

**SUPPLEMENTARY APPENIDX**

**Medicaid Benefit Generosity and Labor Market Outcomes: Evidence from Medicaid Adult**

**Vision Benefits**

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Appendix Table 1 reports descriptive characteristics by Medicaid status. A discussion of these results is provided in the main text.

Appendix Table 2 provides coefficient estimates for key explanatory variables included in our regression analysis. These results correspond with the triple difference analysis shown in Table 4 in the main paper. These estimates suggest that younger age, Hispanic ethnicity, unmarried status, male sex, higher educational attainment, and US citizenship are associated with a higher likelihood of employment. Among the employed, younger age, Hispanic ethnicity, married status, male sex, and having less education are associated with greater hours worked. Older age, married status, male sex, higher educational attainment, and US citizenship are associated with higher hourly wages and a higher mean log occupation wage.

Appendix Table 3 provides results by age and marital status and extends the subgroup analysis shown in Table 4 in the main paper. The results of these tables are described in the main text.

Appendix Tables 4 and 5 presents the results from occupation specific triple difference models of intensive margin effects and occupation switching. Appendix Table 6 presents results for the commute time variables observed in the American Community Survey. Results and methods for all three tables are described in the main text.

Appendix Table 7 presents an additional set of specification and robustness checks. The first two rows describe results from our main model when using alternative CPS weights produced by the State Health Access Data Assistance Center and distributed by IPUMS-CPS (Zeigenfuss & Davern, 2009). These alternative weights correct for the fact that there are sudden jumps in population counts when the Census Bureau switches over to a new Decennial population base. They also correct for imputation errors by excluding full-supplement

imputations and re-weighting the remaining sample back to population controls. Full supplement imputations occur when a monthly CPS respondent refuses to participate in the ASEC and their entire supplement response is imputed. We come to the same conclusions when using these alternative weights or when excluding weights altogether.

Appendix Table 7 also presents results from our preferred model when we only include states that adopted a benefit change. Identification in this model comes only from treatment timing. Results from that model are similar to results presented in the main text. We also show that we come to similar conclusions when replacing the lagged vision indicator in our main model with a concurrent indicator. Though estimates are somewhat attenuated.

The bottom of Appendix Table 7 presents the results of our parametric test of differential pre-existing trends. As described in the main text, this test is complicated by the fact that a single state may have multiple vision benefit changes over the study period. To capture the largest number of states that ultimately changed their vision coverage policies before any change, we restricted our analysis period to 2001-2007 (CPS years 2002-2008). Eight states changed their coverage policies for the first time during or after 2008, including: California, Idaho, Michigan, Nevada, New Mexico, North Carolina, Oregon, and Washington.<sup>1</sup> States that changed their coverage policies prior to 2008 were excluded from the sample for this analysis. We estimated the following regression:

$$Y_{ist} = \beta_1 \text{Changer}_s \times \text{Medicaid}_{it} \times \text{year}_t + \beta_2 X_{ist} + \tau_t + \gamma_s + \tau_t \times \text{Medicaid}_{it} + \gamma_s \times \text{Medicaid}_{it} + \tau_t \times \gamma_s + \varepsilon_{ist}$$

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<sup>1</sup> Three of these states changed their policies in 2011, and therefore do not contribute to identification in our DDD analysis that uses lagged vision coverage policies. We repeated the same analysis excluding these three states (ID, NC, and WA) with very similar results. We chose to include all eight states since the larger sample size may increase the chance of detecting significant differences in outcome trends.

Where  $\text{Changer}_s$  is an indicator equal to one for the eight states that eventually changed their vision coverage policies during our study period and zero otherwise,  $\text{year}_t$  is a linear yearly trend, and all other variables are as defined in the main text. The coefficient estimate on the interaction between being a changer state, Medicaid status, and the linear yearly trend is of interest. We also estimated analogous models with no within-state control group (i.e., Medicaid beneficiaries only).

Appendix Table 7 presents the results of this analysis, both for the Medicaid sample only and including the within-state control group. We did not detect a significant difference in trends for most of the outcomes we studied, with the exception of the log hourly wage for which trends differed at the five percent level regardless of whether we included the within-state control group. Taken together, we do not find strong evidence that our identifying assumption is violated in either the parametric tests presented here or in the event study models presented in the main paper.

References

Ziegenfuss, J.Y., Davern, M.E., 2011. Twenty years of coverage: an enhanced current population survey – 1989-2008. *Health Services Research* 46(1), 199-209.

**Appendix Table 1:** Weighted sample characteristics, CPS 2002-2013

<b>Characteristic</b>	<b>Sample</b>		
	<b>All</b>	<b>Medicaid</b>	<b>Control group</b>
Age	38.92 (0.14)	37.48 (0.24)	39.17*** (0.17)
White, non-Hispanic	48.90 (4.41)	44.00 (4.77)	49.73** (4.44)
Black, non-Hispanic	16.96 (2.13)	21.81 (2.74)	16.14*** (2.07)
Hispanic	27.02 (5.45)	26.31 (6.31)	27.14 (5.42)
Asian/other	7.12 (0.90)	7.87 (0.94)	6.99 (0.90)
Married	48.16 (1.27)	46.53 (2.35)	48.43 (1.21)
Male	45.01 (0.40)	32.35 (0.81)	47.14*** (0.46)
Less than high school degree	25.38 (2.01)	32.01 (2.55)	24.26*** (2.12)
High school degree	36.49 (1.58)	37.64 (1.84)	36.30** (1.55)
Some college or more education	38.13 (0.93)	30.35 (0.99)	39.44*** (1.03)
US citizen	79.76 (3.38)	82.65 (4.50)	79.28* (3.24)
Medicaid enrollee	14.39 (1.37)	100.00	0.00
Resides in state with Medicaid adult vision coverage	65.48 (6.37)	67.10 (6.78)	65.21 (6.43)

Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. The sample includes 48,020 adults who were on Medicaid at some point during the past calendar year and 267,734 low-income adults who were not on Medicaid in the past year. All estimates are expressed as percentages, except for age which is expressed in years. Sampling weights are used to produce nationally-representative estimates. Standard errors are in parentheses and are clustered by state. T-tests were used to test the difference in mean characteristics between

Medicaid beneficiaries and the control group. Significance stars indicate a significant difference compared with Medicaid beneficiaries. \*  $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Appendix Table 2.** Coefficient Estimates for Key Explanatory Variables, Triple Difference Specification, CPS 2002-2013

	Outcome					
	Full sample		Employed last year			
Explanatory variable	Any work	Usual hours (log)	Usual hours (log)	Full time	Hourly wage (log)	Occ. wage
Medicaid x vision benefits	1.44 (1.76)	7.82 (5.46)	5.90*** (1.36)	5.63*** (1.07)	-1.06 (1.95)	2.27*** (0.59)
Age	-0.51*** (0.39)	-1.82*** (0.14)	-0.05*** (0.01)	0.00 (0.01)	0.16*** (0.02)	0.08*** (0.01)
Black, non-Hispanic	0.84 (0.88)	5.14 (3.12)	4.01*** (0.35)	5.55*** (0.44)	0.05 (0.59)	-6.95*** (0.37)
Hispanic	5.65*** (0.56)	23.16*** (2.17)	4.76*** (0.54)	7.03*** (0.80)	-0.36 (0.88)	-5.98*** (0.51)
Other race, non-Hispanic	-3.76*** (0.64)	-11.70*** (2.29)	2.51*** (0.73)	2.30*** (0.74)	-0.60 (0.88)	-3.25*** (0.94)
Married	-2.79*** (0.58)	-7.33*** (2.19)	2.64*** (0.51)	3.73*** (0.48)	11.80*** (0.41)	4.95*** (0.30)
Male	13.03*** (1.54)	55.34*** (5.50)	13.68*** (0.51)	14.13*** (0.40)	8.17*** (0.50)	14.53*** (0.34)
Less than high school diploma	-4.93*** (0.88)	-14.75*** (3.34)	3.35*** (0.73)	4.24*** (0.72)	-14.71*** (0.52)	-19.78*** (0.45)
High school diploma or GED	-0.32 (0.48)	2.79* (1.60)	5.59*** (0.39)	6.29*** (0.39)	-8.75*** (0.35)	-14.59*** (0.36)
US citizen	1.44** (0.69)	4.69* (2.52)	0.14 (0.31)	0.04 (0.35)	7.12*** (0.93)	7.11*** (0.50)

Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. The sample includes 48,020 adults who were on Medicaid at some point during the past year and 267,734 low-income adults not on Medicaid in the past year. All regression results were estimated using linear probability models or linear regression of logged outcomes that controlled for age, race/ethnicity, sex, Medicaid status, marital status, education, citizenship status, state and year fixed effects as well as interactions between Medicaid status and state, Medicaid status and year, and state and year. The coefficient estimates for state and year fixed effects and interactions between Medicaid status and state, Medicaid status and year, and state and year are omitted for brevity. Survey weights were used to produce nationally representative estimates and errors were clustered at the state level. Estimates for binary variables (worked at least one week last year, usually worked full time, usually worked part time) represent percentage point effects. Estimates for logged variables are in terms of log points. The "Mean log occupation wage" represents the mean of the log wage for the full non-elderly adult CPS sample by occupation category (from CPS variable occ1990) excluding farming/fishing occupations and any categories with fewer than 100 observations. Standard errors are shown below estimates in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**Appendix Table 3.** Triple Difference Results by Age and Marital Status, CPS 2002-2013

	<b>Under age 45</b>	<b>At least age 45</b>	<b>p-value for difference</b>	<b>Married</b>	<b>Unmarried</b>	<b>p-value for difference</b>
<b>Full sample</b>						
Worked at least one week last year	1.44 (1.95)	1.45 (2.26)	0.99	-0.81 (1.91)	3.33 (2.26)	0.02
Usual hours worked last year (log)	7.42 (6.09)	8.50 (7.48)	0.88	0.70 (6.27)	13.76* (7.25)	0.04
<b>Employed last year</b>						
Usual hours worked last year (log)	4.75*** (1.54)	8.57*** (2.70)	0.2	6.51*** (1.28)	5.00*** (1.75)	0.41
Usually worked full time last year (vs. part time)	5.33*** (1.73)	5.52*** (1.76)	0.95	6.38*** (0.79)	4.01* (2.25)	0.39
Hourly wage last year (log)	-1.08 (2.08)	-0.43 (2.56)	0.82	-3.84** (1.84)	3.40 (3.92)	0.13
Mean log occupation wage	2.89** (1.15)	0.70 (1.42)	0.37	3.98*** (1.11)	1.45 (1.20)	0.17
Sample Size	216,584	99,170		163,028	152,726	

Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. The sample includes 48,020 adults who were on Medicaid at some point during the past year and 267,734 low-income adults not on Medicaid in the past year. All regression results were estimated using linear models that controlled for demographic characteristics, state and year fixed effects, and interactions between Medicaid status and state, Medicaid status and year, and state and year. Survey weights were used to produce nationally representative estimates and errors were clustered at the state level. The reported coefficient estimates are for the interaction between the vision coverage indicator and Medicaid status. Standard errors are shown in parentheses. Estimates for binary variables represent percentage point effects. Estimates for logged variables are in terms log points. All estimates are scaled by 100. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. See text for a description of outcome variables and model covariates.

**Appendix Table 4.** Triple Difference Results within Major Occupation Categories, Full Time vs. Part Time Work, CPS 2002-2013

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<b>Occupational category</b>	
Managerial and professional specialty occupations	2.95 (8.10)
Technical, sales, and administrative support	7.56** (3.04)
Service	3.25 (2.60)
Precision production, craft, and repair	0.27 (5.39)
Operators, fabricators, and laborers	11.01*** (2.62)
Drivers	9.60 (7.18)
Any transportation	9.89 (6.48)

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Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. Estimates reported in the table represent the coefficient for the interaction between the vision coverage indicator and Medicaid status where the outcome is full time vs. part time work among employed sample individuals in each indicated occupation category. Standard errors are shown below estimates in parentheses. All regression results were estimated using linear models that controlled for demographic characteristics, state and year fixed effects, and interactions between Medicaid status and state, Medicaid status and year, and state and year. Survey weights were used to produce nationally representative estimates and errors were clustered at the state level. Estimates for binary variables represent percentage point effects. Estimates for logged variables are in terms log points. All estimates are scaled by 100. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. See text for a description of outcome variables and model covariates.

**Appendix Table 5.** Triple Difference Estimates of the Effect of Vision Coverage on Occupational Category Switching, CPS 2002-2013

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<b>Occupational category</b>	
Managerial and professional specialty occupations	1.01* (0.52)
Technical, sales, and admin support	0.41 (1.09)
Service	-1.53 (1.25)
Precision production, craft, and repair	-0.06 (0.62)
Operators, fabricators, and laborers	-1.34* (0.73)
Drivers	0.59 (0.42)
Any transportation	0.58 (0.45)

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Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. The sample includes 48,020 adults who were on Medicaid at some point during the past year and 267,734 low-income adults not on Medicaid in the past year. Outcomes are binary indicators for each indicated occupational category. Estimates reported in the table represent the coefficient for the interaction between the vision coverage indicator and Medicaid status. Standard errors are shown below estimates in parentheses. All regression results were estimated using linear models that controlled for demographic characteristics, state and year fixed effects, and interactions between Medicaid status and state, Medicaid status and year, and state and year. Survey weights were used to produce nationally representative estimates and errors were clustered at the state level. Estimates for binary variables represent percentage point effects. Estimates for logged variables are in terms log points. All estimates are scaled by 100. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. See text for a description of outcome variables and model covariates.

**Appendix Table 6.** Triple Difference Estimates of the Effect of Vision Coverage on Transportation and Commuting Variables, ACS 2008-2013

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<b>Outcome</b>	
Used car or motorcycle for commute past week	1.43*** (0.39)
Commute time (log)	0.51 (0.98)
Departs after 4:00pm	0.43 (0.28)
Departs before 5:00am	0.15 (0.32)
Departs either after 4:00pm or before 5:00am	0.58 (0.37)

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Source: 2008-2013 American Community Survey (ACS). The sample consists of 1,300,492 observations, including 190,179 Medicaid enrollees and 1,110,313 low-income adults who were not enrolled in Medicaid. Estimates come from an analogous triple-difference model as described by Equation 2. The car/motorcycle variable is a dummy variable indicating if a car/motorcycle was usually used versus walking, public transportation, bicycle, or other mode of transport. Commute times are measured in log minutes. The depart time outcomes suggest that at least part of the commute (in at least part of the year) was taken at night.

**Appendix Table 7.** Additional Specification checks, CPS 2002-2013

	Outcomes					
	Full Sample		Workers			
	Any Work	Usual Hours (log)	Usual Hours (log)	Full-Time	Wage (log)	Occ. Index
Alternative sample weights	0.67 (1.89)	5.23 (5.90)	5.83*** (1.47)	5.59*** (1.22)	-1.27 (2.31)	2.49*** (0.63)
No sample weights	0.81 (1.45)	5.70 (4.78)	5.71*** (1.08)	5.42*** (0.99)	-1.89 (1.84)	1.94** (0.74)
Changer states only	0.27 (2.38)	3.77 (7.46)	5.71*** (1.74)	5.18*** (1.28)	0.25 (2.09)	2.62*** (0.66)
Concurrent vision coverage indicator	0.78 (1.65)	4.26 (5.11)	3.66** (1.56)	3.27** (1.26)	-1.65 (1.71)	0.60 (0.94)
<b>Test for difference in outcome trends before policy changes</b>						
Outcome trends (Medicaid only)	-0.74 (0.52)	-2.55 (1.91)	0.03 (0.51)	0.26 (0.70)	1.71** (0.78)	-0.24 (0.40)
Outcome trends (Full sample)	-0.81 (0.60)	-2.62 (2.21)	0.31 (0.56)	0.79 (0.85)	1.52*** (0.55)	-0.26 (0.36)

Source: 2002-2013 Current Population Survey-Annual Social and Economic Supplement. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Models, outcomes, and covariates are described in the text.