

# Evaluation of Wisconsin's BadgerCare Plus Health Care Coverage Program

## Report #3

Target Efficiency and the Displacement of Private Insurance:  
How Many New BadgerCare Enrollees Came from the Uninsured?

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*Translating Research for Policy and Practice*

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## **Preface: BadgerCare Plus**

Wisconsin's BadgerCare Plus (BC+) program was designed to ensure access to health insurance coverage to virtually all Wisconsin children and to bolster coverage for parents and other caretaker adults. The program, launched in February of 2008, expanded upon BadgerCare (Wisconsin's Children's Health Insurance Program - CHIP) and Medicaid. Its reforms included eligibility expansions; simplification of eligibility rules and enrollment and verification processes; and an aggressive marketing and outreach campaign.

BadgerCare Plus eliminated the income eligibility ceiling for children. Coverage operates as a single program with two insurance products: the Standard Plan, for enrollees < 200% Federal Poverty Level (FPL), and the Benchmark Plan, for enrollees >200% FPL. The former is the traditional Medicaid plan and requires only minimal cost-sharing, while the latter is comprised of a more limited set of covered services and requires co-payments on non-preventive services, similar to private insurance policies.

The premium threshold for children was set at 150% FPL under BadgerCare and was raised to 200% FPL under BadgerCare Plus. Modest-income children (200-300% FPL) enrolled in the Benchmark Plan are subject to premium payments that increase with family income level; premiums start at \$10 per month and are capped at 5% of total monthly income. The families of higher-income children (> 300% FPL) are required to pay the full cost of coverage in the Benchmark Plan, which amounted to approximately \$100 per month in 2008.

In contrast to the 200% income threshold imposed for children, the sliding-scale premium begins at 150% FPL for parents and caretakers; again, with total family premium contributions capped at 5% of monthly income. BadgerCare Plus also includes caretaker relatives in its definition of parental eligibility.

Prior to the launch of BadgerCare Plus, anti-crowd-out provisions were applied in the BadgerCare program but not in the Medicaid program. Under BadgerCare Plus, applicants with incomes over 150% FPL are subject to anti-crowd-out provisions. With good-cause exceptions, these individuals face a three-month waiting period for dropped coverage and they cannot have been offered employer-sponsored insurance (ESI) during the past 12 months or have the opportunity to enroll in ESI during the upcoming 3 months. The employer must cover at least 80% of the premium for the crowd-out provisions to apply.

## **Summary of Findings**

This study measures the substitution of BadgerCare Plus coverage for existing private coverage using a combination of administrative and survey data. Findings include estimates of the percentage of individuals who were newly enrolled into the program that had access to private, employer-sponsored health insurance at or around the time of enrollment and the fraction of these individuals who subsequently dropped this coverage.

It is important to note that, in Wisconsin, persons below 150% of the federal poverty level, who are covered under Medicaid (vs. CHIP), are permitted to enroll in BadgerCare Plus regardless of whether they have other existing coverage or access to other insurance. Medicaid is always a payer of last resort following any other third party liable for insurance. CHIP (now CHIPRA) includes crowd out provisions and, in Wisconsin, these are applied for individuals above 150% FPL.<sup>1</sup>

Through the analysis reported here, we estimate that approximately 11% of individuals who enrolled in BadgerCare Plus between April 2008 and November 2009 dropped their private health insurance coverage. Another 12% of enrollees maintained their coverage while they were enrolled in BadgerCare Plus (BadgerCare Plus was the secondary payer). (Table 1) That means that, of 326,327 new enrollees in this time period, about 76,000 had other private health insurance. Of this group, about 40,000 maintained their private coverage as the primary payer, and about 36,000 dropped their private coverage.

The percentage of BadgerCare Plus enrollees with private insurance at the time of enrollment was higher in the first two months of the new program – February 2008 and March 2008. The percentage of new enrollees in these two months who dropped private coverage was also 11%, while another 26% maintained their existing coverage. (Table 2)

The percentage of enrollees with access to private health insurance and the percentage that dropped this insurance in the January 2006-January 2008 period (prior to the program's expansion) was lower than in the periods following the expansion. We estimate that, of individuals who enrolled between January 2006 and January 2008, 10% maintained their private insurance and 7% dropped their private insurance. (Table 2)

Our estimated percentages of enrollees who initially had private insurance and who subsequently dropped this insurance are roughly similar for child and adult enrollees, are higher for individuals in higher income families, and are slightly higher for enrollees in urban counties.

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<sup>1</sup> <https://www.cms.gov/ThirdPartyLiability/Downloads/SummaryofFederalStatutoryRequirements.pdf>  
<https://www.cms.gov/ThirdPartyLiability/Downloads/SummaryofFederalRegulatoryRequirements.pdf>

Overall, these estimates of the percentage of new enrollees who dropped private health insurance in favor of coverage under BadgerCare Plus are very low compared with previous crowd-out estimates, reported elsewhere at 25-50%, associated with Medicaid and CHIP expansions in other states and nationally.

**Table 1.**  
**Percentages of Newly Enrolled BadgerCare Plus Members with Private Coverage at or near the Time of Enrollment and who Subsequently Dropped, April 2008 through November 2009**

	Had Private Coverage at the Time of Enrollment	Maintained Private Coverage	Dropped Private Coverage	Number of New Enrollees
All	23.3%	12.4%	10.9%	973,883
Adults	22.7%	10.9%	11.8%	91,975
Children	23.8%	13.6%	10.2%	326,327

**Table 2.**  
**Comparison of Three Time Periods: Percentages of Newly Enrolled BadgerCare Plus Members with Private Coverage that Subsequently Dropped**

	Had Private Coverage at the Time of Enrollment	Maintained Private Coverage	Dropped Private Coverage
January 2006-January 2008	17%	10%	7%
February 2008-March 2008	37%	26%	11%
April 2008-November 2009	23%	12%	11%

The findings from this study are subject to several limitations, detailed on pages 26-28 of this report.

### **Background**

The displacement of private insurance coverage through expansion of public insurance is known in the economics and policy literature as “crowd-out.” Crowd-out can be defined in several different ways, and estimates of the magnitude of crowd-out in public program expansions vary. Generally, crowd-out refers to the substitution of publicly-funded coverage for existing private coverage. Individuals may choose to forgo coverage available from their employer or in the individual market because publicly funded coverage is more affordable or more comprehensive. Alternatively, employers may choose to drop coverage for their workers once public coverage becomes available.

The Congressional Budget Office, using a broad definition of crowd-out, concluded that between 25% and 50% of children enrolled in CHIP previously had private health insurance.<sup>2</sup> Federal law requires that the states have provisions to prevent substitution of CHIP for employer-sponsored insurance.

<sup>2</sup> Congressional Budget Office, “The State Children’s Health Insurance Program,” May 2007.

BadgerCare Plus contains a number of provisions intended to limit the extent to which individuals with access to private insurance could drop that insurance and enroll in BadgerCare Plus. These “anti-crowd-out” provisions apply only to applicants whose income is above 150% FPL. They include a three-month waiting period for dropped coverage and a 12-month look back and three-month look forward for access to employer-sponsored insurance. Good-cause exceptions to these anti-crowd-out provisions include loss of health coverage because of job loss. Moreover, these provisions only apply to employer-sponsored insurance that is deemed “affordable,” that is, if the employer pays at least 80 percent of the total premium.

An Employer Health Insurance Verification (EVHI) database is used to verify if applicants and members have access to employer-sponsored insurance.<sup>3</sup> DHS also reports that private insurance disclosure tapes are used to check whether members are covered by private insurance.<sup>4</sup>

BadgerCare Plus applicants with incomes below 150% FPL are not subject to anti-crowd out provisions. Third party liability disclosure information is received for everyone enrolled in BadgerCare Plus. As a matter of federal law, Wisconsin’s BadgerCare Plus program does not administer separate requirements for low-income BadgerCare Plus applicants

A large literature exists on the question of crowd-out in Medicaid and CHIP. The estimates vary widely, and studies use different time periods, populations, methods, and data sources. Generally, the studies conclude that expansions to lower income populations are associated with lower crowd-out. Longitudinal studies also tend to find lower crowd-out. Only two previous studies have used administrative data (see Table 3).

If the BadgerCare Plus target population is people currently without health insurance, then target efficiency would mean the degree to which BadgerCare Plus’ new enrollees come from the uninsured rather than from other sources of coverage. Wisconsin’s BadgerCare Plus Program, however, defines its target more flexibly, allowing enrollment of persons without what it defines as “affordable” health insurance coverage, even if that coverage is currently available and if that person is currently enrolled in such coverage.

Nonetheless, the administration’s goal with BadgerCare Plus and other policy initiatives was to reach 98% “access to coverage,” regardless of whether the individual is actually enrolled in that coverage. The underlying question, we believe, is how many BadgerCare Plus enrollees came from the uninsured?

## **Research Questions**

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This study seeks to answer two questions.

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<sup>3</sup> EVHI was not used for this analysis. The reasons for this are described in an internal working report available from the UW Population Health Institute: BadgerCare Plus Evaluation Report: Applicants Access to Employer Health Insurance: Do Existing Systems Effectively Collect and Verify Information? December 2010.

<sup>4</sup> Robert Wood Johnson Foundation, State Coverage Initiatives. Profiles in Coverage, Wisconsin’s BadgerCare Plus Program. April 2009. Available at: <http://www.statecoverage.org/node/1751>.

1. What percentage of new enrollees had private insurance coverage at or near the time of their enrollment?
2. What percentage of new enrollees dropped private insurance coverage (that is, moved from private coverage to BadgerCare Plus)?

**Table 3.**  
**Selected Previous Estimates of Crowd-out in Medicaid/CHIP**

Article	Data	Literature Method	Result
Cutler & Gruber 1996	1987-1992 CPS	Simulated eligibility instrument	Kids 31%, 40%; Family 50%
Dubay & Kenney 1996, 1997	1988, 1992-1993 CPS	DD, kids & preg. women vs adult men	<100% FPL 0%; >22%-59%
Thorpe & Florence 1998	1989-1994 NLSY	Moving from private to Medicaid	Kids, 16%
Blumberg et al. 2000	1990 SIPP Panel	DD, eligible kids vs. non-eligible	Kids, 4%
Yazici & Kaestner 2000	1988 & 1992 NLSY	DD, eligible kids vs. non-eligible	55-59%
Kronick & Gilmer 2002	1988-1999 CPS	DD, state/region	45%
Aizer & Grogger 2003	1995-2002 CPS	DD, eligibility, time, by states	55-59%, 5-24%
Card & Shore-Sheppard 2004	1990-1993 SIPP	DD, eligibility on income and age	<100% FPL 0%; >, 50%
LoSasso & Buchmueller 2004	1996-2000 CPS	Simulated eligibility instrument	50%
Shore-Sheppard 2005	1987-1995 CPS	Simulated eligibility instrument	33%, 59%
Ham & Shore-Sheppard 2005	1985-1995 SIPP	Simulated eligibility instrument	0%
Hudson et al. 2005	1996-2002 MEPS	DD and sim. eligibility instrument	DD 25-55%; IV 39-70%
Basnak and Raphael 2006	1996 & 2002 CPS	DD, states and time	21-30% Kids
Shone et al. 2007	2001 NY	Admin. Survey	28% Kids
Sommers et al. 2008	2002 HHS	Admin. Survey	28% Kids
Lee et al. 2008	1996-2002 CPS	DD and sim. eligibility instrument	40%, 0% Kids
Gruber & Simon 2008	1996 & 2001 SIPP	DD and sim. eligibility instrument	60% Family; 30% Individ.
Dubay & Kenney 2009	1997-2002 NSAF	DD and sim. eligibility instrument	33-43% Kids

We examine three time periods – a pre-expansion period (January 2006-January 2008), an initial post-expansion period (February and March 2008), and a post-expansion period (April 2008-November 2009) – and three income categories – below 150% FPL, 150-200% FPL, and 200%-300% FPL. We also separately examined child and adult enrollees and residents of rural and urban counties.

Our research questions focused exclusively on the presence or absence of private coverage, not the nature of that coverage. We do not apply the state's 80% affordability test in considering the legitimacy of a change from private to public coverage, for reasons discussed below. This approach is consistent with that of the State in reporting its own progress toward its policy goal of 98% access to coverage, whereby it does not account for whether the coverage achieves the 80% affordability standard.

## **Data and Methods**

This analysis combines high quality Wisconsin DHS administrative data systems, administrative data from the State's Unemployment Insurance System, data from the U.S. Department of Labor, and data from the U.S. Census Bureau's Current Population Survey (CPS).

Previous studies have used survey data almost exclusively. Thus, the use of administrative data in this study represents a methodological innovation in this literature. Moreover, the use of administrative data may be needed to analyze state-specific experiences. While in principle, survey data could be used to analyze the Wisconsin experience, several problems arise with that approach, most notably insufficient sample sizes at the state level. We will discuss the problems with using survey data and will show that its use yields unreliable estimates in the case of Wisconsin.

### **Data**

We use longitudinal administrative data to examine expansions of eligibility that took effect as of February 2008 with implementation of BadgerCare Plus. The study involves four linked administrative databases:

- CARES: Wisconsin's program eligibility database;
- UI: Unemployment Insurance and quarterly wage records;
- TPL: Wisconsin's Third Party Liability database; and
- DOL: U.S. Department of Labor database of all self-insured firms.

The unit of observation in this dataset is an individual in the first month that person enrolled in BadgerCare Plus between January 2006 and November 2009, though we also use case-level (household) information when appropriate. We link across these different sources by using Social Security numbers (SSNs) and federal employer identification numbers (FEINs).

Data on BadgerCare Plus enrollees were drawn from the Wisconsin eligibility database system, CARES, from January 2006 to November 2009. For some of the analysis, we consider cases, not individuals; a case includes all individuals associated with eligibility determination (generally, everyone in the applicant's household). Over this time period, we have monthly enrollment data for a total of 1,392,185 enrollees in 433,525 unique cases. CARES also contains demographic and income information, including age, sex, ethnicity, citizenship, educational attainment, and income sources. A subset of enrollees' records also include completed fields about their health insurance status at the time of application (see Section E below).

Individuals are matched to the TPL database using their SSNs. TPL is an individual-level database that contains all enrollees in Wisconsin health insurance programs who are covered by a private fully-insured health insurance plan. For research purposes, this database is limited in two ways. First, the database does not contain individuals who are covered by health insurance provided by a self-funded employer (whose policies are not subject to state regulation). Second, these data are available for each month in which an individual is enrolled in BadgerCare Plus, but do not contain information on the health insurance coverage of individuals in months prior to enrollment or following disenrollment. Those enrollees who do not have insurance according to the TPL database either (a) do not have private insurance or (b) have health insurance through a self-funded employer.

To assess whether enrollees may have access to health insurance coverage through a self-funded employer, we connect CARES cases to their employers by linking CARES through SSNs to a database of quarterly earnings records from Wisconsin's unemployment insurance (UI) system. Almost all employers are required to file quarterly wage reports for each employee on the payroll in case of later unemployment claims. The wage reports include the employee's SSN and quarterly wages and the employer's FEIN and industry classification code. Only employers not subject to unemployment insurance laws are exempt from reporting.<sup>5</sup> Further, even if UI were missing some employees (such as independent contractors), it is highly unlikely that these workers would also receive health insurance from a self-funded employer. Of the 433,525 cases in our sample, 286,352 or 66% have a member that also appears in the UI database. That is, 66% of our cases have a member who was employed by a UI reporting firm.

Next, in order to see if a BadgerCare Plus enrollee's employer offers a self-funded plan, we use FEINs (obtained from UI) to link to data from the U.S. Department of Labor (DOL). The DOL maintains data that cover the universe of employers within the United States from 2003-2007 that are self-insured for health, life, and disability and related insurance plans. These data are used to administer ERISA, and are acquired as part of the required reporting of self-insured firms to the Internal Revenue Service. We obtained these data through a Freedom of Information Act request.

The resulting dataset combines information from all of these sources. Means of some of the available fields are listed in Table 4, which presents information at the case level. Most notably, the youngest child in the family is under 5 for nearly half of our sample. Almost the entire sample consists of cases under 150% FPL; as we report elsewhere, much of the new enrollment occurred in previously income-eligible populations. Only a very few households have highest earners who are self-employed, although many appear to be full-time workers. We adjust for full- or part-time status by imputation: we compare a worker's quarterly earnings with what they could expect to earn working full-time (35 hours) at minimum wage; workers below that level were considered part-time.<sup>6</sup>

A minor issue involves the usage of FEINs to link data from different sources. FEINs are issued by the Internal Revenue Service for payroll tax reporting. Although a FEIN is unique to a firm, firms can have more than one FEIN if they have more than one location or operate under different names. For single-unit firms (which have only one establishment), there is a one-to-one relationship between the firm and the FEIN.

However, multi-unit firms can have more than one FEIN, such as chain stores, although each establishment can be associated with only one FEIN. Because the UI system sometimes cross-verifies data with the IRS, we are confident that FEINs used in the DOL and UI data are

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<sup>5</sup> In general, WI employers are subject to UI liability if they pay \$1,500 or more in wages in any calendar quarter or have full or part-time employees working for them in 20 weeks or more during a calendar year. Special rules apply for agriculture, non-profit firms, and employers of domestic service workers.

<sup>6</sup> Previous work found that wage and hour information from CARES to be of low quality relative to UI information. See Wolfe B, Haveman R, Kaplan T, Young Cho Y. SCHIP Expansion and Parental Coverage: An Evaluation of Wisconsin's BadgerCare." *Journal of Health Economics*, 25: 1170-1192,2006.

correctly matched. Additionally, for a small sample of employers, including one retail chain, one company that owned several chains in the same industry, and one major manufacturer, we were able to directly verify that the FEINs that were submitted to UI and DOL were identical and accurately represented who owned the responsibility for the insurance offer.

<b>Table 4. Means of Administrative Data</b>	
	<u>Percent</u>
Male	37.53%
Dane County	5.83%
Milwaukee County	25.81%
Has child <=5	47.49%
Has child > 5 and <13	25.19%
Adult <34	58.60%
Adult 34-54	37.05%
High School Graduate	46.77%
Some College	12.24%
FPL 151-200%	7.47%
FPL 201-300%	3.01%
FPL > 300%	1.00%
Employed (UI match)	66.00%
Of which:	
Goods Industry	15.17%
Self Employed	0.88%
Full Time	49.67%
Small (non-DOL) Firm	84.92%
Sources: WI CARES System, UI System, Department of Labor, and Wisconsin's Employer Verification of Health Insurance System.	
Note: All newly enrolled cases (n=433,525), January 2006-November 2008.	

## **Methods**

The following section outlines our approach to the measurement of the percentage of new enrollees in BadgerCare Plus with private insurance at the time of enrollment. We first discuss our measurement of point estimates, followed by a description of the estimates for predicted probabilities of health insurance. Finally, we consider varying adjustments and refinements to our numbers, contingent upon the appropriate interpretational context.

### ***A. Obtaining Point Estimates***

We employed several methods in order to obtain point estimates of the percentage of BadgerCare Plus enrollees with prior health insurance coverage, using assumptions.

We were first interested in calculating the probability that an individual enrolled in BadgerCare Plus has private, employer-sponsored health insurance (ESI) at the time of enrollment. To calculate this, we determined how many enrollees were covered by a private insurance plan in the TPL database. Among those who were not covered by a plan in TPL, we must estimate who received insurance coverage from a self-funded plan. We will refer to this quantity as  $P(\text{Covered by Self-funded Firm} | \text{enroll})$  or more simply,  $P(\text{Covered by Self-funded Firm})$ . The probability of having ESI from a self-funded plan is given by the probability of having health insurance given that a member of the case is employed at a self-funded firm (from the DOL database) multiplied by the probability of employment at a self-funded firm:

$$(1) \quad P(\text{Covered by Self-funded Firm}) = P(\text{Covered by Self-funded Firm} | \text{Employed at Self-funded Firm}) \times P(\text{Employed at Self-Funded Firm})$$

We explicitly assume that the probability of being covered by a self-funded plan is zero for those enrollees with no family member employed at a self-funded firm. While this is not literally true, because of the availability of retiree health insurance and COBRA, estimates from the CPS suggest that this number is very low.

Our strategy was to estimate equation (1) to get an estimate of the percentage of new enrollees in BadgerCare Plus with ESI through a self-funded firm. We estimated the probabilities that case members were employed and whether they were employed at self-funded firms using the DOL data records. We estimated the probability of having ESI conditionally on being employed at a self-funded firm using two methods.

“Point estimation” involves several modeling steps: We calculated the percentage of BadgerCare Plus enrollees that had ESI from a self-funded firm. We used the administrative data files to determine whether a case had an employed member at a self-funded firm. We then estimated the probability of being offered health insurance using survey data. We predicted these probabilities over each newly enrolled case and took the average predicted probability for each group as the conditional probability.

Figure 1 provides a graphical presentation of our approach.<sup>7</sup>

### ***B. Estimating Health Insurance Coverage From Survey Data***

We use the 2007-2009 March Current Population Survey (CPS) to estimate the predicted probabilities that new BadgerCare Plus enrollees would have ESI. We also use the 2007-2008 Wisconsin Family Health Survey (FHS)<sup>8</sup> to assess the reliability of the CPS, and found similar

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<sup>7</sup> Note on methods: The point estimate is of policy interest but could be sensitive to our modeling assumptions. For this reason, we also calculated upper-bound estimates to validate our findings. Details on the upper-bound estimation are available from the authors.

<sup>8</sup> The FHS is a yearly phone survey of households in Wisconsin that focuses on questions about health status, health services, and insurance. It also contains information on demographics and income. We use a question in the FHS that asks about current health insurance coverage to construct the dependent variable. The 2007 and 2008 FHS data have 5,161 respondents in total. We restrict the sample to

results. The CPS contains information on insurance coverage for all household members. We estimate probit models where the dependent variable is an indicator for employment-based health insurance coverage of the highest-earning worker.

We used the probit models to predict the probabilities of having ESI for each case. Because our predictors are matched with background and employment information in the administrative data, we simply entered the value of the matched variables from administrative data into the predicted probit model and then calculate the probability for the relevant groups of enrolled cases in the administrative data. We then used these average predicted probabilities combined with the probabilities of cases being in each group in equation (1) to come up with the estimates of the probability of having ESI among those who had a family member employed at a self-funded firm.

### *C. Estimates of Crowd-Out*

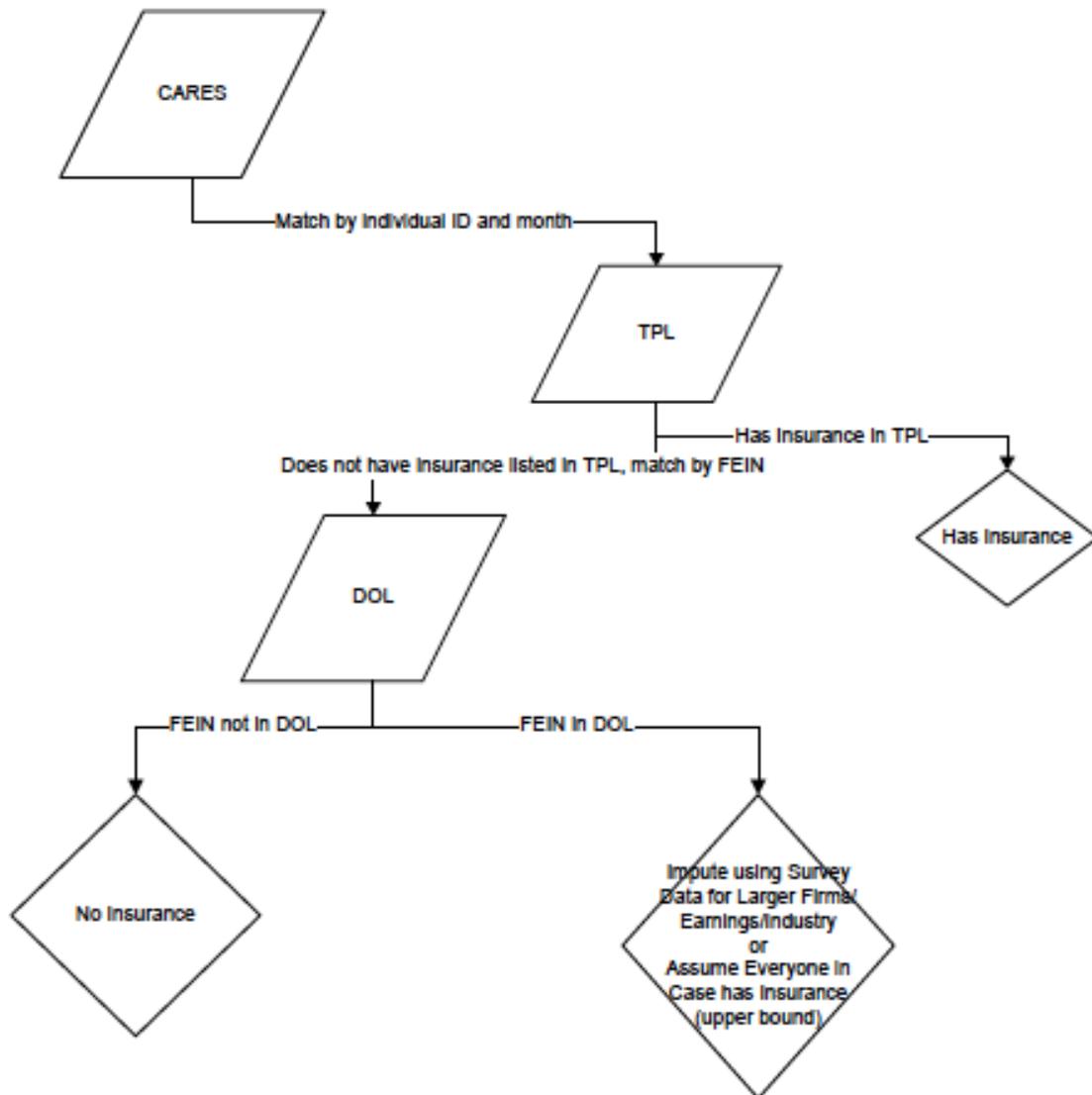
Not every person with private health insurance at the time of enrollment in public programs will drop that coverage. Many BadgerCare Plus enrollees also had private insurance at the time of enrollment and continue to maintain their private coverage. In such cases of dual coverage, BadgerCare Plus is the payer of last resort. Since these individuals did not drop their private insurance coverage in favor of public insurance, we most likely do not want to consider them in our estimates (although they may be making intensive margin adjustments by choosing less comprehensive coverage or dropping dependent coverage).

To determine what percentage of enrollees had private coverage at the time of enrollment but subsequently dropped that coverage, we once again use the TPL data base that collects information on all individuals with a private source of insurance in the state who are also enrolled in BadgerCare Plus. The State collects these data so it can determine in which cases BadgerCare Plus is the payer of last resort. We look forward seven months post enrollment. Those individuals who had coverage at the time of enrollment (month 1), but did not have it in any of the following six months (months 2 through 7) and were still enrolled in BadgerCare Plus were considered as having dropped their private coverage.

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households headed by workers aged 18-65 and that have one or more children, leaving us with 2,016 observations.

**Figure 1.**  
**Method for Estimating the Percentage of Enrollees with Private Insurance**



#### ***D. Calculations of Enrollees Who Recently Lost Jobs and Adjustments for Job Loss***

The longitudinal aspect of the UI data allows observation of job losses and changes among employees. We were able to calculate both the percentage of enrollees who may have enrolled because of a recent job separation of a family member and the percentage of enrollees who dropped coverage after enrollment because of a job separation. Newly enrolled households with access to employer-sponsored insurance prior to enrollment, but who simultaneously lost their jobs, likely should not be counted as having been “crowded-out.” We identified workers who experienced a job loss, defined as going from having a job match in the quarter previous to dropping TPL coverage to having no job match. We then assigned these workers as not having dropped their coverage and calculate a new point estimate. All of our estimates of the percentage of enrollees who dropped private coverage do not include those who lost jobs.

#### ***E. State Policy***

Recall that BadgerCare Plus combines Medicaid and CHIP into a unified program. State policy explicitly allows all otherwise eligible applicants below 150% FPL to enroll in BadgerCare Plus, regardless of insurance status. This policy aligns with federal law, whereby categorically eligible Medicaid populations, given their low incomes, have not been subject to crowd-out tests. BadgerCare Plus applicants above 150% FPL are subject to anti-crowd-out provisions to help target the reform effort towards the uninsured. This variation in treatment, however, may create different enrollment incentives for individuals with incomes greater than 150% FPL and individuals with incomes below 150% FPL. Thus, we consider them separately in our analysis.

### **Results**

#### ***A. Percentage with Private Insurance at the Time of Enrollment***

Overall, for all enrollees, we estimated that in the post-BadgerCare Plus expansion period (April 2008-November 2009), 23.3% of enrollees had private insurance coverage at the time of enrollment. *These results are presented in Table 5.*

We separately considered the “initial” post-expansion period (February and March 2008) because of both the auto-enrollment process and the initial large jump in enrollment that occurred with program launch. The percentage of new enrollees in those two months that had private health insurance at the time of enrollment was substantially higher – we estimated that percentage to be 36.8%.

The percentage of enrollees with private health insurance at the time of enrollment was lower prior to the program expansion (January 2006-January 2008). We estimated this percentage to be 17.1%.

We also stratified these results by poverty level and by whether the county of residence was urban or rural. Higher percentages of enrollees living in families with higher incomes as a percentage of the federal poverty level had access to private insurance at the time of enrollment. Enrollees living in urban, as opposed to rural, counties were slightly more likely to have had access to private insurance.

Because our estimates rely on two different sources – the TPL data for those with coverage through non-self-funded insurance plans and the DOL data and survey data from the CPS for those with coverage through self-funded plans, we separated the sources of the estimates into these two components in Table 6. For example, of the 23.3% of new enrollees between April 2008 and November 2009 that we estimated to have had access to private health insurance, 18.1 percent had access via a non-self-funded plan (TPL), while we estimate 5.1 percent had access through a self-funded plan.

We also calculated these figures separately for children and adults (see Tables 7-10). The rates did not appreciably differ across children and adults. This is perhaps not surprising because the adults in this study are parents (or caretaker relatives), and children tend to have the same sources of private coverage as their parents/caretakers.

### ***B. Percentage with Private Insurance at the Time of Enrollment***

We estimated that overall, only 10.9% of BadgerCare Plus enrollees (between April 2008 and November 2009) dropped private coverage within seven months of enrollment. This percentage was only slightly higher in the initial BadgerCare Plus period – 11.2% – and was substantially lower in the pre-BadgerCare Plus period – 7.0%.

These estimates of the percentage of enrollees who dropped their private coverage are low compared with estimates from the previous literature (see Table 2). As with the estimates of the percentage of enrollees with access to private coverage at the time of enrollment, the estimates of the percentage that dropped private coverage are higher for those individuals in families with higher incomes as a percentage of FPL and are slightly higher for those enrollees who reside in urban counties. Moreover, the estimates are very similar for children and for parents.

<b>Table 5: Estimates of Target Efficiency for All Enrollees (Parents and Children)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured At or Near the Time of Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	17.1%	36.8%	23.3%
<i>By Poverty Level</i>			
< 150	16.5%	33.4%	21.3%
> 150	24.8%	45.2%	32.8%
150-200	23.8%	46.6%	31.7%
200-300	34.6%	42.8%	35.0%
300+	28.5%	41.3%	38.3%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	6.7%	10.5%	10.9%
<i>By Poverty Level</i>			
< 150	6.5%	10.1%	9.0%
> 150	9.2%	11.9%	14.7%
150-200	9.1%	12.5%	14.6%
200-300	9.5%	10.0%	13.9%
300+	9.3%	13.7%	19.8%
<b>Panel C</b>			
<b><i>Number of Enrollees</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	973,883	91,975	326,327
<i>By Poverty Level</i>			
< 150	913,070	64,082	264,904
> 150	60,813	27,893	61,423
150-200	56,035	18,380	45,113
200-300	1,868	7,900	13,459
300+	391	1,613	2,851

<b>Table 6: Sources of Estimates of Target Efficiency for All Enrollees (Parents and Children)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured at or Near Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	17.1%	36.8%	23.3%
<i>By source</i>			
TPL	12.5%	31.9%	18.1%
DOL / CPS	4.7%	4.9%	5.1%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	6.7%	10.5%	10.0%
<i>By source</i>			
TPL	2.1%	5.6%	4.8%
DOL / CPS	4.7%	4.9%	5.1%

<b>Table 7: Estimates of Target Efficiency for All Enrollees (Children)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured At or Near the Time of Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	19.0%	37.1%	23.8%
<i>By Poverty Level</i>			
< 150	18.3%	32.5%	21.4%
> 150	28.3%	45.6%	34.9%
150-200	27.4%	49.1%	35.6%
200-300	35.9%	42.6%	33.0%
300+	30.7%	40.8%	37.8%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	6.2%	9.7%	9.4%
<i>By Poverty Level</i>			
< 150	6.0%	9.1%	8.2%
> 150	8.7%	11.3%	15.0%
150-200	9.0%	12.1%	15.0%
200-300	8.8%	9.9%	13.7%
300+	9.4%	13.9%	20.0%
<b>Panel C</b>			
<b><i>Number of Enrollees</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	610,939	48,242	187,022
<i>By Poverty Level</i>			
< 150	573,581	30,560	152,438
> 150	37,358	17,682	34,584
150-200	34,298	8,594	20,222
200-300	1,419	7,535	11,610
300+	295	1,553	2,752

<b>Table 8: Sources of Estimates of Target Efficiency for All Enrollees (Children)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured at or Near Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	19.0%	37.1%	23.8%
<i>By source</i>			
TPL	14.9%	33.1%	19.1%
DOL / CPS	4.1%	4.0%	4.6%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	6.2%	9.7%	9.4%
<i>By source</i>			
TPL	2.1%	5.7%	4.7%
DOL / CPS	4.1%	4.0%	4.6%

<b>Table 9: Estimates of Target Efficiency for All Enrollees (Adults)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured At or Near the Time of Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	14.0%	36.5%	22.7%
<i>By Poverty Level</i>			
< 150	13.5%	34.2%	21.1%
> 150	19.3%	44.6%	29.9%
150-200	18.2%	44.4%	28.5%
200-300	30.8%	47.7%	47.4%
300+	22.6%	54.4%	37.8%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	7.6%	11.3%	10.8%
<i>By Poverty Level</i>			
< 150	7.3%	11.0%	10.1%
> 150	9.9%	12.9%	14.4%
150-200	9.8%	12.9%	14.3%
200-300	11.9%	11.3%	14.9%
300+	10.1%	7.7%	13.7%
<b>Panel C</b>			
<b><i>Number of Enrollees</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	362,944	43,733	139,305
<i>By Poverty Level</i>			
< 150	339,489	43,733	112,466
> 150	23,455	43,733	26,839
150-200	21,737	9,786	24,891
200-300	449	365	1,849
300+	96	60	99

<b>Table 10: Sources of Estimates of Target Efficiency for All Enrollees (Adults)</b>			
<b>Panel A</b>			
<b><i>What Percentage of Newly Enrolled Individuals Were Privately Insured at or Near Enrollment?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	14.0%	36.5%	22.7%
<i>By source</i>			
TPL	8.4%	30.6%	16.8%
DOL / CPS	5.6%	5.9%	5.8%
<b>Panel B</b>			
<b><i>What Percentage of Newly Enrolled Individuals Dropped Private Insurance Prior to Disenrolling From BC+ (within 7 Months of Enrollment)?</i></b>			
	Jan 06 - Jan 08	Feb 08 - Mar 08	Apr 08 - May 09
All	7.6%	11.3%	10.8%
<i>By source</i>			
TPL	2.0%	5.4%	4.9%
DOL / CPS	5.6%	5.9%	5.8%

### C. Adjustment for Job Loss

As mentioned above, all of our numbers have been adjusted for the possibility that private insurance was dropped not because it was displaced but because the enrollee or a family member of an enrollee lost his or her job. The adjustments affect our estimates by only a small degree.

However, this does not imply that job separation is not an important reason why people enroll in BadgerCare Plus. We estimate that, between April 2008 and May 2009, 6.6% of enrollees had a household head that lost his or her job. We define the household head as the person with the highest level of earnings on the case (see Table 11). This percentage is roughly the same as it was in the pre-BadgerCare Plus period (7.3%).

<b>Table 11: Estimates of Job Separations for All Enrollees</b>			
<i>What Percentage of Newly Enrolled Individuals Had a Family Head who Separated from His or Her Job in the Quarter Preceding Enrollment?</i>			
	Jan 06 – Jan 08	Feb 08 – Mar 08	Apr 08 – May 09
All	7.3%	7.6%	6.6%
<i>By Poverty Level</i>			
< 150	7.4%	8.6%	7.0%
> 150	5.4%	5.3%	4.9%
150-200	5.5%	6.7%	5.9%
200-300	0.9%	2.9%	2.1%
300+	0.5%	2.2%	2.1%

### D. Estimates from Survey Data

To provide context for the CPS analysis, we first compared public insurance counts in the CPS to those from our administrative data. Using the CPS to calculate the number of Wisconsin residents under 65 who had Medicaid at some point during the previous year indicates that there were 592,967 enrollees in 2006; 601,084 in 2007; and 714,573 in 2008. These estimated levels of enrollment from the CPS are higher than what are reported in our administrative data, perhaps because we are not easily able to exclude disabled enrollees from the CPS figures. The 12-month average of enrollment was 504,750 in 2006; 512,500 in 2007; 577,700 in 2008; and 657,800 in 2009. The estimated increase in enrollment according to the CPS also exceeded the increase in enrollment according to administrative data. The CPS suggests an increase of 113,500 people between 2007 and 2008, which is much larger than the difference in the average number of enrollees in 2007 and 2008 from our administrative data, which was 65,200.

The trends in public and private insurance rates for the years 2006-2009 for Wisconsin, Minnesota, the Midwest (excluding Wisconsin), and the U.S. as a whole (excluding Wisconsin) are reported in Figure 2. Before the introduction of BadgerCare Plus, the percentage of children in Wisconsin that were uninsured was lower in Wisconsin (5.2%) than in Minnesota, the rest of the Midwest, or the rest of the U.S. The percentage of children with public insurance in Wisconsin was roughly that in the rest of the Midwest and the rest of the U.S., but was below

that in Minnesota. The percentage of children in private insurance in Wisconsin was roughly that in Minnesota or the rest of the U.S., but was above that in the rest of the U.S. Similarly, Wisconsin initially had a lower rate of uninsured parents/caretakers and a higher rate of publicly insured than in the other states.

The CPS reports that the percentage of children in Wisconsin with public insurance increased by 2.3 percentage points between 2006-2007 and 2008-2009. This increase in Wisconsin was smaller than the increase in the control states. For example, the increase in public coverage among children increased by 7.4 percentage points in Minnesota between 2006-2007 and 2008-2009. The percentage of children with private coverage in Wisconsin fell by 3 percentage points between 2006-2007 and 2008-2009. This decrease was roughly equal to the decline in the U.S. (2.9 percent) and in Minnesota (3.8 percent), but was smaller than the decline in the rest of the Midwest (5.2 percent).

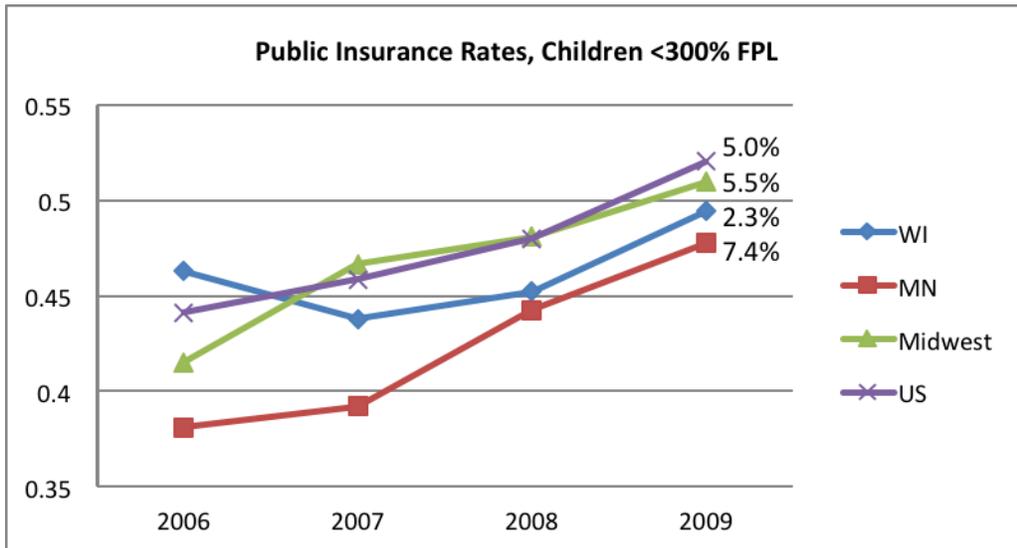
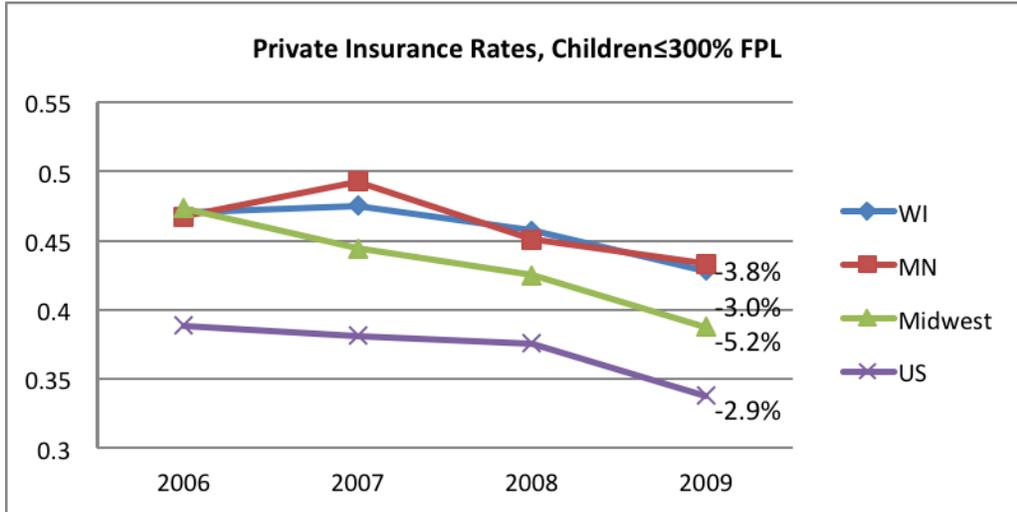
Similarly, the change in the percentage of parents/caretakers with public coverage also increased in Wisconsin between 2006-2007 and 2008-2009, but by a smaller amount than in the control states. The change in the private insurance rate among parents/caretakers fell in Wisconsin by a similar amount as it did in other states. The differences between the changes in Wisconsin and the changes in control groups are generally not statistically significant.

Table 12 reports the estimates from equation (3) and (4) using the CPS. Results for children are in the top panel while results for adults are in the bottom panel. The table reports the coefficient on the interaction term ( $\beta_3$ ) and its standard error for each separate regression with the dependent variables in rows and the control groups in columns.

The results show that, for all children, rates of public coverage increased by less in Wisconsin than in Minnesota, the rest of the Midwest, or the rest of the U.S, controlling for demographic characteristics of households. The standard errors on these estimates are quite large, however. This imprecision leads to estimates of crowd-out that we believe are not credible: Rates of private coverage increased in Wisconsin relative to the control states, except for when compared the whole U.S. The implied crowd-out rates for children range from 167% (when the Midwest is the control) to a crowd-in rate of 100% (when the rest of the U.S is the control).

We also computed crowd-out rates in which we code anyone with both private and public insurance as having public only. This was done in order to compare our figures to previous other studies that have not accounted for such dual public-private coverage. These estimated rates are sometimes positive (suggesting movement toward private coverage) for both children and adults. Bootstrap bias-corrected confidence intervals for the crowd-out ratios are reported in the table in parentheses. The confidence intervals are quite large in all cases, and never exclude zero.

**Figure 2.**  
**Public and Private Insurance Rates for Children**



## Public and Private Insurance Rates, Parents/Caretakers

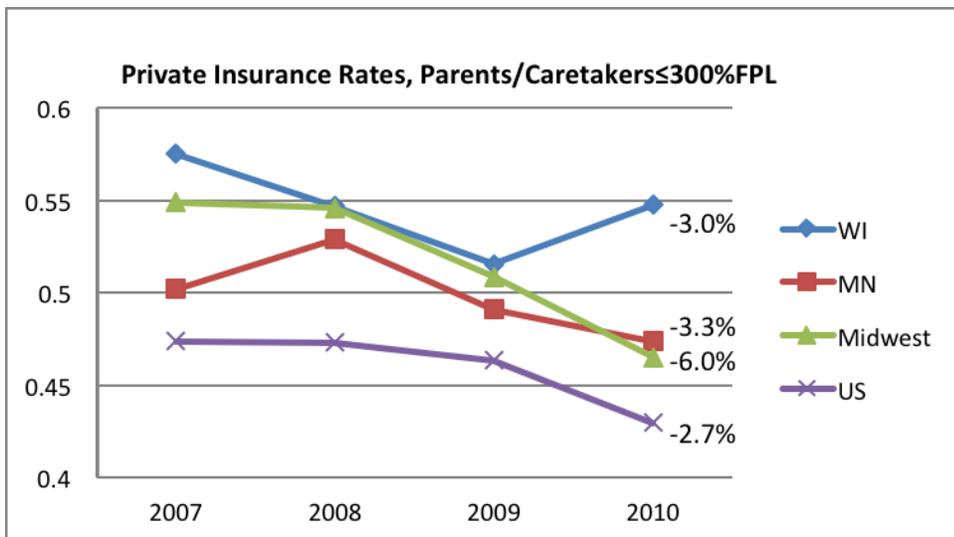
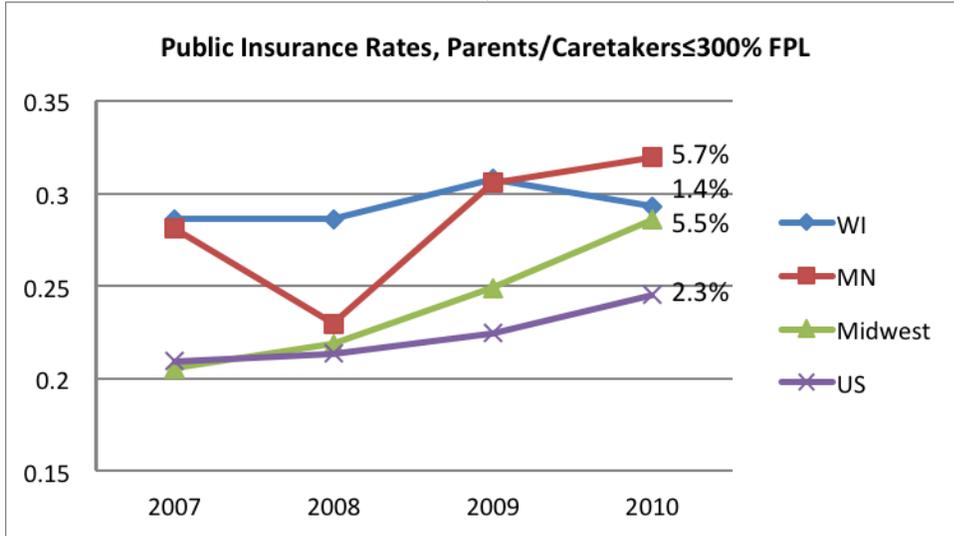


Table 12.  
Difference-in-Difference Estimates of BC+ Introduction on Health Insurance Status and Crowd-Out

<i>Panel A. Children</i>						
	Difference-in-difference			Crowd-Out Ratio		
	MN	MIDW	U.S.	MN	MIDW	U.S.
Public/Both	-0.058 [0.043]	-0.034 [0.033]	-0.034 [0.031]			
Private	0.017 [0.042]	0.022 [0.032]	-0.002 [0.043]	<b>-0.29</b> (-.89, 3.61)	<b>-0.65</b> (-2.09, 2.22)	<b>0.06</b> (-2.38, 9.01)
Private/Both	0.061 [0.043]	0.057 [0.034]	0.034 [0.032]	<b>-1.05</b> (-3.26, .15)	<b>-1.68</b> (-14.11, .15)	<b>-1.00</b> (-7.31, .723)
Uninsured	0.041 [0.026]	0.012 [0.018]	0.032 [0.017]			
Sample Size	5606	19112	149619			
<i>Panel B. Parents/Caretakers</i>						
	Difference-in-difference			Crowd-Out Ratio		
	MN	MIDW	U.S.	MN	MIDW	U.S.
Public/Both	-0.041 [0.038]	-0.037 [0.029]	-0.010 [0.027]			
Private	-0.002 [0.042]	0.025 [0.032]	-0.002 [0.030]	<b>0.05</b> (-2.85, 20.11)	<b>-0.68</b> (-2.76, 2.58)	<b>0.20</b> (-1.52, 206)
Private/Both	0.006 [0.042]	0.031 [0.032]	0.005 [0.030]	<b>-0.15</b> (-2.87, 13.42)	<b>-0.84</b> (-5.76, 1.62)	<b>-0.50</b> (-8.72, 9.69)
Uninsured	0.042 [0.032]	0.013 [0.023]	0.012 [0.021]			
Sample Size	4096	14268	116219			
<p>Table reports the coefficients on the interaction term of Wisconsin and Post (2009-2010) of separate regressions for each dependent variable (rows) and control (columns). Standard errors in brackets. Full regressions available upon request. Sample includes children and parents or caretakers under 65 who are under 300% FPL. DD regressions include controls for family structure and characteristics. Bias-corrected 1000 replicate bootstrap confidence intervals for crowd-out ratios in parentheses.</p>						

The discrepancy between these CPS results and the bounds from our administrative data are likely due to the small sample sizes in the CPS. It may be that we selected inappropriate control groups, especially given the economic downturn that was occurring in conjunction with BadgerCare Plus implementation. If the downturn hit Wisconsin harder than Minnesota, for example, this would confound our results.

It is also possible, however, that survey data would lead to systematically different estimates of crowd-out than would administrative data (because, for example, of the Medicaid undercount). The small sample sizes in the CPS (and resulting large standard errors) prevent us from saying anything definitive about any bias in estimates of crowd-out from survey data -- only that it is unlikely to be precise when considering an expansion in just one state. Overall, we believe that our estimates, using administrative data informed by population numbers from survey data, provide a more accurate measure of crowd-out.

### ***E. Analysis of Supplemental CARES Variables on Health Insurance***

The CARES system – Wisconsin’s eligibility database for BadgerCare Plus and other public assistance programs – contains information about health insurance (both access and coverage). Information about access to insurance is collected via the Employer Health Insurance Verification System. TPL data, initially collected in the claims database, is stored in the “Medical Coverage” screen in CARES. This screen records three measures of insurance coverage information:

- whether someone in the case has major medical insurance,
- whether that insurance is employer provided, whether that employer covers at least 80% of the premium, and
- whether anyone else is covered under the policy.

The information reported in these data fields can come from two sources. It either comes from TPL matches or directly from an applicant/member reporting that they have coverage. If there is medical coverage reported, then the case worker must fill in the fields for whether the coverage is through an employer and whether it is affordable. If there is no information about medical coverage (no TPL match or the applicant/member says that they do not have coverage), the whole “screen” and all the fields remain empty. The fields are generally not completed for applicants with family incomes below 150% FPL, as other insurance is not a factor for determining eligibility at this income level.

Because most BadgerCare Plus applicants have incomes below 150% FPL, the medical coverage fields are generally empty, which reads as missing data for research purposes. We thus did not incorporate these data into our primary analysis of the percentage of BadgerCare Plus applicants with access to health insurance. We do report them here (Table 13) as additional information, but we are not confident in the reliability of this analysis.

## Limitations

The analysis presented here is subject to several limitations. First, we could not identify individuals who dropped their private health insurance coverage several months prior to and in anticipation of enrolling in BadgerCare Plus. If these individuals would have kept their coverage but for the program, their private coverage should be considered as having been displaced. However, due to limitations in the TPL database, we could not observe the private insurance coverage of enrollees in the months prior to enrollment.

We should note that, for the majority of enrollees, we would not anticipate much of this strategic dropping of private coverage in anticipation of enrollment for two reasons. First, as noted above, enrollees with incomes less than 150% of FPL can enroll even if they have private insurance. Thus, these enrollees have no reason to drop private coverage until they are actually enrolled in BadgerCare Plus. Moreover, the vast majority of enrollees have incomes less than 150% FPL. Second, a 12-month look-back period applies for individuals, for whom the anti-crowd-out provisions do apply, further restricting the scope for this type of strategic behavior.

**Table 13.**  
**CARES Medical Coverage Screen**

<b>Does Anyone in the Case Have Major Medical Insurance?</b>	
Yes	13.84%
No	8.56%
Missing	77.60%
<b>Is or was this Medical Coverage provided by an employer?</b>	
Yes	13.80%
No	41.36%
Missing	44.84%
<b>Does the employer pay at least 80% of the premium?</b>	
Yes	2.26%
No	3.08%
Missing	94.66%

\* Report by Case. All cases have at least one person in the case listed as employed in Unemployment Insurance databases in quarter prior to application for BadgerCare Plus.

As well, we could not assess activity in the three-month “look-forward” period -- that is, whether BadgerCare Plus enrollees might have had the opportunity to take-up employer-sponsored coverage after a required waiting period.

Recall as well that, the state does not apply anti-crowd-out policies to enrollees when employer-sponsored insurance is not deemed “affordable” (employer covers at least 80% of the premium.) In our study, we did not stratify by this 80% affordability threshold, as no reliable data exist on the premium paid by employers. The state’s administrative data from the CARES system includes a variable “Does the employer pay at least 80% of the premium?” But in our study

period, the field was missing data for 95% of cases, because it is not asked of many applicants -- for example those with family incomes below 150%. In addition, if the applicant, including those with higher incomes, does not report access to health insurance, the field remains blank and appears as missing data. (Table 13). The TPL database reports only whether an enrollee is covered by an insured plan; it does not include information about the enrollees' share of or cost of the premium.

Our calculations treat a person who was covered by a private "affordable" policy at the time of enrollment in the same manner as a person who was covered by a private "unaffordable" policy at the time of enrollment. As noted in the introduction, we believe this is still a fair measure to answer our research questions, as this study measures what percentage of new enrollees had private coverage and dropped that coverage in favor of BadgerCare Plus. As well, the state, in reporting its own progress toward its policy goal of 98% access to coverage, does not account for whether the coverage meets the 80 percent affordability standard.

As well, we can only observe whether a person is covered by a private insurance plan in the TPL database, not the generosity of that plan. Because of this limitation, we could not observe whether individuals were reducing their private coverage on the intensive margin (that is, choosing less generous plans), even as they did not completely drop it.

Another limitation: this study could not determine the reason for dropped coverage. The observed dropping of insurance coverage by a BadgerCare Plus enrollee may not have been at the enrollees' discretion, as firms continued to limit and drop coverage during the economic down turn. Nor could we determine if an employer drops coverage due to the economic environment or due to the availability of BadgerCare Plus – a perceived incentive for crowd-out of employer-sponsored insurance.

Finally, in assigning the probable insurance status to individuals whose family members work for a self-funded plan, we use only those characteristics of the family that are observable. It is quite likely that families that choose to enroll in BadgerCare Plus are less likely to have an offer of insurance than similar families that do not. On the other hand, our use of TPL measures only those who actually have other coverage and drop it. The State's policies, bar enrollment in BadgerCare Plus for those with an offer of "affordable" employer coverage. Those persons would not appear in TPL if they didn't take-up that offered coverage. In this way, access to ESI would likely be higher than what we report.

## **Conclusion**

This analysis finds that that approximately 11% of individuals who enrolled in BadgerCare Plus between April 2008 and November 2009 period dropped their private health insurance at or near the time of enrollment. Approximately 12% of these enrollees maintained their private insurance and used BadgerCare Plus as the secondary payer.

While 23% overall had private insurance at or near the time of enrollment, this percentage was higher in the first two months of the new program – February 2008 and March 2008 – with 36.8% having access. The percentage of new enrollees in these two months who dropped private coverage was also only 11%.

Our estimates suggest that the percentage of enrollees with private health insurance and the percentage that dropped this insurance in the January 2006-January 2008 period (prior to the program's expansion) was lower than in the periods following the expansion. We estimate that 17% of individuals who enrolled between January 2006 and January 2008 had private insurance and that only 7% dropped this private insurance.

Our estimated percentages of enrollees who initially had private insurance and who subsequently dropped this insurance are roughly similar for child and adult enrollees, are higher for individuals in higher income families, and are slightly higher for individuals residing in urban counties.

These estimates of the percentage of new enrollees who dropped private health insurance in favor of coverage under BadgerCare Plus are very low compared with previous crowd-out estimates, reported elsewhere at 25-50%, associated with Medicaid and CHIP expansions in other states and nationally.

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## Appendix: CPS and FHS Samples and Health Insurance Models

We report summary statistics on our FHS and CPS samples in Table A1. We also use both data sets to estimate probit models of health insurance coverage. The predictors in the probit models include sex, age, geographic location, age of the youngest child in the family, educational level, self-employment status, occupational industry, firm size, earnings, and federal poverty level (FPL). The FHS has fewer available covariates than the CPS. See Table A1 for descriptive statistics on the CPS and FHS samples.

Except for FPL and age of the youngest child, all variables are employment or demographic characteristics of either the highest earner in a family (CPS) or the reference individual (FHS). These variables were selected and constructed to match with the available information in administrative data. The age of the highest earner is coded into 18-34, 35-54, and older than 54 years old (reference). The educational level of the highest earner is coded into less than high school (reference), high school graduation or GED but no college education, and at least one year of college education. The size of the employer is coded into a dichotomous variable, with less than 100 as the reference group. The yearly earnings of the highest earner are coded into less than \$10,000, \$10,000-\$14,999, \$15,000-19,999, \$20,000-\$29,999, and more than \$30,000 (reference). Earnings are inflated to 2009 dollars using the CPI-U. FPL is divided into 150% and less (reference), 151-200%, 201-300%, and greater than 300%.

We use two indicators to identify the residential counties that are more diverse and highly urbanized: living in Dane county (mainly Madison) and living in Milwaukee or Waukesha counties.<sup>9</sup> We create a dichotomous indicator for the goods-producing industries, including agriculture/forestry, mining, construction and manufacturing industries in the major industry code. Age of the youngest child is categorized into being younger than 6, 6-12 (reference), and older than 12. We also control for the survey years.

We use probit models to estimate the percentage of having private insurance among workers. Table A2 shows the marginal effects from the probit models. Since all variables are binary, the table reports the marginal effects of going from 0 to 1 for each. We obtained similar results from the FHS and the CPS. Our results suggest that residential area, earnings, industry, firm size, educational level, and family poverty levels predict the probability of having private insurance well. The workers from smaller firms and workers in non-goods producing industries are less likely to have health insurance. Earning and FPL are positively associated with having health insurance. The workers living in the two largest metropolitan counties in Wisconsin are more likely to have private insurance than those living in other areas. Self-employment is negatively associated with private insurance.

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<sup>9</sup> We first intended to separate urban and rural residential areas. Though CPS contains geographic information sufficient for our purpose, the administrative data only have residential county. We thus created two indicators of urban counties in order to match both data sets. We cannot separate Milwaukee from Waukesha in the CPS data.

Table A1. Descriptive Statistics FHS and CPS Samples

	FHS Mean	CPS Mean
Private Insurance	0.86	0.82
Public Insurance	0.08	0.11
Survey Year 2008	0.52	0.32
Survey Year 2009		0.34
Male	0.37	0.68
Dane County	0.08	0.09
Milwaukee County	0.17	0.26
Youngest Child <5	0.32	0.40
Youngest Child 5-13	0.51	0.26
Highest earner <34		0.26
Highest earner 34-54		0.71
Self-Employed	0.11	0.10
Full Time Worker	0.85	
Firm with 50 or fewer workers	0.38	0.37
FPL 151-200%	0.09	0.06
FPL 200-300%	0.23	0.19
FPL>300%	0.56	0.62
High School Graduate	0.33	0.29
Some College	0.67	0.66
Goods-producing industry		0.31
Highest earner <\$10k		0.02
Highest earner \$10-15k		0.03
Highest earner \$15-20k		0.03
Highest earner \$20-30k		0.12

Notes: Table shows sample means for the populations used for the probit models.

Table A2. Marginal Effects from Probit Models of P(ESI)

	Probit: Marginal Effects	
	FHS	CPS
2007		0.012 [0.02]
2008	0.020 [0.02]	-0.020 [0.046]
Male	0.009 [0.021]	-0.017 [0.02]
Dane County	-0.042 [0.046]	0.069* [0.035]
Milwaukee County	-0.034 [0.033]	0.039* [0.018]
Has child <=5	-0.042* [0.02]	-0.018 [0.019]
Has child > 5 and <13	0.014 [0.022]	-0.023 [0.022]
Adult <34		-0.059 [0.044]
Adult 34-54		-0.015 [0.042]
Earnings <10k		-0.306** [0.062]
Earnings 10-15k		-0.191** [0.045]
Earnings 15-20k		-0.123** [0.037]
Earnings 20-30k		-0.073** [0.024]
Goods Industry		0.076** [0.019]
Self Employed	-0.094** [0.035]	-0.031 [0.026]
Full Time	0.011 [0.02]	
Small Firm	0.094** [0.024]	-0.074** [0.017]
FPL 151-200%	0.102** [0.026]	0.029 [0.029]
FPL 201-300%	0.194** [0.03]	0.084** [0.028]
FPL > 300%	0.280** [0.021]	0.176** [0.028]

High School Graduate	0.126*	0.069*
	[0.063]	[0.03]
Some College	0.203**	0.124**
	[0.062]	[0.031]
Observations	2016	2685

Standard errors in brackets

\*\* p<0.01, \* p<0.05

This table shows the marginal effects from probit models in two survey data sets used to predict the probability of private insurance over the administrative data in the calculation of equation 1.

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