Re-assessing the Effect of the TennCare Disenrollment on Health Insurance Coverage and Employment: Response to DeLeire (2018)

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I. Introduction

This note extends the analysis in Garthwaite, Gross, and Notowidigdo (2014), hereafter "GGN," complementing the detailed and thoughtful analysis of DeLeire (2018). In GGN, we studied the effect of public health insurance coverage on private health insurance coverage and employment-related outcomes. To do so, we exploited a large public health insurance disenrollment. In late 2005, approximately 170,000 Tennessee residents abruptly lost Medicaid coverage. Primarily using the March Supplement to the Current Population Survey (CPS), we concluded that the disenrollment increased labor supply, mostly along the extensive margin. The results suggested that the increase in employment was concentrated among individuals working at least 20 hours a week and receiving private, employer-provided health insurance.

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We focused on the March CPS because it is the dataset labor and health economists turn to first when examining questions at the nexus of employment and health insurance. That said, each source of data has its own advantages and disadvantages. To that end, DeLeire (2018) carries out an investigation of the same outcomes as GGN using the Survey of Income and Program Participation (SIPP) rather than the March CPS. He finds no evidence of increased private health insurance coverage or increased employment. In this note, we examine his analysis and seek to understand why the estimated effects of the TennCare disenrollment seem to differ across datasets.

II. Were Adults with Children Disenrolled Too?

One potential reason why the results might differ is that the SIPP population appears to be different than the March CPS population. In particular, in the SIPP it appears as though many parents were disenrolled, whereas in the March CPS, the disenrolled seem to consist primarily of "childless adults," that is, adults without dependent children in the household. DeLeire cites previously unreported survey data collected by Moreno and Hoag (2001), which provides some suggestive evidence that the TennCare disenrollment may have also affected parents, contrary to the March CPS results, and thus GGN. That survey was fielded in two separate waves in 1998 and 1999, six-to-seven years before the disenrollment.

This survey is a useful discovery, and it may affect the interpretation of GGN's triple-difference results, since that approach assumes that childless adults were more affected by the reform than adults with dependent children. It also suggests that future work using this natural experiment should consider multiple research designs. For example, GGN also report estimates for those 65 and older, with the above-65 population serving as an alternative control group for working-age adults (combining adults with children and childless adults, as DeLeire prefers to do in his analysis).

At the same time, there are reasons to be cautious when judging the triple-difference approach solely through the lens of these survey results. Tello-Trillo (2016) uses data from the National Health Interview Survey to estimate difference-in-difference results for both childless adults and parents in Tennessee. Tello-Trillo finds that the disenrollment led to a precise, large decrease in Medicaid coverage among childless adults, and estimates a small effect for parents that is statistically indistinguishable from zero. As a result, both the March CPS and the NHIS provide support for the conclusion that the disenrollment primarily affected childless adults. Additionally, the triple-difference approach does not require that parents were entirely unaffected, but rather that they were less affected

by the disenrollment than childless adults. That assumption is supported by the survey evidence, the March CPS, the NHIS, and the narrative evidence presented in GGN.

In the remainder of this note, we present new results from an analysis of the Behavioral Risk Factor Surveillance System (BRFSS), which broadly supports the original GGN estimates of the effect of the disenrollment on health insurance coverage, but fails to support the original conclusions regarding employment.

III. Evidence from the BRFSS

GGN present estimates of the effect of the TennCare disenrollment on insurance coverage, both public insurance coverage and private insurance coverage. Those estimates together form an estimate of crowdout: the share of the disenrolled who regained coverage through the private market. The estimates also support the hypothesized mechanism behind the employment results: that some disenrolled Tennessee residents entered the labor market in order to regain health insurance.

We view both the employment results and the insurance-coverage results to be the main empirical findings in GGN. Since DeLeire's results suggest caution in interpreting the GGN employment results, one might naturally be concerned about the crowdout estimates, as well. As a result, we carry out an additional analysis using the Behavioral Risk Factor Surveillance System (BRFSS) and present new results.

We begin by reporting estimates of the effect of the reform on having "any insurance coverage" using the March CPS. These results were not reported in the original GGN paper, but they are useful because they can be compared to estimates from the BRFSS, which captures health insurance coverage overall, but does not ask respondents whether they are covered by a public program or a private plan.[2]

Table 1 presents these results and Figure 1 presents the "any coverage" estimates graphically. The first column in Table 1 reproduces the results from the original GGN paper on public insurance coverage, and the next column repeats this specification on the same sample but using "any insurance coverage"

[2] While the BRFSS data set was used in the original GGN paper, it was not used to validate the March CPS estimates; instead, it was used to report monthly time-series estimates that informed the likely dynamic effects of the disenrollment. Here we construct analogous regression results using the BRFSS data that can be compared directly to the results from the March CPS.

as the outcome. Comparing these two estimates suggests meaningful crowdout, in that public coverage dropped more than any coverage did. These two estimates suggest an implied crowdout estimate similar to what we had reported in the original paper.[3]

The next three columns of Table 1 report results based on an alternative sample definition that does not make any education restrictions. We do so in order to maximize the comparability of the CPS with the BRFSS, since the BRFSS only includes coarse education categories (see Appendix for details). Column 4 presents the "any coverage" estimate from the March CPS and Column 5 presents an analogous estimate from the BRFSS. The results are remarkably similar across the two datasets: -0.033 in the CPS and -0.031 in the BRFSS. The means of the dependent variables are also similar.

The final columns in Table 1 present estimates once we impose a more stringent education restriction, dropping all respondents with Bachelor's degrees or Advanced degrees. We continue to find similar estimates across the March CPS and the BRFSS, reinforcing the conclusions regarding crowdout in the original paper.

An earlier version of DeLeire (2018) found positive effects of the reform on private insurance coverage, consistent with some crowdout. The NBER Working Paper and published paper no longer present evidence of crowdout, which appears to be due to a combination of two changes to the main sample: restricting the sample to responses in the interview month and a shorter follow-up period (August 2016, as compared to July 2017 before). We note that the shorter follow-up period could attenuate the effect of private insurance coverage if it takes some time for individuals to find private insurance coverage following their disenrollment. Such dynamics are reported in GGN using the BRFSS data, and also reported by Tello-Trillo (2016).

Our original conclusions regarding crowdout in GGN are also supported in more recent work on the TennCare disenrollment in which we focus on hospitals (Garthwaite, Gross, and Notowidigdo 2018). In that work, we studied the Tennessee Joint Annual Reports (JAR), a collection of reports filed annually by all Tennessee hospitals to the Tennessee department of health. We compiled suggestive time-series evidence of increases in hospital admissions among the privately insured after the

[3] An alternative crowdout estimate can be constructed by calculating one minus the ratio of the "any coverage" estimate to the public coverage estimate: 1 – 0.036/0.073. This number is similar to the roughly 50-percent crowdout estimate reported in GGN.

disenrollment, in addition to declines in publicly insured visits and increases in uninsured visits. This evidence is also consistent with meaningful crowdout due to the disenrollment.

The BRFSS also includes questions related to employment, so in Table 2 we report employment estimates from the BRFSS data. These employment results have the opposite sign as the March CPS results, and the sample means suggest that the BRFSS measures much lower employment rates than the CPS. This further suggests the March CPS employment results should be interpreted cautiously, though the BRFSS is not as well-designed to measure employment as the March CPS.

IV. Conclusions

We appreciate the effort by DeLeire (2018) to carry out a re-examination of some of the outcomes studied in our original work. We conclude with some reflections on the TennCare natural experiment, more generally. At the time of writing the GGN paper, we emphasized how unusual it was for a state to carry out a large-scale public health insurance disenrollment.[4] However, the U.S. now faces the possibility of many additional large-scale public health insurance disenrollments in the future, depending on the outcome of ongoing efforts to "repeal and replace" the Affordable Care Act.

Against this backdrop, we believe that the TennCare disenrollment will continue to be useful to researchers studying the consequences of removing individuals from Medicaid. The natural experiment in Tennessee has a number of attractive features: a sharp policy change, a clearly-defined treated population, and several natural control groups. Since circulating our paper, a number of other authors have "re-deployed" the natural experiment to study other outcomes. Tello-Trillo (2016) studies health outcomes and healthcare utilization, Argys et al. (2017) study personal financial outcomes, and Ghosh and Simon (2015) study adult hospitalizations. We have also used the natural experiment to study hospital uncompensated care costs, finding that hospitals in Tennessee were financially affected by the reform (Garthwaite et al. 2018).

As an additional analysis, we have also studied the TennCare disenrollment in the County Business Patterns (CBP), an annual series published by the Census Bureau to track employment. Figure 2 plots the logarithm of employment in Tennessee and other Southern states from 2002 through 2007.

[4] We have found only one other large Medicaid disenrollment (in Missouri), and this policy change is also studied along with the Tennessee reform by Garthwaite et al. (2017).

There appears to be an increase in employment in Tennessee after 2005, relative to the increase in other Southern states.[5]

We conclude from DeLeire's work that the March CPS employment estimates in our original GGN paper should be interpreted cautiously. We find an increase in employment in the March CPS, the Local Area Unemployment Statistics data series (which is based partly on the March CPS, as well as the Current Employment Statistics survey and state unemployment insurance systems), and the CBP data. DeLeire finds no increase in employment in the SIPP, and there seems to be no increase in the BRFSS, either. However, the implied crowdout estimates from the March CPS appear to be similar to those found using the BRFSS, and both of these results are different from the SIPP estimates. The potential for meaningful crowdout suggests to us that there was likely at least some increase in employment from the disenrollment, but the confidence intervals in our original work, as well as the range of estimates across different datasets, suggest that the precise magnitude is uncertain.

An important open question raised by DeLeire (2018) is the reliability of the triple-difference research design used in GGN. The survey evidence uncovered by DeLeire suggests that more adults with children were disenrolled than we were led to believe based on our own reading of the literature and our analysis of March CPS data. However, the BRFSS results also suggest that the disenrollment was concentrated among childless adults. As a result, we still recommend continuing to report both difference-in-difference and triple-difference estimates, since we still believe that childless adults were disproportionally affected by the reform (both in absolute terms, as well as proportional to their population).

Overall, despite the differences in results across different datasets (which highlights a general difficulty with measuring some of these outcomes), we still believe the TennCare reform is a useful natural experiment for future work. We hope it will continue to be useful for learning about the consequences of a large-scale Medicaid disenrollment.

[5] We run a simple, difference-in-difference regression with 100 times the logarithm of employment as the outcome of interest, years 2002 through 2007, and all Southern states in the sample, $N = 96$. The post-2005 Tennessee difference-in-difference point estimate is 1.2 with a p-value of 0.081.

References

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Appendix

This section describes the efforts made to make the BRFSS as similar to the March CPS sample as possible. We begin with the BRFSS data from years 2000–2007, and we process the data as follows.

Childless Adults. For 2001–2007, CHILDREN reports the responses to: "How many children less than 18 years of age live in your household?" If the answer is "none" then we classify that person as childless. In 2000, CHILDREN is not reported, instead there are three questions which ask: "How many children less than 4 years of age live in your household?"; "How many children between ages 5 and 12 years of age live in your household?"; and "How many children between ages 13 and 17 years of age live in your household?" Thus, for the year 2000, if the answer to any of those questions is affirmative, then we label the household as having a child, otherwise the household is childless.

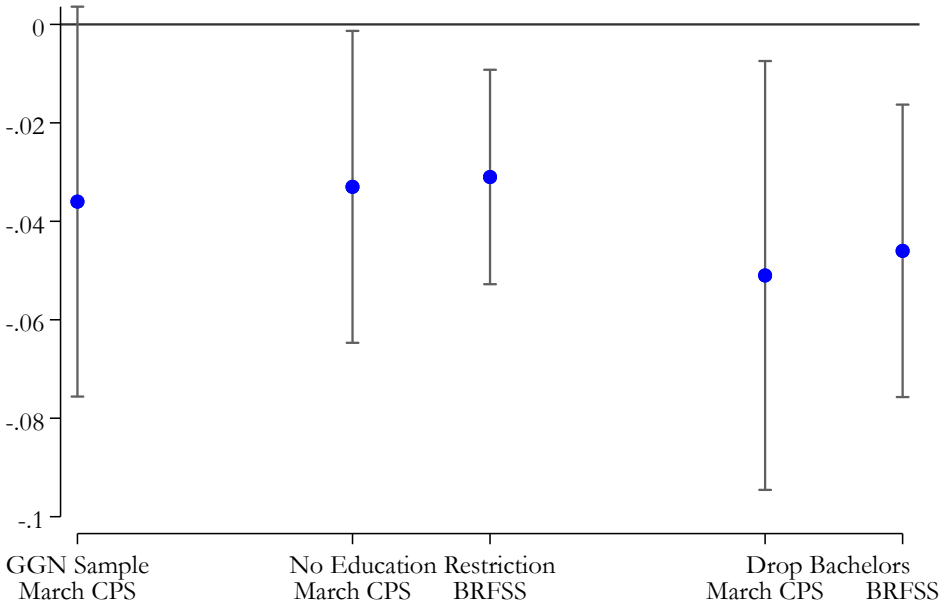
Employment. To measure employment we use the variable EMPLOY, which is the same in every year and allows us to exclude those out of work and/or who report being a homemaker, a student, retired, or unable to work.

Education. We use the variable EDUCA from BRFSS, which asks: "What is the highest grade or year of school you have completed?" The levels are as follows: 1. Never attended school or only kindergarten, 2. Grades 1 through 8 (Elementary), 3. Grades 9 through 11 (Some high school), 4. Grade 12 or GED (High school graduate), 5. College 1 to 3 years (Some college or technical school), 6. College 4 years or more (College graduate), 9. Refused. When we excluded "bachelors and advanced" in creating an alternative sample, we exclude those with EDUCA greater than 5.

Has Coverage. We use the variable HLTHPLAN from BRFSS, which asks: "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" Answers are Yes, No, Don't Know, or Refused. This is less detailed than the health insurance variables from the CPS, which allow us to observe whether the respondent has public or private health insurance.

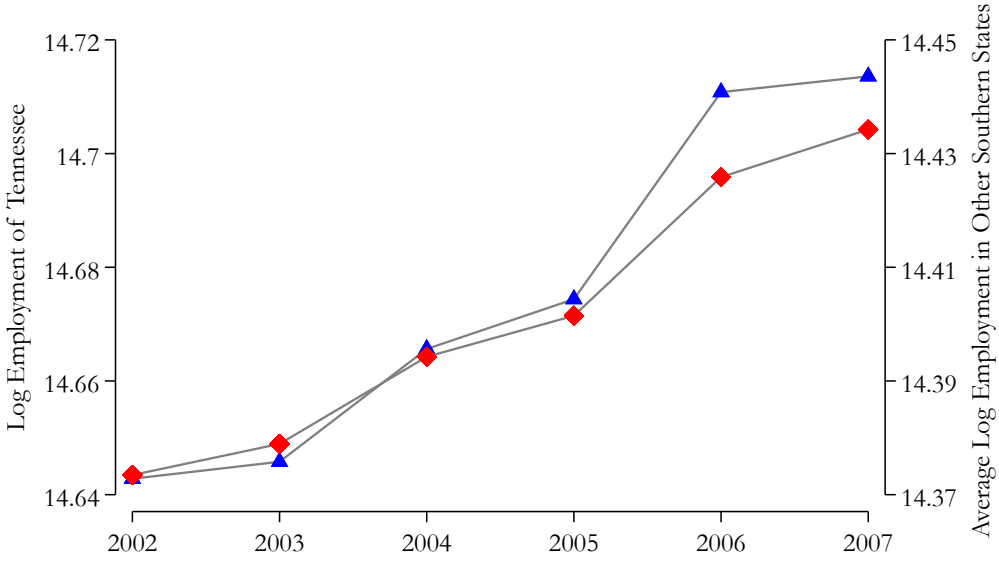
Weights. We use _FINALWT from BRFSS to create weights in the sample and use these weights when collapsing data to get "cell means" by state-year-childless-status.

Figure 1. Comparison of Point Estimates in Table 1



This figure presents the estimated effect of the TennCare disenrollment on survey respondents reporting that they have any health insurance coverage.

Figure 2. Employment Estimates Based on County Business Patterns



This figure presents the estimated log-employment rates based on data from the County Business Patterns.

Table 1. The Effect of the TennCare Disenrollment on Insurance Coverage
Dependent Variable: The share of respondents reporting the given outcome

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	GGN Sample Restrictions		No Education Restrictions			Drop Bachelors and Advanced Degrees		
Dataset:	March CPS	March CPS	March CPS	March CPS	BRFSS	March CPS	March CPS	BRFSS
Outcome:	Has Public Health Ins.	Has Any Health Ins.	Has Public Health Ins.	Has Any Health Ins.	Has Any Health Ins.	Has Public Health Ins.	Has Any Health Ins.	Has Any Health Ins.
Tennessee × Post 2005 × No Children	- 0.073	- 0.036	- 0.071	- 0.033	- 0.031	- 0.095	- 0.051	- 0.046
	(0.017)	(0.020)	(0.016)	(0.016)	(0.011)	(0.017)	(0.022)	(0.015)
	[0.001]	[0.089]	[0.000]	[0.064]	[0.010]	[0.000]	[0.031]	[0.008]
R^2	0.952	0.948	0.945	0.951	0.973	0.954	0.947	0.959
Mean of dep. variable	0.139	0.796	0.132	0.809	0.813	0.158	0.765	0.762

The sample includes the 17 southern states between 2000 through 2007. For both panels, $N = 272$; the sample consists of means for each state, year, and childless status; state fixed effects, year fixed effects, childless fixed effects, and fixed effects for all possible pairwise interactions are included but not shown. The standard errors in parentheses are modified block bootstrap standard errors that are computed using the following two-stage re-sampling proceudre: (1) states are drawn with replacement and (2) individuals are drawn with replacement within states (resampling independently for state clusters chosen more than once). These standard errors are robust to autocorrelation between observations from the same state and explicitly account for sampling error in the state-by-year means (or state-by-year-by-childless status means). The associated p-values in brackets are based on two-tailed t-test with 17 degrees of freedom.

Table 2. The Effect of the TennCare Disenrollment on Employment
Dependent Variable: The share of respondents reporting being employed

	(1)	(2)	(3)	(4)	(5)
	GGN Sample Restrictions	No Education Restrictions		Drop Bachelors and Advanced Degrees	
Dataset:	March CPS	March CPS	BRFSS	March CPS	BRFSS
Tennessee × Post 2005 × No Children	0.046	0.041	- 0.026	0.056	- 0.018
	(0.020)	(0.020)	(0.015)	(0.025)	(0.018)
	[0.032]	[0.067]	[0.114]	[0.043]	[0.314]
R^2	0.941	0.945	0.962	0.930	0.951
Mean of dep. variable	0.705	0.717	0.632	0.682	0.596

The sample includes the 17 southern states between 2000 through 2007. For both panels, $N = 272$; the sample consists of means for each state, year, and childless status; state fixed effects, year fixed effects, childless fixed effects, and fixed effects for all possible pairwise interactions are included but not shown. The standard errors in parentheses are modified block bootstrap standard errors that are computed using the following two-stage re-sampling proceudre: (1) states are drawn with replacement and (2) individuals are drawn with replacement within states (resampling independently for state clusters chosen more than once). These standard errors are robust to autocorrelation between observations from the same state and explicitly account for sampling error in the state-by-year means (or state-by-year-by-childless status means). The associated p-values in brackets are based on two-tailed t-test with 17 degrees of freedom.