THE OREGON HEALTH INSURANCE EXPERIMENT: EVIDENCE ON IMPACT ON LABOR FORCE PARTICIPATION, BENEFIT RECEIPT AND INCOME FROM ADMINISTRATIVE DATA

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Analysis Plan

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Introduction

In 2008, the state of Oregon ran a lottery to extend the ability to apply for Medicaid to a subset of low-income uninsured adults. About 90,000 individuals signed up for the lottery in January and February of 2008, and about 30,000 were ultimately selected. This lottery provides the opportunity to study the effects of Medicaid using a randomized control design. The Oregon Medicaid program and the lottery design have been described in more detail elsewhere, as have some of its effects in the first year (Finkelstein et al. 2012).

This document serves as a record of our ex ante planned analysis on the effect of health insurance on (1) labor force participation, (2) receipt of disability and other benefits and (3) total income, using administrative data on outcomes from the Social Security Administration. By pre-specifying the analysis comparing outcomes for treatments (those selected by the lottery) and controls (those not selected), we hope to minimize issues of data mining and specification searching. We use the control distributions for all the outcomes and perform treatment-control comparisons to explore the validity of our analysis (i.e. balance of pre-lottery outcomes and the uptake of insurance), but have not examined the treatment data for any of the outcomes we propose to analyze. This plan was constructed after viewing the findings from a mail survey and administrative data collected approximately one year after the lottery (Finkelstein et al. 2012) and in-person interview data collected approximately two years after the lottery (Baicker et al.). The methods proposed here follow those undertaken in those analyses very closely; the outcome measures, however, are new.

Data and Methods

Matching to Social Security Administration Data

Our target study population was the 74,922 individuals who signed up for the lottery that formed our previous analytical sample (see Finkelstein et al., 2012).

We probabilistically matched individuals on the lottery list to their records in Social Security Administration (SSA) data based on the first name, last name and date of birth they provided at the time of lottery sign up (January and February 2008). These variables were used to match our sample to the SSA masterfile linking names and date of birth with Social Security Number as of the end of 2007 (i.e. right at the time of lottery signup and prior to any lottery selection). Individuals could then be matched based on SSN to SSA data on earnings and benefits.

As shown in Table 1, 84.9% of the Oregon Health Study (OHS) analysis sample (controls only) was matched to a unique Social Security Number. The match rate is balanced between treatments and controls (see Table 1). The 63,238 matched individuals form our study sample for all the analyses in this document. All subsequent analyses refer to these matched individuals.

On all observable dimensions, the treatment and controls whom we matched to SSA data have similar characteristics. This is shown in Table 2. In Panel A we examine the balance between matched treatment and controls on "lottery list" demographic characteristics reported by the individuals at the time of lottery sign up (therefore measured pre-randomization). In Panel B, we look at the balance in 2007 (i.e. pre lottery) between matched treatment and controls on all of the outcome variables that we will subsequently analyze. We report F-statistics (and p values) separately for each panel, and pooled across all the variables.

The treatment and control samples appear balanced on all these characteristics. The overall F-stat for differences in all the Panel A lottery list demographics has a p-value of 0.17; for the pre-randomization outcomes in Panel B it is 0.32. The overall F-stat across all the variables in panel A and B has a p-value of 0.18.

SSA data on labor force participation, income, and benefits

Our primary data on outcomes come from the Social Security Administration (SSA). The SSA data contain individual-level data on annual wage earnings, annual self-employment earnings, annual SSI benefits, and annual SSDI benefits from 2006-2009. For what they can measure, these data are excellent; they provide accurate information for a near-universal sample. They have been used in other recent studies of employment, earnings and benefit receipt (see e.g. (Song and Manchester 2007, von Wachter, Song and Manchester 2011). Their limitations lie primarily in what we do not observe, in particular hours of work, earnings at a higher frequency than annual, and the ability to construct household-level measures by linking across families.

Other Data

Insurance: We use state administrative records on the complete Medicaid enrollment history of lottery list participants from prior to the lottery through the end of 2009; these data were previously described by Finkelstein et al. (2012). We use these data to generate our primary measure of the first stage outcome (i.e. insurance coverage). We define our primary first stage variable as whether one was ever covered by OHP Standard or OHP Plus from March 10 2008 through the end of 2009.

Lottery list variables: We use demographic information reported by individuals at the time of sign up and described in Finkelstein et al. (2012).

TANF/SNAP Data: We also use administrative data on receipt of Temporary Assistance for Needing Families (TANF) and the Supplemental Nutrition Assistance Program (more commonly known as food stamps). This data was obtained from Oregon's Department of Human Services' Children, Adults and Families Division (CAF). We previously looked at the impact of the lottery on TANF and food stamps, and found little effect (Finkelstein et al, 2012). They are included in this paper for the purpose of generating a more complete definition of income and benefits.

Study Period

All of our analyses of income and benefits focus on annual outcome variables in the 2009 calendar year. This is because (1) most of the SSA data are reported annually, and (2) 2009 is the only full post-treatment year for which we can isolate the effect of insurance on finance outcomes. The lottery was conducted between March and October 2008, therefore 2008 is a year of partial treatment. In 2010, all of the controls in our study were gradually selected to be eligible to apply for OHP in a second round of lottery (please see appendix for details). In the appendix, we also show analyses of income and benefits using 2008 outcomes and combined outcomes from 2008 and 2009; it is possible these will yield interesting findings and/or more power.

We define our first stage measure of insurance coverage begin on March 10, 2008 (the first lottery draw date) and to end on December 31, 2009. This 21-month observation period

represents, on average, 18.6 months (standard deviation = 1.96 months) after individuals were notified of their selection in the lottery.

Statistical Analysis

We follow the statistical framework laid out by Finkelstein et al. (2012); more detail and discussion is provided there.

Our statistical approach starts with an intent-to-treat (ITT) model, which compares the outcomes of individuals who were selected to win the lottery (lottery treatments) and those who were not selected (lottery controls).

Because treatment status is assigned at the household level (once one member is selected, all members are considered lottery winners) but lottery selection was conducted at the individual level, individuals from bigger households have great chances of being selected than their counterparts from smaller households. Since treatment probability varies by household sizes, we control for household size indicators. To try to reduce idiosyncratic noise, we also control for the 2007 (i.e. pre lottery) value of the dependent variable in all of our analyses of outcomes. We will explore the sensitivity of our results to using these controls as well as adding additional pre-lottery covariates (see Appendix). Because treatment occurred at the household level, we cluster the standard errors on the household identifier in all regressions. All analyses are weighted to account for the selection of some controls in the second lottery starting in the fall of 2009; see the appendix for a more detailed discussion of our weight calculations.

In addition to the intent-to-treat analysis, which estimates the effect of being selected in the lottery, we also provide a local-average-treatment-effect analysis (sometimes called a complier-average-causal-effect analysis). This analysis, under certain assumptions, provides an unbiased estimate of the effect of health insurance coverage for those individuals for whom being selected in the lottery results in insurance coverage that they would not otherwise have obtained (Angrist, Imbens and Rubin 1996). We use being selected in the lottery as an instrument for being covered by health insurance (specifically, OHP Plus or OHP Standard which we call "Medicaid") and estimate a two-stage least squares model with the same adjustments and weights as in the intent-to-treat model. Table 3 shows our first stage estimate of the impact of the lottery on the probability of being covered by Medicaid from March 10 2008 through the end of 2009. We estimate that the lottery increases Medicaid coverage by 27 percentage points.[1]

Planned analyses

Labor Force Participation

Health insurance may affect individuals' labor market activities, including whether they work, the number of hours they work, and their wages. The sign of the effect of Medicaid on these labor market activities is ambiguous. For example, by improving health and/or reducing disruptions caused by emergency health care needs, health insurance may reduce absenteeism at work, which could translate into increases in employment, hours, and/or wages. On the other hand, public health insurance might decrease labor force participation if part of the incentive for

[1] Note that our first stage is measured as ever on Medicaid from March 10 2008 (start of lottery) through the end of 2009, although our outcomes are all measured in 2009 only.

participating in the labor market is to gain access to health insurance. In addition, given the income eligibility ceiling for Medicaid, enrollment in Medicaid might cause individuals to reduce their labor market activities (and income) to maintain their eligibility for the program.

Table 4 reports results for our measures of labor force participation. In Panel A we consider (1) whether the individual had any individual earnings (wage + self employment) (2) total individual earnings (3) whether total individual earnings are above Federal Poverty Level (FPL). We view the FPL as an interesting cutoff the data (i.e. does the individual earn enough to raise his household out of poverty?); however as described in more detail in the appendix, error in our ability to measure the individual's household structure means there will be a fair bit of noise in our cut point .

In Panel B of Table 2 we break down total individual earnings into wage earnings and self-employment earnings.

Receipt of Benefits

Table 5 reports results on the effect of health insurance on receipt of certain social insurance benefits. In Panel A we look at the impact of health insurance on receipt of (and amount of benefits from) Supplemental Social Security Income (SSI) and Social Security Disability Insurance (SSDI). These are new outcomes that we can measure in the SSA data. An individual is coded as "receiving" a certain kind of benefit (SSDI or SSI) in 2009 if the amount of that benefit received in 2009 is greater than 0.

In Panel B we examine the impact of insurance on TANF and food stamp receipt and benefits. These were previously examined (through September 2009) in Finkelstein et al. (2012); we report them here primarily because they will feed in to our income measures in Table 6.

Both SSI and SSDI provide supplemental income to disabled individuals and their families. SSDI pays if the beneficiary has worked long enough and paid Social Security taxes, and SSI pays benefits based on financial need. Both come with eligibility for public insurance (Medicare and Medicaid respectively), although SSDI has a two-year waiting period. TANF provides cash assistance to low-income families with dependent children. Food stamps provide financial assistance for food purchasing to low-income individuals and families.

The impact of Medicaid on SSI and SSDI receipt is ambiguous. If health insurance improves health and reduces disability, it may reduce receipt of both benefits. Health insurance may also decrease the incentive to apply for SSI and SSDI since part of their benefits are in the form of insurance. Any effects of health insurance on labor force participation may also affect receipt of SSI and SSDI. Finally, there may be spillovers from the process of receiving (or applying for) one type of benefit to receiving (or applying for) another. This seems particularly likely in the case of TANF and food stamps since, in Oregon, if the individual applied for OHP in person (rather than by mail), case workers were instructed to offer assistance to interested applicants in applying for TANF and food stamps.

For each benefit, we consider (1) whether the individual was receiving any benefit in 2009 and (2) The amount of benefits received by the individual in 2009 (or, in the case of TANF and SNAP, the amount of benefits received by the individual's family as that is how the data are reported). Finally, we consider the total amount of disability benefits, which include both SSI and SSDI. We note that insurance presumably cannot impact average monthly SSI or SSDI amount in any way other than through receipt, since benefit amount is a function of past earnings history.

Income

Table 6 reports results for our measures of individual income and economic well-being. We consider (1) Any total individual income (2) amount of total individual income and (3) a composite measure of economic self-sufficiency modeled after Kling, Liebman, and Katz (Kling, Liebman and Katz 2007).

We define total individual income as the sum of wage or self-employment earnings (Table 4), SSI/SSDI benefits, and TANF benefits (Table 5). All of these are measured for the individual except TANF benefits which are measured for the family. This is our most comprehensive measure of income but it is not complete. Omissions include income from Social Security benefits, gifts, alimony and child support, and unemployment benefit. We do not attempt to construct a measure of family or household income since we can only identify individuals in the same household if they were listed on the same lottery application.

We create a composite index of economic self-sufficiency that averages together four measures previously analyzed: (1) an employment indicator measuring whether the individual had any earnings during a specific year (Table 4 row 1); (2) the individual's earnings (Table 4 row 2); (3) an indicator for receipt of food stamps (Table 5, Panel B, row 2), and (4) Government income, measured as the total amount of income received in SSI, SSDI income, SNAP benefits, and TANF benefits (with the latter two measured at the family level in Table 5, Panel B). To create the index from these four outcomes, each outcome in the index is normalized and transformed; the mean of the control group is subtracted and we divide by the standard deviation of the control group so that we are able to study the mean impact on the index relative to the standard deviation of the control group. We reverse the sign for adverse outcomes of self-sufficiency (government income and benefit receipt) so that a higher value of the index corresponds to greater economic self-sufficiency.

As discussed above, the impact of health insurance on the components of income (earnings and government benefits) is ambiguous. Naturally therefore the impact of health insurance on the outcomes studied in Table 6 is also ambiguous.

Table 1: Match Balance

Sample	Sample Size	Mean match rate (controls)	Difference between treatments and controls
Full "in analysis" sample,	74922	0.849 (0.002)	0.003 (0.003) [0.269]

Note: The dependent variable is an indicator variable that is 1 if the observation is a treatment and 0 otherwise. The independent variable is an indicator of whether the observation was matched to an SSA record. Regressions control for dummies for household size; standard errors are clustered by household.

Table 2. Balance of Treatments and Controls on Matched Analysis Sample

Panel A: Lottery list characteristics		
	Control mean	Diff. between treatments and controls
Age	1967.863	0.172
se	(12.292)	(0.107)
p		[0.109]
Female?	0.559	-0.009
se	(0.497)	(0.004)
p		[0.021]
English as a preferred language?	0.959	0.001
se	(0.199)	(0.002)
p		[0.656]
Signed self up?	0.926	0.001
se	(0.262)	(0.001)
p		[0.19]
Signed up first day of list?	0.096	0.002
se	(0.295)	(0.003)
p		[0.54]
Gave phone number?	0.861	-0.003
se	(0.346)	(0.003)
p		[0.351]
Address a PO Box?	0.12	-0.001
se	(0.326)	(0.003)
p		[0.645]
In MSA?	0.768	-0.003
se	(0.422)	(0.004)
p		[0.487]
Median hh income of zip code	39216	41
se	(8497)	(77.9)
p		[0.598]
F-stats on Panel A (lottery list) characteristics		1.43
p		[0.167]

Table 2. Balance of Treatments and Controls on Matched Analysis Sample, cont.

Panel B: 2007 outcomes			
		Control mean	Diff. between treatments and controls
Any Individual Earnings		0.677	0.0035
	se	(0.468)	(0.0039)
	p		[0.368]
Total Individual Earnings		7113	93.2
	se	(10330)	(84.2)
	p		[0.269]
Individual Earnings above FPL		0.149	0.0023
		(0.356)	(0.003)
			[0.427]
Wage Earnings		6585	47
	se	(9334)	(79.3)
	p		[0.554]
Self-employment Earnings		527	46.2
	se	(4931)	(37.1)
	p		[0.213]
Receiving SSI		0.011	-0.00067
	se	(0.103)	(0.00082)
	p		[0.417]
Receiving SSDI		0.049	-0.002
	se	(0.215)	(0.0018)
	p		[0.246]
Amount of SSI		5.08	-0.663
	se	(63)	(0.476)
	p		[0.164]
Amount of SSDI		462	-18.4
	se	(2266)	(18.5)
	p		[0.322]
Amount of Disability Benefits		467	-19
	se	(2274)	(18.6)
	p		[0.306]
Receiving TANF		0.02	0.001
	se	(0.14)	(0.0012)
	p		[0.406]
Receiving SNAP		0.552	0.01
	se	(0.497)	(0.0044)
	p		[0.02]
Amount of TANF		42.3	3.7
	se	(377)	(3.33)
	p		[0.267]
Amount of SNAP		943	25
	se	(1309)	(12.9)

p	[0.053]

Table 2. Balance of Treatments and Controls on Matched Analysis Sample, cont.

Panel B		
	Control mean	Diff. between treatments and controls
Any total individual income	0.718	0.0024
se	(0.45)	(0.0037)
p		[0.515]
Total individual income	7621	77.8
se	(10345)	(84.1)
p		[0.355]
F-Stats on Panel B (pre-randomization outcomes) variables		1.15
P		[0.315]
F-Stats on all Panel A and Panel B variables		1.27
p		[0.176]

Notes: The first column reports the mean and standard deviation for the control sample. The second column reports the difference between the average response rate for those selected by the lottery and those not selected (controls), as calculated by ordinary least squares regression. All regressions include indicators for household size and all standard errors are clustered on household. We report the coefficient, standard error, and per comparison p-value. (N = 63238)

Table 3: First Stage

	SSA sample	
	Control mean (1)	Estimated FS (2)
Ever on Medicaid	0.151	0.265 (0.0039) <0.001

Notes: The period for "ever on Medicaid" is defined as between March 10th, 2008 and December 31st, 2009. The dependent variable is 1 if the individual was ever on OHP Standard or OHP Plus (together called "Medicaid") during this period and 0 otherwise. The regression controls for household size dummies and the standard error is clustered by households. All regressions are weighted. N=63238

Table 4: Labor Force Participation (2009)

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any Individual Earnings	0.547			
Total Individual Earnings	6513			
	(10227)			
Individual Earnings above FPL	0.142			
Panel B:				
Wage Earnings	6041			
	(9913)			
Self-employment Earnings	472			
	(3159)			

Note: Earnings include wage earnings and self-employment earnings. . FPL is defined using adjusted household size (see text for more details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009.N=63238

Table 5: Receipt of Benefits (2009)

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A				
Receiving SSI	0.041			
	(0.199)			
Receiving SSDI	0.062			
	(0.241)			
Amount of SSI	27.3			
	(165)			
Amount of SSDI	710			
	(2963)			
Amount of Disability Benefits	737			
	(2990)			
Panel B				
Receiving TANF	0.031			
Receiving SNAP	0.599			
Amount of TANF	111			
	(711)			
Amount of SNAP	1494			
	(1893)			

Note: Disability Benefits include both SSI and SSDI benefits. All outcomes are measured at the individual level except for "Amount of TANF" and "Amount of SNAP" which are the amount that the individual's household received. SSI and SSDI benefits are reported at the individual level. All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table 6: Income (2009)

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any total individual income	.639			
Total individual income	7361			
	(10228)			
Panel B:				
Economic Self-Sufficiency	0			
	0.683			

Note: Total individual income includes individual level wage and self-employment earnings, SSI and SSDI benefits, and TANF (TANF is measured at the household level). Economic Self-Sufficiency is a standardized composite measure of employment, earnings, receipt of SNAP and government income, with the latter two entering negatively (see text for details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

References

Angrist, J. D., G. W. Imbens & D. B. Rubin (1996) Identification of Causal Effects Using Instrumental Variables. *Journal of the American Statistical Association,* 91**,** 444-455.

Baicker, K., S. Taubman, H. Allen, M. Bernstein, J. Gruber, J. P. Newhouse, E. Schneider, B. Wright, A. Zaslavsky, A. Finkelstein & the Oregon Health Study Group The Oregon Health Insurance Experiment: Evidence from the In-Person Interviews. *Work in progress.*

Finkelstein, A., S. Taubman, B. Wright, M. Bernstein, J. Gruber, J. P. Newhouse, H. Allen, K. Baicker & O. H. S. Group (2012) The Oregon Health Insurance Experiment: Evidence from the First Year. *The Quarterly Journal of Economics,* 127**,** 1057-1106.

Kling, J. R., J. B. Liebman & L. F. Katz (2007) Experimental Analysis of Neighborhood Effects *Econometrica,* 75**,** 83-119.

Song, J. & J. Manchester (2007) New Evidence on Earnings and Benefit Claims Following Changes in the Retirement Earnings Test in 2000 *Journal of Public Economics,* 91**,** 669-700.

von Wachter, T., J. Song & J. Manchester (2011) Trends in Employment and Earning of Allowed and Rejected Applicants to the Social Security Disability Insurance Program. *American Economic Review,* 101**,** 3308-29.

Appendix

Matching the Oregon Sample to SSA Records

Matching process

We attempted to match the full Oregon Health Insurance Experiment analytic sample (N=74,922) to the SSA records. We used full name and date of birth (provided at time of lottery sign-up) to match them to SSA's masterfile of all SSNs ever issued; in addition to SSN, these data set includes last name, first name, middle initial, date of birth, sex, place of birth and date of death (if any). It is updated to account for new information (such as a name change or a birth date correction). We linked to the data as of the end of 2007 (i.e. right before the lottery). We then used SSN to link individuals to outcomes data on labor force participation, benefits and earnings.

Due to large file sizes, we conducted the match in three steps.

Step 1: First, we looked for identical matches on first name, last name, and date of birth using SAS. 80.8% of our Oregon Health Insurance Experiment analytic sample (controls) was matched uniquely to a Social Security Number using this method.

Step 2: In the second step, using SAS, we then limited the remaining SSA records to ones that were sufficiently similar to one of the remaining unmatched Oregon records. Two records were considered "sufficiently similar" if they have identical date of birth and (1) they have similar first names[1] or (2) they have similar last names or (3) their first names and last names are both similar but the orders are reversed. We then probabilistically matched this subset of SSA records to the remaining unmatched Oregon records in Linkplus using first name, last name, and date of birth. We manually reviewed the pairs matched in Linkplus and picked those that we were "almost certain" (as a subjective matter) were true matches (we picked a conservative threshold in this step because most of the unmatched records in this step will still get a chance to be matched in Step 3). Another 0.6% of the Oregon Health Insurance Experiment analytic sample (controls) was matched this way.

Step 3: Finally, we allow for the possibility that there could be data entry errors in the date of birth field in either the Oregon reservation list or the SSA records. From SSA records that had not been matched in the previous two steps, we used SAS to extract only the ones that

1. Had both a similar first name and a similar last name as one of the remaining unmatched Oregon reservation records or had a similar name with first and last name reversed as one of the remaining unmatched Oregon reservation records ("similar" defined as above)
   AND
2. Had a similar date of birth[2] as that same Oregon reservation record

[1] "Similar" names were defined using the "soundex" algorithm in SAS. The goal of the algorithm is for homophones to be encoded to the same representation so that they can be matched despite minor differences in spelling. The function would also consider Katherine, Catherine, and Kate the same name.

[2] "Similar" dates of birth were defined as follows. Two dates of birth, DMY1 and DMY2 (D = day, M = month, Y = year) were considered "similar" if:

In Linkplus, we probabilistically matched SSA records that fit these criteria to the remaining unmatched records from the Oregon reservation list on first name, last name, and date of birth. Once again we manually reviewed the pairs matched in Linkplus and identified pairs that we thought were likely to be true matches (using our subjective assessment of 80% or more likely to be a match as our definitely of "likely true match"). We were able to match another 3.5% of the Oregon analysis sample (controls).

In total, we successfully matched 84.9% of the Oregon Health Insurance Experiment analytic sample (controls) to a unique Social Security Number.

Treatment-control balance

In Table 1 of the analysis plan, we showed that the match rates are balanced between treatments and controls among the OHS analysis sample. Table A1 shows that the match rates are also balanced between treatments and controls for each of the three steps mentioned in the previous section

Difference between matched and unmatched individuals

In Table 2 of the analysis plan we showed that the matched controls in the OHS analysis sample do not differ from the matched treatments in terms of pre-randomization characteristics. However, not surprisingly, the individuals on the Oregon lottery list (controls only) who matched to an SSA record have slightly different characteristics from those who did not match to any SSA record. Table A2 shows these results.

Most notably, nearly 30% of unmatched individuals do not list English as their preferred language for applications, compared to only about 5% of matched individuals. This difference suggests that many unmatched individuals may be recent immigrants, documented or undocumented. Although only U.S. citizens and a small number of qualified non-citizens can receive OHP, there was no screening during the application process to prevent them from signing up for the lottery. This is consistent with the evidence that matched individuals have a much higher estimated first stage in the lottery compared to unmatched individuals; our first stage for the analytic sample matched individuals is 0.265 compared to 0.189 for unmatched individuals (see Table A3).

In addition, unmatched individually are also about a year older and slightly less likely to list a PO Box as an address, to have signed up on the first day, or to have responded to the 12 month mail survey. They are also more likely to live in an MSA and in zipcodes with slightly higher median household income.

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*M1 = M2, Y1=Y2 (D1 may differ from D2 arbitrarily) OR
*D1 = D2, Y1 = Y2 (M1 may differ from M2 arbitrarily) OR
*D1 = D2, M1 = M2, Y1 differs from Y2 by 1 digit or transposition OR
*D1 = M2, M1 = D2, Y1 = Y2

Data

SSA Data On Outcomes

We use SSA data to measure annual labor force participation, earnings, and benefit receipt primarily from 2007 – 2009 (in some supplemental analyses we explore 2006 data as well). 2007 is prior to the lottery; 2008 is the year the lottery was conducted and 2009 is post-lottery for everyone. The main text reports the control means for the variables analyzed. Table A4 reports the control mean, standard deviation and % positive; it also reports moments of the distribution control on positive.

Data on annual earnings comes from the Master Earnings File which contains W-2 annual wage information for each job the individual held during the year as well as self employment income from schedule SE. We use this to code up individual annual earnings, and to break out earnings into wage and self-employment earnings. Data on annual SSDI benefits comes from the Master Beneficiary Record which is the master file for the Title II program. Data on annual SSI benefits comes from the Supplemental Security Records file, which is the master file for the title XVI program. These data on earnings and benefit receipt have been used in other recent studies of employment, earnings and benefit receipt (see e.g. Song and Manchester 2007, von Wachter, Song and Manchester 2011).

Other Data

We obtained state administrative records on the complete Medicaid enrollment history of lottery list participants from prior to the lottery through the end of 2009. We use these data as our primary measure of the first-stage outcome (i.e., insurance coverage). In addition, we obtained state administrative records on the Food Stamp and TANF benefit history of lottery list participants from prior to the lottery through the end of 2009. We use these records on benefit receipt and amount granted to the household to generate a more complete definition of income and benefits. We also obtained pre-randomization demographic information that the participants provided at the time of lottery sign-up. We use these data primarily to construct nine ‘‘lottery list variables’’ that we use to examine treatment and control balance on pre-randomization demographics. Additional information on each of these data sources is provided in the appendix of Finkelstein et al (2012).

Analytic specifications

The goal of this analysis, as described in the main plan, is to evaluate the effect of lottery selection and subsequent insurance coverage on income and benefits. This section describes the empirical specifications.

Intent-to-treat effect of the lottery (ITT)

We estimate the Intent-to-Treat (ITT) effect of winning the lottery (i.e. the difference between treatment and controls) by estimating the following OLS equation:

$$y_{ih} = \beta_0 + \beta_1 LOTTERY_h + X_{ih}\beta_2 + V_{ih}\beta_3 + \varepsilon_{ih} \quad (1)$$

where *i* denotes an individual and *h* denotes a household.. For example y_i might be the amount of SSI benefits of individual *i* in household *h.*

LOTTERY is an indicator variable for whether or not household *h* was selected by the lottery. The coefficient on *LOTTERY* (β_1) is the main coefficient of interest, and gives the average difference in (adjusted) means between the treatment group (the lottery winners) and the control group (those not selected by the lottery); it is interpreted as the impact of being able to apply for OHP Standard through the Oregon lottery.

We denote by X_{ih} the set of covariates that are correlated with treatment probability (and potentially with the outcome) and therefore must be controlled for so that estimates of β_1 give an unbiased estimate of the relationship between winning the lottery and the outcome. In all of our analyses, X_{ih} includes indicator variables for the number of individuals in the household listed on the lottery sign-up form (hereafter "household size"); although the state randomly sampled from individuals on the list, the entire household of any selected individual was considered selected and eligible to apply for insurance. As a result, selected (treatment) individuals are disproportionately drawn from larger households.

We denote by V_{ih} a second set of covariates that can be included to potentially improve power by accounting for chance differences between treatment and control group in variables that may be important determinants of outcomes. These covariates are not needed for β_1 to give an unbiased estimate of the relationship between winning the lottery and the outcome, however, as they are not related to treatment status. In our primary analysis using outcomes from 2009, V_{ih} includes a lagged dependent variable from 2007. We decided to include the lagged dependent variable based on analysis (in the control sample) of the partial R-squared as a measure of the the predictive power of lagged dependent variables on our outcome variables (see Table A5); our investigations indicated that further including 2006 data did not substantially further improve the partial R-squared (not shown).

In all of our analyses we cluster the standard errors on the household identifier since the treatment is at the household level. All analyses are weighted to account for a new lottery as described below in the "Weights" section.

Local average treatment effect of Medicaid (LATE)

The intent-to-treat estimates from equation (1) provide an estimate of the causal effect of winning the lottery (i.e. winning the opportunity to apply for OHP Standard). This provides an estimate of the net impact of expanding *access* to public health insurance. We are also interested in the impact of insurance *coverage*. We model this as follows:

$$y_{ih} = \pi_0 + \pi_1 INSURANCE_{ih} + X_{ih}\pi_2 + V_{ih}\pi_3 + \nu_{ih} \quad (2)$$

where INSURANCE is a measure of insurance coverage and all other variables are as defined in equation (1). We estimate equation (3) by two stage least squares (2SLS), using the following first stage equation:

$$INSURANCE_{ih} = \delta_0 + \delta_1 LOTTERY_{ih} + X_{ih}\delta_2 + V_{ih}\delta_3 + \mu_{ih} \quad (3)$$

in which the excluded instrument is the variable *LOTTERY*.

We interpret the coefficient on insurance from instrumental variable estimation of equation (3) as a local average treatment effect of insurance, or LATE (Imbens and Angrist 1994). In other words, our estimate of π_1 identifies the causal impact of insurance among the subset of individuals who obtain insurance on winning the lottery and who would not obtain insurance without winning the lottery (i.e. the compliers).[3]

The LATE interpretation requires the additional identifying assumption that the only mechanism through which winning the lottery affects the outcomes studied is the lottery's impact on insurance coverage. We believe this is a reasonable approximation; in earlier work we discussed potential violations; where we could explore them we did not find cause for concern (Finkelstein et al. 2012).

Weights

New state lottery

In the fall of 2009, the state of Oregon began conducting a new lottery for OHP Standard. For the first draw, the state mailed postcards to those on the original list who were not selected (our controls). Those who returned the postcard were added to the new waiting list and an initial draw was done just from that group. After the drawing, we probabilistically matched (using LinkPlus software) the new waiting list to our study population to identify individuals who were eligible for selection by the state (called "opt-ins") and those who were actually selected (called "selected opt-ins"). As with the original lottery, the draw was done on individuals, but the opportunity to apply for OHP (treatment) was extended to the whole household.

Rationale for the weights

[3] When insurance is defined as "ever on OHP Standard" we can probably be comfortable interpreting the IV estimates of equation (3) as the treatment-on-treated (ToT) rather than a LATE. In practice, there are two small violations of this interpretation. First, if there were no way to get OHP Standard without winning the lottery there would be no "always-takers" in the terminology of Angrist, Imbens and Rubens Angrist, J. D., G. W. Imbens & D. B. Rubin (1996) Identification of Causal Effects Using Instrumental Variables. *Journal of the American Statistical Association*, 91**,** 444-455.but about 2 percent of our controls got onto OHP standard through some limited alternative mechanisms —for example, pregnant women who are on OHP Plus can sometimes stay on OHP Standard after giving birth. Second, it is possible that some compliers were put on OHP Plus rather than Standard, since case workers are instructed to first check applicant eligibility for Plus; in practice this number is likely to be small since the estimated first stage is very similar for "ever on Medicaid" (which includes Plus and Standard) and "ever on OHP Standard" (see Table 3 of Finkelstein et al. (2012)).

We exclude from our analytic sample individuals selected in the new lottery drawing ("new lottery drops"). We adjust for this using weights constructed on the following principle: within any (even non-random) subset of the original sample base, a randomly selected group can be weighted to stand in for the non-selected remainder based on the probability of that random selection without introducing bias. We can thus construct a weight that corrects for the initial new lottery drawing done in the fall of 2009. The weights are designed to insure our analytic sample is balanced on treatment status.

Construction of the weights

Let O be the set of opt-ins in our study population eligible for drawing in the initial new lottery drawing. Let S be the set of opt-ins selected in the drawing. We define the weight for individual *i* to be:

$$w(i) = \begin{cases} \frac{1}{1-p} \; if \; i \; in \; O_t \; and \; in \; S \\ 0 \; if \; i \; in \; S \\ 1 \; if \; i \; not \; in \; O \end{cases}$$

where *p* is the probability of an optin being selected.

In fact, selection probabilities varied by the number of household members on the list, so in all cases, we actually estimated the selection probability separately by strata of "tickets" (household members on the new waiting list at the time of the drawing).

Final analytic weights

Table A6 summarizes the distribution of the weights. Since only one selection for the new lottery occurred before the end of 2009, the impact of the new lottery is very minimal for our main analysis on SSA outcomes.

Analytic Variables

Defining indicator of total individual earnings above FPL

In our analysis of the effect of insurance on labor force participation in Table 4, we look at an indicator for whether the study participant's total individual earnings (from both wages and self-employment) are above the Federal Poverty Level (FPL). We did this as a potentially interesting threshold in the data, but we know that this binary variable will have several sources of measurement error in it relating to our ability to define the FPL and individual's earnings relative to it.

The FPL concept applies to household income, not individual income, and depends on household size. However we are not able to identify all the household members of an individual in our data. We therefore use individual earnings instead of household income and simply ask whether the individual earns enough to raise his household above the FPL. The FPL however depends on the household size and this is measured with error.

We have two sources of information on household structure. First, applicants can write down the information for household members are also seeking benefit. These people are subsequently assigned the same household identifier and are used to define the "household size" variables in our analysis. However, this measure is by no means complete, as it was not designed to include all household members. Children or adults who were not seeking insurance were not listed.

We also we conducted a 12-month mail survey of about 50,000 study (for more details see (Finkelstein et al. 2012). People participating in this survey were asked about everyone who lived in the same household, including children. The survey answers provide a more comprehensive count of household size, but we do not have this data for people who were not in the 12-month mail survey study sample or who did not respond to the survey.

We generate a measure of "adjusted household size" that combines the advantages of our two sources of information on household structure. Using our matched SSA sample who responded to the 12-month survey, we calculate average household size as reported in the 12-month survey for each "household size" defined based on the lottery list report (weighted using 12-month mail survey weights). Table A7 reports the results. Not surprisingly given the data structure just described, the adjusted household size is on average higher than the "household size" from the lottery list. The adjusted household size is best interpreted as "expected value of household sizes conditional on having x names on the individual's lottery application."

We then use this "adjusted household size" for everyone on the lottery list of a given lottery list household size, *including those who were not surveyed or who did not respond to the mail survey*. For example, if there was one individual from the household on the lottery list, we assume that there were 2.63 total individuals in the household. We then calculate the "Federal Poverty Line" for each individual based on their adjusted household size. For example, in 2009 the Federal Poverty Line is $10830 for households of size 1. The FPL increases by $3740 for each additional individual in the household. Therefore we calculate a FPL corresponding to an adjusted household size of 2.63 is $10830+$3740*(2.63-1) = $16926. We then compare individual earnings to this "FPL" to generate our indicator for whether individual earnings are above our calculation of the FPL.

Defining total individual income

We define total individual income as the sum of wage income, self-employment earning, and SSI/SSDI benefits reported at the individual level from the SSA data, plus the household level TANF benefit amount.

Defining composite measure of economic self-sufficiency

Our index of economic self-sufficiency is based on 4 measures: (1) employment, (2) earnings, (3) SNAP receipt, and (4) government income. Our measure of employment is an indicator for whether the adult had any wage or self-employment earnings during a specific year.

Earnings is the amount of total individual wage or self-employment earnings during the year. SNAP is measured as receiving any SNAP benefit for that year. Government income is the total amount of individual SSI/SSDI income, SNAP benefits, and TANF benefits.

Our index of economic self-sufficiency follows the spirit of the one developed by Kling, Liebman, and Katz (Kling, Liebman and Katz 2007) but the underlying measures differ slightly. In the context of studying the impact of housing vouchers in a low income population, Kling, Liebman, and Katz (2007) included 5 measures in their index using a combination of survey results and administrative data: (1) employment is an indicator for whether the adult had worked for pay during the week prior to survey; (2) annual earnings is the amount of self-reported to have been earned from all employers before taxes and deductions during the year (3) welfare receipt is measured as being a beneficiary of TANF at the time of the survey; (4) government income is the amount received altogether in the form of TANF, SSI benefits, unemployment benefits, Social Security, General Assistance and related programs during the year and (5) an indicator for working for pay during the previous week and not receiving TANF.

Our measure (which is based entirely on administrative data) differs from the Kling et al measure in some of the specifics. In particular, Kling *et al.*'s measure puts a heavy weight on getting off TANF, which is a major form of government assistance for their population. However, getting off TANF is not a very relevant measure of in our study. Individuals receiving TANF are eligible for OHP Plus, so would be unlikely to seek coverage through OHP Standard (the lotteried program); less than 4 percent of the control group received any TANF benefit in 2009. We therefore use instead an indicator for whether or not the individual received SNAP (60% of our control group did in 2009) as our measure of welfare receipt. Relatedly, our measure drops their fifth outcome, the combination of working and not receiving TANF indicator since it is also dependent on the notion of getting off TANF. Finally, we calculate government income slightly differently; both our measure and theirs include TANF and SSI. In addition, we are able to include SSDI and SNAP benefits but do not have data on unemployment benefits, Social Security, and General Assistance and related programs.

To generate our composite index, we follow Kling et al and average a normalized transformation of each outcome. The normalized transformation is generated by subtracting the mean of the control group and divide by the standard deviation of the control group. For any given outcome Y_k , the normalized, transformed outcome is therefore: $Y_k^*=(Y_k-\mu_k)/\sigma_k$ where the mean and standard deviation are based on the control group. The summary index across our four outcomes is $Y^*=\Sigma_k Y_k^*/K$. We reverse the sign for adverse measures of economic self-sufficiency (government income and food stamp receipt), so that a higher value of the normalized measure represents a more "beneficial" outcome.

Sensitivity Analyses

Alternative Time Periods

Our main analyses use outcome variables from 2009 because 2009 is the only full post-treatment year for which we can isolate the effect of insurance on finance outcomes without contamination. Since the first lottery selection happened in March 10, 2008, it is possible that the 2008 income and benefit amount for some individuals selected in the earlier rounds were affected by the lottery. In Tables A9 - A11, we repeat our main analyses on labor force participation, receipt of benefit, and income using 2008 outcome variables; our first stage variable is now defined as "ever on Medicaid through the end of 2008" (see the last row of Table A8). This specification is not weighted because the new lottery did not take place until 2009. In Tables A12 - A14, we repeat our main analyses using combined 2008 and 2009 outcome variables. This specification is weighted to take into account the new lottery and the first stage is the first stage used in our baseline analysis of 2009 outcomes (i.e. ever on Medicaid through end of 2009) as shown in Table 3 or the first row of Table A8).

Covariates.
Our baseline specification uses 2009 outcomes and controls for the dependent variable from 2007 (pre randomization). In Tables A15 - A17, we rerun the baseline specification without controlling for pre-randomization outcomes for robustness check. In Tables A18 – A20 we rerun our baseline specification including as additional pre-randomization measures nine "lottery list" variables included in Table A2; specifically we control for: birth year, whether female. Whether list English as a preferred language, whether signed up self, whether signed up on first day, whether provided a phone #, whether gave address as a PO box, whether address was in an MSA, and median household income of zip code).

Figures and Tables

Table A1: Balance of Treatments and Controls

	In-Analysis Sample	
Status	**Control mean**	**Diff between treatment and controls#**

Matched in Step 1	0.808	0.0037
se		(0.0032)
P		[0.247]
Matched in Step 2	0.006	0.00053
Se		(0.00059)
p		[0.377]
Matched in Step 3	0.035	-0.00099
se		(0.0014)
p		[0.488]
Matched	0.849	0.0032
se		(0.0029)
p		[0.269]

Notes: An individual from the Oregon reservation list is considered "matched" if it was matched in Step 1, in Step 2, or in Step 3. All regressions control for household size indicators, and standard errors are clustered at the household level. N=74,922

Table A2: Comparison of list characteristics between matched and unmatched controls

	unmatched means	Diff. between matched and unmatched
birth year	1969	-0.93
se	(12)	(0.163)
p		[<0.001]
older than 59?	0.063	0.0055
se	(0.243)	(0.0033)
p		[0.091]
younger than 25?	0.103	-0.0019
se	(0.303)	(0.0041)
p		[0.649]
female?	0.548	0.0053
se	(0.498)	(0.0063)
p	.	[0.4]
English as a preferred language?	0.716	0.232
se	(0.451)	(0.0058)
p		[<0.001]
Signed self up?	0.874	0.0036
se	(0.332)	(0.0025)
p		[0.151]
Signed up first day of list?	0.073	0.025
se	(0.259)	(0.0036)
p		[<0.001]
Gave phone number?	0.866	0.00048
se	(0.341)	(0.0046)
p		[0.917]
Address a PO Box?	0.095	0.026
se	(0.293)	(0.0041)
p		[<0.001]
In MSA?	0.801	-0.038
se	(0.399)	(0.0055)
p		[<0.001]
Median hh income of zip code	39543	-317
se	(8271)	(115)
p		0.006
List hhsize	1.25	1.10E-15
se	(0.433)	(7.70E-16)
p		[0.164]
Mail survey respondent?	0.255	0.029
se	(0.436)	0.0059
p		[<0.001]
Inperson survey respondent?	0.568	-0.011
se	(0.496)	(0.013)
p		[0.412]
F		127
p	.	[<0.001]

Notes: This table compares list characteristics for matched (in SSA sample) and unmatched (exclude from SSA sample) controls in the full Oregon analysis sample. All regressions control for household size and standard errors are clustered at the household level. “Inperson survey respondent” does not condition on being in the InPerson recruiting sample. There are no weights. N= 45088.

Table A3: First Stage for matched and unmatched individuals

Panel A		
	Control mean likelihood of ever being on Medicaid (1)	Diff between treatment and controls (2)
Matched	0.151	0.265
		(0.0039)
		[<0.001]
Unmatched	0.150	0.189
		(0.0086)
		[<0.001]

Panel B	
	Coefficient (1)
Treatment	0.189
	(0.009)
	[<0.001]
Matched	0.008
	(0.005)
	[0.123]
Treatment*Matched	0.076
	(0.009)
	[<0.001]

Notes: The period for "ever on Medicaid" is defined as between March 10th, 2008 and December 31st, 2009. The dependent variable is 1 if the individual was ever on OHP Standard or OHP Plus (together called "Medicaid") during this period and 0 otherwise. The regression controls for household size dummies, and the standard error is clustered by households. All regressions are weighted. The first row of Panel A shows the first stage estimate of the Oregon analysis sample matched to an SSA record (the SSA analysis sample). N=63238. The second row shows the first stage estimates of the unmatched individuals in the Oregon analysis sample. N=11684. Panel B runs a first stage regression on the full Oregon analysis sample (N=74922) with an interaction term between treatment*matched to test the statistical difference between the two first stage coefficients (matched and unmatched) in Panel A.

Table A4: Distribution of Control Outcome Variables

Panel A: Labor Force Participation (2009)

				Conditional on any					
	Mean	SD	Percent Any	5th %tile	25 %tile	Median	Mean	75th %tile	95th %tile
Total Individual Earnings	6513.02	10227.32	0.55	395.06	3580	9658	11907.78	17144.99	24840.33
Wage Earnings	6040.61	9912.99	0.51	333.05	3244.96	9535.11	11834.78	17356.51	25051
Self-employment Earnings	472.41	3158.81	0.059	769	2541	6004	8037.04	10958	16149

Panel B: Receipt of Benefits (2009)

				Conditional on any					
	Mean	SD	Percent Any	5th %tile	25 %tile	Median	Mean	75th %tile	95th %tile
Amount of SSI	27.28	165.42	0.041	66.4	269.4	602.5	657.92	850.8	1307.1
Amount of SSDI	709.62	2962.64	0.062	4756	8811	11019	11508.56	13866	17061
Amount of TANF	111.36	710.99	0.037	382	1205	2452	3017.18	4630	6101
Amount of SNAP	1494.35	1892.93	0.61	193	1246	2184	2468.51	3058	5071

Panel C: Income (2009)

				Conditional on any					
	Mean	SD	Percent Any	5th %tile	25 %tile	Median	Mean	75th %tile	95th %tile
Total Individual Income	7361.28	10228.29	0.64	405.86	3552.6	9618	11518.9	16427.42	23734.36

Table A5: Partial R2 of lagged outcomes

	2009 on 2007
	(1)
Any individual earnings	0.205
Total individual earnings	0.226
Total individual earnings above FPL	0.128
	(1)
Receiving SSI Benefit	0.0419
Receiving SSDI Benefit	0.738
Amount of SSI Benefit	0.0279
Amount of SSDI Benefit	0.69
Receiving TANF Benefit	0.0334
Receiving SNAP Benefit	0.264
Amount of TANF Benefit	0.0703
Amount of SNAP Benefit	0.301
Total Amount of Benefit	0.512
Any individual total income	0.176
Individual total income	0.233

Notes: Restricted to control individuals in the Oregon analysis sample who are also matched to a unique SSN number. . We computed the partial R-squared of the 2007 outcomes (or the sum of the 2006 and 2007 outcome) from a regression of the 2009 outcome on this earlier outcome (and household size dummies); regressions use the standard weights and cluster on the household level.

(N= 36813)

Table A6: Distribution of Weights

	Mean	SE	Min	5th Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile	Max	N
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
SSA Sample	1	0.161	0	1	1	1	1	1.11	1.2	63238
Control SSA Sample	0.999	0.207	0	1	1	1	1.11	1.11	1.2	38261
Treatment SSA Sample	1	0.002	1	1	1	1	1	1	1.11	24977

Notes: Zero weights are the result of being dropped after being selected in the new state lottery.

Table A7: Adjusted Household Size

List hhsize	Adjusted household size from 12-month mail survey answers
1	2.63
2	3.71
3	4.25

Notes: The table shows the average household size as reported in the 12 month mail survey for 12 month mail survey responders with different list hhsize. The means are generated using 12 month mail survey weights. List hhsize is defined as the number of people listed on the Oregon reservation list application.

Table A8: First Stage on alternative time periods

	SSA sample	
	Control mean (1)	Estimated FS (2)
Ever on Medicaid (2009)	0.151	0.265
		(0.0039)
		[<0.001]
Ever on Medicaid (2008)	0.103	0.281
		(0.0037)
		[<0.001]

Notes: The period for "Ever on Medicaid (2009) is defined as between March 10th, 2008 and December 31st, 2009. The period for "Ever on Medicaid (2008) is defined as between March 10th, 2008 and December 31st, 2008. The dependent variable is 1 if the individual was ever on OHP Standard or OHP Plus (together called "Medicaid") during this period and 0 otherwise. The regression controls for household size dummies and the standard error is clustered by households. The regression for "Every on Medicaid (2009)" is weighted to adjust for a new lottery started in late 2009. N=63238

Table A9: Labor force participation, 2008 outcomes

	Control mean (1)	ITT (2)	LATE (3)	p-value (4)
Panel A:				
Any Individual Earnings	0.631			
Total Individual Earnings	6621			
	(9714)			
Individual Earnings above FPL	0.124			
Panel B:				
Wage Earnings	6089			
	(8957)			
Self-employment Earnings	532			
	(4293)			

Note: Earnings include wage earnings and self-employment earnings. . FPL is defined using adjusted household size (see text for more details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. N=63238

Table A10: Receipt of benefits, 2008 outcomes

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A				
Receiving SSI	0.027			
	(0.163)			
Receiving SSDI	0.060			
	(0.237)			
Amount of SSI	13.7			
	(109)			
Amount of SSDI	647			
	(2788)			
Amount of Disability Benefits	661			
	(2807)			
Panel B				
Receiving TANF	0.019			
Receiving SNAP	0.621			
Amount of TANF	57.2			
	(454)			
Amount of SNAP	1222			
	(1485)			

Note: Disability Benefits include both SSI and SSDI benefits. All outcomes are measured at the individual level except for "Amount of TANF" and "Amount of SNAP" which are the amount that the individual's household received. SSI and SSDI benefits are reported at the individual level. All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. N=63238

Table A11: Income, 2008 outcomes

	Control mean (1)	ITT (2)	LATE (3)	p-value (4)
Panel A:				
Any total individual income	.695			
Total individual income	7339 (9740)			
Panel B:				
Economic Self-Sufficiency	0 0.661			

Note: Total individual income includes individual level wage and self-employment earnings, SSI and SSDI benefits, and TANF (TANF is measured at the household level). Economic Self-Sufficiency is a standardized composite measure of employment, earnings, receipt of SNAP and government income, with the latter two entering negatively (see text for details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household.. N=63238

Table A12: Labor force participation, 2008 & 2009 outcomes

	Control mean (1)	ITT (2)	LATE (3)	p-value (4)
Panel A:				
Any Individual Earnings	0.682			
Total Individual Earnings	13132			
	(18429)			
Individual Earnings above FPL	0.176			
Panel B:				
Wage Earnings	12126			
	(17721)			
Self-employment Earnings	1005			
	(6263)			

Note: Earnings include wage earnings and self-employment earnings. . FPL is defined using adjusted household size (see text for more details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table A13: Receipt of benefits, 2008 & 2009 outcomes

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A				
Receiving SSI	0.051			
	(0.221)			
Receiving SSDI	0.063			
	(0.243)			
Amount of SSI	41			
	(231)			
Amount of SSDI	1359			
	(5697)			
Amount of Disability Benefits	1400			
	(5741)			
Panel B				
Receiving TANF	0.05			
Receiving SNAP	1.22			
Amount of TANF	169			
	(1044)			
Amount of SNAP	2719			
	(3173)			

Note: Disability Benefits include both SSI and SSDI benefits. All outcomes are measured at the individual level except for "Amount of TANF" and "Amount of SNAP" which are the amount that the individual's household received. SSI and SSDI benefits are reported at the individual level. All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table A14: Income, 2008 & 2009 outcomes

	Control mean (1)	ITT (2)	LATE (3)	p-value (4)
Panel A:				
Any total individual income	0.758			
Total individual income	14700 (18446)			
Panel B:				
Economic Self-Sufficiency	0 (0.67)			

Note: Total individual income includes individual level wage and self-employment earnings, SSI and SSDI benefits, and TANF (TANF is measured at the household level). Economic Self-Sufficiency is a standardized composite measure of employment, earnings, receipt of SNAP and government income, with the latter two entering negatively (see text for details). All regressions control for household size dummies and the 2007 value of the dependent variable. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table A15: Labor force participation, 2009 outcomes, without pre-randomization controls

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any Individual Earnings	0.547			
Total Individual Earnings	6513			
	(10227)			
Individual Earnings above FPL	0.142			
Panel B:				
Wage Earnings	6041			
	(9913)			
Self-employment Earnings	472			
	(3159)			

Note: Earnings include wage earnings and self-employment earnings. . FPL is defined using adjusted household size (see text for more details). All regressions control for household size. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009.N=63238

Table A16: Receipt of benefits, 2009 outcomes, without pre-randomization controls

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A				
Receiving SSI	0.041			
	(0.199)			
Receiving SSDI	0.062			
	(0.241)			
Amount of SSI	27.3			
	(165)			
Amount of SSDI	710			
	(2963)			
Amount of Disability Benefits	737			
	(2990)			
Panel B				
Receiving TANF	0.031			
Receiving SNAP	0.599			
Amount of TANF	111			
	(711)			
Amount of SNAP	1494			
	(1893)			

Note: Disability Benefits include both SSI and SSDI benefits. All outcomes are measured at the individual level except for "Amount of TANF" and "Amount of SNAP" which are the amount that the individual's household received. SSI and SSDI benefits are reported at the individual level. All regressions control for household size dummies. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table A17: Income, 2009 outcomes, without pre-randomization controls

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any total individual income	.639			
Total individual income	7361			
	(10228)			
Panel B:				
Economic Self-Sufficiency	0			
	0.683			

Note: Total individual income includes individual level wage and self-employment earnings, SSI and SSDI benefits, and TANF (TANF is measured at the household level). Economic Self-Sufficiency is a standardized composite measure of employment, earnings, receipt of SNAP and government income, with the latter two entering negatively (see text for details). All regressions control for household size dummies. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238.

Table A18: Labor force participation, 2009 outcomes, controlling for list covariates

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any Individual Earnings	0.547			
Total Individual Earnings	6513			
	(10227)			
Individual Earnings above FPL	0.142			
Panel B:				
Wage Earnings	6041			
	(9913)			
Self-employment Earnings	472			
	(3159)			

Note: Earnings include wage earnings and self-employment earnings. . FPL is defined using adjusted household size (see text for more details). All regressions control for household size dummies, the 2007 value of the dependent variable, and the full list of pre-randomization covariates from Table A3. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009.N=63238

Table A19: Receipt of benefits, 2009 outcomes, controlling for list covariates

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A				
Receiving SSI	0.041			
	(0.199)			
Receiving SSDI	0.062			
	(0.241)			
Amount of SSI	27.3			
	(165)			
Amount of SSDI	710			
	(2963)			
Amount of Disability Benefits	737			
	(2990)			
Panel B				
Receiving TANF	0.031			
Receiving SNAP	0.599			
Amount of TANF	111			
	(711)			
Amount of SNAP	1494			
	(1893)			

Note: Disability Benefits include both SSI and SSDI benefits. All outcomes are measured at the individual level except for "Amount of TANF" and "Amount of SNAP" which are the amount that the individual's household received. SSI and SSDI benefits are reported at the individual level. All regressions control for household size dummies, the 2007 value of the dependent variable, and the full list of pre-randomization covariates from Table A3. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238

Table A20: Income, 2009 outcomes, controlling for list covariates

	Control mean	ITT	LATE	p-value
	(1)	(2)	(3)	(4)
Panel A:				
Any total individual income	.639			
Total individual income	7361			
	(10228)			
Panel B:				
Economic Self-Sufficiency	0			
	0.683			

Note: Total individual income includes individual level wage and self-employment earnings, SSI and SSDI benefits, and TANF (TANF is measured at the household level). Economic Self-Sufficiency is a standardized composite measure of employment, earnings, receipt of SNAP and government income, with the latter two entering negatively (see text for details). All regressions control for household size dummies, the 2007 value of the dependent variable, and the full list of pre-randomization covariates from Table A3. Standard errors are clustered by household. All regressions are weighted to adjust for a new lottery that started in late 2009. N=63238.

References

Angrist, J. D., G. W. Imbens & D. B. Rubin (1996) Identification of Causal Effects Using Instrumental Variables. *Journal of the American Statistical Association,* 91**,** 444-455.

Finkelstein, A., S. Taubman, B. Wright, M. Bernstein, J. Gruber, J. P. Newhouse, H. Allen, K. Baicker & O. H. S. Group (2012) The Oregon Health Insurance Experiment: Evidence from the First Year. *The Quarterly Journal of Economics,* 127**,** 1057-1106.

Imbens, G. W. & J. D. Angrist (1994) Identification and Estimation of Local Average Treatment Effects. *Econometrica,* 62**,** 467-475.

Kling, J. R., J. B. Liebman & L. F. Katz (2007) Experimental Analysis of Neighborhood Effects *Econometrica,* 75**,** 83-119.

Song, J. & J. Manchester (2007) New Evidence on Earnings and Benefit Claims Following Changes in the Retirement Earnings Test in 2000 *Journal of Public Economics,* 91**,** 669-700.

von Wachter, T., J. Song & J. Manchester (2011) Trends in Employment and Earning of Allowed and Rejected Applicants to the Social Security Disability Insurance Program. *American Economic Review,* 101**,** 3308-29.