Evaluation of Wisconsin's BadgerCare Plus Health Coverage

for

Parents & Caretaker Adults and for Childless Adults

2014 Waiver Provisions

Final Report

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ABBREVIATIONS & GLOSSARY OF TERMS

CARES	Wisconsin Medicaid's Eligibility and Enrollment System
CLA	Childless Adults: Adults without dependent children
CMS	U.S. Centers for Medicare and Medicaid Services
Core Plan	A BadgerCare benefit, prior to 2014, with enrollment capped in 2009 for a limited number of Childless Adults with incomes up to 200% FPL; required enrollment fees and provided a limited set of benefits relative to standard Wisconsin Medicaid coverage.
DHS	Wisconsin Department of Health Services
Enrollment Spell	Unless otherwise noted, an enrollment spell is a period that begins with the enrollment start date and ends with an enrollment gap of more than 1 month.
FPL	Federal Poverty Level
Hazard regression modeling	Hazard models adjust for duration dependence in the outcome variable and are useful to understand the factors associated with the occurrence and timing of an event (e.g., disenrollment from Medicaid).
HIP	University of Wisconsin Health Innovation Program: Location of servers hosting BadgerCare claims and encounter data for evaluation project
HIPAA	Health Insurance Portability and Accountability Act: Federal Law governing privacy of patient and consumer health information
Kaplan Meier Survival curve	A Kaplan Meier survival curve illustrates the proportion of individuals in a population that has not yet experienced the event of interest (e.g., disenrollment) plotted against time since baseline.
Metropolitan area	A county that contains a core urban area of 50,000 or more population, as designated by the Year 2000 U.S. Census. https://www.census.gov/population/metro/
RRP	Restrictive Reenrollment Period: Period during which a person is locked-out of program enrollment following non-payment of a required BadgerCare premium
TMA	Transitional Medical Assistance: also known as "Extensions." A Medicaid program that offers up to 1 year of additional Medicaid health insurance benefits for certain low-income individuals who would otherwise lose coverage due to an increase in income.
UW IRP	University of Wisconsin Institute for Research on Poverty: independent evaluators for Wisconsin's BadgerCare 2014 waiver

17 Evaluation Questions Defined by the Wisconsin Department of Health Services

TMA: Payment of premiums

1. Will the premium requirement reduce the incidence of unnecessary services?
2. Will the premium requirement lead to improved health outcomes?
3. Will the premium requirement slow the growth in healthcare spending? --
4. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?
5. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?

Association of enrollment status to utilization and costs

6. Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?
7. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?

Enrollment analysis by payment of premiums

8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?
9. How access to care affected by the application of new, or increased, premium amounts?

Payment of premiums and three-month restrictive re-enrollment

10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?
11. Does this impact vary by income level?
12. If there is an impact, explore the break-out by income level.

CLA: Effects of benefit plan for demonstration expansion group

13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?
17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?

I. EXECUTIVE SUMMARY

The University of Wisconsin conducted an evaluation of the Wisconsin BadgerCare Reform Demonstration Project implemented under Wisconsin's CMS-approved 2014 Medicaid § 1115 Demonstration waiver. The evaluation assesses how the changes affect two Medicaid populations: (1) parents and caretaker adults who are eligible for Medicaid through Transitional Medical Assistance (TMA Adults) and (2) childless adults (CLAs) with an effective income level at or below 100% of the federal poverty level (FPL). The waiver tested three policy demonstrations: 1) premiums for the TMA population, 2) Restrictive Reenrollment Periods (RRPs) for non-payment of premiums, and 3) provision of standard Medicaid benefit plan for CLAs with incomes below 100% FPL. The Wisconsin Department of Health Services (DHS) DHS had defined 17 evaluation questions focusing on these policies and populations, and the evaluation applied rigorous methods to address the DHS-defined hypotheses.

The evaluation required administrative data from the Wisconsin DHS on (a) claims and encounters, (b) diagnostic codes, (c) enrollment, and disenrollment reason codes, and (d) premium payment information. The evaluation team also conducted surveys, in 2016 and in 2018, of currently enrolled and disenrolled BadgerCare members. The surveys assessed insurance coverage, measures of health service utilization, health status, knowledge of program requirements, perceptions of Medicaid policies, and response to premiums.

Key Findings

CMS, in its approval of Wisconsin's 2014 Medicaid waiver, had identified core elements of the evaluation, directing the State to test seven specific questions. The Wisconsin DHS defined its 17 evaluation questions based on the seven CMS questions. The following provides a brief summary of answers to the CMS questions:

1. *For the TMA demonstration participants, will the premium requirement reduce the incidence of unnecessary services, slow the growth in healthcare spending, and increase the cost effectiveness of Medicaid services?*
   The use of premiums in this waiver were not effective in reducing the incidence of unnecessary services, did not slow the growth in healthcare spending, and did not increase the cost-effectiveness of Medicaid services.

2. *Is there any impact on utilization and/or costs associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?*
   Individuals who were subject to the 3-month RRP, and who subsequently reentered the program in the year that TMA started, showed notably lower utilization of health services following reentry, including outpatient services, inpatient services, and prescription drugs. One

interpretation is that the experience of RRP dislocates individuals from health services that they may have used prior to leaving TMA. A survey of individuals who had a recent experience of RRP showed them having significantly lower self-reported access to care and more financial barriers than other individuals recently enrolled in TMA. Overall, these data suggest that, while the 3-month RRP reduced the amount of time spent out of the program, even short experiences of RRP are associated with lower access to care.

3. *Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?*
   The sample of individuals who were continuously enrolled in TMA over 12 months generally did not show a change in utilization and spending, compared to the substantial changes observed among those that disenrolled and then re-enrolled.

4. *What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment? Does this impact vary by income level?*
   The evaluation identified no definitive changes in rates of premium payment or rates of disenrollment related to the policy change, although there was an observed decrease in individuals returning to BadgerCare after leaving TMA in the wake of the policy change.

5. *What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?*
   The waiver's premium provisions caused an immediate decrease in overall TMA enrollment. Increased premium exposure particularly reduced the length of TMA enrollment spell for those with incomes below 133% FPL.

6. *How is enrollment or access to care affected by the application of new, or increased, premium amounts?*
   Premiums, by reducing enrollment, affected health care access as measured by utilization. Premiums do not affect utilization behavior of beneficiaries who remain enrolled in the program, but selectively affects the composition of the enrolled population and, thus, their aggregate utilization profile.

7. *Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes, a reduction in the incidence of unnecessary services, an increase in the cost effectiveness of Medicaid services and an increase in the continuity of health coverage?*
   The provision of a Standard Medicaid benefit plan to childless adults was effective in improving enrollment, continuity of coverage, and access to care for childless adults. The likelihood of

remaining enrolled was higher after implementation of the Standard Plan for CLAs compared to the prior period.

Utilization of services increased for this population after implementation of the Standard Plan, including increases in the average number of outpatient visits, emergency department visits and hospitalizations, the likelihood of receiving any prescription medication, the probability of receiving a flu shot, a smoking cessation visit, and an HbA1c test (among adults with diabetes). Concomitantly, health care costs for each major service category, outpatient, emergency department, inpatient and prescription medications increased for CLAs after implementation of the Standard plan. Supplemental analyses demonstrated improved use of behavioral health services and, for persons with diabetes, better access to and use of diabetes-related prescription medications.

CLAs that entered the program post-waiver differed from those that had been in the program pre-waiver: Overall, continuing CLAs had higher rates of use for outpatient visits and prescription medications and lower rates of use for acute care services including emergency department visits and inpatient admissions. Continuing CLAs were more likely to receive some types of health-related care use including flu shots and mammograms, and less likely to have potentially preventable emergency department visits than new CLA enrollees. The pattern of care use observed among continuing CLAs compared to newly enrolled CLAs is consistent with a population that is more routinely engaged with the health care sector.

The State of Wisconsin's waiver proposal document and CMS approval documents stated the following overall objectives for the 2014 waiver:

1. *Ensure every Wisconsin resident has access to affordable health insurance and reduce the state's uninsured rate.*
2. *Provide a standard set of comprehensive benefits that will lead to improved healthcare outcomes at no additional cost to state taxpayers and the federal government.*
3. *Create a program that is sustainable, so our healthcare safety net is available to those who need it most.*

These objectives stand in reference to the State's approach to Medicaid eligibility as an alternative to the Affordable Care Act Medicaid expansion model. However, the DHS-defined and CMS-approved hypotheses and evaluation questions for the 2014 waiver did not incorporate consideration of #1 and #3. This evaluation included extensive exploration of hypotheses related to item #2, but the DHS-defined hypotheses did not include consideration of "additional cost to taxpayers and the federal governments." Assessment of this element was therefore not within the scope of the evaluation.

II. DEMONSTRATION WAIVER AND EVALUATION BACKGROUND

IIA. General Background Information

The University of Wisconsin conducted an evaluation of the Wisconsin BadgerCare Reform Demonstration Project, as outlined by the Wisconsin Department of Health Services (DHS) and approved by the federal Centers for Medicare and Medicaid Services (CMS). BadgerCare is Wisconsin's combined Medicaid and Children's Health Insurance Program (CHIP) for low-income families and adults without dependent children.

The most substantial change that occurred with this waiver involved an expansion of eligibility for adults without dependent children ("childless adults" or CLAs) with incomes up to 100% of the federal poverty level (FPL). This waiver provided eligibility to this population, and coverage with the standard Medicaid benefit covered services. Prior to this waiver, Wisconsin had provided a "Core Plan" program of coverage for some childless adults that offered a narrower set of benefits and required an annual enrollment fee. However, the Core Plan had frozen enrollment in 2009 and, with limited exceptions, was no longer enrolling new members. The program enrollment had steadily declined due to attrition over time, with approximately 14,000 members at the time that the 2014 waiver took effect.[1]

The State of Wisconsin, in 2013, did not adopt a Medicaid expansion as defined under the Affordable Care Act. Instead, then-Governor Walker proposed, and the legislature approved, changes to the Medicaid program to set coverage for adults up to 100% FPL. The State of Wisconsin's waiver proposal, as approved by CMS, stated the following objectives for the 2014 waiver:

1. Ensure every Wisconsin resident has access to affordable health insurance and reduce the state's uninsured rate.
2. Provide a standard set of comprehensive benefits that will lead to improved healthcare outcomes at no additional cost to state taxpayers and the federal government.
3. Create a program that is sustainable so our healthcare safety net is available to those who need it most.

The waiver document noted that the Affordable Care Act (ACA) provisions would allow most individuals with household incomes greater than 100% FPL the opportunity to purchase private insurance through the Federally Facilitated Marketplace (FFM). The State also noted that availability of federal premium

[1] For details about the timeline and policy decisions, see Wisconsin Department of Health Services. The Wisconsin Health Insurance Market and Wisconsin Entitlement Reforms, Operationalizing the Affordable Care Act. March 31, 2014. Available at https://www.dhs.wisconsin.gov/publications/p0/p00634a.pdf

subsidies for those with incomes greater than 100% FPL and not exceeding 400% FPL, along with cost-sharing reductions for lower-income consumers.

With that context, the State's 2014 Medicaid waiver took effect as an alternative to the ACA's Medicaid expansion model. The State of Wisconsin posited that, setting Medicaid income limits for adults at 100% FPL and in conjunction with the ACA Marketplace, every Wisconsin resident would have access to affordable health insurance.

Childless adults with incomes not exceeding 100% FPL became eligible to enroll in Medicaid/BadgerCare. At the same time, Wisconsin's the income eligibility threshold for adult parents and caretaker relatives was changed from 200% FPL to 100% FPL. (A previous, long-standing waiver expired that had supported the expanded coverage for parents/caretaker adults, but this change was not a specific element for approval under the 2014 waiver.) The State's expectation with the 2014 changes: All adults not otherwise eligible for BadgerCare Plus with incomes above the poverty level will have access to subsidized private insurance coverage in the FFM.[2]

The waiver focused on provisions related to Childless Adult coverage expansions, along with premium-related provisions for Transitional Medicaid. It did not include questions related to the change of existing parent/caretaker adult coverage from 200% to 100% FPL, and that effect on coverage, access, utilization, and health outcomes. DHS had not translated its stated goal -- that "all adults not otherwise eligible for BadgerCare Plus with income above the poverty level will have access to subsidized private insurance in the FFM" -- into waiver hypotheses; the evaluation did not test the State's goals #1 and #3.

The evaluation did test hypotheses related to State goal #2: Provision of a standard set of comprehensive benefits will lead to improved healthcare outcomes at no additional cost to state taxpayers and the federal government. However, the DHS-defined hypotheses and evaluation questions did not directly incorporate consideration of "additional cost to taxpayers and the federal governments," relative to the pre-waiver status quo and/or relative to an ACA Medicaid expansion. Assessment of this goal was therefore not within the purview of the contracted evaluation.

The 2014 waiver also changed various components of premium cost-sharing for the Transitional Medicaid (TMA) population and changed rules for Restrictive Reenrollment Periods (RRPs) for non-payment of premiums, further described below.

[2] Wisconsin Department of Health Services. The Wisconsin Health Insurance Market and Wisconsin Entitlement Reforms, Operationalizing the Affordable Care Act. March 31, 2014. See page 4. Available at https://www.dhs.wisconsin.gov/publications/p0/p00634a.pdf

CMS approved the demonstration waiver on December 30, 2013, providing authorization to the State of Wisconsin to implement its provisions between January 1, 2014-December 31, 2018.[3]

IIB. Waiver Overview and Target Populations

The 2014 Wisconsin waiver concerns two beneficiary populations, adults who are eligible for Transitional Medical Assistance, and adults without dependent children. In the following paragraphs, we describe these populations and provide an overview of the waiver's provisions. The waiver provisions were effective on April 1, 2014.[4]

Transitional Medical Assistance (TMA). TMA extends Medicaid coverage for current beneficiaries for up to 12 months following an increase in income beyond 100% of the federal poverty level (FPL). TMA is available to adults who initially enrolled in Medicaid under parent/caretaker eligibility and had an income at or below 100% FPL at the time of enrollment and for at least three of the six months immediately preceding the month in which the income went above 100% FPL. The July 2012 DHS waiver introduced a premium requirement for TMA beneficiaries with income at or above 133% FPL. The premium amount was based on a sliding scale relative to household income with a cap of 9.5% of household income (the same premium schedule used in the exchanges under the Affordable Care Act). Under the 2014 waiver, these provisions remained in place. The 2014 waiver introduced a premium requirement for TMA beneficiaries with income between 100% and 133% FPL. Unlike for higher-income TMA beneficiaries, however, this requirement only takes effect after the 6th month of TMA enrollment.

The method for calculating the premium amount is the same for all TMA beneficiaries. The 2014 waiver also stipulates that TMA adults who do not make a required premium payment are disenrolled from BadgerCare at the end of their eligibility month and placed in a three-month Restrictive Reenrollment Period (RRP). During the 3-month RRP, these individuals are ineligible for TMA if and until they pay their outstanding premium balance. This RRP policy differs from the policy in place before the 2014 waiver. Specifically, from July 2012 to March 2014, TMA beneficiaries with income at or above 133% FPL who failed to pay a premium were subject to a 12-month RRP. During that 12-month RRP, these individuals were ineligible for TMA. There was no mechanism for a return to TMA within those 12 months.

[3] Approval letter and STCs available here: https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/wi/Badger-Care-Reform/wi-badgercare-reform-original-appvl-12302013.pdf

[4] Additional detail regarding the 2014 WI Medicaid waiver application available here: : https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/wi/Badger-Care-Reform/wi-BadgerCare-reform-demo-project-app-11102011.pdf;

Childless Adults (CLA). This demonstration population includes non-pregnant, non-disabled adults between 19 and 64 years of age, without dependent children. The 2014 waiver introduced a change in income eligibility and benefits for this population. Previously, the DHS offered coverage under its Core Plan to a limited number of CLAs with income up to 200% FPL. The Core Plan required enrollment fees and provided a limited set of benefits relative to standard WI Medicaid coverage, the Standard Plan. Effective April 1, 2014, the WI DHS eliminated the Core Plans. The DHS transitioned CLAs beneficiaries with incomes at or below 100% FPL to the Standard Plan, and all new childless adult applicants with incomes that do not exceed 100% FPL are enrolled in the Standard Plan. The Wisconsin Medicaid Standard Plan has no premiums for eligible members below 100% FPL, and provides the full range of Medicaid benefits.[5] CLAs with income above 100% FPL are no longer eligible for Medicaid coverage.

Evaluation Populations

Table II.1 shows the socio-demographic descriptors of the TMA and CLA beneficiary populations enrolled as of April 2015, one year after the initiation of the waiver policies. We additionally include a description of adults enrolled under parent/caretaker eligibility although the 2014 waiver does not include provisions specific to this eligibility category. Rather, this population plays an important role in the evaluation because it represents the pool of potential TMA beneficiaries, and serves as a concurrent comparison group for several analyses.

[5] Additional detail regarding the CLA population and a comparison of benefits under the Core, Basic, and Standard plans may be found online: https://www.dhs.wisconsin.gov/BadgerCareplus/standard.htm; and https://www.forwardhealth.wi.gov/kw/pdf/2008-199.pdf

Table II.1. Sociodemographic Profile of Waiver Population, April 2015

Variable	PARENTS/ CARETAKERS	CHILDLESS ADULTS	TMA/Extensions (excess earnings category)
	Mean	Mean	Mean
Age	34.7	39.1	34.9
Female	72.9%	42.3%	71.9%
Non-Hispanic White	61.4%	60.3%	64.3%
Black	19.1%	24.3%	15.6%
Hispanic	9.4%	6.2%	9.6%
Other/unreported	8.1%	5.9%	8.5%
Citizen	96.3%	98.1%	96.0%
First language English	95.3%	97.8%	94.8%
Less than high school	21.3%	23.9%	15.2%
High school/GED	63.9%	55.3%	67.0%
More than high school	11.2%	6.2%	13.9%
Education missing	3.6%	14.6%	4.0%
Resides in a non-metropolitan area	66.5%	66.4%	64.1%
Number of children in household	2.2	0.07	2.1
Number of adults in household	1.6	1.2	1.7
Family income %FPL	37.2%	21.5%	127.8%
Length of enrollment spell in months	36.5	12.9	37.8
Number of Enrollees, April 2015	163,548	160,402	13,952

III. EVALUATION QUESTIONS AND HYPOTHESES

CMS, in its approval of Wisconsin's 2014 waiver, specified the following specific questions:

1. For the TMA demonstration participants, will the premium requirement reduce the incidence of unnecessary services, slow the growth in healthcare spending, and increase the cost effectiveness of Medicaid services?
2. Is there any impact on utilization and/or costs associated with individuals who were disenrolled, but re-enrolled after the 3-monthrestrictive re-enrollment period?
3. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?
4. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment? Does this impact vary by income level (if so, include a break-out by income level)?
5. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?
6. How is enrollment or access to care affected by the application of new, or increased, premium amounts?
7. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes, a reduction in the incidence of unnecessary services, an increase in the cost effectiveness of Medicaid services and an increase in the continuity of health coverage?

The Wisconsin DHS subsequently prepared and submitted an evaluation design, in which it proposed 17 evaluation questions that DHS had defined, prior to engaging an external independent evaluator. The hypotheses focus on programmatic changes authorized by the 1115 Waiver: Premium changes, three-month RRP; and Standard Plan coverage for CLAs. CMS approved that evaluation design, and then DHS engaged the University of Wisconsin as an independent evaluator. The University of Wisconsin subsequently prepared a revised evaluation plan for submittal to CMS. As required, that evaluation design plan retains the 17 hypotheses that DHS and CMS had already approved. The UW evaluation team revised the methodological approaches to answer each of the 17 questions.

The completed evaluation addresses the 17 evaluation questions defined by DHS, using methods described by the UW team in the "BadgerCare Reform Demonstration Draft Evaluation Design" of October 31, 2014, as approved by CMS on November 12, 2014.[6]

[6] Available at https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/wi/Badger-Care-Reform/wi-BadgerCare-demo-eval-plan-20141031.pdf

The evaluation design documents may be found in the attachments to this report:

Attachment C: DHS Evaluation Design as originally submitted to and approved by CMS;
Attachment D: UW Design Report: Recommended Changes and Crosswalk; and
Attachment E: CMS Comments and UW/DHS Responses

The evaluation uses rigorous methods to arrive at an understanding of how the changes implemented under Wisconsin's 2014 Medicaid 1115 Waiver Demonstration affect two Medicaid populations: (1) parents and caretaker adults who are eligible for Medicaid through Transitional Medical Assistance (TMA Adults) and (2) childless adults (CLAs) with an effective income level at, or below, 100% of the federal poverty level (FPL).

Generally, with respect to the TMA Adults, the evaluation assesses the following:

A. The effect of premiums on enrollment, access to care, the incidence of unnecessary services, health outcomes, and spending;
B. The effect of an RRP on payment of premiums and enrollment; and
C. The association of enrollment status to utilization and costs, and as experienced by those who are continuously enrolled and those who are exposed to an RRP.

For the CLA population, the evaluation assesses the effects of providing a more comprehensive benefit plan on health care use, continuity of Medicaid coverage, health outcomes, and costs.

The 17 Evaluation questions defined by the Wisconsin DHS and approved by CMS are as follows:

TMA: Payment of premiums

1. Will the premium requirement reduce the incidence of unnecessary services?
2. Will the premium requirement lead to improved health outcomes?
3. Will the premium requirement slow the growth in healthcare spending? --
4. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?
5. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?

Association of enrollment status to utilization and costs

6. Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?
7. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?

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8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?
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Payment of premiums and three-month restrictive re-enrollment

10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?
11. Does this impact vary by income level?
12. If there is an impact, explore the break-out by income level.

CLA: Effects of benefit plan for demonstration expansion group

13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?
17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?

IV. METHODOLOGY: CROSS-CUTTING DATA ELEMENTS

The evaluation of this waiver involved two separate populations -- Transitional Medicaid (TMA) and Childless Adults (CLA) -- three different programmatic changes – coverage and benefits changes, premiums, and restrictive-reenrollment periods -- with 17 associated hypotheses. This required a broad range of evaluation approaches, methods, and data applications.

This section describes the cross-cutting data elements of the evaluation, while Section V describes the methods, limits, and results specific to the hypotheses. Each hypotheses-specific section includes a discussion of the evaluation design, target and comparison groups, data sources, time periods for data collected, measures, and analytic methods.

The evaluation of the demonstration waiver, across each waiver provision, relied on state administrative data and a beneficiary survey. These data elements and their specific sources are described below.

IV.A. Administrative Data

Enrollment, Disenrollment, RRP and Premium Payment Data

Wisconsin CARES is the state's online eligibility and enrollment portal for public benefits, including Medicaid, TANF, and FoodShare (SNAP). We use data from CARES to attain longitudinal administrative data pertaining to enrollment. Demographic information includes age, sex, educational attainment, county of residence, income, and income sources. CARES data also include reason codes associated with disenrollment, and "premium payment files" that contain monthly information on the dollar amount of premium owed, whether it was paid, and the date of payment. The evaluation team receives updates to BadgerCare eligibility and enrollment data, including RRP and premium payment data, every six months.

Claims and Encounter-Based Outcome Measures

The State's MMIS database provided Wisconsin's claims and encounter data. The claims and encounter data contained detailed information on diagnoses, procedure, and billing codes from which we constructed outcomes measures of health care use and cost.

We used a common set of health care claims- and encounter-based outcome measures to evaluate health care use for multiple components of the evaluation. Table IV.A.1 provides a summary of these measures, the questions for which each measure is used, and source or reference used to specify the measure. We adapted the specifications of these published measures as needed to satisfy the purpose of the evaluation. For example, in some cases the published specifications required extensive look-back periods of continuous enrollment to establish the presence or absence of a particular diagnosis or service use. This type of look-back requirement may be inconsistent with the optimal design of a study cohort or

comparison group. Attachment A provides a detailed description of the measures identified in Table IV.A.1. Additional measures that are specific to individual components of the evaluation are identified in the relevant section(s) of the report.

Table IV.A.1. Claims/Encounter-Based Health and Health Care Outcome Measures

Description	Data Source	Reference Measure	Evaluation Questions
Health-related			
Breast Cancer Screening	MMIS	NQF 2372, BCS-AD	2,4,13,15
Flu Vaccinations for Adults ages 18 to 64		NQF 0039, FVA-AD	2,4,6,13,15
Comprehensive Diabetes Care: Hemoglobin A1c Testing (HbA1c)		NQF measure 0057; HA1C-AD	2,4,13,15
Antidepressant Medication Management		NQF measure 0105; AMM-AD	2, 13
Follow-up after Hospitalization for Mental Illness, within 7-days and within 30-days		NQF measure 0576; FUH-AD	2, 13
Smoking cessation medication assistance		NQF 0027; MSC-AD	2,4,6,13,15
Initiation and Engagement of Alcohol and other Drug Dependence Treatment: Initiated treatment within 14-days of the diagnosis; received >=2 services within 30-days of AOD diagnosis		NQF measure 0004; IET-AD	2, 13
Health Care Use, General			
Office-based visits	MMIS	Non-emergency department outpatient and office-based visits, total and defined by type	3-7, 9, 16
Emergency department visits		ED visits, all cause	3-7, 9, 16
Inpatient admissions		Inpatient admissions, all cause	3-7, 9, 16
Prescription Medications		Prescription medication claims	3-7, 9, 16
Potentially Preventable/Avoidable Health Care Use			
All-Cause Readmissions Rate	MMIS	NQF 1768, PCR-AD	1,9, 14
Potentially Preventable Emergency Department Visits		Billings, Parikh, Mijanovich, 2000. Commonwealth Fund.	1,6,9,14
Potentially Preventable Inpatient Admissions		AHRQ Prevention Quality Indicators	1,6,9, 14

Billings J, Parikh N, Mijanovich T. 2000. "Emergency Department Use: The New York Store." Issue Brief Commonwealth Fund. Available at https://www.commonwealthfund.org/usr_doc/billings_nystory.pdf?section=4039

IV.B. Primary Data Collection: Beneficiary Survey

The evaluation included the fielding of a survey at two separate points in the four-year evaluation period.

2a. Overview

The UW Survey Center conducted the mixed-mode mail and telephone surveys to reach a sample size powered to detect differences between waiver evaluation sub-groups. The surveys were fielded in 2016 and in 2018. Another survey had been fielded in 2014 as part of a prior waiver evaluation. The surveys included an initial mailing with two follow-letters, and then a telephone follow-up to non-respondents. Extensive resources were placed on tracking down non-responding households (including referring "hard-to-reach" cases) to the UW Survey Center's tracking center.

The survey protocol was designed to obtain a representative sample of individuals across subgroups (described below) that the waiver affects. The 2018 survey updates cross-sectional surveys of enrollees conducted in 2014 and 2016. The 2018 survey sampling frame was devised to allow for continuity across multiple populations and question domains with the 2016 survey (and to a lesser extent with the 2014 survey). It also included a new sampling plan for TMA enrollees to facilitate a better comparison of differences between individuals who were, and were not, exposed to premiums.

Table IV.B.1. Survey Frames and Samples, 2018

Group	Inclusion Criteria	Original N	Fielded N
RRP	Immediately before survey fielded, enrolled in RRP for at least a month	350	300
Childless Adults	1,170 newly sampled and 175 sampled from prior 2014 and 2016 surveys, who remain enrolled	1,345	735
TMA 100-133% FPL, 6-month continuous enrollment	TMA enrolled for at least 6 months, with incomes consistently below 133% FPL in first 6 months	580	290
TMA > 133% FPL, 6-month continuous enrollment	TMA enrolled for at least 6 months, with incomes generally above 133% FPL in first 6 months	770	385
Other TMA	Any TMA exposure	580	290
	Total	3,625	2,000

2b. Survey Domains

The survey included items to measure demographics, health status, utilization of care, and health care experiences. Wherever possible, items drew upon validated and widely used survey measures, such as those used in the National Health Interview Survey, the Urban Institute Health Reform Monitoring Survey, and the Behavioral Risk Factor and Surveillance System. Items in the survey have been validated for representative population samples, including individuals with low reading proficiency. Additionally,

the survey included measures related to satisfaction with program changes, knowledge of program requirements, and health insurance literacy. The 2018 survey was substantially similar in content to the 2016 survey. Major changes to the survey included the following:

- Removed questions about whether individuals had knowledge about policy changes that occurred in 2014 (as these were now deemed too long ago for reliable recall)
- Added screeners for substance use
- Added more questions about family exposure to premiums
- Added new reasons for individuals to self-identify why they do not work
- Added new questions about satisfaction and attitudes toward Medicaid

See Attachment F of this document for the 2018 Survey instrument.

2c. Sample Construction and Response Rate

The 2018 survey drew a new sample of Medicaid beneficiaries, along with some resampling of cases from the 2016 survey. The process for drawing the sample proceeded in two steps: The UW evaluation team provided the WI DHS with criteria for drawing a sample frame from the waiver evaluation groups (parents/caretaker adults, and childless adults). The subgroups included enrollment category, income category, and specific conditions such as length of time for enrollment in TMA, as outlined in Table IV.B.1. Wisconsin DHS was responsible for drawing a list of adults from among those that met the sampling frame criteria, and providing this list of individuals to the UW Survey Center.

From this list provided by DHS, the UW Survey Center then generated the sample for the 2018 survey by selecting a random sample of 2,000 individuals, with sampling divided among the different enrollment categories of Parents/Caretaker Adults, Childless adults, and Transitional Medicaid. These subjects then received, by U.S. mail from the UW Survey Center, an invitation to participate. The initial invitation included the survey questionnaire along with a $5 incentive. Non- respondents received two follow-up letters, and then a telephone follow-up.

The UW Survey Center, during its routine follow-up and monitoring of respondent characteristics, detected an irregularity within the sample: 106 respondents self-identified as persons below 18 years of age and, therefore, did not meet the waiver's age criteria. After consultation with the Wisconsin DHS, we determined that DHS, in drawing the list that it provided to the Survey Center, had not applied the waiver evaluation's age exclusion criteria.

This required exclusion, post-survey implementation, of these ineligible cases (N=106) from the survey sample, reducing the overall cases eligible for completion. Other reasons for ineligibility included no mail response and no phone number and having language problems. Overall, 371 cases were excluded. The remaining eligible cases (N=1,629) comprise the effective survey sample from which the response rate is calculated.

The survey attained 712 complete cases for an overall 44% response rate, with rates by specific subgroups detailed in Table IV.B.2.

Table IV.B.2. Enrollee Population, Survey Sample, and Response Rates by Subgroup for the 2018 Survey

	RRP	Childless Adults	TMA 100-133% FPL	TMA >133% FPL	Other TMA	Total
Original Sample	300	735	290	385	290	2,000
Ineligible due to <18 years of age	90	10	2	3	1	106
Ineligible due to other reasons	37	110	50	35	33	265
Potentially Eligible Sample	173	615	238	347	256	1,629
Completed Surveys	65	265	87	182	113	712
Response Rate	**37%**	**43%**	**37%**	**52%**	**44%**	**44%**

2d. Weighting

We created raking weights[7] for each survey respondent, which accounts for under-representation of some population groups in the survey sample relative to their size in the population from which they were sampled (due to differential non-response or to differential sampling of groups). These weights allow us to calculate statistics that are more representative of the underlying populations. Raking weights adjust the marginal proportion of survey respondents to the underlying population using age, sex, race, and geographic location.

[7] Deville J, Sarndal C, Sautory O. 1993. Generalized Raking Procedures in Survey Sampling. Journal of the American Statistical Association 88(423): 1013-1020.

V. HYPOTHESES-SPECIFIC METHODS, RESULTS, AND LIMITATIONS

This section address each of the hypotheses in three sections:

A) TMA premium-related hypotheses,

B) The specific effect of Restrictive Reenrollment Periods (RRPs), and

C) CLA coverage-related hypotheses.

Each section will include the hypotheses addressed, the methodology, methodological limitations, and the results of the evaluation. The following Section VI will provide a consolidated discussion of conclusions and implications.

V.A. TRANSITIONAL MEDICAID POPULATION

Background on Study Population

This component of the waiver evaluation assessed the effects of changes made to premium requirements for Medicaid beneficiaries enrolled under Transitional Medical Assistance provisions.

In Wisconsin, parents of dependent children who have qualified for Medicaid benefits under Section 1931 rules (family incomes <100% FPL) for at least three of the previous six months are eligible for Transitional Medical Assistance (TMA). TMA allows up to 12 months of extended Medicaid coverage to those who would otherwise lose eligibility due to increased income. Prior to July 2012, Wisconsin allowed TMA enrollees 12 months of continued eligibility without requiring them to pay premiums. In July 2012, Wisconsin began charging premiums to those in TMA due to increased earnings if their incomes exceeded 133% FPL.

In April 2014, (under the waiver evaluated here), TMA premium policy again changed so that those with incomes 100-133% FPL were required to pay premiums after six months of TMA enrollment, with the prior policy still applicable to those above 133% FPL. Table V.A.1 displays the premium amounts. Premiums for all TMA-eligible beneficiaries ended in December 2018 with the expiration of this portion of the waiver. Policies regarding disenrollment for nonpayment also changed in 2014; the 2014 waiver included those changes, which are also included in this evaluation and discussed in section V.B. of this report.

The changes in premium requirements have the potential to affect the number and characteristics of the population enrolled in TMA under BadgerCare Plus. Wisconsin DHS developed several hypotheses (Hypotheses 1-5, 8, 9) related to the TMA premiums.

Table V.A.2 summarizes the evaluation design for TMA-related hypotheses. This section examines these hypotheses. Because the methods used for examining several of the hypotheses are highly similar, we group our description of the analyses in some cases. We begin by examining Hypothesis 8, since understanding the effects of the waiver on enrollment is key for interpreting all other results.

Table V.A.1. Transitional Medicaid Premium Requirements

	Time Period	
Income as % FPL	July 2012-March 2014	April 2014-December 2018
[100-133%)	No premium required	$0 months 1-6 2% months 7-12
[133%-140%)	3.0%	3.0%
[140%-150%)	3.5%	3.5%
[150%-160%)	4.0%	4.0%
[160%-170%)	4.5%	4.5%
[170%-180%)	4.9%	4.9%
[180%-190%)	5.4%	5.4%
[190%-200%)	5.8%	5.8%
[200%-210%)	6.3%	6.3%
[210%-220%)	6.7%	6.7%
[220%-230%)	7.0%	7.0%
[230%-240%)	7.4%	7.4%
[240%-250%)	7.7%	7.7%
[250%-260%)	8.1%	8.1%
[260%-270%)	8.3%	8.3%
[270%-280%)	8.6%	8.6%
[280%-290%)	8.9%	8.9%
[290%-300%)	9.2%	9.2%
300% and above	9.5%	9.5%

Notes: Prior to July 2012, premiums were not required for any TMA-eligible beneficiaries. Premiums for this eligibility group ended in December 2018 with the expiration of the waiver approval for this policy.

Table V.A.2. Design Table for TMA-Related Analyses

Description	Sample	Unit of Analysis	Statistical Modeling Strategy
Enrollment-related			
Probability of TMA Transition	Potential TMA enrollees (parents <100% FPL)	Person-level	Probit model (Descriptive)
TMA characteristics, income, and premiums paid	TMA enrollees	Person, person-month	Descriptive analysis
Number and fraction of TMA enrollees	TMA enrollees	Month	Interrupted time series/regression discontinuity
Length of TMA enrollment spell	TMA enrollees	Person-spell	Regression discontinuity
Health Care Use, General			
Outpatient, total	TMA enrollees; TMA enrollees with 12 months continuous enrollment	Month; person-month	Interrupted time series/regression discontinuity
Outpatient, primary			
Outpatient, specialty			
Emergency department, all			
Hospitalizations, all			
Potentially Preventable/Avoidable Health Care Use			
Readmissions rate (Hospital)	TMA enrollees; TMA enrollees with 12 months continuous enrollment	Person-month	Interrupted time series/regression discontinuity; difference-in-differences
Potentially Preventable Emergency Visits			
Potentially Preventable Hospitalizations			
Total Prescription $			
Total Spending $			
Health-related			
Breast cancer screening	TMA enrollees; TMA enrollees with 12 months continuous enrollment	Month; Person-month	Interrupted time series/regression discontinuity; difference-in-differences
Flu Vaccination			
Smoking cessation			

Description	Sample	Unit of Analysis	Statistical Modeling Strategy
Diabetes HbA1c	TMA enrollees with 12 months continuous enrollment	Episode	Pre/post mean comparison
Antidepressant Medication Management			
7-day follow up for mental illness hospitalization			
30-day follow up for mental illness hospitalization			
AOD treatment initiation			
"Cost-effectiveness" defined as change in # of outcomes/cost of outcome per person-period:			
Breast cancer screening	TMA enrollees; TMA enrollees with 12 months continuous enrollment	Month; Person-month	Interrupted time series/regression discontinuity; difference-in-differences
Smoking cessation			
Flu Vaccination			
Diabetes HbA1c	TMA enrollees with 12 months continuous enrollment	Episode	Pre/post mean comparison
"Cost-effectiveness" defined as change in # of events/cost of events per person-period			
Office-based visits	TMA enrollees; TMA enrollees with 12 months continuous enrollment	Month; Person-month	Interrupted time series/regression discontinuity; difference-in-differences
ED visits			
Inpatient admissions			

H8: What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?

Premiums are known to affect enrollment in Medicaid. Prior Wisconsin experience, for example, demonstrated that an introduction of premiums, from 0 to 10 dollars per month resulted in fewer months enrolled and reduced the probability of remaining enrolled for a full year, but other discreet changes in premium amounts did not affect enrollment or had a much smaller effect.[8] The introduction of premiums after six months of TMA enrollment for those with incomes 100-133% FPL is expected to decrease overall TMA enrollment. It may also decrease the probability of transition to TMA, decrease new takeup of TMA, and increase the number of exits from TMA.

Methods

We first developed a description of TMA enrollment over time, including the probability of transitioning to TMA, by TMA status, income, premium payment status, and other demographic characteristics available through CARES.

We then used a regression discontinuity/interrupted time series study design to compare the rate of transitions from MA adult to TMA status in order to understand whether premium requirements affect the incentive to take up TMA and/or experience the types of transitions that would lead to a qualifying event. We also used this design to study the probability of exit from TMA. This design allowed us to identify the causal effect of premiums by assuming that enrollment behavior in the TMA population would have evolved similarly over time if not for the new premium requirements (see limitations below). We estimated this using local linear regression analysis and were mainly interested in a break in the level of entry, exit, or overall enrollment at the time of the waiver.

Finally, we used a regression discontinuity design within the TMA population in order to study the effect of premium amounts. This design involves comparing the enrollment behavior of those who transition and have incomes just low enough to qualify them for a particular premium amount relative to those who transition and have incomes just higher, qualifying them for a higher premium amount. The strength of this design is that it ensures populations are highly similar (as both transitioned from MA) rather than relying on a comparison of adults who did not transition, who may be different from those who did in unobservable ways that are predictive of the enrollment outcome. We performed this analysis for each level of the required premium.

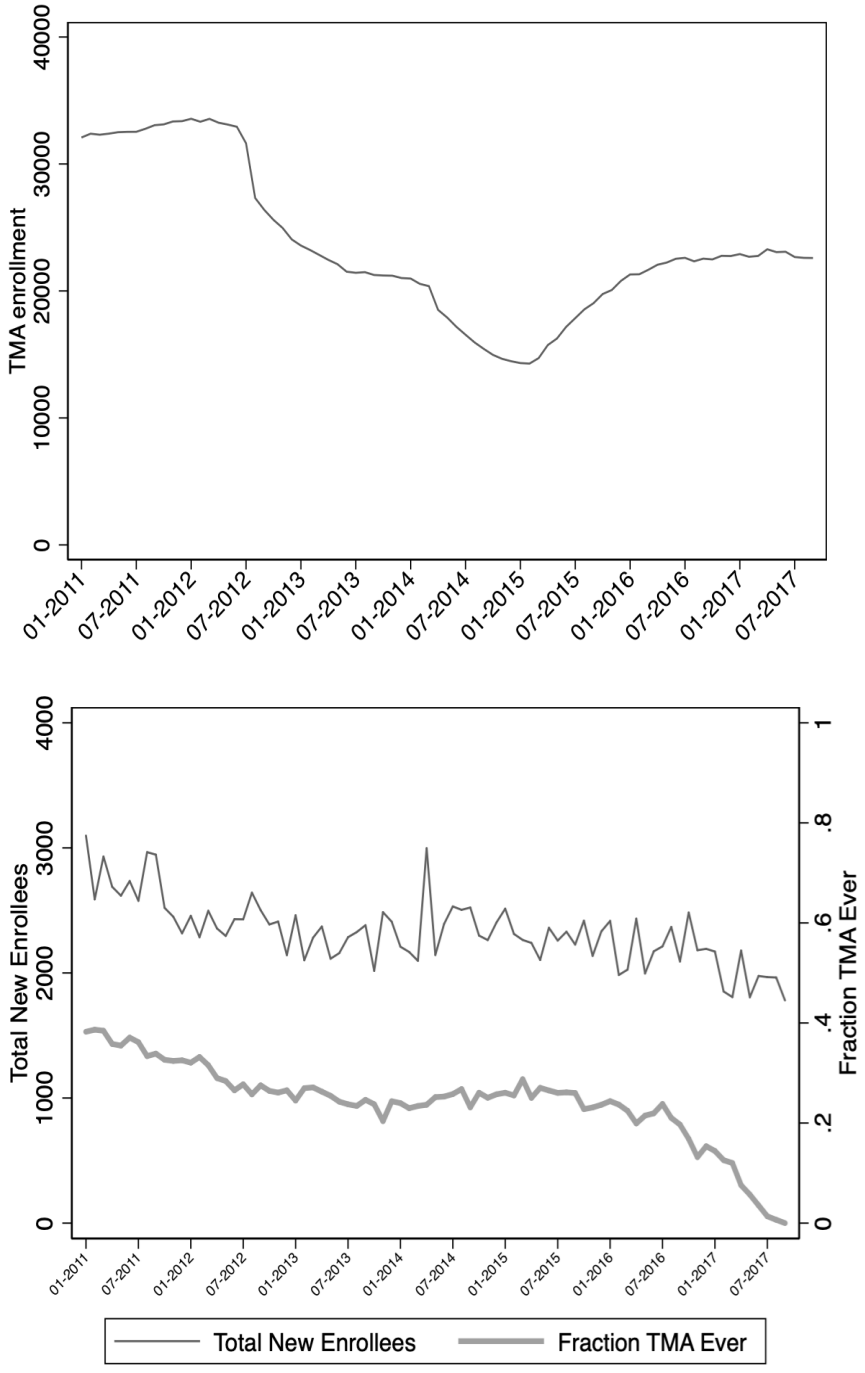
[8] See, for example: Dague L. The effect of Medicaid premiums on enrollment: a regression discontinuity approach. J Health Econ. 2014 Sep;37:1-12.

Findings

Figure V.A.1 shows trends in TMA enrollment from January 2011 to August 2017. The top panel shows the total number of adult TMA enrollees in our sample. A clear decline occurred after April 2014 in the total number associated both with the initiation of premiums after July 2012 and the introduction of premiums for the lowest income TMA enrollees. TMA enrollment gradually trended back up beginning in mid-2015 and remained steady throughout most of 2016 and 2017. Because of the timing, we do not believe that this can be attributed to any of the policies associated with the waiver. Although explaining this trend in TMA enrollment would be interesting and potentially informative, it is outside the purview of this evaluation.

To help consider take-up of TMA, the bottom panel shows the total number of potential new TMA enrollees (parents with incomes below the poverty line) graphed on the left axis. Most noteworthy is the April 2014 spike in new potential TMA enrollment of nearly 1,000 individuals, a roughly 50% increase over average new enrollment in prior months. Average new enrollment in this category was otherwise roughly similar in the year before and after the April 2014 waiver policy changes, at 2,300 individuals per month. The fraction of those new enrollees who ever experience a TMA spell is shown on the right axis. This fraction remains relatively steady throughout the 2014 waiver period, averaging approximately 20% through the end of 2016 and trailing off towards the end of the period because of less follow-up time available in the data.

Figure V.A.1. Trends in TMA Enrollment over Time



Notes: For each month from January 2011 to September 2017, the top panel of the figure shows total TMA enrollment. The second panel shows the number of total new enrollees in BadgerCare who were potentially eligible to enroll in TMA. The figure also shows the fraction of these new enrollees who had enrolled in TMA by the end of the study period.

Table V.A.3 displays the average characteristics of TMA enrollees separated both by the premium policy under which they first enrolled in BadgerCare and the policy in place when they transitioned to TMA. The period labeled (2) is from 07/2012 to 03/2014 and (3) is from 04/2014 to 08/2017. There are no major differences in demographic characteristics across the periods for initial enrollment. There are some slight differences in characteristics at transition, most notably lower average income at initial enrollment for those who transition during the waiver period. This table also shows the income distribution of TMA enrollees at the time of their initial transition. There are no substantive changes in the income distribution of TMA enrollees associated with the different time periods.

Table V.A.4. shows the marginal effects from probit models of the probability of ever transitioning to TMA on three different subsamples: those who initially enrolled when there were no TMA premiums, those who enrolled between 7/2012 and 3/2014 when there were no premiums for those 100-133% FPL, and those who enrolled after 4/2014 during the waiver period. For example, the .09 in the Female row for period 1 would be interpreted as follows: being female is associated with a 9 percentage point increase in the probability of transitioning to TMA relative to the excluded category (being male) for individuals who enrolled prior to 7/2012.

For continuous characteristics, the marginal effect can be approximately interpreted as the change in probability in transition associated with a one unit change in the characteristic, for example: the .007 marginal effect for income as % FPL means that a 10 percentage point increase in FPL is associated with a 7 percentage point increase in the probability of transitioning to TMA on average. While there are some differences in the associations between various demographic characteristics and TMA transition for the no premium period relative to the periods during which there were premiums, the models suggest largely similar relationships for the two premium periods. The exception is that associations with race and ethnicity indicators across the two premium periods do appear to be slightly different. This analysis is strictly descriptive and should not be interpreted as causal.

Table V.A.5. shows the number and fraction of TMA enrollees who were recorded in the administrative data as having paid premiums, during the two premium-required time periods and by income. The table includes only months recorded as enrolled. On average, a majority of TMA enrollees paid premiums when required. At the highest income levels, TMA enrollees were less likely to pay premiums. The table also reports the fraction missing a record of whether or not they paid premiums. This most frequently (>80% of the time) but not always occurs for those with incomes 100-133% FPL, who are not always required to pay premiums.

Table V.A.3. Average Enrollee Characteristics by TMA Status by Premium Policy at Enrollment and Transition

Policy period	At Initial Enrollment				At Transition to TMA			
	(2)		(3)		(2)		(3)	
	mean	sd	mean	sd	mean	sd	mean	sd
HH size	3.13	1.27	2.86	1.37	3.27	1.19	2.91	1.36
Percent FPL at Enrollment	37.43	35.92	36.32	37.96	43.04	36.45	35.59	37.11
Female	0.68	0.47	0.67	0.47	0.65	0.48	0.68	0.47
Citizen	0.93	0.26	0.92	0.28	0.93	0.26	0.92	0.27
Tribe member	0.02	0.13	0.01	0.11	0.02	0.14	0.01	0.11
Black (non-Hispanic)	0.19	0.39	0.19	0.39	0.14	0.35	0.20	0.40
White (non-Hispanic)	0.62	0.49	0.60	0.49	0.66	0.47	0.60	0.49
Hispanic	0.11	0.31	0.12	0.32	0.10	0.30	0.11	0.32
Other race	0.08	0.27	0.07	0.26	0.08	0.28	0.07	0.26
Resides in Metro Area	0.35	0.48	0.37	0.48	0.36	0.48	0.36	0.48
Less than high school	0.71	0.46	0.69	0.46	0.69	0.46	0.64	0.48
High School	0.27	0.44	0.28	0.45	0.28	0.45	0.33	0.47
More than high school	0.02	0.15	0.02	0.16	0.03	0.16	0.03	0.17
Age	29.22	8.98	30.29	9.07	30.37	8.97	31.14	9.05
Spell length	24.49	16.13	16.59	9.70	21.79	14.59	19.59	13.13
# months until TMA	19.21	14.62	12.13	8.62				
Income at transition to TMA								
100-133% of FPL	0.62	0.49	0.61	0.49	0.62	0.49	0.65	0.48
133-140% of FPL	0.05	0.22	0.05	0.23	0.06	0.24	0.05	0.23
140-150% of FPL	0.06	0.24	0.06	0.25	0.07	0.25	0.07	0.25
150-160% of FPL	0.05	0.21	0.05	0.22	0.06	0.24	0.05	0.21
160-170% of FPL	0.04	0.19	0.04	0.20	0.04	0.20	0.04	0.20
170-180% of FPL	0.03	0.18	0.03	0.17	0.04	0.19	0.03	0.17
180-190% of FPL	0.02	0.14	0.02	0.14	0.02	0.15	0.02	0.14
190-200% of FPL	0.02	0.13	0.02	0.14	0.02	0.14	0.02	0.14
above 200% of FPL	0.12	0.32	0.11	0.31	0.07	0.25	0.07	0.26
Observations	16,102		21,902		6,100		31,904	

Notes: The table summarizes the characteristics of TMA enrollees at the time of their initial enrollment in BadgerCare and in the first month of TMA enrollment during each policy period: Policy 2 (7/1/2012-3/31/2014), premiums for those 133% FPL and higher; and Policy 3 (4/1/2014-8/31/2017), premiums for all >100% FPL, with 100-133% FPL premiums beginning after 6 months.

Table V.A.4. Predictors of TMA Transition

	Ever Transitioned		
	Policy 1	**Policy 2**	**Policy 3**
HH size	0.0159***	-0.00155	0.00195
	(0.00193)	(0.00554)	(0.00408)
Income % FPL	0.00702***	0.00391***	0.00400***
	(0.0000780)	(0.000192)	(0.000144)
Female	0.0920***	0.161***	0.130***
	(0.00598)	(0.0145)	(0.0110)
Citizen	-0.113***	-0.333***	-0.169***
	(0.0147)	(0.0298)	(0.0214)
Tribe member	-0.285***	-0.0806	-0.249***
	(0.0224)	(0.0565)	(0.0489)
Black (non-Hispanic)	-0.273***	-0.155***	-0.0438***
	(0.00696)	(0.0172)	(0.0139)
Hispanic	-0.110***	-0.0721***	0.0174
	(0.00981)	(0.0225)	(0.0169)
Other race	-0.0331**	-0.0223	0.0239
	(0.0134)	(0.0297)	(0.0228)
Resides in metro area	0.0185***	-0.0593***	-0.00987
	(0.00573)	(0.0140)	(0.0108)
High School	0.0697***	0.0892***	0.0896***
	(0.00569)	(0.0153)	(0.0121)
More than HS	0.274***	0.245***	0.206***
	(0.0184)	(0.0483)	(0.0359)
Age	-0.0103***	-0.00657***	-0.00176***
	(0.000298)	(0.000722)	(0.000592)
N	237428	43697	75937

Notes: Table shows the average marginal effects from probit models of the probability a member with the potential to enroll in TMA if they experience a change in earnings that qualifies them enrolls in TMA as a function of demographic characteristics. Independent variables are listed in the far left column; dependent variables are the column headings. Models are estimated for three different time periods reflecting the different premium policies. Policy 1 (3/1/2008-6/30/2012), no premiums; Policy 2 (7/1/2012-3/31/2014), premiums for those 133% FPL and higher; Policy 3 (4/1/2014-8/31/2015), premiums for all >100% FPL, with 100-133% FPL premiums beginning after 6 months. Education level is coded as 0 (less than high school), 1 (high school), or 2 (more than high school). Robust standard errors in parentheses. ***p<0.01; **p<0.05; *p<0.10

Table V.A.5. Number and Fraction of TMA Who Paid Premiums by Time Period & Income

	First Eligible Month		All Eligible Months	
	Policy 2	Policy 3	Policy 2	Policy 3
100-133% FPL	1026	5257	14920	55969
	6%	15%	9%	19%
133-140% FPL	739	1674	5384	11075
	70%	61%	53%	60%
140-150% FPL	823	1839	6578	12708
	68%	57%	59%	62%
150-160% FPL	688	1383	5716	9589
	68%	54%	62%	63%
160-170% FPL	491	995	4111	7145
	66%	53%	65%	64%
170-180% FPL	363	782	2983	5647
	65%	50%	64%	64%
180-190% FPL	242	532	2018	3922
	59%	49%	65%	66%
190-200% FPL	193	447	1695	3166
	61%	49%	68%	66%
>200% FPL	543	1429	6854	14571
	43%	38%	28%	27%
Total Number	5108	14338	50259	123792
TMA Missing Payments Status	14267	28542	146785	220530
Fraction of Missing 100-133% FPL	0.903	0.791	0.937	0.807

Notes: Table shows the number and fractions of TMA enrollees who paid a premiums by month of TMA eligibility and by %FPL during the eligible month. The “first eligible month” refers to the member's first month of TMA enrollment. “All Eligible Months” reflects all months of TMA enrollment. The table also reports the number and fraction of TMA enrollees for whom premium payment status was missing in the administrative data. Policy 2 (7/1/2012- 3/31/2014) implemented premiums for those 133% FPL and higher; Policy 3 (4/1/2014- 8/31/2017), implemented premiums for all >100% FPL, with 100-133% FPL premiums beginning after 6 months.

Table V.A.6 shows the average dollar amounts of monthly premiums paid and unpaid under both TMA premium policies, among those with nonmissing premium data. This table is most useful for getting a sense of the actual premium amounts charged and paid by individuals. Amounts for those with incomes >133% FPL were similar under the two policies. In general, paid premiums were slightly higher on average than unpaid premiums within an income band, which suggests a positive correlation between income and likelihood of paying premiums. We did not consider the paid premium and amount fields sufficiently reliable and interpretable to the degree required to use for further analysis, but report them for completeness.

Table V.A.6. Amount of Paid and Unpaid Premiums by Premium Policy

	First Eligible Month				All Eligible Months			
	Policy 2		Policy 3		Policy 2		Policy 3	
Income in FPL	**Unpaid**	**Paid**	**Unpaid**	**Paid**	**Unpaid**	**Paid**	**Unpaid**	**Paid**
100-133% FPL	$5	$10	$13	$49	$10	$56	$31	$43
133-140% FPL	$63	$73	$66	$74	$68	$74	$66	$75
140-150% FPL	$75	$90	$79	$89	$82	$92	$80	$91
150-160% FPL	$94	$110	$96	$110	$102	$113	$97	$111
160-170% FPL	$108	$133	$114	$129	$119	$136	$115	$131
170-180% FPL	$125	$152	$132	$147	$140	$158	$134	$151
180-190% FPL	$153	$175	$154	$168	$163	$178	$155	$172
190-200% FPL	$170	$195	$173	$192	$187	$199	$177	$199
>200% FPL	$354	$328	$325	$311	$374	$346	$314	$316

Notes: Table shows the average amount of premium recorded as paid or not paid among TMA enrollees during the different premium policies by income level and eligible month. "First eligible month" refers to the member's first month of enrollment in TMA; "All Eligible Months" reflects all months of TMA enrollment. Policy 2 (7/1/2012-3/31/2014), premiums for those 133% FPL and higher; Policy 3 (4/1/2014-9/30/2017), premiums for all >100% FPL, with 100-133% FPL premiums beginning after 6 months.

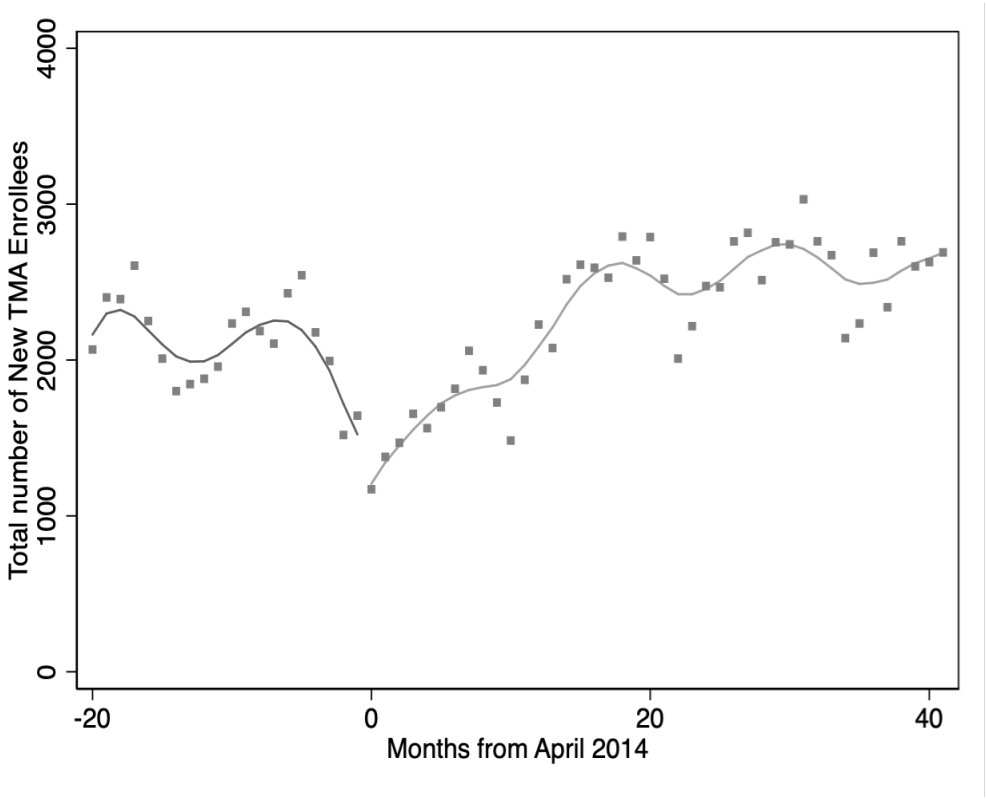
We next present the interrupted time series results. We were most interested in a break in the series and focus on that coefficient in what follows. A summary of results is available in Table V.A.7.

Table V.A.7. Summary of Enrollment Results

	2014 Waiver
TMA Take-up	
New As Fraction Total	0.000
	(0.001)
Number New Spells	-169
	(180)
Number of TMA Exits	445**
	(68)
Total TMA Enrollment	-1601***
	(59)
TMA Spell Length	
at 133% FPL	-.213*
	(.119)
at 140% FPL	-.03
	(.148)
at 150% FPL	-.302*
	(.18)
at 160% FPL	.247
	(.204)
at 170% FPL	-.078
	(.251)
at 180% FPL	-.065
	(.287)
at 190% FPL	.099
	(.323)
at 200% FPL	-.43
	(.388)
Notes: Table shows results of regression discontinuity/interrupted time series models of TMA enrollment. Details in text.	

Figure V.A.2 shows the total number of new TMA spells (with multiple spells allowed per person) per month. The figure has local linear regression lines superimposed allowing a break in April 2014. The results of our analysis did not indicate a statistically significant drop in the number of new enrollees in total (nor as a fraction of potential enrollees, not shown as a figure) immediately following the implementation of the waiver, although the point estimate is negative and the lowest number of new spells in the period occurs in April 2014.

Figure V.A.2. Total New TMA Enrollment



Notes: Figure shows TMA take-up by month from July 2012 to September 2017 (April 2014 = 0). The figure shows the total number of new TMA enrollees in the analysis sample. Each dot on the graph represents the relevant quantity for a particular month; estimated local linear regression lines are superimposed on the graphs.

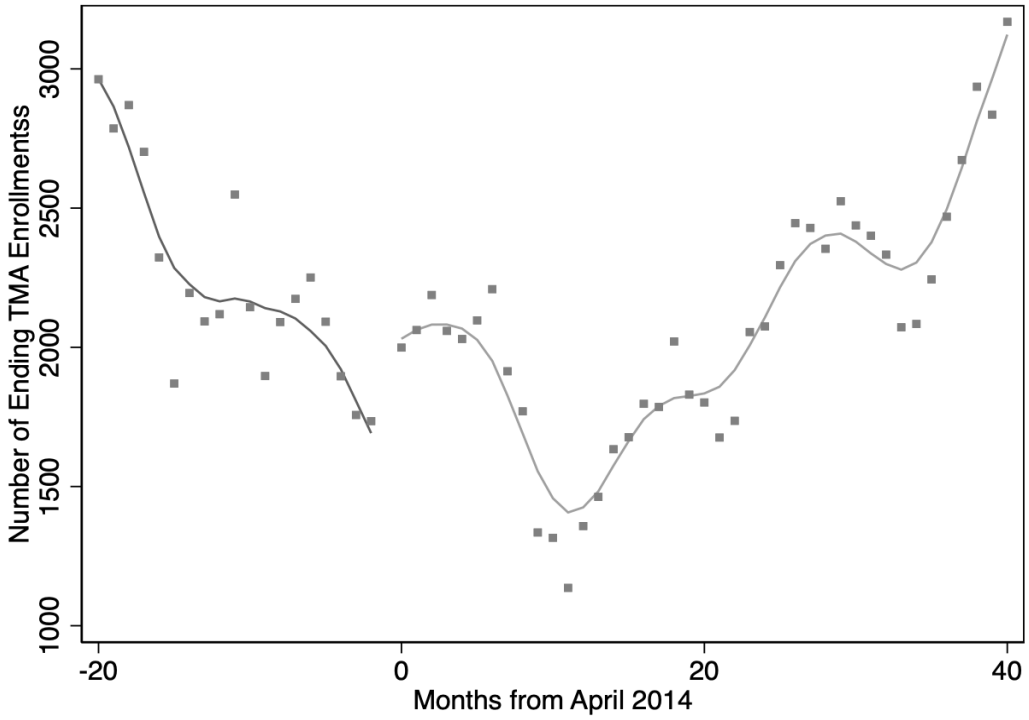
Figure V.A.3 shows the number of TMA spells ending per month. Our results indicate that this decrease is approximately 775 individuals and is statistically significant at the 10% level. However, this is entirely attributable to the spike in exits occurring in March 2014. Without the inclusion of March, there would be an increase in exits of 445 people/month, statistically significant at the 5% level. We believe that this result is more representative of the result of the premiums, since it is unlikely that the premiums would make anyone less likely to exit. The March 2014 spike in exits may be associated in some way with the large reduction in parental enrollment also occurring in that month (non-extension parental eligibility ended for those with incomes > 100% FPL).

Figure V.A.4 shows the average length of TMA spells by income as a percentage of the FPL during both the previous waiver (July 2012-March 2014) and the waiver beginning in April 2014. Average spell length is shown in bins that are fixed at 1 percentage point FPL. The figure and associated analysis only include spells that began prior to the end of 2016 to avoid censoring. Several things are notable in the figure. First, overall higher income is correlated with shorter enrollment spells. Second, there is a clear break (decline) in the average length of enrollment spell for both groups at 133% FPL. For the earlier time

period, this break measures at -.36 months/person, statistically significant at the 1% level, and at the later time period at -.21 months/person, statistically significant at the 10% level. Finally, overall average length of enrollment has also decreased by .65 months.

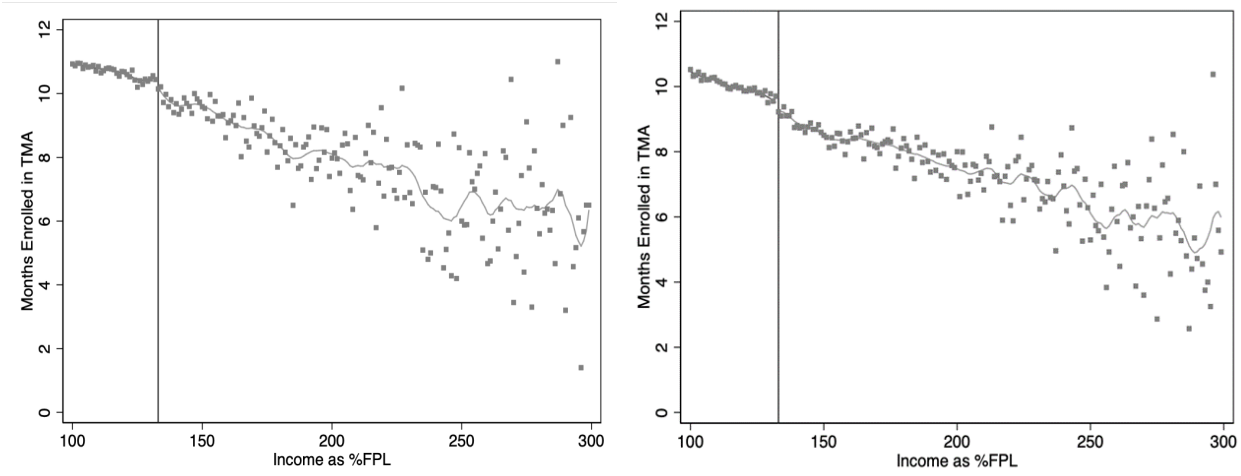
This evidence suggests that increased premium exposure for those with lower incomes reduces the length of enrollment spell. We also tested the other thresholds at which the premium percentage increases. While many of the point estimates indicate declines, only the 150% threshold is statistically significant. The data are likely too noisy to provide a precise measure of the effects at these higher income levels (due to fewer individuals being enrolled); this can be observed in the increased dispersion of the average spell length per bin shown in the figure.

Figure V.A.3. Number of TMA Spells Ending



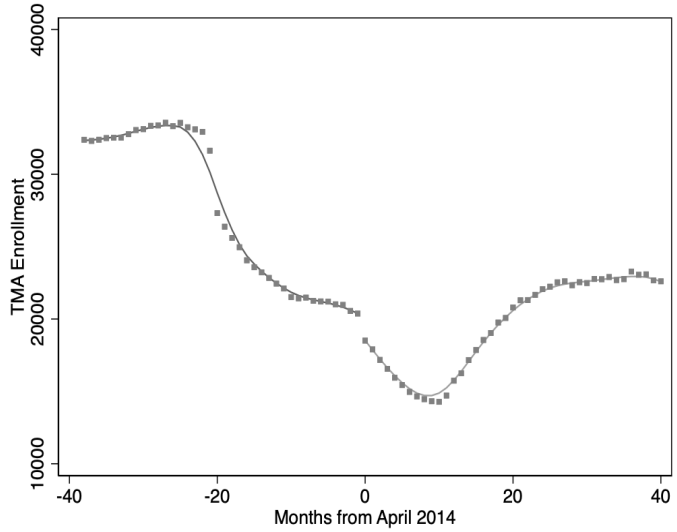
Notes: Figures show the number of TMA enrollment spells which end for each month. A spell ends if the individual goes back to BC or is not enrolled anymore. The period starts July 2012 to September 2017 (April 2014 = 0) and excludes March 2014. Each dot on the graph represents the relevant quantity for a particular month; estimated local linear regression lines are superimposed on the graphs.

Figure V.A.4. Length of TMA Spell by Income



Notes: Figures show the length of TMA enrollment spells by income as a percent of the federal poverty line. Panel A shows enrollment spells beginning after July 2012 and ending before March 2014 (Policy 2) and Panel B shows enrollment spells beginning after April 2014 and ending before January 2017 (Policy 3). Each dot on the graph represents relevant quantity for a particular month; estimated local linear regression lines are superimposed on the graphs.

Figure V.A.5. Total TMA Enrollment



Notes: Figure shows the number of adult TMA enrollment spells active each month. The figure shows January 2011 to September 2017 (April 2014 = 0). Each dot on the graph represents the relevant quantity for a particular month; estimated local linear regression lines are superimposed on the graphs.

Figure V.A.5 summarizes total TMA enrollment per month. This is a net measure that includes the effects of new enrollment, exits, and shorter enrollment spells. On net, the waiver changes are associated with a significant drop in overall TMA enrollment. The size of the total immediate drop is estimated to be approximately 1600 adults and as noted above is followed by a downward trend in TMA enrollment that lasts until approximately March 2015.

Limitations

Simultaneous changes occurred for parents/caretaker enrollment criteria (in particular, MAGI income criteria for eligibility, along with the ineligibility of those with incomes >100% FPL). These changes were associated with an increase in parent/caretaker enrollment for individuals <100% FPL at the same time as the associated premium change for TMA. The results for TMA presented here can only be interpreted as associations. We did not significantly depart from the proposed design.

Conclusions

The waiver's premium provisions likely caused an immediate decrease in TMA enrollment and shorter TMA spells. This evidence suggests that increased premium exposure reduces the length of enrollment spell for those with incomes below 133% FPL. Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

H9: How is access to care affected by the application of new, or increased, premium amounts?

H1: Will the premium requirement reduce the incidence of unnecessary services?

H3: Will the premium requirement slow the growth in healthcare spending?

Analyses of Hypotheses H9, H1, and H3 follows here, as they relate and contribute to other TMA-related hypotheses. It is important to note at the outset, however, the tenuous basis underlying these hypotheses. Because premiums are charged regardless of whether or not an individual receives health care, we generally would not expect that access to care, the incidence of unnecessary services, or the growth in healthcare spending would be directly affected by the introduction of new premiums to beneficiaries. CMS, in its recent guidance to states related to 1115 waivers, notes the following:

> "States with traditional premiums, not structured as beneficiary accounts, should not expect to see changes to service use, except to the extent that there is an income effect of premiums on health care demand. Hypotheses and research questions about service use should be adopted only by states with beneficiary accounts."[9]

[9] CMS. Appendix to Evaluation Design Guidance for Section 1115 Eligibility and Coverage Demonstrations: Premiums or Account Payments. Available at https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/ce-evaluation-design-guidance-premiums-appendix.pdf

However, these outcomes may be affected by selection effects, such that premiums induce declines in enrollment by individuals that are more or less likely to use health care in certain ways. For example, if healthier individuals are more likely to exit, we would expect per person usage of health care to increase but overall utilization may decrease). We tested for both direct and indirect effects in what follows, but caveats (listed below) must be considered in interpreting the analysis.

Methods

We used three main methods to study these questions. First, we used a regression discontinuity/interrupted time series study design to compare the average per person outcomes and total outcomes before and after the waiver implementation. This design allowed us to identify the causal effect of premiums by assuming that health care utilization behavior in the TMA population would have evolved similarly over time if not for the new premium requirements (see limitations below). We estimated this using local linear regression analysis and are mainly interested in a break in the level at the time of the waiver. This design measured the net effects (including indirect effects of premiums as well as any direct effects). We expected to see changes (declines) in overall utilization due to the changes in enrollment, but per-person utilization could have changed because of the population composition as well as because of direct effects.

Second, we used a difference-in-differences design to understand the direct effects of premiums. We first selected a sample of TMA enrollees with initial incomes between 100-133% FPL who were continuously enrolled for 12 months either before or after the new policy. Those who were enrolled before will be less exposed to premiums than those who enrolled after, because of the new policy. We then compared the outcomes during the second six months of enrollment (when premiums were required for this group under the waiver) to the first six months (when they were not), for those who enrolled before vs. after April 2014. This design relies on the idea that the change in the outcome for the first six months relative to the second six months for prior enrollees provide a reasonable counterfactual trend for those who enrolled after April 2014. If there were any direct effects of premiums, in particular if premiums reduce health care utilization, unnecessary care, or spending, we expected it to show up in this population.

Finally, we provided an analysis based on the 2018 survey, which was designed to provide a more targeted comparison of TMA enrollees with substantial experience paying premiums versus those that did not. Specifically, the survey selected oversamples of TMA enrollees who spent at least 6 months with incomes 100-133% FPL (N=91), the group with less premium exposure, and those with at least 6 months with incomes >133% FPL, the group with more premium exposure (N=186). We compared responses to questions related to experiences paying premiums and access to care between these two groups.

Findings

Figures IV.A.6 present the time series of average outpatient, emergency visits, and hospitalizations per person (the time series for total visits look very similar to the enrollment trends shown above). Table V.A.8 summarizes the results.

For the time series results, we regressed either the mean or total outcome variable on a trend, with indicator variable equal to 1 if the month is post April 2014, and the interaction of these variables. Table V.A.8. presents the coefficient of the indicator variable. For difference-in-differences results, we regressed the outcome variable on an indicator variable equal to 1 is the month is the seventh to twelfth month of the TMA spell, an indicator variable equal to 1 if the month is after April 2014, the interaction of these indicator variables, and calendar month fixed effects. Table V.A.8 shows the coefficient of the interaction variable.

No overall breaks in the trend in health care use are evident at the (despite the decrease in enrollment). There are some changes in per person health care use (labeled as "Mean" in the table), both overall and for enrollees with incomes 100-133% FPL. For example, monthly outpatient visits per TMA enrollee with income below 133% FPL increased by .063 visits per month, statistically significant at the 1% level. Notably none of the results that are statistically different from zero suggest a decrease in health care utilization, which is more consistent with selection (less healthy enrollees remaining enrolled) than direct effects on access to care.

The difference-in-difference results similarly do not suggest a decrease in health care utilization. We do see some increases in utilization. For example, there is a .01 increase in outpatient specialty visits per person-month in the last six months relative to the first six months, for those who were exposed to the new premium policy relative to those who were not (statistically significant at the 10% level). Increases in health care utilization are difficult to explain as a direct consequence of the premium policy. We also conducted this analysis on the above 133% FPL TMA population as a placebo, and finding no changes.

We now turn to measures of "unnecessary" health care use. We note that these measures are intended to capture "necessity" at the population rather than individual level; they should be considered more features of overall system quality rather than as the results of individual choices. These measures are defined in Table IV.A.1 with complete specifications found in Appendix A. Table V.A.9 shows the results of our estimation for several of these outcomes.

Figure V.A.6. Time Series of Average Outpatient, Emergency Visits, and Hospitalizations per Person

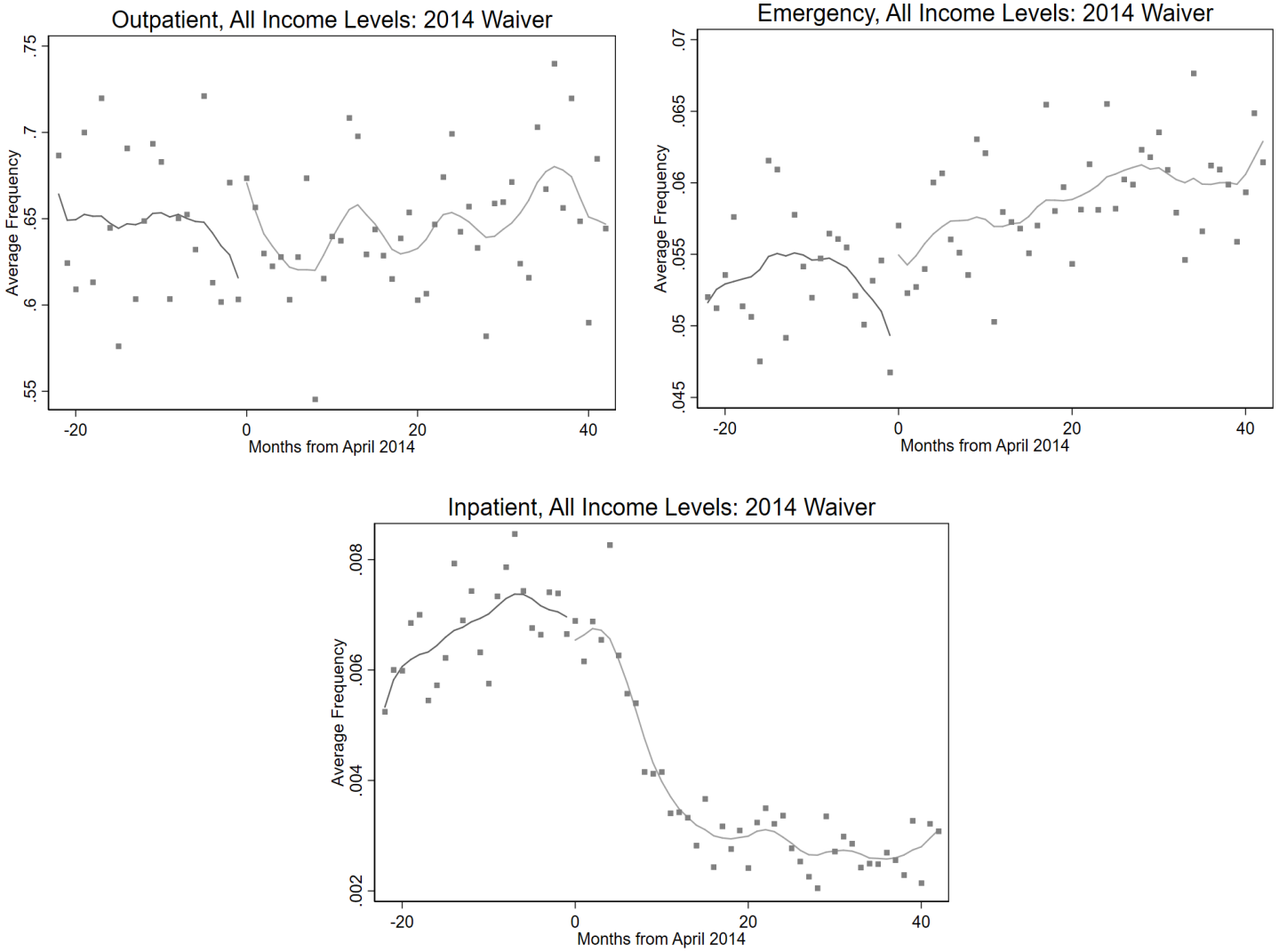


Table V.A.8. Summary of Utilization Results, TMA

	Outpatient		Outpatient Pri.		Outpatient Spec.		Emergency		Inpatient	
	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum
Average Pre-waiver (12 months prior)	0.649	12406	1.147	6686	0.831	4841	0.053	1021	0.007	134
Regression discontinuity analysis										
All Income Levels	0.041	-740.603	0.003	-509.352	.029**	-226.485	.006*	-15.779	0	-11.33
	-0.027	-910.705	-0.037	-519.061	-0.014	-336.154	-0.003	-95.944	0	-9.883
Income below 133% FPL	.063***	-79.918	.079***	44.042	0.011	-129.248	.007***	13.479	0	-3.424
	-0.025	-458.696	-0.027	-252.815	-0.015	-189.519	-0.003	-48.805	-0.001	-5.5
12 month continuous TMA spell analysis										
	Outpatient		Outpatient - Prim.		Outpatient - Spec.		Emergency		Inpatient	
	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls
Income below 133% FPL										
Post*Months 7-12	0.00207	0.00186	-0.00397	-0.00465	0.0105*	0.0108*	0.00129	0.00111	0.00113**	0.00114**
	-0.0169	-0.017	-0.0148	-0.0149	-0.00548	-0.00551	-0.00229	-0.0023	-0.000559	-0.000562
Observations	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972
Income above 133% FPL										
Post*Months 7-12	0.0128	0.0116	-0.00105	-0.00111	0.0104	0.00935	0.00365	0.00367	-0.00131	-0.00134
	-0.024	-0.0242	-0.0205	-0.0206	-0.00797	-0.00801	-0.00311	-0.00313	-0.000949	-0.000954
Observations	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table V.A.9. Utilization Outcomes: change in Health Care Use Associated with Waiver Provisions

	A/D/P related	Injury related	Unclassified	Non-emergent	Emergent/ Primary Care Treatable	Emergent Preventable/ Avoidable	Emergent Not Preventable/ Avoidable	Potentially Preventable Hospitalizations	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Sum
Average Pre-waiver (12 months prior)	0.023	0.166	0.263	0.260	0.162	0.029	0.098	0.007	140
Regression discontinuity analysis									
All Income Levels	.009***	0.001	.028*	.017**	-.025***	-.005**	-.018***	0	-12.358
	-0.003	-0.016	-0.015	-0.007	-0.008	-0.002	-0.005	0	-11.825
Income below 133% FPL	0.003	-0.008	0.039	0.007	-0.019	-0.005	-.014**	0	-3.858
	-0.003	-0.017	-0.026	-0.013	-0.014	-0.003	-0.007	-0.001	-5.267
12 month continuous TMA spell analysis									
Income below 133% FPL									
Post*Months 7-12	-0.00766	-0.0211	0.029	0.00841	-0.00469	-0.0120***	0.00803	0.00604***	
	-0.00582	-0.0154	-0.0219	-0.0175	-0.013	-0.00428	-0.0122	-0.00124	
Observations	6,285	6,285	6,285	6,285	6,285	6,285	6,285	165,972	
Income above 133% FPL									
Post*Months 7-12	-0.00389	-0.0154	0.0105	-0.0237	0.0211	-0.00181	0.0133	0.00232	
	-0.00857	-0.0238	-0.0335	-0.025	-0.0191	-0.00647	-0.0178	-0.00194	
Observations	2,854	2,854	2,854	2,854	2,854	2,854	2,854	85,800	
Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. All difference-in-difference results include controls.									

Table V.A.10. Expenditure Outcomes: Change in Service Costs Associated with Waiver Provisions

	Outpatient Costs		Outpatient Costs - Prim.		Outpatient Costs - Spec.		Emergency Costs		Inpatient Costs		Prescriptions Costs		Total expenditure	
	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum	Mean	Sum
Average Pre-waiver	81.18	1552138	28.99	554332	38.88	743329	21.10	403353	37.42	715557	71.97	1376084	139.70	2671048
(12 months prior)														
Regression discontinuity analysis														
All Income Levels	4.569	-113160	3.33	-25734	1.185	-58661	4.081	26601	5.091	5380	4.763	-81368	11.263*	72457
	-4.884	-129204	-2.816	-40376	-6.43	-52503	-2.989	-59939	-5.443	-107704	-4.273	-127442	-6.479	-96353
Income below 133% FPL	7.161**	-25279	9.108*	11867	0.639	-25368	2.533	2324	4.887	-223	3.772	-44805	13.838**	83929
	-3.49	-58419	-4.733	-24510	-4.878	-24331	-2.063	-16659	-7.545	-71668	-4.865	-80280	-6.857	-68551
12 month continuous TMA spell analysis														
	Outpatient Costs		Outpatient Costs - Prim.		Outpatient Costs - Spec.		Emergency Costs		Inpatient Costs		Prescriptions Costs		Total expenditure	
	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls	No controls	Controls
Income below 133% FPL														
Post*Months 7-12	-7.199**	-7.293**	-0.936	-0.975	-3.224*	-3.314*	-0.333	0.117	5.185	5.491	8.565**	8.615**	32.27***	32.53***
	-3.174	-3.191	-1.624	-1.635	-1.95	-1.959	-2.336	-2.305	-5.453	-5.467	-4.04	-4.076	-10.43	-10.49
Observations	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972	167,256	165,972
Income above 133% FPL														
Post*Months 7-12	-13.42	-13.49	0.468	0.523	-6.362	-6.373	-4.692	-4.557	12.37	12.69	5.836	5.728	-15.03	-15.22
	-13.62	-13.77	-2.394	-2.411	-7.206	-7.282	-4.835	-4.874	-16.65	-16.77	-5.33	-5.371	-20.35	-20.49
Observations	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800	86,568	85,800
Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1														

Table IV.A.1 and Attachment A detail how we operationalize potentially preventable and avoidable emergency department visits and hospitalizations. For emergency visits, in the time series overall we saw increases in the probability of alcohol, drug, and psychiatric (A/D/P) related visits, unclassified visits, and non-emergent visits, and decreases in the probability of all types of emergent visit (including primary care treatable, preventable/avoidable, and not preventable/avoidable). In the 100-133% FPL group, we saw a statistically significant decrease in emergent not preventable/avoidable visits only. In the difference-in-differences model, we saw a decline in the probability of emergent preventable/avoidable visits, but an increase in potentially preventable hospitalizations.

We considered readmissions as well, but because of low sample sizes we do not report those results in the table. There was no statistically significant change in readmissions across all methods.

Table V.A.10 shows the results for expenditure outcomes. When actual spending is not available, these outcomes are based on applying the Medicaid Fee schedules to the encounter reports so that the allowed amount field is the same amount as if it were an actual fee for service charge. However, this does not represent actual spending levels by the state or individual. The conclusion from the time series evidence is very similar to the visit level measures. No evidence of an overall break in spending at the time of the waiver is observed. We see a statistically significant increase in monthly average per person outpatient ($7) and total expenditures ($14) in the 100-133% FPL population, and for total expenditures overall ($11). The difference-in-differences results suggest decreases in some outpatient costs (for example, a $7 decrease per member-month statistically significant at the 5% level) but an increase in prescription spending (more than $8 per member-month) and overall ($32 per member-month). We again see no changes in the above 133% FPL population.

Finally, we present the results of the survey analysis in Table V.A.11 and IV.A.12. Table V.A.11 displays the differences in the demographic characteristics of the two TMA income groups. The groups were not statistically different along most demographic characteristics including percent male, younger than 35, household composition and size, and employment status. However, individuals with higher incomes were significantly more likely to be non-Hispanic white (78% versus 63%, p=.013) and, not surprisingly, less likely to report that their household earned less than $30,000 per year (57% versus 75%, p=.005).

We produced weighted estimates of differences in measures of access and utilization. Analyses that were unadjusted versus those that adjusted for age, sex, and race were not significantly different. Unadjusted results are shown in Table V.A.12.

Table V.A.11. Survey Measures: Demographics Comparison of Recent TMA Enrollment 100-133% FPL with >133% FPL

		TMA >133 FPL	TMA 100-133 FPL	p-value
		%/Mean	%/Mean	
Gender and age				
	Male	23.2	26.3	0.593
	Age < 35	45.6	53.5	0.234
Race/Ethnicity				
	White	78.5	63.1	0.013
	Black	6.8	17.0	0.027
	Other race	7.9	10.0	0.592
	Mixed race	1.9	1.4	0.724
	Hispanic	4.9	8.5	0.285
Education level				
	Greater than High School	64.1	62.5	0.802
Household composition				
	Lives alone	4.9	5.9	0.733
	Lives with spouse	30.2	24.6	0.340
	Lives with others	65.0	69.4	0.470
Household size				
	Less than or equal to 2	16.7	15.0	0.718
Number of household members less than 19 years old				
	At least 1	40.5	33.1	0.241
	Zero	59.5	66.9	0.241
Employment and income				
	Employed	81.2	84.7	0.477
	Hours of work per week >=20	78.7	82.8	0.427
	Gross annual income < $30,000	56.6	74.7	0.005

Table V.A.12. Survey Measures of Access, Utilization, and Care Experiences Comparing Recent TMA Enrollment 100-133% FPL with >133% FPL

		TMA >133 FPL	TMA 100-133 FPL	p-value
		%/Mean	%/Mean	
Enrollment related				
	Currently uninsured	13.0	5.5	0.134
	In the past 12 months, how many months did you have some kind of health care coverage			
	0 months	0.5	0.0	0.318
	1-11 months	14.5	13.2	0.784
	12 months	85.0	86.7	0.721
Utilization and health related				
	Usually gets health care at private doctor's office or clinic	89.9	93.1	0.395
	Needed health care in the past 12 months, and received it	82.9	85.6	0.593
	Needed prescription medication in the past 12 months	81.4	76.1	0.344
	Number of visits to the doctor or clinic in the last 12 months			
	0 visits	11.7	17.2	0.243
	At least 1	88.3	82.8	0.243
	How long has it been since your last visit to the dentist			
	Less than a year	58.6	50.5	0.228
	Between 1 and 5 years	29.3	31.8	0.686
	More than 5 years	11.6	16.2	0.355
	Never visited	8.4	25.8	0.482
	Number of visits to the emergency department in the last 12 months			
	0 visits	67.8	61.4	0.331
	1 visit	16.9	23.2	0.250
	2 visits	7.5	6.3	0.723
	At least 3 visits	7.8	9.1	0.730
	Number of overnight stays at the hospital in the last 12 months			
	0 stays	92.8	97.7	0.056
	1 or more stays	7.2	2.3	0.056

		TMA >133 FPL	TMA 100-133 FPL	p-value
		%/Mean	%/Mean	
	Self-reported health quality			
	Excellent	40.2	48.2	0.207
	Good	36.5	38.0	0.819
	Fair/Poor	23.3	13.6	0.062
	A physical or emotional condition limits your ability to work	12.5	14.2	0.737
	Quality of medical care received in the last 12 months is Fair/Poor	9.9	9.2	0.855
	Number of health conditions that a doctor or provider has diagnosed to you			
	0 conditions	33.9	39.1	0.411
	1 condition	32.4	29.6	0.650
	2-3 conditions	19.2	19.7	0.919
	At least 4 conditions	14.5	11.5	0.525
	During past 12 months, had flu shot or flu vaccine	20.8	22.8	0.729
	Has had your blood cholesterol checked	72.8	63.3	0.125
Opinions				
	Satisfaction with the range of services			
	Very satisfied	48.2	55.8	0.249
	Somewhat satisfied	39.4	32.7	0.298
	Somewhat dissatisfied	8.2	7.3	0.806
	Very dissatisfied	4.4	4.0	0.891
	Satisfaction with choice of doctors			
	Very satisfied	52.4	44.1	0.202
	Somewhat satisfied	33.0	44.6	0.071
	Somewhat dissatisfied	8.3	6.2	0.505
	Very dissatisfied	6.4	5.3	0.684
	You agree with the following statements			
	The amount I pay for health care is fair	67.7	82.2	0.074
	The amount I pay for health care is affordable	55.7	71.2	0.012
	I'd rather pay for my health care than pay nothing	60.1	54.9	0.446
	It's important for me to have health insurance	94.8	87.0	0.065
	Cost of prescription influences my decision to filling them	60.7	64.3	0.576
	I don't worry since being in Medicaid/BadgerCare	61.3	58.0	0.611

		TMA >133 FPL	TMA 100-133 FPL	p-value
		%/Mean	%/Mean	
	Having Medicaid/BadgerCare takes stress away	78.4	80.5	0.689
	Without Medicaid/BadgerCare wouldn't be able to afford doctor	90.2	87.7	0.574
	Having Medicaid/BadgerCare helps live a better life	83.5	84.9	0.786
Cost related				
	Currently owes money for medical expenses	29.4	35.2	0.362
	Had to borrow money or skip payments in order to pay medical expenses	27.0	14.4	0.018
	Had problems paying bills	22.3	15.5	0.209
	In the last 12 months, has a doctor or clinic refused to treat you because you owed money to them for past treatment	1.2	3.5	0.300
	In the past 12 months, you or your family ever paid a premium for Medicaid/BadgerCare	92.3	53.1	0.000
	In the past 12 months, you or your family ever paid a co-pay for Medicaid/BadgerCare	54.7	45.7	0.297
Overall N		**186**	**91**	

As expected, exposure to premiums was higher in the group >133% than those 100-133% FPL. Specifically, 93% versus 51% reporting having paid any premiums for Medicaid/BadgerCare in the prior year.

The two groups were not statistically different in terms of most dimensions of perceived access to care including current and past year experiences being uninsured, ability to get needed care, and self-reported prevalence of doctor, dentist, and emergency department visits. Individuals in >133% FPL group were more likely to report 1 overnight stay in the hospital in the prior year (7% versus 2%, p=.056). The groups did not significantly differ in reporting fair/poor quality of health care received and receipt of recommended care such as flu vaccinations.

Individuals in the >133% FPL were less likely than those 100-133% FPL to report “the amount I pay for health care is affordable” (56% versus 71%, p=.012), but did not otherwise significantly differ in self-reported attitudes about their health care including the perceived fairness of the program and the value of Medicaid in their lives.

The groups did not significantly differ in self-reporting having any medical debt, but individuals >133% FPL were more likely than those 100-133% FPL to report that they "had to borrow money or skip payments in order to pay medical expenses" in the prior year (27% versus 14%, p=.018)

Limitations

As noted above, the changes in enrollment associated with the waiver may cause compositional changes in the population of TMA enrollees. Such changes would affect and cannot be separated from the outcomes studied here. For example, 14% of TMA spells lasted 12 months before premiums applied to the 100-133% FPL group, but only 11% after. The same caveat identified in the enrollment discussion, about simultaneous changes to income eligibility policies, also applies here and limits the causal interpretation of these results. We added the consideration of the continuously enrolled sample to the original design plan.

We found trends in the inpatient data dissimilar to those in the emergency visit and outpatient data. While emergency and outpatient visits begin to trend back up in early 2015 when enrollment in TMA starts to rebound, inpatient visits do not. We have verified that inpatient visits and the patient population were coded correctly, and we confirmed that this trend is native to the raw data received from the state Medicaid agency. It is possible this is the true trend in inpatient visits, or there may be a flaw in the original data pull. If the latter, the data flaw does not affect the time series results, since it is far enough removed from the beginning of the waiver. It could affect point estimates for the continuously enrolled population for outcomes involving inpatient claims. However, we do not consider this potential effect sufficient to affect any of the conclusions reported for this evaluation.

Several of the outcomes intended to measure necessity of health care use are rare and the group studied here may be too small to measure them reliable at the population level.

The survey data are subject to several limitations: the small sample sizes limited the ability to detect smaller differences between groups, the comparison is entirely cross-sectional and it is likely that there are other differences between these populations that independently influence access to care, and the data are subject to survey biases related to recall and social desirability.

Conclusions

Taken together, these results suggest that premiums may have affected health care access as measured by utilization, but indirectly (through selective enrollment) if at all. The evidence does not consistently support the possibility of a reduction in unnecessary healthcare services; although we did find a decrease in the probability of preventable/avoidable emergency visits associated with the premiums in the difference-in-differences models, we also found an increase in preventable hospitalizations. There is no evidence of an overall reduction in health care spending.

Overall, the survey results support the notion that individuals who were in TMA at a higher income – and thus more likely to be exposed to premiums – did not significantly differ in most dimensions of prior year access and utilization. Notable exceptions are that the group that paid premiums were less likely to perceive their care to be affordable and more likely to have borrowed money to pay for medical debt. Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

H2: Will the premium requirement lead to improved health outcomes?

Some of the outcomes examined under H2 required some methodological modifications, which are described below.

Methods

We considered several different claims-based measures of health outcomes, described in Attachment A. For breast cancer screening, flu vaccination, and smoking cessation, the methods mirror the time series and difference-in-differences methods described above. The main difference for H2 from the previous analyses is that some health outcomes could only be examined for a cohort who was enrolled for twelve months continuously (follow-up for mental illness hospitalization, diabetes HbA1c testing, AOD treatment initiation, and antidepressant medication management). This prohibited both the RD analyses of the overall TMA health as well as the DD model for the continuously enrolled population for these outcomes, which relied on a comparison of the first six months relative to the final six months of enrollment. We therefore studied a simple pre-post comparison of these health outcomes for those who were enrolled for 12 months before versus after the change in premium policy and include controls for age, gender, education level, and length of spell prior to TMA enrollment. This method does have limitations, described below.

Findings

Table V.A.13 reports the results for the outcomes breast cancer screening, flu vaccination, and smoking cessation. Because the flu vaccination is highly seasonal, the time series analysis was not appropriate. In the time series, we found a decrease in total breast cancer screenings in the 100-133% FPL group, and a small increase in mean per-person smoking cessation treatment both overall and in the 100-133% FPL group. In the difference-in-differences models, we found a small decrease in breast cancer screenings. We did not find a statistically significant change in flu vaccinations or smoking cessation. There were no changes in any health outcomes in the over 133% FPL population.

We considered sample sizes for the outcomes that needed to be measured in a 12-month continuous enrollment period (follow-up for mental illness hospitalization, diabetes HbA1c testing, AOD treatment initiation, and antidepressant medication management) too small to report results in a table. We did not

find a statistically significant difference in any of these outcomes for individuals continuously enrolled for 12 months in the post-waiver period relative to the prior period.

Limitations

All caveats previously described above for the time series and difference-in-differences methods apply. As explained above, we needed to use a different design for certain health outcomes to accommodate their measurement. The limitations of the pre-post analysis are 1) there is no control group and so it may reflect changes over time, although these outcomes are unlikely to be fast-moving, and 2) the composition of those continuously enrolled for 12 months was itself affected by the premium changes, so the analysis may simply reflect selection into who remained enrolled. The second problem cannot be addressed statistically in this context and should be kept in mind as an important caveat; we are unable to conclude that any changes are causal implications of the new premium policy. Finally, some outcomes are relatively rare and may not be measured reliably in a group of this size over this time period.

Table V.A.13. TMA Premium Relationship to Health Outcomes

	Breast Cancer Screening		Flu Vaccination		Smoking Cessation	
	Mean	Sum	Mean	Sum	Mean	Sum
Average Pre-waiver (12 months prior)	0.0068	129	0.0158	303	0.0045	85
Regression discontinuity analysis						
All Income Levels	0	-18.1	n/a	n/a	.001**	4.552
	-0.001	-11.277			0	-6.202
Income below 133% FPL	0	-14.112**	n/a	n/a	.001***	6.033
	-0.001	-6.883			0	-5.37
12 month continuous TMA spell analysis						
	Breast Cancer Screening		Flu Vaccination		Smoking Cessation	
	No controls	controls	No controls	controls	No controls	controls
Income below 133% FPL						
Post*Months 7-12	-0.00179**	-0.00191**	0.00087	0.000823	-0.000579	-0.000654
	-0.000906	-0.000908	-0.00111	-0.00112	-0.000578	-0.000581
Observations	167,256	165,972	167,256	165,972	167,256	165,972
Income above 133% FPL						
Post*Months 7-12	0.000948	0.000778	0.00193	0.00162	-0.000223	-0.000225
	-0.00146	-0.00146	-0.00161	-0.00161	-0.000796	-0.000802
Observations	86,568	85,800	86,568	85,800	86,568	85,800
Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						

Conclusions

No meaningful changes in health outcomes occurred. We found no support for the hypothesis that premiums led to improved health outcomes.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

H4: Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?

H5: Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?

To address H4 and H5, whether premium requirements increase the cost effectiveness of Medicaid services in Wisconsin, we measure effectiveness both by healthcare utilization and by short-term health outcomes. The definitions of "cost-effectiveness" used here are dictated by the DHS-defined hypotheses, although a typical definition of cost-effectiveness in health services research would be expressed as dollars per gain in health (and utilization relative to cost is not a standard way of thinking about cost-effectiveness). The reason these are typically presented as dollars spent per outcome is so that different interventions can be compared in common units and thought of as "dollars per unit health."

To avoid confusion, we will refer to the ratios as "outcomes per dollar" rather than as cost-effectiveness ratios. Because of significant turnover in the TMA population, which by definition faces time-limited enrollment, we are limited to looking at these outcomes in the short-term only.

Here again, we note that recent guidance from CMS discourages consideration of effects on health outcomes and health care utilization, including cost-effectiveness, in a pure premium context such as that of this waiver. The rationale is that in the absence of significant income effects (such that the payment of premiums reduces income enough to affect the overall use of healthcare services) economic theory does not support the idea that ex-ante premiums, which must be paid regardless of the amount of healthcare services used, should affect utilization and thus health.

As discussed above, premiums affect enrollment. This means these outcome measures are essentially from the state's perspective and are population-based: on net, we examine how the changes to premium policy affected health care costs and quality, with the understanding that these effects come from both a composition effect (individuals leaving the program due to premiums) and from any direct effects (individuals staying enrolled but changing their behavior).

Methods

This evaluation component aimed to determine whether there was a change in services delivered per dollar spent or in health outcomes per dollar spent. From prior analyses, we had estimates of the change in services and change in health outcomes. We also had estimates of the change in expenditures and average pre-period expenditures, which we interpreted as costs for the purpose of this analysis. If there was no change in the outcome, the change in outcomes per dollar is zero. We therefore considered only outcomes for which we previously found a change in at the per-person per-month level at the time of the waiver. If no change in cost was found, we divided the adjusted outcome by the average cost in the 12 months prior. If a change in costs was found, we adjusted the average cost by the change, and then divide. This exercise was only valid if we believed that the estimates on which it was based were plausible.

Findings

Table V.A.14 displays a summary of the findings for the outcome per dollar-effectiveness measures. The aggregate outcomes changed for outpatient and emergency services. The following were found to have changed in the continuously enrolled: inpatient, breast cancer screening. The interpretation is as follows: outpatient visits increased by .063 per person/month from a prior average of .65. Outpatient visits increased in cost by 7 per month to 85 per person-month in post-period. The ratio of visits to costs thus changed from .65/81.18 to .71/88.34, which when calculated is a negligible change. Emergency visits and breast cancer screenings both show an increase in the ratio of outcomes to costs. In the case of breast cancer screenings, this is because both screenings and costs were found to decline.

Limitations

Because these results are based on the results of prior analyses (above), it carries with it all the caveats of those analyses. In addition, the analysis is only short-term. The limitation of only measuring changes for program participants means that if there are negative health consequences of disenrollment in TMA (short or long-term), they are not included. This analysis does not include a consideration of state administrative costs or premium revenue.

Conclusions

Out of the many possible outcomes we examined in the evaluation, we observed possible increases in outcomes per dollar for only two: emergency care and breast cancer screenings. However, the interpretation of these limited findings requires caution, for two reasons: 1) The findings are based on estimates that were questionably attributable to the premiums, and 2) even if attributable to premiums, the observed changes likely reflected selection on enrollee type rather than any meaningful change of service utilization or outcomes by beneficiaries that remained enrolled in the program.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

Table V.A.14. Outcome Per-Dollar-Effectiveness Measures -- Observed Change

	Outpatient	Emergency	Inpatient	Breast Cancer Screening
Aggregate or Continuously Enrolled?	**Aggregate**	**Aggregate**	**Continuously Enrolled**	**Continuously Enrolled**
Estimate (Change in outcome per person/month)	0.063	0.007	0.0011	-0.00191
Prior average outcome	0.65	0.053	0.007	0.007
Net new average outcome	0.71	0.06	0.008	0.005
Prior average cost (per person/month, includes zeros)	81.18	21.10	37.42	0.46
Estimated change in average cost	7.161	0	0	-0.176
New net average cost	88.34	21.10	37.42	0.28
Prior ratio (average outcome/average cost)	0.0080	0.0025	0.0002	0.0148
New ratio (average outcome/average cost)	0.0081	0.0028	0.0002	0.0172
Difference	0.0001	0.0003	0.0000	0.0024

V.B. RESTRICTIVE REENROLLMENT PERIODS (RRPs)

Background

This section describes the findings from the evaluation questions related to restrictive reenrollment periods (RRPs). RRPs are defined as a period of time during which Medicaid/BadgerCare members have their enrollment terminated due to non-payment of a required premium, they and are prevented from reenrolling in the program for a designated time period. The RRP policy enacted under the 2014 waiver modifies the waiver authority provided to the state under the 2012 waiver. Under the 2012 waiver, Wisconsin received CMS authority to charge premiums for TMA enrollees with monthly incomes above 133% of the federal poverty level and impose restricted reenrollment for premium non-payment for a period lasting 12 months. There was no mechanism for a TMA beneficiary to reenroll within those 12 months. Under the 2012 waiver, TMA enrollees with monthly incomes 100-133% were exempted from paying premiums.

In 2014, Wisconsin renewed its waiver. The State maintained the same premium levels for individuals above 133% FPL, but the State shortened the length of RRPs to three months and allowed individuals to reenter the program early if they paid owed premiums. Additionally, the program introduced premiums for TMA beneficiaries with monthly incomes 100-133% FPL, along with the same three-month RRP provision for premium non-payment. However, the premium and RRP provisions only applied to these lower income enrollees after six months of TMA enrollment.

The following section describes the methods for several components that comprised the RRP analysis. The design table, Table V.B.1 displays a summary of the approach.

Table V.B.1. Design Table for RRP Analysis

Description	Sample	Unit of Analysis	Statistical Modeling Strategy
Questions 10-12 Impact of 3-month RRP on premium payments and enrollment			
% leaving TMA for any cause, to RRP, to enter BadgerCare, for non-enrollment	childless adults subject to premiums (monthly income >133% FPL) from 2012-2017	Average in group in the study month	
% with unpaid premiums			
length of RRP if subject to RRP			Interrupted time series
Questions 6-7 Impact of the 3-month RRP on utilization, cost, and health care use			
Any health care use	Individuals who reentered the program after an RRP and a comparison group of continuously enrolled TMA	Person month	
Outpatient visits			
Emergency and hospital visits			
Prescription drug fills			
Spending associated with utilization			Pre-post comparison and difference-in-differences
Self-reported access	Individuals who experienced an RRP versus a representative TMA sample	Survey respondents	
Financial barriers			
Perceived quality of care			
Health status			Comparison of means in two samples

IV.B.1. RRP Enrollment Analysis

Wisconsin DHS defined three questions related to enrollment:

10: What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?

11: Does the RRP impact vary by income level?

12: If there is an impact from the RRP, explore the break-out by income level.

.

Methods

Sample: We evaluated the changes in premium payment, disenrollment, and entry into RRP among TMA members after the 2014 waiver was implemented**.** We began with monthly enrollment records from Wisconsin merged with premium payment files and RRP files. We aggregate our data to calendar months, in our primary analysis we focus on individuals who in a given month have incomes above 133% FPL. This income group was consistently subject to premiums during the study period, but experienced a change in the RRP policy. We summarize trends from September 2012 to August 2017, a total of 60 calendar months. Of the total 377,473 TMA enrollment person-months that occurred in the study period, 102,945 were accrued to individuals with incomes above 133% FPL in those months (27% of all person-months). Of note, for this analysis, individuals contribute data only in month where they have incomes above 133% FPL, thus some individuals in this group contribute data in months of their TMA enrollment spell when they are above 133%, but not in months where their income dips into the 100-133% FPL range.

Empirical Approach: We used an interrupted time series (ITS) design to estimate the effect of the RRP policy change on levels and trends in study outcomes among individuals with monthly incomes above 133% FPL. To obtain causal estimates, this design requires a discrete intervention, a sufficient number of observation points to control for the underlying outcome trends, and the absence of a concurrent event that might confound the intervention-outcome relationship. The time series must be sufficiently long time with adequate sample sizes at each point to identify the effect of interest. The intervention occurred in month 20 (April 2014): There are 19 months before and 40 months after the policy change. For the purposes of this analysis, we impose a 3 month "washout" excluding the implementation month, 1 month before and 1 month after, giving us a total of 57 months.[10]

Outcome Measures: We created four outcomes which we express as a monthly average per study month: (1) an indicator for the share of members that had unpaid premiums in the month, (2) an indicator for

[10] A washout period refers to the transitional time period immediately preceding and following the policy change, which is excluded from the measurement/analysis due to the ambiguity about which policies may be influencing outcomes during this time.

the share of TMA enrollees leaving the program overall, (3) the share leaving with an RRP specifically, (4) an indicator for the mean duration of RRP for individuals leaving with an RRP in the study month.

Statistical Analysis: We compared unadjusted average monthly enrollment outcomes before and after the 2014 waiver using a *t* test for count/continuous variables and a Wald test for binary variables. Additionally, we used segmented linear regression to illustrate the unadjusted, means for study outcomes at the population-level in the months preceding and following the policy change. We selected a first-order autoregressive process to model the correlation structure of the data.

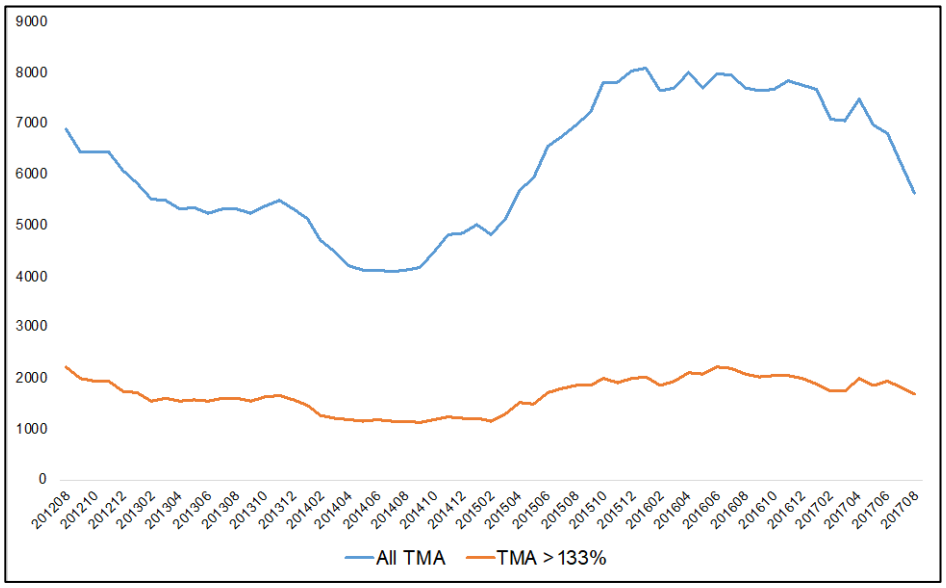
$$Y_{it}=\beta_0+\beta_1 baseline\ trend_t+\beta_2 waiver_t+\beta_3 trend\ change_t+X_i\beta+\varepsilon_t.$$

Y_{it} is the mean value for the outcome for in month *t*. The integer variable *baseline trend* denotes the month numbered from the start to the end of the study period, 1,…60. The binary variable *waiver* equals 1 for months after the policy change *t*=21 and 0 otherwise. The integer variable *trend change* reflects the number of months since the policy change. The vector X includes summary person-level covariates: age, sex, and race.

Findings

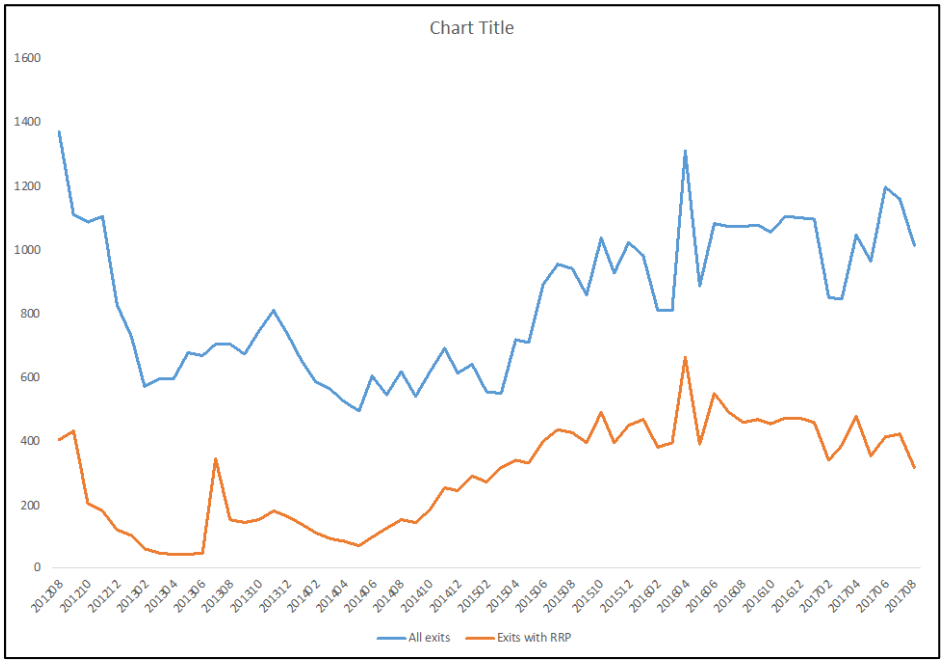
Figure V.B.1 shows the mean monthly enrollment in TMA overall and for individuals >133% FPL. As the figure shows, TMA enrollment and enrollment for individuals in the >133% FPL group trended downward from late 2012 till late 2014, and then began increasing sharply in 2015, and plateauing in early 2016. Figure V.B.2 shows the mean monthly number of individuals >133% FPL leaving TMA for any cause and with an RRP specifically, although this measure fluctuates somewhat by month, there is an apparent increase in the number of enrollees in this group leaving for any cause and for RRP specifically after the 2014 waiver. Further, the proportion of individuals leaving with an RRP out of all exits appears to increase after the 2014 waiver.

Figure V.B.1. Mean Monthly Enrollment in TMA from August 2012 until July 2017



Notes: Individuals in the "All TMA" group are any individuals enrolled in TMA in the month and TMA>133% have a monthly income greater than 133% FPL in the month.

1 Figure V.B.2. Mean Number of Exits from TMA for Any Cause and for RRP among Individuals with Income >133% FPL



Notes: An exit is defined as being observed in the final month of TMA enrollment (i.e., after the month the individual is not observed in TMA). Individual exiting to RRP appear in an RRP in the month following TMA enrollment.

Table V.B.2 shows the results of the interrupted time series regression analysis. The two key indicators of interest capture level changes (i.e., "jumps" in the outcome immediately after the policy change) and trend changes. For all of the outcomes related to percent leaving TMA and percent not paid, there is no significant level change. However, it is worth noting that these changes are not precisely estimated. For example, the point estimate for percent leaving with RRP is 3.98 point increase, which is large but not statistically significant at the p<.05 threshold. Consistent with the policy change which led to a sharp decrease in the length of RRP, we estimate a level decrease in mean months of RRP (among those subject to RRP). Specifically, the mean months of RRP decreased by 5.4 months, p<.01. This represents a 65% decrease from a baseline value of 8.3 months.

Table V.B.2 also shows the estimated coefficient for the trend in the post period, which represents the difference in the slope of the monthly change after the waiver. There was no significant change in the trend for all exits from TMA, or from exits due to RRP or to a state of non-enrollment. However, after the policy change the trend for exits to BadgerCare significantly decreased by an additional -0.18 per month (p<.01). In other words, the implementation of the policy was associated with a slowing down in the rate of individuals exiting from TMA to BadgerCare. There were no significant changes in trend for premium non-payment or in duration of RRP spell among those who entered RRP. Additionally, Figure V.B.3 depicts the graphs associated with the interrupted time series models. These graphs represent the regression adjusted means in the study group in each of the study months and the segmented linear regression lines that are fit to the periods before and after the 2014 waiver.

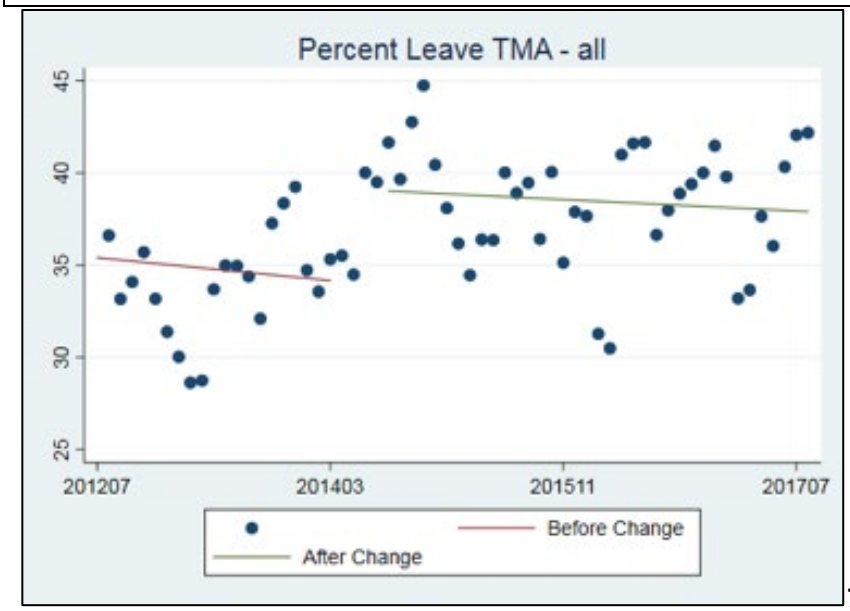
Table V.B.2. Interrupted Time Series Regression Estimates for Full Sample

	% Leave TMA				% premiums unpaid (if subject to premiums)	Among those who leave TMA to RRP
	All	to BC	to RRP	to not enroll		RRP length
month	0.109	0.0245	0.0710	0.0251	0.217	-0.00303
	(0.196)	(0.0380)	(0.243)	(0.0441)	(0.264)	(0.0132)
Level change	3.519	-1.014	3.988	0.339	6.731	-5.398***
	(3.178)	(0.626)	(3.769)	(0.580)	(4.390)	(0.573)
Trend change	-0.122	-0.182***	0.0504	0.00106	-0.326	0.00306
	(0.214)	(0.0429)	(0.260)	(0.0448)	(0.288)	(0.0245)
Constant	33.12***	10.81***	20.95***	1.175*	28.62***	8.302***
	(2.333)	(0.505)	(2.835)	(0.648)	(3.713)	(0.157)

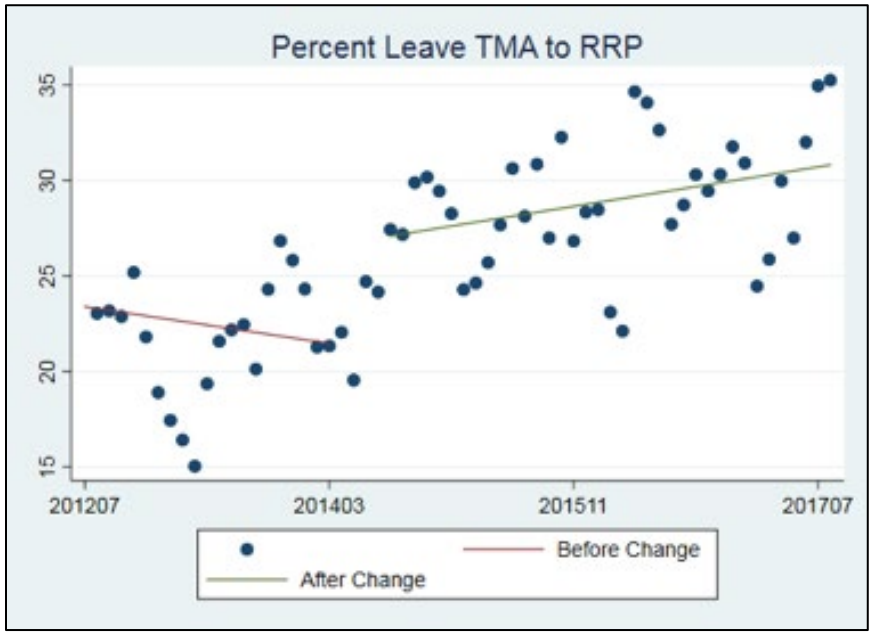
Notes: Data are aggregated to study months N=57. Standard errors in parentheses. Estimates from interrupted time series regressions. *** p<0.01, ** p<0.05, * p<0.1

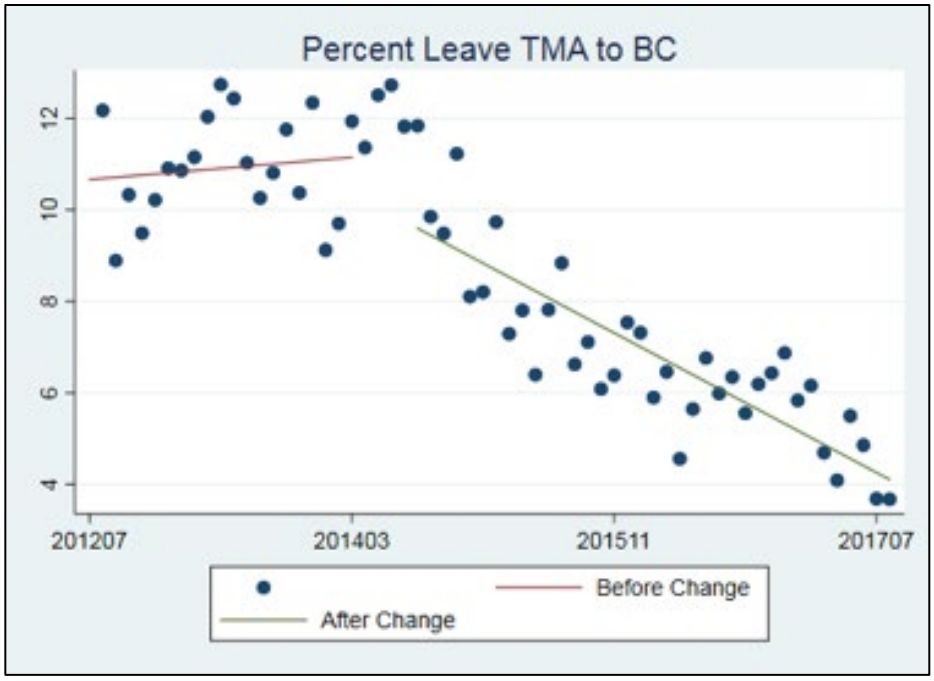
Figure V.B.3. Interrupted Time Series Graphs

Notes: Each dot in the figures represents a monthly average for TMA individuals >133% FPL. The red line represents the fitted average for the pre-waiver period and the green-line represents the fitted average for the post waiver period. There is a 3-month washout period at the time of the waiver. (See footnote on page 53.)

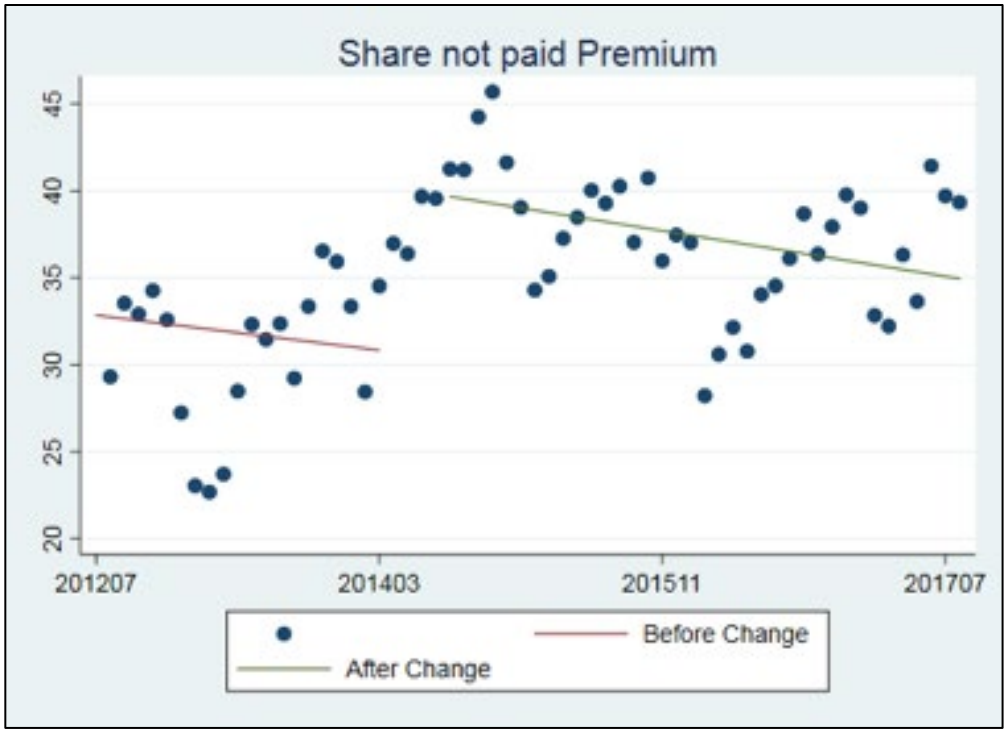


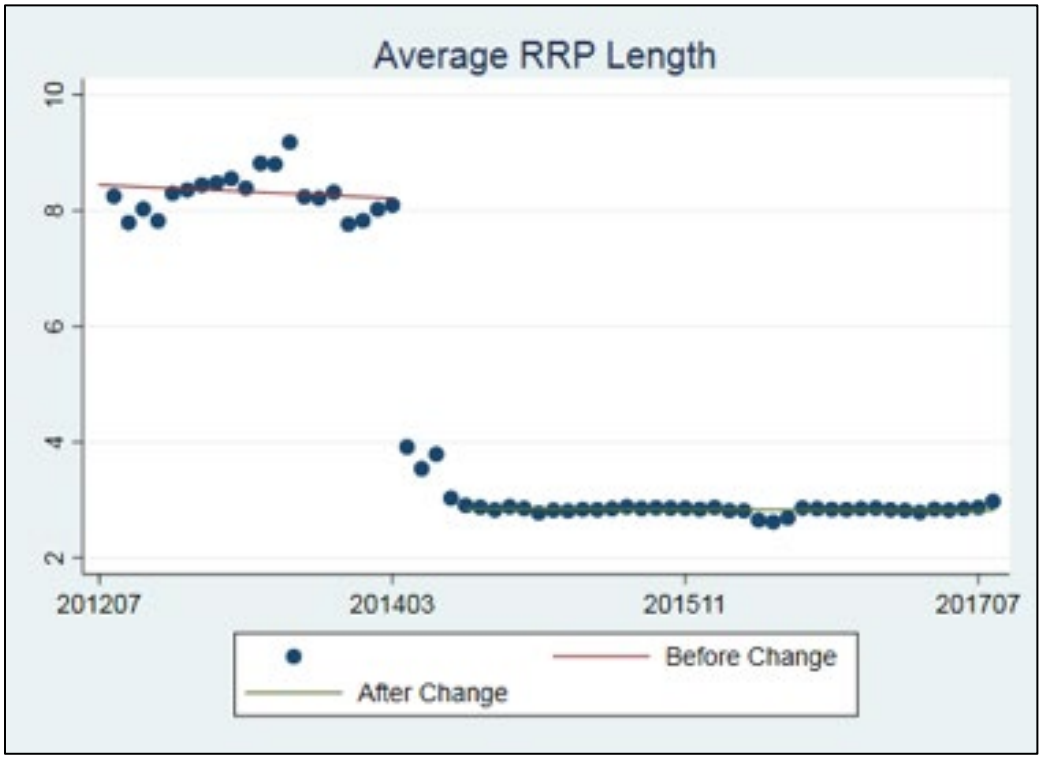
[7]




Percent Leave TMA to BC
12
10
8
6
4
201207
201403
201511
201707
Before Change
After Change


Percent Leave TMA to not enrolled
4
3
2
1
201207
201403
201511
201707
Before Change
After Change


Share not paid Premium
45
40
35
30
25
20
201207
201403
201511
201707
Before Change
After Change


Average RRP Length
10
8
6
4
2
201207
201403
201511
201707
Before Change
After Change

Differences by Income

To address Questions 11-12, we replicated the analysis for all individuals >133% FPL by splitting the sample into two subgroups: individuals 133-150% FPL and individuals >150% FPL. However, as shown in Table V.B.3, the associations were very similar in these two income groups, suggesting that there was unlikely to be differences among individuals with higher versus lower incomes in TMA.

Table V.B.3. Interrupted Time Series Regression Estimates by Income Group

Individuals 133-150% FPL						
	% Leave TMA				**% premiums unpaid (if subject to premiums)**	**Among those who leave TMA to RRP**
	All	**to BC**	**to RRP**	**to not enroll**		**RRP length**
month	0.119	0.00290	0.0911	0.0437	0.252	0.0187
	(0.252)	(0.0572)	(0.329)	(0.0909)	(0.269)	(0.0130)
Level change	1.932	-1.701*	2.677	0.639	5.462	-4.435***
	(3.928)	(0.942)	(4.619)	(0.927)	(3.964)	(0.698)
Trend change	-0.166	-0.167***	0.0197	-0.0284	-0.427	-0.0189
	(0.275)	(0.0613)	(0.343)	(0.0921)	(0.293)	(0.0292)
Constant	32.04***	12.61***	18.36***	0.676	27.40***	6.835***
	(2.942)	(0.692)	(3.644)	(1.222)	(3.290)	(0.163)
Individuals >150% FPL						
	% Leave TMA				**% premiums unpaid (if subject to premiums)**	**Among those who leave TMA to RRP**
	All	**to BC**	**to RRP**	**to not enroll**		**RRP length**
month	0.131	0.0228	0.0952	0.0190	0.185	-0.00325
	(0.205)	(0.0422)	(0.235)	(0.0324)	(0.329)	(0.0115)
Level change	4.699	-0.281	4.674	0.129	7.783	-5.990***
	(3.333)	(0.665)	(3.566)	(0.447)	(5.679)	(0.599)
Trend change	-0.150	-0.173***	0.00688	0.0144	-0.260	0.00304
	(0.221)	(0.0467)	(0.250)	(0.0353)	(0.367)	(0.0252)
Constant	33.55***	9.653***	22.41***	1.396***	29.37***	8.925***
	(2.403)	(0.561)	(2.968)	(0.460)	(4.730)	(0.122)

Notes: Data are aggregated to study months N=57. Standard errors in parentheses. Estimates from interrupted time series regressions. *** p<0.01, ** p<0.05, * p<0.1

Limitations

Several limitations should be considered when considering the analysis related to Questions 10-12. First, this is an analysis without a comparison group, and thus depends critically on the assumptions of the ITS model, including the assumption that there is a discrete intervention that occurs in 2014 that can be separated from other contemporaneous trends. This assumption is less plausible if the concurrent implementation of the health insurance exchanges under the Affordable Care Act that began in January 2014 independently influenced enrollment dynamics among higher-income individuals in TMA. While the TMA premiums were deliberately aligned with the exchanges, some members may have preferred to leave TMA for the exchanges because they (or members of their household) preferred to be covered in the private, non-group market than in Medicaid. Second, despite the large sample size and lengthy time series, the estimates obtained in this analysis are imprecise, and thus we cannot rule out potentially large negative or positive effects for outcomes such as premium non-payment rates.

Conclusions

The 2014 waiver reduced the maximum length of the RRP from 12 months under the 2012 waiver to 3 months. This policy change had one predictable and unambiguous impact – for those who entered the RRP, it resulted in an instantaneous (i.e., level shift) shorter mean duration of RRP of more than 5 months. The effects of the 2014 waiver change on other dynamics related to premium payment and exits from the program are more ambiguous. In the interrupted time series analysis, we failed to reject the null hypothesis (i.e., could not statistically determine whether the policy caused any change) for questions such as whether the RRP increased the share of individuals leaving the program for any reason and for an RRP specifically and we also could not identify any significant change related to premiums. However, these models were imprecisely estimated and there is at least some visual evidence in our ITS figures to suggest that premium non-payment increased after the policy change. We did, however, identify a decreased trend in individuals leaving TMA to enter BadgerCare after the policy change. It is possible that this change may reflect an improving economy during this time period, which might independently have propelled more individuals out of TMA and into private coverage, rather than returning to BadgerCare.

In interpreting these results, it is useful to consider two questions. First, did the policy change influence the behavior of beneficiaries? Second, did the policy improve coverage and access for beneficiaries? The first question is difficult to answer with certainty because of the imprecision of the estimates related to changes in exit and premium-paying behavior. If the RRP length reduction actually caused an increase in premium non-payment, this would be an unintended consequence of the policy. It is theoretically possible that individuals who are forward-looking make decisions about premium payments based on the penalties that they expect to face, and that the 12-month RRP is more punitive than the 3-month RRP.

That said, from the standpoint of the individuals who enter the RRP, and who presumably want to maximize their time covered by public insurance, the reduction in mean time spent in an RRP under the 2014 is likely to be beneficial. Thus, in response to the second question, the reduction in the RRP length should be seen as a benefit for restoring coverage, which is likely to be a key vehicle for improving access to care.

However, for reasons that are not very clear, the RRP policy change seems to have resulted in a downward trend in individuals transitioning from TMA back to BadgerCare. Whether this is viewed as a beneficial outcome depends on the reasons why individuals may seek to return to BadgerCare and on the state's policy goals. As noted, return rates may reflect the economic conditions in the state, with more individuals being lifted out of poverty. The state may want to create incentives, especially during strong economic conditions, to increase transitions to private coverage. On the other hand, it may be that individuals need to reenroll in BadgerCare because of a decrease in income after an RRP, in which case returns to BadgerCare would help to buffer the income and coverage fluctuations that are common in the TMA-eligible population. For this purpose, the state might seek to facilitate the ability of TMA enrollees to transition back to BadgerCare when they become income eligible again. This is not a question we can resolve, as the scope of the evaluation did not include an examination of incomes for individuals who did not return to BadgerCare enrollment after an RRP.

The following analyses of Hypotheses 6 and 7 consider the implications of the RRP on access to care: Wisconsin's RRP-exposed individuals demonstrated a clear reduction in utilization, and this reduction may reflect worsening access due to a disconnection from services.

As well, Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

IV.B.2. RRP Utilization and Spending Analysis

Wisconsin DHS defined two hypotheses related to utilization and spending changes associated with the RRP:

H6: Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?

H7: Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for beneficiaries that have disenrolled and then re-enrolled?

IV.B.2.a. Claims Analysis

Methods

Sample: These questions relate to two populations that can be identified after the 2014 waiver. Question 6 pertains to individuals who were disenrolled, but re-enrolled after experiencing the three month RRP (the *RRP reenrollment sample*) and question 7 compares this population to individuals who are continuously enrolled (*continuously enrolled sample*). While there are several possible ways to define these populations, we applied criteria that were likely to yield sufficient sample sizes for analysis and were consistent with the questions. Specifically, to define the RRP reenrollment sample we looked at the 12 month period from the first month of TMA enrollment, and included all individuals who (1) were observed with at least 1 month of TMA enrollment before an RRP, (2) experienced at least 2 months of RRP during this period, and (3) after the RRP returned to either TMA or BadgerCare in the 12 month window. Notably, individuals who experienced an RRP but did not return to TMA and/or BadgerCare in the 12 months were not eligible for our study sample, since we did not have data on utilization for this group after the RRP. The continuously enrolled sample was all individuals who had 12 months of continuous TMA enrollment in the 12-month period.

Empirical Approach: Question 6 does not involve a comparison group and was therefore evaluated as a simple pre-post comparison looking at utilization, costs, and health care outcomes in the pre-RRP period versus the post-RRP period.

Question 7, however, does involve a comparison in trends between the RRP reenrollment sample and the continuously enrolled sample. We therefore implemented a difference-in-differences approach. For the *RRP reenrollment group,* the "intervention" was RRP, and the pre months occurred prior to RRP and the post months occurred after RRP. Because the continuously enrolled group by definition did not have any RRP, we simply compared their first 6 months versus their last 6 months of their TMA spell. This assumes that any differences between these two time periods represents a valid counterfactual for the differences that would have occurred in the RRP group absent the imposition of the RRP. While this

assumption is inherently untestable since the counterfactual condition cannot be observed, we do show some monthly plots to illustrate the trends in the study outcomes in the first six months in the RRP group versus the continuously enrolled group.

Outcome Measures: We selected a set of health care utilization and spending outcomes that could be readily tracked at the monthly level. Note, because this analysis was monthly it was not feasible to track relatively rare outcomes at the monthly level (e.g., a hospitalization for a specific diagnosis) or outcomes that require multiple months to construct (e.g., medication management for an episode of major depression disorder). Our utilization outcomes were monthly measures for: (1) any health care use (0/1), (2) outpatient health care use (number of visits), (3) outpatient primary care use (number of visits), (4) outpatient specialty care use (number of visits), (4) emergency department utilization (number of visits), (5) potentially preventable emergency department visits (number of visits), (6) hospitalization (number of visits), and (7) fills of prescription drug (number of fills). For each of these outcomes, we also constructed monthly spending associated with each type of service. Individuals who did not have observed utilization or spending in a given month in each category were imputed a value of 0 for that category in the month. The definition of these utilization measures are described in Table IV.A.1 and in previously published work using WI Medicaid claims and encounter data.[11]

Statistical Analysis: Our unit of analysis was a month of enrollment measured at the individual level. Individuals could contribute up to 12 monthly observations (for individuals who were continuously enrolled). For the pre-post analysis, we estimated ordinary least squares regressions for each of the study outcomes where the main variable of interest was an indicator for whether the month was before or after the RRP. The coefficient on the indicator for *post* can therefore be interpreted as the mean monthly adjusted difference in the outcome in the post-RRP period compared to the pre-RRP period. Models also adjusted for age, sex, citizenship, tribal membership, and race/ethnicity. Standard errors were clustered at the person level to account for the dependence of observations within individuals.

The difference-in-differences models build upon this approach by adding into the sample individuals in the continuously enrolled sample. The model includes indicators for post-RRP, being in the RRP reentry sample (versus the continuously enrolled sample), and the interaction between these two terms (the difference-in-differences). As in the pre-post model, standard errors were clustered at the person level.

For utilization models, our model functional form was an ordinary least squares regression model. For models related to expenditures, we primarily relied on two-part models, which are a class of regression models that are well-tailored to data that have a highly skewed distribution (such as spending, where

[11] DeLeire, Dague, Leininger, Voskuil, Friedsam. Wisconsin Experience Indicates that Expanding Public Insurance to Low-Income Childless Adults has Health Care Impacts. Health Affairs. 2013;6:1037-1045; Burns, Dague, DeLeire, Dorsch, Friedsam, Leininger, Palmucci, Schmelzer, Voskuil. Health Services Research. 2014;49(Suppl 2):2173-2187.

many individuals have 0 values and a small group have very high values). Following other studies on health care spending, we opted to estimate generalized linear models with a first stage logistic regression model and a Gamma distribution for the non-zero values.[12] Using the *tpm* routine in Stata, our model combines these estimates to provide an estimate at the mean. To scale these estimates to dollar amounts, we applied predicted margins for the difference-in-differences parameter, holding all other values at their means.

Another concern that may arise with our sample is that we are comparing individuals with different observable characteristics and that these observable differences may lead to biased estimates. In a sensitivity analysis, we applied inverse probability of treatment weighting (IPTW), a technique that weights the RRP reentry sample and continuously enrolled samples to more closely resemble each other in demographic characteristics that were observed in the baseline period. The principal advantage of the IPTW approach is that it helps to further account for fixed characteristics of individuals that would influence their monthly trend independent of the RRP. In practice, however, we found that the IPTW approach yielded very similar results to the unweighted models, and therefore present the unweighted models.

Findings

Demographic characteristics of the individuals in the reenrollment sample are shown in Table V.B.4. We identified 11,024 unique individuals in the *continuously enrolled* group and 4,662 in the *RRP reentry* group. On average, individuals in the *continuously enrolled* group were older and more likely to be male and non-Hispanic white, and substantially less likely to be non-Hispanic African American. Individuals in the reenrollment sample were observed in TMA for a mean of 4.3 months, in BadgerCare for 4.9 months, in RRPs for 2.2 months, and in neither TMA, BadgerCare, or RRP for 0.5 months (not shown).

Unadjusted differences in outcomes are shown in Table V.B.4. for individuals in the reenrollment sample in their months before and after an RRP. Individuals who entered into an RRP experienced a significant decrease in utilization across a range of outcomes. The percentage of individuals with any health care use in the month decreases from 39.3% to 29.6% (P<.0001), a 9.7 percentage point decline. The mean number of monthly outpatient visits decreases from 0.512 to 0.439 (P<.0001), a .073 visit decrease.

Substantial decreases were also observed for primary care and specialty care visits. The average number of monthly ED visits decreased from .067 to 0.058, a .009 decrease in monthly ED visits (P=.001), and the average number of potentially preventable ED visits decreased from .036 to .029, or .007 visits per month (P<.0001). The mean number of medications filled decreased from .826 to .664, a decrease of .16

[12] Buntin, Melinda Beeuwkes, and Alan M. Zaslavsky. 2004. Too much ado about two-part models and transformation?: Comparing methods of modeling Medicare expenditures. Journal of health economics 23(3): 525-542.

prescriptions (P<.0001). The only indicator which increased was hospitalizations – going from a mean of .004 per month to .007 per month, a .002 increase (P=.006).

Table V.B.4. Characteristics of the Continuously Enrolled and the RRP Reenrollment Samples

	Mean	
	Continuously enrolled	**RRP Reenroll**
Age	38.2	32.3
Female (%)	66.7	76.8
Citizen (%)	92.3	95.1
Tribe member (%)	3.3	0.2
White (non-Hispanic) (%)	74.5	54.3
Black (non-Hispanic) (%)	5.9	30.8
Hispanic (%)	8.5	11.5
Other race (%)	9.5	4.7
No. individuals	11,024	4,662
Notes: Demographic characteristics of individuals who were enrolled in TMA for 12 continuous months versus individuals who were in TMA, left for an RRP, and then reenrolled.		

The average spending associated with these indicators similarly decreased in a commensurate manner (Table V.B.5). For example, mean monthly spending on outpatient visits decreased from $60.8 to $54.4, a $6.4 reduction (P=.045). Mean monthly spending on medication decreased from $60.4 to $53.5, a reduction of $6.8 (P=.028). Total spending decreased from $225.9 to $220.9, a decrease of $5 – however, this decrease was not statistically significant (P=.706).

To provide a comparison, the same indicators were examined for the continuously enrolled TMA sample, comparing their first six months and their last six months. Means for virtually all indicators in this group remained very similar during these two time periods (and in general, were higher in all time periods than for the group that experienced the RRP) (Table V.B.6). The lone exception was hospitalizations, which increased from 0.004 in the first six months to 0.007 in the final six months.

Table V.B.7 shows the coefficients for the difference-in-differences models, which is conceptually similar to comparing the changes for the *RRP reentry* group with the *continuously enrolled* group, accounting for other covariates. Across multiple indicators, the difference-in-differences models show significant decreases post-RRP in the study outcomes in the reenrollment sample compared to the continuously enrolled sample: any monthly HCU decreased by 8.0 percentage points (P<.01), this was a 20.3% decrease relative to the baseline mean (the mean in the months before the RRP shown in Table V.B.5).

There was no statistically significant change in the number of outpatient or outpatient primary care, but there was a significant reduction in monthly number of outpatient visits to specialty care -.04 visits (P<.01), 17.9% decrease relative to the baseline mean. In adjusted models, there was no statistically significant change in monthly use of emergency department care overall and for potentially preventable emergency department care or for hospitalizations. The number of prescriptions per month decreased by -.15 (P<.01), a 16.9% decrease relative to the baseline mean. The estimates for the models related to expenditures were generally imprecise and not statistically, significant, indicating that we could statistically not rule out zero changes in spending.

Table V.B.5. Pre-Post Differences for Reenrollment Sample

	Months before RRP	Months after RRP	Diff	p-value
Any health care use in a month	0.393	0.296	-0.097	(0.000)
Average Outpatient visit in a month	0.512	0.439	-0.073	(0.000)
Average Outpatient Primary visit in a month	0.252	0.229	-0.023	(0.134)
Average Outpatient Specialty visit in a month	0.218	0.164	-0.054	(0.000)
Average ED visit in a month	0.067	0.058	-0.009	(0.001)
Average Potentially Preventable ED visit in a month	0.036	0.029	-0.007	(0.000)
Average Hospitalization in a month	0.004	0.007	0.002	(0.006)
Average Medication fill in a month	0.826	0.664	-0.162	(0.000)
Average Spending				
Outpatient visit in a month	$60.75	$54.36	-$6.39	(0.046)
Outpatient Primary visit in a month	$20.36	$20.53	$0.17	(0.910)
Outpatient Specialty visit in a month	$28.05	$22.73	$-5.32	(0.000)
ED visit in a month	$23.60	$22.87	$-0.73	(0.796)
Potentially Preventable ED visit in a month	$9.16	$8.51	$-0.66	(0.455)
Hospitalization in a month	$23.63	$38.31	$14.68	(0.141)
Medication fill in a month	$60.35	$53.55	$-6.80	(0.028)
Total	$225.90	$220.86	$-5.04	(0.706)
Total N	19,068	24,295		
Note: Reenrollment sample consists of individuals who left TMA for an RRP and then reenrolled within the year.				

Table V.B.6. Pre-Post Differences for Continuously Enrolled TMA Sample

	TMA - 12 cont. months 1-6	TMA - 12 cont. months 7-12	Diff	p-value
Any health care use in a month	0.529	0.528	-0.001	(0.798)
Average Outpatient visit in a month	0.711	0.703	-0.008	(0.384)
Average Outpatient Primary visit in a month	0.406	0.398	-0.008	(0.371)
Average Outpatient Specialty visit in a month	0.260	0.258	-0.002	(0.562)
Average ED visit in a month	0.0392	0.038	-0.001	(0.349)
Average Potentially Preventable ED visit in a month	0.0205	0.020	0.000	(0.712)
Average Hospitalization in a month	0.002	0.003	0.001	(0.0340)
Average Medication fill in a month	1.212	1.198	-0.014	(0.203)
Average Spending				
Outpatient visit in a month	$69.32	$72.50	$3.18	(0.499)
Outpatient Primary visit in a month	$29.20	$28.27	$-0.93	(0.342)
Outpatient Specialty visit in a month	$29.96	$31.55	$1.59	(0.502)
ED visit in a month	$18.57	$18.57	$0.00	(0.998)
Potentially Preventable ED visit in a month	$7.29	$7.555	$0.27	(0.712)
Hospitalization in a month	$15.24	$24.207	$8.97	(0.0439)
Medication fill in a month	$113.40	$113.39	$-0.01	(0.997)
Total	$283.00	$296.08	$13.08	(0.215)
Total N	67,628	65,740		
Notes: Continuously enrolled sample are individuals who were enrolled in TMA continuously for 12 months.				

Table V.B.7. Difference-in-Differences Regression Coefficients

Utilization Models								
	Any Health Care Use	All Outpatient	Primary Care Outpatient	Specialty Care Outpatient	Emergency	Potentially Preventable ED	Hospitalization	Prescriptions
Post x Treat	-0.0796***	-0.0318	0.00389	-0.0396***	-0.00270	-0.00394*	0.00106	-0.105***
	(0.00665)	(0.0271)	(0.0246)	(0.00678)	(0.00344)	(0.00239)	(0.000828)	(0.0251)
Spending Models								
	Total spending	Outpatient visit	Outpatient Primary visit	Outpatient Specialty visit	Emergency	Potentially Preventable ED	Inpatients visits	Prescriptions
Post x Treat	11.67	-4.272	3.603	-5.181*	-1.280	-0.435	-1.371	0.613
	(19.28)	(5.816)	(2.206)	(2.695)	(2.866)	(1.007)	(7.100)	(5.827)

Notes: Models include indicators for post and treatment group (RRP reentry versus continuously enrolled and are adjusted for age, sex, citizenship, tribal membership, and race/ethnicity. Spending models represent predicted margins from two-part models and can be interpreted as dollar amounts at the mean of the sample. Clustered standard errors at individual level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

IV.B.2.b. Survey Analysis

To augment the claims analysis, we examined two groups in the 2016 and 2018 survey samples: (1) individuals who were sampled from the TMA population and (2) individuals who were specifically identified as having experienced at least 2 months of RRP at the time of the survey sample. Comparing these two groups provides some insight into the differences in self-reported access to care between individuals with known RRP experience versus other individuals in TMA that might not otherwise be identified with claims-based measures. This analysis therefore provides some evidence relevant to Hypothesis 7. However, it is important to note that the survey design does not permit as direct an evaluation of Hypothesis 7 as the claims data: the data are cross-sectional, so there is no ability to compare trends within individuals before and after the RRP, and the RRP sample captured in the survey are not necessarily individuals who reenrolled in the program subsequent to their RRP experience.

Methods

Sample: Combining samples from 2016 and 2018, the RRP group had 178 individuals and the TMA group had 711 individuals. The overall response rates in these groups (i.e., the share of individuals who responded to the survey as a proportion of those in scope) were 32.2% and 46.2%, respectively.

Empirical Approach: We conducted a simple descriptive analysis of these two groups, examining both unadjusted and regression-adjusted differences. We emphasize that this is not an analysis that supports causal inference, however, regression-adjustment helps account for observable differences in the characteristics of the two groups.

We weighted respondents in each group to reflect the demographics of the sample frame. We examined unadjusted demographic differences between the two sample groups, and then adjusted for demographics to compare self-reported access to care, health status, and insurance status in the two groups.

Outcomes: We examined several self-reported measures related to access and coverage: (1) uninsured at time of interview, (2) usual source of care, (3) received needed medical care in prior 12 months, (4) "fair or poor" quality of care, (5) currently owes money for medical expenses, (5) had to borrow money to pay for medical bills, (6) self-reported health, and (7) presence of work-limiting disability.

Statistical Analysis: Regression-adjusted differences were calculated by pooling the data and estimating a separate model for each outcome that included an indicator for being in the RRP (versus the TMA) sample, indicators for year (2016 or 2018), and controls for demographic characteristics. The data were weighted. We calculated regression-adjusted means using predicted margins.

Findings

Individuals in the RRP sample were significantly more likely than those in the comparison group to be older than age 35 and Black non-Hispanic, and slightly more likely to have a high school diploma and to not live with a spouse. (Table V.B.8).

In adjusted analyses, individuals in the RRP sample were significantly more likely to report being uninsured (Table V.B.9) (31.9% versus 18.7%, $p<.05$). The two samples show no significant differences in self-reports of having a usual source of care. But those in the RRP group were significantly less likely to report receiving needed medical care in the prior year (64.9% versus 79.4%, $p<.01$) and significantly more likely to report that the quality of care received in the prior year as fair/poor (21.4% versus 8.3%, $p<.01$). They were more likely to report owing money for medical expenses (63.5% versus 31.0%, $p<.05$) and needing to borrow money, skip paying other bills, or paying other bills late in order to pay health care bills in last 12 months (38.9% versus 20.9%, $p<.01$). Self-reported health status or work-limiting disability status show no significant differences.

Limitations

In our analysis related to utilization and spending use claims data we could not observe health care use that did/did not occur during the RRP. Relatedly, we were restricted to observing service use reimbursed by Medicaid, and it is possible that many individuals establish relationships with free community providers that are maintained after they are re-enrolled. The difference-in-differences design we used also does not represent a perfect natural experiment – as an RRP is triggered by premium non-payment, there may be other individual-level factors that cause changes in utilization that are not directly caused by the RRP itself (such as a change in health status). Finally, the survey analysis relies on cross-sectional observational data and can therefore not support any causal inferences.

Conclusions

The exploration of Hypotheses 6 and 7 yielded several notable findings. First, comparing the months before versus after an RRP for individuals who reenrolled in either TMA or BadgerCare, we identified substantial decreases in utilization and spending across a variety of indicators. After the RRP, the probability of any health care use in the month decreased by 9.7 percentage points (from a baseline of 39.3 percent). Substantial decreases were found across outpatient, inpatient, and pharmaceutical utilization. Spending decreased as well, generally by a similar magnitude as utilization. By comparison, when we examined a sample of individuals who were continuously enrolled in TMA over 12 months, we found that utilization and spending generally did not change.

Our difference-in-differences models allowed us to formally compare these two groups (RRP reentrants versus TMA continuously enrolled). These models show that compared to the changes that the continuously enrolled from their first six months to their last six months, the RRP sample experience substantial decreases in many types of utilization in the period after reenrollment.

On their own, the changes in utilization and spending do not answer the question of whether RRP negatively or positively affects access. It is theoretically possible that the observed decrease is the result of some health or access improvement that is caused by the RRP. However, the survey analysis raises concerns that individuals who experience RRPs generally have poorer access than those in TMA who do not (though as noted the survey analysis is unable to compare trends within individuals over time). And, notably, the RRP survey sample reported significantly higher levels of financial distress.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

Table V.B.8. Demographics of Recent Medicaid Enrollees with RRP Experience versus Enrollees without RRP Experience

		% Individuals with Recent RRP Experience	% Individuals with no Recent RRP Experience	
Male		27.34	23.29	
Older than 35		53.98	38.12	***
Race/Ethnicity				
	White, Non-Hispanic	52.63	70.90	***
	Black, Non-Hispanic	23.67	9.99	***
	Spanish, Hispanic, or Latino	10.63	6.87	
	Other race (Asian, Indian), not Hispanic	5.51	6.97	
	Mixed race, not Hispanic	2.85	2.88	
	Missing	4.71	2.39	
High school diploma or greater than high school		85.18	79.07	*
Household annual income < 30000		64.23	58.83	
Household composition				
	Lives alone	7.12	6.92	
	Lives with spouse	23.95	30.66	*
	lives with others	63.90	59.91	
	Missing	5.02	2.51	
Two or more household members below 19		37.25	38.46	
Sample size		178	711	

Notes: Authors' analysis of survey data collected in 2016 and 2018 of former enrollees in the Wisconsin Transitional Medical Assistance Medicaid program who did versus did not have experience with RRP for non-payments of premiums. *P<.1, **P<.05, ***P<.01

Table V.B.9. Access to Care and Health Status of Recent Medicaid Enrollees with RRP Experience versus Those without RRP Experience

		% Individuals with Recent RRP Experience	% Individuals with no Recent RRP Experience	
Currently uninsured		31.89	18.70	**
Usual source of care (other than urgent care/ED)		66.96	73.23	
Needed medical care in past 12 months and got it		64.93	79.36	***
Quality of the medical care received in the last 12 months was "fair or poor"		21.36	8.27	***
Currently owe money for medical expenses		63.45	31.02	***
Had to borrow money, skip paying other bills, or pay other bills late in order to pay health care bills in last 12 months		38.98	20.99	***
Self-reported physical and mental health				
	Excellent, Very good	36.47	43.88	
	Good	41.37	37.68	
	Fair, Poor	21.18	18.04	
	Missing	0.480	0.425	
A physical, mental, or emotional problem limits ability to work at job		16.11	13.89	
Sample size		178	711	

Notes: Authors' analysis of survey data collected in 2016 and 2018 of former enrollees in the Wisconsin Transitional Medical Assistance Medicaid program who did versus did not have experience with RRP for non-payments of premiums. Estimates are adjusted for sex, age greater than 35, and race. *P<.1, **P<.05, ***P<.01

V.C. CHILDLESS ADULTS (CLA)

Evaluation questions 13-17 address whether and to what extent the provision of standard Medicaid benefits to childless adult (CLAs) beneficiaries affected health, health care, resource use and enrollment outcomes for CLAs. The differences in covered services between the Core and Standard plans are summarized in Attachment G of this document. In this section of the evaluation report, we first present the research designs that are common to all evaluation questions, 13-17. We then describe the methods and findings that are specific to questions concerning health care and health-related outcomes, questions 13-16, and then for question 17, which pertains to coverage continuity. We also conducted two supplementary analyses focused on health care use for specific conditions: mental health and substance use disorders (MHSUDs) and diabetes. Results from these supplementary analyses are presented in Attachments I and J of this document.

13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?

14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?

15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase the cost-effectiveness (outcomes/cost) of Medicaid services?

16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare beneficiaries increase the cost-effectiveness (utilization/cost) of Medicaid services?

Methods

Design. For each of the evaluation questions 13-17, we implement a difference-in-differences design, and a post-only design to address the two comparisons of interest to, and specified by, the WIDHS. These comparisons are:

A. Comparison of CLA beneficiaries' outcomes while enrolled in the Standard Plan relative to their outcomes while enrolled in the Core Plan; and
B. Comparison of post-waiver outcomes for two groups of CLA beneficiaries enrolled in the Standard Plan: new CLA beneficiaries who became eligible on or after April 2014; and continuing CLA beneficiaries who transitioned from Core plan coverage to Standard Plan coverage in April 2014.

We use a difference-in-differences design to implement Comparison A. We estimate the change in outcomes for CLA beneficiaries before enrollment in the Standard Plan and after Standard Plan enrollment relative to the change in outcomes over the same time periods in a comparison group of

parent/caretaker beneficiaries. As illustrated in Table V.C.1, the first difference, (B-A), most directly addresses the comparison of interest while the second difference, (D-C), aims to net out the expected change in outcomes related to within-state and within-Medicaid trends that similarly affected the outcome in both groups.

Table V.C.1. Difference-in-Differences Research Design for Evaluation of Childless Adults Enrollment in Standard Plan

	Pre-Period		**Post-Period**
Treatment Group	Core Plan (A) Cohort of childless adults	**=>**	Standard Plan (B) Same cohort of childless adults
Comparison Group	Standard Plan (C) Cohort of parents/caretakers	**=>**	Standard Plan (D) Same cohort of parents/caretakers
	Difference-in-Differences:		**[(B-A) - (D-C)]**

The DD design rules out alternative explanations for between-group differences in the outcomes that might arise from secular trends and events affecting both groups (e.g., health insurance market and economic conditions). This design generates the estimated causal effect of providing Standard Plan coverage to childless adults conditional on satisfying the parallel trends assumption. That is, absent the switch from Core plan to standard Medicaid coverage, we assume that trends in outcomes for childless adults would have been parallel to those for parents conditional on the variables in our analytic models. While this assumption is not directly testable, we offer evidence of its plausibility by assessing outcome trends in the pre-waiver period for both groups as data permits (for example, Figures V.C.1-C.18).

To implement comparison B, we use a post-only design to describe the differences in study outcomes between two groups of CLA Standard Plan enrollees: new CLA enrollees, individuals who enrolled on or after April 1, 2014; and continuing CLA enrollees, individuals who transitioned from the Core Plan to the Standard Plan in April 2014. The study design is illustrated in Figure V.C.1.

This design yields insight into the association between Standard Plan coverage and study outcomes for CLAs who experienced a richer set of benefits from the start of their Medicaid enrollment (i.e., new enrollees) relative to CLAs who initially experienced a more limited set of Medicaid benefits (i.e., continuing CLAs.) We note that the design does not allow us to distinguish between several plausible explanations for potential outcome differences between new enrollees and continuing CLAs. These explanations include prior health insurance coverage and differences across groups in unobserved characteristics related to study outcomes such as care-seeking preferences, health history, etc.

Figure V.C.1. Illustration of study design to compare the experience in the Standard Plan of Continuing CLA enrollees that transition from the Core Plan relative to new CLA enrollees

Childless Adult Enrollees	April 2014 – End of Observation Period
Continuing CLA Enrollees	=>……..|
New CLA Enrollees	=>……..|

Finally, we implement a cross-sectional research design to compare outcomes for three CLA samples: CLA beneficiaries enrolled in the Core plan before implementation of the 2014 waiver; CLA beneficiaries enrolled in the Standard plan in 2016; and CLA beneficiaries enrolled in the Standard Plan in 2018. We do so using the Wisconsin Medicaid beneficiary surveys in order to compare self-reported health (Q13), health care access (Q14), and health insurance coverage (Q17) outcomes among childless adult beneficiary respondents. The results from this cross-sectional, descriptive analysis provide contextual information for interpretation of the claims-based analysis, and a rich characterization of the attributes of the CLA beneficiary population than is otherwise possible with use of administrative data alone.

The 2014 survey sample included a random selection of CLA beneficiaries who were enrolled in the Core plan between January 2012-March 2014 (see Table V.C.2). The survey was fielded just after implementation of the April 2014 waiver. The reference period for most of the survey questions assessed the beneficiary's experience in the past 12 months in which case the responses provide an estimate of study outcomes during the Core plan period. Questions in the 2014 survey that ask respondents to report on current experience reflect experience under Standard plan rather than the Core plan.

Sample. The analytic samples used to implement the difference-in-differences, and post-only, designs vary somewhat across evaluation questions, so these samples are presented under the relevant evaluation questions. The survey sample is constant across all CLA evaluation questions.

Table V.C.2. Survey Sample Construction for Childless Adult Beneficiaries

	2014 survey	2016 Survey	2018 Survey
Total N Sampled	300	600	735
*ineligible	n/a	96	120
Eligible sample	300	504	615
Respondents	194**	278	265
Response rate	65%	55%	43%
Dates of data collection	4/1/14-8/30/14	5/10/16-9/26/16	5/18/18 – 10/28/19
*Individuals who died, moved out of state, reported no history of Medicaid coverage at the time of survey, or (in 2018 only) were less than 18 years of age ** Analyses of 2014 data include the 192 subjects due to missingness on select variables.			

Table V.C.3 shows the respondent characteristics from the WI Medicaid beneficiary surveys. Relative to both 2016 and 2018 respondents, the 2014 sample of CLAs was on average older, and more likely to live either alone or with a spouse. There were no statistically significant differences between the 2014 sample and the two later samples with respect to gender composition, race, or employment status. However, the 2016 sample reported fewer hours worked per week on average than the original 2014 CLA sample. Lastly, the most recent group of CLAs surveyed, in 2018, were more likely to report gross annual income of at least $30,000 and of having at least one household member under the age of 19.

Table V.C.3. Medicaid Beneficiary Survey Results: Childless Adult Respondent Characteristics

		(1)	(2)	(3)	2014 v. 2016 p-value	2014 v. 2016 p-value
		2014	2016	2018		
		N=192	N=278	N=265		
Gender					0.660	0.680
	Male	52.2%	54.6%	54.6%		
	Female	47.8%	45.3%	44.8%		
Age					<0.01	<0.01
	19-34	12.2%	33.2%	44.6%		
	35-44	11.2%	9.4%	10.3%		
	45 +	76.5%	56.3%	44.8%		
	Missing	0.0%	1.2%	0.3%		
Race/Ethnicity					0.666	<0.1
	White	67.3%	69.5%	67.5%		
	Black	14.7%	15.6%	7.2%		
	Hispanic	3.7%	1.7%	3.9%		
	Other	9.8%	12.2%	18.8%		
	Missing	4.4%	0.9%	2.6%		

		(1)	(2)	(3)	2014 v. 2016 p-value	2014 v. 2016 p-value
		2014	2016	2018		
Education level					0.447	<0.05
	Below High School	57.0%	54.4%	44.2%		
	High School or above	38.8%	44.3%	52.8%		
	Missing	4.2%	1.3%	3.0%		
Household composition					<0.05	<0.01
	Lives alone	32.1%	22.7%	20.5%		
	Lives with spouse	31.1%	26.5%	16.6%		
	lives with others	34.4%	49.5%	59.6%		
	Missing	2.4%	1.4%	3.3%		
Household size					<0.05	<0.01
	> 2	17.3%	29.5%	38.6%		
	<=2	78.7%	66.8%	57.3%		
	Missing	4.0%	3.7%	4.1%		
Number of HH members less than 19 yo					0.987	<0.05
	At least 1	11.7%	11.8%	20.6%		
	Zero	80.9%	82.2%	70.8%		
	Missing	7.5%	6.0%	8.7%		
Employment status					0.219	0.155
	Unemployed	37.5%	49.5%	43.5%		
	Employed	50.9%	37.8%	40.7%		
	Missing	11.6%	12.7%	15.8%		
Hours of work per week					<0.05	0.144
	<20	37.5%	49.5%	43.5%		
	>=20	50.9%	37.8%	40.7%		
	Missing	11.6%	12.7%	15.8%		
Annual gross income					0.113	<0.01
	<30000	83.5%	81.4%	65.7%		
	>=30000	10.3%	5.6%	22.9%		
	Missing	6.1%	12.9%	11.5%		

Notes: Authors' unweighted estimates using the Wisconsin Medicaid Beneficiary Surveys. Chi-square tests are used to test equivalence of categorical outcomes between cross-sectional samples of childless adult respondents.

Data. We use the same data sources across all evaluation questions for this component of the evaluation report: Medicaid enrollment, claims and encounter data; and the WI Medicaid beneficiary. These data are described above in Section IV.

Evaluation Questions 13-16: Specific Methods, Findings, and Conclusions

Sample. The operational definitions of the study groups for study comparisons A and B, and the time frame for analyses are noted below in Table V.C.4. For both Comparison A & B, we include a group of CLA beneficiaries who were enrolled in the Core plan for some duration in the year before implementation of the Standard plan and subsequently enrolled in the Standard plan. We note that because Core plan enrollment had been suspended to new enrollees (with few exceptions) in October 2009, individuals that had any enrollment in the Core plan between April 2013-March 2014 were stably enrolled beneficiaries, as they would have entered the program several years prior.

To implement the difference-in-differences design for Comparison A, the sample inclusion criteria required continuous enrollment throughout the observation period, April 2013 – March 2015. The comparison sample of parents/caretakers includes individuals who were likewise continuously enrolled in parent/caretaker coverage for the full observation period, April 2013 – March 2015. Requiring continuous enrollment for the 24-month period eliminates the possibility that changes in sample composition may account for any observed effects of the insurance transition on outcomes.

To implement comparison B, the continuing CLA group for Comparison B includes individuals with at least one-month of enrollment in the Core plan between 4/2013-3/2014 to ensure immediate past exposure to the Core plan without demanding continuous enrollment in that year, and continuous enrollment in the Standard plan between April 2014 – March 2015, the assessment period for study outcomes. We define new CLA enrollees as individuals that had no Core plan enrollment between 4/2013-3/2014, and continuous enrollment in the Standard plan from 4/2014-3/2015.

Table V.C.4. Study Groups and Time Periods by Comparison of Interest

Study Time Period	Continuing CLA Enrollees	Continuing Parent/Caretaker Enrollees	New CLA Enrollees
4/1/2013 – 3/31/2015 Comparison A	CLAs enrolled continuously from 4/2013-3/2015 N= 7,510.	Parent/Caretakers enrolled continuously from 4/2013-3/2015, N=69,059.	
4/1/2014 – 3/31/2015 Comparison B	CLAs with at least 1 month of enrollment in Core plan from 4/2013-3/2014 and enrolled continuously from 4/2013-3/2015 in Standard plan, N=8,685.		CLAs with continuous Standard Plan enrollment beginning from 4/2014-3/2015, and no Core plan enrollment between April 2013-March 2014, N=64,589.

Table V.C.5 summarizes the characteristics of our study groups for Comparison A, the 7,510 CLA beneficiaries and 69,059 parent and caretaker beneficiaries who were continuously enrolled from April 2013 – March 2015. We tested the equivalence of the population characteristics using t-tests for binary and continuous measures, and chi-squire tests for categorical measures.

Table V.C.5. Baseline Characteristics of Childless Adult and Parent Beneficiaries with Continuous Enrollment, April 2013-March 2015

	Continuing parents	**Continuing childless adults**	**p-value**
	%/Mean	**%/Mean**	
Gender, Citizenship, Tribal Membership, Residence			
% Female	76.73	50.69	<0.01
% Citizen	95.91	98.67	<0.01
% Tribe	2.01	0.55	<0.01
% Resides in metropolitan area	32.61	31.45	<0.05
Race			<0.01
% White	62.36	76.70	
% Black	21.29	14.87	
% Hispanic	8.32	3.91	
% Other	8.51	4.75	
Education level			<0.01
% < high school education	21.24	15.27	
% >= high school education	68.59	45.99	
% Missing education	10.17	38.74	
Age in April 2014			<0.01
19-34	51.05	15.83	
35-49	43.15	30.44	
50 +	6.20	53.74	
N	69,059	7,510	

Note: T-test used to compare equivalence of baseline characteristics for binary and continuous measures between childless adult and parent beneficiaries. Chi-square test used to compare equivalence of baseline characteristics for categorical variables between the study groups.

The two cohorts differ in demographic composition on all measures observed. Such differences would be expected, given the different eligibility criteria for parent adult coverage and CLA coverage. Relative to parents and caretakers, members of the CLA cohort are less likely to be female, are generally older, and less likely to be a racial or ethnic minority.

Table V.C.6 summarizes the characteristics of our study groups for Comparison B. Although, the differences between groups across the first set of characteristics presented, sex, tribal membership, residence in a metropolitan area and citizenship, are all statistically significantly different from zero, the magnitudes of difference are relatively small. Relative to newly enrolled CLAs, the group of continuing CLA enrollees are more likely to be White, and to be older.

Table V.C.6. Characteristics of New and Continuing Childless Adults, April 2014

	New childless adults		Continuing childless adults		p-value
	%/Mean	SE	%/Mean	SE	
Gender, Citizenship, Residence					
% Female	44.8	0.0	50.7	0.0	<0.01
% Citizen	97.9	0.0	98.6	0.0	<0.01
% Resides in metropolitan area	31.8	0.0	31.1	0.0	<0.01
% Tribe	1.5	0.0	0.6	0.0	<0.01
Race					<0.01
% White	62.6	0.0	75.7	0.0	
% Black	25.1	0.0	15.8	0.0	
% Hispanic	5.3	0.0	3.8	0.0	
% Other	7.4	0.0	4.9	0.0	
Education level					<0.01
% < high school education	19.1	0.0	15.2	0.0	
% >= high school education	47.2	0.0	46.3	0.0	
% Missing education	33.7	0.0	38.6	0.0	
Age in April 2014					<0.01
19-34	41.8	0.0	16.5	0.0	
35-49	29.8	0.0	30.6	0.0	
50 +	28.4	0.0	53.0	0.0	
N	64,589		8,685		

Note: T-test used to compare equivalence of characteristics for binary and continuous measures between new and continuing childless adults. Chi-square test used to compare equivalence of characteristics for categorical variables between the study groups. New CLAs are individuals enrolled in the Standard plan from April 2014-March 2015 without any enrollment in the Core plan between April 2013-March 2014. Continuing CLAs are individuals enrolled in the Core plan for at least one month between April 2013--March 2014, and enrolled in the Standard plan from April 2014-March 2015.

Measures. A discussion of all claims-based health care use and health-related measures used in this evaluation is provided above in Section IV, with accompanying Table IV.A.1, and the specifications for these measures are included in Attachment A. For evaluation questions 13-16, we summarize the specific measures used for comparisons A and B in Tables V.C.7 and V.C.8 respectively.

Table V.C.7. Outcome Measures for Childless Adults, Analytic Samples and Modeling Strategy: Comparison A - Continuously enrolled childless adults relative to continuously enrolled parents and caretakers, April 2013 - March 2015

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	Statistical Modeling Strategy
UTILIZATION					
Health-related					
Flu Vaccinations for Adults ages 18 to 64	13, 15	Full sample	Number and percentage of sample with outcome (w/in group pre vs. post)	person-year	Ordinary Least Squares
Smoking cessation assistance	13, 15				
Mammogram	13, 15	Women ages 50 to 64			
HbA1c	13, 15	Adults with a diabetes diagnosis in primary or secondary position on an outpatient, ED, or inpatient claim between 4/2013-3/2015			
Antidepressant Medication Management for Major Depressive Disorder (MDD)	13	Adults with a new episode of major depressive disorder between 4/2013-3/2015	Number and percentage of sample with any episode; Percentage of episodes with outcome (w/in group pre vs. post)	MDD episode	Ordinary Least Squares
Follow-up after Hospitalization for Mental Illness, within 7- and 30-days	13	Full sample	Number and percentage of sample with MI hospitalization; Number and percentage of MI hospitalizations with outcome (w/in group pre vs. post)	mental health hospital-discharge	Ordinary Least Squares

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	Statistical Modeling Strategy
Initiation treatment for alcohol or other drug abuse treatment w/in 14 days of episode; Engaged in >= 2 treatment services for alcohol or other drug abuse w/in 30 days of episode	13	Adults with a new alcohol or other drug abuse episode between 4/2013-3/2015	Number and percentage of sample with AODA episode; Number and percentage of AODA episodes *with outcome* (w/in group pre vs. post)	AODA episode	Ordinary Least Squares
Health Care Use, General					
Office-based visits	16	Full sample	By group monthly trends, probability of any use and volume of use; Mean annual use per subject w/in group pre v post	person-year	Two-Part Model Generalized Linear Model
Emergency department visits	16				
Inpatient admissions	16				
Prescription medications (probability only, not quantity)	16				
Potentially Preventable/Avoidable Health Care Use					
All-Cause Readmissions Rate	14	Full sample	Number and percentage of hospitalizations with a readmission (w/in group pre vs. post)	hospital-discharge	Ordinary Least Squares
Potentially Preventable Emergency Department Visits	14		Number and percentage of all ED(INP) visits that are potentially preventable w/in group pre vs. post	person-year	Two-Part Generalized Linear Model
Potentially Preventable Inpatient Admissions	14				
HEALTH CARE EXPENDITURES					
Health Care Use, General					
Office-based visits	16	Full sample	Mean annual expenditures per subject w/in group pre vs. post	person-year	Two-Part Model Generalized Linear Model
Emergency department visits	16				
Inpatient admissions	16				
Prescription meds	16				

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	Statistical Modeling Strategy
COMPOSITE MEASURES					
Outcomes/Cost					
Flu Vaccinations for Adults ages 18 to 64 (i.e., # of flu vaccines/cost of flu vaccines)	15	Full sample	Mean value of (outcome/cost) per subject w/in group pre vs. post	person-year	Ordinary Least Squares
Smoking cessation assistance (i.e., # of smoking cessation assistance visits/cost of smoking cessation assistance visits)	15				
Mammogram (i.e., # of mammograms/cost of mammograms)	15	Women ages 50 to 64			
HbA1c (i.e., # of HbA1c tests / cost of HbA1c tests)	15	Adults with a diabetes diagnosis in primary or secondary position on an outpatient, ED, or inpatient claim between 4/2013-3/2015			
Utilization/Cost					
Office-based visits (i.e., # of office visits/cost of office visits)	16	Full sample	Mean value of (utilization/cost) per subject w/in group pre vs. post	person-year	Ordinary Least Squares
Emergency department visits (i.e., # of ED visits/cost of ED visits)	16				
Inpatient admissions (# of inpatient admissions / cost of inpatient admissions)	16				

Table V.C.8. Outcomes Measures for Childless Adults, Analytic Samples and Modeling Strategy: Comparison B - Continuing and New Childless Adult Enrollees 7

Comparison B: Continuing and New Childless Adult enrollees					
	Evaluation Question	**Analytic Sample**	**Descriptive Statistics**	**Unit of Analysis for Regression Models**	**Statistical Modeling Strategy**
UTILIZATION					
Health-related					
Flu Vaccinations for Adults ages 18 to 64	13, 15	Full sample	Number and percentage of sample with outcome across groups	person	Ordinary Least Squares
Smoking cessation assistance	13, 15				
Mammogram	13, 15	Women ages 50 to 64		person	
HbA1c	13, 15	Adults with a diabetes diagnosis in primary or secondary position on an outpatient, ED, or inpatient claim between 4/2014-3/2015			
Antidepressant Medication Management for Major Depressive Disorder (MDD)	13	Adults with a new episode of major depressive disorder between 4/2014-3/2015	Number and percentage of sample with any episode across groups; Percentage of episodes with outcome across groups	MDD episode	Ordinary Least Squares
Follow-up after Hospitalization for Mental Illness, within 7- and 30-days	13	Full sample	Number and percentage of sample with MI hospitalization and outcome across groups	mental health hospital-discharge	Ordinary Least Squares

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	
Initiation treatment for alcohol or other drug abuse treatment w/in 14 days of episode; Engaged in >= 2 treatment services for alcohol or other drug abuse w/in 30 days of episode	13	Adults with a new alcohol or other drug abuse episode between 4/2014-3/2015	Number and percentage of sample with AODA episode across groups; Number and percentage of AODA episodes *with outcome* across groups	AODA episode	Ordinary Least Squares
Health Care Use, General					
Office-based visits	16	Full sample	By group monthly trends, probability of any use and volume of use; Mean annual use per subject across groups	person	Two-Part Model Generalized Linear Model
Emergency department visits	16				
Inpatient admissions	16				
Prescription medications (probability only, not quantity)	16				
Potentially Preventable/Avoidable Health Care Use					
All-Cause Readmissions Rate	14	Full Sample	Number and percentage of hospitalizations with a readmission across groups	hospital-discharge	Ordinary Least Squares
Potentially Preventable Emergency Department Visits	14	Full sample	Number and percentage of all ED(INP) visits that are potentially preventable across groups	person	Two-Part Generalized Linear Model
Potentially Preventable Inpatient Admissions	14				

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	Statistical Modeling Strategy
HEALTH CARE EXPENDITURES					
Health Care Use, General					
Office-based visits	16	Full Sample	Mean expenditures per year across groups	person	Two-Part Model Generalized Linear Model
Emergency department visits	16				
Inpatient admissions	16				
Prescription medications	16				
COMPOSITE MEASURES					
Outcomes/Cost					
Flu Vaccinations for Adults ages 18 to 64 (i.e., # of flu vaccines/cost of flu vaccines)	15	Full Sample	Mean value of (outcome/cost) per subject w/in group pre vs. post	person	Ordinary Least Squares
Smoking cessation assistance (i.e., # of smoking cessation assistance visits/cost of smoking cessation assistance visits)	15				
Mammogram (i.e., # of mammograms/cost of mammograms)	15	Women ages 50 to 64			
HbA1c (i.e., # of HbA1c tests / cost of HbA1c tests)	15	Adults with a diabetes diagnosis in primary or secondary position on an outpatient, ED, or inpatient claim between 4/2014-3/2015			

	Evaluation Question	Analytic Sample	Descriptive Statistics	Unit of Analysis for Regression Models	Statistical Modeling Strategy
Utilization/Cost					
Office-based visits (i.e., # of office visits/cost of office visits)	16	Full sample	Mean value of (utilization/cost) per subject w/in group pre vs. post	person	Ordinary Least Squares
Emergency department visits (i.e., # of ED visits/cost of ED visits)	16				
Inpatient admissions (# of inpatient admissions / cost of inpatient admissions)	16				

From the Medicaid beneficiary survey, we assess multiple measures that assess health and health care access, with results shown in Tables V.C.9 and C.10.

Statistical Analyses

To implement the first comparison of interest, outcomes for childless adults and parents before and after implementation of the Standard plan, we first estimated the unadjusted monthly trends for the two groups for total health care use in each major service category to provide an overview of changes over time in general health care use, and to assess the plausibility of the parallel trends assumption. Additionally, for each outcome we compare the unadjusted mean across study groups for the relevant time period. That is, for the difference-in-difference analysis we compare unadjusted mean in the year before and the year after implementation of the Standard Plan. For the post-only comparison of continuing and new CLA beneficiaries, we compare the unadjusted mean during the year after implementation of the Standard Plan.

The empirical model that we use to implement the difference-in-differences design is described below.

$$Y = \beta_1 TG + \beta_3 TT + \gamma_1 (TG * TT) + \varphi X + \varepsilon$$

Y is an outcome of interest, TG is an indicator for membership in the treated group (childless adults), and TT is an indicator for the post-period. Observations are at the person-year level. We allow X to stand for control variables and ε to represent a random error term. The treatment effect of interest is the coefficient

on the interaction term, γ_1. Standard errors are adjusted for multiple observations within person over time.

The empirical model that we will use to implement Comparison B**,** the comparison of post-waiver outcomes for new and continuing CLAs, for evaluation questions 13-17 is noted below.

$$Y = \beta_1 CCLA + \varphi X + \varepsilon$$

Y is an outcome of interest, $CCLA$ is an indicator that takes on a value of 1 for continuing CLAs that transitioned from the Core plan and a value of 0 for new enrollees. Observations are at the person level. We allow X to stand for control variables, and ε represents a random error term. The coefficient of interest, β_1, represents the relative difference in the outcome for continuing CLA enrollees compared to new CLAs.

For the difference-in-difference and post-only analyses described above, we use both ordinary least squares and two-part Poisson log regression models depending on the outcome (see Tables V.C.7 and C8). The two-part model accommodates the large proportion of zero values for many outcomes by first modeling the probability of any use, Pr ($y_i > 0 | x_i$), with logit regression. The second part of the model then predicts the mean use conditional on any use, E ($y_i | x_i, y_i > 0$), using a Poisson log generalized linear model (GLM). The overall predicted use, our outcome of interest, is obtained by multiplying the two-parts of the model, $E(y_i | x_i) = Pr(y_i > 0 | x_i)\ E(y_i | y > 0, x_i)$. We report the post-estimation average marginal effects to facilitate interpretation.

Analyses of survey data to compare self-reported health and health care access for beneficiaries under the Core and Standard plans include tests of equivalence across the 2014 and 2016 survey respondents, and separately across the 2014 and 2018 respondents. We use chi-square and t-tests for categorical, and binary and continuous measures respectively. We implemented both unweighted and weighted analyses accounting for sample construction. The results were comparable, so we present only unweighted results here.

Findings and Conclusions. We present findings for each evaluation question beginning with the presentation of results for the comparison of continuously enrolled CLAs and parents (i.e., Comparison A), followed by the results for the comparison between continuing and new CLA enrollees (i.e., Comparison B), and the survey analyses where appropriate. Unless noted, all between-group differences presented are statistically different from zero using a p-value of < 0.05.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?

To address this question, we evaluate claims-based health-related measures as shown in Tables V.C.7 and C8, and multiple measures of self-reported health from the WI Medicaid Beneficiary Survey.

Table V.C.9 presents the findings from the difference-in-differences analyses comparing outcomes for continuously enrolled CLAs and parent and caretaker enrollees from April 2013 – March 2015. These analyses compare outcomes before and after enrollment in the Standard Plan for childless adults relative to the change in outcomes over the same time periods in the comparison group of parent and caretaker beneficiaries. For each outcome the following results are provided: the mean value or probability for childless adults and parents during the year before and after implementation of the Standard Plan; the difference-in-differences estimate; and the magnitude of that estimate expressed as a percentage of the baseline value for childless adults.

Childless adults experienced increases in the likelihood of receiving health-related care in several areas. Specifically, In the year before implementation of the waiver, approximately 32% of CLAs and 20% of parents received a flu shot respectively. Relative to parents, CLAs experienced an increase of 10% in the likelihood of receiving a flu shot after implementation of the waiver. The probability of receiving a visit for smoking cessation assistance increased by 0.01 percentage points for childless adults compared to parents, a relative increase of 14%. The likelihood of receiving an HbA1c test among adults with a diagnosis of diabetes increased among CLAs by 3% compared to parents after implementation of the waiver.

Approximately 55% of age-eligible women enrolled as CLAs and parents received a mammogram during the year before implementation of the Standard plan. The likelihood of receiving this preventive health care service declined by 10% within the CLA group relative to parents after the transition to the Standard plan. There was no differential change in the likelihood of receiving antidepressant medication management for individuals with a diagnosis of depression among childless adults relative to parents after implementation of the Standard plan. The descriptive results for outpatient follow-up after a hospitalization for a mental illness are provided; however, we did not estimate a regression model for these outcomes because of the extremely small number of observations. A table of frequencies for the outcomes presented in this table is found in Attachment H.

We observed substantial increases in the likelihood of initiation and engagement in treatment for alcohol and other drug use (AODA) disorders among CLAs relative to parents; however, we urge caution in the interpretation of this outcome. It reflects both greater initiation and engagement in treatment among CLAs in the post-period relative to the pre-period, and a decline in the absolute number of index AODA episodes observed for parents in the post-period, from 2,547 in the pre-period to 1,736 in the post-

period (as shown in Attachment H). The denominator for this measure is an index AODA episode, a health care event with an AODA diagnosis that is preceded by a "clean" period, one in which there is no AODA-related care use. Parents were more likely to have an index AODA episode observed in the pre-period, perhaps associated with the more generous coverage for behavioral health services available under the Standard plan. Parents that continued to receive treatment for an index episode identified in the pre-period thus did not contribute to the denominator in the post-period because of the absence of a "clean" period.

Table V.C.10 presents regression findings for our second comparison of interest, Comparison B, that compares the post-waiver health-related care use for continuing and newly enrolled CLA beneficiaries. Continuing CLAs were 9.6 percentage points more likely to receive a flu shot in the year following implementation of the Standard plan compared to newly enrolled CLAs. They were 19.4 percentage points more likely to receive a mammogram and 0.1 percentage points less likely to receive a smoking cessation visit. There were no notable differences between groups in the use mental health and substance use related services in the 12-months after implementation of the Standard plan.

Table V.C.11 presents a comparison of CLA survey respondents' self-reported health outcomes at three time points, 2014, 2016, and 2018. As described above, the 2014 sample was constructed from Core plan enrollees while the 2016 and 2018 samples were drawn from childless adult Standard plan enrollees. We test the equivalence of unadjusted outcomes in 2016 and 2018 relative to 2014, a comparison between Standard plan enrollees from two time points relative to a sample drawn from Core plan enrollees.

Across all three respondent samples, approximately 25-30% report that their health is excellent or very good with no significant differences over time in that outcome. From 2014 to 2018, there was a significant increase, from 9.5% to 17%, of CLA beneficiaries who reported that their health had improved in the last 12 months.

A relatively large fraction of respondents reported having 2 or more chronic health conditions; however, there was a shift downward over time. Approximately 51% reported having 2 or more chronic conditions in 2014 compared to 44% in 2018. There was a significant increase in the percentage of respondents who reported having a physical, mental, or emotional condition that limits their work at a job; that figure increased from 22% in 2014 to 41.9% and 38.0% in 2016 and 2018 respectively.

The 2016 and 2018 surveys included a two-question screener for depression, the Patient Health Questionnaire-2. A score of 3 or higher indicates a positive screen for depression. Approximately 42% and 37% of childless adult beneficiary respondents screened positive for depression in 2016 and 2018 respectively. The 2018 survey included questions to estimate prevalence of illegal drug use. Approximately 5% of respondents indicated that in the last 30 days they had used an illegal drug or a prescription medication for non-medical reasons.

Table V.C.9. Average change in health-related care use for childless adults relative to parents one year before and one years after implementation of Standard Medicaid coverage for childless adults

Outcome	N	Unit of Analysis	Childless Adults, Mean (SE)				Parents, Mean (SE)				Difference-in-Differences Estimate		Percentage Change Relative to Baseline for Childless Adults
			i Pre		ii Post		iii Pre		iv Post		Outcome (95% Confidence Interval)	*P* Value	
ANY USE													
Flu Vaccine	153,138	person-year	0.321	(0.005)	0.340	(0.005)	0.202	(0.002)	0.192	(0.002)	0.033 (0.022, 0.044)	<0.01	10%
Smoking Cessation Visit	153,138	person-year	0.073	(0.003)	0.079	(0.003)	0.072	(0.001)	0.069	(0.001)	0.010 (0.002, 0.018)	<0.05	14%
Mammogram	23,778	person-year	0.553	(0.011)	0.530	(0.011)	0.545	(0.005)	0.577	(0.005)	-0.055 (-0.086, -0.024)	<0.01	-10%
Hemoglobin A1c testing	11,776	person-year	0.804	(0.011)	0.887	(0.009)	0.711	(0.007)	0.775	(0.006)	0.021 (0.004, 0.037)	<0.05	3%
Antidepressant Medication	1,109	person-episode	0.659	(0.075)	0.613	(0.057)	0.560	(0.231)	0.566	(0.022)	-0.037 (-0.224, 0.150)	0.697	-6%
Follow-up after hospitalization for mental illness after 7 days	793	hospital discharge for mental illness	0.000	(0.000)	0.035	(0.024)	0.413	(0.039)	0.464	(0.058)	NA	NA	NA
Follow-up after hospitalization for mental illness after 30 days	793	hospital discharge for mental illness	0.000	(0.000)	0.086	(0.045)	1.491	(0.125)	1.492	(0.200)	NA	NA	NA
Initiation treatment for alcohol or other drug abuse treatment w/in 14 days of episode	5,372	person-episode	0.120	(0.015)	0.330	(0.019)	0.316	(0.009)	0.279	(0.021)	0.244 (0.189, 0.299)	<0.01	204%
Engaged in >= 2 treatment services for alcohol or other drug abuse w/in 30 days of episode	5,372	person-episode	0.077	(0.013)	0.232	(0.017)	0.250	(0.009)	0.213	(0.010)	0.192 (0.143, 0.242)	<0.01	250%

Note: Authors' estimates using Wisconsin Medicaid health care claims data and Ordinary Least Squares models. All models include age, sex, race, hispanic ethnicity, education, and residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for continuing childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level. Outcomes with "NA" indicated had insufficient observations to calculate a meaningful difference-in-difference estimate.

Table V.C.10. Average difference in annual health-related care use for new childless adults relative to continuing childless adults during the year after implementation of Standard Medicaid coverage for childless adults

							(III)	
Outcome	**N**	**Unit of Analysis**	**New Childless Adults, Mean (SE)** April 2014-March 2015		**Continuing Childless Adults, Mean (SE)** April 2014-March 2015		**Estimated Difference in Outcome for Continuing CLAs relative to new CLAs**	
							Outcome (95% Confidence Interval)	*P* Value
Flu Vaccine	73,274	person	0.204	(0.002)	0.336	(0.005)	0.096 (0.086, 0.107)	<0.01
Smoking Cessation Visit	73,274	person	0.075	(0.001)	0.077	(0.003)	-0.009 (-0.015, -0.002)	<0.01
Mammogram	10,488	person	0.480	(0.005)	0.674	(0.011)	0.194 (0.170, 0.219)	<0.01
Hemoglobin A1c testing	6,449	person	0.906	(0.004)	0.902	(0.008)	-0.011 (-0.028, 0.007)	0.233
Antidepressant Medication Management	849	person-episode	0.541	(0.019)	0.630	(0.039)	0.071 (-0.017, 0.158)	0.113
Follow-up after hospitalization for Mental Illness after 7 days	992	hospital discharge for mental illness	0.079	(0.016)	0.096	(0.071)	-0.003 (-0.144, 0.139)	0.971
Follow-up after hospitalization for Mental Illness after 30 days	992	hospital discharge for mental illness	0.262	(0.041)	0.260	(0.194)	-0.075 (-0.470, 0.320)	0.709
Initiation of treatment for alcohol or other drug abuse treatment w/in 14 days of episode	8,214	person-episode	0.386	(0.006)	0.338	(0.017)	-0.032 (-0.070, 0.005)	<0.1
Engaged in >=2 treatment services for alcohol or other drug abuse w/in 30 days of episode	8,214	person-episode	0.295	(0.005)	0.244	(0.015)	-0.031 (-0.066, 0.004)	<0.1

Note: Authors' estimates using Wisconsin Medicaid health care claims data and Ordinary Least Squares models. All models include age, sex, race, hispanic ethniciy, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

Table V.C.11. Wisconsin Medicaid Beneficiary Survey Results: Health Outcomes among Childless Adult Beneficiaries, 2014-2018

Outcome Measure	%/Mean (1) 2014	(2) 2016	(3) 2018	2014 v. 2016 p-value	2014 v.2018 p-value
	N=192	N=278	N=265		
In general, would you say your health is				0.360	0.375
Excellent, Very good	24.4%	27.8%	29.9%		
Good	42.8%	34.9%	35.2%		
Fair, Poor	32.9%	37.3%	33.6%		
Missing	0.0%	7.1%	1.3%		
How has your health changed in the last 12 months?				0.668	<0.05
Better	9.5%	10.9%	17.0%		
Same	71.7%	68.3%	56.2%		
Worse	17.0%	20.5%	24.5%		
Missing	1.9%	0.2%	2.3%		
Number of reported health conditions*				0.306	<0.05
No conditions	28.4%	23.5%	26.9%		
One condition	17.7%	19.1%	27.0%		
Two or three conditions	18.4%	27.4%	23.1%		
At least 4 conditions	32.9%	29.1%	20.5%		
Missing	2.6%	1.0%	2.5%		
Does a physical, mental, or emotional condition limits your ability to work at job?				<0.01	<0.01
Yes	22.0%	41.9%	38.0%		
No	71.1%	55.2%	58.2%		
Missing	6.9%	3.0%	3.8%		
Over the past two weeks, how often have you been bothered by having little interest or pleasure in doing things?				NA	NA
Less than half the days	NA	63.0%	66.9%		
More than half the days	NA	25.5%	24.3%		
Missing	NA	11.5%	8.8%		
Over the past two weeks, how often have you been bothered by feeling down, depressed, or hopeless?				NA	NA
Less than half the days	NA	63.0%	66.9%		
More than half the days	NA	25.5%	24.3%		
Missing	NA	11.5%	8.8%		

Outcome Measure	%/Mean			2014 v. 2016 p-value	2014 v.2018 p-value
	(1)	(2)	(3)		
	2014	2016	2018		
Patient Health Questionnaire 2, Depression Screener				NA	NA
<3	NA	57.6%	63.0%		
>=3	NA	42.4%	37.0%		
In the last 30 days, have you used an illegal drug or used a prescription medication for non-medical reasons?				NA	NA
Yes	NA	NA	5.2%		
No	NA	NA	91.7%		
Missing	NA	NA	3.2%		
Note: Authors' unweighted estimates using the Wisconsin Medicaid Beneficiary Surveys. Chi-square tests are used to test equivalence of categorical outcomes between cross-sectional samples of childless adult respondents. (*) Original question states "Have you ever been told by a doctor or other health care provider that you have any of the health conditions listed below: Diabetes or sugar diabetes, Asthma, High blood pressure, Emphysema or chronic bronchitis, Heart disease, angina, or heart attack, Congestive heart failure, Depression or Anxiety, High cholesterol, Kidney problems, kidney disease, or dialysis, A stroke, Alcoholism or drug addiction, Cancer, except for skin cancer."					

Conclusions and Limitations. CLAs experienced relatively greater increases in some but not all health-related care use outcomes compared to parents after implementation of the Standard Plan including the likelihood of a flu shot, a visit for smoking cessation assistance, and an HbA1c test (among adults with a diagnosis of diabetes). The second comparison of health-related care use outcomes assesses the difference in post-waiver health care use between newly enrolled CLAs relative to continuing CLA enrollees. Continuing CLAs were relatively more likely to receive a flu shot and mammogram than new CLAs but less likely to have a smoking cessation visit.

We note that this post-only design does not allow us to distinguish between several potential explanations for these outcome differences. These explanations include a more established relationship with health care providers as a function of longer-term enrollment among the continuing CLAs that might explain higher rates for some health-promoting care use, differences in unobserved characteristics between the two groups that are associated with health-related care use, and/or a change in care use among continuing CLAs in response to the more generous coverage provided through the Standard plan.

The descriptive findings from the Wisconsin Medicaid beneficiary survey provide contextual information about the health status of the CLA beneficiary population over time. There were some positive changes in self-reported health status over time, including overall health and the number of chronic conditions reported; however, more generally the CLA beneficiary population has a relatively high prevalence of indicators of poor health. Notably 38% of CLA in 2018 reported having a condition that limits their ability to work, and over 40% screened positive for depression. This cross-sectional analysis does not support causal attribution of these differences in health status across surveys to the implementation of the

Standard plan. Differences in the characteristic of individuals that enrolled in the Core plan and newly enrolled in the Standard plan may explain the difference in health outcomes. Nonetheless, understanding the health profile of the CLA is relevant to the design and implementation of future WI Medicaid policy and programmatic changes.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?

To address this question, we evaluate three measures shown in Tables V.C.2 and C3: readmission within 30-days of a hospital discharge, a potentially preventable emergency department visit and a potentially preventable hospitalization. Additionally, we assess multiple self-reported measures of health care access from the WI Medicaid Beneficiary Survey.

Table V.C.12 presents the findings from the difference-in-differences analysis comparing outcomes for continuously enrolled CLAs and parents from April 2013 – March 2015. During the year before implementation of the Standard plan for CLAs, approximately 9.3% and 7.7% of hospitalizations were followed by a readmission within 30-days among CLAs and parents respectively. In the post period, the likelihood of readmission increased by 3 percentage points among CLAs relative to parents, a 32% relative increase ($p < 0.10$). Both CLAs and parents experienced an increase in the likelihood of a potentially preventable ED visit from the year before implementation of the Standard plan to the following year. That increase was 16% greater among CLAs than parents. There was no statistically significant difference in the change in likelihood of potentially preventable hospitalizations among CLAs and parents after the transition to the Standard plan.

Table V.C.13 shows the results for the comparison of potentially preventable care use in the one-year following implementation of the Standard plan between continuing and new CLAs. The probability of a readmission within 30-days is similar across both groups; approximately 12-13% of hospitalizations result in a readmission within 30-days. Continuing CLAs are about 6 percentage points less likely to have a potentially preventable emergency department visit than new CLAs. There is no marked difference in the likelihood of potentially preventable hospitalization between the two groups.

In V.C.14, the findings from analysis of the Wisconsin Medicaid Beneficiary Survey are presented. The survey includes a variety of health care access measures that aim to provide insight into barriers to care, and factors that may influence the use of unnecessary care.

Table V.C.12. Average change in potentially preventable health care use for childless adults relative to parents one year before and one year after implementation of Standard Medicaid coverage for childless adults

Outcome	Unit of Analysis	N	Childless Adults, Mean (SE)				Parents, Mean (SE)				Difference-in-Differences Estimate		Percentage Change Relative to Baseline for Childless Adults
			i		ii		iii		iv				
			Pre		Post		Pre		Post		Outcome (95% Confidence Interval)	*P* Value	
ANY USE											**Probability of Event**		
Hospital Readmission within 30-days, All Cause	hospital discharge	14,575	0.093	(0.012)	0.127	(0.011)	0.077	(0.004)	0.089	(0.004)	0.030 (-0.004, 0.064)	<0.1	32%
QUANTITY OF USE											**Number of Vists or Hospitalizations**		
Potentially Preventable ED Visit	person-year	153,138	0.288	(0.010)	0.317	(0.011)	0.514	(0.004)	0.522	(0.005)	0.045 (0.004, 0.087)	<0.05	16%
Potentially Preventable Hospitalization	person-year	153,138	0.009	(0.001)	0.011	(0.002)	0.007	(0.0005)	0.007	(0.0005)	0.002 (-0.002, 0.006)	0.377	22%

Note: Authors' estimates using Wisconsin Medicaid health care claims data, Ordinary Least Squares for hospital readmission and two-part generalized linear models for preventable ED visits and hospitalizations.All models include age, sex, race, hispanic ethnicity, education, and residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

Table V.C.13. Average difference in potentially preventable health care use for continuing childless adults relative to new childless adults during the year after implementation of Standard Medicaid coverage for childless adults

							(III)	
Outcome	Unit of Analysis	N	New Childless Adults, Mean (SE)		Continuing Childless Adults, Mean (SE)		Estimated Difference in Outcome for Continuing CLAs relative to new CLAs	
			April 2014-March 2015		April 2014-March 2015		Outcome (95% Confidence Interval)	*P* Value
ANY USE							**Probablity of Event**	
Hospital Readmission within 30-days, All Cause	hospital discharge	9,391	0.124	(0.004)	0.135	(0.010)	0.012 (-0.019, 0.042)	0.443
QUANTITY OF USE							**Number of Vists or Hospitalizations**	
Potentially Preventable ED Visit	person	73,274	0.458	(0.005)	0.334	(0.011)	-0.059 (-0.089, -0.029)	<0.01
Potentially Preventable Hospitalization	person	73,274	0.011	(0.001)	0.011	(0.002)	-0.001 (-0.005, 0.003)	0.678

Note: Authors' estimates using Wisconsin Medicaid health care claims data, Ordinary Least Squares models for hospital readmission and two-part generalized linear models for preventable ED and hospitalizations. All models include age, sex, race, hispanic ethniciy, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

Table V.C.14. Wisconsin Medicaid Beneficiary Survey Results: Health Care Access among Childless Adult Beneficiaries, 2014-2018

Outcome Measure	%/Mean			2014 v.2016 p-value	2014 v.2018 p-value
	(1)	(2)	(3)		
	2014	2016	2018		
	N=192	N=278	N=265		
Got all care needed in the past 12 months?				<0.01	<0.01
Yes	47.0%	76.4%	68.3%		
No	24.7%	12.7%	21.9%		
Did not need	0.6%	9.4%	8.7%		
Missing	27.6%	1.5%	1.1%		
Needed a prescription in the last 12 months?				0.618	<0.01
Yes	76.7%	79.1%	68.7%		
No	23.1%	20.6%	31.3%		
Missing	0.3%	0.3%	0.0%		
Got all needed prescription in the last 12 months (among those that needed a prescription)?				<0.01	0.446
Yes	70.2%	88.0%	72.6%		
No	29.4%	11.4%	24.0%		
Missing	0.3%	0.7%	3.4%		
N	152	226	187		
Is there a place you usually get health care?				0.993	<0.01
Yes	73.1%	77.5%	61.4%		
No	19.1%	20.2%	38.6%		
Missing	7.9%	2.3%	0.0%		
Where do you usually get health care (among those who have a place they usually get health care)?				<0.05	<0.01
Doctor's office, health center, clinic	83.6%	80.3%	85.5%		
ER, urgent care	3.4%	5.8%	8.1%		
No usual place, don't know	9.3%	4.1%	0.8%		
Other	3.7%	5.2%	3.7%		
Missing	0.0%	4.6%	1.9%		
N	146	220	168		

Outcome Measure	%/Mean				
	(1)	(2)	(3)		
	2014	2016	2018	2014 v.2016 p-value	2014 v.2018 p-value
How long has it been since last visit to dentist?				NA	NA
Less than 12 months	NA	43.6%	39.7%		
B/w 1 and 5 years	NA	35.3%	33.7%		
More than 5 years	NA	18.6%	20.8%		
Never visited	NA	1.0%	0.6%		
Missing	NA	1.4%	5.3%		
In the last 12 months, how many times did you visit a doctor's office, hospital, or clinic?				<0.05	0.198
No visits	25.9%	15.5%	19.8%		
More than one visit	71.9%	83.9%	78.9%		
Missing	2.2%	0.6%	1.3%		
In the last 12 months, how many times did you go to an emergency room?				<0.05	0.234
0 times	72.9%	57.2%	63.6%		
1 time	11.2%	24.3%	17.0%		
2 times	8.3%	8.4%	6.4%		
3 or more times	7.5%	10.1%	11.8%		
Missing	0.0%	0.0%	1.3%		
In the last 12 months, how many different times were you a patient in a hospital for at least one overnight?				NA	NA
One time	NA	12.6%	11.3%		
More than one time	NA	5.0%	4.0%		
Missing	NA	82.4%	84.7%		
Overall, how would you rate the quality of the medical care received in the last 12 months?				<0.01	<0.1
Excellent, Very good	46.7%	59.6%	52.8%		
Good	16.6%	22.9%	22.4%		
Fair, Poor	18.9%	10.2%	12.2%		
Did not have	17.8%	7.1%	10.9%		
Missing	0.0%	0.2%	1.7%		
In the past 12 months, did you have problems paying any medical bills?				NA	NA
No	NA	75.4%	65.3%		
Yes	NA	22.9%	32.8%		
Missing	NA	1.7%	1.9%		

Outcome Measure	%/Mean			2014 v.2016 p-value	2014 v.2018 p-value
	(1)	(2)	(3)		
	2014	2016	2018		
In the past 12 months, did you need any of the following at any time but not get it because of how much it cost?				NA	NA
Prescriptions	NA	3.7%	2.0%		
Medical care	NA	2.1%	0.9%		
General doctor	NA	0.3%	1.1%		
Specialist	NA	1.3%	1.9%		
Tests/treatment	NA	3.5%	6.0%		
Dental care	NA	15.5%	10.4%		
Mental health care	NA	2.8%	6.3%		
Eyeglasses/Vision	NA	22.1%	27.3%		
Missing	NA	48.7%	44.1%		
In the last 12 months, has a doctor, clinic, or medical service refused to treat you because you owed money to them?				0.943	0.519
No	91.7%	92.0%	92.8%		
Yes	5.0%	4.8%	3.4%		
Missing	3.3%	3.2%	3.8%		
Currently owe money for medical expenses?				<0.05	<0.05
No	51.6%	64.5%	64.8%		
Yes	47.8%	34.8%	33.2%		
Missing	0.6%	0.7%	2.0%		
Money owed for medical expenses (among those who currently owe money)?				0.241	<0.01
<=2000	64.7%	49.7%	40.8%		
2000-10000	22.9%	23.1%	33.8%		
>10000	2.9%	7.7%	13.7%		
Missing	9.5%	19.5%	11.7%		
N	92	98	96		

Notes: Authors' unweighted estimates using the Wisconsin Medicaid Beneficiary Surveys. Chi-square tests are used to test equivalence of categorical outcomes between cross-sectional samples of childless adult respondents. Unless indicated, the sample size for each question is the total sample N identified at the top of columns 1-3.

In 2014, 47% of respondents reported receiving all the care that they needed. That figure was higher in both 2016 and 2018, at 76% and 68% respectively. Among CLAs that reported needing a prescription in the past 12 months, 70% reported getting all needed in 2014, increasing to 88% in 2016. That percentage declined in 2018 but was not statistically different from the 2014 value. In 2014, 73% of CLAs reported that they had a place where they usually got care, and among them 84% reported that it was a

doctor's office, health center or clinic. In 2018, 61% reported that they had a place where they usually got care of whom 86% reported that it was a doctor's office, health center or clinic.

Considering measures of health care use, in 2014 approximately 73% reported zero visits to the emergency room in the past 12 months compared to 57% in 2016. There was no significant difference in the percentage reporting no emergency room visits in 2014 and 2018. The fraction of respondents that rated the medical care received in the past 12 months as excellent or very good increased from 47% in 2014 to 60% in 2016; the difference between 2014 in this measure and the 2018 value (53%) was not statistically significant.

Financial barriers to care may impede appropriate use of primary or preventive care services leading to downstream unnecessary care use. Several survey measures attempt to capture these potential barriers. Across all three surveys, 3-5% of respondents indicated that they had been refused treatment because of money owed to a provider. In 2014, 48% of CLA respondents reported that they currently owed money for medical expenses. That figure decreased to 35% and 33% in 2016 and 2018 respectively.

Several measures of health care use and access were added to the survey in 2016. While we do not have a comparison among Core plan enrollees, these descriptive measures provide additional contextual information about the access barriers that Standard plan CLA beneficiaries face. In 2016 and 2018 respectively, approximately 19% and 21% of respondents indicated that it had been more than 5 years since they had seen a dentist. About 18% of CLA respondents in 2016 and 16% in 2018 reported having had one or more inpatient admissions in the past 12 months. Across those two years, 23-33% of respondents indicated that they had problems paying medical bills in the past 12 months. When asked about specific services that were needed but not obtained due to cost, respondents most commonly reported eyeglasses/vision, dental care, and tests/treatment.

Conclusion and Limitations. Following transition to the Standard plan, continuously enrolled CLAs experienced no difference or a slightly increased probability of potentially preventable acute care use compared to continuously enrolled parents. By contrast, when comparing continuing CLA enrollees to newly enrolled CLA beneficiaries, the likelihood of potentially preventable care use was either similar or lower. The relatively lower likelihood of a potentially preventable ED visit for continuing CLAs compared to those who were newly enrolled, for example, may signal better connections to primary care or reflect differences in the preferences and health needs of the continuing and new CLA enrollees. The design does not allow us to determine which of these explanations may hold.

The findings from the WI Medicaid beneficiary survey indicate change over time in multiple measures of health care access– including receipt of all care needed, having a usual place of care, and owing money for medical expenses - however the changes are not uniformly positive or negative. The difference in

findings between the 2014 Core plan sample, and 2016 and 2018 Standard plan samples may result from differences between the samples in characteristics that are correlated with health care use (e.g., age, educational achievement, and history of enrollment in Medicaid, etc.). This cross-sectional analysis does not allow us to disentangle these competing explanations for the observed differences over time.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase the cost-effectiveness (outcomes/cost) of Medicaid services?

Evaluation question 13 examined the relative change in health-related care use outcomes. The focus of the current question is to assess the change in outcomes/cost after implementation of the Standard plan. We note that the measure, outcomes/cost, is not a typical measure of "cost-effectiveness," which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Consistent with the WI DHS' specification of this question, we evaluate the association between implementation of the Standard plan and outcomes/cost. The four outcomes of interest are identified in Table V.C.7. The numerator for each measure is the quantity observed per person-year, and the denominator is the Medicaid paid amount for that quantity per person-year, referred to as cost.

Table V.C.15 presents the results of the difference-in-differences analyses. There are two statistically significant differences between CLAs and parents in the change in outcomes/cost after implementation of the Standard plan. The average number of mammograms/cost of mammograms declined by 21% relative to parents and caretakers after implementation of the Standard Plan. There was a substantial relative increase in the average number of HbA1c tests/cost of HbA1c tests among CLAs relative to parents; however, this result is driven by a small number of low-cost HbA1c tests.

The results for the second comparison of interest, between continuing and new CLAs, are presented in Table V.C.16. The ratio of flu vaccine/cost of flu vaccine is lower by -0.0012 for continuing CLAs compared to new CLAs. There are no other statistically significant differences in the outcomes/cost ratios between the two study groups.

We note that the ratio of outcomes/cost does not have a ready interpretation or provide insight into the potential cost-effectiveness of standard plan coverage relative to core plan coverage for CLAs.

Table V.C.15. Average change in the ratio of health care outcomes per person-year to costs per person-year for childless adults relative to parents one year before and one year after implementation of Standard Medicaid coverage for childless adults

											(IV)
Outcome/Cost	**Childless adults, Mean (SE)** N = 15,020 person-years				**Parents, Mean (SE)** N = 138,130 person-years				**Difference-in-Differences Estimate**		**Percentage Change Relative to Baseline for Childless Adults**
	i Pre		ii Post		iii Pre		iv Post		Outcome (95% Confidence Interval)	*P* Value	
HEALTH RELATED HEALTH CARE USE											
Flu Vaccine / Cost	0.057	(0.001)	0.047	(0.0004)	0.058	(0.001)	0.048	(0.0003)	0.0009 (-0.0012, -0.0030)	0.412	2%
Mammogram / Cost	0.057	(0.003)	0.043	(0.002)	0.050	(0.002)	0.048	(0.002)	-0.012 (-0.021, -0.003)	<0.01	-21%
Smoking Cessation Visit / Cost	0.018	(0.001)	0.025	(0.006)	0.044	(0.024)	0.144	(0.055)	-0.093 (-0.193, 0.006)	<0.1	-528%
Hemoglobin A1c testing / Cost	0.074	(0.001)	0.079	(0.001)	0.490	(0.128)	0.079	(0.001)	0.419 (0.165, 0.673)	<0.01	566%

Note: Authors' estimates using Wisconsin Medicaid health care claims data and Ordinary Least Squares. The unit of analysis is the person-year, and all models include age, sex, race, hispanic ethnicity, education, and residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

Table V.C.16. Average difference in ratio of health care outcomes per person to costs per person for continuing childless adults relative to new childless adults during the year after implementation of Standard Medicaid coverage for childless adults

					(III)	
	New Childless adults, N = 64,589		**Continuing Childless adults,** N = 8,685		**Estimated Difference for Continuing CLAs relative to new**	
Outcome/Cost	April 2014-March 2015		April 2014-March 2015		Outcome (95% Confidence Interval)	*P* Value
HEALTH RELATED HEALTH CARE USE						
Flu Vaccine	0.0480	(0.0002)	0.0477	(0.0006)	-0.0012 (-0.002, 0.003)	<0.01
Mammogram	0.4159	(0.0073)	0.0166	(0.0049)	-0.0003 (-0.005, 0.004)	0.894
Smoking cessation visit	0.0190	(0.0002)	0.0232	(0.0039)	0.005 (-0.005, 0.014)	0.323
Hemoglobin A1c testing	0.0774	(0.0003)	0.0784	(0.0006)	0.0017 (-0.00001, 0.003)	<0.1

Note: Authors' estimates using Wisconsin Medicaid health care claims data and Ordinary Least Squares. All models include age, sex, race, hispanic ethnicity, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare beneficiaries increase the cost-effectiveness (utilization/cost) of Medicaid services?

Analogous to Question 15, the focus of the current question is to assess the change in utilization/cost after implementation of the Standard plan; it is not a typical measure of "cost-effectiveness," which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Before presenting findings for the specified ratio, utilization/cost, we provide analyses of utilization and cost separately across the four major health care service categories. These analyses directly identify change in health care resource use over time by type of service.

The first set of results concerns the comparison between continuously enrolled CLAs and continuously enrolled parents. Figures V.C.1- C.7 display the monthly trends in the use of health care for outpatient visits, emergency department visits, inpatient admissions, and prescription medications from April 2013 – March 2015. The vertical line indicates the first month of the waiver's implementation, April 2014. The range of values included on the Y-axes differ across outcome categories to accommodate the variation in the range inherent in the outcomes themselves.

Figures V.C.1 and C.2 show the probability and mean number of outpatient visits increased over time for CLAs relative to parents and caretakers; the increase coincides with the transition to the Standard plan in April 2014. This general pattern repeats in the emergency department visits, inpatient admissions, and prescription medication claims, depicted in Figures V.C.3.-C.7.

Table V.C.17 presents the difference-in-differences regression analysis findings for health care use within the four major service categories. Consistent with the descriptive trends shown in Figures V.C.1-C.7, health care use increased following transition to the Standard plan among CLA beneficiaries relative to parents and caretakers continuously enrolled in the Standard plan. On average, and relative to parents, the number of outpatient visits increased by 2.7 per year or 25%, the number of ED visits increased by 0.16 per year or 21%, and the number of inpatient admissions increased among CLAs by 0.04 per year or 45%. The likelihood of having a prescription medication claim in the year increased by 4% among CLAs relative to parents and caretakers.

Table V.C.17. Average change in annual health care use for childless adults relative to parents one year before and one year after implementation of Standard Medicaid coverage for childless adults

											(IV)
Outcome	**Childless adults, Mean (SE)** N = 15,020 person-years				**Parents, Mean (SE)** N = 138,130 person-years				**Difference-in-Differences Estimate**		**Percentage Change Relative to Baseline for Childless Adults**
	i Pre		ii Post		iii Pre		iv Post		Outcome (95% Confidence Interval)	*P* Value	
QUANTITY OF USE									**Number of Events**		
Outpatient Visit	10.661	(0.157)	13.179	(0.246)	12.145	(0.104)	12.191	(0.105)	2.704 (2.204, 3.204)	<0.01	25%
Emergency Department Visit	0.775	(0.025)	0.878	(0.029)	1.105	(0.008)	1.109	(0.008)	0.161 (0.077, 0.244)	<0.01	21%
Hospitalization	0.089	(0.005)	0.130	(0.006)	0.090	(0.001)	0.104	(0.002)	0.040 (0.020, 0.055)	<0.01	45%
ANY USE									**Probability of use**		
Prescription medications	0.868	(0.868)	0.896	(0.004)	0.863	(0.863)	0.868	(0.001)	0.032 (0.024, 0.040)	<0.01	4%

Note: Authors' estimates using Wisconsin Medicaid health care claims data and ordinary least squares regression to asssess prescription medication use and two-part generalized linear models for all other outcomes. The unit of analysis is the person-year, and all models include age, sex, race, hispanic ethnicity, education, and residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

Figures V.C.1-C.7. Monthly Trends for Continuously Enrolled Childless Adults and Parents/Caretakers, April 2013-March 2015

Figure C.1. Monthly trends in probability of any outpatient visit for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

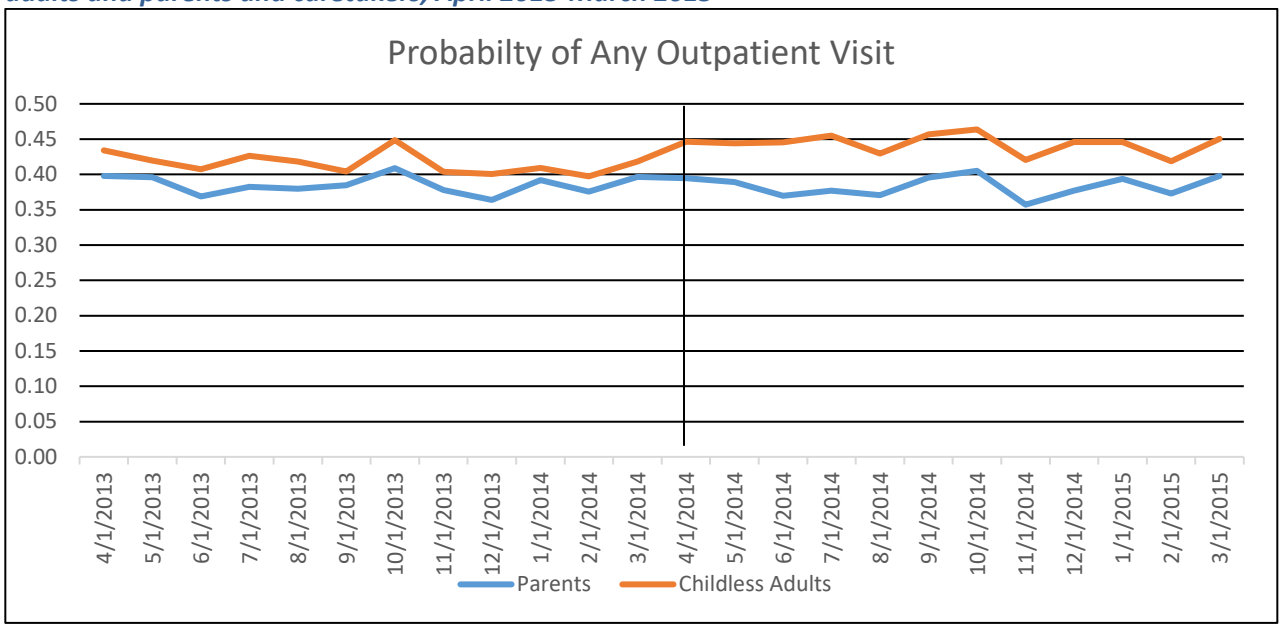


Figure C.2. Monthly trends in average number of outpatient visits for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

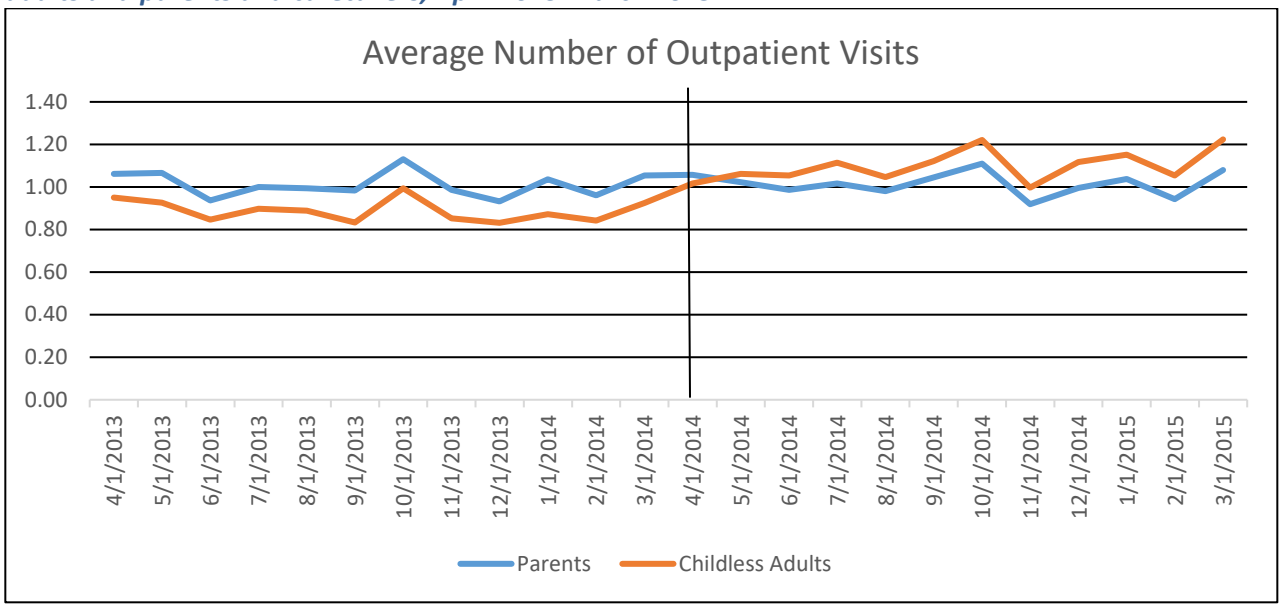


Figure C.3. Monthly trends in probability of any ED visit for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

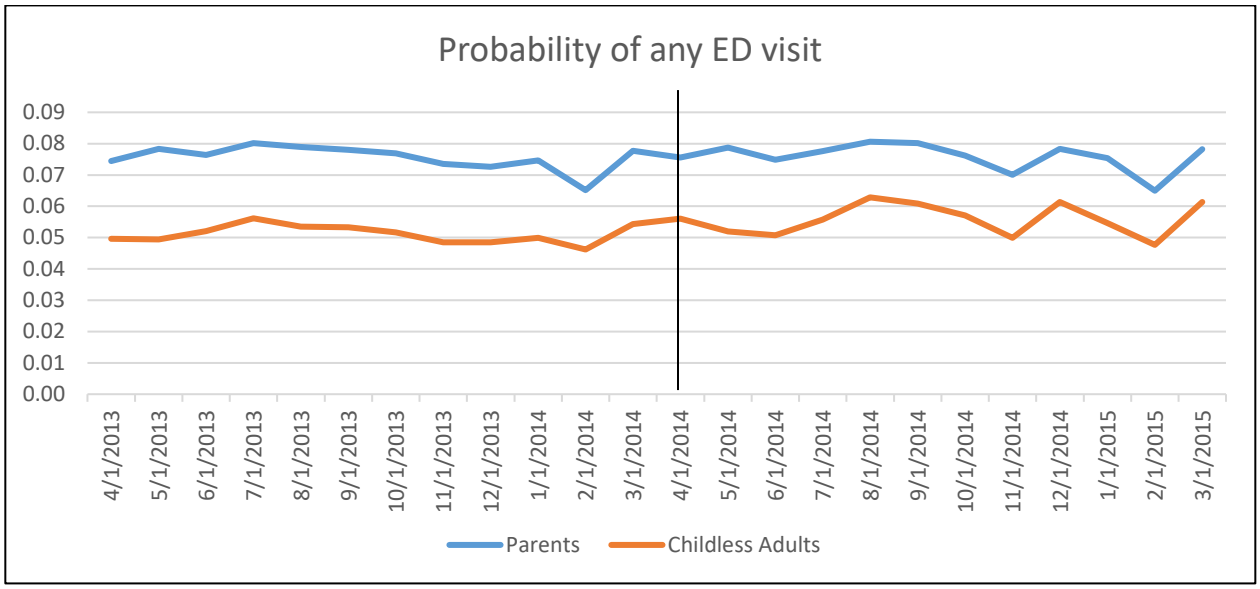


Figure C.4. Monthly trends in average number of ED visits for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

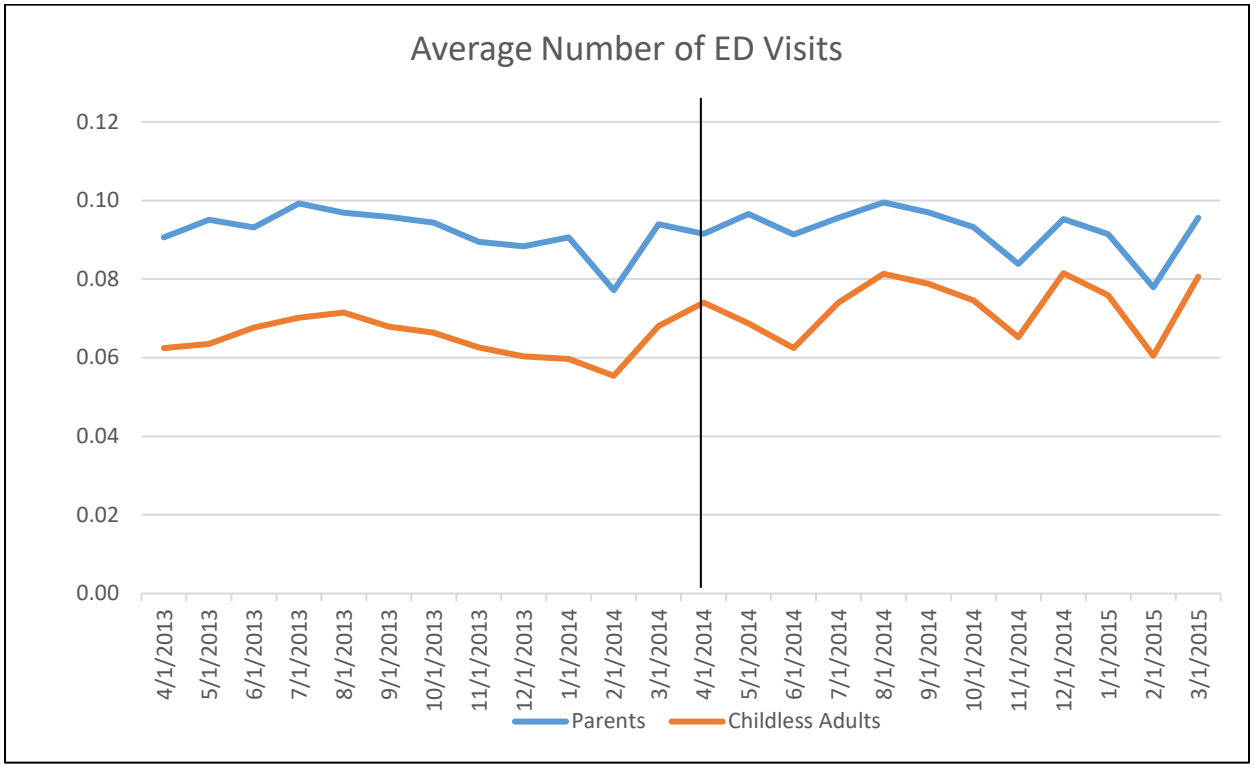


Figure C.5. Monthly trends in probability of any inpatient admission for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

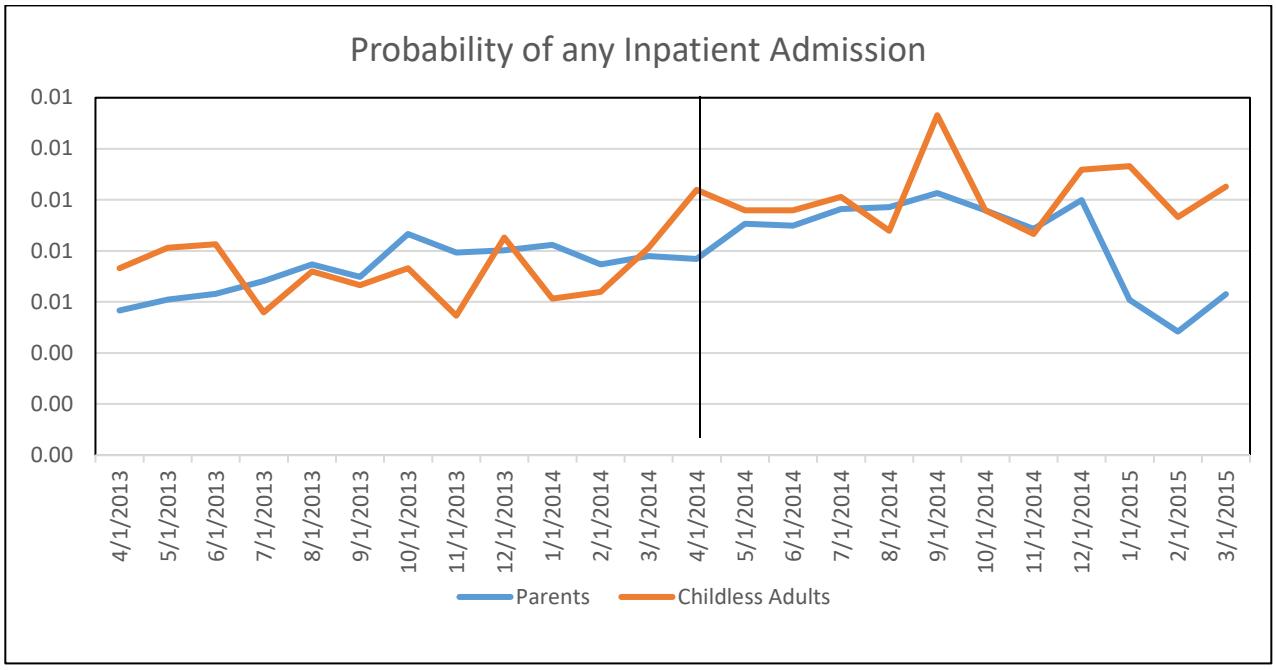


Figure C.6. Monthly trends in average number of inpatient admissions for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

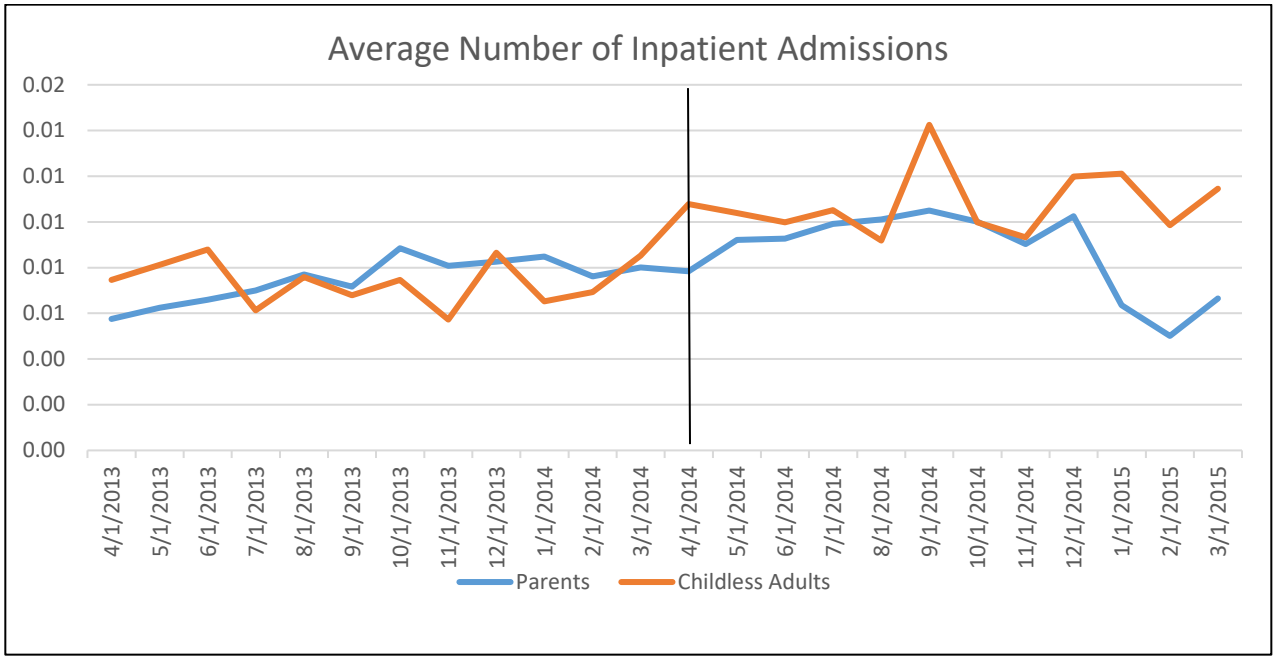
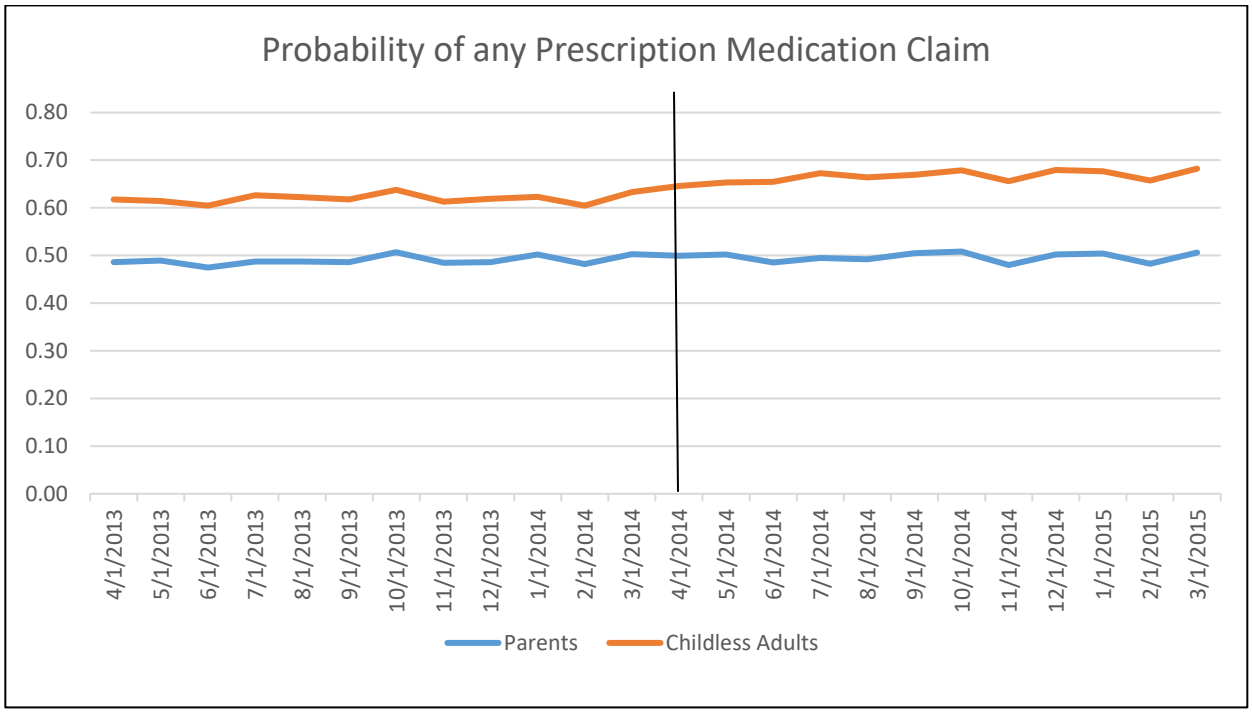


Figure C.7. Monthly trends in probability of any prescription medication claim for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015



Note: Figures depict the unadjusted monthly values (means or probabilities) for each identified outcome for childless adult (CLA) and parent/caretaker beneficiaries continuously enrolled from April 2013-March 2015.

Figures V.C.8-C.11 show monthly trends for health care costs in each of the four major service categories. Each month, the average cost across all sample beneficiaries for the identified service category is plotted. Thus, this average includes beneficiaries who did and did not have service use in the month. In each service category, there is an uptick in costs coincident with the start of the demonstration waiver, in April 2014, and the trend continues upward throughout the observation period.

Figures V.C.8—C.11. Monthly service cost trends for continuously enrolled childless adults, parents/caretaker adults

Figure C.8. Monthly trends in average cost per month, outpatient visits, for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

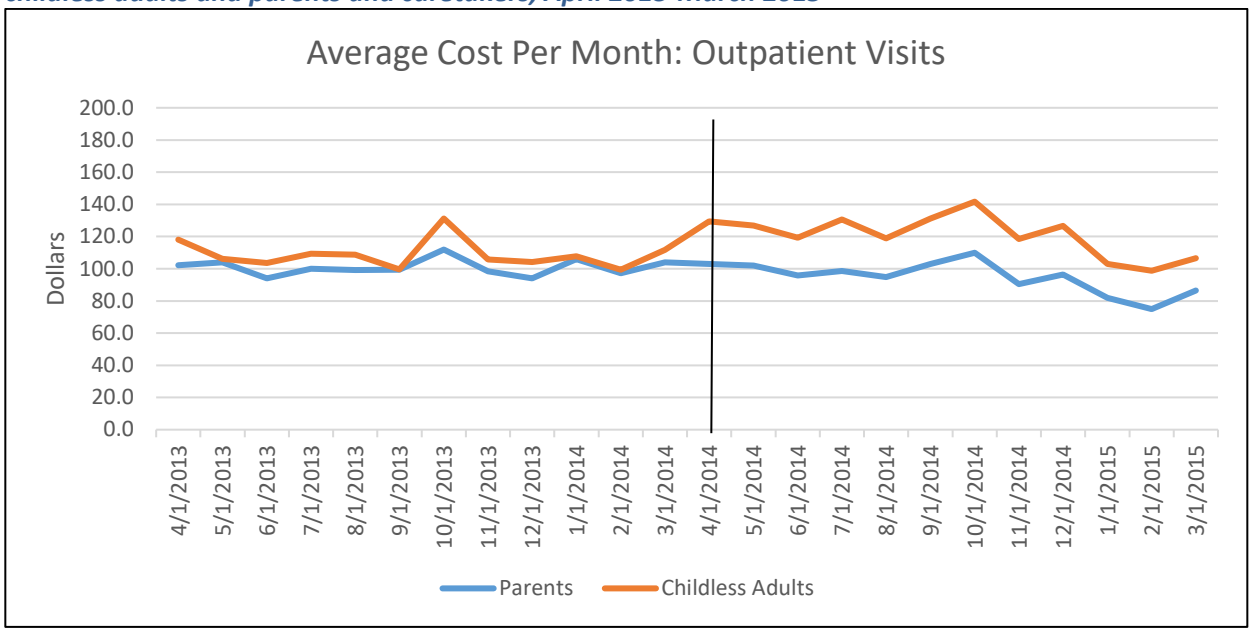


Figure C.9. Monthly trends in average cost per month, ED visits, for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

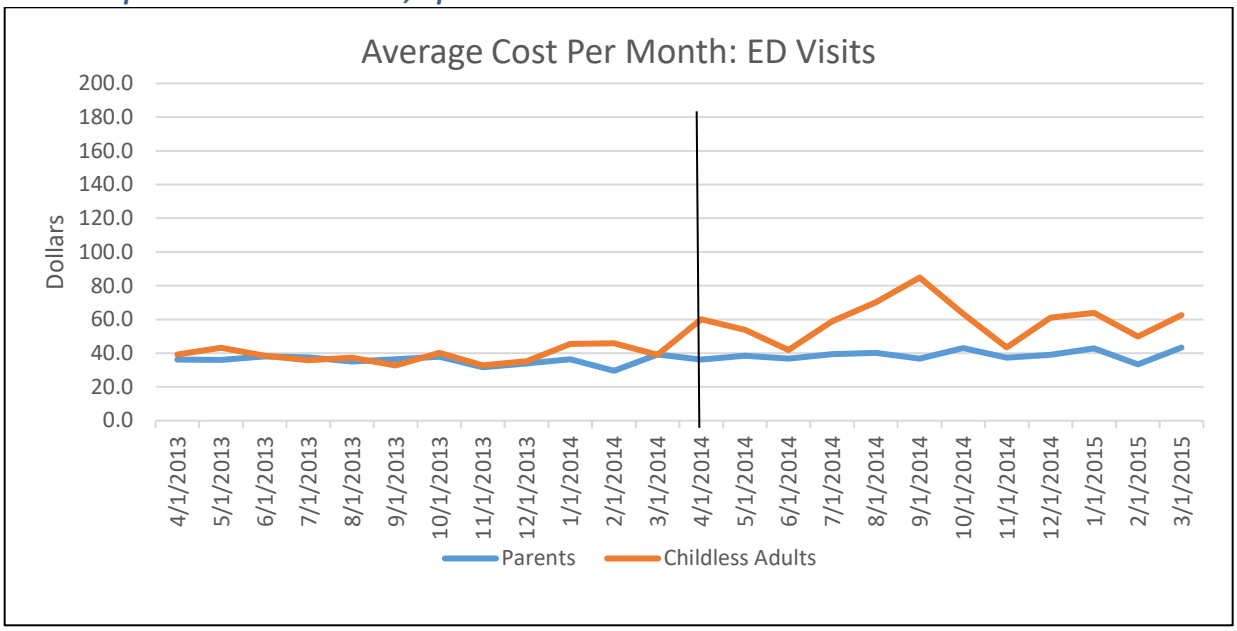


Figure C.10. Monthly trends in average cost per month, hospitalizations, for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015

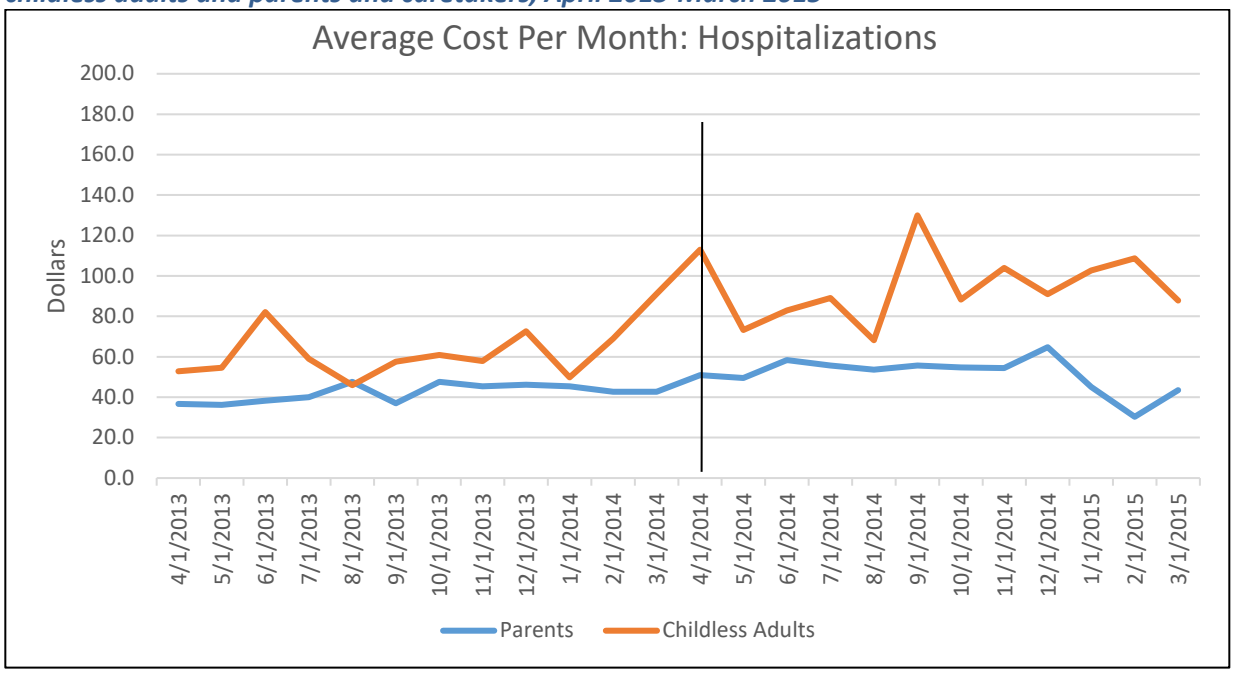
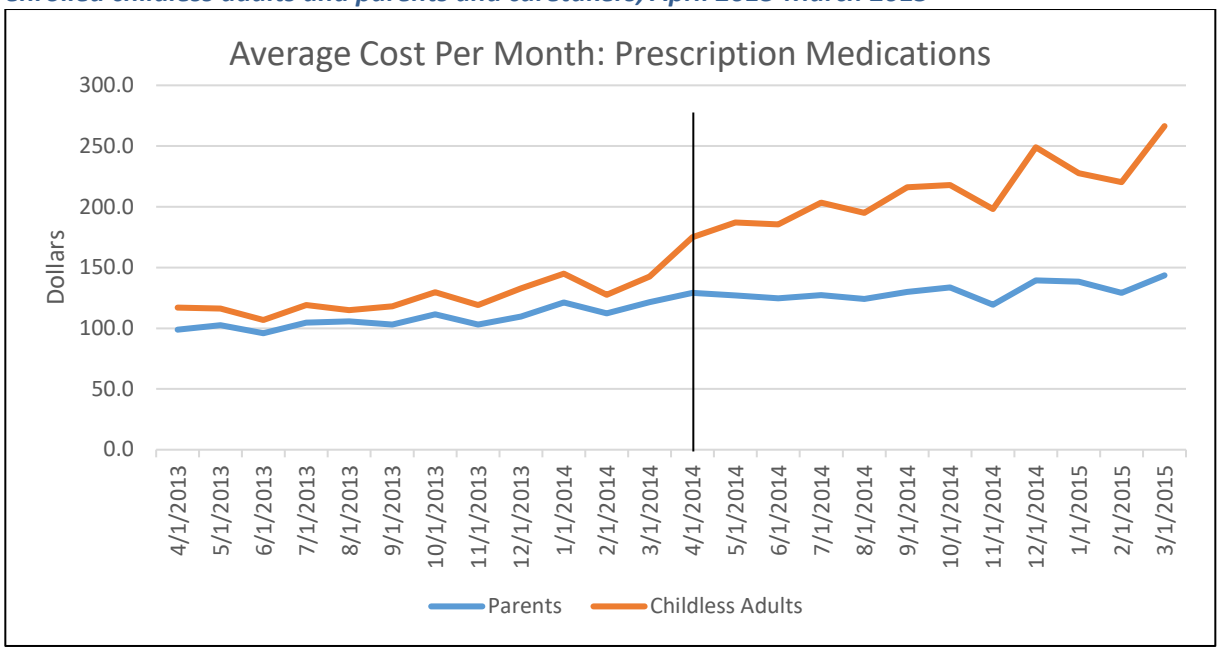


Figure C.11. Monthly trends in average cost per month, prescription medications, for continuously enrolled childless adults and parents and caretakers, April 2013-March 2015



Note: Figures C.8.a-11.a depict the unadjusted monthly mean values for each identified outcome for childless adult (CLA) and parent/caretaker beneficiaries continuously enrolled from April 2013-March 2015.

Table V.C.18 presents the difference-in-differences regression results for annual health care costs for the four major service categories. The average annual costs among CLAs for outpatient visits in the year before implementation of the Standard plan was $1306 compared to $1210 among parents. Average annual costs for outpatient visits increased by 18%, or $231, among CLAs relative to parents after implementation of the Standard plan. Average annual costs for emergency department visits grew by $272 for CLAs relative to parents after implementation of the Standard plan, an increase of 59%. Similarly, costs for hospitalizations increased by 31% among CLAs compared to parents over the study period, and prescription medication costs grew 49%, an average of $726 per person-year among CLAs relative to parents.

Table V.C.19 presents the difference-in-difference results for the ratio of utilization/cost as specified in evaluation question 16. For each service category shown, the numerator of the ratio is the outcome presented in Table V.C.17; the denominator is the outcome presented in Table V.C.18. For each outcome, there is a relative decline among CLAs compared to parents over the study period ranging from 4% for outpatient visits/costs to 500% for hospitalizations/cost of hospitalizations. When interpreting the magnitude of these changes it is important to keep in mind that the absolute values (i.e., pre-period ratio for CLAs) from which the relative change is estimated are very small.

We turn now to the results from the comparison between continuing CLAs and newly enrolled CLAs. Figures C12-C18 display the monthly trends in the use of health care for outpatient visits, emergency department visits, inpatient admissions, and prescription medications during the first year after implementation of the Standard plan when both groups are exposed to the same type of coverage, from April 2014 – March 2015. The range of values included on the Y-axes differ across outcome categories to accommodate the variation in the range inherent in the outcomes themselves.

Table V.C.18. Average change in annual health care costs for childless adults relative to parents one year before and one year after implementation of Standard Medicaid coverage for childless adults

Outcome	Childless adults, Mean (SE) N = 15,020 person-years				Parents, Mean (SE) N = 138,130 person-years				Difference-in-Differences Estimate		Percentage Change Relative to Baseline for Childless Adults
	i Pre		ii Post		iii Pre		iv Post		Outcome (95% Confidence Interval)	*P* Value	
HEALTH CARE USE											
Outpatient Visit	1305.55	(24.16)	1450.99	(28.19)	1210.25	(7.95)	1137.37	(8.42)	231.34 (168.09, 294.58)	<0.01	18%
Emergency Department Visit	465.52	(25.86)	713.99	(42.35)	428.24	(8.53)	466.87	(8.98)	272.48 (157.62, 387.33)	<0.01	59%
Hospitalization	753.53	(52.68)	1138.85	(79.01)	505.54	(12.83)	616.50	(18.31)	233.48 (58.44, 408.52)	<0.01	31%
Prescription medications	1488.68	(44.50)	2541.40	(81.25)	1289.55	(14.09)	1565.05	(16.98)	725.77 (601.37, 850.17)	<0.01	49%

Note: Authors' estimates using Wisconsin Medicaid health care claims data and two part models. The unit of analysis is the person-year, and all models include age, sex, race, hispanic ethniciy, education, and residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

Table V.C.19. Average change in the ratio of health care use per person-year to costs per person-year for childless adults relative to parents one year before and one year after implementation of Standard Medicaid coverage for childless adults

	(I)				(II)				(III)		(IV)
Utilization/Cost	Childless adults, Mean (SE) N = 15,020 person-years				Parents, Mean (SE) N = 138,130 person-years				Difference-in-Differences Estimate		Percentage Change Relative to Baseline for Childless
	i Pre		ii Post		iii Pre		iv Post		Outcome (95% Confidence Interval)	*P* Value	
HEALTH CARE USE											
Outpatient Visit / Cost of Outpatient Visits	0.011	(0.0001)	0.012	(0.0001)	0.012	(0.0001)	0.014	(0.0001)	-0.0005 (-0.0009, -0.00004)	<0.05	-4%
Emergency Department Visit / Cost of Emergency Department Visits	0.005	(0.0001)	0.004	(0.0001)	0.007	(0.0002)	0.007	(0.0002)	-0.0007 (-0.0013, -0.00007)	<0.05	-16%
Hospitalization / Cost of Hospitalizations	0.0002	(0.0000042)	0.0002	(0.00001)	0.001	(0.0001)	0.002	(0.0004)	-0.0009 (-0.0018, -0.0001)	<0.05	-500%

Note: Authors' estimates using Wisconsin Medicaid health care claims data and Ordinary Least Squares. The unit of analysis is the person-year, and all models include age, sex, race, hispanic ethnicity, education, residence in an urban area. For each outcome the difference-in-difference estimate represents the average change in the outcome for childless adults compared to parents after implementation of standard Medicaid coverage for childless adults. The difference-in-differences estimate divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

Figures V.C.12-C.18. Monthly Trends for New and Continuing Childless Adults, April 2014-March 2015

Figure C.12. Monthly trends in probability of any outpatient visits for new and continuing childless adults, April 2014-March 2015

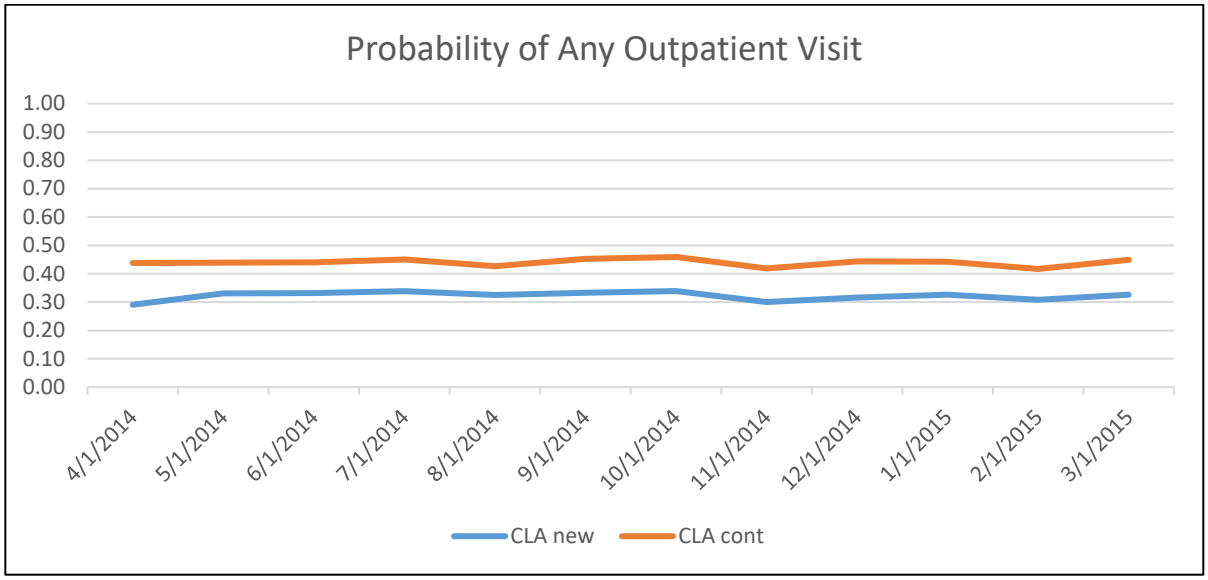


Figure C.13. Monthly trends in average number of outpatient visits for new and continuing childless adults, April 2014-March 2015

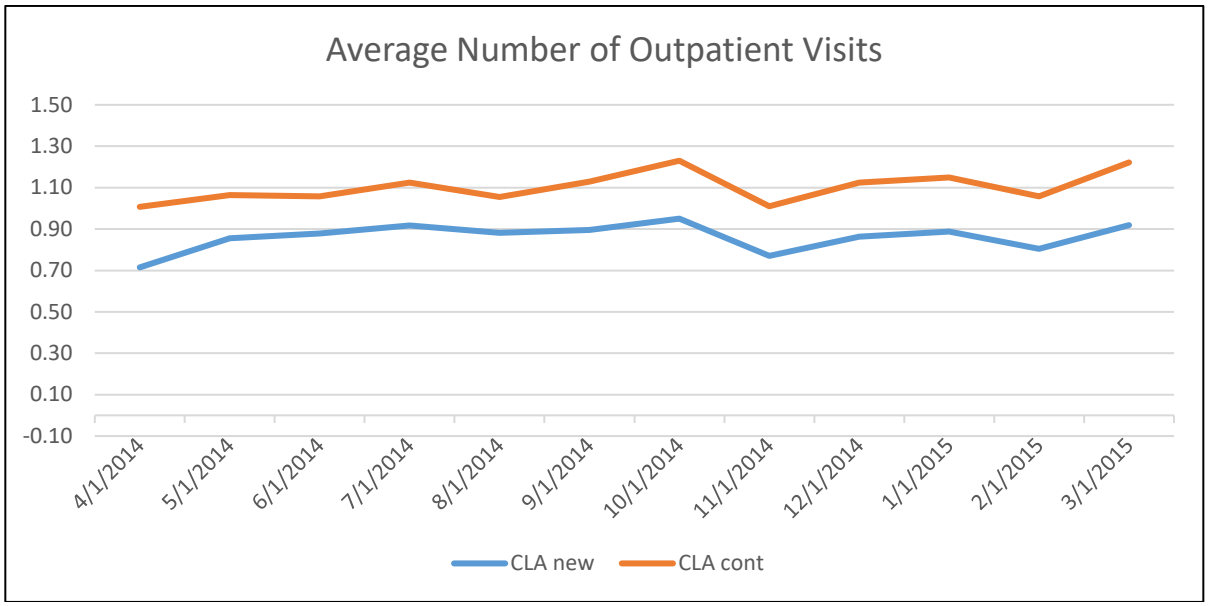


Figure C.14. Monthly trends in probability of any emergency department visit for new and continuing childless adults, April 2014-March 2015

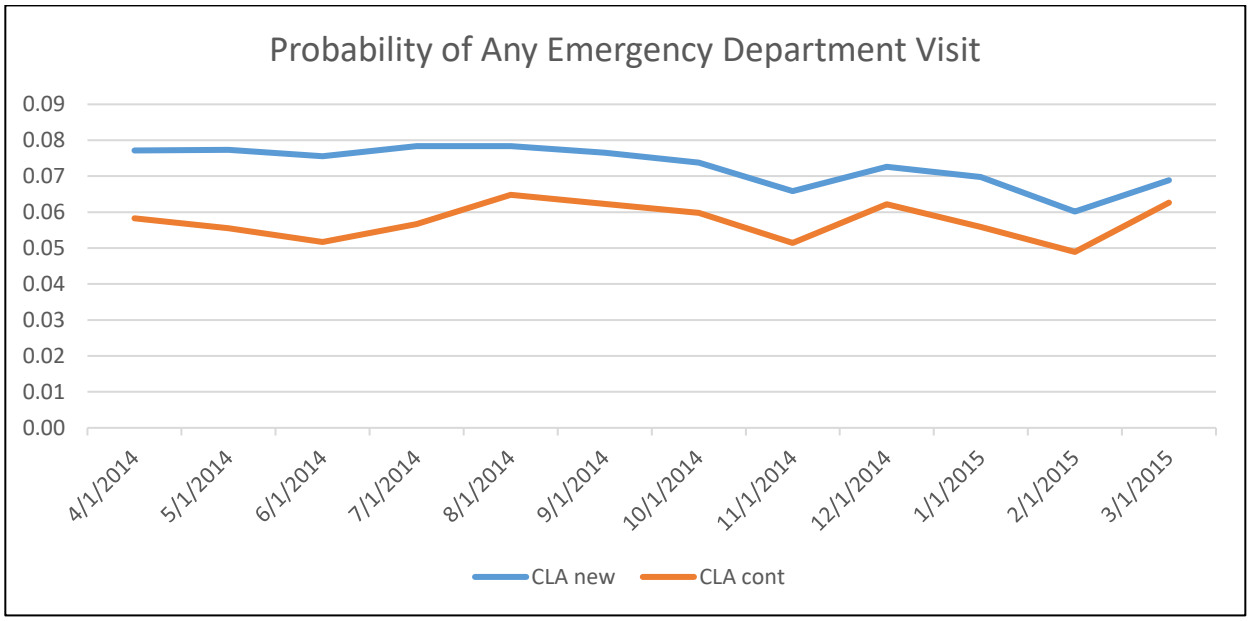


Figure C.15. Monthly trends in average number of emergency department visits for new and continuing childless adults, April 2014-March 2015

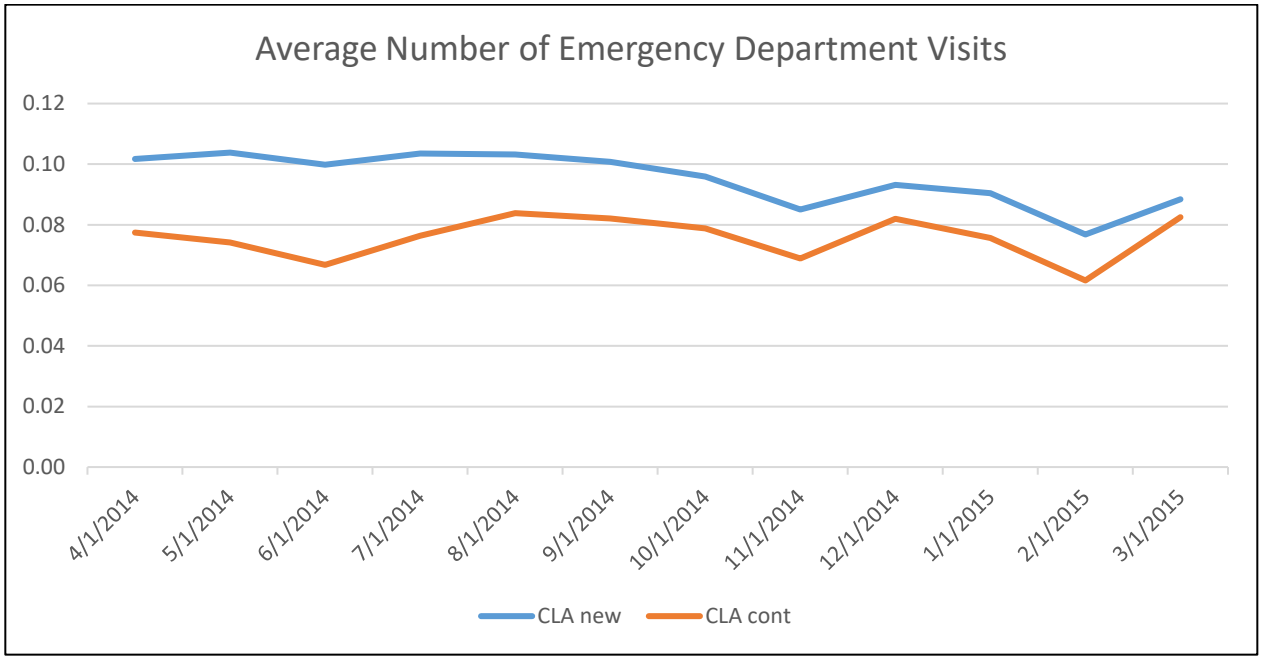


Figure C.16. Monthly trends in probability of any inpatient admission for new and continuing childless adults, April 2014-March 2015

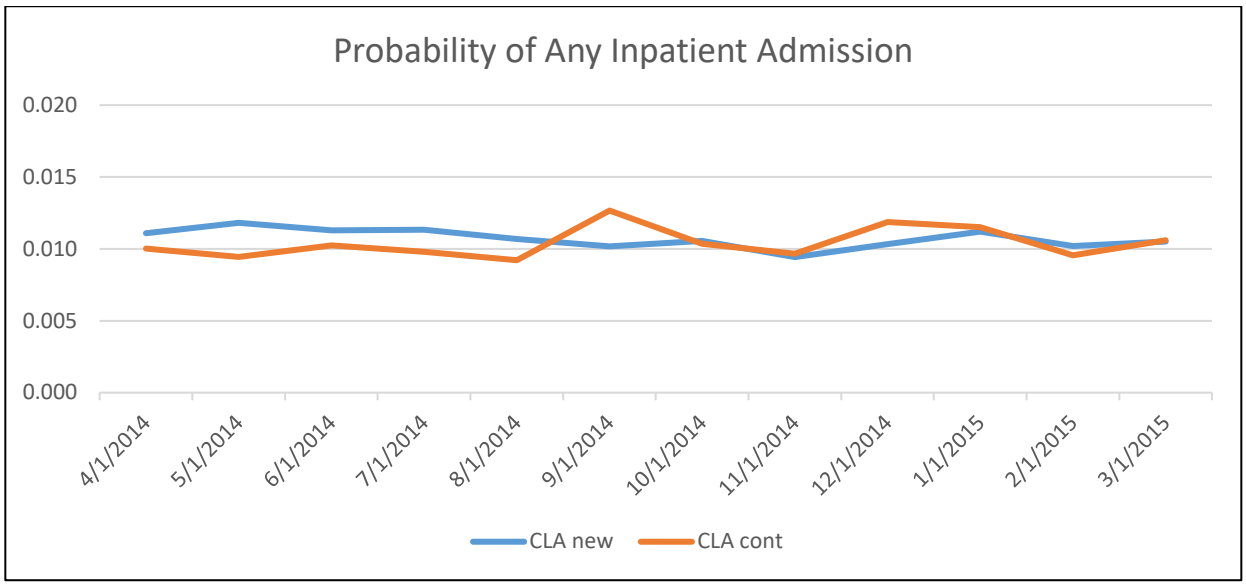


Figure C.17. Monthly trends in average number of inpatient admissions for new and continuing childless adults, April 2014-March 2015

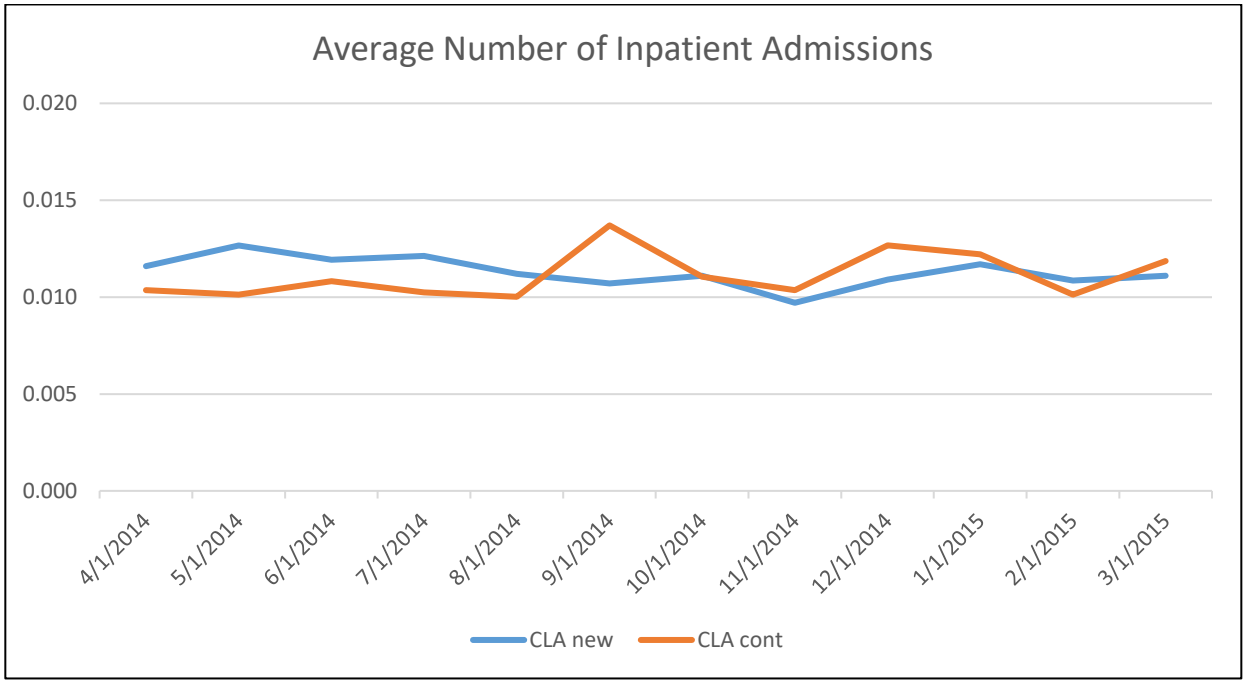
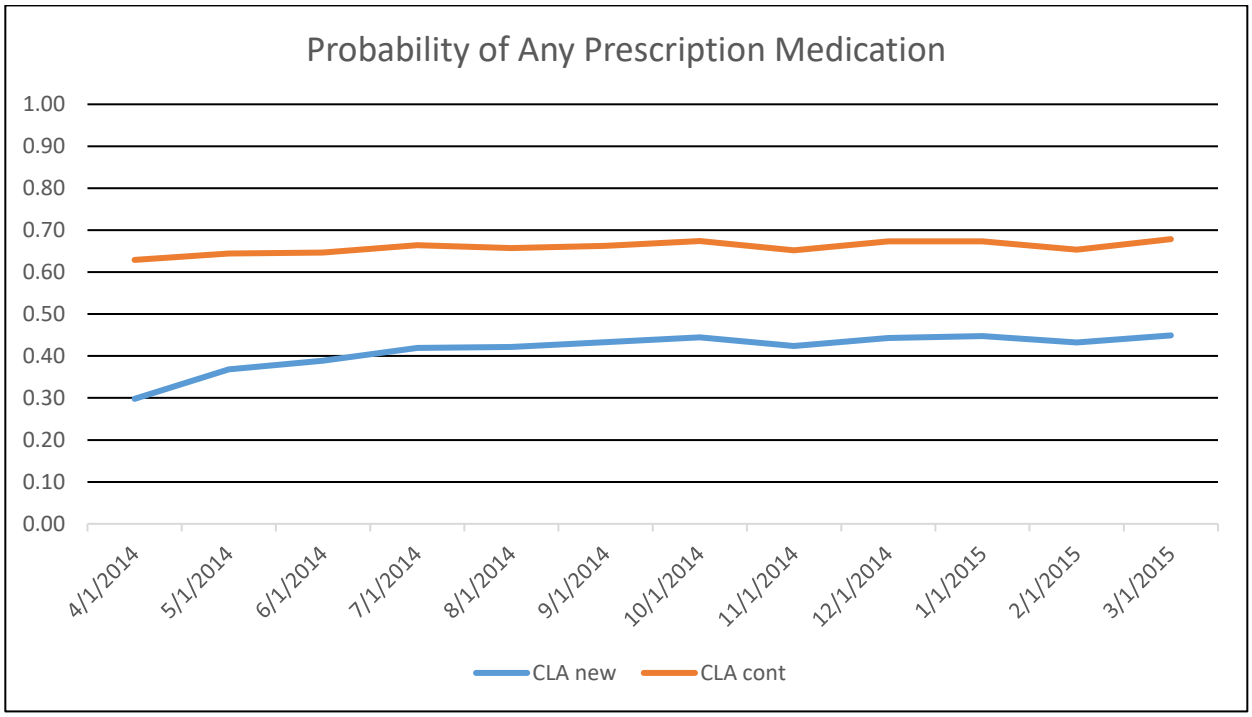


Figure C.18. Monthly trends in probability of any prescription medication for new and continuing childless adults, April 2014-March 2015



Note: Figures depict the unadjusted monthly values (means, probabilities, costs) for each identified outcome for new and continuing childless adult beneficiaries from April 2014 - March 2015.

Figures C.12 and C.13 show very similar and increasing trends over time in the probability and mean number of outpatient visits for continuing and new childless adult enrollees. This general pattern is repeated for emergency department visits shown in Figures C.14 and C.15. The trend in inpatient admissions, Figures C.16 and C.17, illustrates the greater variability we would expect for low frequency events, but overall the trends are not strikingly different. For newly enrolled CLAs, there is an upward trend in the likelihood of receiving a prescription medication during the first months of Standard plan availability that stabilizes and resembles the trend for continuing CLAs. This initial difference in trend may reflect initial care-seeking among new enrollees and the prescription medications that result from establishing or re-establishing contact with providers.

The unadjusted means and regression results for the comparison of health care use in the first year after implementation of the Standard plan for continuing and new CLAs are presented in Table V.C.20. The unadjusted average number of outpatient visits for new CLA enrollees was 10.3/year compared to 13.2/year for continuing CLAs. On average, new CLAs had 1.14 emergency department visits in the year compared to 0.91 among continuing CLAs. The number of inpatient admissions in the year among new

CLAs averaged 0.136 compared to 0.134 among continuing CLAs. The likelihood of receiving any prescription medication claim was 0.75 among new CLAs and 0.89 among continuing CLAs. The regression adjusted results indicate that relative to new CLAs, the continuing CLAs had an average of 2.47 more outpatient visits/year, an average of -0.08 and -0.01 fewer emergency department and inpatient admissions respectively and were more likely to receive a prescription medication claim by 11 percentage points.

Figures V.C.19-C.22 show the monthly trend in health care costs for the four major service categories shown in Figures C.12-C.18. These trends are consistent with the trends observed for health care use in each category with greater variability as would be expected for outcomes in which there is a relatively wide range of expenditures per event (e.g., ED and inpatient).

Table V.C.21 presents the unadjusted, average annual health care cost for each service category and study group and the regression adjusted difference between them. Among new CLAs, on average the annual cost of outpatient visits is $1155 per person compared to $1452 among continuing CLAs. After regression adjustment, annual health care costs for outpatient visits are $204 higher among continuing CLAs relative to new CLAs in the first year after implementation of the Standard Plan. Health care costs for prescription medications were $804 higher on average after regression adjustment for continuing CLAs relative to new CLAs. Regression results for emergency department visits and inpatient admissions indicate no significant difference in health care costs for the first year after the Standard Plan between the groups.

In Table V.C.22, regression results for the utilization/cost outcomes are shown. On average the number of outpatient visits/cost of outpatient visits is roughly 0.01 for both study groups with a very small, statistically significant difference of 0.0003. On average the number of emergency department visits/cost of emergency department visits was about 0.005 in both groups with a very small, statistically significant difference of -0.0004. There was no significant difference between groups in the number of inpatient admissions/cost of inpatient admissions.

Table V.C.20. Average difference in annual health care use for continuing childless adults relative to new childless adults during the year after implementation of Standard Medicaid coverage for childless adults

					(III)	
Outcome	**New Childless adults, Mean (SE)** N = 64,589 April 2014 - March 2015		**Continuing Childless adults, Mean (SE)** N = 8,685 April 2014 - March 2015		**Estimated Difference Continuing CLAs relative to new CLAs**	
					Outcome (95% Confidence Interval)	*P* Value
QUANTITY OF USE					**Number of Events**	
Outpatient Visit	10.341	(0.090)	13.229	(0.241)	2.473 (2.027, 2.919)	<0.01
Emergency Department Visit	1.142	(0.011)	0.910	(0.029)	-0.078 (-0.152, -0.004)	<0.05
Hospitalization	0.136	(0.002)	0.134	(0.006)	-0.013 (-0.027, -0.0001)	<0.05
ANY USE					**Probability of use**	
Prescription claims	0.747	(0.002)	0.894	(0.003)	0.110 (0.102, 0.117)	<0.01

Note: Authors' estimates using Wisconsin Medicaid health care claims data and ordinary least squares regression to assess prescription medications use and two-part generalized linear models for all other outcomes. All models include age, sex, race, Hispanic ethnicity, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

Table V.C.21. Average difference in annual health care costs for continuing childless adults relative to new childless adults during the year after implementation of Standard Medicaid coverage for childless adults

Outcome	New Childless adults, Mean (SE) N = 64,589 April 2014-March 2015		Continuing Childless adults, Mean (SE) N = 8,685 April 2014-March 2015		(III) Estimated Difference for Continuing CLAs relative to new CLAs	
					Outcome (95% Confidence Interval)	*P* Value
HEALTH CARE USE						
Outpatient Visit	1155.12	(12.87)	1452.03	(26.36)	203.75 (152.72, 254.79)	<0.01
Emergency Department Visit	763.07	(16.55)	723.85	(40.37)	-66.89 (-159.56, 25.78)	0.157
Hospitalization	1105.92	(28.83)	1165.05	(74.25)	-99.43 (-249.56, 50.69)	0.194
Prescription medications	1332.08	(18.01)	2471.43	(71.99)	804.35 (703.29, 905.41)	<0.01

Note: Authors' estimates using Wisconsin Medicaid health care claims data and two-part models. All models include age, sex, race, Hispanic ethnicity, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

Table V.C.22. Average difference in ratio of health care use per person to costs per person for continuing childless adults relative to new childless adults during the year after implementation of Standard Medicaid coverage for childless adults

Utilization/cost	New Childless adults, N = 64,589 April 2014-March 2015		Continuing Childless N = 8,685 April 2014-March 2015		(III) Estimated Difference in Outcome for Continuing CLAs relative to new CLAs	
					Outcome (95% Confidence Interval)	*P* Value
HEALTH CARE USE						
Outpatient Visits / Cost of Outpatient Visits	0.0117	(0.00003)	0.0123	(0.0001)	0.0003 (0.0001, 0.005)	<0.01
Emergency Department Visits/ Cost of Emergency Department Visits	0.0053	(0.00004)	0.0051	(0.0002)	-0.0004 (-0.0062, -0.0002)	<0.01
Hospitalization / Cost of Hospitalizations	0.0003	(0.00002)	0.0008	(0.0003)	-0.0005 (-0.0001, 0.00001)	<0.1

Note: Authors' estimates using Wisconsin Medicaid health care claims data and ordinary least squares. The unit of analysis is the person-year, and all models include age, sex, race, Hispanic ethnicity, education, and residence in an urban area. For each outcome the difference estimate represents the average difference in the outcome for continuing childless adults compared to new childless adults after implementation of standard Medicaid coverage for childless adults. Standard errors are clustered at the individual level.

Figures V.C.19-C22. Monthly service cost trends for new and continuously enrolled childless adults, April 2014-March 2015

Figure C.19. Monthly trends in outpatient visit cost for new and continuing childless adults, April 2014-March 2015

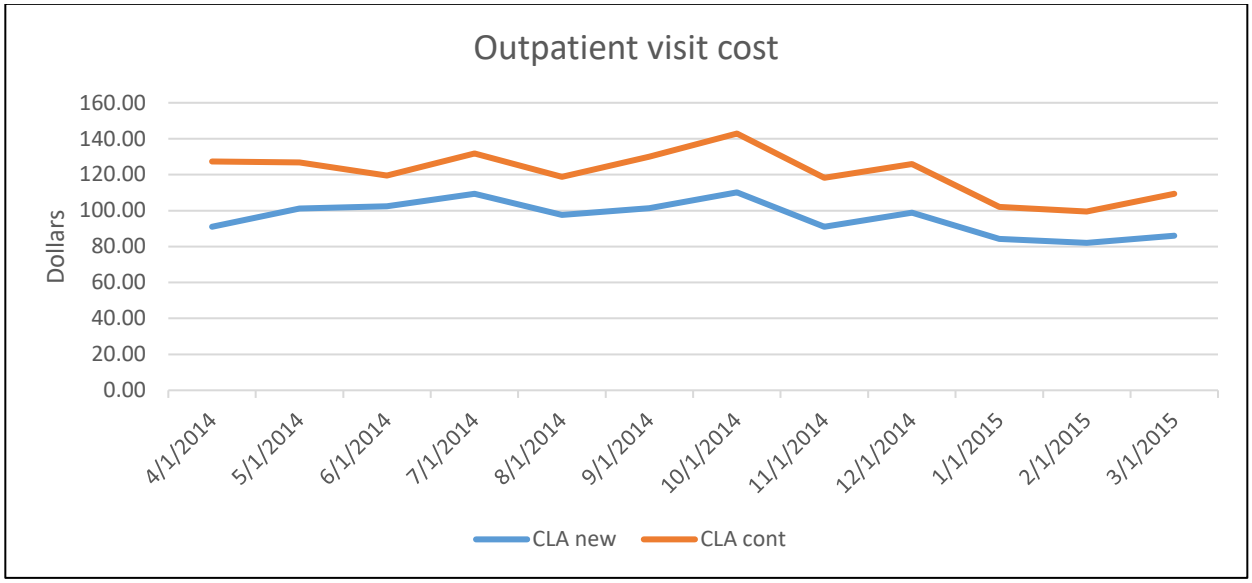


Figure C.20. Monthly trends in emergency department visit cost for new and continuing childless adults, April 2014-March 2015

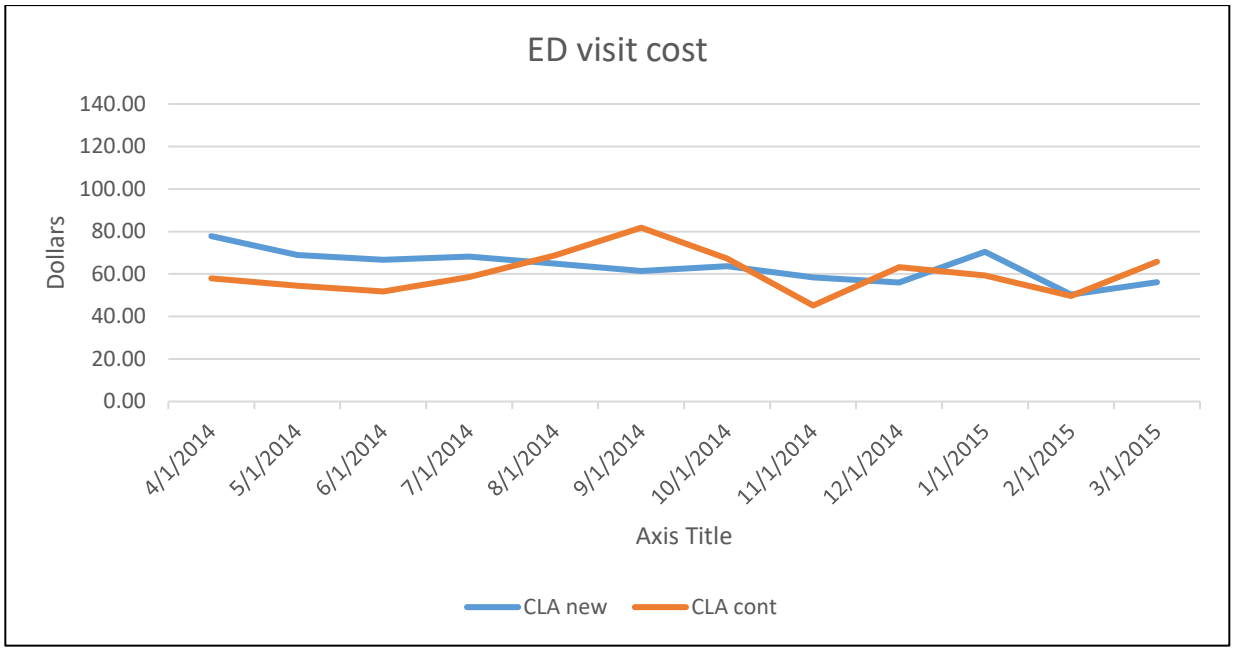


Figure C.21. Monthly trends in hospitalization costs for new and continuing childless adults, April 2014-March 2015

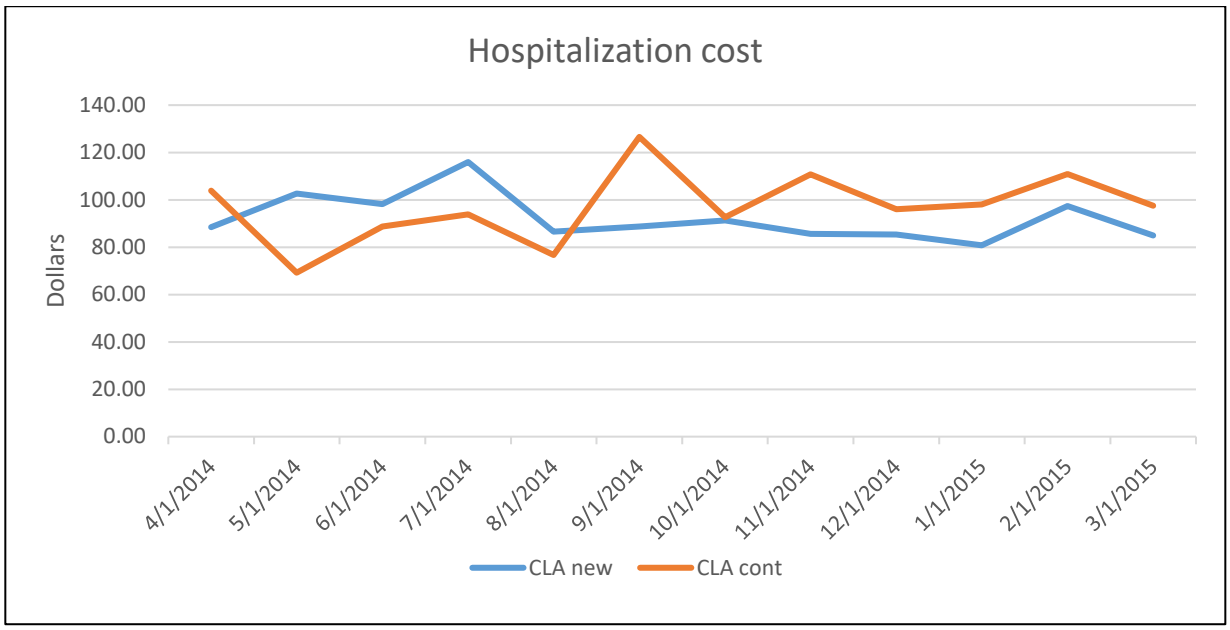
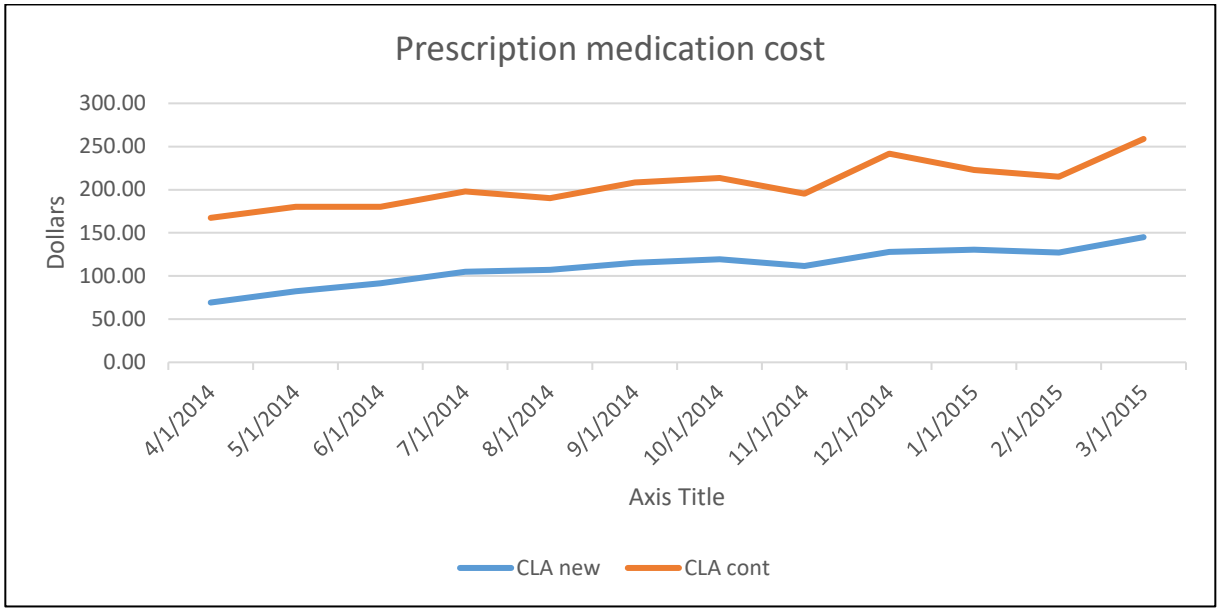


Figure C.22. Monthly trends in prescription medication cost for new and continuing childless adults, April 2014-March 2015



Notes: Figures C.19-C.22 depict the unadjusted monthly mean values for each identified outcome for new and continuing childless adult beneficiaries from April 2014 - March 2015.

Conclusions and Limitations. We note that the ratio of utilization/cost does not have a ready interpretation or provide direct insight into the potential cost-effectiveness of standard plan coverage relative to core plan coverage for CLAs. However, the direct comparisons of use and cost outcomes informs our understanding of beneficiary behavior under different types of coverage.

Specifically, as illustrated in Tables V.C.14 and C.15, health care use and accompanying costs increased for CLAs after implementation of the Standard plan relative to parents across all major service categories. These increases in outpatient, inpatient and prescription medications are consistent with the expansion in covered services and/or reduced cost-sharing that the transition from the Core to Standard plans brought about (as summarized in Attachment G).

The comparison of health care use across new and continuing CLAs yields several findings of note. Continuing CLAs, who by definition have a history of relatively stable Medicaid enrollment, had higher use of outpatient and prescription medication services in the first year after the transition to the Standard plan than the newly enrolled CLAs, and lower use of emergency and inpatient services. This pattern for general measures of use echoes the findings above for questions 13 and 14 that concern specific subtypes of use within service category (e.g. potentially preventable ED visits). Differences in the characteristics of the study group may drive different health care use preferences and patterns, and/or history of stable enrollment may facilitate greater engagement or reliance on outpatient services rather than hospital-based services. We cannot distinguish between these explanations within the current evaluation; however, the findings suggest the importance of examining the relationship between continuity and longevity of enrollment duration and health-related care use patterns.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

Question 17: Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?

The objective of this question is to understand whether and to what extent the provision of standard Medicaid benefits to childless adult (CLAs) beneficiaries increased continuity of health coverage. There are at least two potentially offsetting factors that may affect how the provision of a benefit plan that is the same as the one provided to all other beneficiaries affect continuity of coverage for CLAs. To the extent that this benefit plan change increases the relative value that CLAs place upon coverage, continuity may increase. However, before implementation of the waiver, CLAs who were enrolled in the Core plan did not have the opportunity to re-enroll if they exited the program and thus faced a potential long-term loss of health insurance coverage upon disenrollment. Coverage under the Standard Plan eliminated this incentive to remain enrolled. To the extent that CLAs take advantage of this greater enrollment

flexibility, continuity of coverage may decline relative to the pre-waiver period. In a preview of our findings, the overall results suggest greater continuity after implementation of the Standard plan relative to the Core plan period.

Methods

Design. We implemented a descriptive difference-in-differences analysis, a two-group, pre-post design for Comparison A, and a post-only design for Comparison B. Additionally, and consistent with evaluation questions 13-16, we also implemented an observational design that compares outcomes across three cross-sectional survey samples of CLA beneficiaries.

Sample. The operational definitions of the study groups for study comparisons A and B, and the time frame for analyses for evaluation question 17 are noted below in Table V.C.23. In contrast to the study sample for Comparison A in questions 13-16, continuous enrollment is not a sample inclusion criterion to execute Comparison A for this evaluation question because the goal here is to ascertain the potential differential change in the probability of disenrollment. Instead, we applied inclusion criteria that would increase the likelihood that subjects remained eligible for Medicaid after 4/2014 by restricting income to <=150% FPL.

We selected this threshold of 150% FPL although it exceeds the 100% FPL cutoff that became effective 4/2014 because of expected measurement error in this variable, and common variation over time in monthly income among Medicaid beneficiaries. We additionally required that that the comparison sample of parents and caretakers have at least one year of continuous enrollment before the study period to increase comparability with the stably enrolled continuing CLAs.

Table V.C.24 summarizes the characteristics of the study groups for Comparison A. The parent/caretaker sample is approximately 71% female compared to 53% among childless adults. Parents and caretakers are more likely to be non-white, and more likely to have a high school diploma/GED or greater. Parents and caretakers are substantially younger with 51% under the age of 35 compared to just 19% among childless adult beneficiaries. Additionally, we assessed the duration of the active spell, the enrollment spell that was active for each beneficiary on April 2013. On average the duration of the active enrollment spell was longer for CLAs compared to parents by 3.6 months.

To implement Comparison B, we define continuing CLA Enrollees as those with at least one month of Standard plan enrollment between 4/2014-3/2015 and at least one month of Core plan enrollment between 4/2013-3/2014. The new CLA enrollee comparison group includes individuals with at least one month of Standard plan enrollment on or after 4/2014 and no enrollment in the Core plan between April 2013-March 2014.

Table V.C.23. Study Groups and Time Periods to Implement the Requested Comparisons

Study Time Period	Continuing CLA Enrollees	Parents/Caretakers	New CLA Enrollees
4/1/13 - 3/31/15 **Comparison A**	CLAs enrolled in April 2013 with income less than 150% FPL.	Parents/caretakers enrolled in April 2013 with income less than 150% FPL and at least 12 continuous months of enrollment before 4/1/2013.	
4/1/14 – 9/30/17 **Comparison B**	CLAs with at least one month of Core plan enrollment between April 2013--March 2014 and at least one month of Standard plan enrollment between April 2014-March 2015.		CLAs with at least one month of Standard plan enrollment beginning on or after 4/1/2014 through 9/30/17 and no Core plan enrollment between April 2013-March 2014.

Table V.C.24. Average Characteristics of Continuing Childless Adult and Parent/Caretaker Enrollees, April 2013-March 2015

	CLA		PAR		p-value
	%/Mean	SE	%/Mean	SE	
Gender, Citizenship, Race, Residence					
Female	52.8	0.000	70.8	0.000	<0.01
Citizen	98.5	0.000	95.8	0.000	<0.01
Tribe	0.69	0.000	1.9	0.000	<0.01
Resides in metropolitan area	32.7	0.000	33.3	0.000	0.107
Race					<0.01
White	76.1	0.000	64.5	0.000	
Black	14.8	0.000	18.7	0.000	
Hispanic	4.2	0.000	8.2	0.000	
Other	4.9	0.000	8.6	0.000	
Income					0.016
0-100 FPL	78.2	0.000	77.6	0.000	
101-125 FPL	12.5	0.000	13.3	0.000	
126-150 FPL	9.2	0.000	9.1	0.000	
Education level					<0.01
< High School	12.6	0.000	16.2	0.000	
>= High School	47.7	0.000	70.6	0.000	
Missing	39.7	0.000	13.2	0.000	
Age					<0.01
19-34	19.3	0.000	51.2	0.000	
35-49	24.8	0.000	40.9	0.000	
50+	55.9	0.000	7.9	0.000	
Missing	0.000	0.000	0.002	0.000	
Active spell length in months	40.3	0.150	36.7	0.047	<0.01
N	16,797		159,734		

Notes: Continuing CLAs include childless adult beneficiaries enrolled in April 2013 with income <= 150% FPL. Continuing PARs include parent/caretaker beneficiaries enrolled in April 2013 with income <=150% FPL, and a history of continuous Medicaid enrollment from April 2012-March 2013. SE indicates standard error. Chi-square and t-tests used to assess equivalence of characteristics across study groups.

Table V.C.25 summarizes sample characteristics for the continuing CLA enrollees and the new CLA enrollee populations. These data are useful for considering if there are compositional differences between the study groups that may also be related to coverage continuity. The demographic variables reflect the first value reported for each subject on or after January 2012. Relative to continuing CLA enrollees (N=11,230) the new CLA enrollees (N=330,129) are younger, and more likely to be non-White and male. The two groups are similar with respect to educational attainment with slightly less than half reporting a high school education. On average, the new CLA enrollees had fewer total Medicaid enrollment months in the year before April 2013 than the continuing CLA enrollees.

Table V.C.25. Average Characteristics of Continuing and New Childless Adult Beneficiaries

	Continuing CLA		New CLA		p-value
	%/Mean	SE	%/Mean	SE	
Gender, Citizenship, Race, Residence					
% Female	51.72	0.005	42.69	0.001	<0.01
% Citizen	98.47	0.001	97.51	0.000	<0.01
Race					<0.01
% American Indian /Eskimo	0.61	0.001	1.73	0.000	
% Black	16.90	0.004	22.38	0.001	
% White	74.38	0.004	61.77	0.001	
% Hispanic	4.23	0.002	6.52	0.000	
% Other race	4.72	0.002	9.78	0.001	
% Resides in metropolitan area	30.74	0.004	31.10	0.001	<0.01
Education level					<0.01
% < high school education	16.31	0.003	18.00	0.001	
% >= high school education	47.35	0.005	44.39	0.001	
% Missing education	36.34	0.005	37.61	0.001	
Age in April 2014					<0.01
19-34	17.33	0.004	47.52	0.001	
35-49	29.74	0.004	28.67	0.001	
50+	52.93	0.005	23.81	0.001	
Total months of enrollment, 1/2012-3/2013	14.72	0.014	1.315	0.007	<0.01
N	11,230		330,129		

Notes: Continuing beneficiaries have at least 1 month of CLA Core enrollment between April 2013-March 2014, and at least one month of CLA Standard Plan enrollment between April 2014—March2015. New beneficiaries have at least one month of CLA Standard Plan enrollment on or after April 2014 through September 2017 and no CLA Core enrollment between April 2013- March2014. SE indicates standard error. Chi-square and t-tests used to assess equivalence of characteristics across study groups.

We note two potential explanations for the non-equivalence of the Continuing and New CLA study groups across these characteristics: 1) the availability of the Standard plan may attract a different childless adult population than did the Core Plan; and/or 2) beneficiaries who remain enrolled in the Core plan five years after its introduction may differ systematically from the Core plan population as a whole. Within the scope of this evaluation, we cannot determine which of these (or other) explanations may prevail. However, it is important to consider the potential source of differences between the groups and how these differences may influence health coverage continuity.

We implement our cross-sectional research design using the same survey sample described for questions 13-16.

Data. The data sources used for evaluation question 17 are identical to those used for questions 13-16 and described previously.

Table V.C.26. Continuity of Health Insurance coverage Outcome Measures Derived from Enrollment Data

Outcome	Unit of Analysis = Enrollment Spell	
Duration [B]	Total number of months from enrollment start to disenrollment	Total number of months from 4/2014 to disenrollment
Renewal [B]	Enrolled >= 1 month beyond renewal month. Renewal month is month 12 of the enrollment spell.	
Disenrollment [A,B]	A gap of >=2 months in CLA enrollment.	
Number of Spells [B]	Number of unique spells (within specified time range)	
Notes: For each outcome, the comparison for which it is assessed is noted in brackets.		

Measures. Table V.C.26 defines the evaluation outcomes for continuity of health insurance coverage derived from administrative data. Each outcome is assessed at the level of enrollment spell. We assess the duration of enrollment spells, the probability of disenrollment, and the probability of spell renewal. For each outcome in the table, we note the comparison for which it is assessed in brackets. For Comparison A we focus exclusively on disenrollment as the key outcome. It is the outcome for which CLAs face the most strikingly different consequences under the two policy periods and is thus plausibly most sensitive to the different regimes. Specifically, under the Core plan, there is no opportunity to initiate a new spell after disenrollment in contrast to the Standard plan. Comparing spell disposition for the continuing and new CLA enrollees (i.e., Comparison B), we consider only the renewals and enrolled months that occur on or after 4/2014, the time period during which both groups were eligible for enrollment and renewal.

From the Medicaid beneficiary survey, we assess three measures related to health insurance coverage: duration of coverage in the past 12 months; type of coverage; and the reason for not having BadgerCare coverage among respondents who report no health insurance.

Statistical Analyses. To implement Comparison A, we estimate Kaplan Meier survival curves to estimate the probability of survival (i.e., continued enrollment) by month for spells that were active in April 2013 through the end of the observation period, September 30, 2017, for CLAs compared to parents. Of interest is the potential change in the survival curve after implementation of the Standard plan relative to the prior period for the CLA enrollees relative to the parent enrollees.

While this descriptive analysis illustrates potential differences between study groups in the likelihood of disenrollment, it does not support causal inference. We acknowledge this limitation and note that Cox proportional hazard regression is customary for time-to-event outcomes and was our originally planned approach to implement a difference-in-differences analysis for Comparison A that would support causal inference. However, the Cox model was not estimable because of the features of this particular natural experiment in which there is no variation in the time entry point for the post-period. Alternative regression strategies considered were ultimately excluded because they did not correctly adjust for the right censoring of observations that is typical of survival data.

To implement Comparison B, the difference in post-waiver coverage outcomes between continuing and new CLA beneficiaries, we describe enrollment spell starts by month during the study period. We use chi-square and t-tests to compare unadjusted outcomes for the two study groups, and describe the probability of remaining enrolled by estimating a Kaplan-Meier survival curve. We implement all regression analysis for two types of spells: new and active. New spells include only those initiated on or after 4/2014. Active spells include all spells that were active on or after April 2014 including legacy spells and new spells. Legacy spells are those that began before April 2014. By looking at new spells only, it allows us to observe the disposition of spells that are initiated for each group under the same policy regime (i.e., Standard plan coverage and open enrollment).

To estimate the difference in the average duration of enrollment spells and the probability of renewal, we implement ordinary least squares and logit regression respectively. The general form of the regression model is depicted below in which

$$Y_{it} = \beta_1 New_i + \varphi X_i + \pi_t + \varepsilon_{it}$$

Y is an outcome of interest for person, *i* , and enrollment spell *t*, *New*, is an indicator that takes on a value of 0 for childless adults that transitioned from the Core plan and a value of 1 for new CLA enrollees. The unit of analysis is the enrollment-spell, X is a vector of beneficiary characteristics, π_t is a

set of calendar month dummy variables indicating the month of the spell start, and ε represents a random error term. The coefficient of interest, β_1, represents the parameter of interest. Standard errors are adjusted for multiple observations within person over time.

We then implement a Cox proportional hazard model to estimate the adjusted relative probability of disenrollment (conditional on being enrolled in the prior month) for new beneficiaries compared to continuing beneficiaries. For this analysis we include only one spell per subject: the first new spell per subject on or after 4/2014; or the first active spell per subject on or after 4/2014. Hazard models are useful to understand the factors associated with the occurrence and timing of event. The event in this case is disenrollment before the end of the observation period, September 2017.

Analyses of survey data to compare self-reported health insurance coverage for beneficiaries under the Core and Standard plans include tests of equivalence across the 2014 and 2016 survey respondents, and separately across the 2014 and 2018 respondents. We use chi-square and t-tests for categorical, and binary and continuous measures respectively. We implemented both unweighted and weighted analyses accounting for sample construction. The results are comparable, so we present unweighted results here.

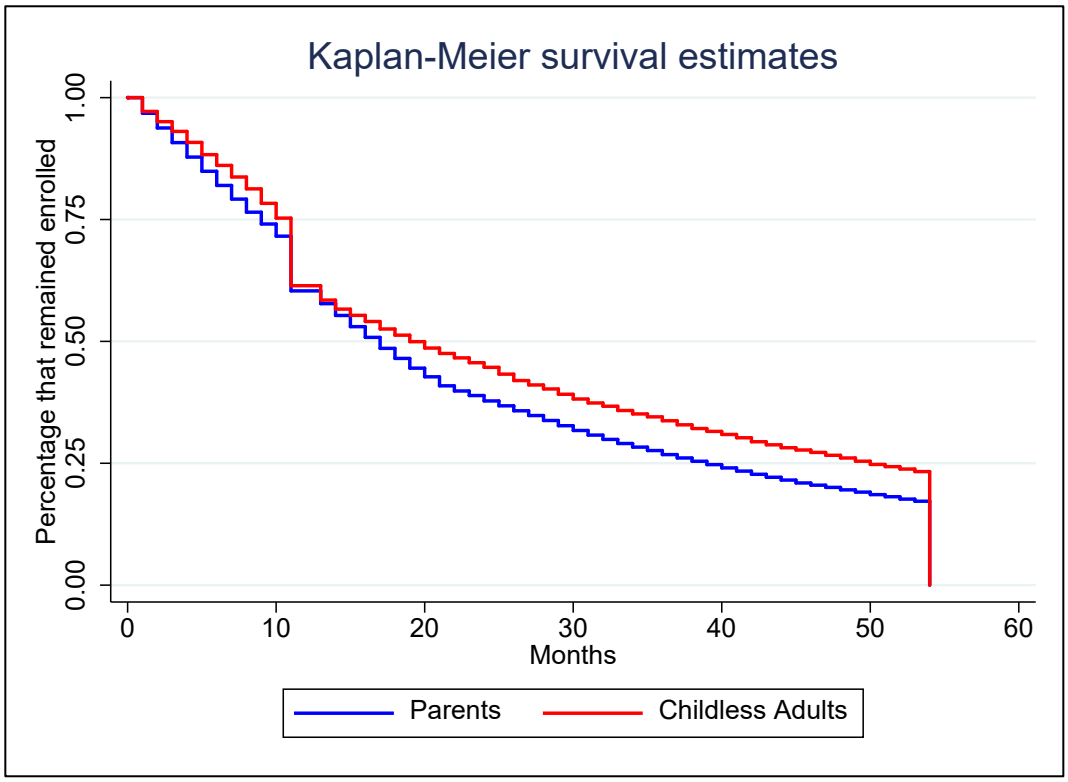
Findings and Conclusions

Figure V.C.23 plots the Kaplan-Meier survival estimates showing the proportion of the CLA and parent enrollee samples that remain enrolled in Medicaid from the first month of observation, April 2013, through September 2017. As the plot shows, throughout the evaluation period, CLAs are more likely to remain enrolled in the program. This finding is consistent with the relatively higher average duration of the active enrollment spell among childless adults compared to parent/caretakers shown in Table Q17.2.

There was a sharp drop in the likelihood of remaining enrolled for both groups at approximately 12-months into the evaluation period when the waiver was implemented. This likely reflects some loss of eligibility in both groups among those whose income exceeded 100% FPL. The likelihood of remaining enrolled continues to decline in both groups in absolute terms after implementation of the waiver; however, the slope of the decline is flatter compared to the pre-waiver period, particularly for CLAs. These findings suggest that on average, the likelihood of disenrollment was lower after implementation of the Standard Plan for CLAs compared to the prior period.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

Figure V.C.23. Kaplan-Meier Survival Curve: Estimates of the Percentage of Childless Adults and Parent/Caretaker Adults that Remain Enrolled



Notes: *The sample includes childless adult beneficiaries enrolled in April 2013 with income <= 150% FPL, and parent/caretaker beneficiaries enrolled in April 2013 with income <=150% FPL who additionally have a history of continuous Medicaid enrollment from April 2012-March 2013. Only one enrollment spell is included per subject, the spell that was active in April 2013.*

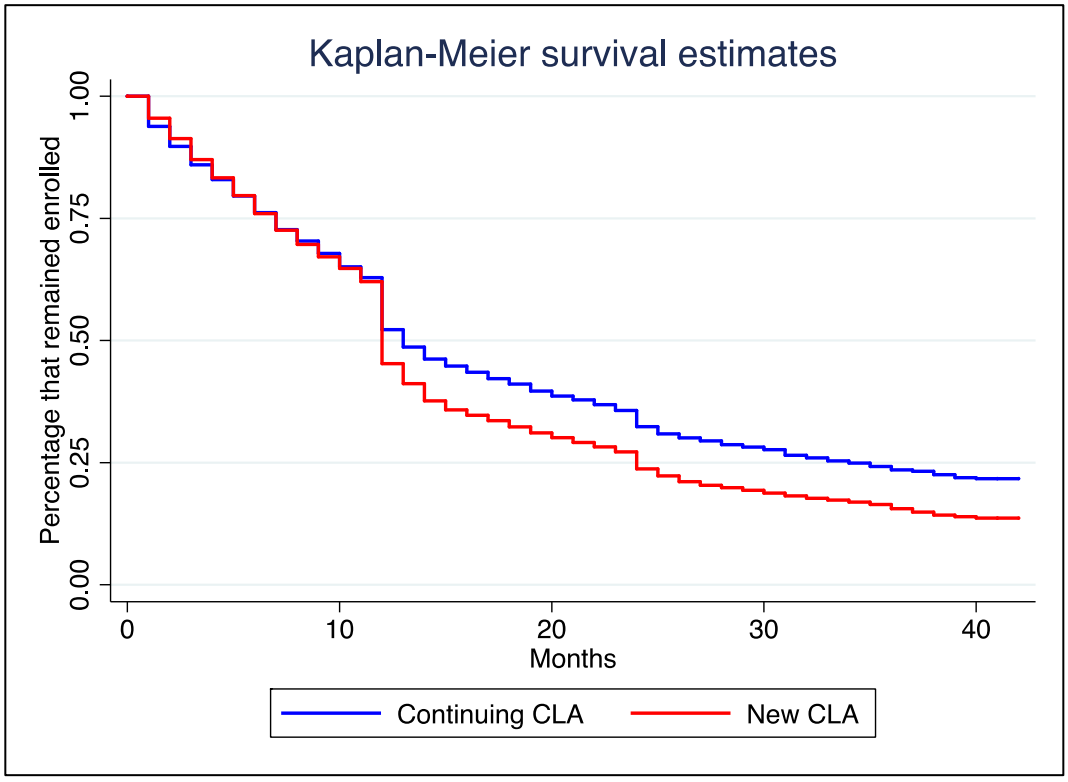
Turning now to the comparison of new and continuing CLAs (Comparison B), Figures IV.C.24 and IV.C.25 present the Kaplan-Meier survival curves for new and active spells respectively. In these analyses, we restrict the sample of enrollment spells to the first observed per person. Each figure plots the survival probability from the first spell observed on or after April 2014 until the end of the observation period, September 2017.

Figure V.C.24 includes only new enrollment spells, those that begin on or after April 2014. During the first 12 months following implementation of the waiver, there is no observable difference in the likelihood of remaining enrolled between new and continuing CLAs. After 12-months, when individuals presumably face renewal, the likelihood of remaining enrolled declines more sharply for new CLAs compared to continuing CLAs, and the difference in survival persists over time.

Figure V.C.25 plots the survival probability for active spells, that is the first spell of any kind (new or legacy) that is observed for each person in the sample. Note that the curve for new CLAs is identical

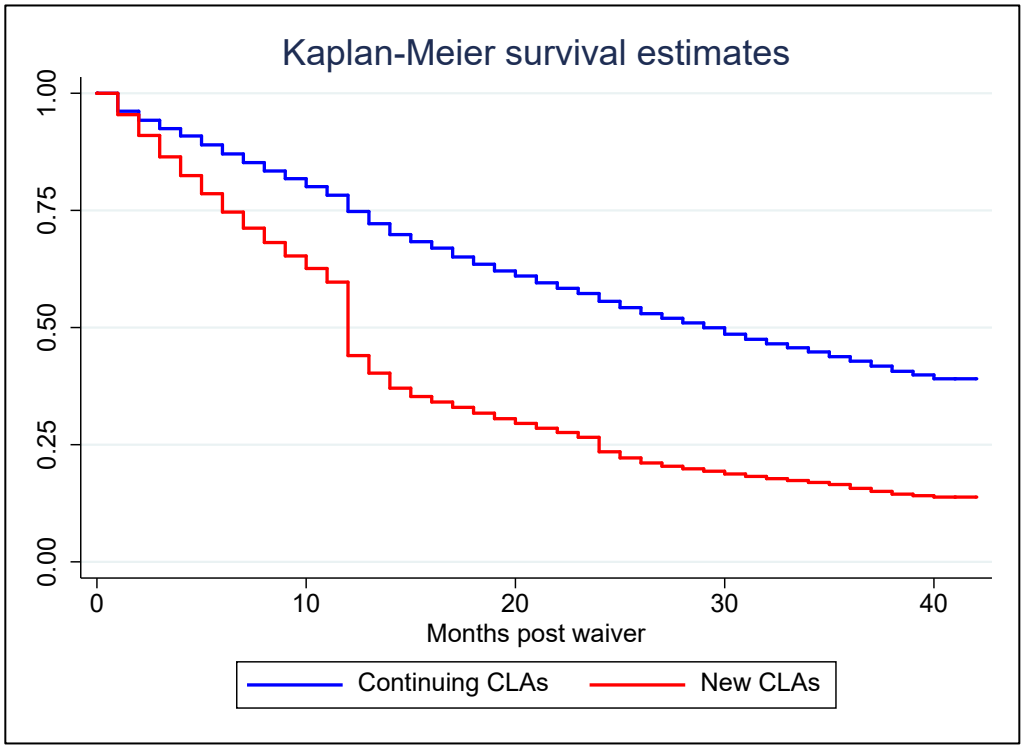
to the curve for new CLAs shown in Figure V.C.19 because new CLAs by definition could only experience new spells. By contrast, the survival curve for continuing CLAs reflects their first active spell as of April 2014, the legacy spell. When the sample of spells is limited to this spell type, the likelihood of remaining enrolled is substantially higher among continuing CLAs than new CLAs.

Figure V.C.24. Kaplan Meier Survival Curve Estimates of the Percentage of Continuing and New Childless Adult Beneficiaries that Remain Enrolled in the First New Spell, April 2014--September 2017



Note: Continuing beneficiaries have at least 1 month of CLA Core enrollment between April 2013- March 2014, and at least one month of CLA Standard plan enrollment between April 2014- March2015. New spells have a start date on or after 4/2014. Only the first new spell per subject is included in these analyses.

Figure V.C.25. Kaplan Meier Survival Curve Estimates of the Percentage of Continuing and New Childless Adults Beneficiaries that Remain Enrolled in the First Active Spell, April 2014--September 2017



Note: Continuing beneficiaries have at least 1 month of CLA Core enrollment between April 2013- March 2014, and at least one month of CLA Standard plan enrollment between April 2014- March2015. Only one spell per subject is included in these analyses, the first spell observed on or after April 2014.

Table V.C.27 presents regression results characterizing the likelihood that a spell ends in disenrollment before September 2017, the end of the observation period for this analysis. Consistent with the sample used for the Kaplan-Meier analyses in Figures IV.C.20 and C.21, for this set of analyses we include only one spell per subject: the first new spell per subject on or after 4/2014 shown in Column 1; or the first active spell per subject on or after 4/2014 shown in Column 2. As noted above, we implement Cox proportional hazard models to estimate the adjusted relative probability of disenrollment (conditional on being enrolled in the prior month) for new beneficiaries compared to continuing beneficiaries. Hazard models are useful to understand the factors associated with the occurrence and timing of disenrollment.

Each exponentiated coefficient in Table V.C.27 should be interpreted as the percentage difference in likelihood of disenrollment in the 3.5 years after implementation of the waiver relative to the excluded category. During the post-waiver period, new spells for new CLA beneficiaries are 15.5%

more likely to end in disenrollment than new spells for continuing CLA beneficiaries consistent with the survival curve in Figure V.C.20. The finding is significantly more pronounced when comparing active spells, effectively a comparison of legacy spells for continuing CLAs and new spells for new CLAs. In this case, we find that during the post-waiver period, new spells among new CLAs are more than twice as likely to end in disenrollment than are legacy spells among continuing CLAs.

Table V.C.27. Cox proportional hazard estimates of the relative disenrollment probability for new beneficiaries compared to continuing beneficiaries, April 2014--September 2017

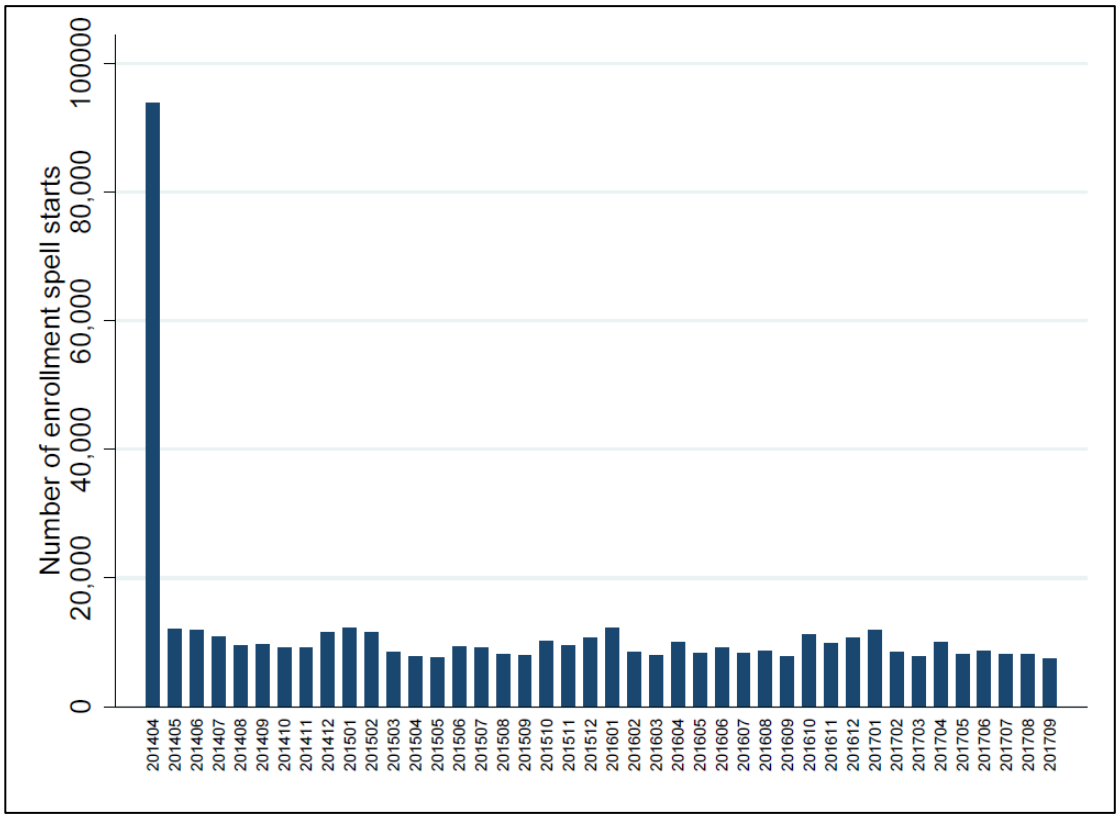
	(1) New spells	(2) Active spells
	Hazard ratio (se)	**Hazard ratio (se)**
New CLA beneficiary	1.155***	2.086***
	(0.0247)	(0.0288)
Female	1.006	1.007*
	(0.00406)	(0.00404)
White	ref	ref
Black	1.122***	1.126***
	(0.00573)	(0.00571)
Other Race/Ethnicity	1.037***	1.040***
	(0.00726)	(0.00724)
Hispanic	1.160***	1.163***
	(0.00926)	(0.00923)
Ages 19 - 34	ref	ref
Ages 35 - 49	0.779***	0.774***
	(0.00381)	(0.00377)
Ages >= 50	0.762***	0.763***
	(0.00403)	(0.00399)
< High school graduate	ref	ref
>=High school graduate	1.029***	1.028***
	(0.00562)	(0.00557)
Missing education	1.098***	1.094***
	(0.00654)	(0.00646)
Resides in non-metropolitan area	ref	ref
Resides in metropolitan area	1.088***	1.086***
	(0.00475)	(0.00470)
N	353,203	360,983

Note: Column (1) includes spells initiated on or after 4/2014. Column (2) includes spells active on or after 4/2014. We include only one spell per subject: the first new spell per subject on or after 4/2014; or the first active spell per subject on or after 4/2014.
***p<0.01; **p<0.05; *p<0.10

Figures V.C.26 and C.27 illustrate the distribution of enrollment spell starts by month for the study period, April 2014 through September 2017. For purposes of this analysis, an enrollment spell begins with the enrollment start date and ends with an enrollment gap of more than 1 month. For example, if a beneficiary enrolls in April 2014, disenrolls in June 2014, re-enrolls in July 2014 and again disenrolls in December 2014, we define the enrollment spell start as April 2014 and the spell end as December 2014. Figure V.C.26 illustrates the distribution of spell starts for new CLA enrollees.

In the first month of Standard plan availability for childless adults in Wisconsin, 93,852 adults enrolled. New spell starts quickly settled to a rate of roughly 10,000 per month thereafter with a range of approximately 7,400 to 12,300 new spell starts per month throughout the observation period.

Figure V.C.26. Enrollment spell starts by month for new CLA beneficiaries, April 2014 -- September 2017

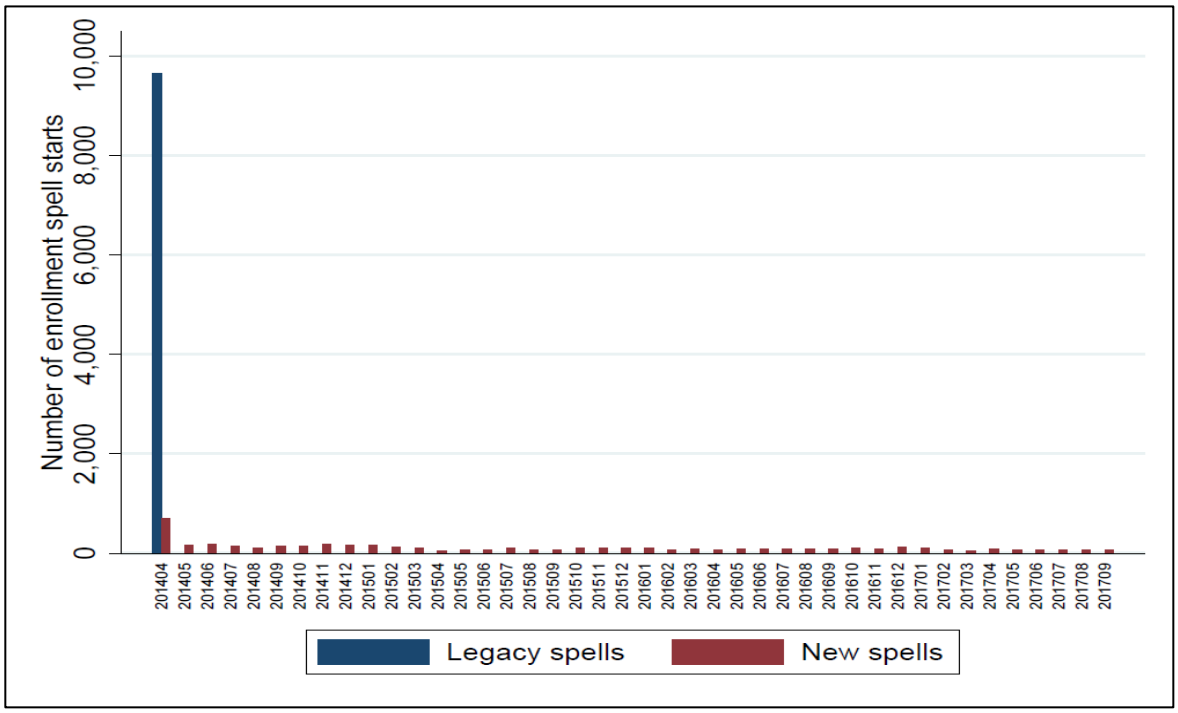


Notes: New beneficiaries have at least one month of CLA Standard Plan enrollment on or after April 2014 and no CLA Core Plan enrollment between April 2013--March 2014. New spells have a start date on or after 4/2014.

Figure V.C.27 illustrates the distribution of spell starts for continuing CLA enrollees. For this group, we show two types of spells in order to account for all spells active for continuing CLA enrollees during the demonstration period. As described earlier, a legacy spell begins before April 2014 and ends on or after April 2014. In Figure V.C.23, we assign legacy spells a start date of April 2014.

Figure V.C.27 shows that, among continuing CLA beneficiaries in April 2014, 9,652 individuals had an active enrollment spell that began before April 2014 (i.e., a legacy spell). Additionally, 698 childless adults began a new enrollment spell in April 2014. These are individuals who had at least one month of Core enrollment from April 2013-March2014 and exited the Core plan before April 2014. Throughout the first two years of the waiver, we observe new enrollment spells in each month among the continuing CLA study group, an average of 112 new spell starts/month.

Figure V.C.27. Enrollment spell starts by month for continuing CLA beneficiaries, April 2014 -- September 2017



Note: Continuing beneficiaries have at least 1 month of CLA Core enrollment between April 2013- March 2014, and at least one month of CLA Standard plan enrollment between April 2014- March2015. New spells have a start date on or after 4/2014. Legacy spells began before 4/2014 and end on or after 4/2014.

Table V.C.28 presents a comparison of unadjusted enrollment outcomes for the new and continuing CLA enrollees. It shows that the large majority of spells, N=9,652, that we observe for continuing CLA beneficiaries are legacy spells, those that began before April 2014. Among continuing CLA

beneficiaries, the average duration of legacy spells in the post-waiver period is approximately 28.1 months compared to 13.7 months for new spells in this study group. The likelihood of renewal is greater for legacy spells relative to new spells.

We test the equivalence of new spell outcomes between continuing and new CLA enrollees. This comparison is particularly useful for considering the level of enrollment mobility and continuity for the new CLA population relative to a stably insured CLA population when they face the same coverage and enrollment flexibility. Among continuing CLAs, there were 4,767 new spells during the observation period. We find statistically significant differences in the disposition of new spells across the continuing and new CLA enrollees. The average enrollment duration for new spells is 13.7 months for continuing CLA enrollees and 12.5 months for new CLA enrollees. Renewal of new spells is more likely among continuing CLAs relative to new CLAs. Specifically, 38.5% of new spells are renewed among continuing CLA beneficiaries compared to 32.8% among new CLA beneficiaries.

These unadjusted findings suggest, with a common benefits package and open enrollment, greater enrollment continuity among the continuing CLA enrollees than among the new CLA enrollees.

Table V.C.28. Frequency and characteristics of enrollment spells for new and continuing CLA beneficiaries, April 2014--September 2017

	Continuing CLAs		New CLAs	
	Legacy spells	New spells (1)	New spells (2)	diff (1)-(2)
	Mean(SE)	Mean(SE)	Mean(SE)	p-value
Average spell length, post waiver	28.134 0.148	13.724 0.164	12.513 0.015	<0.01
Probability of renewal, post waiver	0.708 0.005	0.385 0.007	0.328 0.001	<0.01
Number of spells	9,652	4,767	481,303	

Notes: Continuing beneficiaries have at least 1 month of CLA Core enrollment between April 2013-March 2014 and at least one month of CLA Standard Plan enrollment between April 2014-March2015. New beneficiaries have at least one month of CLA Standard Plan enrollment on or after April 2014 through September 2017, and no CLA Core enrollment between April 2013-March 2014. A legacy spell begins before 4/2014 and ends on or after 4/2014. For all spell types, only the spell months post-waiver are considered here. A new spell begins on or after 4/2014. First spells are a subset of New Spells. Specifically, a first spell is the first new spell observed for a given beneficiary.

Tables V.C.29-C30 present adjusted, regression results for spell duration and renewal. Table V.C.29 presents the results from ordinary least squares regression models comparing the average spell duration for new CLA enrollees relative to continuing CLA enrollees in the post-waiver period, April 2014 – September 2017. Each coefficient in Table V.C.29 represents the mean difference in spell duration (in months) associated with a one-unit change in the characteristic holding all other variables at their mean value. Standard errors are in parentheses below the estimate.

Table V.C.29. Adjusted mean difference in spell duration between new and continuing CLA beneficiaries in the post-waiver period, April 2014--September 2017

	(1) New spells		(2) Active spells
	β(se)		β(se)
New CLA beneficiary	-0.585***		-0.602***
	(0.172)		(0.172)
Female	-0.0669**		-0.0902***
	(0.0299)		(0.0299)
White	ref		ref
Black	-0.554***		-0.579***
	(0.0351)		(0.0351)
Other Race/Ethnicity	-0.523***		-0.534***
	(0.0501)		(0.0501)
Hispanic	-0.954***		-0.980***
	(0.0539)		(0.0539)
Ages 19 - 34	ref		ref
Ages 35 - 49	1.834***		1.873***
	(0.0365)		(0.0364)
Ages > 50	2.533***		2.464***
	(0.0397)		(0.0443)
< High school graduate	ref		ref
>- High school graduate	-0.259***		-0.249***
	(0.0383)		(0.0384)
Missing education	-0.958***		-0.919***
	(0.0431)		(0.0431)
Resides in non-metropolitan area	ref		ref
Resides in metropolitan area	-0.240***		-0.233***
	(0.0325)		(0.0325)
Post waiver spell start	n/a		-14.93 ***
			(0.231)
Constant	11.93***		26.95***
	(0.180)		(0.155)
N	486,070		495,722

Column (1) includes all spells initiated on or after 4/2014. Column (2) includes all spells active on or after 4/2014 including new and legacy spells. Regression models adjust for calendar month of enrollment spell start with the inclusion of calendar month indicator variables. Standard errors are clustered at the person-level to account for correlation within person across multiple spells. ***p<0.01, **p<0.05, *p<0.10

Consistent with the unadjusted findings (Table V.C.28), the average duration of new spells among new CLA enrollees is shorter by 0.59 months than new spells among continuing CLA enrollees. Including all active spells, the average duration of spells among new CLA enrollees is 0.60 months shorter than spells among continuing CLA enrollees.

Several potential explanations exist for these differences in spell length including the new enrollment and benefit features under the waiver and differences in the characteristics of new and continuing CLA enrollees that may be related to spell length. This analysis cannot distinguish between these possibilities; however, differences between new and continuing CLA enrollees in socio-demographic attributes suggest the plausibility of the latter explanation.

To estimate the association between the availability of Standard plan coverage and flexibility to exit and enter coverage under the 2014 waiver for childless adults, and the probability of spell renewal, we use logit regression and present the average marginal effects from these analyses in Table V.C.30. Each estimate in Table V.C.30 represents the difference in the probability of spell renewal associated with a one-unit change in the characteristic holding all other variables at their mean values.

The probability of spell renewal is lower among new CLA enrollees than among continuing CLA beneficiaries by 3.65 and 3.7 percentage points for the sample of new spells and of all active spells respectively. Individuals who renew their enrollment spell relative to those who do not are also older, more likely to be female, and less likely to be of Hispanic origin.

From the Medicaid beneficiary surveys, Table V.C.31 presents health insurance enrollment status outcomes. The likelihood of reporting no health insurance in the past 12 months declined from 26% of CLA respondents in 2014 to 3% and 1% respectively in 2016 and 2018. Equally notable is the significant increase in the percentage of the sample that reported 12 months of coverage, from a low of 40% in 2014 to greater than 73% in both 2016 and 2018. In 2016 and 2018, approximately 63% and 74% respectively reported current coverage through Medicaid or BadgerCare Plus, significantly greater than the 23% who reported such coverage in the 2014 survey. Among respondents who reported no BadgerCare coverage, the reasons given to explain this lack of coverage differed across the survey periods. However, the sample size for this question is very small in 2016 and 2018; thus, we recommend caution in the interpretation of these results.

Table V.C.30. The mean difference in probability of spell renewal for new CLA beneficiaries relative to continuing CLA beneficiaries in the post-waiver period, April 2014--September 2017

	(1) New spells	(2) Active spells
	Avg marginal effect	Avg marginal effect
New CLA beneficiary	-0.0365***	-0.0373***
	(0.00700)	(0.00708)
Female	0.00855***	0.00794***
	(0.00142)	(0.00142)
White	ref	ref
Black	-0.0301***	-0.0308***
	(0.00171)	(0.00172)
Other Race/Ethnicity	-0.0211***	-0.0214***
	(0.00243)	(0.00244)
Hispanic	-0.0495***	-0.0505***
	(0.00265)	(0.00267)
Ages 19 - 34	ref	ref
Ages 35 - 49	0.0694***	0.0703***
	(0.00172)	(0.00172)
Ages > 50	0.0952***	0.0945***
	(0.00196)	(0.00195)
< High school graduate	ref	ref
>= High school graduate	-0.0107***	-0.0103***
	(0.00193)	(0.00194)
Missing education	-0.0368***	-0.0357***
	(0.00210)	(0.00210)
Resides in non-metropolitan area	ref	ref
Resides in metropolitan area	-0.0132***	-0.0131***
	(0.00154)	(0.00154)
Post waiver spell start	n/a	-0.374***
		(0.00888)
N	486,070	495,722

Notes: Column (1) includes all spells initiated on or after 4/2014. Column (2) includes all spells active on or after 4/2014. Regression models adjust for calendar month of enrollment spell start with the inclusion of calendar month indicator variables. Standard errors are clustered at the person-level to account for correlation within person across multiple spells. The average marginal effect represents the difference in the probability of spell renewal associated with a one-unit change in the characteristic holding all other variables at their mean values.
***p<0.01; **p<0.05; *p<0.10

Table V.C.31. Wisconsin Medicaid beneficiary survey results: health insurance status among childless adult beneficiaries, 2014-2018

	%/Mean			2014 v. 2016 p-value	2014 v. 2018 p-value
	(1)	(2)	(3)		
Outcome Measure	2014	2016	2018		
	N=192	N=278	N=265		
In the past 12 months, how many months did you have some kind of health care coverage?				<0.01	<0.01
No health care coverage	26.3%	3.2%	1.0%		
1-11 months of health care coverage	31.9%	19.2%	23.4%		
12 months of health care coverage	39.9%	74.9%	73.3%		
Missing	1.9%	2.7%	2.3%		
What type of health care coverage do you currently have?				<0.01	<0.01
Medicaid, BadgerCare Plus	22.7%	63.2%	74.0%		
Employer or family member's employer	10.0%	3.9%	3.8%		
Private plan	1.5%	0.5%	0.0%		
Medicare	7.9%	5.3%	3.5%		
ACA/Obamacare	12.2%	11.1%	2.3%		
Uninsured	25.8%	6.0%	3.2%		
Other	8.3%	6.2%	8.7%		
Missing	11.6%	3.8%	4.5%		
For those who no longer have Medicaid/BadgerCare coverage: what are the reasons you no longer have that coverage?				<0.05	<0.05
Not eligible	23.8%	55.1%	70.1%		
Premium related	29.2%	0.0%	0.0%		
Other	5.5%	30.2%	0.0%		
Missing	41.6%	14.7%	29.9%		
N	44	11	16		

Notes: Authors' unweighted estimates using the Wisconsin Medicaid Beneficiary Surveys. Chi-square tests are used to test equivalence of categorical outcomes between cross-sectional samples of childless adult respondents. Unless indicated, the sample size for each question is indicated at the top of columns 1-3.

Conclusions

Overall, the findings suggest that continuing CLA beneficiaries experienced greater continuity of coverage under the Standard plan than did new CLAs when continuity is defined by enrollment spell duration, renewal and disenrollment. It is highly plausible that underlying differences between these two study groups may explain this divergence in coverage continuity, although we cannot separate that potential explanation from the availability of Standard Plan coverage

From the analyses comparing continuing CLA enrollees with continuing parents and caretakers, descriptive evidence suggests that CLA beneficiaries experienced relatively lower likelihood of disenrollment under the Standard plan compared to the Core plan, when compared to a within-state, within-Medicaid comparison group of parents and caretaker beneficiaries.

The survey data analysis indicates a shift toward greater and more continuous coverage, and a higher likelihood of Medicaid or BadgerCare coverage in particular, among CLAs over time. This shift may reflect several factors. The time lag between sample construction and survey implementation in 2014 may have contributed to relatively lower reporting of coverage among 2014 respondents as insurance status may have changed between sample construction and survey completion. The 2014 waiver increased the availability of BadgerCare for income-eligible CLAs by lifting the long-standing enrollment suspension and allowed income-eligible individuals to re-enter if their enrollment lapsed or ended.

Section VI of this report provides a more in-depth discussion of conclusions in the context of the overall waiver evaluation.

Consolidated Summary of CLA Hypotheses 13-17 Results and Alternative Comparison Strategies

The objective of evaluation questions 13-17 is to understand whether and to what extent the provision of standard Medicaid benefits to childless adult (CLAs) beneficiaries affected their health, health care, and health care costs CLAs. We implement three comparisons to address questions 13-16 together. We first compare the difference in outcomes for continuously enrolled CLA beneficiaries after enrollment into the Standard plan relative to the Core plan enrollment to the difference in outcomes over the same period for continuously enrolled parent and caretaker beneficiaries. The first difference, most directly addresses the evaluation questions while the second difference, aims to net out the expected change in outcomes related to within-state and within-Medicaid trends that similarly affected both groups.

Second, we compare outcomes after implementation of the Standard plan for new CLA beneficiaries, those who became eligible on or after April 2014, to continuing CLA beneficiaries, those who transitioned from Core plan coverage to Standard Plan coverage in April 2014. This comparison yields insight into the association between Standard Plan coverage and study outcomes for CLAs who experienced a richer set of benefits from the start of their Medicaid enrollment (i.e., new enrollees) relative to CLAs who initially experienced a more limited set of Medicaid benefits (i.e., continuing CLAs.)

Third, we use the WI Medicaid Beneficiary Surveys and implement a cross-sectional design to compare outcomes for three CLA samples: CLA beneficiaries enrolled in the Core plan before implementation of the 2014 waiver; CLA beneficiaries enrolled in the Standard plan in 2016; and CLA beneficiaries enrolled in the Standard Plan in 2018. Findings from this comparison are particularly helpful to characterize the CLA population and provide context for findings from the claims-based analysis.

A summary of findings that cut across these questions and the alternative comparison strategies are summarized below.

13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase the cost-effectiveness (outcomes/cost) of Medicaid services?
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare beneficiaries increase the cost-effectiveness (utilization/cost) of Medicaid services?

Comparison of CLAs to Parents and Caretakers

- We compared the change in outcomes for CLAs relative to parents one year after implementation of the Standard plan for CLAs compared to the prior year.
- Health care use generally increased for both study groups in the year after implementation of the Standard plan; however, this increase was larger for CLAs. These increases are consistent with the increase in covered services available under the Standard plan compared to the Core plan.
- The average number of outpatient visits increased by 25%, or approximately 2.7 visits per year, among CLAs relative to parents after implementation of the Standard plan. The average number of ED visits and hospitalizations increased by 21% and 45% respectively among CLAs relative to parents. Finally, among CLAs, the likelihood of receiving any prescription medication in the year increased by 4% relative to parents.
- Select measures of health-related health care use also increased among CLAs relative to parents including the probability of receiving a flu shot, a smoking cessation visit, and an HbA1c test (among adults with diabetes); however, this pattern was not observed for all health-related care use measures.
- Health care costs for each major service category, outpatient, emergency department, and inpatient and prescription medications increased for CLAs relative to parents after implementation of the Standard plan. The magnitudes of increase were as follows: 18% for outpatient visits; 59% for emergency department visits; 31% for inpatient hospitalizations; and 49% for prescription medications.

Comparison of Continuing CLAs to Newly Enrolled CLAs

- We compared the difference in outcomes for continuing CLAs relative to new CLAs in the year after implementation of the Standard plan.
- Overall, continuing CLAs had higher rates of use for outpatient visits and prescription medications and lower rates of use for acute care services including emergency department visits and inpatient admissions.
- Continuing CLAs were more likely to receive some types of health-related care use including flu shots and mammograms, and less likely to have potentially preventable emergency department visits than new CLA enrollees.
- The pattern of care use observed among continuing CLAs compared to newly enrolled CLAs is consistent with a population that is more routinely engaged with the health care sector. While the study design cannot identify the explanation for outcome differences between these two groups, the findings suggest the importance of examining the relationship between continuity and longevity of enrollment duration and health-related care use patterns

Comparison of CLA beneficiaries surveyed in in 2014, 2016, and 2018

- Chronic conditions and work-limiting health conditions are common among CLA beneficiaries. More than 40% of CLAs reported having at least 2 chronic conditions; over 40% screened positive for depression; and approximately 38% reported having a condition that limits their ability to work.
- Approximately 88% of CLA beneficiaries reported getting all of the medical care needed in 2018 compared to 70% in 2014.
- When asked about specific services that were needed but not obtained due to cost, respondents most commonly reported eyeglasses/vision and dental care.
- The percentage of respondents that rated the medical care received in the past 12 months as excellent or very good increased from 47% in 2014 to 60% in 2016.
- Refusal of services due to inability to pay was infrequent. Across all three surveys, 3-5% of CLA respondents indicated that they had been refused treatment because of money owed to a health care provider.
- Medical debt was a common phenomenon but decreased over time. In 2014, 48% of CLA respondents reported that they currently owed money for medical expenses. That figure decreased to 35% and 33% in 2016 and 2018 respectively.
- Financial access barriers persist among CLA respondents. Across the 2016 and 2018 survey years, 23-33% of respondents indicated that they had problems paying medical bills in the past 12 months.

Question 17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?

The objective of this question is to understand whether and to what extent the provision of standard Medicaid benefits to childless adult (CLAs) beneficiaries increased continuity of health coverage. Consistent with the analytic approaches used for questions 13-16, we implement a post-waiver comparison between continuing and new CLA beneficiaries, and a cross-sectional design to compare survey outcomes for three samples of CLAs. Additionally, we implement a pre-post comparison between CLA and parent/caretaker beneficiaries who were enrolled in both the pre- and post-waiver periods.

Comparison of CLAs and Parents and Caretakers

- We compared the change in the likelihood of remaining enrolled after the implementation of the waiver relative to the preceding period for CLAs relative to the comparable change for a comparison group of parents and caretakers. This comparison is useful for understanding how CLA enrollees' enrollment behavior responded to a benefit change compared to a stably enrolled, Medicaid population that did not experience the change.

- The likelihood of remaining enrolled continued to decline in both groups in absolute terms after implementation of the waiver; however, the slope of the decline was flatter compared to the pre-waiver period, particularly for CLAs.
- These findings suggest that on average, the likelihood of remaining enrolled was higher after implementation of the Standard Plan for CLAs compared to the Core plan period.

Comparison of Continuing CLAs to Newly Enrolled CLAs

- We compared the difference in enrollment duration and the probability of renewal and disenrollment among new and continuing CLA enrollees. This comparison is useful for considering the level of enrollment mobility for the new CLA population relative to a stably enrolled CLA population when they face the same coverage and enrollment flexibility.
- The two groups differ across demographic characteristics. Relative to continuing CLA enrollees (N=11,230) the new CLA enrollees (N=330,129) are younger, and more likely to be non-White and male. The two groups are similar with respect to educational attainment with slightly less than half reporting a high school education.
- Across all measures of continuity assessed, including duration of enrollment, likelihood of renewal, and likelihood of disenrollment, continuing CLAs experience greater continuity of coverage in the post-waiver period compared to new CLAs. This observation holds for both enrollment spells that began before April 2014, and enrollment spells initiated after April 2014.
- It is plausible that underlying differences between new and continuing CLAs may explain the difference in coverage continuity, although we cannot separate that potential explanation from the availability of Standard Plan coverage

Comparison of CLA beneficiaries surveyed in in 2014, 2016, and 2018

- We compared the difference in health insurance coverage for CLA respondents sampled during the Core plan period to two CLA samples from the Standard plan period. The overall findings indicate increased health insurance coverage for CLAs after implementation of the Standard plan relative to the preceding period.
- The likelihood of reporting no health insurance in the past 12 months declined from 26% of CLA respondents in 2014 to 3% and 1% respectively in 2016 and 2018.
- Similarly, the percentage of CLAs that reported 12 months of health insurance coverage, increased from 40% in 2014 to greater than 73% in both 2016 and 2018.
- In 2016 and 2018, approximately 63% and 74% respectively reported current coverage through Medicaid or BadgerCare Plus, significantly greater than the 23% who reported such coverage in the 2014 survey.

VI. CONCLUSIONS

This section begins with a consolidated summary of results for each of the three policies tested under the 2014 demonstration waiver: 1) premiums for TMA, 2) RRP, and 3) standard Medicaid benefits for CLAs. Then, we address the two questions CMS poses in its guidance to states for summative evaluation reports: 1) Was demonstration effective in achieving the goals and objectives established at the beginning of the demonstration? and 2) What could be done in the future that would better enable such an effort to more fully achieve those purposes, aims, objectives, and goals?

A. Consolidated summary of results for the three test policies

A1. Premiums for Transitional Medicaid (TMA)

The waiver required premiums for members of Transitions Medical Assistance with incomes above 133% FPL, and premiums after six months TMA enrollment for members 100-133% FPL. The evaluation identified the following results:

1. The waiver's premium provisions caused an immediate decrease in overall TMA enrollment.
2. Results from the administrative data suggest that premiums may have affected health care access as measured by utilization, but indirectly (through selective enrollment).
3. Survey results indicate that those TMA members exposed to premiums (above 133% FPL) did not otherwise differ from those not exposed to premiums. Notable exceptions are that the group that paid premiums were less likely to perceive their care to be affordable and more likely to have borrowed money to pay for medical debt.
4. The evidence does not consistently support the possibility of a reduction in unnecessary healthcare services. Although we did find a decrease in the probability of preventable/avoidable emergency visits associated with the premiums in some models, we also found an increase in preventable hospitalization services defined under within Prevention Quality indicator (PQI) composite measures.
5. Premiums did not generally lead to improved health outcomes and did not produce an overall reduction in health care spending.
6. A negligible change occurred in the ratio of outpatient visits to costs (utilization/cost ratio). A small change was observed in emergency visits and breast cancer screenings relative to cost (Outcome/cost ratio), but these observations are not meaningful and not likely to reflect a response to premiums.

A2. Restrictive Reenrollment Period (RRP) for Non-Payment of Premiums

The 2014 waiver continued to impose restrictive reenrollment periods (RRPs) on individuals in TMA for non-payment of premiums, but shortened their mean length from 12 to 3 months, and allowed for earlier reentry upon payment of owed premiums. The 3-month RRP, as expected, substantially reduced the mean length of RRP spells. The evaluation identified the following results:

1. No definitive changes in rates of premium payment or rates of disenrollment related to the policy change.
2. Decrease in individuals transitioning back to BadgerCare after leaving TMA in the wake of the policy change.
3. Individuals who were subject to the 3-month RRP, and who subsequently reentered the program in the year that TMA started, showed notably lower utilization of health services following reentry spanning outpatient, inpatient, and prescription drugs. One interpretation is that the experience of RRP dislocates individuals from health services that they may have used prior to leaving TMA.
4. A survey of individuals who had a recent experience of RRP showed them having significantly lower self-reported access to care and more financial barriers than other individuals recently enrolled in TMA.
5. Overall, these data suggest that, while the 3-month RRP reduced the amount of time spent out of the program, even short experiences of RRP are associated with lower access to care.

A3. Childless Adults: Medicaid Standard Plan Benefits

The waiver extended standard Medicaid benefits to childless adult (CLAs) with incomes up to 100% FPL. The evaluation used several comparison group methods to assess how this coverage affected beneficiary health, health care, and health care costs. Results include the following:

1. The likelihood of remaining enrolled was higher after implementation of the Standard Plan for CLAs compared to the prior period.
2. Utilization of select services increased for this population after implementation of the Standard Plan, including increased in the average number of outpatient visits, emergency department visits and hospitalizations, the likelihood of receiving any prescription medication, the probability of receiving a flu shot, a smoking cessation visit, and an HbA1c test (among adults with diabetes).
3. Health care costs for each major service category, outpatient, emergency department, and inpatient and prescription medications increased for CLAs after implementation of the Standard plan.
4. CLAs that continued from pre-waiver to post-waiver differed from CLAs newly enrolling post-waiver:

a. Relative to continuing CLA enrollees, the post-waiver new CLA enrollees are younger, and more likely to be non-White and male. The two groups are similar with respect to educational attainment with slightly less than half reporting a high school education.

b. Overall, continuing CLAs had higher rates of use for outpatient visits and prescription medications and lower rates of use for acute care services including emergency department visits and inpatient admissions.

c. Continuing CLAs were more likely to receive some types of health-related care use including flu shots and mammograms, and less likely to have potentially preventable emergency department visits than new CLA enrollees.

d. The pattern of care use observed among continuing CLAs compared to newly enrolled CLAs is consistent with a population that is more routinely engaged with the health care sector.

e. Across all measures of continuity assessed, including duration of enrollment, likelihood of renewal, and likelihood of disenrollment, continuing CLAs experience greater continuity of coverage in the post-waiver period compared to new CLAs.

f. It is plausible that underlying differences between new and continuing CLAs may explain the difference in coverage continuity, although we cannot separate that potential explanation from the availability of Standard Plan coverage

6. CLAs surveyed over time (in 2014, 2016, and 2018) report improvements in insurance coverage and access to care.

a. Survey findings indicate increased health insurance coverage and increased continuous insurance coverage for CLAs after implementation of the Standard plan relative to the preceding period.

b. The survey found that medical debt was common, but decreased over time. In 2014, 48% of CLA respondents reported that they currently owed money for medical expenses. That figure decreased to 35% and 33% in 2016 and 2018 respectively.

c. Approximately 88% of CLA beneficiaries reported getting all of the medical care needed in 2018 compared to 70% in 2014. Nonetheless, financial access barriers persist among CLA respondents. Across the 2016 and 2018 survey years, 23-33% of respondents indicated that they had problems paying medical bills in the past 12 months.

B. CMS Questions for Summative Evaluation Reports

B1. Effectiveness of Demonstration Waiver Provisions

- ***In general, was the demonstration effective in achieving the goals and objectives established at the beginning of the demonstration?***

CMS, in its approval of Wisconsin's 2014 Medicaid waiver, had identified core elements of the evaluation, directing the State to test seven specific questions. The Wisconsin DHS defined its 17 evaluation questions based on the seven CMS questions. The following provides a brief summary of answers to the CMS questions:

1. *For the TMA demonstration participants, will the premium requirement reduce the incidence of unnecessary services, slow the growth in healthcare spending, and increase the cost effectiveness of Medicaid services?*

   The use of premiums in this waiver were not effective in reducing the incidence of unnecessary services, slowing the growth in healthcare spending, and increasing the cost effectiveness of Medicaid services. CMS itself has recently recognized the weakness of such hypotheses. CMS recent guidance to states related to 1115 waivers notes the following:

   > "States with traditional premiums, not structured as beneficiary accounts, should not expect to see changes to service use, except to the extent that there is an income effect of premiums on health care demand. Hypotheses and research questions about service use should be adopted only by states with beneficiary accounts."[13]

   However, these outcomes may be affected by selection effects, such that premiums induce declines in enrollment by individuals that are more or less likely to use health care in certain ways. The evaluation considered this potential in its exploration of hypotheses related to CMS questions 5 and 6.

2. *Is there any impact on utilization and/or costs associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?*

   Individuals who were subject to the 3-month RRP, and who subsequently reentered the program in the year that TMA started, showed notably lower utilization of health services following reentry spanning outpatient, inpatient, and prescription drugs. One interpretation is that the experience of RRP dislocates individuals from health services that they may have used prior to leaving TMA. A survey of individuals who had a recent experience of RRP showed them having significantly lower self-reported access to care and more financial barriers than other individuals recently enrolled in TMA. Overall, these data suggest that, while the 3-month RRP reduced the amount of time spent out of the program, even short experiences of RRP are associated with lower access to care.

[13] CMS. Appendix to Evaluation Design Guidance for Section 1115 Eligibility and Coverage Demonstrations: Premiums or Account Payments. Available at https://www.medicaid.gov/medicaid/section-1115-demo/downloads/evaluation-reports/ce-evaluation-design-guidance-premiums-appendix.pdf

3. *Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?*

   The sample of individuals who were continuously enrolled in TMA over 12 months generally did not show a change in utilization and spending, compared to substantial changes observed among those that disenrolled and then re-enrolled.

4. *What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment? Does this impact vary by income level?*

   The evaluation identified no definitive changes in rates of premium payment or rates of disenrollment related to the policy change, although there was an observed decrease in individuals returning to BadgerCare after leaving TMA in the wake of the policy change.

5. *What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?*

   The waiver's premium provisions caused an immediate decrease in overall TMA enrollment. Increased premium exposure particularly reduced the length of TMA enrollment spell for those with incomes below 150% FPL.

6. *How is enrollment or access to care affected by the application of new, or increased, premium amounts?*

   Premiums, by reducing enrollment, affected health care access as measured by utilization.

7. *Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes, a reduction in the incidence of unnecessary services, an increase in the cost effectiveness of Medicaid services and an increase in the continuity of health coverage?*

   The provision of a Standard Medicaid benefit plan to childless adults was effective in improving enrollment, continuity of coverage, and access to care for childless adults. The likelihood of remaining enrolled was higher after implementation of the Standard Plan for CLAs compared to the prior period.

   Utilization of services increased for this population after implementation of the Standard Plan, including increased in the average number of outpatient visits, emergency department visits and hospitalizations, the likelihood of receiving any prescription medication, the probability of receiving a flu shot, a smoking cessation visit, and an HbA1c test (among adults with diabetes). Concomitantly, health care costs for each major service category, outpatient, emergency department, inpatient and prescription medications increased for CLAs after implementation of

the Standard plan. Supplemental analyses demonstrated improved use of behavioral health services and, for persons with diabetes, better access to and use of diabetes-related prescription medications.

CLAs that entered the program post-waiver differed from those that had been in the program pre-waiver: Overall, continuing CLAs had higher rates of use for outpatient visits and prescription medications and lower rates of use for acute care services including emergency department visits and inpatient admissions. Continuing CLAs were more likely to receive some types of health-related care use including flu shots and mammograms, and less likely to have potentially preventable emergency department visits than new CLA enrollees. The pattern of care use observed among continuing CLAs compared to newly enrolled CLAs is consistent with a population that is more routinely engaged with the health care sector.

The State of Wisconsin's waiver proposal and CMS approval documents stated the following objectives for the 2014 waiver:

1. *Ensure every Wisconsin resident has access to affordable health insurance and reduce the state's uninsured rate.*
2. *Provide a standard set of comprehensive benefits that will lead to improved healthcare outcomes at no additional cost to state taxpayers and the federal government.*
3. *Create a program that is sustainable, so our healthcare safety net is available to those who need it most.*

The waiver document noted that the Affordable Care Act (ACA) provisions would allow most individuals with household incomes greater than 100% FPL the opportunity to purchase private insurance through the Federally Facilitated Marketplace (FFM). The State also noted that availability of federal premium subsidies for those with incomes greater than 100% FPL and not exceeding 400% FPL, along with cost-sharing reductions for lower-income consumers.

With that context, the State's 2014 Medicaid waiver took effect as an alternative to the ACA's Medicaid expansion model. The State of Wisconsin posited that, setting Medicaid income limits for adults at 100% FPL and in conjunction with the ACA Marketplace, every Wisconsin resident would have access to affordable health insurance.

Childless adults with incomes not exceeding 100% FPL became eligible to enroll in Medicaid/BadgerCare. At the same time, Wisconsin's income eligibility threshold for adult parents and caretaker relatives was changed from 200% FPL to 100% FPL. (A previous, long-standing waiver expired that had supported the expanded coverage for parents/caretaker adults, but this change was not a specific element for approval

under the 2014 waiver.) The State's expectation with the 2014 changes: All adults not otherwise eligible for BadgerCare Plus with incomes above the poverty level will have access to subsidized private insurance coverage in the FFM.

This goal, however, was not translated into waiver hypotheses. The waiver focused on provisions related to Childless Adult coverage expansions, along with premium-related provisions for Transitional Medicaid. It did not include questions related to the change of existing parent/caretaker adult coverage from 200% to 100% FPL, and that effect on coverage, access, utilization, and health outcomes. For that reason, the evaluation did not test any hypotheses specifically related to the State's goals #1 and #3.

Some of the hypotheses did indirectly relate to the program sustainability element of goal #3 – for example, in their focus on reduction of unnecessary services. However, the hypotheses and evaluation questions did not directly incorporate consideration of "additional cost to taxpayers and the federal governments" – relative to the pre-waiver status quo and/or relative to an ACA Medicaid expansion. Assessment of this goal was therefore not within the purview of the contracted evaluation.

The evaluation did test hypotheses related to State goal #2: Provision of a standard set of comprehensive benefits will lead to improved healthcare outcomes at no additional cost to state taxpayers and the federal government. As noted above, the extension of Medicaid/BadgerCare standard benefits to childless adults proved effective in improving health care access and increased utilization of services for this population. Supplemental analyses demonstrated improved use of behavioral health services and, for diabetics, better access to and use of diabetes-related prescription medications.

B2. Outcomes, Impacts, and Opportunities for Improvements

- ***If the state did not fully achieve its intended goals, why not?***
- ***What could be done in the future that would better enable such an effort to more fully achieve those purposes, aims, objectives, and goals?***

The 2014 waiver's premium-related provision was not effective in achieving the associated goals or fulfilling the stated hypotheses, as detailed in Section V.A. of this report. The State has now abandoned the premium policy for adults in Transitional Medicaid. Those provisions expired in December 2018. However, Wisconsin is now beginning a new demonstration waiver, in which the State will test premiums for childless adults with incomes between 50-100% FPL.

The State engaged the evaluator to help design the waiver evaluation plan for the waiver approved in 2018 and to develop hypotheses for this new waiver, prior to submitting its evaluation plan to CMS. This early engagement with the evaluator will be helpful in testing hypotheses that logically relate to the demonstration provisions.

As noted above, CMS' recent evaluation guidance directs states to "articulate an expectation about the effect of premiums on enrollment patterns, based on established economic theory and existing evidence on premiums." CMS explains:

> "One goal related to premiums is to prepare beneficiaries to comply with a common feature of commercial health insurance plans, with the hope that beneficiaries who gain commercial coverage at some point are better prepared to maintain it. … However, whether premiums should be expected to affect health care service use depends on the policy design. States with beneficiary accounts that beneficiaries contribute to and draw down to pay for services might expect to see changes to service use patterns such as lower overall use of care. *States with traditional premiums, not structured as beneficiary accounts, should not expect to see changes to service use, except to the extent that there is an income effect of premiums on health care demand. Hypotheses and research questions about service use should be adopted only by states with beneficiary accounts."* (Emphasis added)

The State's 2014 waiver goals -- pertaining to affordable coverage for every Wisconsin resident and a sustainable Medicaid program "for those who need it most" – refer to Wisconsin's Medicaid model in lieu of an ACA Medicaid expansion approach. The state's 2018 waiver retains these goals, worded as follows:

- Ensure that every Wisconsin resident has access to affordable health insurance to reduce the state's uninsured rate.
- Create a medical assistance program that is sustainable so a health care safety net is available to those who need it most.

In order to evaluate whether the State achieves these goals, the evaluation must explore hypotheses and research questions about not only those eligible for the Medicaid program, but also about those not eligible for coverage under current policy. In particular, Wisconsin's success in achieving its stated goals depends on the degree to which low-income residents are able to attain affordable coverage through other channels (the ACA Marketplace or elsewhere). As well, it is important to understand how health care use may differ between low-income consumers who face cost-sharing associated with commercial coverage relative to low-income consumers who would otherwise have a Medicaid benefit plan.

The 2014 waiver had excluded these questions from the scope of the waiver evaluation, although integral to understanding the degree to which the State achieved its stated purposes, aims, objectives, and goals. The evaluation of the 2018 waiver offers an opportunity to better assess how the provisions support these stated goals.

VII. ATTACHMENTS

A. Measure Specifications

B. Supplementary Measures - MHSUD

C. DHS Evaluation Design as originally submitted to and approved by CMS

D. UW Design Report: Recommended Changes and Crosswalk

E. CMS Comments and UW/DHS Responses

F. Survey Instrument

G. Summary of major benefit differences between Wisconsin Medicaid Core Plan and Standard Plan Coverage

H. Frequency of observations for health-related health care use outcomes among continuously enrolled childless adults and parent/caretakers, April 2013-March 2015

I. Supplemental Analysis of Childless Adult Outcomes: Treatment for Mental Health and Substance Use Disorders

J. Supplemental Analysis of Childless Adult Outcomes: Medication Use by Diabetics

ATTACHMENT A: Specifications for health care claims/encounter-based measures used in evaluation and summarized in Table IV.A.1.

Name	Reference Measure		Citation	Key modification(s) to Reference Measure	Unit of Analysis (Smallest Available)			Evaluation Question(s)
	ID	Name			Childless adults	TMA (RRP)	TMA (Premium)	
Health Related								
Breast Cancer Screening	NQF 2372	BCS-AD	1	We modified the criteria for inclusion in the denominator to align with sample construction for our research designs. We include all age-eligible women within our evaluation population, ages 50-64. There is no minimal enrollment duration requirement. There is no difference between the time period in which eligibility for the measure is assessed and the time period in which the measure is assessed. The measure is assessed at the person-month level.	person-month	person-month	person-month	2,4,13,15
Flu Vaccinations for Adults ages 18 to 64	NQF 0039	FVA-AD	1	NQF 0039 is a CAHPS survey-based measure. We do not have access to CAHPS for this evaluation. We constructed a claims-based measure of flu vaccine at the person-month. We include all age-eligible individuals in our evaluation populations, and we assess receipt of a flu shot at the person-month level. There is no minimal enrollment duration requirement. There is no difference between the time period in which eligibility for the measure is assess and the time period in which the measure is assessed (i.e., measurement period). The CPT codes used to identify receipt of a flu shot are the following: cpt codes for Flu vaccination: '90630','90653','90654','90655','90656','90657','90658','90660','90661','90662','90663','90664','90665','90666','90667','90668','90672','90673','90674','90682','90685','90686','90687','90688','90666','90756','Q2034','Q2035','Q2036','Q2037','Q2038','Q2039','90460','90471','90472','90473','90474','G0008'	person-month	person-month	person-month	2,4,6,13,15

Comprehensive Diabetes Care: Hemoglobin A1c Testing	NQF 0057	HA1C-AD	1	We modified the criteria for inclusion in the denominator to align with sample construction for our research designs. Identifying the eligible population for this measure requires some continuous enrollment period over which a diagnosis of diabetes may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. Among continuously enrolled evaluation populations, the inclusion criteria are the following: one or more outpatient visit, ED visit, or hospitalization with a diabetes-related diagnosis code in the primary or secondary position at any time during the continuously enrolled time period. 25000,25001,25002,25003,25010,25011,25012,25013,25020,25021,25022,25023,25030,25031,25032,25033,25040,25041,25042,25043,25050,25051,25052,25053,25060,25061,25062,25063,25070,25071,25072,25073,25080,25081,25082,25083,25090,25091,25092,25093,E119,E109,E1165,E1065,E1169,E1010,E1165,E1169,E1010,E1065,E1100,E1101,E1069,E1100,E1165,E1065,E1069,E11641,E1011,E10641,E1101,E1165,E1011,E1065,E1129,E1029,E1121,E1165,E1021,E1065,E11311,E11319,E1136,E1139,E10311,E10319,E1036,E1039,E11311,E11319,E1136,E1139,E10311,E10319,E1036,E1039,E1140,E1040,E1151,E1051,E11618,E11620,E11621,E11622,E11628,E11630,E11638,E11649,E118,E108. The numerator is identified as a claim with a procedure code for an HbA1c test 83036,83037,3044F,3045F,3046F. There is no difference between the time period in which eligibility for the measure is assessed and the time period in which the measure is assessed.	person-year (difference-in-differences design only)	*Not Applicable.	person-year (subgroup analysis of 12-month continuously enrolled beneficiaries)	2,4,13,15
Comprehensive Diabetes Care: LDL Screening				CMS retired this measure from the Adult Core Set. It is excluded from this evaluation.				

Antidepressant Medication Management	NQF 0105	AMM-AD	1-3	We modified the criteria for inclusion in the denominator to align with the sample construction for our research designs, and the numerator based on research applications of this type of MDD health care quality metric (see references 2-3). Identifying the eligible population for this measure requires some continuous enrollment period over which a major depressive disorder episode may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. Among continuously enrolled evaluation populations, the first MDD episode for a person occurs when we observe: a) one inpatient admission with MDD diagnosis; or b) 2 outpatient visits with MDD diagnosis on different dates within a 4-month period. ICD9 codes of 296.2 or 296.3 are those that satisfy MDD definition. The start date of an MDD episode defined by two outpatient visits is the first visit date. The start of an MDD episode defined by a hospitalization is the admission date. The end of the episode is defined as conclusion of the fourth month from the start date. For any given person with at least one MDD episode, a subsequent episode begins only after a gap of >= 3 months from the last service date in the episode during which time s/he had no outpatient or inpatient health care use with a MDD diagnosis. Our measure does not distinguish between acute and continuation phase episodes.	MDD-episode	*Not Applicable.	MDD-episode (subgroup analysis of 12-month continuously enrolled beneficiaries)	2, 13

Follow-up after Hospitalization for Mental Illness, within 7-days and within 30-days	NQF 0576	FUH-AD	1, 4	Identifying the eligible population for this measure requires some continuous enrollment period over which the post-discharge outcome may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. Hospitalization for mental illness is defined as a hospitalization with a primary ICD9 diagnosis of 290.xx, 293.xx-302.xx, 306.xx-314.xx (or ICD10 equivalent in later years.) The value set for NQF 057 to identify follow-up visits is not publicly available. We identify outpatient follow-up using the outpatient mental health visit definition described In Attachment B Table of Supplementary Outcome Measures. This measure is consistent with prior published research by members of this evaluation team (see reference 4).	person-discharge	*Not Applicable.	person-discharge (subgroup analysis of 12-month continuously enrolled beneficiaries)	2, 13
Smoking cessation assistance	NQF 0027	MSC-AD	1, 5	NQF 0027 is a CAHPS survey-based measure. We do not have access to CAHPS for this evaluation. We constructed a claims-based measure of smoking cessation assistance at the level of the person-month in consultation with researchers at the UW Center for Tobacco Research & Intervention. We define receipt of smoking cessation assistance as the presence of one of the following procedure codes '99406','99407','C9801','C9802','G0375','G0376','G0436','G0437',` G8402','G8453','S9453','S9075','G9016', OR '99385','99386','99387','99395','99396','99397', '99201','99202','99203','99204','99205','99211','99212','99213','99214','99215' with a diagnosis of tobacco use disorder (3051) in the first or second diagnosis variable. We will augment the current specification with prescription medication claims for smoking cessation medication.	person-month	person-month	person-month	2,4,6,13,15

Initiation and Engagement of Alcohol and other Drug Dependence Treatment: Initiated treatment within 14-days of the diagnosis	NQF 0004	IET-AD	1, 8	Identifying the eligible population for this measure requires some continuous enrollment period over which the qualifying diagnosis and treatment initiation may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. We modified the criteria for inclusion in the denominator to align with the sample construction for our research designs. Within the specified continuous enrollment period, the intake period begins on the 2nd day of the third month of the measurement year. The intake period is used to capture a new AOD episode (i.e., following a minimum of 2-months without a relevant diagnosis). The index episode is the earliest inpatient, intensive outpatient, partial hospitalization, outpatient, detoxification, or ED visit during the Intake Period with a diagnosis of AOD. The Index Episode Start Date (IESD) is the earliest date of service during the Intake Period with a diagnosis of AOD. As a founding member of the 9-state Medicaid Distributed Research Network-Opioid Treatment Measures Workgroup, this evaluation team has access to all of the relevant procedure and diagnosis value sets for NQF 0004 to identify the index episode, and subsequent treatment within 14-days.	AODA-index episode	*Not Applicable.	AOD-index episode (subgroup analysis of 12-month continuously enrolled beneficiaries)	2, 13

Initiation and Engagement of Alcohol and other Drug Dependence Treatment: Initiated treatment and who had >=2 additional services with AOD diagnosis within 30 days of initiation visit	NQF 0004	IET-AD	1,8	Identifying the eligible population for this measure requires some continuous enrollment period over which the qualifying diagnosis and treatment initiation may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. We modified the criteria for inclusion in the denominator to align with the sample construction for our research designs. Within the specified continuous enrollment period, the intake period begins on the 2nd day of the third month of the measurement year. The intake period is used to capture a new AOD episode (i.e., following a minimum of 2-months without a relevant diagnosis). The index episode is the earliest inpatient, intensive outpatient, partial hospitalization, outpatient, detoxification, or ED visit during the Intake Period with a diagnosis of AOD. The Index Episode Start Date (IESD) is the earliest date of service during the Intake Period with a diagnosis of AOD. As a member of the 9-state Medicaid Distributed Research Network-Opioid Treatment Measures Workgroup, this evaluation team has access to all of the relevant procedure and diagnosis value sets for NQF 00014 to identify the index episode, and subsequent treatment within 30 days.	AODA-index episode	*Not Applicable.	AOD-index episode (subgroup analysis of 12-month continuously enrolled beneficiaries)	2, 13
Health Care Use, General								
Office-based visits			6-7	Consistent with the team's prior work, outpatient visits are defined according to the procedure code. Each unique clinician-visit within a day contributes to the enrollee's total number of outpatient visits per person per month. This approach to defining office-based visits does not involve the use of diagnosis codes.	person-month	person-month	person-month	3-7, 9, 16
Emergency department visits			6-7	Consistent with the team's prior work, emergency department visits are defined by the procedure code. Each unique ED-visit within a day contributes to the total number of ED visits per person per month.	person-month	person-month	person-month	3-7, 9, 16

Hospitalizations			6-7	Consistent with the team's prior work, hospitalizations are defined by the procedure code. Each hospitalization within a calendar month contributes to the total number of hospitalizations per person per month. We do not include transfers between institutions as separate admissions.	person-month	person-month	person-month	3-7, 9, 16
Potentially Preventable/Avoidable Health Care Use								
Plan All-Cause Readmissions Rate	NQF 1768	PCR-AD	1	Identifying the eligible population for this measure requires some continuous enrollment period over which the post-discharge outcome may be observed. The applicability and duration of continuously enrolled evaluation populations varies across evaluation hypotheses. The evaluation team does not have access to the full value set required to construct NQF 1768 measure as specified in the Adult Core Set. Thus we do not distinguish between planned and unplanned hospitalizations in defining an index hospitalization. Each hospitalization is included in the denominator. For each hospitalization we identify the presence or absence of a hospitalization within 30 days of discharge.	person-discharge	*Not Applicable.	person-discharge (subgroup analysis of continuously enrolled beneficiaries)	1,9, 14
Potentially Preventable Emergency Department Visits			9	We use the well-established New York University ED visit algorithm here as in our prior work to assess the probability that an ED visit is preventable.	person-month	person-month	person-month	1,6,9,14
Potentially Preventable Inpatient Admissions			6,10	We use the diagnosis codes specified in the AHRQ's Prevention Quality Indicators technical specifications to identify potentially preventable inpatient admissions. We exclude PQI's that are not relevant for the study population (e.g., pediatric measures). Hospitalizations with diagnoses that meet the criteria for more than one PQI are counted only once. The current measure defines a hospitalization for any potentially preventable condition as one that meets the criteria for the PQI 2018 specifications for the overall quality composite measure PQI90.	person-month	person-month	person-month	1,6,9, 14

Notes: NQF is an abbreviation for National Quality Forum.	
*The strongest research designs to address the RRP-related evaluation hypotheses do not include a continuously enrolled cohort, and there is no meaningful person-month version of this measure.	
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ATTACHMENT B: Supplementary Measures - MHSUD

B1. Supplementary Claims/Encounter-Based Health and Health Care Outcome Measures

Measure	Description	Unit of analysis
Mental Health and Substance Use Disorder Treatment Use		
Outpatient MHSUD visit	Consistent with the team's prior published work [1], outpatient MHSUD visits are defined according to the procedure code, or the procedure + diagnosis code. Each unique visit within a day contributes to the enrollees total number of outpatient MHSUD visits per person per month. A visit with the following procedure code is considered an MHSUD visit: H0010,H0011,H0012,H0013,H0017,H0018,H2012, H2012,T1008,W1023,Z0003, T1007,90801,90802,90804,90805,90806, 90807,90808,90809,90810,90811,90812,90813,90814,90815,90820, 90835,90842,90843,90844,90845,90846,90847,90848,90849,90853, 90855,90857,90862,90875,90876,90880,G0071,G0072,G0073,G0074, G0075,G0076,G0077,G0078,G0079,G0080,G0081,G0082,H0001,H0002, H0004,H0005,H0006,H0014,H0015,H0023,H0031,H0034,H0036,H0037, H0039,H0040,H0046,H0049,H0050,H2000,H2001,H2010,H2014,H2017, H2018,H2019,H2020,H2021,H2023,H2024,H2025,H2026,H2035,H2036, H5010,H5020,H5025,H5220,H5230,H5240,H5299,M0064,S9475,S9480, T1006,T1012,T1015,T1016,T1017,W1027,W1030,W1032,W1033,W1035, W1037,W1038,W1039,W1044,W1046,W1048,W1049,W1050,W1059,W1064, W1065,W1070,W9890,W9892,Z0001,Z0002,Z0002,90889,H0033,J0570, J0592,J0571,J0572,J0573,J0574,J0575,11981,11982,11983,96372, 96373,96374,96375,96376,J2315,H0049,H0050. Additionally an outpatient evaluation and management visits billed with a diagnosis of 290.xx, 293.xx-302.xx, 306.xx - 314.xx is identified as an outpatient MHSUD visit.	person-year
Outpatient MHSUD visit, Psychiatrist	This measure is defined according to the specifications of the MHSUD outpatient visit (defined above) and attributes of the rendering (or treating) provider specifically the clinician type (i.e., physician, psychologist, social worker, physician assistant or nurse practitioner)	person-year
Outpatient MHSUD visit, non-psychiatrist	This measure is defined according to the specifications of the MHSUD outpatient visit (defined above) and attributes of the rendering (or treating) provider specifically the clinician type, and among physicians, the specialty.	person-year
MHSUD-Related Inpatient Admission	We define MHSUD-related inpatient admissions as those with a primary MHSUD diagnosis, 290.xx-314.xx.	person-year
MHSUD-Related ED Visit	We define MHSUD-related ED visits as those with a primary MHSUD diagnosis, 290.xx-314.xx.	person-year

MHSUD-Related Prescription Drug Fill	For prescription medication outcomes, we created separate binary indicators of any claim in the month for prescription medications within the following therapeutic drug classes, antidepressants, antianxiety, antipsychotics, and antimanic agents. To assess SUD-related medication use, we constructed a binary measure of any claim in the month for any of the following types of prescription drugs: opiate partial agonists; opiate antagonists; and alcohol deterrents. Medication-assisted treatment for SUDs that is exclusively delivered in a clinician's office, including methadone maintenance, is captured in the measure of MHSUD outpatient visits.	person-year
References		
1	Burns ME, Huskamp HA, Smith JC, Madden JM, Soumerai SB. The Effects of the Transition from Medicaid to Medicare on Health Care Use for Adults with Mental Illness. Medical Care. 2016;54(9)L868-877.	

B2. Mental health and substance use disorder-related prescription medication measures

Drug Class	Drug Name
Antianxiety	Alprazolam, Alprazolam ER, Alprazolam Intensol, Alprazolam ODT, Alprazolam XR, Buspirone HCL, Chlordiazepoxide HCL, Clorazepate dipotassium, Diazepam, Lorazepam, Lorazepam Intensol, Meprobamate, Midazolam HCL, Oxazepam, Xanax
Antidepressant	Amitriptyline HCL, Amoxapine, Aplenzin, Brintellix, Budeprion SR, Budeprion XL, Buproban, Bupropion HCL, Bupropion HCL SR, Bupropion XL, Celexa, Chlordiazepoxide-Amitriptyline, Citalopram HBR, Clomipramine HCL, Cymbalta, Desipramine HCL, Desvenlafaxine ER, Doxepin HCL, Duloxetine HCL, Effexor XL, Escitalopram oxalate, Fetzima, Fluoxetine DR, Fluoxetine HCL, Fluvoxamine maleate, Fluvoxamine maleate ER, Forfivo XL, Imipramine HCL, Imipramine pamoate, Lexapro, Luvox CR, Maprotiline HCL, Marplan, Mirtazapine, Nardil, Nefazodone HCL, Norpramin, Nortriptyline HCL, Olanzapine-Fluoxetine HCL, Oleptro ER, Pamelor, Paroxetine CR, Paroxetine ER, Paroxetine HCL, Paxil, Paxil CR, Perphenazine-Amitriptyline, Phenelzine sulfate, Pristiq, Protriptyline HCL, Prozac, Prozac weekly, Remeron, Sarafem, Sertraline HCL, Silenor, Symbyax, Tranylcypromine sulfate, Trazodone HCL, Venlafaxine HCL, Venlafaxine HCL ER, Viibryd, Wellbutrin, Wellbutrin SR, Wellbutrin XL, Zoloft
Antipsychotic	Abilify, Abilify Discmelt, Abilify Maintena, Aripiprazole, Chlorpromazine HCL, Clozapine, Fanapt, Fluphenazine decanoate, Fluphenazine HCL, Geodon, Haloperidol, Haloperidol decanoate, Haloperidol decanoate 100, Invega, Invega Sustenna, Latuda, Loxapine, Olanzapine, Olanzapine ODT, Orap, Paliperidone ER, Perphenazine, Quetiapine fumarate, Rexulti, Risperdal, Risperdal Consta, Risperidone, Risperidone ODT, Saphris, Seroquel, Seroquel XR, Thioridazine HCL, Thiothixene, Trifluoperazine HCL, Ziprasidone HCL, Zyprexa, Zyprexa Zydis
Antimanic agents	Lithium, Lithium carbonate, Lithium carbonate ER, Lithobid, Carbamazepine, Carbamazepine ER, Carbatrol, Depakote, Depakote ER, Depakote Sprinkle, Divalproex sodium, Divalproex sodium ER, Epitol, Equetro, Lamictal, Lamictal (blue), Lamictal (green), Lamictal (orange), Lamictal ODT, Lamictal XR, Lamictal XR (orange), Lamotrigine, Lamotrigine ER, Lamotrigine ODT, Tegretol, Tegretol XR, Valproic acid
Treatment for Substance use disorder (Opiate agonists, Alcohol deterrents)	Acamprosate calcium, Antabuse, Buprenorphine HCL, Buprenorphine-Naloxone, Campral, Disulfiram, Naloxone HCL, Naltrexone HCL, Suboxone, Vivitrol, Zubsolv

ATTACHMENT C: DHS Evaluation Design as originally submitted to and approved by CMS

ATTACHMENT C: DHS' WAIVER EVALUATION DESIGN, ORIGINALLY SUBMITTED TO AND APPROVED BY CMS

BadgerCare Reform Demonstration Draft Evaluation Design

October 31, 2014

Table of Contents

1. Executive Summary

In response to Section XI (Sections 47 – 48) of the Special Terms and Conditions (STCs) for the Wisconsin BadgerCare Reform Demonstration Project approved for the Wisconsin Department of Health Services, this document describes the proposed design for evaluating the effectiveness of the Demonstration in terms of the following domains of focus: Better Care, Better Health, and Reducing Costs.

Specifically, the evaluation design which is a mix of both quantitative and qualitative research techniques focuses on the application of rigorous scientific methods to arrive at an understanding of how the changes implemented under the Demonstration impact two Medicaid populations—(1) those individuals who are eligible for Medicaid through Transitional Medical Assistance (TMA Adults) and (2) those childless adults with an effective income level at, or below, 100% of the federal poverty level (FPL). As shown in the following figure, the Demonstration will result in a premium payment requirement for Parents & Caretaker Relatives over 133% FPL from the first day that transitional medical assistance (TMA) is effective (A2/A2). These premiums will be based on a sliding scale (Appendix 1) relative to household income with a cap of 9.5% of household income. Members between 100% and 133% FPL (A1/A1) will be eligible for TMA coverage for the first six (6) months of enrollment without paying a premium, but then will be required to pay premiums thereafter on the same scale. For both groups, once the period during which they are required to pay a premium begins, premium payment will be a condition of continued enrollment. Adults who do not make a premium payment will be dis-enrolled from BadgerCare Plus after a 30-day grace period and prohibited from reenrolling in BadgerCare Plus for 3 months—at which time they are eligible to re-enroll with the applicable premium payment structure.

Figure 1A: Plan Assignment and Premium Requirement Thresholds for TMA Adults

FPL	Before	After	STC- Cross Reference
<= 100%	C	C	N/A
>100 & <=133%	A1	A1	Population 1
> 133%	A2	A2	Population 1

Standard Plan

With respect to the TMA Adults, the evaluation will assess the impact of the premium requirement on measures such as the incidence of unnecessary services (e.g., Emergency Department visits or Inpatient Stays for Ambulatory Care Sensitive Conditions, 30 Day-All Cause Readmissions), changes in the cost of care (e.g., total allowed amounts for care in the demonstration period for the population as a whole and within sub-groups stratified on premium rate, education level, gender, etc.), measures of health process outcomes (e.g., preventive screening adherence rates), and measures of health outcomes as a function of cost (i.e., cost-effectiveness). Many of these measures will utilize claims, enrollment, and eligibility data from administrative sources, but factors affecting disenrollment will be identified using survey instruments and case studies (requirements are described in sections 3.3 and 3.4, respectively).

The second population included in this Demonstration is the non-pregnant, non- disabled childless individuals between 19 and 64 years of age whose income level does not exceed 100% of FPL. As depicted below, populations D/D* will move from the Core Plan or Basic Plan (limited benefit plans available to childless adults prior to April 1, 2014) to the Standard Plan—although, Basic Plan members were required to reapply before being enrolled to the Standard Plan. Please see appendix 3 for a full description of the BadgerCare Plus benefit plans and covered services. Childless adults with incomes that do not exceed 100% FPL who were previously enrolled in the BadgerCare Plus Core Plan have been transitioned to the BadgerCare Standard Plan, and those above 100% FPL may have moved to the federal Marketplace. Effective April 1, 2014, all new childless adults with incomes that do not exceed 100% FPL will be enrolled in the Standard Plan.

Figure 1B: Plan Assignment Changes for Childless Adults (CLA)

FPL	Before	After	STC Cross-Reference
100%	D	D*	Population 2
200%	B	B	N/A

Standard Plan

Co[redacted]lan

No Plan/Market Place

*Population also includes individuals formerly on Core Plan wait-list

As with the evaluation of the Demonstration's impact on the TMA population, the evaluation of the Demonstration's impact on the CLA population will focus on measures of better health, better care, and reducing costs, and this evaluation will also study the effect an expanded set of available services has on these outcomes.

As outlined in the following table, the evaluation design will utilize multiple research methodologies and data sources to provide answers to the following questions— derived from Section 48, paragraph b of the STCs—for the TMA and CLA populations.

Table 1: Evaluation Questions and Associated Data Analysis Methods

Evaluation Question	Evaluation Method			
	Case Study	Administrative Data Analysis	Case-Control Matching Study	Enrollment/ Disenrollment Survey
For the TMA: Demonstration participants: Payment of Premiums				
1. Will the premium requirement reduce the incidence of unnecessary services?	Y	Y	Y	--
2. Will the premium requirement lead to improved health outcomes?	Y	Y	Y	--
3. Will the premium requirement slow the growth in healthcare spending?	Y	Y	Y	--
4. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
5. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
Association of Enrollment Status to Utilization and/or Costs				
6. Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?	Y	Y	Y	Y
7. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?	Y	Y	Y	Y
Enrollment Analysis by Payment of Premiums				

Evaluation Question	Evaluation Method			
	Case Study	Administrative Data Analysis	Case-Control Matching Study	Enrollment/ Disenrollment Survey
8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?	Y	Y	Y	--
9. How access to care affected by the application of new, or increased, premium amounts?	Y	Y	Y	Y
Payment of Premiums and 3-Month Restrictive Re-enrollment				
10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?	Y	Y	Y	Y
11. Does this impact vary by income level?	Y	Y	Y	--
12. If there is an impact, explore the break-out by income level.	Y	Y	Y	--
For CLA Adults: Effects of the Benefit Plan for demonstration expansion group				
13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?	Y	Y	Y	--
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?	Y	Y	Y	--
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?	Y	Y	Y	Y

2. Evaluation Design Overview

2.1 Development Approach

In order to develop an evaluation design that is capable of answering the questions set forth in the preceding table, the following logic models were employed to focus development of the design on the activities and external influences that affect the outcomes being studied.

Figure 2a: Program Logic Model for BadgerCare Reform – TMA Adults

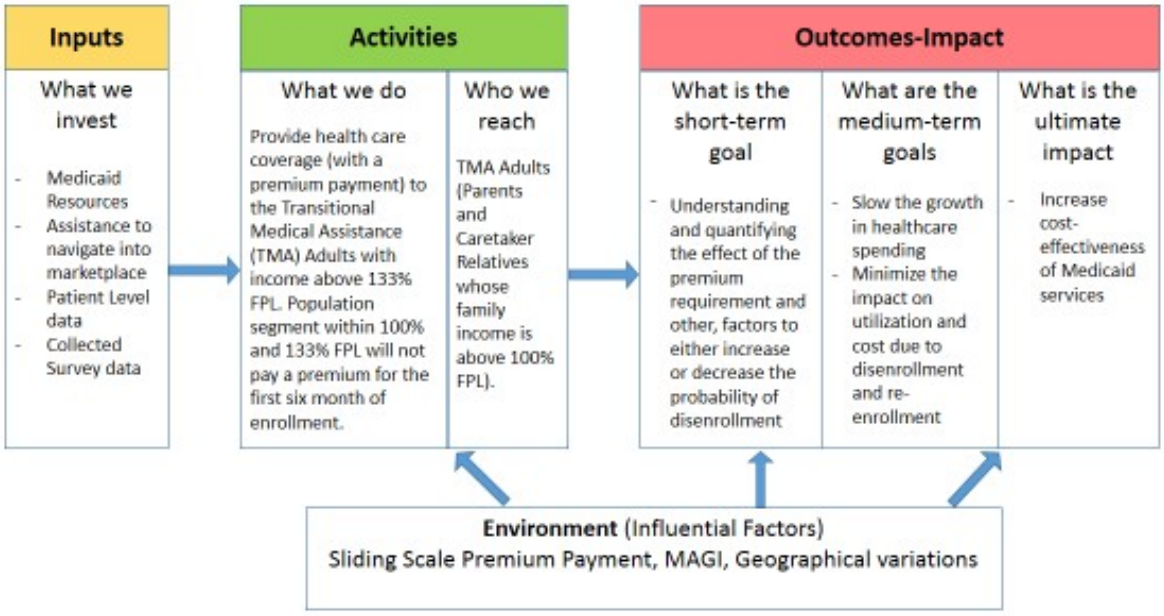
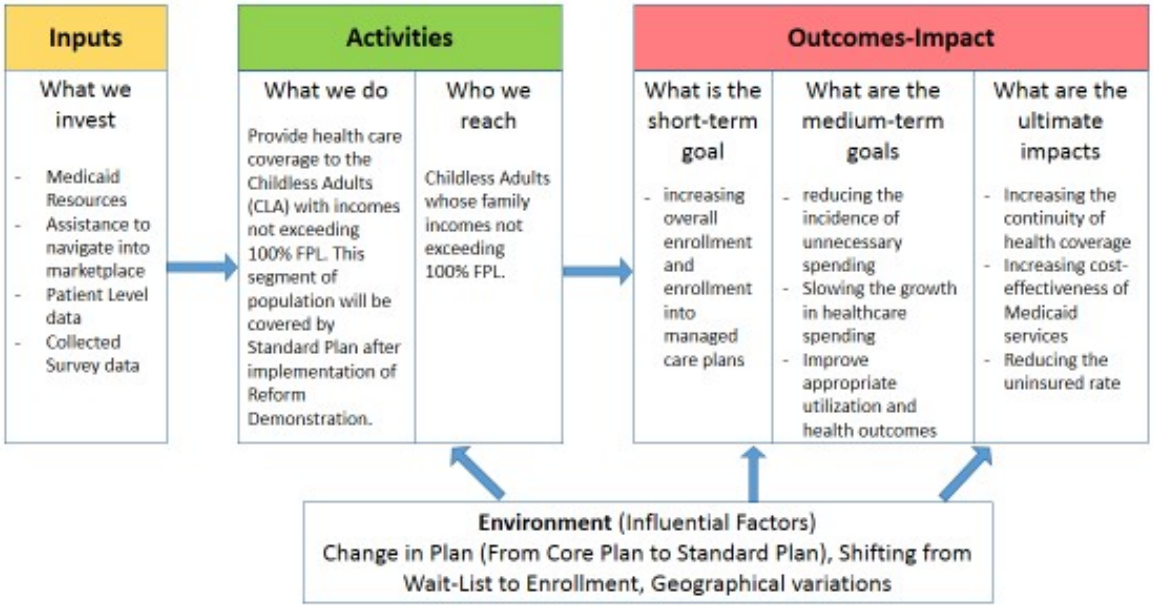


Figure 2b: Program Logic Model for BadgerCare Reform – Childless Adults



These models will also provide the logical framework to be used in evaluating the effectiveness of the Demonstration. Logic models (Taylor-Powelare et. al., 2003) are graphical representations of the logical relationships between the resources, activities, outputs and outcomes of a program. Whereas there are many ways in which logic models can be presented, the underlying purpose of the logic model is to identify the possible "if-then" (causal) relationships between the elements of the program. For example, the current logic model identifies the resources available for the Demonstration program, the types of activities that can be effectively implemented using those resources, and the specific outputs and outcomes that can be expected as a result of those activities.

2.2 **Target Populations**

As described previously, two target populations will be studied under this evaluation—TMA Adults and Childless Adults.

2.2.1 TMA Population.

In the TMA population, the Demonstration will enable the State to test the impact of requiring a premium payment that aligns with the insurance affordability program in the federal Marketplace based on their household income when compared to federal poverty level (FPL). This population is divided into two segments—those individuals with incomes above 133 percent of the FPL (who will be required to pay a premium starting from the first day of enrollment) and those with incomes between 100-133 percent of the FPL (who will be required to pay a premium after the first 6 calendar months of TMA coverage).

2.2.2 CLA Population.

The Childless Adults (CLA) population consists of Non-pregnant, Non- Disabled Childless Adults between 19 and 64 years of age who have family incomes that do not exceed 100 percent FPL. As a result of the

Demonstration, this population will be moved from the Core or Basic Plan to the Standard Plan[1]—which offers more comprehensive services compared to the Core or Basic Plan. This population will likely include a large portion of the individuals who were on the Core Plan wait-list.

The State will isolate or exclude from the evaluation any overlapping initiatives (e.g. integrated care models coupled with payment reform) that target the TMA or CLA populations. At this time the State has not identified any current initiatives that would impact this evaluation, and will provide a detailed analysis plan for controlling the effects of such initiatives on the current evaluation's studied outcomes.

2.3 **Stage of Development**

The Demonstration project began April 1, 2014 and will continue until December 2018. There will be short-term, medium-range and long-term outcomes expected from this project. The target populations will be monitored using claims, eligibility and enrollment data. At the end of the demonstration period, the study populations will be surveyed regarding enrollment and

disenrollment events. The populations will also be surveyed for case studies (to be identified by the selected evaluator) to augment the findings generated by the analysis of administrative data.

2.4 **Inputs**

The State and CMS have dedicated resources to the Medicaid Program. The State has modified the program to reduce the uninsured population in the state as well as increase health outcomes for the Medicaid population. To evaluate these goals, the evaluator will collect enrollment and medical claims data from the interChange System (hosted and operated by HP Enterprise Services), eligibility data from the Client Assistance for Re-employment and Economic Support System (CARES). In addition, the evaluator will develop and collect data using a survey of selected members. The State will also support the activities and human resources necessary to complete the evaluation process through the demonstration period, December 31, 2018

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[1] Basic Plan members were required to reapply before being enrolled in the Standard Plan

2.5 **Activities**

During the Demonstration, the State will provide healthcare coverage to both the TMA and CLA population in accordance with the terms outlined. As outlined in STC 26, the State will hold a public forum (initial within first 6 months and annually thereafter) to solicit comments on the progress of the demonstration project and will provide a summary of the forum in the subsequent Quarterly Report submitted following the close of the quarter in which the forum is held. In addition to these summaries, the Quarterly Report will include initial findings included as part of the evaluation design—e.g., enrollment/disenrollment rates, measures of unnecessary services, counts of services accessed, etc—.

2.6 **Outcomes**

The evaluation will assess whether the Demonstration achieves the following goals:

- Ensure every Wisconsin resident has access to affordable health insurance and reducing the State's uninsured rate.
- Provide a standard set of comprehensive benefits for low income individuals that will lead to improved healthcare outcomes.
- Create a program that is sustainable so Wisconsin's healthcare safety net is available to those who need it.

Successful accomplishment of these goals will be demonstrated or inferred by achievement of short-, medium-, and long-range goals within the two study populations.

2.6.1 TMA Population

The short term goal is:

a) understanding and quantifying the effect of the premium requirement and other, factors to either increase or decrease the probability of disenrollment

The medium range goals are:

b) slowing the growth in healthcare spending

c) minimizing the impact on utilization and cost due to disenrollment and re-enrollment

d) improve appropriate utilization, quality and health outcomes The long term goal is:

e) increasing cost-effectiveness of Medicaid services

2.6.2 CLA Population

The short term goal is:

a) increasing overall enrollment and enrollment into managed care plans

The medium range goals are:

b) reducing the incidence of unnecessary spending

c) slowing the growth in healthcare spending

d) improve appropriate utilization and health outcomes The long term goals are:

e) increasing the continuity of health coverage

f) increasing cost effectiveness of Medicaid services

g) reducing the uninsured rate

In the following sections, the evaluation design describes the Core Elements of the evaluation—including the specific research questions posed, the methods used to arrive at the answers to those research questions, the outcome measures used to evaluate the impact of the demonstration, and the sources of those measures. The evaluation design also provides details on the sources of data that will be used to perform the analyses (i.e., the independent, dependent, and co-varying factors that will be studied) as well as an explanation of the establishment of the baseline measures and control groups for each of the populations under study.

3. Evaluation Design

Having framed the evaluation design development in terms of the preceding logic models, the following evaluation questions identified in STC 48.b. will be addressed using a variety of research methodologies.

Table 2: Evaluation Questions and Associated Data Analysis Methods

Evaluation Question	Evaluation Method			
	Case Study	Administrative Data Analysis	Case-Control Matching Study	Enrollment/ Disenrollment Survey
For the TMA: Demonstration participants: Payment of Premiums				
1. Will the premium requirement reduce the incidence of unnecessary services?	Y	Y	Y	--
2. Will the premium requirement lead to improved health outcomes?	Y	Y	Y	--
3. Will the premium requirement slow the growth in healthcare spending?	Y	Y	Y	--
4. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
5. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
Association of Enrollment Status to Utilization and/or Costs				
6. Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?	Y	Y	Y	Y
7. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?	Y	Y	Y	Y
Enrollment Analysis by Payment of Premiums				
8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?	Y	Y	Y	--
9. How access to care affected by the application of new, or increased, premium amounts?	Y	Y	Y	Y
Payment of Premiums and 3-Month Restrictive Re-enrollment				
10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?	Y	Y	Y	Y
11. Does this impact vary by income level?	Y	Y	Y	--
12. If there is an impact, explore the break-out by income level.	Y	Y	Y	--
For CLA Adults: Effects of the Benefit Plan for demonstration expansion group				
13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?	Y	Y	Y	--
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?	Y	Y	Y	--

Evaluation Question	Evaluation Method			
	Case Study	Administrative Data Analysis	Case-Control Matching Study	Enrollment/ Disenrollment Survey
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?	Y	Y	Y	Y

The proposed research methods used to answer these questions—and the application of the methods to specific research questions—are described in the following sections. The DHS will procure for an independent evaluator before the end of the second demonstration year, March 31, 2016. The DHS will consult with CMS if the selected evaluator proposes additional research methods.

3.1 **Administrative Data Analysis**

Analysis of administrative data will be conducted using Medicaid enrollment and claims data from the interChange System and from the Medicaid eligibility determination and maintenance system, Client Assistance for Re-employment and Economic Support System (CARES), hosted by Deloitte.

3.2 **Case-Control Matching Study**

Within the TMA population for which FPL is 133% or more, there will be a portion of the population that will lose the coverage due to non-payment of premiums.

The best estimate about the percent of drop-outs is that approximately 40% will fall into this category within first twelve months of the demonstration. To answer the research questions related to this section of the TMA population, matching sample will be constructed from the remainder 60% of the cohort who maintained their coverage during the first year. The matching will be executed following standard statistical procedures such as, propensity score matching or exact covariate matching. Since the case group and the matched control group are drawn from a somewhat homogenous population, i.e. TMA with 133% or more FPL, any matching method for a specific outcome may inherit biases due to unobserved covariates. To overcome any shortcomings from this situation Heller, Rosenbaum & Small (2009) recommended to perform sensitivity analysis using split-sample technique. In our case we will execute matching to determine comparable control group and apply 10%-90% split-sample technique to test the sensitivity of biases due to unobserved covariates.

Here we discuss the split-sample approach in the context of a research question: Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled? This is a direct comparison of costs and utilization between the groups of members who were continuously enrolled versus the members who were disenrolled and reenrolled again. Let's call the disenrollment/re-enrollment group as treatment and continuously enrolled group as control. The treatment group may have different health outcomes and/or costs than the control group due to some cofactors which are not adjusted. As Zhang et.al., (2011) mentioned 'after adjustment for observed covariates, the key source of uncertainty in an observational study is the possibility that differences in outcomes between treated and control subjects are not effects of the treatment but rather biases from some unmeasured way in which treated and control subjects were not comparable'.

Heller, Rosenbaum, and Small (2009) suggested to split the sample at random into a small planning sample of 10% and large analysis sample of 90% to perform a sensitivity analysis that asks how failure to control some unmeasured covariates might alter the conclusion of the research question. The planning sample will be used to design the study and guide the analysis plan – whereupon the planning sample will be discarded. All analyses and interpretations will be based on untouched, unexamined, untainted analysis sample.

As an example, we demonstrate how the research question 5 will be analyzed using the proposed method. The research question states: 'Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have dis-enrolled and then re-enrolled?' For the overall analysis the whole cohort will be considered at the beneficiary level analysis for several outcome variables. One of those is unnecessary ED visits.

The predictor variables are FPL level and the indicator variable whether the beneficiary lost coverage due to dis-enrollment after controlling for some demographic factors. This analysis will produce measures of impact of dis- enrollment over the costs and/or unnecessary utilization. To highlight this effect in some form of causation, we will have to apply method of observational studies where the beneficiaries who were dis-enrolled during the first year after demonstration will be considered as 'Cases'. Applying matching technique we will find comparable controls from the pool of beneficiaries who had continuous coverage during the first year. Furthermore, to

avoid the risk of bias in finding right controls, we will employ split-sample technique to determine the sensitivity of that bias. We propose to have a 10%-90% split for planning and analysis pair samples as were done in Heller, Rosenbaum & Small (2009) and Zhang, Small, Lorch, Srinivas and Rosenbaum (2011).

3.3 **Enrollment/Disenrollment Survey**

DHS intends to contract with an independent evaluator during the second year of the demonstration and will conduct two surveys during the course of the demonstration. DHS will target completing a survey at the end of the second demonstration year and one at the end of the fourth year of the demonstration.
The surveys will be designed so that the sample size represents all major demographic sections of the study population and all levels of FPL eligibility.

We are proposing two separate surveys be employed for the two study populations. The focus for TMA Adults population will be to capture the effects of premium payments on enrollment status. For the Childless Adults, the surveys will try to discern the effects of enhanced benefits, based on survey respondents answers regarding their service needs, on health outcomes.

The survey data will be matched with claims and eligibility data used in administrative analysis to find the impact of premium payments on disenrollment, re-enrollment, churning and subsequently its impact on healthcare cost and utilization. DHS will update Table 3 to include additional measures identified from the surveys.

3.4 Case Study

The case study will be designed to provide information to address several of the questions included in the BadgerCare Demonstration Reform program. The first set of questions (1-10) relate to the TMA Adults (Population 1) and the second set (11-14) for Childless Adults (Population 2). To address these questions, in addition to administrative data analysis, case-control study and application of survey methodology, we propose phone interviews to investigate how premium payment and restrictive enrolment impacted health outcomes, costs and general impact of the program.

4. Data Analysis and Interpretation

The data analysis plan includes the four methods of evaluation previously discussed—Administrative Data Analysis, Case-Control Matching Study, Case Study and Enrollment/ Disenrollment Survey Study. As depicted in the Question/Method Matrix (Table 2, below), each research question will be evaluated by different combinations of these methods. The proposed methods can be modified and adapted according to the evaluator's determination satisfying the standards agreed upon by the State and CMS. The outcome measures for each of these questions and related factors that will be needed to complete the analyses are described later in this section. The data analyses will be organized by the two study populations—TMA Adults and Childless Adults, respectively.

Further, in order to most effectively utilize these methods to research the questions specified in STC 48.b. The questions will be further broken out into a larger number of more specific research questions. The following question/method matrix identifies the research methods that will be employed to address each of the resulting research questions, and a description of the application of each method to the study of the associated question is detailed in this section.

Table 3: Evaluation Questions and Associated Data Analysis Methods

Evaluation Question	Evaluation Method			
	Case Study	Administrative Data Analysis	Case-Control Matching Study	Enrollment/ Disenrollment Survey
For the TMA: Demonstration participants: Payment of Premiums				
18. Will the premium requirement reduce the incidence of unnecessary services?	Y	Y	Y	--
19. Will the premium requirement lead to improved health outcomes?	Y	Y	Y	--
20. Will the premium requirement slow the growth in healthcare spending?	Y	Y	Y	--
21. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
22. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
Association of Enrollment Status to Utilization and/or Costs				
23. Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?	Y	Y	Y	Y
24. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?	Y	Y	Y	Y
Enrollment Analysis by Payment of Premiums				
25. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?	Y	Y	Y	--
26. How access to care affected by the application of new, or increased, premium amounts?	Y	Y	Y	Y
Payment of Premiums and 3-Month Restrictive Re-enrollment				
27. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?	Y	Y	Y	Y
28. Does this impact vary by income level?	Y	Y	Y	--
29. If there is an impact, explore the break-out by income level.	Y	Y	Y	--
For CLA Adults: Effects of the Benefit Plan for demonstration expansion group				
30. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?	Y	Y	Y	--
31. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?	Y	Y	Y	--

32. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?	Y	Y	Y	--
33. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?	Y	Y	Y	--
34. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?	Y	Y	Y	Y

4.1 **Population Segment Definition**

In order to facilitate the discussion of the analyses applied to the two study populations, each population "segment" will be described in further detail below:

Figure 3A: Plan Assignment and Premium Requirement Thresholds for TMA Adults

FPL	Before	After	STC- Cross Reference
<= 100%	C	C	N/A
>100 & <=133%	A1	A1	Population 1
> 133%	A2	A2	Population 1

Standard Plan

Figure 3B: Plan Assignment Changes for Childless Adults (CLA)

FPL	Before	After	STC Cross-Reference
100%	D	D*	Population 2
200%	B	B	N/A

Core Plan/Basic Plan

No Plan/Market Place

*Population also includes individuals formerly on Core Plan wait-list

Segment A1: Parents and Caretaker Relatives who are non-pregnant, non- disabled whose effective family income is between 100% and 133% of FPL.

Segment A2: Parents and Caretaker Relatives who are non-pregnant, non- disabled whose effective family income is over 133% of FPL.

Segment A1: Same baseline population as Segment A1, but these members will have a twelve-month extension to have the same benefit as A1. Hence this segment of the population will not be considered for the initial analysis plan. When

more detailed information will be available in 2015 for this segment, the analysis plan can be amended based on policy decisions reached.

Segment A2: Same baseline population as Segment A2, who will be subjected to pay premiums during Demonstration based on sliding scale cost-sharing structure

Segment B: Non-pregnant, non-disabled childless individuals who are from 19 through 64 years old with an effective income between 100% and 200% FPL.

Segment B: Same baseline as population Segment B, who will be transitioned from Core Plan/Basin Plan to marketplace in the Demonstration project and is not a part of the evaluation design.

Segment C: Parents and Caretaker Relatives who are non-pregnant, non- disabled whose effective family income does not exceed 100% of FPL. The benefits for this segment will remain unchanged after the implementation of the Demonstration Reform and is not a part of the evaluation design.

Segment D: Non-pregnant, non-disabled childless individuals who are from 19 through 64 years old with an effective that does not exceed 100%, before Demonstration.

Segment D*: This segment of the study population will include all the baseline population which are entering Demonstration from segment D and all the uninsured or people on the Core Plan waitlist who qualified to be part of Segment D.

4.2 **Data Analysis Method**

The three major analytical strategies will be adopted for the data analysis to test the evaluation hypotheses. The methods are described in further detail below.

1. Means Test
2. Multivariate Regression modeling
3. Cost-Effectiveness Analysis

Means Test

For all the measures that are population based, the predictors cannot be associated to the changes that are observed in time. The overall measures are compared before and after implementation time periods. The changes will be viewed as the effects of the reform demonstration. Multiple comparisons will be carried out to determine measurement changes from baseline and over time.

Multivariate Regression Modeling

The measures from Medicaid Adult Core Set and NCQA HEDIS will be modeled using difference-in-difference (DID). These measures are population based, with overall rates and percentages are calculated related to sections of populations. Individually each member will have dichotomous response for each of the measures indicating whether or not the member received services (e.g. screening) received during a specific time period. Those dichotomous variables are then modeled by predictors and control variables.

For the hypothesis where the outcome is measured as the indicator of dis- enrollment, similar dichotomous variables will be used. The annual total cost variables are on continuous type but most likely will be positively skewed. For this reason all cost data will be log-transferred before modeling by predictors and control variables.

Cost-Effectiveness Analysis

Cost-effectiveness analysis typically relates cost of care to the quality outcomes as a population-based measure. The primary factor in this analysis is how the effect of time is addressed. For example, adherence to control medication may have a significant impact on Asthma outcomes. If the intervention is geared toward raising medication adherence, then the cost of care will increase during the first few months of the intervention due to higher rates of medication refill.

However, the long term effect of the higher adherence in terms of reduced ER visit or hospitalizations might not be observed immediately. So the cost- effectiveness will be very low (potentially negative) for initial months. For each of the outcomes the potential lag-time will be considered for cost-effectiveness analysis.

For each research question described in the preceding Question/Method Matrix (Table 3, above), the outcome variable(s) and the predictors are stated below. We found that most of the questions needed to be analyzed by controlling several variables. Instead of repeating those under each question, the list is mentioned here. Unless otherwise mentioned for any given question it will be assumed that the research question will be analyzed using this set of control variables.

Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO or FFS, Tribal population*. Some risk scores use Age and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.

Questions 1 thru 12 relate to the population segments A2 and A2. Population segment A2 data is used to create baseline measures for comparison of measures calculated at a future date during the Demonstration. Otherwise, data from population segments A2 and A2 will be merged to develop statistical models and case-control studies. All 12 research questions will be analyzed at the beneficiary level. The claims and eligibility data will be used to create beneficiary level variables. The questions for which the cofactors or outcomes are time-varying variables longitudinal analysis methods are proposed.

The reports that will be generated to monitor health outcomes shown in Table 3, will be calculated at aggregate level.

Question 1: Will the premium requirement reduce the incidence of unnecessary services?

Hypothesis 1.1: The incidence of unnecessary services (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-Day All Cause Readmissions and overall inpatient stays) will be lower for TMA members in the demonstration than the incidence of unnecessary services for the same population prior to the demonstration.

Members in transitional medical assistance who are paying premiums will be more engaged in the health care decision making process and will make more efficient use of preventive and primary care, reducing the incidence of unnecessary services such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-Day All Cause Readmissions and overall inpatient stays.

Outcome Variables: Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-Day All Cause Readmissions and overall inpatient stays.

Predictor / Explanatory Variable(s): FPL (hence sliding scale premium).

Data Analysis Method: Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the individual premium payment levels determined by the premium schedule. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s) and perform sub-group analyses (i.e., separate models for different sub-sections of the population). For case-control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this

division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 2: Will the premium requirement lead to improved health outcomes?

Hypothesis 2.1: Health care outcomes (as defined in table 3 below) for the TMA population who are paying premiums will be better than the health care outcomes for these members prior to the demonstration.

Hypothesis 2.2: Health care outcomes (as defined in table 3) for TMA members who are paying premiums will be better than health care outcomes for members not paying premiums.

TMA members who are paying premiums will be more engaged in the health care decision making process and will make more efficient use of preventive and primary care, leading to improved health outcomes.

Table 4: Outcome Measures Frequently used by DHS to Determine Healthcare Quality

Focus Area	NQF Measure #	CMS Adult Core Set #	Measure
Preventive / Screening	0031	Measure 3	Breast Cancer Screening (BCS) (HEDIS-NCQA)
Chronic	0057	Measure 19	Comprehensive Diabetes Care- HbA1c Testing (HEDIS-NCQA)
	0063	Measure 18	Comprehensive Diabetes Care- LDL-C Screening (HEDIS-NCQA)
Mental Health	0105	Measure 20	Antidepressant Medication Management (AMM- Effective Continuation Phase) (HEDIS)
	0004	Measure 25	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-Engagement of AOD Treatment) (HEDIS-NCQA)
			Tobacco Cessation (Counseling only) – Wisconsin specific measure – the percentage of adult smokers that received tobacco cessation counseling during the calendar year
	0576	Measure 13	Follow-up After Hospitalization for Mental Illness – 30 Days After Discharge (FUH-30) (HEDIS-NCQA)
Emergency Dept.			Ambulatory Care – Emergency Department Visits (AMB) sans revenue code 0456 (HEDIS-NCQA)

DHS will explore including additional health care outcomes measures from medical record data as agreed upon with HMOs and other Medicaid providers in the state.

Outcome Variables: The outcome variables will be recorded as member-specific data. The screening, preventive and primary care indicators are binary variables based on whether a member reported to have obtained the age, gender, and chronic condition specific services specified by NCQA for relevant HEDIS measures.

Predictor/Explanatory Variable(s): FPL (hence sliding scale premium).

Data Analysis Method: The changes in the likelihood that a member will receive screening, preventive and primary care services over time (during the prior year and the five-year duration of the study) will be examined as a function of the individual premium payment levels determined by the premium schedule. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates.
Therefore, we are proposing to develop generalized estimation equation (GEE) models for the binary outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) will be performed.

For case-control analyses a split-sample method will be used to assess the assignments of individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 3: Will the premium requirement slow the growth in healthcare spending?

Hypothesis 3.1: Healthcare spending for TMA members paying premiums during the demonstration will be lower compared to the healthcare spending for the same members prior to the demonstration.

Hypothesis 3.2: Healthcare spending for TMA members paying premiums during the demonstration will be lower compared to the healthcare spending for members (of similar makeup) outside of the demonstration.

Outcome Variable: The evaluation will consider using Allowed Amounts, Paid Amounts, and/or per member costs as the outcome variable for cost calculations (e.g. the allowed amount is calculated as the amount paid by Wisconsin Medicaid for services based on the maximum allowable fee schedule or the capitation payments made to Medicaid HMOs).

Predictor / Explanatory Variable(s): FPL levels defined in terms of levels on the sliding premium scale.

Data Analysis Method: Healthcare spending over time (during the prior year and the five-year duration of the study) will be evaluated as a function of individual premium payment level. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed.

Since the cost data are generally positively skewed (with long right side tail), assumptions related to linear regressions do not hold true for modeling purposes. Some kind of transformation of cost data is needed to apply linear regression methods. Most common of those are log transformations of the cost data. This process might result in hidden biases during transforming back to the predicted values of the cost data (Manning & Mullahy, 2001) and corrective measures can be adopted as described in that research publication.

For case-control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes. See section 5 for data collection methods and baseline development.

Question 4: Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?

Hypothesis 4.1: The cost-effectiveness for TMA members paying premiums during the demonstration will be higher (over time) as compared to the cost effectiveness for the same members prior to the demonstration.

Outcome Variable: Cost-Effectiveness is usually calculated as cost divided by a measure of health outcomes. In this case the cost variable(s) utilized in Question 2 can be used along with the measure of unnecessary services utilized in Question 1 in combination with the health care outcomes measures listed below:

Predictor / Explanatory Variable(s): FPL levels defined in terms of levels on the sliding premium scale.

Data Analysis Method: The need is to analyze the changes in cost-effectiveness (specifically aimed at unnecessary services over time and the health outcomes defined in table 3 above), during the baseline year and the five-year duration of the study, as explained by the individual premium payment requirements by FPL. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub- sections of the population) are proposed.

For case-control matching study using split-sample technique, samples can be determined during the first year of the Demonstration. This division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 5: Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?

Hypothesis 5.1: The cost-effectiveness for TMA members paying premiums during the demonstration will be higher (over time) as compared to the cost effectiveness for the same members prior to the demonstration.

Outcome Variable: Cost-Effectiveness will be determined as to whether changes in cost resulted in fewer unnecessary utilization healthcare services. In this case the cost variable(s) used in Question 2 can be used along with the measure of unnecessary

services (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-Day All Cause Readmissions, and overall inpatient stays).

Predictor / Explanatory Variable(s): FPL levels defined in terms of levels on the sliding premium scale.

Data Analysis Method: The need is to analyze the changes in cost-effectiveness (specifically aimed at reduction of unnecessary services), during the prior year and the five-year duration of the study, as explained by the individual premium payment requirements by FPL. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed.

For the case-control matching study, the control group will be identified by propensity score matching and the split-sample technique used to determine the sensitivity of bias present in the matching method. The case and control samples will be determined during the first year of the Demonstration. This division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 6: Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re- enrolled after the 3-month restrictive re-enrollment period?

Hypothesis 6.1: Utilization, costs, and health care outcomes will not be impacted for those individuals who were disenrolled, but re-re-enrolled after the 3-month restrictive re-enrollment period due to the limited amount of time that individuals would not have access to benefits.

Outcome Variable: Unnecessary services (i.e. ED Visits and Inpatient Stays for Ambulatory care Sensitive Conditions) and avoidable events (i.e. 30-Day All-Cause

Readmissions and Unnecessary Medical Services and Devices) as well as the health care outcomes defined in table 3.

The evaluation will consider using Allowed Amounts, Paid Amounts, and/or per member costs as the outcome variable for cost calculations (e.g. the allowed amount is calculated as the amount paid by Wisconsin Medicaid for services based on the maximum allowable fee schedule or the capitation payments made to Medicaid HMOs).

Predictor / Explanatory Variable(s): FPL levels defined in terms of levels on the sliding premium scale. Disenrollment/Re-enrollment history will be used to identify common patterns of disenrollment and re-enrollment and the effect of these patterns on the outcome variable will be assessed.

Data Analysis Method: We are proposing longitudinal regression methods for this analysis. The enrollment / disenrollment / re-enrollment information can be used multiple ways. Indicator variables can be developed to identify whether a member had any of these statuses within a certain unit of time and these variables will be added to the regression model. Alternatively, the enrollment status can be counted and categorized to discover differential effects of disenrollment/re-enrollment vs. continuous enrollment.

Question 7. Are costs, utilization of services, and/or health outcomes different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re- enrolled?

Hypothesis 7.1: Utilization, costs, and health care outcomes will not be different for those individuals who are continuously enrolled compared to those for individuals that have disenrolled and then re-enrolled due to the limited amount of time that individuals would not have access to benefits.

Outcome Variable: Unnecessary services (i.e. ED Visits and Inpatient Stays for Ambulatory Care Sensitive Conditions) and avoidable events (i.e. 30-Day All Cause Readmissions and utilization of unnecessary medical services and devices).

The evaluation will consider using Allowed Amounts, Paid Amounts, and/or per member costs as the outcome variable for cost calculations (e.g. the allowed amount is calculated as the amount paid by Wisconsin Medicaid for services based on the maximum allowable fee schedule or the capitation payments made to Medicaid HMOs).

Predictor / Explanatory Variable(s): FPL (hence sliding scale premium). Disenrollment/Re-enrollment history (Identify few frequent patterns of disenrollment / re- enrollment and create dummy variables on those patterns).

Data Analysis Method: We are proposing longitudinal regression methods for this analysis. The enrollment / disenrollment / reenrollment information can be used multiple different ways. Indicator variable can be developed whether a member had any of these statuses within a certain unit of time and use the variable in models. Otherwise, the enrollment status can be counted and categorized to discover differential effects.

A Case-Control matching method using split-sample approach will be employed to determine if there are significant different outcomes between the groups of different insurance status.

Question 8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?

Hypothesis 8.1: TMA members with higher incomes will transition faster out of BadgerCare Plus than TMA members with lower income. The impact of the premium will vary by income level as TMA members with higher income will have more health care coverage options than members with lower income levels and may transition out of BadgerCare Plus faster.

Outcome Variable: Disenrollment/Re-enrollment history (Identify frequent patterns of disenrollment / re-enrollment and create dummy variables on those patterns).

Predictor / Explanatory Variable(s): FPL (hence sliding scale premium) with possible categorization into wider intervals (smaller number of buckets). STC Attachment B.

Data Analysis Method: Depending on the type of outcome variable that is used the analysis method will be selected. For example, if enrollment / disenrollment indicator is a categorical variable then either logistic regression analysis or generalized linear models can be employed to answer the research question.

Question 9. How is access to care affected by the application of new, or increased, premium amounts?

Hypothesis 9.1: The premium requirement will have no effect on access to care.

Outcome Variable: Access to care can be defined as availability of Preventive Care, Behavioral Health Care, Specialist Care, Post-Acute Care, will be measured through survey questions for TMA population related to accessing needed care such as whether members have a primary care physician and if they have had difficulties scheduling appointments with providers for needed care.

Predictor / Explanatory Variable(s): FPL (hence sliding scale premium) with possible categorization into wider intervals (smaller number of buckets). Appendix 1. Also, dummy variables can be created to depict if the premium payment is new or an increased amount from past payments.

Data Analysis Method: Generally 'Access To Care' can be determined as continuous or discrete variable, depending on the emphasis of the domain of care. Based on that determination an appropriate regression model can be developed for longitudinal data.

Question 10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?

The 3-month restrictive re-enrollment period for failure to make a premium payment will have variable impact on membership continuation and enrollment. We envision that after the restrictive re-enrollment period is over and members reenroll again their

likelihood of paying regular premiums will increase. The comprehensive benefit package that Wisconsin Medicaid members receive will incentivize them to continue paying their premiums and remain enrolled in Medicaid after their return beyond the restrictive reenrollment period. We also presume that this effect will vary by income level, since members with higher incomes will have more opportunities to purchase health insurance outside of BadgerCare Plus. The next three hypotheses are based on this context.

Hypothesis 10.1: The 3-month restrictive re-enrollment period for failure to make a premium payment will increase retention for both payment of premiums (after members return to Wisconsin Medicaid) and TMA member's enrollment after adjusting for the member's acuity.

Outcome Variable(s): This is a Dyad Outcome. A suitable combination category class can be created based on the premium amount and pattern of enrollment / disenrollment. The categories will be created so that variability can be observed based on 3-month restrictive enrollment.

Predictor / Explanatory Variable: This is a Binary variable and based on whether any member had experienced this condition.

Data Analysis Method: The categorization of dual outcome variables will create a nominal variable since there may not be a logical ordering between the categories. The logistic regression method for nominal variables may be applied to answer this research question.

Question 11. Does this impact (as described in Question 10) vary by income level?

Hypothesis 11.1: The impact (as described in Question 10) will vary by income level and other variables.

Outcome Variable: This is a Dyad Outcome. A suitable combination category class can be created based on the premium amount and pattern of enrollment / disenrollment.

The categories will be created so that variability is observed based on 3-month restrictive enrollment.

Predictor / Explanatory Variable(s): Categorical variables created by smaller number of income classes.

Data Analysis Method: The categorization of dual outcome variables will create a nominal variable since there may not be a logical ordering between the categories. The logistic regression method for nominal variables may be applied to answer this research question.

Question 12. If there is an impact (as described in Question 10), explore the break-out by income level.

Hypothesis 12.1: (as described in Question 10) We will explore the break-out by income level.

Outcome Variable: This is a Dyad Outcome. A suitable combination category class can be created based on the premium amount and pattern of enrollment / disenrollment.
The categories will be created so that variability is observed based on 3-month restrictive enrollment.

Predictor / Explanatory Variable(s): Categorical variables created by smaller number of income classes.

Data Analysis Method: The categorization of dual outcome variables will create a nominal variable since there may not be a logical ordering between the categories. The logistic regression method for nominal variables may be applied to answer this research question.

To find the break-out point(s) in the income level where significant differences are observed, exploratory analyses can be employed using different cut-off points of the income scale.

Questions 13 thru 16 relate to the population segment D and D*. Population segment D data are used to create baseline measures where only comparison of measures will be made to a future date during the Demonstration. Otherwise, data from population segments D and D* will be merged to develop statistical models and for case-control studies. Note: population segment D* will have new members who were on the uninsured or on the Core Plan waitlist before implementation of the Demonstration and were enrolled to BadgerCare Plus after the Demonstration.

Question 13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?

Hypothesis 13.1: Childless adults who were previously (prior to April 1, 2014) enrolled in the BadgerCare Plus Core Plan will have better health outcomes in the demonstration than prior to the demonstration due to the enhanced benefit package in the Standard Plan such as mental health and dental.

Hypothesis 13.2: Newly eligible childless adults enrolled in the Standard Plan starting on April 1, 2014 will have better health outcomes as compared to the childless adults enrolled in the Core Plan for a similar period of enrollment during the demonstration.

Outcome Variable: Health Outcome Measures as shown in the following Table 3.

Table 5: Outcome Measures Frequently used by DHS to Determine Healthcare Quality

Focus Area	NQF Measure #	CMS Adult Core Set #	Measure
Preventive / Screening	0031	Measure 3	Breast Cancer Screening (BCS) (HEDIS-NCQA)
Chronic	0057	Measure 19	Comprehensive Diabetes Care- HbA1c Testing (HEDIS-NCQA)
	0063	Measure 18	Comprehensive Diabetes Care- LDL-C Screening (HEDIS-NCQA)
Mental Health	0105	Measure 20	Antidepressant Medication Management (AMM- Effective Continuation Phase) (HEDIS)

	0004	Measure 25	Initiation and Engagement of Alcohol and Other Drug Dependence Treatment (IET-Engagement of AOD Treatment) (HEDIS-NCQA)
			Tobacco Cessation (Counseling only) – Wisconsin specific measure – the percentage of adult smokers that received tobacco cessation counseling during the calendar year
	0576	Measure 13	Follow-up After Hospitalization for Mental Illness – 30 Days After Discharge (FUH-30) (HEDIS-NCQA)
Emergency Dept.			Ambulatory Care – Emergency Department Visits (AMB) sans revenue code 0456 (HEDIS-NCQA)

Wisconsin Medicaid will explore including additional health care outcomes measures from medical record data as agreed upon with HMOs and other Medicaid providers in the state. Some additional health care outcomes could also be derived from the survey questions.

Wisconsin Medicaid will include EPSDT measures as part of health care outcomes pending further analysis of the 19 to 20 age cohort covered under the Core Plan and the new childless adult population to assess cell size.

Predictor / Explanatory Variable(s): The health outcomes measures for the childless adult population who were covered by the Core Plan before implementation of the demonstration and during the demonstration. Hence the combination of time period and benefit plan is the predictor for this analysis.

Data Analysis Method: First, the basic analysis for this research question will be calculation and comparison of different measures over time. DHS has baseline data and values for the measures in Table 3 for the BadgerCare Plus Standard Plan population; for the Core Plan population, DHS has baseline data but not specific baseline values which can be calculated through administrative data using the algorithms developed by our fiscal vendor for the Standard Plan population. The baseline measures will be used for most of the comparison purposes. We propose to adjust some of the measures by suitable control variables, though HEDIS measures as described in the table above, are not adjusted by any covariates.

A second analysis will be to examine the changes in the likelihood that a member will receive screening, preventive and primary care services over time (during the years prior to the demonstration and the five-year duration of the study) will be examined as a function of the enhanced benefit package of the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop generalized estimation equation (GEE) models and use a logistic regression model for the binary outcome variable(s).
Sub-group analyses (i.e., separate models for different sub-sections of the population) will be performed.

For case-control analyses a split-sample method will be used to assess the assignments of individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 14. Will this (as described in Question 13) achieve a reduction in the incidence of unnecessary services?

Hypothesis 14.1: For childless adults who were previously (prior to April 1, 2014) enrolled in the BadgerCare Plus Core Plan there will be a reduction in the incidence of unnecessary services (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions,30-Day All Cause Readmissions) during the demonstration compared to prior to the demonstration due to the enhanced benefits provided in the Standard Plan, specifically mental health and dental.

Hypothesis 14.2: Newly eligible childless adults enrolled in the Standard Plan starting on April 1, 2014 will show more efficient utilization of services compared to the childless adults enrolled in the Core Plan for a similar period of enrollment during the demonstration.

Outcome Variable: Unnecessary services and avoidable events (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions, 30-Day All Cause Readmissions and unnecessary medical services and devices).

Predictor / Explanatory Variable(s): Most notable predictor as described in the question is the effect of time and the enhanced benefit package.

Data Analysis Method: Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the enhanced benefit package provided in the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score, income level) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s) and perform sub-group analyses (i.e., separate models for different sub-sections of the population). For case-control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 15. Will the provision increase the cost effectiveness (Outcomes/Cost) of Medicaid services?

Hypothesis 15.1: For childless adults who were previously (prior to April 1, 2014) enrolled in the BadgerCare Plus Core Plan there will be increased cost effectiveness during the demonstration than prior to the demonstration due to the enhanced benefits provided in the Standard Plan, specifically mental health and dental.

Hypothesis 15.2: Newly eligible childless adults enrolled in the Standard Plan starting on April 1, 2014 will show higher cost effectiveness compared to the childless adults enrolled in the Core Plan for a similar period of enrollment during the demonstration.

Outcome Variables: Cost-Effectiveness will be determined as to whether changes in cost resulted in better health outcomes. In this case the cost variable(s) will be determined as total cost of care per member and the health outcomes will be that are listed in Table 3, screening / preventive measures, chronic condition management, mental health related measures and frequency of ED visits.

Predictor / Explanatory Variable(s): Most notable predictor as described in the question is the effect of time and the enhanced benefit package.

Data Analysis Method: Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the enhanced benefit package provided in the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score, income level) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s) and perform sub-group analyses (i.e., separate models for different sub-sections of the population). For case-control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 16. Will the provision increase the cost effectiveness (Utilization/Cost) of Medicaid services?

Hypothesis 16.1: For childless adults who were previously (prior to April 1, 2014) enrolled in the BadgerCare Plus Core Plan there will be increased cost effectiveness during the demonstration than prior to the demonstration due to the enhanced benefits provided in the Standard Plan, specifically mental health and dental.

Hypothesis 16.2: Newly eligible childless adults enrolled in the Standard Plan starting on April 1, 2014 will show higher cost effectiveness compared to the childless adults enrolled in the Core Plan for a similar period of enrollment during the demonstration.

Outcome Variable: Cost-Effectiveness will be determined as to whether changes in cost resulted in fewer unnecessary utilization healthcare services. In this case the cost variable(s) will be determined as total cost of care per member that can be used along with the measure of unnecessary services (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-day all cause readmissions, and overall inpatient stays).

Predictor / Explanatory Variable(s): Most notable predictor as described in the question is the effect of time and the enhanced benefit package.

Data Analysis Method: The effect may vary by income level or any other demographic variables. So some adjustment by control variables are also proposed for this question. The means test will determine any significant difference in cost-effectiveness measures from before to after demonstration.

There will also be an analysis of the changes in cost-effectiveness (specifically aimed at reduction of unnecessary services), during the prior year and the five-year duration of the study, as explained by the enhanced benefit package provided in the Standard Plan. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed.

For the case-control matching study, the control group will be identified by propensity score matching and the split-sample technique used to determine the sensitivity of bias present in the matching method. The case and control samples will be determined during the first year of the Demonstration. This division of the sample will be maintained during the rest of the study period for comparison purposes.

Question 17. Will it demonstrate an increase in the continuity of health coverage?

Hypothesis 17.1: For childless adults who were previously (prior to April 1, 2014) enrolled in the BadgerCare Plus Core Plan there will be an increase in the continuity of coverage in the demonstration compared to prior to the demonstration due to the enhanced benefits provided in the Standard Plan, specifically mental health and dental.

Hypothesis 17.2: Newly eligible childless adults enrolled in the Standard Plan starting on April 1, 2014 will show an increased continuity of coverage compared to the childless adults enrolled in the Core Plan for a similar period of enrollment during the demonstration.

Outcome Variable: Any preferred measure of Continuity of Coverage. The measure will be calculated by combining data from claims and eligibility. Moreover, the continuity of care will be determined as part of the survey to CLAs related to usual sources of care and their experience in getting needed care before and after the demonstration.

Predictor / Explanatory Variable(s): Enrollment binary variable.

Data Analysis Method: Comparison between before and after implementation of Demonstration will be made and the measure will be analyzed over time.

A summary of the analysis plan for each of the questions is provided, below, as Table 4.

Table 6: BadgerCare Reform Demonstration Evaluation Data Analysis Plan

Research Question	Proposed Variables in analysis and/or model development			Anticipated Analysis level & Comments	Proposed Data Analysis Method
	Outcome Variable	Predictors / Independent Variable(s)	Control Variables		
For the TMA: Demonstration participants: Payment of Premiums					
1. Will the premium requirement reduce the incidence of unnecessary services?	Unnecessary ED Visits as defined in Billings et al., (2000) paper. Ambulatory Care Sensitive Visits (Non-Emergent, Primary Care Treatable, Avoidable). Also, 30-Day All Cause Readmissions and Unnecessary Medical Services & Devices.	FPL (hence sliding scale premium)	Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO or FFS, Tribal population*. Some risk scores use Age and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.	Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the individual premium payment levels determined by the premium schedule. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time- varying covariates. Therefore, it is proposed to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population).
2. Will the premium requirement lead to improved health outcomes?	The outcome variables will be recorded as member-specific data. The screening, preventive and primary care indicators are binary variables based on whether a member reported to have obtained the age, gender, and chronic condition specific services specified by NCQA for relevant HEDIS measures.	FPL (hence sliding scale premium)		Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	The changes in the likelihood that a member will receive screening, preventive and primary care services over time (during the prior year and the five-year duration of the study) will be examined as a function of the individual premium payment levels determined by the premium schedule. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time- varying covariates. Therefore, we are proposing to develop generalized estimation equation (GEE) models for the binary outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) will be performed.
3. Will the premium requirement slow the growth in healthcare spending?	Allowed Amount will be used as the outcome variable for all cost calculations. This will be calculated as the amount paid by Wisconsin Medicaid for services based on the maximum allowable fee schedule or the capitation payments made to Medicaid HMOs.	FPL (hence sliding scale premium)		Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Healthcare spending over time (during the prior year and the five-year duration of the study) will be evaluated as a function of individual premium payment level. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed.

4. Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	Cost-Effectiveness is usually calculated as cost divided by a measure of health outcomes. In this case the cost variable(s) utilized in Question 2 can be used along with the measure of unnecessary services utilized in Question 1.	FPL (hence sliding scale premium).		Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	The need is to analyze the changes in cost-effectiveness (specifically aimed at unnecessary services over time), during the prior year and the five-year duration of the study, as explained by the individual premium payment requirements by FPL. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed.
5. Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?	Cost-Effectiveness will be determined as to whether changes in cost resulted in fewer unnecessary utilization healthcare services. In this case the cost variable(s) used in Question 2 can be used along with the measure of unnecessary services (such as Emergency Department visits and Inpatient Stays for Ambulatory Care Sensitive Conditions (ASCs), 30-Day All Cause Readmissions, and overall inpatient stays).	FPL levels defined in terms of levels on the sliding premium scale.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	The need is to analyze the changes in cost-effectiveness (specifically aimed at reduction of unnecessary services), during the prior year and the five-year duration of the study, as explained by the individual premium payment requirements by FPL. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed. For case-control matching study, the control group will be identified by propensity score matching method and the split-sample technique used to determine the sensitivity of bias present in matching method. The case and control samples will be determined during the first year of the Demonstration. This division of the sample will be maintained during the rest of the study period for comparison purposes.
Association of Enrollment Status to Utilization and/or Costs					
6. Is there any impact on utilization and/or costs associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?	Unnecessary ED Visits as defined in Billings et al., (2000) paper. Ambulatory Care Sensitive Visits (Non-Emergent, Primary Care Treatable, Avoidable). Also, 30-Day All Cause Readmissions and Unnecessary Medical Devices. Overall PMPY Cost of Care (Medical and Pharmacy Expenditures). Allowed Amount will be considered for cost calculations.	FPL (hence sliding scale premium). Disenrollment/Re-enrollment history (Identify few frequent patterns of disenrollment / re-enrollment and create dummy variables on those patterns).	Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO or FFS, Tribal population*. Some risk scores use Age	Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Longitudinal regression methods are proposed for this analysis. The enrollment / disenrollment / re-enrollment information can be used multiple ways. Indicator variables can be developed to identify whether a member had any of these statuses within a certain unit of time and these variables will be added to the regression model. Alternatively, the enrollment status can be counted and categorized to discover differential effects of disenrollment/re-enrollment vs. continuous enrollment.

7. Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for individuals that have disenrolled and then re-enrolled?	Unnecessary ED Visits as defined in Billings et al., (2000) paper. Ambulatory Care Sensitive Visits (Non-Emergent, Primary Care Treatable, Avoidable). Also, 30-Day All Cause Readmissions and Unnecessary Medical Devices. Overall PMPY Cost of Care (Medical and Pharmacy Expenditures). Allowed Amount will be considered for cost calculations.	FPL (hence sliding scale premium). Disenrollment/Re-enrollment history (Identify few frequent patterns of disenrollment / re-enrollment and create dummy variables on those patterns).	and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.	Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Longitudinal regression methods are proposed for this analysis. The enrollment / disenrollment / reenrollment information can be used multiple different ways. Indicator variable can be developed whether a member had any of these statuses within a certain unit of time and use the variable in models. Otherwise, the enrollment status can be counted and categorized to discover differential effects.
Enrollment Analysis by Payment of Premiums					
8. What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?	Disenrollment/Re-enrollment history (Identify few frequent patterns of disenrollment / re-enrollment and create dummy variables on those patterns).	FPL (hence sliding scale premium) with possible categorization into wider intervals (smaller number of buckets). Appendix 1.	Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO or FFS, Tribal population*. Some risk scores use Age and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.	Beneficiary level Analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Depending on the type of outcome variable that is used the analysis method will be selected. For example, if enrollment / disenrollment indicator is a categorical variable then either logistic regression analysis or generalized linear models can be employed to answer the research question.
9. How is enrollment or access to care affected by the application of new, or increased, premium amounts?	Access to care can be defined through survey questions related to whether members have a primary care physician and if they have had difficulties scheduling appointments with providers for needed care.	FPL (hence sliding scale premium) with possible categorization into wider intervals (smaller number of buckets). Appendix 1. Also, dummy variables can be created to depict if the premium payment is new or an increased amount from past payments.		Beneficiary level Analysis. The control sample will be selected by split-sample method from within the TMA Adults population	Generally 'Access To Care' can be determined as continuous or discrete variable, depending on the emphasis of the domain of care. Based on that determination appropriate regression model can be developed for longitudinal data. The source of these data will be enrollment surveys.
Payment of Premiums and 3-Month Restrictive Re-enrollment					
10. What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?	This is a Dyad Outcome. A suitable combination category class can be created based on amount of premium and pattern of enrollment / disenrollment. The categories will be created so that variability are observed based on 3-month restrictive enrollment.	This is a Binary variable and determined whether any member had experienced this condition or not.	Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO	Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	The categorization of dual outcome variables will create a nominal variable since there may not be a logical ordering between the categories. The logistic regression method for nominal variables may be applied to answer this research question.

11. Does this impact vary by income level?	This is a Dyad Outcome. A suitable combination category class can be created based on amount of premium and pattern of enrollment / disenrollment. The categories will be created so the variability are observed based on 3-month restrictive enrollment.	As income level is associated with premium payment, which is the outcome variable, the predictor must be carefully defined so that it is separated form outcome.	or FFS, Tribal population*. Some risk scores use Age and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.	Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	The categorization of dual outcome variables will create a nominal variable since there may not be a logical ordering between the categories. The logistic regression method for nominal variables may be applied to answer this research question.
12. If there is an impact, explore the break-out by income level.	This is a Dyad Outcome. A suitable combination category class can be created based on amount of premium and pattern of enrollment / disenrollment. The categories will be created so that variability is observed based on 3-month restrictive enrollment.	As income level is associated with premium payment, which is the outcome variable, the predictor must be carefully defined so that it is separated form outcome.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the TMA Adults population	To find the break-out point(s) in the income level that makes significant difference in outcome variable, exploratory analyses can be employed using different cut-off points of the income scale.
For Childless Adults: Effects of the Benefit Plan for demonstration expansion group					
13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?	Health Outcome Measures as shown in Table 2.	Groups that will be predictors are: CLA population and Core Plan Group.	Demographics (Age[Group], Gender, Race & Ethnicity), Education, County, Region, Risk Score[ACG or CDPS], belongs to MCO or FFS, Tribal population*. Some risk scores use Age and Gender as predictors. In that case, age and gender can be dropped for modelling purposes.	Aggregate level analysis: Baseline measures are calculated for the start of the study period and compared with similar measures from before and after the implementation. Beneficiary level analysis. The control sample will be selected by split-sample method from within the CLA Adults population.	The basic analysis for this research question will be calculation and comparison of different measures over time. The baseline measures will be used for most of the comparison purposes. We propose to adjust some of the measures by suitable control variables, though HEDIS measures as described in the table above, are not adjusted by any covariates. A second analysis will be to examine the changes in the likelihood that a member will receive screening, preventive and primary care services over time (during the years prior to the demonstration and the five-year duration of the study) will be examined as a function of the enhanced benefit package of the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop generalized estimation equation (GEE) models and use a logistic regression model for the binary outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) will be performed. For case-control analyses a split-sample method will be used to assess the assignments of individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

14. Will this achieve a reduction in the incidence of unnecessary services?	Unnecessary ED Visits as defined in Billings et al., (2000) paper. Ambulatory Care Sensitive Visits (Non-Emergent, Primary Care Treatable, Avoidable). Also, 30-Day All Cause Readmissions and Unnecessary Medical Devices.	Before and after implementation comparison.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the CLA Adults population	: Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the enhanced benefit package provided in the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s) and perform sub-group analyses (i.e., separate models for different sub-sections of the population). For case- control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.
15. Will the provision increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	Cost-Effectiveness will be determined as to whether changes in cost, even though increment, resulted in better health outcomes. In this case the cost variable(s) will be determined as total cost of care per member and the health outcomes will be that are listed in Table 4.2, screening / preventive measures, chronic condition management, mental health related measures and frequency of ED visits.	Before and after implementation comparison.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the CLA Adults population	Changes in the number of unnecessary services over time (during the prior year and the five-year duration of the study) will be examined as a function of the enhanced benefit package provided in the Standard Plan. This explanatory variable as well as some of the control variables (e.g., age, risk score, income level) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s) and perform sub-group analyses (i.e., separate models for different sub-sections of the population). For case-control analyses a split-sample method will be used to assign individuals to the case and control groups. The samples will be determined during the first year of the Demonstration and this division of the sample will be maintained during the rest of the study period for comparison purposes.

16. Will the provision increase the cost effectiveness (Utilization/Cost) of Medicaid services?	Cost-Effectiveness will be determined as to whether changes in cost, even though increment, resulted in fewer unnecessary utilization healthcare services. In this case the cost variable(s) will be determined as total cost of care per member that can be used along with the measure of unnecessary services (such as Emergency Department visits for Ambulatory Care Sensitive Conditions (ASCs), 30-day all cause readmissions, and overall inpatient stays).	Most notable predictor as described in the question is the effect of time.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the CLA Adults population	The effect may vary by income level or any other demographic variables. So some adjustment by control variables are also proposed for this question. The means test will determine any significant difference in cost-effectiveness measures from before to after demonstration. There will also be an analysis of the changes in cost-effectiveness (specifically aimed at reduction of unnecessary services), during the prior year and the five-year duration of the study, as explained by the enhanced benefit package provided in the Standard Plan. This outcome variable as well as some of the control variables (e.g., age, risk score) are time-varying covariates. Therefore, we are proposing to develop longitudinal regression models for outcome variable(s). Sub-group analyses (i.e., separate models for different sub-sections of the population) are proposed. For the case-control matching study, the control group will be identified by propensity score matching and the split-sample technique used to determine the sensitivity of bias present in the matching method. The case and control samples will be determined during the first year of the Demonstration. This division of the sample will be maintained during the rest of the study period for comparison purposes.
17. Will it demonstrate an increase in the continuity of health coverage?	Measure of Continuity of Coverage.	Before and after implementation comparison.		Beneficiary level analysis. The control sample will be selected by split-sample method from within the CLA Adults population	The effect may vary by income level or any other demographic variables. So some adjustment by control variables are also proposed for this question.

5. Data Collection Methods

Data will be collected from 3 main sources over the course of the evaluation. The two basic sources are the interChange System enrollment and claims data (captured and maintained by HP Enterprise Services, hereinafter identified as 'Enrollment and Claims/Encounter Data') and the Eligibility CARES data (captured and maintained by Deloitte, hereinafter mentioned as 'Eligibility Data'). A periodic data collection schedule will be developed by the evaluator according to analytical and reporting needs. The data fields needed to answer research questions and to create the measure to report to CMS periodically will be determined by the evaluator.

These two data sources are updated on a regular basis and hence the periodic data extraction will capture all the latest updates. To develop the baseline data, the evaluator will use Medicaid eligibility and claims data extracted at the beginning of the demonstration. All claims and eligibility data for those members will be collected twenty-four months prior to the implementation start date (April 2, 2014). These data will be archived for the exclusive use of the evaluation project, and the data format and storage location will be determined by the evaluator.

For all case-control matching analyses, since the income level (FPL) is a major matching variable, we propose to adopt a split-sample approach to define the control group. The cohort of new members joining the segments will be included into the segments for analysis purposes. The new members may be treated separately for the case-control study since those members will not have sufficient data from before implementation date.

In the middle of the demonstration and at the end of the study period, the enrollment / disenrollment / reenrollment survey will be administered by the evaluator. The survey information will be augmented with enrollment and claims data and eligibility data to provide a deeper understanding of the member perspective about premium payments, 3-month restrictive reenrollment and its' effect on health outcomes, continuity of coverage and cost of providing health care.

6. Quarterly Progress Report Contribution

Where appropriate and practical, summary statistics will be broken out by the levels of covariates such as FPL, gender, etc. to provide consistent indicators of program performance throughout the Demonstration period, however, no inferential statistics will be calculated until the second yearly report—at which time interim findings pertaining to sub-group differences in process outcomes, health outcomes, and cost-savings may be included in the quarterly progress reports.

7. Estimated Evaluation Budget

As noted previously DHS intends to contract with an independent evaluator during the second year of the demonstration and will conduct two surveys during the course of the demonstration. DHS will produce an evaluation budget as part of the contracting process,. DHS contracted with the University of Wisconsin (UW) Population Health Institute to complete the evaluation for the Wisconsin Medicaid Section 1115 Health Care Reform Demonstration (BadgerCare) (11-W-00125/5) and Childless Adults Section 1115 Demonstration (11-W-00242/5).

The UW Population Health Institute conducted one survey (at the end of the demonstrations) along with the data evaluation. The total cost for the survey and evaluation for the two expiring waivers is $400,000. DHS anticipates that the costs to conduct the evaluation for the current demonstration will be higher than the expiring demonstrations due to the additional survey and evaluation in demonstration year 3. DHS estimates the cost to be between $500,000 and $800,000.

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ATTACHMENT D: UW Evaluation Design Report: Recommended Changes and Crosswalk

EVALUATION OF WISCONSIN'S BADGERCARE PLUS HEALTH COVERAGE

for

PARENTS & CARETAKER ADULTS AND FOR CHILDLESS ADULTS

2014 CMS Section 1115 Waiver Provision

Design Report: Analytic Methods

Submitted to the
WISCONSIN DEPARTMENT OF HEALTH SERVICES
December, 2015

by the
Health Policy Research Team
UW Population Health Institute

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I. INTRODUCTION/BACKGROUND

The UW Population Health Institute (The Institute) is conducting an evaluation of the Wisconsin BadgerCare Reform Demonstration Project, as outlined by the Wisconsin Department of Health Services (DHS) and approved by the federal Centers for Medicare and Medicaid Services (CMS). The evaluation uses rigorous methods to arrive at an understanding of how the changes implemented under Wisconsin's 2014 Medicaid 1115 Waiver Demonstration affect two Medicaid populations —(1) those individuals who are eligible for Medicaid through Transitional Medical Assistance (TMA Adults) and (2) those childless adults (CLAs) with an effective income level at, or below, 100% of the federal poverty level (FPL).

The evaluation will address the 17 evaluation questions defined by DHS in the "BadgerCare Reform Demonstration Draft Evaluation Design" of 10/31/2014. Building on this draft design, the Institute's team will utilize state-of-the art social scientific methods to rigorously answer each question. This design report outlines the selected methodological and statistical approaches, fulfilling the first deliverable for the project.

The design report proceeds as follows. We first summarize the proposed methods according to each evaluation question in Table 1 and then describe the data sources required for this evaluation. Our detailed explanation of the methodological approaches specific to each evaluation question is organized according to the programmatic changes authorized by the 1115 Waiver: Premium changes; 3-month RRP; and Standard Plan coverage for CLAs. Finally, an attachment at the end of this document provides a cross-walk between the evaluation team's plans and the DHS' Draft design, to clarify how this design report aligns with and meets the DHS and CMS evaluation objectives.

Table 1. Evaluation Questions and Associated Data Analysis Methods

Evaluation Question	Evaluation Method			
	Administrative Data		Survey Data	
	Descriptive Analysis	Causal Analysis	Descriptive Analysis	Causal Analysis
For TMA demonstration participants: Payment of Premiums				
1: Will the premium requirement reduce the incidence of unnecessary services?	X	DD & WP		
2: Will the premium requirement lead to improved health outcomes?	X	DD & WP		
3: Will the premium requirement slow the growth in healthcare spending?	X	DD & WP		
4: Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?	X	DD & WP		
5: Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?	X	DD & WP		
Association of enrollment status to utilization and costs				
6: Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?	X	WP	X	
7: Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for beneficiaries that have disenrolled and then re-enrolled?	X	DD		
Enrollment analysis by payment of premiums				
8: What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?	X	ITS & RD		
9: How is access to care affected by the application of new, or increased, premium amounts?		RD[a]	X	RD[a]
Payment of Premiums and Three Month Restrictive Re-enrollment				
10: What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?	X	HZ		
11: Does the RRP impact vary by income level?	X			
12: If there is an impact from the RRP, explore the break-out by income level.	X			
For CLA Adults: Effects of the Benefit Plan for Demonstration Expansion Group				
13. Will the provision of a benefit plan that is the same as the one provided to all ther BadgerCare adult beneficiaries result in	X	DD		

improved health outcomes?				
14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?	X	DD		
15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?	X	DD		
16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Utilization/Cost) of Medicaid services?	X	DD		
17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?	X	DD	X	WP[b]

Legend:
DD = Differences-in-Differences
ITS = Interrupted Time Series
RD= Regression Discontinuity
WP = Longitudinal within-person analysis
HZ = Hazard modeling

[a] Contingent on approval and feasibility of matching survey data to CARES data.
[b] Continent upon sufficient sample size for panel compo

II. DATA SOURCES

The evaluation will require administrative data from the Wisconsin DHS on (a) claims and encounters, (b) diagnostic codes, (c) enrollment, and disenrollment reason codes, and (d) premium payment information. We will also conduct a survey, in 2016 and 2018, of current and disenrolled members, assessing measures of utilization, health, and response to premiums.

A. Administrative Data from Wisconsin DHS

1. Enrollment Data

We will use longitudinal administrative data from the CARES system to measure enrollment. CARES also contains demographic information, including age, sex, educational attainment, county of residence, income, and income sources. The CARES data may contain data about an applicant's health insurance status at the time of application, although we have found previously that these fields are only regularly filled for the subset of enrollees for which this question is applicable (i.e., those for whom crowd-out provisions pertain.)

From these data, we will ascertain, where relevant, the month a person disenrolled from BadgerCare Plus (BC+). We will utilize reason codes associated with disenrollment. Further, these data contain "premium payment files" that contain monthly information on the dollar amount of premium owed, whether it was paid, and the date of payment.

2. Unemployment Insurance Earnings Data

We will use longitudinal administrative data from the Unemployment Insurance earnings reporting system to augment the enrollment data with individual measures of reported quarterly employment, wages, and firm industry code. In addition to these measures of individual-specific employment and wages (which are only available at case-level in CARES) and industry of employment, the unemployment insurance earnings data will allow us to assess the employment dynamics of individuals who transition from standard BadgerCare Plus into TMA.

3. Claims/Encounter Data

We will obtain claims and encounter data from the State's MMIS claims database. These data files include detailed ICD-9 diagnostic codes. We will draw claims data for the period from February 2008 (the beginning of the BC+ program) throughout the end of the current 1115 demonstration period. The claims and encounter data contain detailed information on diagnoses, procedure, and billing codes from which we will construct outcomes measures of health care use including health-related measures, general care use, and unnecessary care use as summarized in Table 2. Our health care use measures will include all-cause emergency department (ED) visits, inpatient hospitalizations, and outpatient visits. We will further categorize ED and inpatient measures of utilization into visits/admissions for ambulatory care sensitive conditions (ACSC) and preventable hospitalizations. Likewise, we will examine types of outpatient visits (e.g., primary, specialty and dental care).

ED visits will be measured as a day with an ED claim, identified using procedure billing codes. ACSC ED visits will be defined following Billings et al., (2000) and using the corresponding algorithm. Using this method, an ED visit is classified on a probabilistic basis into one of five categories, with the first three considered ACSC: (1) non-emergent, (2) emergent/primary care treatable, (3) emergent but preventable, and (4) emergent not preventable, (5) injuries, mental health, drug or alcohol, other.

Hospitalizations will be measured as the number of hospital stays, using bed day revenue codes to identify them in the claims. This analysis will distinguish between new admissions and transfers between hospitals, as transfers should not be considered new hospitalizations. Since transfers cannot be observed directly, any gap of less than two days between an admission and a discharge or last bed day will be considered a transfer.

Table 2 Health and health care outcome measures derived from MMIS data

Focus	Data Source	Description	Evaluation Question
Health-related			
Preventive health			
Breast cancer screening (BCS)	MMIS	NQF measure 0031; CMS adult core set #3;	1-7, 9, 13,15
Influenza immunization	MMIS	NQF measure 0041	1-7, 9, 13,15
Chronic health			
Diabetes care HBA1c testing	MMIS	NQF measure 0057; CMS adult core set #19	1-7, 9, 13,15
Diabetes care-LDL-C screening	MMIS	NQF measure 0063; CMS adult core set #18	1-7, 9, 13,15
Mental health & substance use disorder			1-7, 9, 13,15
Antidepressant medication management	MMIS	NQF measure 0105; CMS adult core set #20	1-7, 9, 13,15
Follow-up within 30 days after hospitalization for mental illness	MMIS	NQF measure 0576; CMS adult core set #13	1-7, 9, 13,15
Tobacco cessation counseling	MMIS		1-7, 9, 13,15
Initiation and engagement of alcohol and other drug dependence treatment	MMIS	NQF measure 0004; CMS adult core set #25	1-7, 9, 13,15
Health care use, general			
Office-based visits	MMIS	Non-emergency department outpatient and office-based visits, total and defined by type (e.g., dental, primary, specialty)	1-7, 9, 13,15
Emergency department visits	MMIS	ED visits, all cause	1-7, 9, 13,15
Inpatient admissions	MMIS	Inpatient admissions, all cause	1-7, 9, 13,15

Potentially avoidable/unnecessary health care use			
30-day all cause hospital readmission	MMIS		1-5, 9, 14,16
Emergency department visit for ambulatory care sensitive condition (ACSC)	MMIS		1-5, 9, 14,16
Inpatient stay for ACSC	MMIS		1-5, 9, 14,16
Preventable hospitalization	MMIS		1-5, 9, 14,16

Preventable hospitalizations will be measured using AHRQ (2010) Preventive Quality Indices (PQIs). PQIs indicate conditions for which good outpatient care can potentially prevent the need for hospitalization, or for which early intervention can prevent complications or more severe disease. The PQIs considered here will be hospital admissions due to the following: (1) short-term complications from diabetes, (2) perforated appendix, (3) long-term complications from diabetes, (4) chronic obstructive pulmonary disease (COPD), (5) hypertension, (6) congestive heart failure, (7) dehydration, (8) bacterial pneumonia, (9) urinary tract infection, (10) angina without procedure, (11) asthma.

Outpatient visits will be measured as the number of provider-day visits. Total outpatient visits will be defined using a procedure code that is used only for outpatient visits (which includes skilled nursing visits). We will follow HEDIS, CMS, and NQF technical specifications as appropriate to construct the measures of health-related care use identified in Table 2.

Health care costs will be estimated by using FFS allowable charges for FFS visits and by imputing costs for Medicaid managed care encounters using the same FFS schedule of allowable charges. Monthly costs per member will be calculated by summing the total amount spent on visits in all service categories by each member, and then dividing by the number of months enrolled.

B. Survey Data

We will utilize the UW Survey Center to conduct surveys for this project. We will conduct a mixed-mode mail and telephone survey to reach a statistically valid sample of the three study cohorts:

- BadgerCare TMA current
- BadgerCare RRP – both those currently in an RRP and those returned from an RRP
- BadgerCare Childless Adults- both currently enrolled and those who were enrolled prior to March 2014

In order to develop a longitudinal panel that can facilitate over-time comparisons, where possible the survey will resample from the 1,054 respondents from the Spring 2014 survey that was fielded under the prior BadgerCare waiver evaluation. We anticipate that more than half of the new survey sample will be comprised of resampled respondents.

The survey design and process will be based on and informed by that utilized by the Oregon Health Study[4], the Urban Institute's Health Reform Monitoring Survey[5],the RAND Patient Satisfaction Survey[6] , and lessons learned administering the national Medicaid CAHPS[7] and elsewhere[8]. The survey will include questions pertaining to health care coverage and utilization during enrollment and during the time not enrolled in BadgerCare, about health status, and about the effect of premiums on enrollment decisions.

The survey will be fielded in Spring 2016 and Spring 2018. It will include an initial mailing with two follow-up letters, and then a telephone follow-up interview to selected respondents and non-respondents. Tracking methods will be utilized to locate individuals no longer BadgerCare-enrolled who are not reached through state-provided addresses information.

[4] Finkelstein A, et al. The Oregon Health Insurance Experiment: Evidence from the First year.. National Bureau of Economic Research, NBER Working Paper No. 17190, July 2011.

[5] Urban Institute. Health Reform Monitoring Survey. Available at http://hrms.urban.org/about.html

[6] Patient Satisfaction Questionnaire from RAND Health. Available at http://www.rand.org/health/surveys_tools/psq.html

[7] CMS Technical Assistance Brief Number 3.Guidance for Conducting the Consumer Assessment of Healthcare Providers and Systems (CAHPS) 5.0H Child Survey. December 2012.

[8] Beebe TJ, Davern ME, McAlpine DD, Call KT, Rockwood TJ. (2005) Increasing Response Rates in a Survey of Medicaid Enrollees: The Effect of a Prepaid Monetary Incentive and Mixed Modes (Mail and Telephone. Medical Care.Vol 43(4).

III. METHODOLOGICAL & STATISTICAL APPROACH

Payment of Premiums and The Effect of Premiums: Questions 1-5, 8,9

Question 1: Will the premium requirement reduce the incidence of unnecessary services?

A. DHS proposed: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. Evaluation Team Proposes:

1. Method

a. Descriptive analysis of administrative data. We will provide rates of unnecessary service use over time by TMA status, income, premium payment status, and other demographic characteristics available through CARES. We will include tabulations as well as a graphical and regression analysis.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare rates of unnecessary service use for those affected by the policy (Treatment Group 1) to those not affected by the policy (Comparison Group 1 and Comparison Group 2 in separate analyses), over time. A purely descriptive analysis would not account for secular changes that might affect unnecessary service use nor the potential for selection into TMA status. This design allows us to identify the causal effect of premiums by assuming that the unnecessary service use for the treatment group would have evolved similarly over time as that of the comparison group(s) in the absence of the implementation of the premium requirement. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable. We will also perform a within-person analysis that considers whether outcomes change over time for those affected by the policy conditional on remaining enrolled.

2. Study Population

Among adults eligible to qualify for TMA, we will use two comparison groups common to Questions 1-5, 8 and 9 in order to isolate the effect of the premium requirements on the outcomes of interest. Comparison Group 1 is defined as all BadgerCare adults below 100% FPL beginning at least 2 years prior to the July 2012 original premium. Because this group never experienced any change in their premium requirements, they provide a good benchmark for general trends in health care usage, costs, and program enrollment. However, since the treatment group (TMA adults) were all originally members of MA adults, it is possible that the composition of Comparison Group 1 changes over time due to the new TMA premium policies. While we will study this directly under Question 8, we will also use an alternative comparison group, parents and caretakers who entered with incomes higher than 100% FPL and so are not eligible for TMA (Comparison Group 2).

Comparison Group 2 was subject to the same policy as TMA from July 2012 – March 2014 and may provide a better match for the TMA group after the time of their transition, as they have

similar income levels. The use of Comparison Group 2 will only be historical since Comparison Group 2 lost eligibility effective April 2014.

For the time dimension of the study, we will consider the outcomes of the treatment and comparison groups across three time periods: first, prior to any premium requirements; second, under the July 2012-April 2014 conditions; and finally, under the April 2014 – present conditions. (Table 3, below)

Table 3: Study Population 1, Premium Requirements for Treatment and Comparison Groups

Timeline	Comparison Group 1	Comparison Group 2	Treatment Group
	MA adults (<100% FPL)	Higher-income parents/caretakers (100-200% FPL)	TMA adults
Prior to premium introduction (Feb 2008- June 2012)	Not required to pay premiums	Parents who enrolled at >150% FPL were required to pay premiums; those 100-150% were not	Not required to pay premiums
First premium policy (July 2012- March 2014)	Not required to pay premiums	Premiums introduced for 133-150%; increased for >150%	Premiums introduced for 133-200%
Current waiver premium policy (April 2014 – present)	Not required to pay premiums	No longer eligible	Premiums introduced for 100-133%

3. Data Requirements

Source:	Time	Purpose:
CARES	(February 2008 – present)	Identification of study population during and prior to TMA period
MMIS Claims	(February 2008 – present)	Identification of outcome measures for study population (Necessary/unnecessary emergency department visits, ambulatory care sensitive inpatient stays, 30 day all cause readmissions)

4. Expected Limitations

a. *Outcome measure.* While we will use empirically validated measures of the outcome, identification of "unnecessary" visits through claims data algorithms is an imperfect process and will inevitably misclassify some visits that were "necessary" as "unnecessary" and vice versa.
b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than the premium requirement changes for Treatment Group 1 but not the comparison groups at the same time as the premium requirement was implemented, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 2: Will the premium requirement lead to improved health outcomes?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. **Evaluation Team Proposes**:

1. Method

a. *Descriptive analysis of administrative data.* Description of health-related outcomes over time by TMA status, income, premium payment status, and other demographic characteristics available through CARES. We will include tabulations and a graphical and regression analysis.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare health-related outcomes for those affected by the policy (Treatment Group 1) to those not affected by the policy (Comparison Group 1 and Comparison Group 2 in separate analyses), over time. A purely descriptive analysis would not account for secular changes that might affect health-related outcomes nor the potential for selection into TMA status. This design allows us to identify the causal effect of premiums by assuming that the health-related outcomes for the treatment group would have evolved similarly over time as that of the comparison group(s) in the absence of the implementation of the premium requirement. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable. We will also perform a within-person analysis that considers whether outcomes change over time for those affected by the policy conditional on remaining enrolled.

2. **Study Population:** Same as Question 1

3. **Data Requirements**

Source	Time Frame	Purpose
CARES	(February 2008 – present)	Identification of study population during and prior to TMA period
MMIS Claims	(February 2008 – present)	Identification of health-related outcomes (Table 2)

4. Expected Limitations

a. *Outcome measure.* While we will use empirically validated measures as described in Table 2, identification of health-related outcomes through claims data algorithms is an imperfect process as it requires the enrollee to utilize the health care system in order to appear unhealthy.

b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than the premium requirement changes for Treatment Group 1 but not the comparison groups at the same time as the premium requirement was implemented, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 3: Will the premium requirement slow the growth in healthcare spending?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. **Evaluation Team Proposes**:

1. Method

a. Descriptive analysis of administrative data. Description of healthcare spending over time by TMA status, income, premium payment status, and other demographic characteristics available through CARES. We will include tabulations and a graphical and regression analysis.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare healthcare spending for those affected by the policy (Treatment Group 1) to those not affected by the policy (Comparison Group 1 and Comparison Group 2 in separate analyses), over time. A purely descriptive analysis would not account for secular changes that might affect healthcare spending nor the potential for selection into TMA status. This design allows us to identify the causal effect of premiums by assuming that the healthcare spending for the treatment group would have evolved similarly over time as that of the comparison group(s) in the absence of the implementation of the premium requirement. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable. We will also perform a within-person analysis that considers whether outcomes change over time for those affected by the policy conditional on remaining enrolled.

2. **Study Population:** Same as Questions 1 and 2

3. **Data Requirements**

Source	Time Frame	Purpose
CARES	(February 2008 – present)	Identification of study population during and prior to TMA period
MMIS Claims	(February 2008 – present)	Identification of healthcare spending outcomes

4. Expected Limitations

Parallel trends assumption. This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than the premium requirement changes for Treatment Group 1 but not the comparison groups at the same time as the premium requirement was implemented, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 4: Will the premium requirement increase the cost effectiveness (Outcomes/Cost) of Medicaid services?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. **Evaluation Team Proposes**:

1. Method

a. Descriptive analysis of administrative data. Description of cost-effectiveness over time (as defined by the ratio of health-related outcomes to spending) by TMA status, income, premium payment status, and other demographic characteristics available through CARES. We will include tabulations and a graphical and regression analysis.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare the health-related outcomes/spending ratio for those affected by the policy (Treatment Group 1) to those not affected by the policy (Comparison Group 1 and Comparison Group 2 in separate analyses), over time. A purely descriptive analysis would not account for secular changes that might affect the ratio of health-related outcomes to spending nor the potential for selection into TMA status. This design allows us to identify the causal effect of premiums by assuming that the health outcomes/spending ratio for the treatment group would have evolved similarly over time as that of the comparison group(s) in the absence of the implementation of the premium requirement. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable. We will also perform a within-person analysis that considers whether outcomes change over time for those affected by the policy conditional on remaining enrolled.

2. Study Population: Same as Questions 1-3

3. Data Requirements

Source	Time Frame	Purpose
CARES	(February 2008 – present)	Identification of study population during and prior to TMA period
MMIS Claims	(February 2008 – present)	Identification of health-related outcomes (Table 2) and healthcare spending

4. Expected Limitations

a. ***Outcome measure.*** While we will use empirically validated measures as described in Table 2, identification of health-related outcomes through claims data algorithms is an imperfect process as it requires the enrollee to utilize the health care system in order to appear unhealthy. We note that Outcomes/Cost is also not a typical measure of "cost-effectiveness", which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Regardless, we will not be able to directly identify the specific costs of any particular change in health outcomes, only "changes in costs" and "changes in health outcomes" induced by the premium requirement.

b. ***Parallel trends assumption.*** This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than the premium requirement changes for Treatment Group 1 but not the comparison groups at the same time as the premium requirement was implemented, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 5: Will the premium requirement increase the cost effectiveness (Utilization/Cost) of Medicaid services?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. **Evaluation Team Proposes**:

1. **Method**
   a. *Descriptive analysis of administrative data.* Description of cost-effectiveness over time (as defined by the ratio of healthcare utilization to spending) by TMA status, income, premium payment status, and other demographic characteristics available through CARES. We will include tabulations and a graphical and regression analysis.
   b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare the ratio of healthcare utilization to spending for those affected by the policy (Treatment Group 1) to those not affected by the policy (Comparison Group 1 and Comparison Group 2 in separate analyses), over time. A purely descriptive analysis would not account for secular changes that might affect the ratio of healthcare utilization to spending nor the potential for selection into TMA status. This design allows us to identify the causal effect of premiums by assuming that the ratio of healthcare utilization to spending for the treatment group would have evolved similarly over time as that of the comparison group(s) in the absence of the implementation of the premium requirement. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable. We will also perform a within-person analysis that considers whether outcomes change over time for those affected by the policy conditional on remaining enrolled.

2. **Study Population:** Same as Questions 1-4

3. **Data Requirements**

Source	Time Frame	Purpose
CARES	(February 2008 – present)	Identification of study population during and prior to TMA period
MMIS Claims	(February 2008 – present)	Identification of healthcare utilization (emergency department use, hospitalizations, and outpatient use) and healthcare spending

4. **Expected Limitations**
   a. ***Outcome measure.*** While we will use empirically validated measures as described in Table 2, identification of health outcomes through claims data algorithms is an imperfect process as it requires the enrollee to utilize the health care system in order to appear unhealthy. We note that Utilization/Cost is also not a typical measure of "cost-effectiveness", which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Regardless, we will not be able to directly identify the specific costs of any particular change in health outcomes, only "changes in costs" and "changes in healthcare utilization" induced by the premium requirement.
   b. ***Parallel trends assumption.*** This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than the premium requirement changes for Treatment Group 1 but not the comparison groups at the same time as the premium requirement was implemented, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 8: What is the impact of premiums on enrollment broken down by income level and the corresponding monthly premium amount?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", and "Case-Control Matching" by statistically matching those who drop out of TMA within 12 months of premium implementation to those who do not drop out.

B. **Evaluation Team Proposes**:
   1. **Method**
      a. Descriptive analysis of administrative data. We will provide a description of TMA enrollment over time, including the probability of transitioning to TMA, by TMA status, income, premium payment status, and other demographic characteristics available through CARES.
      b. Causal analysis of administrative data. We will use an interrupted time series study design to compare the rate of transitions from MA adult to TMA status in order to understand whether premium requirements affect the incentive to take up TMA and/or experience the types of transitions that would lead to a qualifying event. We will also use this design to study the probability of exit from TMA. This design allows us to identify the causal effect of premiums by assuming that enrollment behavior in the TMA population would have evolved similarly over time if not for the premium requirements. We will use econometric modeling techniques that appropriately account for serial correlation.
      Second, we will use a regression discontinuity design within the TMA population in order to study the effect of premium amounts. This design involves comparing the enrollment behavior of those who transition and have incomes just low enough to qualify them for a particular premium amount relative to those who transition and have incomes just higher, qualifying them for a higher premium amount. The strength of this design is that it ensures populations are highly similar (as both transitioned from MA) rather than relying on a comparison of adults who did not transition, who may be different from those who did in unobservable ways that are predictive of the enrollment outcome. We will perform this analysis for each level of the required premium.

   2. **Study Population:** Same as Questions 1-5

3. **Data Requirements**

Source	Time Frame	Purpose
CARES	February 2008 – present	Identification of study population during and prior to TMA period. Identification of premium amounts and payment status.
UI Earnings reports	First quarter 2008 - present	Verification of changes in earnings

4. Expected Limitations

a. *Interrupted time series assumption*. This analysis relies on the idea that no other programmatic changes occurred at the same time as the premium changes. To this end, we will not be able to separate the effects of the premium from other simultaneously implemented policies.

b. *Regression discontinuity assumption.* This analysis requires the assumption that TMA adults are not purposefully selecting into their premium-paying group (for example, by influencing their reported income). This assumption is somewhat testable and will be addressed by studying transition probabilities at the premium margins.

3. *Income as a confounder.* Because premiums are higher as income increases, it is not completely possible to separate the effect of the premium from the effect of income on average. In particular, we will not be able to conclude whether the effects may differ for higher income groups due to the amount of the premium or due to the beneficiaries' higher incomes.

Question 9: How is access to care affected by the application of new, or increased, Premium amounts?

A. **DHS proposed**: "Case Study", "Administrative Data Analysis", "Case-Control Matching", and "Enrollment/Disenrollment Survey"

B. **Evaluation Team Proposes**:

1. Method

a. *Descriptive analysis of survey data.* : The survey that will be fielded in Spring 2016 will include questions that will provide measures of access to care (e.g., usual source of care and experience of any unmet need for medical care), which is not well measured from administrative claims data. The survey will include both current TMA enrollees as well as those who have been placed in an RRP, so that both those who are and are not currently paying premiums are represented. We will summarize survey measures of beneficiary access to care stratified by TMA and premium-requirement status, providing tabular, graphical, and regression-adjusted analyses.

b. *Matched analysis of administrative data*. If feasible, we will enhance the survey by matching the survey data to the administrative data. This will allow us to observe more precise measures of income and enrollment, which will facilitate a causal analysis. In particular, we will use a regression discontinuity design within the TMA population in order to study the effect of premium amounts. This design involves comparing the surveyed access to care responses of those who transition and have incomes just low enough to qualify them for a particular premium amount relative to those who transition and have incomes just higher, qualifying them for a

higher premium amount. The strength of this design is that it ensures populations are highly similar rather than relying on a comparison of adults who did not transition, who may be different from those who did in unobservable ways that are predictive of the enrollment outcome. We will perform this analysis for each level of the required premium using appropriate econometric techniques.

2. **Study Population:** Same as Questions 1-5,8

3. **Data Requirements**

Source	Time Frame	Purpose
CARES	February 2008 – present	Identification of study population during and prior to TMA period. Identification of premium amounts and payment status.
Survey	Point-in-time measures valid at time of survey implementation	Measuring access to care

4. **Expected Limitations**
   a. ***Survey data sample.*** While the survey team will follow best practices in design, feasible limitations in limitations will not allow the identification of very small differences in access to care.
   b. ***Regression discontinuity assumption.*** This analysis requires the assumption that TMA adults are not purposefully selecting into their premium-paying group (for example, by influencing their reported income). This assumption is somewhat testable and will be addressed by studying transition probabilities at the premium margins.
   c. ***Income as a confounder.*** Because premiums are higher as income increases, it is not completely possible to separate the effect of the premium from the effect of income on average. In particular, we will not be able to conclude whether the effects may differ for higher income groups due to the amount of the premium or due to the beneficiaries' higher incomes.

Restrictive Reenrollment Period for Failure to Pay Premium: Questions 6-7, 10-12

The 2014 waiver introduced a 3-month restrictive reenrollment period (RRP) for TMA beneficiaries who failed to pay the required premium after a 30-day grace period. Unlike the 12-month RRP that had previously been in place for BadgerCare+ members, the RRP included in the 2014 waiver allows beneficiaries to re-enter the program before the end of the RRP period if they repay previously owed premiums. TMA members with incomes between 100%-133% FPL are exempted from premiums in their first six months of enrollment and are therefore not subject to the RRP during this time.

For those beneficiaries who experience an RRP, the period of disenrollment may affect both outcomes related to service use (utilization, cost, and access) as well as outcomes related to enrollment. Relative to patterns of utilization before entering an RRP, beneficiaries may decrease their use of health services while in an RRP since they are temporarily uninsured, but then increase their service use in the

immediate period after returning to the program due to "pent-up" demand for care (Question 6). Over longer-periods of time, these may lead to differences in spending and service utilization between those who experience RRPs versus those who remain continuously enrolled (Question 7). The presence of an RRP may also be hypothesized to reduce the likelihood that beneficiaries fail to make premium payments, at least insofar as beneficiaries are concerned about losing benefits for an extended period of time (Question 10). The impact of the RRP penalty may also differ depending on the member's income level (Questions 11-12), but the direction of the association has not yet been hypothesized.

Question 6: Is there any impact on utilization, costs, and/or health care outcomes associated with individuals who were disenrolled, but re-enrolled after the 3-month restrictive re-enrollment period?

A. DHS proposed: "Case Study", "Administrative Data Analysis", "Case-Control Matching", and "Enrollment/Disenrollment Survey"

B. Evaluation Team Proposes:

1. Method

Question 6 will be addressed through (1) an analysis of administrative data (claims and enrollment from CARES and MMIS) and (2) through an analysis of survey data. The survey will contribute to assessment of both questions 6 and 7, which has several new questions designed to focus on the experiences of being in an RRP.

a. Administrative data analysis: A key analytical challenge in measuring the impact of the RRP is to identify the impact of being placed in an RRP on post-RRP outcomes independent of other individual-level factors that may drive utilization changes. For example, a beneficiary may experience a health event that causes both a temporary inability to work (increasing financial strain) and which leads to greater than average utilization in the pre-RRP period. Risk of entering an RRP may also be influenced by changes in the environment, such as the secular trends in the state economy. To account for these factors, we will estimate a regression model that compares pre- and post-RRP trends taking advantage of repeated measures of utilization within the same beneficiary, and also taking advantage of data from other beneficiaries who experience RRPs at different times. In this estimation strategy, beneficiaries in pre-RRP periods can serve as controls for themselves in the post-RRP period as well as for other beneficiaries who experience RRPs at different times.

The regression equation measuring the impact of the RRP can be expressed as:

$$Y_{it} = \beta_0 + \beta_1 Post\text{-}RRP_{it} + \beta_2 Pre\text{-}RRP_{it} + \beta_3 Demographics_i + \beta_4 Month_t + \beta_5 Person_i + \varepsilon_{it}$$

Where *Y* represents any outcome measure, for person *i* observed at time *t*. *Post-RRP* is an indicator for being observed in a post-RRP period and *Pre-RRP* is an indicator for being observed in a pre-RRP period. The omitted time period in these models are periods of "regular enrollment." *Demographics* represents time-invariant individual-level demographics. *Month* is a monthly indicator for time point where the individual is observed (in order to adjust for secular time trends). *Person* is an individual-level random effect, which allows the model to apply a different intercept term to each beneficiary. Standard errors will be adjusted to account for the auto-correlation of individual-level data across months and the clustering of multiple RRPs

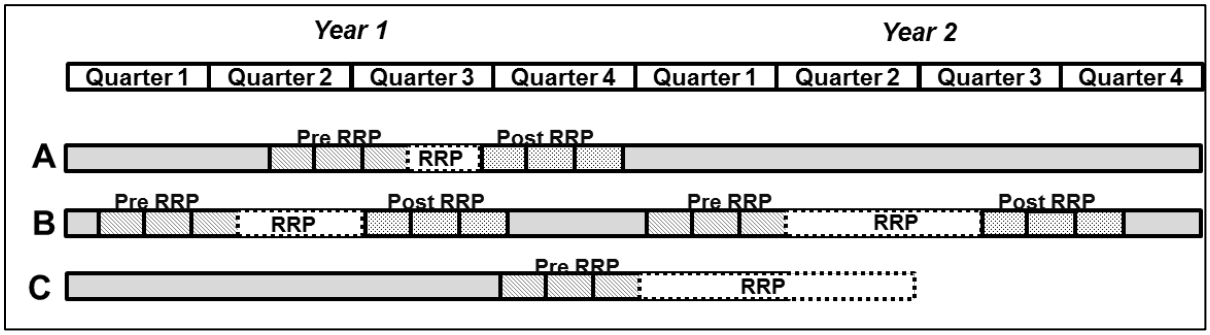
within the same beneficiary. This regression approach can be adapted for a variety of outcomes using generalized linear models. These models will allow us to specify the appropriate functional form for the outcome (e.g., probit models for binary outcomes and negative binomial or Poisson models for number of visits).

b. Survey Data Analysis**:** The survey that will be fielded in Spring 2016 and Spring 2018 will provide a special module of questions specifically designed to capture the experiences of beneficiaries who have experienced a recent RRP. To ensure that an adequate sample of these beneficiaries are captured in the data collection process, we will allocate approximately 20% of the sample (~200 interviews) to beneficiaries whom the state indicates have been recently placed in an RRP. Comparison of responses will be conducted within the RRP sample between those that return to BadgerCare and those that do not return, and between the RRP and non-RRP samples (especially other TMA beneficiaries). The analysis will adjust for other differences in income and demographics. This comparison will reveal whether beneficiaries in an RRP experience a greater prevalence of access problems than do other demographically similar BadgerCare enrollees.

2. **Study Population**

For the administrative data analyses we will identify all beneficiaries who were placed in an RRP at any point from January 1, 2014-December 31, 2015. The maximum length of an RRP is 3 months, but we expect that many members will have RRPs less than 3 months (as they can rejoin the program after paying owed premiums). We also assume that some beneficiaries will remain disenrolled beyond the length of the RRP. We will test the sensitivity of several sample restrictions, such as limiting the sample to beneficiaries who have disenrollment periods of 1-6 months.

Figure 1. Measuring RRPs for Hypothetical TMA Beneficiaries



For each beneficiary who is placed in an RRP, we will define two adjacent time periods: the pre-RRP period and post-RRP period. We can define these periods in terms of monthly segments (e.g., 3 months pre and 3 months post RRP). All time periods that are outside of the window of time adjacent to the RRP will be considered "regular enrollment" periods.

Figure 1 illustrates this approach for 3 hypothetical beneficiaries (A, B, and C). Person A experiences a brief RRP in year 1; person B experiences two separate RRPs in years 1 and 2; person C enters an RRP in year 2, but does not re-join the program for a period of at least 6 months. Other time periods, shown in light gray comprise regular enrollment periods.

3. Data Requirements

Source	Time Frame	Purpose
CARES	January 1, 2014-December 31, 2015	Identification of study population: beneficiaries during and prior to three-month RRP
MMIS Claims	January 1, 2014-December 31, 2015	Measures of cost, utilization, and access to care created using claims data
Survey	Point-in-time measures valid at time of survey implementation	Identification of study population: beneficiaries that experience RRP and return; beneficiaries that experience RRP and do not return; beneficiaries that do not experience an RRP; Measures of utilization

4. Expected Limitations

a. ***Selection Bias from Life Events:*** entry into an RRP is not a random process – it is more likely to occur to individuals that experience "life events" that precede non-payment of premiums. Failure to control for these life events can bias the interpretation of the "RRP effect" since these events can influence utilization independent of the RRP. However, it is difficult to know what the direction of bias will be since life events can be either negative (e.g., loss of employment, marital dissolution) or positive (e.g., new coverage options through a job gain or spousal employment). We will address this issue in regression models by controlling for individual-level variables that may be associated with greater risk of life events (such as demographics). We will also, where possible, attempt to identify whether the RRP coincides with life events that are observed through other state databases (such as gains or losses in employment).

b. ***Survey Response Bias:*** respondents to the RRP survey may be different than the population experiencing the RRP (for example, individuals who agree to complete a survey may have a greater likelihood of rejoining the program). To address this survey response bias, we will use survey weights to adjust the sample closer to the overall population of RRP individuals (e.g., adjusting by demographic factors that may influence both survey response and RRP experiences).

Question 7: Are costs and/or utilization of services different for those that are continuously enrolled compared to costs/utilization for beneficiaries that have disenrolled and then re-enrolled?

A. DHS Proposed: "Case Study", "Administrative Data Analysis", "Case-Control Matching", and "Enrollment/Disenrollment Survey"

C. Evaluation Team Proposes:

1. Methods

To examine the effects of experiencing a disruption in coverage due to an RRP relative to being continuously enrolled on utilization, cost, and health care outcomes, we will use a difference-in-differences design to compare the longer-term trends in outcomes between the population of TMA beneficiaries that experience RRPs to several alternative groups that do not experience RRPs.

The first comparison is a within-group comparison for TMA with incomes 100-133% FPL in their first six months (when they are not subject to RRP) versus their second six months when they are subject to RRPs. The advantage of this comparison is that we observe the group during a time period when they are not at risk of losing coverage due to an RRP compared to a time period when the policy changes and they are exposed to an RRP. Second, we can look at TMA populations who remain continuously enrolled (i.e. never experience an RRP), but are otherwise similar to those who do experience an RRP (using a propensity score matching process with baseline demographic characteristics). Third, we can compare TMA beneficiaries with an RRP to similar beneficiaries in the CLA population, which is not subject to RRPs, and is therefore less likely to experience enrollment gaps.

Matching: A challenge with such a comparison is that differences between RRP and non-RRP beneficiaries may also reflect unmeasured differences in underlying preferences for insurance, need for care, and access to alternative health care resources. If these differences are not accounted for, comparisons will provide biased estimates of the effect of being in the RRP group. One strategy to address the comparability problem is to apply propensity score matching to the sample. A propensity score reflects the degree to which beneficiaries in the non-RRP group are like beneficiaries in the RRP group based on a set of observable characteristics taken from some baseline period (such as the first two months of coverage). The propensity score can be derived using demographic information (race, age, sex), income category, and health service utilization measures. This method can be implemented using a regression model that assigns each individual in the non-RRP group a probability of being similar to an RRP individual. Examining whether the matched samples are similar on observable covariates can test balance between the RRP and non-RRP groups.

Estimation Approach: After matching, we can estimate a regression model of the following form:

$$Y_{it} = \beta_0 + \beta_1 RRP\text{-}Group_{it} + \beta_2 Year_t + \beta_3 Person_i + \varepsilon_{it}$$

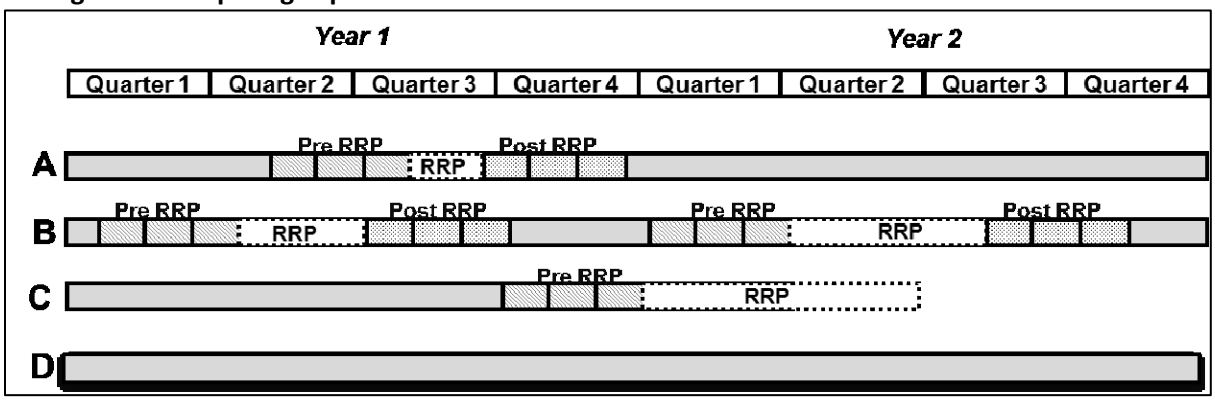
Where *Y* represents any study outcome related to either spending or utilization (for example, in 6 month increments) for person *i* observed at year *t*. *RRP-Group* is an indicator for whether an individual is in the TMA population that experienced an RRP versus the matched group that did not experience an RRP. *Year* is an indicator for the calendar year of data (to account for secular trends).

Person represents an individual-level random effect. Since beneficiaries can contribute data from multiple years, data will be clustered at the level of the beneficiary.

2. Study Population

Whereas Question 6 is focused on changes in utilization and spending that occur after an RRP within the population that experiences an RRP, Question 7 is focused on overall trends in costs and utilization in the RRP population versus the non-RRP population. This is represented in Figure 2 where the comparison is now between beneficiaries A, B, and C to beneficiary D (and others like him/her). The simplest way to conduct this comparison is to sum all utilization and spending over defined time periods (e.g., six month increments) and compare averages in the TMA subgroup that experienced RRPs versus the TMA group that did not experience RRPs.

Figure 2. Comparing experience of RRP and non-RRP TMA beneficiaries



3. Data Requirements:

Source	Time Frame	Purpose
CARES	January 1, 2014-December 31, 2015	Identification of study population: beneficiaries in TMA who experience an RRP versus CLA or TMA individuals who don't experience an RRP
MMIS Claims	January 1, 2014-December 31, 2015	Measures of cost, utilization, and access to care created using claims data

4. Expected Limitations:

Matching Bias: With the exception of the first comparison that focuses on the same population at two different time periods, this research question will be addressed by matching groups with RRP experience to groups that do not experience an RRP. Matching is most effective if the observable variables used to create the comparison group are closely related to selection into the treatment group. While this assumption cannot be directly tested, we can examine the robustness of the matching method by comparing different matching and weighting strategies.

Question 10: What impact does the 3-month restrictive re-enrollment period for failure to make a premium payment have on the payment of premiums and on enrollment?

A. DHS Proposed: "Case Study", "Administrative Data Analysis", "Case-Control Matching", and "Enrollment/Disenrollment Survey"

B.Evaluation Team Proposes:

1. **Methods**

For both analyses described below, we will measure the payment of premiums as a function of two processes: the average length of total enrollment and, conditional on being enrolled in the program, the amount of premiums owed that are paid to the program during the time enrolled in the program.

Analysis 1: The Effect of Premiums and RRP on Enrollment:

This first analysis will address the question of how much enrollment duration changes after the imposition of premiums with RRP (without further disentangling the effect of premiums from the RRP). We will compare enrollment patterns among TMA individuals with incomes 100%-133% FPL in their first six months in the program (when they are not subject to premiums or RRP) to TMA beneficiaries in this same income group (100%-133% FPL) in their second six months in the program (when they are submit to premiums) and to TMA beneficiaries in income groups above 133% FPL in their first six months of enrollment. Using both comparison groups is necessary because the group of TMA beneficiaries that persist in the program after six months may be more highly selected toward individuals with a long-term demand for public insurance.

Estimating Enrollment Trends: We will apply hazard modeling to compare the relative risk of disenrollment in the first six months for TMA individuals with income 100%-133% FPL to disenrollment rates in the comparison groups over the six month segments noted above. The hazard model assumes that every individual has some underlying probability of leaving the program, whether or not they are subject to premiums and/or an RRP, and that this risk can be modeled as a function of time spent in the program, demographics, and policy variables. The population 100%-133% FPL in their first six months provides a baseline rate with which to compare disenrollment rates in segments of the program with higher incomes or with longer periods of enrollment. The hazard model will allow us to calculate the rate of leaving the program comparing a baseline (no premiums or RRP) to the rate with premiums and RRP, conditional on a set of time invariant person-level covariates.

Analysis 2: Historical Comparison with the 12 Month RRP

This analysis will consider the differences in both disenrollment rate and total premiums paid between individuals subject to the 3 month RRP 2016 versus the effect of 12 month RRP among demographically similar individuals in the past. The time periods will be July 2012-December 2013 (12 month RRP) versus July 2014-December 2015 (3 month RRP).

The two populations will first be matched on demographic and income covariates. Once comparable cohorts have been created, the analysis will calculate the mean length of an enrollment spell and the amount paid per month of enrollment, conditional on being in the program. These two parameters can be combined to estimate the unconditional predicted amount of money paid to the program during a time of enrollment.

Average total amount paid = (Mean number of months of enrollment)(Amount paid per month during enrollment)*

2. Study Population

This question considers how the RRP for the TMA population would affect the rate of premium payments relative to a situation in which beneficiaries are subject to premiums but are not locked-out through the RRP. Because there is no segment of the Wisconsin program that currently is required to pay premiums and is not subject to an RRP, there is no readily available comparison group. It is also important to note that the 3 month RRP is different than the previously existing 12 month RRP not only because it is shorter but also because it is less binding (i.e., beneficiaries are allowed to re-enter the program before the end of 3 months as long as they pay owed premiums).

3. **Data Requirements:**

Source	Time Frame	Purpose
CARES	January 1, 2014-December 31, 2015	Comparing TMA enrollees 100-133% FPL before and after premium requirement begins (after first six months of enrollment)
CARES	July 2012-December 2013; July 2014-December 2015	Comparing TMA enrollees subject to the 3 month RRP versus TMA enrollees subject to the 12 month RRP

4. **Expected Limitations**
   - **a.** ***Generalizability (Approach 1):*** The first approach focuses on the disenrollment effect of being subject to a premium plus RRP on a specific income group (100-133% FPL). This effect may not apply to higher income levels. Addressing heterogeneity by income is a key objective of Questions 11 and 12, below.
   - **b.** ***Identifying Premium Effect (Approach 1):*** As noted above, the first approach does not allow us to disentangle the effect of being subject to premiums versus being subject to RRP. Therefore, these estimates are understood to represent the combined effect of these two policies on the relevant income group where we have the ability to clearly identify over-time variation in the implementation of the policy.
   - **c.** ***Secular Trends (Approach 2):*** The second approach, comparing the historical 12 month RRP to the current 3 month RRP is challenging because these two policies unfolded against different time varying trends that could independently influence enrollment dynamics (e.g., the implementation of the Affordable Care Act and changes in the state economy). As a possible way to address this, we will explore using enrollment dynamics in a third group (such as parents and caretakers) that is less affected by these premium policy changes but is likely to be influenced by the same secular trends.

Question 11: Does the RRP impact vary by income level?
&
Question 12: If there is an RRP impact, explore the break-out by income level.

A. DHS Proposed: "Case Study", "Administrative Data Analysis", and "Case-Control Matching"

B. Evaluation Team Proposes:

1. Methods

Testing for heterogeneity in the effect of the RRP by income level can be accomplished by comparing subgroup effects within the 3 month RRP to the 12 month RRP (i.e., examining whether the average rate of premium payment is higher or lower among beneficiaries with higher income after the switch). This can be operationalized by interacting a variable for income category with the variable for policy group in a model that reports average differences in mean number of months of enrollment (e.g., by looking at whether the enrollment effect is greater for individuals above 200% FPL) and carrying out a similar analysis for estimates of amount paid per month during enrollment. Formal testing of statistical significance for interaction can indicate whether any variation identified is likely to reflect variation that cannot be explained simply by chance differences in the income groups.

2. **Study Population:** same as for Question 10

3. **Data Requirements:** Same as 10

4. **Expected Limitations**

As indicated in Question 8, there is no way to fully disentangle the effect of premiums from higher income since the two increase together. We will descriptively compare differences in enrollment trends by income level and will attribute those differences to some combined effect of income and premium levels.

Childless Adult Beneficiary Enrollment in the Medicaid Standard Plan: Questions 13-17

The objective of evaluation questions 13-17 is to understand whether and to what extent the provision of standard Medicaid benefits to childless adult (CLAs) beneficiaries improved health, health care, and resource use-related outcomes for CLAs. The WI Department of Health Services is specifically interested in measuring CLA Standard Plan enrollees' outcomes relative to the two comparators, A and B, described below. We will implement both comparisons for each of the research questions related to childless adult enrollment in the Standard Plan. In the following paragraphs, we describe the general samples and research designs that we will deploy across questions 13-17. We then provide additional analytical detail that is specific to each research question.

A. A comparison of CLA beneficiaries' outcomes while enrolled in the Standard Plan relative to their outcomes while enrolled in the Core Plan; and

B. A comparison of outcomes for newly eligible CLA beneficiaries enrolled in the Standard Plan relative to outcomes for CLA beneficiaries enrolled in the Core Plan for a similar period of enrollment during the demonstration.

A. Research Design and Sample

Design. We will implement a difference-in-differences (DD) design to estimate the change in outcomes for CLA beneficiaries before enrollment in the Standard Plan and after Standard Plan enrollment relative to the change in outcomes over the same time periods in a propensity-score matched comparison group of parent/caretaker beneficiaries. As illustrated in Table 4, a comparison group of parents/caretakers who were continuously enrolled in the Standard Plan controls for any trends that may have affected the health care use of publicly-insured low-income adults during this period that were not otherwise related to the introduction of Standard Plan coverage for CLA beneficiaries. The DD design with a well-matched comparison group increases our capacity to make causal inferences from the evaluation findings by isolating the impact of the coverage change on the affected population.

Table 4. Difference-in-Differences Research Design for Evaluation of Childless Adult Enrollment in Standard Plan

	Pre-Period *April 2012 - March 2014		**Post-Period *April 2014-March 2016**
Treatment Group	Core Plan (A) Cohort of childless adults < =100%FPL	**=>**	Standard Plan (B) Same cohort of childless adults <=100%FPL
Comparison Group	Standard Plan (C) Propensity-score matched cohort of parents/caretakers <=100%FPL	**=>**	Standard Plan (D) Same cohort of parents/caretakers <=100%FPL
Difference-in-Differences:			**[(B-A) - (D-C)]**

**Time segments for the 'pre' and 'post' periods may be adjusted based on enrollment continuity of sample and data availability.*

Sample. We will use the CARES data to identify the sample of CLA beneficiaries that transitioned from the Core Plan to the Standard Plan. Each individual that meets the following criteria will be included in the "transitioner," sample: income that is at or below 100% FPL; enrollment in the Core Plan in March 2014; and enrollment for at least 1 month after the April 1, 2014 transition to the Standard Plan.

Because childless adult and parent/caretaker beneficiaries may differ on observable characteristics, we will employ propensity score methods to construct a statistically matched comparison group of parents/caretakers using CARES and MMIS claims data. The comparison sample of parents/caretakers will include subjects who can be statistically matched to the childless adult beneficiary sample in terms of their administrative characteristics (e.g., month and duration of enrollment, income level, age, gender, county of residence), past utilization (measures of visits in the pre-period), and health history (measured by diagnostic codes in the MMIS data in the pre-period). A large literature has demonstrated that matching on past outcome measures, as we propose here, is an exceptionally strong propensity score matching design.[9]

[9] See for example: Heckman J, Ichimura H, Todd P. (1997) Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. Review of Economic Studies, Vol. 64, pp. 605-654; Card D and Sullivan D. (1988) Measuring the Effect of Subsidized Training Programs on Movements into

B. Research Design and Sample

Design. We will describe the differences in study outcomes between two groups of CLA Standard Plan enrollees: individuals who enrolled on or after April 1, 2014; and individuals who transitioned from the Core Plan to the Standard Plan in April 2014. The observational study design is illustrated in Figure 3.

Figure 3. Comparing the experience in the Standard Plan of new CLA enrollees to CLA enrollees that transitioned from the Core Plan

CLA Beneficiaries	April 2014-March 2015				April 2015 – March 2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
New Enrollees	=> ----------|							
Transitioners	=> ----------|							

This design will yield important insight into the effects on study outcomes of Standard Plan coverage for CLAs who experienced a richer set of benefits from the start of their Medicaid enrollment (i.e., new enrollees) relative to CLAs who initially experienced a more limited set of Medicaid benefits (i.e., transitioners.) We note that the design does not allow us to distinguish between several plausible explanations for potential outcome differences between new enrollees and transitioners. These explanations include prior health insurance coverage and differences across groups in unobserved characteristics related to study outcomes such as care-seeking preferences, health history, etc.

Sample. We will use CARES data to identify two groups of CLA beneficiaries between the ages of 19-64: new enrollees; and transitioners. New enrollees will include CLA beneficiaries with at least 1 month of Standard Plan enrollment beginning on or after 4/1/2014 and no Core Plan enrollment in the prior 12 months. The new enrollee population will thus include both individuals on the Core Plan wait list and individuals that were not on the Core Plan wait list. Each individual that meets the following criteria will be included in the "transitioner," sample: income that is at or below 100% FPL; enrollment in the Core plan in March 2014; and enrollment for at least 1 month after the April 2014 transition to the Standard Plan.

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and out of Employment. Econometrica, Vol. 56, pp. 497-530; Deheija R and Wahba S. (1999) Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs. Journal of the American Statistical Association, Vol, 94, pp. 1053-1062; Deheija R and Wahba S. (2002) Propensity Score Matching Methods for Nonexperimental Causal Studies. Review of Economic Studies, Vol. 84, pp. 151-161; Heckman J, Ichimura H, Smith J, Todd P. (1996) Sources of Selection Bias in Evaluating Programs: An Interpretation of Conventional Measures and Evidence on the Effectiveness of Matching as a Program Evaluation Method. Proceedings of the National Academy of Sciences, Vol. 93, pp. 13416-13420. Heckman J and Smith J. (1999) The Pre-Program Earnings Dip and the Determinants of Participation in a Social Program: Implications for Simple Program Evaluation Strategies. NBER Working Paper 6983, National Bureau of Economic Research, Cambridge: MA; and Smith J and Todd P. (2005) Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators? Journal of Econometrics, Vol. 125, pp. 305-353.

Question 13. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries result in improved health outcomes?

A. DHS Proposed: "Case Study;" "Administrative Data Analysis;" and "Case-Control Matching."

B. Evaluation Team Proposes:

1. Method

a. *Descriptive analysis of administrative data*. We will describe health-related outcomes over time for CLA beneficiaries by sample membership (i.e., new enrollees and transitioners), and for CLA transitioners relative to the matched parent/caretaker comparison group. We will include tabulations as well as a graphical and regression analysis. Study outcomes for Q.13 are summarized in Table 2.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare health-related outcomes for those affected by the change to Standard Plan coverage (CLA transitioners) to those not affected by the coverage change (matched parents and caretakers), over time. A purely descriptive analysis would not account for secular changes that might affect health-related outcomes. This design allows us to identify the causal effect of Standard Plan coverage relative to Core Plan coverage by assuming that the health-related outcomes for the treatment group would have evolved similarly over time as that of the comparison group in the absence of the change in coverage. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable.

1. **Study Population:** CLA transitioners; CLA new enrollees; and matched parent/caretaker sample as described above.

2. Time period

a. We will compare health-related outcomes for new enrollees relative to transitioners from April 1, 2014 through March 30, 2016.

b. The pre and post-periods for our DD analyses will include up to 24 months each, April 2012-March 2014 and April 2014-March 2016 respectively.

3. Data Requirements

Source	Time Frame	Purpose
CARES	April 2012 – March 2016	Identification of study samples and the specific months observed for each subject. Provides the demographic data for use in construction of propensity-score matched parent/caretaker group.
MMIS Claims	April 2012 – March 2016	Identification of health-related outcomes. Provides the diagnostic and health care data for use in construction of propensity-score matched parent/caretaker group.

5. Expected Limitations

a. *Outcome measures.* We will use empirically validated measures whenever possible as described in Table 2. However, identification of health-related outcomes through claims data algorithms is an imperfect process as it requires the enrollee to utilize the health care system in order to appear unhealthy.

b. *Outcome measures*. The technical specifications for some of the outcomes noted in Table 2 require 18-24 months of continuous enrollment for inclusion in the denominator. This restriction will limit the available sample for measure construction and may affect the generalizability of the finding to the relevant WI Medicaid population. When feasible, we will modify the definition and technical specifications of some measures to balance sample size limitations and evaluation objectives. .

c. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than coverage changes for CLA transitioners (that is also related to the outcome) but not the comparison group in April 2014, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 14. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries achieve a reduction in the incidence of unnecessary services?

A. DHS Proposed: "Case Study;" "Administrative Data Analysis;" and "Case-Control Matching."

B. Evaluation Team Proposes:

1. Method

a. Descriptive analysis of administrative data. We will describe rates of unnecessary service use over time for CLA beneficiaries by sample membership (i.e., new enrollees and transitioners), and for CLA transitioners relative to the matched parent/caretaker comparison group. We will include tabulations as well as a graphical and regression analysis. Outcome measures for Q.14 are summarized in Table 2.

b. Causal analysis of administrative data. We will use a difference-in-differences study design to compare rates of unnecessary service use for those affected by the change to Standard Plan coverage (CLA transitioners) to those not affected by the coverage change (matched parents and caretakers), over time. A purely descriptive analysis would not account for secular changes that might affect health outcomes. This design allows us to identify the causal effect of Standard Plan coverage relative to Core Plan coverage by assuming that the use of unnecessary services for the treatment group would have evolved similarly over time as that of the comparison group in the absence of the change in coverage. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable.

2. Study Population: CLA transitioners; CLA new enrollees; and matched parent/caretaker sample as described above.

3. **Time period**

a. We will compare unnecessary service use for new enrollees relative to transitioners from April 1, 2014 through March 30, 2016.

b. The pre and post-periods for our DD analyses will include up to 24 months each, April 2012-March 2014 and April 2014-March 2016 respectively.

4. **Data Requirements**

Source	Time Frame	Purpose
CARES	April 2012 – March 2016	Identification of study samples and the specific months observed for each subject. Provides the demographic data for use in construction of propensity-score matched parent/caretaker group.
MMIS Claims	April 2012 – March 2016	Identification of outcome measures. Provides the diagnostic and health care data for use in construction of propensity-score matched parent/caretaker group.

5. Expected Limitations

a. *Outcome measure.* Identification of "unnecessary" visits through claims data algorithms is an imperfect process and will inevitably misclassify some visits that were "necessary" as "unnecessary" and vice versa.

b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than coverage changes for CLA transitioners (that is also related to the outcome) but not the comparison group in April 2014, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 15. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost effectiveness (Outcomes/Cost) of Medicaid services?

A. DHS Proposed: "Case Study;" "Administrative Data Analysis;" and "Case-Control Matching."

B. Evaluation Team Proposes:

1. Method

a. *Descriptive analysis of administrative data*. We will describe the cost-effectiveness over time (as defined by the ratio of health-related outcomes to spending) for CLA beneficiaries by sample membership (i.e., new enrollees and transitioners), and for CLA transitioners relative to the matched parent/caretaker comparison group. We will include tabulations as well as a graphical and regression analysis. Outcome measures for Q.15 are summarized in Table 2.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare the health-related outcomes/spending ratio for those affected by the change to Standard Plan coverage (CLA transitioners) to those not affected by the coverage change (matched parents and caretakers), over time. A purely descriptive analysis would not account for secular changes that might affect the ratio of health outcomes to spending. This design allows us to identify the causal effect of Standard Plan coverage relative to Core Plan coverage by assuming that the outcome/spending ratio for the treatment group would have evolved similarly over time as that of the comparison group in the absence of the change in coverage. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable.

c. Expenditures estimation. Health care expenditures will be computed using an algorithm that maps encounter data to a fee-for-service schedule of allowable charges for the Wisconsin Medicaid population.[10]

2. Study Population: CLA transitioners; CLA new enrollees; and matched parent/caretaker sample as described above.

3. Time period

a. We will compare the ratio of health-related outcomes to spending for new enrollees relative to transitioners from April 1, 2014 through March 30, 2016.
b. The pre and post-periods for our DD analyses will include up to 24 months each, April 2012-March 2014 and April 2014-March 2016 respectively.

4. **Data Requirements**

Source	Time Frame	Purpose
CARES	April 2012 – March 2016	Identification of study samples and the specific months observed for each subject. Provides the demographic data for use in construction of propensity-score matched parent/caretaker group.
MMIS Claims	April 2012 – March 2016	Identification of outcome measures. Provides the diagnostic and health care data for use in construction of propensity-score matched parent/caretaker group.

5. Expected Limitations

a. *Outcome measure.* We will use empirically validated measures whenever possible as described in Table 2. Identification of health-related outcomes through claims data algorithms is an imperfect process as it requires the enrollee to utilize the health care system in order to appear unhealthy. We note that outcomes/spending is also not a typical measure of "cost-effectiveness," which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Regardless, we will not be able to directly identify the specific costs of any particular change in health outcomes, only "changes in costs" and "changes in health-related outcomes" induced by the introduction of Standard Plan coverage.
b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than coverage changes for CLA transitioners (that is also related to the outcome) but not the comparison group in April 2014, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase in the cost (Utilization/Cost) of Medicaid services?

[10] Leininger L, Friedsam D., Voskuil K., DeLeire T. (2014) Predicting high-need cases among new Medicaid enrollees. *American Journal of Managed Care*. 20(9):e399-e407.

A. DHS Proposed: "Case Study;" "Administrative Data Analysis;" and "Case-Control Matching."

B. Evaluation Team Proposes:

1. Method
   a. *Descriptive analysis of administrative data*. We will describe the cost-effectiveness over time (as defined by the ratio of health care use to spending) for CLA beneficiaries by sample membership (i.e., new enrollees and transitioners), and for CLA transitioners relative to the matched parent/caretaker comparison group. We will include tabulations as well as a graphical and regression analysis. Outcome measures for Q.16 are summarized in Table 2.
   b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare the health care use/spending ratio for those affected by the change to Standard Plan coverage (CLA transitioners) to those not affected by the coverage change (matched parents and caretakers), over time. A purely descriptive analysis would not account for secular changes that might affect the ratio of health care use to spending. This design allows us to identify the causal effect of Standard Plan coverage relative to Core Plan coverage by assuming that the care use/spending ratio for the treatment group would have evolved similarly over time as that of the comparison group in the absence of the change in coverage. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable.
   c. Expenditures estimation. Health care expenditures will be computed using an algorithm that maps encounter data to a fee-for-service schedule of allowable charges for the Wisconsin Medicaid population.

2. Study Population: CLA transitioners; CLA new enrollees; and matched parent/caretaker sample as described above.

3. Time period
   a. We will compare the ratio of health care use to spending for new enrollees relative to transitioners from April 1, 2014 through March 30, 2016.
   b. The pre and post-periods for our DD analyses will include up to 24 months each, April 2012-March 2014 and April 2014-March 2016 respectively.

4. Data Requirements

Source	Time Frame	Purpose
CARES	April 2012 – March 2016	Identification of study samples and the specific months observed for each subject. Provides the demographic data for use in construction of propensity-score matched parent/caretaker group.
MMIS Claims	April 2012 – March 2016	Identification of outcome measures. Provides the diagnostic and health care data for use in construction of propensity-score matched parent/caretaker group.

5. Expected Limitations
   a. *Outcome measure.* We note that utilization/cost is also not a typical measure of "cost-effectiveness", which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Regardless, we will not be able to directly identify the

specific costs of any particular change in health outcomes, only "changes in costs" and "changes in healthcare utilization" induced by the premium requirement.

b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than coverage changes for CLA transitioners (that is also related to the outcome) but not the comparison group in April 2014, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

Question 17. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries demonstrate an increase in the continuity of health coverage?

A. DHS Proposed: "Case Study;" "Administrative Data Analysis;" "Case-Control Matching," and "enrollment/disenrollment survey."

B. Evaluation Team Proposes:

1. Method

a. *Descriptive analysis of administrative data*. We will describe the continuity of health insurance coverage and the continuity of health care over time for CLA beneficiaries by sample membership (i.e., new enrollees and transitioners), and for CLA transitioners relative to the matched parent/caretaker comparison group. We will include tabulations as well as a graphical and regression analysis.

b. *Causal analysis of administrative data*. We will use a difference-in-differences study design to compare the continuity of coverage and care for those affected by the change to Standard Plan coverage (CLA transitioners) to those not affected by the coverage change (matched parents and caretakers), over time. A purely descriptive analysis would not account for secular changes that might affect continuity of coverage. This design allows us to identify the causal effect of Standard Plan coverage relative to Core Plan coverage by assuming that the continuity of coverage and care for the treatment group would have evolved similarly over time as that of the comparison group in the absence of the change in coverage. For estimation, we will use an appropriate econometric model that incorporates the nature and distribution of the outcome variable.

c. *Descriptive and causal analysis of survey data*. In addition to the 2014 survey of BadgerCare beneficiaries, the 2016 and 2018 surveys will provide repeated cross-sectional measures of health care continuity for CLA beneficiaries with income at or below 100%FPL. Using these data we will describe the continuity of health care over time for CLA beneficiaries. The planned surveys will also include a panel component, a subset of respondents that is surveyed up to three times (i.e., 2014, 2016, and 2018). This panel of respondents enables person-level, fixed effects analyses to estimate the effect of the transition to the Standard Plan from Core Plan coverage on health care continuity. In this fixed effects framework, each person serves as his/her own control. Implementation of this causal analysis is contingent upon retention of a sufficient sample of CLA panel respondents.

2. Study Population: CLA transitioners; CLA new enrollees; and matched parent/caretaker sample as described above.

3. Time period

a. We will compare continuity of coverage and care for new enrollees relative to transitioners from April 1, 2014 through March 30, 2016.
b. The pre and post-periods for our DD analyses will include up to 24 months each, April 2012-March 2014 and April 2014-March 2016 respectively.
c. For survey-based measures, we will describe continuity of care across and within CLA beneficiaries at three time points (2014, 2016, and 2018).

4. Data Requirements

Source	Time Frame	Purpose
CARES	April 2012 – March 2016	Identification of study samples and the specific months observed for each subject. Provides the demographic data for use in construction of propensity-score matched parent/caretaker group. Identification of outcome measures related to coverage continuity (i.e., number and duration of enrollment and disenrollment spells; re-enrollment at renewal; transition to non-CLA Medicaid eligibility category.)
MMIS Claims	April 2012 – March 2016	Provides the diagnostic and health care data for use in construction of propensity-score matched parent/caretaker group.
Survey	Point-in-time measures valid at time of survey implementation	Identification of outcome measures for continuity of care: usual source of care; usual provider of care; receipt of all needed care in the past 12 months.

5. Expected Limitations

a. *Survey data sample.* While the survey team will follow best practices in design and implementation, it is possible that the resulting sample size will not allow identification of small differences in continuity of care or support within-subject analyses.
b. *Parallel trends assumption.* This assumption is required for the difference-in-differences analysis but is fundamentally untestable. If something other than coverage changes for CLA transitioners (that is also related to the outcome) but not the comparison group in April 2014, the design would be invalid. While we are not aware of any obvious violations in this context, it should be noted as a potential limitation.

ATTACHMENT E: CMS Comments to Evaluation Design Report and UW/DHS Responses

ATTACHMENT E: CMS Comments and UW/DHS Responses

Wisconsin BadgerCare Reform Evaluation Design changes
UW Response to CMS Review, V2

CMS comments in Font Times Roman
UW Comments in *Font Calibri italics*

The revised plan represents a set of robust evaluation methodologies, including elements like the proposed difference-in-difference study design, in conjunction with a within-person longitudinal analysis, and interrupted time series and regression discontinuity designs. **The main limitations that need to be clarified or addressed are listed below. Items in bold are considered priorities.**

We appreciate CMS' careful and thoughtful review of our Design Report. We had submitted that report to the Wisconsin Department of Health Services under our contract to evaluate Wisconsin's 2014 BadgerCare waiver. The State had provided to us an evaluation plan, titled "BadgerCare Reform Demonstrate Evaluation Plan" (https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/wi/Badger-Care-Reform/wi-badgercare-demo-eval-plan-20141031.pdf), that had been prepared by a separate consulting firm and pre-approved by CMS, and asked that we use that plan, including its measures and methods, for our evaluation.

Our team, after reviewing that plan, met with Wisconsin DHS, noted concerns about the plan and asked that we propose a revision. DHS understood our perspective, particularly with regard to the scientific methods, and asked that, in preparing a revision, we adhere to the existing 17 study questions as outlined in its existing pre-approved plan and within the existing budget and timeline limits for the evaluation.

We welcome an ongoing discussion about how to best answer questions of importance to both Wisconsin DHS and to CMS. Toward that end, we offer the following responses to the CMS comments.

Effect of Premium Requirements and Payment of Premiums Q 1-5; 8-9

- The proposed evaluation outcome measures listed in Table 2 do not adequately assess whether enrollees are forgoing any necessary care. Evaluators may want to consider adapting additional national standards for preventive care outcome measures for the evaluation such as: adult access to ambulatory care (NCQA), tobacco use cessation (NCQA, NQF #0028), body mass index screening and follow-up (NQF #0421), cervical cancer screening (NQF #0032), screening for clinical depression (NQF #0418), and practitioner follow-up after hospitalization (NQF #0567).

The current evaluation reflects the outcome measures that the WI DHS selected in its CMS-approved "BadgerCare Reform Demonstrate Evaluation Plan," (see pages 25 and 35-36 in that original plan) along with additional measures that the UW PHI team suggested to the DHS based on the data available.

We are happy to consider additional variables as outcomes to the extent that we may construct them with the data available and within the current budget and project timeline. For example, time and resources permitting, using the available claims and enrollment data it may be possible to assess access to ambulatory care, cervical cancer screening, and practitioner follow-up after hospitalization. However, the additional measures requested above are beyond the scope of the current project because they require access to clinical information (e.g., electronic medical records) that is not available to the evaluation team.

- **The first comparison population of MA Adults <100% FPL are not exposed to the premium policy because their income requirements do not qualify them. We can expect systematic differences between the treatment population (TMA Adults) and this proposed comparison group on key variables, such as income level, that influence both selection into the groups and subsequent outcomes. Propensity score methods are used with a difference-in-difference framework to balance the groups on these key observable variables. Do the evaluators propose to use propensity score methods in this case, as proposed for the CLA comparison group in Q 13-17?**

  Propensity score matching is unnecessary if the common trends assumption is satisfied. If matching appears to be needed, we will use this method. It is important to note that TMA adults were previously members of the MA adults <100% FPL group. In addition, we have planned analyses as indicated that involve only comparisons within the TMA population.

- **The evaluators note that the second comparison group of parents/caretakers was exposed to the premium policy for a limited time period, and can only serve as a historical comparison since they do not have Medicaid coverage in the post-policy period for the treatment group (Table 3). Do the evaluators propose to conduct a difference-in-difference analysis with this comparison population as well? If so, how are the different time periods of exposure to premium payments for the two groups going to be aligned? Alternately, what study design will be used to compare the two groups?**

  We plan to use this comparison group in a cohort study (so the timelines would be aligned, for example, 1 year prior). The relevant assumption would be that the outcomes would have evolved similarly for this population in the prior time period so that they provide a good counterfactual for the post-policy period for the treatment group.

- It is possible that the treatment and comparison groups may not be mutually exclusive, meaning that someone may have qualified as an MA adult in earlier years, and may now

qualify as a TMA adult who has to pay a premium. How will the evaluation handle such beneficiaries?

The analysis is planned to be spell-level. Therefore, if the enrollment represents a distinct spell, the individuals will be treated as distinct. We will explore whether controlling for prior enrollment spells is important for the analysis.

- In assessing the impact of premiums on enrollment, the evaluators rightly note that income effects cannot be separated from premium effects. Evaluators may however want to consider stratifying the ITT and RDD analyses by specific income levels to assess if the impact of premiums on enrollment varies by income. The proposed design currently does not get at this question.

  The analysis plan states: "We will perform this analysis for each level of the required premium." This means that at each income level at which the premium changes, we will provide separate estimates. Since the ITT/RDD analyses can only be done at the margins at which the premiums change, and these are also different income levels, the design of the waiver does not allow us to directly assess the question of whether any differing effects are due to higher premiums or higher incomes.

- Does the survey sample of 1,054 refer to respondents with completed surveys? In fielding the survey, and using it to facilitate over-time comparisons, evaluators may want to consider the low response rate of <25% for the adult Medicaid population on mixed-mode mail and phone surveys, to determine their target sample.

  The 2014 evaluation surveyed 2,000 total members, with 1,084 total respondents with completed surveys, yielding a (very high) 54% response rate. We have previously conducted extensive research on the response rates of various Medicaid surveys and our project partner, the UW Survey Center has extensive and longstanding expertise in the various methods available to increase response rates, as well as with weighting and oversampling techniques.

- Can the evaluator provide more clarity on how they plan to link survey data to claims?
  Each survey instrument has a code on it that allows connection back to unique assigned identifier at the UW Survey Center. That Survey Center identifier is connected in a separate secure data file to each respondent's Medicaid ID number, which is what is used to connect the responses to the Medicaid claims.

- **What survey questions will adequately capture whether premiums affect disenrollment and access to care as consequence of disenrollment? Will the evaluators consider conducting interviews or focus groups with disenrolled beneficiaries to obtain qualitative insights to how premiums affect disenrollment?**

  We have attached a copy of the full survey instrument here. Several questions within the instrument address premiums, their relationship to enrollment, and access to care as a consequence to disenrollment. On the "Non-RRP" survey version, these concerns are specifically addressed in questions 2,4,8-19, 23, 27, 40-44. The "RRP" survey version specifically addresses these concerns in questions 3-19, 23, 27, 40-44.

  We have opted not to conduct focus groups given our very limited evaluation resources. Instead, are conducting enhanced telephone follow-up within the survey protocol, with respondent interviews, to achieve a high survey response rate and to gain robust understanding across all survey elements.

Restrictive Reenrollment Period for Failure to Pay Premiums Q6-7; 10-12

- In assessing Q6, are outcomes to be estimated every beneficiary-month, while additionally including calendar-month in the models to control for time trends?

  Yes, that is the current plan.

- As noted previously, evaluators may want to consider oversampling beneficiaries experiencing RRPs to allow for pre-post comparisons in Q6. Longitudinal survey response rates for Medicaid beneficiaries can be greatly improved by providing incentives upon completion of the follow-up survey.

  We are oversampling beneficiaries experiencing RRPs.

- To evaluate Q7, evaluators propose using a difference-in-difference design, but the model specification on Page 20 seems to compare just differences in cost/utilization (calculated over a 6-month periods) between the groups. Please clarify.

  Here is our anticipated model for the DD design that involves subjects 100-133% FPL versus those higher income 134%+:

  $$Y_{it} = \beta_0 + \beta_1 After\_transition_{it} + \beta_2 High\_Income_{it} + \beta_3 After\_transition * High\_Income_{it} + \beta_4 Demographics_{it} + \beta_5 CalendarMonth + \varepsilon_{it}$$

  Where Y is some outcome measured for individual i at time t (which is constrained to be in the first six months of TMA). "After transition" is being observed in the time period after April 2014 when the RRP policy changed, "High Income" is being 133%+ FPL and thus subject to the requirements, β_3 is the key DD coefficient which identifies the differences in continuity of coverage and service use outcomes in the post-transition period in the targeted group compared to the untargeted group 100-

133% FPL. Demographics are person-level fixed characteristics and CalendarMonth is a seasonality control for the calendar month in which the RRP began.

- For Q7, it will be important to match RRP and non-RRP beneficiaries by their health status. Hence, evaluators may want to consider including Chronic Illness Disability Payment System (CDPS) risk score computed using all diagnoses on claims/encounters over the baseline period in the propensity score model.

  We agree that propensity score matching will be important for matching RRP and non-RRP subjects, and we hope to develop an approach that encompasses a variety of health status/utilization measures. Our team has not previously worked with the CDPS algorithm. It does appear to be available for free to research teams such as ours, and may be feasible with the structure of claims that we have available, but we are not prepared to commit to implementing this algorithm on the claims until we are confident that it can be done with high reliability and within the limited resources our team has available. We can also explore alternative methods for health stratification such as the Charlson Comorbidity Index.

- **In Analysis 1 for Q10-12, evaluators may want to consider conducting a sensitivity analysis comparing disenrollment rates for TMA beneficiaries with varying income levels in the first two months to their respective disenrollment rates in their last two months of TMA eligibility to assess the impact of premiums alone. Since the RRP locks out a beneficiary for three-months, the marginal rate of disenrollment between these first and last TMA eligibility months will capture the burden of premiums alone on disenrollment. Evaluators may want to consider to something similarly unique to assess the effect of RRP alone on disenrollment.**

  Thank you for this good suggestion. This is a creative approach that we will certainly explore, as we agree that the potential loss of months of eligibility are much greater for an RRP in months 1 and 2 than they are in months 11 and 12. Offhand, the only concern we have about this approach is that individuals who persist to months 11 and 12 may be a more selected group that is likely to persist in their coverage and pay premiums regularly than those who attrit from coverage earlier, but we can explore approaches to reduce potential bias.

- **In Analysis 2 for Q 10, evaluators propose using a historical comparison group of beneficiaries who experienced the 12 month RRP in a previous policy version. Would this not bias the findings in favor of the 3 month RRP because of the increased opportunity for beneficiaries to pay premiums? What survey questions will adequately capture the impact of RRP on access to care? Will the evaluators consider conducting interviews or focus groups with beneficiaries with RRPs to obtain qualitative insights on the consequences of RRP?**

Our study design is conditional, so we don't only look at total months. We look at disenrollment rate/RRP rate from period of TMA entry, and then conditional on exiting TMA, we separately look at length of time out of the program.

We have survey items that ask people where they go for care during the RRP. For example:

[RRP only]During the period of time you could not be enrolled because of Restrictive Reenrollment, which of the following statements applied to your health care needs? Select *all* that apply.	**Yes**	**No**
a. I did not need any health care	◯	◯
b. I needed health care, but I decided to delay until I had health care coverage again [# Skip to Q7, place usually go]	◯	◯
c. I received health care in the hospital emergency room	◯	◯
d. I received health care at a community health center or clinic	◯	◯
e. I received health care from a private doctor or clinic	◯	◯
f. I received health care where I usually do when I have health care coverage	◯	◯
[RRP only] How did you pay for the health care you got during the period of time you could not be enrolled in BadgerCare Plus? Select all that apply.		
a. I, or a friend or family member, paid directly (out-of-pocket)	◯	◯
b. I was able to get free/charity care	◯	◯
c. I used a different health insurance plan	◯	◯
d. I still owe money/have debt for those bills	◯	◯

We have opted not to conduct focus groups given our very limited evaluation resources. Instead, we are conducting enhanced telephone follow-up within the survey protocol, with respondent interviews, to boost the response rate to the surveys and gain robust understanding across these elements.

Childless Adult Beneficiary Enrollment Q 13-17

To capture the impact of transitioning into a more comprehensive plan on beneficiary outcomes, evaluators may want to consider adapting additional nationally recognized preventive care outcome measures such as: adult access to ambulatory care (NCQA), tobacco use cessation (NCQA, NQF #0028), body mass index screening and follow-up (NQF #0421), cervical cancer

screening (NQF #0032), screening for clinical depression (NQF #0418), and practitioner follow-up after hospitalization (NQF #0567).

The current evaluation reflects the outcome measures that the WI DHS selected in its CMS-approved "BadgerCare Reform Demonstrate Evaluation Plan," (see pages 25 and 35-36 in that original plan) along with additional measures that the UW PHI team suggested to the DHS based on the data available.

We are happy to consider additional variables as outcomes to the extent that we may construct them with the data available and within the existing budget and project timeline. For example, time and resources permitting, using the available claims and enrollment data it may be possible to assess access to ambulatory care, cervical cancer screening, and practitioner follow-up after hospitalization . However, the additional measures requested above are beyond the scope of the current project because they require access to clinical information (e.g., electronic medical records) that is not available to the evaluation team.

- It will be important to match beneficiaries in the treatment and comparison group by their health status. Hence, evaluators may want to consider including Chronic Illness Disability Payment System (CDPS) risk score computed using all diagnoses on claims/encounters over a baseline period in the propensity score model.

  Propensity score matching of the treatment and comparison group is unnecessary if the common trends assumption is satisfied. We appreciate the CMS' suggestion of the CDPS as a potential matching variable and will consider it if matching appears to be needed. (See also the response to Q7 on page 5.)

- Systematic differences between childless adults and parents/caretakers are likely. While propensity score methods ensure balance between the two groups on measured confounders, are there contingency plans in place if there is no balance observed between the treatment and comparison group on these observed confounders?

  In the context of the diff-in-diff design, systematic differences between the groups are only problematic to the extent that they violate the common trends assumption.

  If matching appears to be necessary, we will select our matching method based on the degree of overlap in observables between the two groups. If there is insufficient overlap, we will implement a single series interrupted time series model. This design has the capacity to yield causal findings in the absence of a comparison group assuming no concurrent event related to the outcome in April 2014 and a sufficient number of data points before and after April 2014. We have a sufficient number of data points to implement this design and are not aware of any confounding concurrent events.

Additional suggestions for evaluators to consider:

- We suggest rewording the "cost-effectiveness" to either "efficiency" or "smarter spending" since the evaluation measures do not get at true cost-effectiveness.

  Our UW evaluation team did not select the content or wording of the State of Wisconsin's evaluation measures. This language was laid out in the State of Wisconsin's document that had previously been approved by CMS and provided to our UW team to follow as part of our evaluation contract.

  In our Design Report that we submitted to DHS, we provided clarifying text in the "limitations" section that follows each of the State's cost -effectiveness questions. This text recognizes the CMS' point. The representative text from Q15 is included below:

  > *We note that outcomes/spending is also not a typical measure of "cost-effectiveness," which is normally expressed as a denominator of a gain in health and a numerator of the cost associated with the health gain. Regardless, we will not be able to directly identify the specific costs of any particular change in health outcomes, only "changes in costs" and "changes in health-related outcomes" induced by the introduction of Standard Plan coverage.*

  If the DHS and CMS would like to alter the language, we propose the text below. These questions are identical to the original DHS questions except for the underlined text.

  Q.4. Will the premium requirement increase the ratio of outcomes to spending for Medicaid services?

  Q5. Will the premium requirement increase the ratio of health care utilization to spending for Medicaid services?

  Q.15 Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase the ratio of outcomes to spending for Medicaid services?

  Q.16. Will the provision of a benefit plan that is the same as the one provided to all other BadgerCare adult beneficiaries increase the ratio of health care utilization to spending for Medicaid services?

- There are multiple diagnoses associated with an ED visit claim/encounter. In applying the Billings Algorithm to determine whether an ED visit is for an ambulatory care sensitive condition, we suggest that evaluators consider the ED diagnoses on the claim with the highest with the highest likelihood of being truly emergent. This allows for consistency in classifying ED visits as avoidable/unavoidable.

  We will apply the Billings algorithm in a consistent and transparent manner as in our prior work. See, for example:

DeLeire T, Dague L, Leininger L, Voskuil K, Friedsam D. 2013. Wisconsin experience indicates that expanding public insurance to low-income childless adults has health care impacts. Health Affairs. 32(6):1037-1045.

- We suggest adding a discussion on the completeness and accuracy of the Wisconsin encounter data.

  We will include this assessment in our annual and final reports, as we have in our previous evaluation projects with Wisconsin DHS.

ATTACHMENT F: Survey Instrument

ATTACHMENT F: 2018 Survey Instrument

Current or Former
BadgerCare Plus Member Survey

Thank you for taking the time to answer the questions on the following pages. This survey is about your health care coverage through Wisconsin Medicaid or BadgerCare Plus. Your answers will help the Wisconsin Department of Health Services understand how changes to these programs affect your health and health care.

Taking part in this survey is voluntary. You can skip questions that you do not want to answer. If you choose not to take this survey, it will not affect any health care benefits you are getting right now or might get in the future. All information is private and confidential. You will not be individually identified with your responses.

For each question, please fill in the circle next to the answer you choose, or write your answer in the box provided. When you are finished, please place the completed survey into the postage-paid envelope provided, and put it in the mail.

If you have questions about the survey, you can contact one of the people listed below:

Bob Cradock at the University of Wisconsin Survey Center
608-265-9885
cradock@ssc.wisc.edu

Donna Friedsam at the UW Population Health Institute
608-263-4881
dafriedsam@wisc.edu

Thank you again for your help!

Your Health Care Coverage

1. In the past 12 months, how many months did you have some kind of health care coverage? Select *one* answer only.

- ○ No health care coverage during the last 12 months
- ○ 1 to 2 months of health care coverage
- ○ 3 to 5 months of health care coverage
- ○ 6 to 8 months of health care coverage
- ○ 9 to 11 months of health care coverage
- ○ Covered for all of the last 12 months → **Go to Question 3**

2. If you did not have health care coverage in some or all of the past 12 months, what are the reasons you did not have coverage? Select *all* that apply.

	Yes	No
a. I did not qualify for Medicaid/BadgerCare Plus anymore	○	○
b. I could not afford payments to remain on Medicaid or BadgerCare Plus	○	○
c. I could not afford payments for private health care coverage, an employer's insurance, or from the federal Marketplace/Healthcare.gov/ACA/Obamacare	○	○
d. I was not offered health care coverage from an employer	○	○
e. I was not able to afford the health care coverage an employer offered **2**	○	○
f. I did not have access to any health care coverage	○	○
g. I did not want health care coverage	○	○
h. I did not know how to find information on available health care coverage options	○	○
i. I did not have the time to get health care coverage	○	○

3. What type of health care coverage do you *currently* have? Select *all* that apply.

	Yes	No
a. Wisconsin Medicaid Program	○	○
b. BadgerCare Plus	○	○
c. Medicare	○	○
d. Employer or family member's employer	○	○
e. A private plan I pay for myself	○	○
f. A health plan from Healthcare.gov, the federal Affordable Care Act (ACA/Obamacare) Marketplace	○	○
g. Other coverage. Please specify:	○	○
h. None - no coverage/insurance	○	○

If you *currently* have coverage from Medicaid or BadgerCare Plus, please skip to Question 7.

4. For those who no longer have Medicaid/BadgerCare coverage: What are the reasons you no longer have that coverage? Select *all* that apply.

	Yes	No
a. I am not eligible anymore because I have access to other health care coverage.	○	○
b. I am not eligible anymore because my income has changed.	○	○
c. I am not eligible anymore for other reasons.	○	○
d. The premiums increased and so I dropped my Medicaid/BadgerCare Plus coverage.	○	○
e. I missed a premium payment, so the Medicaid/BadgerCare Plus program temporarily removed me from coverage.	○	○
f. Other reason. Please specify: _____	○	○

5. Have you ever looked for information on health care coverage available from the federal Health Insurance Marketplace (healthcare.gov)? Select *one* answer only.

- ○ Yes
- ○ No, but I plan on looking for information → **Go to Question 7**
- ○ No, and I do not plan on looking for information → **Go to Question 7**
- ○ I have not heard about this kind of health care coverage → **Go to Question 7**
- ○ I do not know how to look for health care coverage → **Go to Question 7**

6. How did the health care coverage available from the federal Health Insurance Marketplace (healthcare.gov) seem to you? Select *one* answer only.

- ○ There are some good options for me
- ○ I can't afford the required premium payments
- ○ The plans don't cover/include the doctors and providers that I need to see
- ○ I'm not sure

7. Is there a place you *usually* go to get health care? Select *one* answer only.

- ◯ Yes
- ◯ No → **Go to Question 9**

8. Where do you usually go to get health care? Select *one* answer only.

- ◯ A private doctor's office or clinic
- ◯ A public health clinic, community health center, or tribal clinic
- ◯ A walk-in clinic in a store, such as Walmart or a pharmacy
- ◯ A hospital-based clinic
- ◯ A hospital emergency room
- ◯ An urgent care clinic
- ◯ Some other place. Please specify: _____
- ◯ I don't have a usual place
- ◯ I don't know

9. Do you have at least one person you think of as your personal doctor or health care provider? Select *one* answer only.

- ◯ Yes, more than one person
- ◯ Yes, only one person
- ◯ No, no one
- ◯ I don't know

10. If you needed health care in the past 12 months, did you get all the care you needed?

- ◯ Yes → **Go to Question 12**
- ◯ No
- ◯ I did not need care in the last 12 months → **Go to Question 12**

11. Think about the *most recent time* you went *without* needed health care in the last 12 months. What were the main reasons you went without care at that time? Select *all* that apply.

	Yes	No
a. It cost too much	○	○
b. I didn't have health care coverage	○	○
c. The doctor wouldn't take my insurance	○	○
d. I owed money to the doctor	○	○
e. I couldn't get an appointment quickly enough	○	○
f. The office wasn't open when I could get there	○	○
g. I didn't have a doctor	○	○
h. Other reason. Please specify:	○	○

12. Was there a time in the *last 12 months* when you needed *prescription medication*?

○ Yes
○ No → **Go to Question 15**

13. If you needed prescription medications in the past 12 months, did you get all the medications you needed? Select *one* answer only.

○ Yes → **Go to Question 15**
○ No
○ I did not need medications in the last 12 months → **Go to Question 15**

14. Think about the *most recent time* you went *without* prescription medications that you needed in the last 12 months. What were the main reasons you went without prescription medications at that time? Select *all* that apply.

	Yes	No
a. They cost too much	○	○
b. I didn't have health care coverage	○	○
c. I didn't have a doctor	○	○
d. I couldn't get a prescription	○	○
e. I couldn't get to the pharmacy	○	○
f. Other reason. Please specify:	○	○

15. How long has it been since you last visited a dentist or a dental care provider for any reason? ***Include visits to dental specialists, such as orthodontists.***

○ Less than 12 months ago
○ Between 1 and 5 years ago
○ More than 5 years ago
○ I have never visited a dentist or dental care provider
○ Not sure

16. In the ***last 12 months*****, how many times did you visit a doctor's office, an urgent care or walk-in clinic, or other health care provider to get care for yourself?** ***Do not include hospital and emergency room visits or dental care. Please give your best guess.***

○ 0 times
○ 1 time
○ 2 times
○ 3 or 4 times
○ 5 or more times

17. In the *last 12 months*, how many times did you go to an emergency room to get care for yourself?

Please give your best guess.

- ◯ 0 times → **Go to Question 19**
- ◯ 1 time
- ◯ 2 times
- ◯ 3 or 4 times
- ◯ 5 or more times

18. Think about the *most recent time* you went to the emergency room in the last 12 months. What were the main reasons you went to the emergency room instead of somewhere else for health care at that time? Select *all* that apply.

	Yes	No
a. I needed emergency care	◯	◯
b. I didn't have health insurance	◯	◯
c. The doctors' office/clinic was closed	◯	◯
d. I couldn't get an appointment to see a regular doctor soon enough	◯	◯
e. I didn't have a personal doctor	◯	◯
f. I couldn't afford the copay to see a doctor	◯	◯
g. I needed a prescription drug	◯	◯
h. I didn't know where else to go	◯	◯
i. Some other reason. Please specify: ☐	◯	◯

19. In the *last 12 months*, how many different times were you a patient in a hospital for at least one overnight? *Do not include hospital stays to deliver a baby.*

☐ times

20. Overall, how would you rate the quality of the medical care you have received in the *last 12 months*?

- ◯ Excellent
- ◯ Very good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ I did not receive medical care in the last 12 months

21. How satisfied or dissatisfied are you with the following aspects of your current health care?

	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied
a. The range of health care services available	○	○	○	○
b. The choice of doctors and other providers	○	○	○	○

Your Health Care Costs

22. In the past 12 months, did you have problems paying any medical bills, including bills for doctors, dentists, hospitals, therapists, medical equipment, nursing home, or home care?

○ Yes
○ No

23. In the past 12 months, did you need any of the following at any time but not get it because of how much it cost? Select *all* that apply.

	Yes	No
a. Prescription drugs	○	○
b. Medical care	○	○
c. To see a general doctor	○	○
d. To see a specialist	○	○
e. To get medical tests, treatment, or follow-up care	○	○
f. Dental care	○	○
g. Mental health care or counseling	○	○
h. Eyeglasses or vision care	○	○

24. Do you *currently* owe money to a health care provider, credit card company, or anyone else for medical expenses?

◯ Yes
◯ No → **Go to Question 26**

25. About how much do you owe?

$ .00 amount owed

26. In the *last 12 months*, have you had to borrow money, skip paying other bills, or pay other bills late in order to pay health insurance bills?

◯ Yes
◯ No

27. In the *last 12 months*, has a doctor, clinic, or medical service refused to treat you because you owed money to them for past treatment?

○ Yes
○ No
○ I don't know

28. A health insurance premium is the amount you or a family member pays each month for health care coverage. In the past 12 months, did you or your family ever pay a premium for Medicaid/BadgerCare?

○ Yes
○ No → **Go to Question 31**

29. About how much did your family pay *per month* in premiums for Medicaid/BadgerCare?

$ .00 amount paid

30. Did you ever compare the premium amounts in Medicaid/BadgerCare to premium amounts that you would pay for private insurance through an employer or through the Obamacare insurance exchanges?

○ Yes
○ No

31. A health insurance co-pay is the amount you or a family member pays each time you receive health care (for example, if Medicaid/BadgerCare requires you to pay anything for a doctor visit or prescription drugs). In the past 12 months, did you or your family ever pay a co-pay for Medicaid/BadgerCare?

○ Yes

○ No ⟶ **Go to Question 34**

32. About how much did your family pay *per month* in copayments for Medicaid/BadgerCare?

$ .00 amount paid

33. Did you ever compare the co-pay amounts in Medicaid/BadgerCare to premium amounts that you would pay for private insurance through an employer or through the Obamacare insurance exchanges?

○ Yes
○ No

34. For the following statements, please indicate whether you strongly agree, agree, are neutral, disagree, or strongly disagree.

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a. The amount I pay for health care is fair.	○	○	○	○	○
b. The amount I pay for health care is affordable.	○	○	○	○	○
c. I'd rather take some responsibility to pay something for my health care than pay nothing.	○	○	○	○	○
d. It is important for me personally to have health insurance.	○	○	○	○	○

e. The amount I might have to pay for my prescription influences my decision about filling prescriptions.	○	○	○	○	○
f. I don't worry as much about something bad happening to me since enrolling in Medicaid/BadgerCare.	○	○	○	○	○
g. Having Medicaid/Badgercare has taken a lot of stress off me.	○	○	○	○	○
h. Without Medicaid/Badgercare I wouldn't be able to afford to go to the doctor.	○	○	○	○	○
1. Having Medicaid/Badgercare has helped me live a better life.	○	○	○	○	○

Your Health Care Coverage Experiences

35. Some people find health care coverage and insurance difficult to understand. For each of the words below, please indicate how confident you are that you understand what the word means.

	Very Confident	Somewhat Confident	Slightly Confident	Not At All Confident
a. Premiums	○	○	○	○
b. Deductibles	○	○	○	○
c. Copayments	○	○	○	○
d. Coinsurance	○	○	○	○

Your Health

36. In general, would you say your health is:

- ◯ Excellent
- ◯ Very good
- ◯ Good
- ◯ Fair
- ◯ Poor

37. How has your health changed in the *last 12 months*?

- ◯ My health has gotten better
- ◯ My health is about the same
- ◯ My health has gotten worse

38. Have you ever been told by a doctor or other health care provider that you have any of the health conditions listed below? Select *all* that apply.

	Yes	No
a. Diabetes or sugar diabetes	◯	◯
b. Asthma	◯	◯
c. High blood pressure	◯	◯
d. Emphysema or chronic bronchitis (COPD)	◯	◯
e. Heart disease, angina, or heart attack	◯	◯
f. Congestive heart failure	◯	◯
g. Depression or anxiety	◯	◯
h. High cholesterol	◯	◯
i. Kidney problems, kidney disease, or dialysis	◯	◯
j. A stroke	◯	◯

k. Alcoholism or drug addition	○	○
l. Cancer, except for skin cancer	○	○

39. In the past 12 months, have you done any of the following things specifically for any of those health conditions you were told that you have? Select *all* that apply.

	Yes	**No**
a. I have been to a doctor or clinic	○	○
b. I have taken medication regularly	○	○
c. I have been to the hospital emergency room because of the condition(s)	○	○
d. I have been admitted to the hospital because of the condition(s)	○	○
e. I have not been treated for the condition(s)	○	○

40. Have you had your blood cholesterol checked?

- ◯ Yes, within the last 12 months
- ◯ Yes, but it's been more than 12 months
- ◯ Never

41. During the past 12 months, have you had either a flu shot or a flu vaccine that was sprayed in your nose?

- ◯ Yes
- ◯ No

42. Do you currently smoke cigarettes every day, some days, or not at all?

- ◯ Every day
- ◯ Some days
- ◯ Not at all → **Go to Question 44**

43. In the *last 12 months*, have you been advised by a doctor or health professional to quit smoking?

- ◯ Yes
- ◯ No
- ◯ I haven't seen a doctor in the last 12 months

44. Does a physical, mental, or emotional condition now limit your ability to work at a job?

- ◯ Yes
- ◯ No

45. Over the past two weeks, how often have you been bothered by having little interest or pleasure in doing things?

- ◯ Not at all
- ◯ A few times
- ◯ More than half the days
- ◯ Nearly every day
- ◯ Don't know

46. Over the past two weeks, how often have you been bothered by feeling down, depressed, or hopeless?

- ◯ Not at all
- ◯ A few times
- ◯ More than half the days
- ◯ Nearly every day
- ◯ Don't know

47. During the past 30 days, did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?

- ◯ Yes
- ◯ No → **Go to Question 50**

48. During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?

_____ Days per week _____ Days per month

49. What is the largest number of drinks you had on any occasion?

_____ Drinks

50. In the last 30 days, have you used an illegal drug or used a prescription medication for non-medical reasons (for example, because of the experience or feeling it caused)?

- ◯ Yes
- ◯ No → **Go to Question 53**

51. How often did you take those drugs or medications for non-medical reasons?

- ◯ Almost every day
- ◯ Sometimes
- ◯ Rarely → **Go to Question 53**

52. In the last 12 months, has a doctor, nurse, or other health professional talked with you about your use of these drugs or medications?

- ◯ Yes
- ◯ No

About You

53. Are you male or female?

- ◯ Male
- ◯ Female

54. What is your current age?

- ◯ Younger than age 19
- ◯ Age 19 to 25
- ◯ Age 26 to 34
- ◯ Age 35 to 44
- ◯ Age 45 to 64
- ◯ Age 65 or older

55. Are you currently employed or self-employed?

- ◯ Yes, employed by someone else
- ◯ Yes, self-employed
- ◯ Not currently employed
- ◯ Retired

56. About how many hours per week, on average, do you work at your current job(s)?

- ◯ I don't currently work
- ◯ I work less than 20 hours per week → **Go to Question 58**
- ◯ I work 20 to 29 hours per week → **Go to Question 58**
- ◯ I work 30 or more hours per week → **Go to Question 58**

57. What are the reasons that you are currently not employed? Select *all* that apply.

	Yes	No
a. Looking for work	◯	◯

b. Taking care of a family member	○	○
c. Ill, disabled, or unable to work due to a health problem	○	○
d. Retired	○	○
e. Taking classes or in school	○	○
f. Don't want to work	○	○

58. What was your household's gross income (before taxes and deductions are taken out) for 2015? Include any cash assistance or unemployment benefits you may have received, and include the income of all members of your household. Select *one* answer only. If you do not know, give your best guess.

- ◯ Less than $4,999
- ◯ $5,000 to $9,999
- ◯ $10,000 to $14,999
- ◯ $15,000 to $19,999
- ◯ $20,000 to $29,999
- ◯ $30,000 to $39,999
- ◯ $40,000 to $49,999
- ◯ $50,000 to $59,999
- ◯ $60,000 to $69,999
- ◯ $70,000 to $79,999
- ◯ $80,000 to $89,999
- ◯ $90,000 to $99,999
- ◯ $100,000 or more

59. Would you describe yourself as Spanish, Hispanic, or Latino?

- ◯ Yes
- ◯ No

60. How would you describe your race? Select *all* that apply.

- ☐ White
- ☐ Black or African-American
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or Pacific Islander
- ☐ Other, please specify: _____

61. What is the *highest* level of education you have completed? Select *one* answer only.

◯ Less than high school
◯ High school diploma or General Education Development (GED) certificate
◯ Vocational training or 2-year degree
◯ Some college but no degree
◯ A 4-year college degree or more

62. What is your current living arrangement? Select *all* that apply.

☐ I live alone
☐ I live with my partner or spouse
☐ I live with my parents
☐ I live with other relatives (including children)
☐ I live with friends or roommates
☐ Other, please specify: _____

63. How many family members, <u>including yourself</u>, counting adults and children, are living in your home? (*For example, if you live alone, you should write "1".*)

_____ family member(s) in my home

64. Of the family members living in your home, how many are under age 19?

_____ family member(s) in my home are under age 19

65. Do you have any children under age 19 who you financially support but that do not live in your home?

◯ Yes
◯ No

Thank you for your participation. When you have finished your survey, please place it in the included postage-paid envelope, and drop it in the mail.

ATTACHMENT G: Summary of major benefit differences between Wisconsin Medicaid Core Plan and Standard Plan Coverage

Service	Core Plan	Standard Coverage
1.Mental health and substance abuse treatment	Coverage limited to services provided by a psychiatrist under the physician services benefit. $0.50 to $3 copay per service, limited to $30 per provider per enrollment year.	Full coverage (not including room and board, i.e., IMD). $0.50 to $3 copay per service, limited to the first 15 hours or $825 of services whichever comes first, provided per calendar year. Copay not required when services are provided in a hospital setting.
2.Hospital, Inpatient	Full coverage *excluding inpatient psychiatric stays in either an Institute for Mental Disease or the psychiatric ward of an acute care hospital and inpatient substance abuse treatmen*t. $3 copay per day for members with income up to 100%FPL with a $75 cap per stay. There is a $300 total copay cap per enrollment year for inpatient and outpatient hospital services for all income levels.	Full coverage. $3 copay per day with a $75 cap per stay.
3.Hospital, Outpatient	Full coverage *excluding outpatient mental health and substance abuse treatment services.* $3 copay per visit for members with income up to 100%FPL. $300 total copay cap per enrollment year for inpatient and outpatient hospital services for all income levels.	Full coverage. $3 copay per visit

4. Hospital, Outpatient-Emergency Room	Full coverage. $3 copay for members w/income up to 100%FPL (waived if member is admitted to the hospital).	Full coverage. No copay.
5. Drugs	Generic-only formulary drug and some OTC drugs. Some brand name drugs are covered. Members are limited to 5 prescriptions per month for opioid drugs. Up to $4 copay for generic drugs and up to $8 copay for brand name drugs with a $24 copay limit per month per provider.	Comprehensive drug benefit with coverage of generic and brand name prescription drugs and some OTC drugs. Members are limited to 5 prescriptions per month for opioid drugs. Copay s: $0.50 for OTC; $1 for generic; $3 for brand name. Limited to $12 per member per provider per month. OTC drugs are excluded from this $12 maximum.
Nursing home	No coverage.	Full coverage. No copay.

https://www.forwardhealth.wi.gov/WIPortal/Home/Provider%20Login/tabid/37/Default.aspx

ATTACHMENT H: Frequency of observations for health-related health care use outcomes among continuously enrolled childless adults and parent/caretakers, April 2013-March 2015

			Childless Adults		Parents/Caretakers	
			Pre	Post	Pre	Post
Outcome	Unit of analysis		N	N	N	N
Flu Vaccine	person-year	Observations	7,510	7,510	69,059	69,059
		Positive outcome (y=1)	2,413	2,562	14,553	13,654
Smoking Cessation Visit	person-year	Observations	7,510	7,510	69,059	69,059
		Positive outcome (y=1)	548	594	4,891	4,638
Mammogram	person-year	Observations	2,207	2,207	9,682	9,682
		Positive outcome (y=1)	1,221	1,170	5,272	5,584
Hemoglobin A1c testing	person-year	Observations	1,283	1,283	4,605	4,605
		Positive outcome (y=1)	1,032	1,138	3,276	3,567
Antidepressant Medication Management	person-episode	Observations	41	75	461	532
		Positive outcome (y=1)	27	46	258	532
Follow-up after hospitalization for Mental Illness after 7 days	person-discharge for mental illnes	Observations	0	58	375	360
		Positive outcome (y=1)	0	2	117	107
Follow-up after hospitalization for Mental Illness after 30 days	person-discharge for mental illness	Observations	0	58	375	360
		Positive outcome (y=1)	0	4	233	213
Hospital Readmission within 30-days, All Cause	person-discharge	Observations	639	919	6,040	6,977
		Positive outcome (y=1)	59	116	377	456
Potentially Preventable ED Visit	person-year	Observations	7,510	7,510	69,059	69,059
		Positive outcome (y>0)	1,296	1,345	19,696	19,921
Potentially Preventable Hospitalization	person-year	Observations	7,510	7,510	69,059	69,059
		Positive outcome (y>0)	57	62	354	372
AODA 14	person- index episode	Observations	443	646	2,547	1,736
		Positive outcome (y>0)	53	213	805	485
AODA 30	person-index episode	Observations	443	646	2,547	1,736
		Positive outcome (y>=2)	34	150	636	369

ATTACHMENT I: Supplemental Analysis of Childless Adults' Mental Health and Substance Use Disorder (MHSUD) Care Use

The change of benefits from Core Plan to Standard Medicaid plan for Childless Adults brought with it a substantial difference in coverage for mental health and substance use disorder (MHSUD) services. (See Attachment G.) We conducted a supplementary analysis to assess health care use for mental health conditions, and how the change in benefits related to any observed changes in services received.

We implement Comparison A using a difference-in-differences (DD) design to compare the average within-person change in Medicaid MHSUD care use for childless adults relative to parents, 12 months before and after the state moved childless adults from the Core plan to standard Medicaid coverage. The study sample includes parent and childless adult beneficiaries who were continuously enrolled in Wisconsin Medicaid from April 2013 – March 2015.

We constructed binary and count variables to capture person-year service use for outpatient, inpatient, and ED services. Outpatient MHSUD visits include visits with procedure codes that are specific to MHSUD care, or an evaluation and management procedure code with a diagnosis of MHSUD in any position. For each MHSUD visit, we observe the type and specialty of treating provider. We assess three measures of outpatient MHSUD visits: total, visits to a psychiatrist, and visits to non-psychiatrist clinicians (i.e., physicians from other specialties, psychologists, social workers, physician assistants or nurse practitioners). We define MHSUD inpatient admissions and ED visits as those with a primary MHSUD diagnosis.

For prescription medication outcomes, we created separate binary indicators of any claim for prescription medications within the following therapeutic drug classes, antidepressants, antianxiety, antipsychotics, and antimanic agents. To assess SUD-related medication use, we constructed a binary measure of any claim for any of the following prescription drugs: opiate partial agonists; opiate antagonists; and alcohol deterrents. Medication treatment for SUDs that is exclusively delivered in outpatient clinics (especially methadone maintenance) is captured in our measure of MHSUD outpatient visits. Attachment B provides the specifications for all measures used in this supplementary analysis.

Statistical Analyses. The goal of the regression analysis is to estimate the average effect of implementing parity-consistent coverage for childless adult beneficiaries on MHSUD treatment use. The unit of analysis is the person-year resulting in 2 observations for each subject. For measures of outpatient, ED, and inpatient health care use, we use a two-part generalized linear model with a log link and Poisson variance distribution. We use a linear probability model to estimate the likelihood of any MHSUD-related prescription medication use. We cluster standard errors at the individual level to account for repeated observations within persons over time. We use the regression results to estimate the average marginal effect of the coverage change for childless adults' use of MHSUD services.

The key variables in our regression models include an indicator for childless adult beneficiary status, a binary variable with a value of 1 from April 2014 – March 2015 and a value of 0 from April 2013 – March 2014, and the interaction of these two variables. We adjust for seasonality by including dummy variables for calendar month, and also adjust for age, sex, race, ethnicity, education, residence in an urban area, and duration of Medicaid enrollment between 2008-2014.

Supplement Table 1. Average change in MHSUD-related annual health care use for childless adults relative to parents, one year before and one year after implementation of Standard Medicaid coverage for childless adults

		Childless Adults, Mean (SE) N = 15,020 person-years				Parents, Mean (SE) N = 138,130 person-years				Difference-in-Differences Estimate		Percentage Change Relative to Baseline for
		Pre		Post		Pre		Post		Average Marginal Effect (95% CI)	*P* Value	
OFFICE-BASED VISITS										**Number of Visits**		
	MHSUD	1.383	(0.032)	2.690	(0.169)	4.436	(0.092)	4.632	(0.095)	1.755 (1.243, 2.267)	<0.01	130%
	MHSUD - Psychiatrist	0.413	(0.018)	0.430	(0.019)	0.329	(0.006)	0.320	(0.006)	0.029 (-0.017, 0.075)	0.222	7%
	MHSUD - Non-Psychiatrist	0.970	(0.024)	2.260	(0.167)	4.108	(0.092)	4.312	(0.094)	1.776 (1.250, 2.302)	<0.01	131%
EMERGENY DEPARTMENT VISIT										**Number of Visits**		
	MHSUD	0.089	(0.009)	0.117	(0.010)	0.059	(0.001)	0.061	(0.001)	0.042 (0.009, 0.075)	<0.05	82%
INPATIENT ADMISSION										**Number of Admissions**		
	MHSUD	0.039	(0.003)	0.070	(0.005)	0.033	(0.001)	0.036	(0.001)	0.035 (0.022, 0.047)	<0.01	90%
PRESCRIPTION MEDICATION USE,										**Probability of Any Fill**		
All MHSUD-related medication classes		0.414	(0.006)	0.444	(0.006)	0.358	(0.002)	0.367	(0.002)	0.022 (0.014, 0.031)	<0.01	5%
	Antianxiety	0.179	(0.004)	0.199	(0.005)	0.157	(0.001)	0.162	(0.001)	0.014 (0.007, 0.022)	<0.01	8%
	Anticonvulsant	0.043	(0.002)	0.049	(0.002)	0.037	(0.001)	0.038	(0.001)	0.004 (0.001, 0.008)	<0.01	9%
	Antidepressant	0.326	(0.005)	0.358	(0.006)	0.292	(0.002)	0.299	(0.002)	0.025 (0.016, 0.033)	<0.01	8%
	Antipsychotics	0.049	(0.003)	0.062	(0.003)	0.043	(0.001)	0.048	(0.001)	0.008 (0.003, 0.012)	<0.01	16%
	Opiate partial agonists, opiate antagonists, alcohol deterrents	0.017	(0.001)	0.022	(0.002)	0.019	(0.001)	0.020	(0.001)	0.004 (0.001, 0.006)	0.134	23%

Note: Authors' estimates using Wisconsin Medicaid health care and prescription medication claims data. Outpatient, ED, and inpatient outcomes reflect estimates from two-part models, while prescription medication outcomes reflect estimates from ordinary least squares. All MHSUD-related medications is defined as any claim within the following drug classes, antidepressants, antianxiety, antipsychotics, antimanic agents, opiate partial agonists, opiate antagonists, and alcohol deterrents. The unit of analysis is the person-year and all models include age, sex, race, ethnicity, education, residence in an urban area. For each outcome, the average marginal effect is derived from the regression model and represents the average change in the outcome for childless adults compared to parents after implementation of Standard Medicaid coverage for childless adults. The average marginal effect divided by the outcome value in the pre-period for childless adults yields the percentage change relative to baseline. Standard errors are clustered at the individual level.

In general, MHSUD-related health care use increased among childless adults after implementation of the Standard Plan relative to parents and caretakers, as shown in Supplement Table 1. The average number of outpatient MHSUD visits increased by approximately 1.76 visits per person per year [or approximately 130% relative to the baseline (i.e., 1.76/1.38). This increase is driven by an increase in outpatient MHSUD visits to non-psychiatrist clinicians. Before implementation of the Standard Plan, childless adults had approximately 0.97 non-psychiatrist MHSUD visits per person per year on average which increased by 1.78 visits per person per year relative to the comparison group of parents and caretakers in the post-period. By contrast, the estimated increase in outpatient MHSUD visits to psychiatrists for childless adults relative to parents, 0.03, was negligible and not statistically different from zero at a threshold of $p < .05$.

Emergency department visits related to MHSUD increased for childless adults relative to parents after implementation of the Standard Plan by an average of 0.04 or 82%. Similarly, MHSUD-related hospitalizations increased following implementation of the Standard Plan for childless adults relative to parents and caretakers by an average of 0.04 admissions per person per year, an increase of 90%. The probability of having at least one claim for a MHSUD-related prescription drug increased by 0.02 from a baseline of 0.41 among childless adults after implementation of the Standard plan relative to parents and caretakers or approximately 5%.

In general, MHSUD-related health care use increased across all service categories and, most significantly, in outpatient care, consistent with the change in coverage for behavioral health services that the transition from the Core to Standard plans brought about.

ATTACHMENT J: Supplemental Analysis of Childless Adults – Prescription Drug Use Among Diabetics

Kim NH, Look KA, Burns ME. 2019. Low-Income Childless Adults' Access to Antidiabetic Drugs In Wisconsin Medicaid After Coverage Expansion. Health Affairs. 38(7): 1145-1152.

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MEDICAID

By Nam Hyo Kim, Kevin A. Look, and Marguerite E. Burns

Low-Income Childless Adults' Access To Antidiabetic Drugs In Wisconsin Medicaid After Coverage Expansion

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ABSTRACT **Medicaid coverage was expanded for childless adults in Wisconsin through an amended Section 1115 demonstration waiver on April 1, 2014. Coverage for prescription drugs was expanded via copayment reductions and a drug formulary expansion. We analyzed administrative drug claims data to evaluate changes in the use of and out-of-pocket spending on antidiabetic drugs among childless adults who experienced the drug coverage expansion. Compared to parents or caretakers, who were not affected by the expansion, childless adults experienced a significant increase of 4 percent in the use of antidiabetic drugs—driven mainly by an increase in the population using the drugs, rather than by more intense use. The expanded drug coverage also reduced the burden of out-of-pocket spending for childless adults by 70 percent. Our findings demonstrate that expanding prescription drug benefits led to increased access to antidiabetic drugs for childless adults in Wisconsin Medicaid.**

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