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Reassessing the Effects of Unemployment Insurance Generosity on Search Intensity: New Evidence from Earnings Histories

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Abstract:

This paper provides the first nationally representative estimates of how unemployment insurance (UI) generosity in the United States affects the search intensity of unemployed individuals using individual level variation in UI generosity. The paper expands the current literature through fully simulating monetary eligibility and entitlement to unemployment insurance at the individual level where past studies have been unable to examine monetary eligibility and have relied on state variations in the maximum weekly benefit amount which can differ significantly from an individual's actual benefit amount. To simulate monetary eligibility and entitlement, work histories of unemployed respondents were obtained through fully matching American Time Use Survey respondents to all of their observations in the Current Population Survey, the population from which they are drawn. The results suggest that higher replacement rates are associated with large reductions in time spent searching for a job during normal economic conditions. However, the results are more mitigated during the Great Recession and post recession period with higher replacement rates being associated with small and statistically insignificant effects on time spent searching for a job, although these results appear to be partially driven by the years 2009 and 2010 which were at the height of the labor market decline.

JEL Classification: J64, J65

Keywords: Unemployment, Unemployment Insurance, Unemployment Benefits, Job Search, Time Use

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1. Introduction

Since the onset of the Great Recession, there has been a renewed debate among policy makers about how UI generosity affects unemployed individuals' reemployment probabilities. Much of the debate has focused on whether more generous UI benefits reduce how much effort recipients put into job search. This has led to a growing interest among researchers about how UI generosity affects time use with much of the research using the American Time Use Survey (see Krueger and Mueller (2010), DeLoach and Kurt (2013), Mukoyama, Patterson, Sahin (2013), Guler and Taskin (2013)). However, one limitation with the American Time Use Survey is that no information is asked in the survey regarding unemployment insurance eligibility or receipt. This has led several authors to impute UI eligibility based off of the cause of unemployment and use the state maximum weekly benefit amount as a proxy for UI generosity while also assuming that individuals are eligible for the maximum number of potential weeks of UI benefits in their state. However the concern with this imputation procedure is that individuals might not have sufficient past earnings to qualify for UI and only around 35% of eligible individuals qualify for the state maximum weekly benefit amount and hence it might not be an appropriate proxy for an individual's actual benefit amount (see Krueger and Meyer (2002)). Furthermore, in several states it is possible to qualify for significantly less than the maximum number of potential weeks of benefits. To address these concerns, I obtain earnings histories of ATUS respondents and simulate UI eligibility, benefit amounts, and potential weeks of benefits.

To obtain earnings histories, this paper takes advantage of the fact that the American Time Use Survey (ATUS) is drawn from the eighth and final wave of the Current Population Survey. The CPS provides valuable information about ATUS respondents' past earnings during their base period, the period where UI eligibility, benefit levels, and potential weeks of benefits

are determined. To obtain ATUS respondents' past earnings, I longitudinally match each respondent's CPS observations across all eight waves of the survey. I then determine the number of CPS observations that fall within each respondent's base period. Respondents can have up to four CPS observations in their base period and I exclude respondents with less than four observations from the analysis. I then use respondents' hours worked during each wave of their base period and their hourly wage to determine base period earnings.

Base period earnings are then run through a simulation program. The simulation biannually captures the structure of each state UI system to determine monetary eligibility, weekly benefit amounts, and potential weeks of benefits for each respondent for the period preceding and following the Great Recession from 2003-2013. The simulation is the first to fully simulate eligibility, weekly benefit amounts, and potential weeks of benefits for all extended and emergency benefits stemming from the Great Recession. The simulation suggest that approximately 17% of individuals included in past studies were ineligible for UI while over two-thirds of eligible respondents received benefits less than the maximum weekly benefit amount. I then exclude the 17% of ineligible respondents included in past studies and focus the analysis on variations in each respondent's individual replacement rate which was not possible in past studies as both the weekly benefit amount and base period earnings were unobserved.

The results suggest that higher replacement rates are associated with large reductions in time spent searching for a job during normal economic conditions with elasticities ranging from -2.2 to -5.8, which are larger in magnitude than past studies have found which relied on state variation in UI generosity. However, the results are more mitigated during the Great Recession and post recession period with higher replacement rates being associated with small and statistically insignificant effects on search times, with elasticity estimates ranging from -.6 to 0,

although the years 2009 and 2010 which were at the height of the labor market decline appear to be partially driving these results. Overall, the results suggest that the moral hazard that UI can induce might be more mitigated during adverse economic conditions. The findings suggest that optimal unemployment benefits might vary throughout the business cycle.

2. Literature Review

Since its inception in the United States in the late 1930s, there has always been a great deal of concern that UI produces a "moral hazard" effect where leisure is subsidized through unemployment insurance and this "moral hazard" effect is often assumed to be increasing in UI generosity. As predicted by UI search models such as Mortensen (1977) and Moffitt and Nicholson (1982), UI lowers search intensity and raises reservation wages of recipients in both the replacement rate and duration of potential benefits. There is also a large empirical literature that examines the effects of increased benefit amounts on spell duration. For example Moffitt (1985), Solon (1985), Meyer (1990), and others have found that a 10% increase in benefit levels increases spell duration by an average of between 3-8%. There has also been a large literature that examines how increases in potential weeks of benefits affect spell duration. For example, Moffitt (1985), Solon (1985), Katz and Meyer (1990), Card and Levine (2000), and others have found that a one week increase in potential benefits increases spell duration by between .08-.30 weeks. There has also been a renewed interest in how additional potential weeks of benefits affect spell duration during the Great Recession as potential weeks of benefits reached up to 99 weeks for certain individuals. Farber and Valletta (2013) and Rothstein (2011) find a small but statistical increase in unemployment caused by the large increase in potential weeks of benefits. While estimates vary widely, most research suggests that more generous unemployment benefits in terms of benefit amounts and potential weeks of benefits increase spell duration although the

size of this effect might vary throughout the business cycle. There are several potential explanations for this explored in the literature including that UI could be reducing search intensity, increasing reservation wages leading some individuals to not accept job offers, or it could be providing individuals more time to seek higher quality employment matches.[1]

This paper focuses on the effects of unemployment insurance generosity on the search intensity of the unemployed, which has been an area of growing interest in recent years. Historically since the inception of requiring active job search for unemployment classification in the United States in 1940, most survey datasets have asked respondents about whether they have searched for a job in the last four weeks as this is a necessary requirement for being considered unemployed.[2] However conditional upon search, most datasets provide little information about search intensity in terms of how much effort an individual puts into searching for a job. Historically this has led to little being known about the search intensity of individuals that report searching through effort level or time spent searching. However, in recent years several papers have attempted to examine the search intensity of the unemployed. Shimer (2004) examines how search intensity varies throughout the business cycle. Using the Current Population Survey, Shimer proxies for search intensity of individuals using the number of search methods that respondents reported using during the four weeks preceding the CPS interview. Shimer hypothesizes that more methods of search imply a higher level of search intensity. Shimer's findings suggest that search intensity is acyclical. Other papers have examined the search intensity of young cohorts using the National Longitudinal Study of Youth 1979 (NLSY79). Holzer (1988) examines the search methods and intensity of unemployed males aged 16-23 using

[1] For papers about UI generosity and reservation wages see Feldstein and Poterba (1984), Shimer and Werning (2007), and Krueger and Mueller (2013). For papers about UI generosity and match quality see Centeno (2004) and Schmieder, von Wachter, and Bender (2011).

[2] See Card (2011) for the origins of the unemployment rate.

the 1981 panel of the NLSY79. Like most surveys, the NLSY79 asks non-employed respondents the types of search methods that they used in the past four weeks while the 1981 panel included a job search questionnaire that asked respondents about the amount of time that they had spent on each type of job search for the week preceding the survey. Holzer finds that the most productive search methods were contacting friends and relatives and direct applications without referral which also had the highest levels of search intensity among the youth male cohort that Holzer examined. Paserman (2008) uses the NLSY79 from 1985-1996 to estimate the degree of hyperbolic discounting for job search. To estimate the convexity of the cost function of searching, Paserman uses the NLSY 1981 job search questionnaire to obtain data on time spent on various methods of search and their effectiveness. Paserman finds a large degree of hyperbolic discounting among low and medium wage workers.

Another recent method of examining search intensity has been to use time use data from the ATUS. Krueger and Mueller (2010) examine the effects of unemployment insurance generosity on the search intensity of the unemployed using the ATUS from 2003-2007. Since information relating to unemployment insurance eligibility or receipt is not provided in the ATUS or CPS monthly files, Krueger and Mueller impute UI eligibility based on the cause of unemployment and spell duration. They then use the state maximum weekly benefit for the given year to proxy as an indicator of UI generosity. Krueger and Mueller's findings suggest that more generous UI benefits (increases in the state maximum weekly benefit) are associated with lower levels of search intensity with elasticity estimates between -1.6 to -2.2. Guler and Taskin (2013) use ATUS files from 2003-2008 while also imputing UI eligibility and using the state maximum weekly benefit as a proxy for UI generosity to examine how UI affects

household production.[3] Their findings suggest that there is a negative relationship between household production and UI generosity. Other papers have used similar UI imputation procedures with time use data. DeLoach and Kurt (2013) use the ATUS from 2003-2011, to examine the effects of macroeconomic shocks on search intensity. DeLoach and Kurt estimate a similar model to that of Krueger and Mueller (2010) while including additional controls to model for macroeconomic shocks. While assuming maximum weeks of benefits, they model for both extended and emergency unemployment benefits. For the analysis DeLoach and Kurt include the log of the vacancy to unemployment rate from the Job Openings and Labor Turnover Survey (JOLTS), log of housing prices from Case-Shiller, and in certain specifications homeownership. DeLoach and Kurt find that deteriorating labor market conditions reduce search intensity, while the effects are mitigated by declines in household wealth.

In addition to not providing information about UI eligibility or receipt another limitation with the ATUS is that sample sizes are quite limited, especially for unemployed individuals that searched for employment over the ATUS observation period which is 24 hours. To address this, Mukoyama, Patterson, and Sahin (2013) examine how job search behavior varies over the business cycle using the ATUS to impute search intensity in the CPS. To do this they first examine how search times vary by type of search and number of types of search, which is essentially an empirical test of Shimer (2004) that more methods of search implies a higher search intensity. After finding that more methods of search on average lead to higher levels of search time, Mukoyama et al. impute search time spent in the CPS based on the number and type of methods that CPS respondents reported undertaking, which takes advantage of the ATUS providing both the number of search methods and time spent searching over the 24 hour diary

[3] Guler and Taskin define household production as activities that are used for the production of goods and services at home instead of purchasing such goods and services from a market.

day. Similar to DeLoach and Kurt, Mukoyama et al. assume the maximum weeks of benefits and model both extended and emergency unemployment benefits. Their findings suggest that aggregate job search intensity is countercyclical at both the extensive and intensive margins. Aguiar, Hurst, and Karabarbounis (2013) use data from the ATUS from 2003-2010 to examine time use during the Great Recession. They find that job search replaces between 2-6% of foregone hours worked, while home production and leisure absorb approximately 30% and 50% of forgone hours worked, respectively.

As noted above, one limitation with the American Time Use Survey is that no information is asked in the survey regarding unemployment insurance eligibility or receipt. This has led several authors (Krueger and Mueller (2010), DeLoach and Kurt (2013), Mukoyama et al. (2013), and Guler and Taskin (2013)) to impute UI eligibility based on the cause of unemployment where voluntary job leavers and new and reentrants are ineligible for benefits while classifying all other unemployed individuals with spells less than the maximum potential weeks of benefits as being eligible.[4] The logic behind this approach is that voluntary job leavers have often been excluded from receiving unemployment insurance and that new and reentrants often lack sufficient earnings to qualify for UI. After eligibility has been imputed, the procedure then uses the state maximum weekly benefit amount for the year that the spell was observed to proxy as an indicator of UI generosity.

While this imputation procedure has been helpful in the literature for examining the effects of unemployment insurance receipt on search intensity, there are three primary concerns with the approach. First, without observing base period earnings, it is not possible to know if an

[4] A growing number of papers have used a similar procedure on CPS data to impute UI eligibility (see Valletta and Kuang (2010), Farber and Valletta (2013), and Rothstein (2011)).

individual was ever monetarily eligible for unemployment insurance during the course of the unemployment spell. This has led several authors to include monetarily ineligible individuals in their samples. Second, since base period earnings are unobserved, the approach is unable to estimate the actual benefit amount that an individual would receive and instead relies on variations in the state maximum weekly benefit amount. Given that only around 35% of UI recipients receive the maximum weekly benefit amount, the procedure could grossly overstate UI generosity for a large fraction of the sample. This can be seen in Table 1 for 2013 as actual UI payments can vary significantly from the state maximum weekly benefit amount. For example as displayed in Table 1, benefits can range from 33-674 dollars in Massachusetts, meaning that someone receiving a 33 dollar benefit would get a proxy value of 674 dollars (the state maximum weekly benefit amount) while someone receiving the same 33 dollar benefit in Mississippi would get a proxy value of 235 dollars. Moreover, the percentage of recipients receiving the maximum weekly benefit can vary significantly by state. Third, weeks of benefits are often determined by base period earnings, where 26 weeks of state benefits is often the maximum potential weeks of benefits in most states.[5] However in many states, it is possible to qualify for significantly less than 26 weeks of benefits and thus the imputation procedure might incorrectly assign 26 weeks to individuals that are eligible for significantly fewer weeks.[6] This could mean that if the duration of an individual's unemployment spell has surpassed the actual weeks of benefits available to the individual but is less than 26 weeks, the procedure would misclassify the individual as still being eligible for UI when the individual would actually no longer be eligible for UI. To address these concerns, I obtain work histories of unemployed respondents through

[5] At the start of 2013, Arkansas, Florida, Georgia, Michigan, Missouri, and South Carolina had maximum potential weeks of benefits between 20-25 weeks while Montana and Massachusetts offered maximums between 28-30 weeks.

[6] The exceptions to this being Connecticut, Hawaii, Illinois, Louisiana, Maryland, New Hampshire, New York, and West Virginia which follow uniform distributions of 26 potential weeks of benefits.

fully matching ATUS respondents to all of their observations in the CPS, the population from which they are drawn. This allows for full simulation of UI eligibility, weekly benefit amounts, and potential weeks of benefits.

3. Data

To examine the relationship between unemployment insurance generosity and search intensity, I use data from the American Time Use Survey (ATUS) from 2003-2013. Since the ATUS provides no direct information about UI eligibility, I match ATUS respondents to their longitudinal data from the Current Population Survey, the dataset from which the ATUS is drawn. I then run earnings histories of unemployed respondents through a simulation program that calculates UI eligibility, benefit amounts, and potential weeks of benefits available. In the remainder of this section, I discuss the American Time Use Survey and Current Population Survey as well as the matching procedure and simulations used for the analysis.

3.1 The American Time Use Survey

The American Time Use Survey (ATUS) is the primary source of how, where, and with whom Americans spend their time. The survey is produced by the Bureau of Labor Statistics and has been collecting monthly data since 2003. The ATUS population is drawn from the 8th (and final) wave of the Current Population Survey, and interviews are conducted 2-5 months after the final CPS observation is taken. Sample households are selected based on the characteristics of the CPS reference person (the person who provided the household information during the CPS interviews), and the respondent is then randomly selected from the list of adults (age 15 or older) from within the household. Sample sizes for 2003 are 1,700 time diaries per month and this number was cut to 1,100 starting in 2004 due to budgetary cuts. The total sample

size collected from 2003 through 2013 is 148,345. To avoid retirement effects, attention is focused on individuals age 20-65 that report being unemployed at the time of the ATUS interview. For an individual to be considered unemployed they cannot have a job, they must be available for a job, and must have actively sought employment in the past four weeks. In total, there are 5,555 unemployed individuals in the ATUS between the ages of 20-65 from 2003-2013 (see Table 2).[7]

The ATUS records time use data on a multitude of activities. More precisely, respondents report each activity they undertook in the past 24 hours (from 4 a.m. to 4 a.m., ending on the interview day), how long they spent on that activity, where that activity took place, and who was with them while they undertook the activity. The ATUS only records primary activities and excludes secondary activities. Given this, respondents cannot report multiple activities occurring simultaneously and must report the activity that they were primarily engaged in. The primary variable of interest for this analysis is total time spent searching for a job. This includes things such as all time spent on active and passive job search, time spent interviewing, and all other time related to job search. In 2013, unemployed individuals in the US spent on average 28 minutes per day on activities related to finding a job (including travel related to job search). Search times averaged 34 minutes per day on weekdays and 14 minutes per day on weekends. However, only 16% of unemployed respondents searched for a job on their diary day implying significantly longer search times conditional upon search of approximately three hours on weekdays and two and a half hours on weekends.

[7] In the US active job search in the past four weeks is necessary for being considered unemployed. Moreover, the reference week for employment status in the ATUS is defined as the 7 days prior to the interview, while in the CPS the reference week is the week prior to the interview.

While primarily asking time use questions, the survey also updates some information that was collected during the eighth wave of the CPS that could have changed since that interview. Of this updated information, the primary variables of interest to this analysis are a subset of labor force questions from the CPS. The ATUS provides individuals' labor force status using five groups: employed, employed not at work during the reference week, unemployed, unemployed on layoff, and not in the labor force. More precisely, the ATUS asks all questions used in the CPS to determine if individuals are unemployed. This includes questions relating to if an individual has a job, is available for a job, and questions relating to if an individual has searched for a job in the last four weeks. If an individual searched for a job then the types of search methods that the individual used are also provided. The ATUS also provides information on recall status for individuals on layoff, whether individuals that are not in the labor force and are over the age of 55 want a job, and hours worked for employed individuals. However, the ATUS excludes several important CPS variables including unemployment duration and reason for unemployment.[8] Moreover, like the CPS monthly files, no information is asked relating to unemployment insurance receipt or eligibility.

3.2 Matching CPS files and Constructing Base Period Earnings

Since the ATUS provides no information regarding UI eligibility, benefit amounts, and potential weeks of benefits, I first obtain ATUS respondents' labor force histories from the respondents' CPS observations. The CPS follows a format where individuals are in the survey for four months then they are excluded from the survey for eight months and then reenter the

[8] To address these limitations, I model unemployment duration using unemployment duration from the CPS plus the time between surveys for individuals that were unemployed during both the eighth wave of the CPS and the ATUS. For individuals that become unemployed between the CPS and ATUS, I model duration as the midpoint between the two surveys, where the surveys are typically 2-5 months apart.

survey for four additional months for a total of up to eight months in the survey over a sixteen month period. Since the CPS follows houses (the physical location) rather than households, respondents can have anywhere from 1-8 CPS interviews, although all ATUS respondents have an eighth wave CPS observation. The CPS provides information on labor force status, hours worked, and wage earnings which are taken twice during the fourth and eighth waves of the survey.

To create earnings histories, I first match individual's basic monthly CPS files using respondents' household id, household number, family number, individual line number, initial month and year in sample, and state which combined uniquely identify individuals across time. The matching procedure produces an unbalanced panel of respondents' observations ranging from 1-8 CPS observations. However as noted by Madrian and Lefgren (1999) a significant number of matched individuals in the CPS have discrepancies in their data such as changes in sex, race, education, or age that are implausible. To address these discrepancies, an algorithm was used where individuals are excluded from the analysis if their sex or race differs across any CPS observations that fall within a respondent's base period (the period where UI earnings test are conducted) or if discrepancies in age fall outside of a four year range for such observations. ATUS respondents are then matched to the longitudinal CPS files using a similar match validation technique.

After matching the CPS files, respondents' CPS labor force status, hours worked, and wage earnings are used to construct base period earnings, and in turn to determine monetary eligibility for UI. Almost all states have base periods that use past earnings consisting of the earliest 4 of the last 5 completed calendar quarters preceding the filing of the UI claim to test for

monetary eligibility.[9] These exclude the last completed quarter before the filing of a claim. Moreover, several states have implemented alternative base periods which generally test the last 4 completed quarters if an individual does not qualify under a traditional base period. ATUS respondents can have anywhere from 0-4 CPS observations during their base period, depending on the duration of their spell and the number of CPS interviews the respondent participated in. To construct base period earnings, I limit the analysis to individuals with four CPS observations during their base period or individuals that have three observations during their base period and have four observations during their alternative base period conditional on their states adopting alternative base periods before their spell start date.[10]

To determine base period earnings, I first determine each respondent's hourly wage rate. For earnings, I primarily rely on reported wage earnings which are taken in the fourth and eighth months of the CPS (the outgoing rotation groups). Because earnings are only asked during the fourth and eighth waves of the survey, 17% of respondents have no reported earnings (or have imputed earnings) in the CPS even though many of these individuals held employment during their base periods. In the case that an individual had no reported earnings or the individual's earnings were imputed, I use predicted hourly wage calculated using CPS earnings files from 2004-2005. To do this, I estimate a wage equation used by Krueger and Mueller (2010) which they use to predict all of their observations hourly earnings of the form:

$$(1) \qquad \log(w_{is}) = a + b\, Z_i + d_s + e_{is},$$

[9] Since the initial claim date is not provided in the ATUS or CPS, I use the spell start date which is often the same day (or week) as the initial claim date.

[10] Restricting the sample to respondents with four base period observations produces the most accurate estimates of UI eligibility, benefit amounts, and potential weeks of benefits but comes at a cost of slightly reducing the sample size. I also explore estimates using three base period observations although the results become more noisy when using less than four base period observations.

where w_{is} is hourly wage, Z_i are controls for age, age squared, education controls for high school degree or less; some college; and college degree, female, and d_s are state fixed effects. The wage equation was estimated using 319,813 workers from CPS Merged Outgoing Rotation Groups (MORGs) files from 2004 and 2005. The sample size of 319,813 was obtained through excluding students, self-employed, self-incorporated, and employed individuals with hourly earnings of less than $1 or more than $200.[11] I then use the wage equation to predict unemployed individuals' hourly wage rate and use this to calculate base period earnings for individuals that I do not observe their earnings or have imputed earnings values in the CPS.[12]

I then examine the hours worked for each employed CPS respondent that I observe during their base period and multiply this by the individual's hourly wage. Individuals that are unemployed or not in the labor force for a given month during their base period (or alternative base period if available) receive a value of zero for the month.[13] I then scale my earnings measure up to an annualized amount which provides base period earnings (see Chetty (2008), Gruber and Cullen (2000), Levine (1993), and LaLumia (2013) for examples of papers that use simulation programs for UI with scaled up earnings).[14]

[11] Following Krueger and Mueller, I adjust wages to account for topcoding.

[12] If an individual has earnings reported in both outgoing rotation groups then I use the earnings from the earlier period.

[13] A small number of respondents have industry and occupation codes that indicate that they are teachers and professors. It is possible that these individuals could be receiving wage income during summer months even while reporting zero hours of employment. When these individuals report zero hours worked during summer months, I exclude them from the analysis.

[14] Another option would be to use the CPS March Supplement (The ASEC) and merge this to the ATUS. The primary advantage of this is that the ASEC provides the weeks worked (and wage income) over the last calendar year. However, there are two primary disadvantages to this approach. First, less than 25% of ATUS respondents have a valid ASEC observation, which is significantly lower than using full monthly files which leads to match rates over 50%. Second, the advantage of knowing weeks worked (and wage income) over the last calendar year is somewhat limited by the fact that a calendar year generally does not correspond to an individual's base period unless the individual became unemployed between April-June using a traditional base period. Given this any benefits from using the March CPS files instead of the full monthly CPS files are likely outweighed by the cost.

3.3 UI Eligibility, Benefit Amounts, and Potential Weeks of Benefits

To determine if unemployed ATUS respondents have sufficient earnings to qualify for UI, I run each unemployed ATUS respondent through a simulation program that determines if the respondent has sufficient base period earnings to qualify for UI for the individual's state of residence. If an individual has sufficient earnings to qualify for UI then the simulation also calculates the individual's weekly benefit amount including any dependent allowances when applicable.[15] While reported recipiency and benefit amounts are latent in this analysis, there are two main advantages of using simulated eligibility and benefits rather than reported benefits. First, UI take-up is endogenous. As noted by Blank and Card (1991) take-up rates among eligibles are typically around 67%. If take-up is correlated with search intensity then using actual benefits received would lead to a biased coefficient estimate on benefits received. Second, UI receipt is often unreported and misreported in survey data. As noted by Meyer, Mok, and Sullivan (2009), UI receipt is often unreported with average yearly reporting rates of 73.8% in the PSID, 74.7% in the SIPP, and 79.2% in the ASEC (March CPS). Hence simulation based methods can help to address these concerns.

The simulation then calculates the number of potential weeks of benefits that each individual is eligible for, which is typically between 12-26 weeks depending on the individuals' base period earnings and the state where the UI claim is based. The simulation also calculates all potential weeks of extended and emergency benefits. This is important as potential weeks of

[15] Dependent allowances are additional monetary payments made by states to eligible UI recipients who have qualifying dependents. The states that pay dependent allowances at some point during the sample period are Alaska, District of Columbia, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, New Jersey, New Mexico, Ohio, Pennsylvania, Rhode Island, and Tennessee. Dependent allowances can range from a minimum of $5 per week in Pennsylvania (with one qualifying dependent) up to $300 per week in Massachusetts (with twelve qualifying dependents; $25 per dependent).

benefits reached as many as 99 weeks during the Great Recession and individuals in the data can be eligible for 1-99 potential weeks of benefits.[16] Aggregate unemployment and aggregate unemployment claims by type of claim and year are displayed in Figure 1.

In addition to monetary conditions, all states also have non-monetary conditions that can exclude voluntary job leavers, individuals not available for full-time employment, individuals fired for cause, and individuals that are eligible for UI but not actively seeking employment, among other requirements. To address non-monetary conditions, I also impose restrictions similar to Krueger and Mueller (2010). To do this, I use data from both the ATUS as well as the final wave of the CPS which is provided in the ATUS to classify each of the 5,555 unemployed individuals between the ages of 20-65 into four groups: On Temporary Layoff (N=703), New and Reentrants (N=2,125), Voluntary Job Leavers (N=138), and Job Losers (N=2,589). More specifically unemployed individuals are classified as:

- **On Temporary Layoff:** if they are classified as on layoff during the ATUS interview.
- **New and Reentrants:** if they were not in the labor force in the CPS and were unemployed in the ATUS and those that were unemployed in the CPS and indicated they were either a New or Reentrant and were still unemployed in the ATUS.
- **Voluntary Job Leavers:** those who were unemployed in the CPS and indicated they voluntarily left their job and remain unemployed in the ATUS.
- **Job Losers:** those who were unemployed in the CPS and indicated that they had lost their job with no expectation of recall, individuals that were unemployed in the CPS

[16] State benefits can range from 1-30 weeks for eligible individuals, while extended benefits can range from 0-20 weeks, and emergency unemployment compensation can range from 0-53 weeks (although jointly they can only run for a maximum of 99 weeks).

whose temporary jobs had ended, and individuals that were employed in the CPS and subsequently became unemployed with no expectation of recall.

I then classify New and Reentrants and Voluntary Job Leavers as ineligible for UI as many states have historically excluded Voluntary Job Leavers from receiving UI while New and Reentrants typically lack sufficient wage earnings during their base period to qualify for UI.[17] I then classify monetarily eligible Job Losers and those On Temporary Layoff with weeks remaining as eligible for UI and assign them their individual replacement rate. I focus my analysis on Job Losers as they are the largest of the groups and they are also most likely to satisfy non-monetary conditions needed to qualify for UI while excluding individuals On Temporary Layoff as they likely face different incentives than Job Losers (see Feldstein (1976), Feldstein (1978), and Topel (1983)).

3.4 Sample Characteristics

Sample characteristics are displayed in Table 2. There are 5,555 unemployed individuals in the ATUS between the ages of 20-65 from 2003-2013 with 2,589 of these individuals being classified as Job Losers. Of the Job Losers, 2,017 had unemployment durations below their states' maximum potential weeks of benefits including all extended and emergency benefits.[18] Of these, 1,060 have four observed observations during their base period. For Job Losers with

[17] Using my simulations, it is possible to test if New and Reentrants have sufficient wage earnings during their base period to qualify for UI. For New and Reentrants between the ages of 20-65 with durations below their states' maximum potential weeks of benefits including extended and emergency benefits, one third (33.6%) are monetarily eligible for UI. However, there is still some concern about whether these individuals satisfy non-monetary conditions which are more difficult to address. Furthermore, many states offer benefits to voluntary job leavers if they view the reason for the voluntary exit as a compelling family reason, although this cannot be observed in the data.

[18] I also exclude a small number of individuals that worked part-time during their base period and live in states that don't pay benefits to individuals seeking part-time employment.

four observations in their base period and satisfying the match quality algorithm, there are 1,013 such individuals implying that the procedure is able to match half (50.22%) of the Job Losers that are potentially eligible for UI in the ATUS between the ages of 20-65.

Each of the 1,013 potentially eligible Job Losers with four valid base period observations satisfying the match quality algorithm were then run through a UI simulation program that biennially captures the structure of each state UI system to determine monetary eligibility, weekly benefit amounts, and potential weeks of benefits for each respondent. Of these, 144 (14.2%) have observed base period earnings that are insufficient to be monetarily eligible for UI while 28 (2.8%) were eligible for less than the maximum weeks of benefits and had exceeded their maximum potential weeks of benefits implying that 17% of observed Job Losers are ineligible from receiving UI. After excluding the 17% of Job Losers that are ineligible for UI, the sample is composed of 841 monetarily eligible respondents that have not surpassed their maximum potential weeks of benefits. I then exclude 18 individuals from the analysis that have replacement rates above 100% or that make the minimum weekly benefit amount as this can lead to extremely large replacement rates in many states.[19] This leaves a sample of 823 individuals from 2003-2013 that are still eligible for UI with remaining potential weeks of benefits. For these individuals, the average replacement rate is 48.12%.[20] Moreover 32.20% of these individuals make the maximum weekly benefit in their state which is consistent with Krueger and Meyer's (2002) estimate of approximately 35%.

[19] Since the state minimum weekly benefit amount is often legislated by law, it is possible to qualify for UI in many states with earnings less than what is needed to qualify for the minimum weekly benefit amount using a state's UI benefit formula which can lead to large replacement rates.

[20] When applicable, the replacement rate includes a $25 benefit increase in UI benefits from the American Recovery and Reinvestment Act that was available from February 2009 until December 2010 for claims filed before May 27, 2010.

Table 3 displays weighted means of each variable included in the model stratified by year as well as a comparison to the weighted means of all Job Losers aged 20-65 that have unemployment durations less than their states' maximum potential weeks of benefits. For 2003-2013 mean job search was 60 minutes per day compared to 56 minutes for all Job Losers with the difference being slightly more pronounced for the 2003-2007 period. The average age of the sample is 41 years compared to 39 years for all Job Losers. The sample is slightly more educated than Job Losers with 25% of the sample having a college degree compared to 21% of Job Losers. Females makeup 42% of the sample compared to 43% of Job Losers. Moreover, the sample is slightly more likely to have a partner than Job Losers with 59% of the sample having a partner relative to 53% of Job Losers. The largest difference between the sample and Job Losers is homeownership with 71% of individuals in the sample being homeowners relative to 58% of Job Losers.[21] With the exception of homeownership, the means in Table 3 suggest that the sample and Job Losers are similar in regards to the variables used in the analysis.

4. Model

For the 823 ATUS respondents meeting this criterion from 2003-2013, I model search intensity following Krueger and Mueller (2010) while replacing log of maximum weekly benefit with each respondents' UI replacement rate. My model is then of the form:

$$(2) \qquad Search_{ist} = \alpha + \beta_1 \text{ Replacement Rate}_{ist} + \beta_2 \log(\widehat{w}_{is}) + \beta_3 \text{ std(resid w)}_s + \pi_1 X_i + d_t + u_{ist,}$$

where $Search_{ist}$ is total minutes of the diary day that were devoted to job search, $Rate_{ist}$ is the ratio of each individual's weekly benefit amount to the individual's average weekly

[21] This difference is primarily caused by the CPS following houses (the physical location) rather than individuals which increases the likelihood that individuals that move frequently will be excluded from the analysis. To address this difference, I include additional controls in certain specifications that control for homeownership.

wage during the individual's base period, $\widehat{w}_{is}$ is the predicted hourly wage of worker i in state s, std(resid w)$_s$ is a dispersion parameter created from the wage equation in Section 3, X_i are controls for age, age squared, education controls for high school degree or less; some college; and college degree, female, partner, children in the household, interactions between female and partner and female and children, weekend, and d_t are month and year fixed effects. Standard errors are clustered by state. Moreover, all regressions are weighted using official survey weights. To isolate the component of UI variation that is only a function of variations in state UI generosity, I follow Gruber (1997) and instrument each individual's replacement rate with a simulated replacement rate. To create the simulated replacement rate, I run each of the 823 UI eligible individuals from the 2003-2013 period through the simulation program for each state-year cell and calculate the average replacement rate biannually.[22] [23] To ensure the validity of the instrument, F-Statistics for the significance of the instrument excluded from the structural model are included after each IV model. The F-Statistics across all specifications range from 12-67, which exceed the rule of thumb value of 10 (see Staiger and Stock (1997) and Stock and Yogo (2005)). Hence the instrument does not appear to be weak.

To address the large changes in economic conditions and increases in potential weeks of UI benefits during the Great Recession, I stratify the sample into the 2003-2007 period and 2008-2013 period as well as including the entire sample period from 2003-2013. I also include additional macroeconomic controls in certain specifications to control for variations in economic conditions throughout the period. These include controls for the monthly state unemployment rate at the time of the ATUS observation, homeownership, the real value of the Case-Shiller

[22] For similar applications used in the Medicaid literature see Currie and Gruber (1996), Gruber and Yelowitz (1999), and Brown, Kowalski, and Lurie (2014).

[23] Krueger and Mueller (2010) include corresponding IV models using state level variation in UI generosity where they instrument for the state average weekly benefit amount using the state maximum weekly benefit amount in certain specifications.

National Home Price Index, the interaction between homeownership and the real value of the Case-Shiller National Home Price Index, and the real value of the S&P500.

5. Results

The results for how UI generosity affects search intensity are displayed in Table 4. The results suggest that for the entire sample period from 2003-2013, higher replacement rates are associated with reductions in search intensity. The baseline estimates suggest that each percentage point increase in an individual's replacement rate is on average associated with a 1.24 minute per day reduction in search times producing an elasticity of -1.0 while the IV estimates suggest a reduction of 1.43 minutes per day producing and elasticity of -1.2 with an average search time of 60 minutes per day. However, given the large amount of unemployment and lack of employment opportunities that arose following the Great Recession, the estimates for this period are much larger in magnitude when the years 2009-2010 are excluded from the analysis (See Table 6, Specification 5). For the 2003-2013 period (excluding 2009 and 2010), the baseline estimates suggest that each percentage point increase in an individual's replacement rate is on average associated with a 1.56 minute per day reduction in search times producing an elasticity of -1.2 while the IV estimates suggest a reduction of 5.60 minutes per day producing and elasticity of -4.2 with an average search time of 64 minutes per day. While the results suggest that higher replacement rates are associated with reductions in search intensity, the stratified sample suggests that there are large differences in the effect of UI generosity in the pre and post periods of the Great Recession.

The results suggest that for the 2003-2007 period, higher replacement rates were associated with large reductions in search intensity. The baseline estimates suggest that each

percentage point increase in an individual's replacement rate is on average associated with a 2.65 minute per day reduction in search times implying an elasticity of -2.2 while the IV estimates suggest a much larger reduction of 7.04 minutes per day implying an elasticity of -5.8 with an average search time of 58 minutes per day. The elasticities are larger in magnitude than Krueger and Mueller's (2010) OLS estimate of -1.6 for all Job Losers for the 2003-2007 period using the maximum weekly benefit.[24] However, since I am estimating this on a subsample of Krueger and Mueller's sample while excluding 16% of respondents that I observe that were never monetarily eligible for UI or had exceeded their maximum weeks of benefits, it is possible that sample heterogeneity is driving these differences. To test for sample heterogeneity, I reestimate Krueger and Mueller's OLS model for my sample of 285 individuals and obtain an elasticity estimate of -1.5 which is slightly smaller in magnitude than Krueger and Mueller's estimate for all Job Losers with durations below the state maximum potential weeks of benefits of -1.6 implying that sample heterogeneity is not driving these differences. My elasticity estimates between -2.2 and -5.8 suggest that reductions in search times caused by increases in UI generosity for this period are much larger than previously thought.

While the results in Table 4 suggest that for the 2003-2007 period higher replacement rates were associated with large reductions in time spent searching for a job, the effects are much smaller for the 2008-2013 period. The baseline estimates suggest that each percentage point increase in an individual's replacement rate is on average associated with a .72 minute reduction per day in search times implying an elasticity of -.6 while the IV estimates suggest no reduction with a coefficient of zero and an elasticity of 0, with both coefficients being statistically

[24] Since Krueger and Mueller are using the maximum weekly benefit as a proxy for the generosity of the weekly benefit amount and since the replacement rate = (weekly benefit amount / the average weekly wage in the base period)*100, a 1% increase in UI generosity would increase the weekly benefit amount and hence the replacement rate by 1% which allows for the direct comparison between elasticities for the maximum weekly benefit amount and the replacement rate.

insignificant. The average search time was 62 minutes per day over this period. For the 2008-2013 period (excluding 2009 and 2010 and displayed in Table 6), the baseline estimates suggest that each percentage point increase in an individual's replacement rate is on average associated with a .62 minute per day reduction in search times producing an elasticity of -.4 while the IV estimates suggest a reduction of 4.33 minutes per day producing and elasticity of -2.8 with an average search time of 69 minutes per day. The results suggest that higher replacement rates had little effect on search intensity during the Great Recession and the period following the Great Recession, although the years 2009 and 2010 which were at the height of the labor market decline appear to be partially driving these results.

One concern with these estimates is the large amount of economic variation that occurred throughout the 2003-2013 period. To address this concern, Table 5 displays estimates with additional macroeconomic controls. These include controls for the seasonally adjusted monthly state unemployment rate, homeownership, the log of the real Case-Shiller National Home Price Index, the interaction between homeownership and the log of the real Case-Shiller National Home Price Index, and the log of the real value of the S&P500. The additional macroeconomic controls are noisy and add little additional fit to the model. The results in Table 4 are robust to the additional macroeconomic controls with the coefficient on Replacement Rate varying little between the two specifications.

Another concern with these estimates is the large number of weeks that individuals could receive UI benefits for during the period, which for certain individuals could be as many as 99 weeks due to Extended and Emergency Benefits. To address this concern, specification checks were run that included total weeks of benefits remaining and continuous weeks of benefits as well as additional robustness checks. The results are displayed in Table 6 and are displayed by

year and whether macroeconomic controls were included. Specification 1 and 2 control for unemployment duration and continuous weeks of benefits remaining, respectively. For these specifications, the coefficients on unemployment duration and continuous weeks of benefits were statistically insignificant and had little effect on the coefficient on replacement rate. Specification 3 uses a Tobit model to address the mass of respondents that report not searching on their diary day. The results are consistent with the baseline estimates in that the Tobit model suggests that more generous benefits are associated with lower search times for the 2003-2007 period and associated with small and statistically insignificant effects for the 2008-2013 period. Specification 4 includes each individual's weekly benefit amount in the baseline model. The inclusion of the individual weekly benefit amount has little effect on the replacement rate and its coefficients are small and statistically insignificant in each of the models. The fifth and final specification estimates both models for the post 2007 period and the entire sample period while excluding data from 2009 and 2010 to ensure that these years which were at the peak of the labor market decline are not driving the results. For the 2008-2013 results (excluding 2009 and 2010; N=283), the coefficients are negative and larger in magnitude than the estimates including 2009 and 2010 but are still statistically insignificant. For the 2003-2013 period (excluding 2009 and 2010; N=568), the coefficients are negative and larger in magnitude than the estimates including 2009 and 2010. This suggest that increases in UI generosity appear to lead to large reductions in search intensity although these results are mitigated by the large number of unemployed and lack of job openings for the 2009-2010 period. In all, the specification checks suggest that the baseline results are robust.

Overall the findings are consistent with other studies that have examined extended and emergency benefits during the Great Recession and found significantly smaller effects on

reemployment probabilities than in past studies and suggest that higher benefit levels might be acting in a similar manner (see Farber and Valletta (2013), Hagedorn, Karahan, Manovskii, and Mitman (2013), and Rothstein (2011)). Moreover, the findings are complementary to much of the recent work studying optimal unemployment insurance (see Kroft and Notowidigdo (2011), Landais, Michaillat, and Saez (2013), and Schmieder, von Wachter, and Bender (2012)). Overall the results indicate that more generous UI benefit amounts are associated with large reductions in search times during normal economic conditions although the effects appear to be more mitigated during the Great Recession and post recession period with higher replacement rates having little effect on search times, although the years 2009 and 2010 which were at the height of the labor market decline appear to be partially driving the latter result.

6. Conclusion

This paper provides the first nationally representative estimates of how unemployment insurance generosity in the United States affects the search intensity of unemployed individuals using individual level variation in UI generosity. The paper expands the current literature through matching American Time Use Survey respondents to all of their observations in the Current Population Survey, the population from which they are drawn, and simulating monetary eligibility and entitlement to unemployment insurance at the individual level where past studies have been unable to examine monetary eligibility and have relied on state variations in the maximum weekly benefit amount which can differ significantly from an individual's actual benefit amount. The simulation is the first to fully simulate eligibility, weekly benefit amounts, and potential weeks of benefits for all extended and emergency benefits stemming from the Great Recession. The results suggest that higher replacement rates are associated with large

reductions in time spent searching for a job during the 2003-2007 period. However the results are more mitigated for the 2008-2013 period encompassing the Great Recession with higher replacement rates being associated with small and statistically insignificant effects on search times. The results suggest that the moral hazard that UI can induce might be more mitigated during adverse economic conditions, especially at the height of the labor market decline during 2009 and 2010. This finding supports the view that optimal unemployment insurance benefits could be tied to labor market conditions, as more adverse economic conditions appear to reduce the moral hazard that more generous UI benefits are known to bring about.

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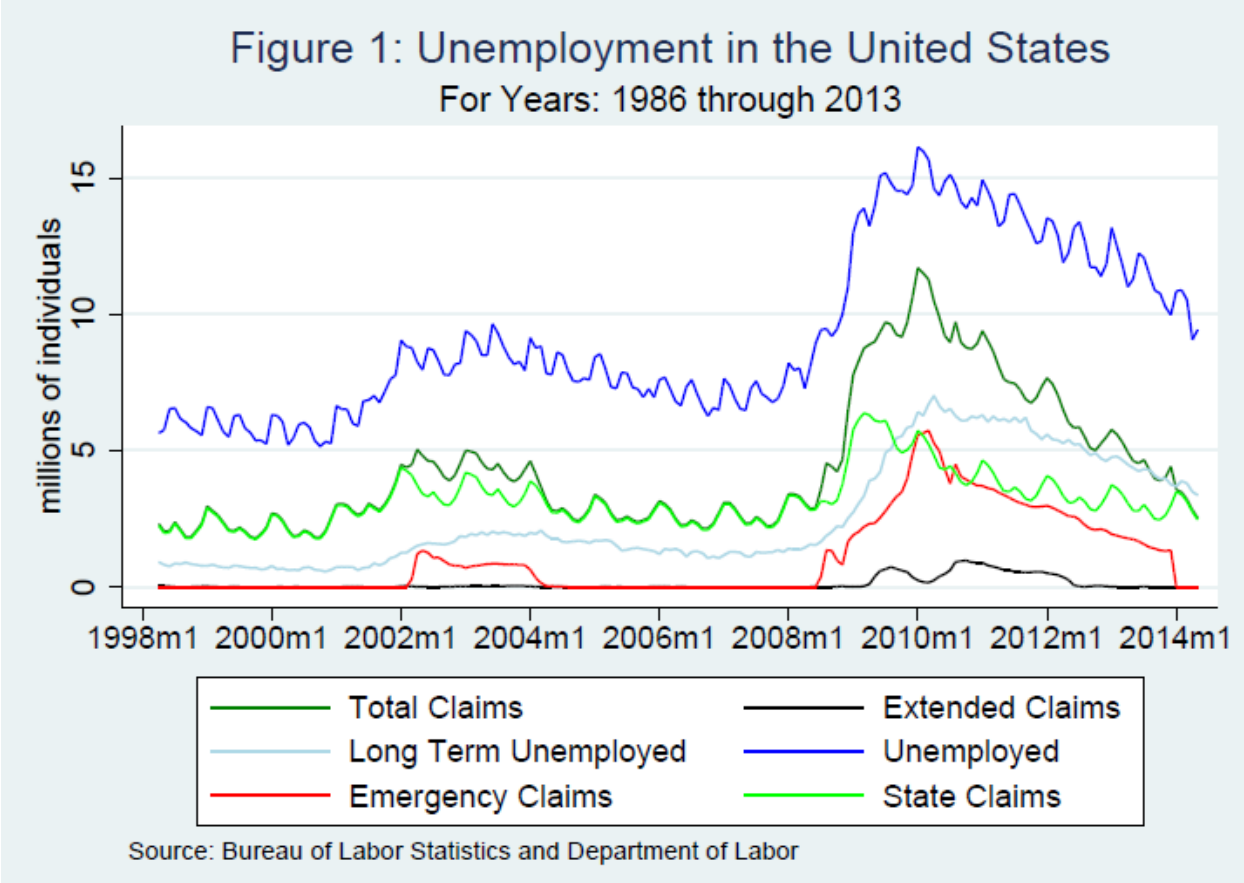
Figure 1: Unemployment in the United States
For Years: 1986 through 2013
millions of individuals
0
5
10
15
1998m1
2000m1
2002m1
2004m1
2006m1
2008m1
2010m1
2012m1
2014m1
Total Claims
Extended Claims
Long Term Unemployed
Unemployed
Emergency Claims
State Claims
Source: Bureau of Labor Statistics and Department of Labor

Table 1 - UI Benefits in Dollars and Weeks by State for 2013[a]

State	Min-WBA	Max-WBA	Average WBA	Average Weekly Wage	Min-Weeks	Max-Weeks
Alabama	45	265	207	794	15	26
Alaska	56	370	250	965	16	26
Arizona	122	240	221	866	12	26
Arkansas	81	451	289	736	9	25
California	40	450	301	1,083	14	26
Colorado	25	466	356	978	13	26
Connecticut	15	591	345	1,230	26	26
Delaware	20	330	245	1,002	24	26
D.C.	50	359	299	1,523	19	26
Florida	32	275	231	822	12	23
Georgia	44	330	267	909	6	20
Hawaii	5	534	424	781	26	26
Idaho	72	357	264	693	10	26
Illinois	51	413	324	1,016	26	26
Indiana	37	390	243	799	8	26
Iowa	59	396	337	780	7	26
Kansas	114	456	341	791	10	26
Kentucky	39	415	292	773	15	26
Louisiana	10	247	207	849	26	26
Maine	65	372	285	718	22	26
Maryland	50	430	329	996	26	26
Massachusetts	33	674	424	1,197	10	30
Michigan	117	362	293	899	14	20
Minnesota	24	393	376	970	11	26
Mississippi	30	235	194	683	13	26
Missouri	35	320	242	824	8	20
Montana	127	446	290	695	8	28
Nebraska	70	362	276	746	12	26
Nevada	16	402	308	822	12	26
New Hampshire	32	427	287	941	26	26
New Jersey	87	624	398	1,141	1	26
New Mexico	76	407	303	750	16	26
New York	64	405	308	1,276	26	26
North Carolina	46	535	290	833	13	26
North Dakota	43	516	396	947	12	26
Ohio	115	413	318	847	20	26
Oklahoma	16	386	293	809	18	26
Oregon	122	524	316	843	3	26
Pennsylvania	70	573	360	934	18	26
Rhode Island	45	566	351	870	15	26
South Carolina	42	326	248	747	13	20
South Dakota	28	333	276	680	15	26
Tennessee	30	275	235	843	13	26
Texas	62	440	341	999	10	26
Utah	26	479	345	794	10	26
Vermont	69	425	313	780	21	26
Virginia	54	378	295	990	12	26
Washington	143	604	387	1,012	1	26
West Virginia	24	424	275	748	26	26
Wisconsin	54	363	276	803	14	26
Wyoming	33	459	359	859	11	26

a. Minimum and maximum values for benefits and potential weeks of benefits are as of January 1, 2013.

Table 2: Determining UI Eligible Individuals and Sample Properties
For individuals age 20-65

Specification	2003-2007	2008-2013	2003-2013
Unemployed	2,171	3,384	5,555
By Unemployment Type:			
New or Reentrant	819	1,306	2,125
On Temporary Layoff	344	359	703
Job Leaver	65	73	138
Job Loser	943	1,646	2,589
Job Losers:			
& Less than State Maximum Weeks[a]	677	1,340	2,017
& Four obs. in Base Period	362	698	1,060
& Excluding Bad Matches	347	666	1,013
& Monetarily Eligible	298	571	869
& Have Weeks Remaining	291	550	841
Percentage of Ineligible Job Losers[b]	16.14%	17.42%	16.98%
& WBA> Min WBA & RR<100%	285	538	823
Eligible:			
Final Sample Size	285	538	823
Average Replacement Rate	46.10%	49.19%	48.12%
Percent Receiving Max WBA	33.33%	31.60%	32.20%
Number qualifying using ABP	13	26	39
Average Spell Duration (weeks)	9.62	14.65	12.90
Max Duration (weeks)	44	61	61

a: including all extended and emergency benefits

a: The difference between Job Losers and Less than State Maximum Weeks also includes a small number of individuals that worked part-time during their base period and live in states that don't pay benefits to individuals seeking part-time employment.

b: Have Weeks Remaining / Four obs. in Base Period

Table 3: Summary Statistics for ATUS Respondents Aged 20-65

	2003-2007		2008-2013		2003-2013	
Specification	Mean	JL-Mean[a]	Mean	JL-Mean[a]	Mean	JL-Mean[a]
Job Search (minutes per day)	57.99	48.94	61.57	60.14	60.45	56.49
Replacement Rate	47.41		50.14		49.28	
log real Predicted Wage	2.92	2.84	2.82	2.76	2.85	2.79
Dispersion Parameter	0.49	0.49	0.49	0.49	0.49	0.49
Age	38.93	36.9	41.68	39.6	40.82	38.72
Some College	0.34	0.3	0.31	0.28	0.32	0.29
College Degree	0.22	0.19	0.26	0.21	0.25	0.21
Female	0.37	0.43	0.44	0.43	0.42	0.43
Female*Partner	0.24	0.24	0.24	0.21	0.24	0.22
Female*Children	0.22	0.22	0.17	0.19	0.19	0.2
Partner	0.58	0.53	0.6	0.53	0.59	0.53
Children	0.49	0.44	0.42	0.43	0.44	0.43
Weekend	0.26	0.25	0.27	0.29	0.27	0.28
State Unemployment Rate	5.25	5.28	8.73	8.89	7.64	7.71
Home Owner	0.76	0.59	0.7	0.58	0.71	0.58
log Case-Shiller	5.34	5.36	5.05	5.04	5.14	5.15
Home Owner x Case-Shiller	4.03	3.17	3.52	2.93	3.68	3.01
log Real-S&P500	7.26	7.27	7.13	7.14	7.17	7.18
N	285	677	538	1340	823	2017

a: Mean of all Job Losers in ATUS aged 20-65 with unemployment durations less than the state maximum potential weeks of benefits

Table 4: The Determinants of Job Search for UI Eligible Individuals
Measured in Minutes per day Searching for a Job

	2003-2007		2008-2013		2003-2013	
Specification	OLS	IV-2SLS[a]	OLS	IV-2SLS[a]	OLS	IV-2SLS[a]
Replacement Rate[a]	-2.65**	-7.04*	-0.72	-0.00	-1.24*	-1.43
	(1.19)	(3.95)	(0.75)	(2.20)	(0.65)	(2.13)
log real Predicted Wage[b]	131.76	193.50	-76.48	-91.41	-25.66	-21.95
	(130.64)	(160.46)	(84.81)	(81.49)	(72.10)	(78.17)
Dispersion Parameter[b]	-238.77	-438.13	109.31	183.98	84.66	67.84
	(380.96)	(399.72)	(204.19)	(275.52)	(163.51)	(230.17)
Age	-7.65	-12.84	14.74**	15.74**	8.37	8.09
	(9.97)	(12.69)	(6.75)	(7.21)	(5.28)	(6.50)
Age Squared	0.08	0.12	-0.16*	-0.17**	-0.09	-0.09
	(0.12)	(0.14)	(0.08)	(0.08)	(0.06)	(0.07)
Some College	-10.59	-30.24	38.06**	43.12**	25.80	24.58
	(32.17)	(43.93)	(18.08)	(20.24)	(16.85)	(21.09)
College Degree	-29.60	-108.68	90.76*	106.39*	61.97	57.91
	(71.26)	(115.04)	(51.03)	(55.05)	(43.23)	(56.31)
Female	61.52	79.16*	-35.19	-39.84*	-14.25	-13.18
	(44.58)	(46.11)	(27.18)	(23.11)	(25.33)	(22.69)
Female*Partner	-40.67	-16.77	-50.48*	-52.11*	-42.32**	-41.73**
	(29.69)	(37.10)	(26.33)	(26.62)	(17.98)	(19.45)
Female*Children	-4.44	-9.52	28.75	28.44	17.08	17.15
	(34.31)	(34.83)	(26.22)	(25.68)	(22.38)	(21.96)
Partner	6.20	-14.87	11.58	14.21	5.07	4.36
	(21.76)	(23.10)	(20.76)	(21.57)	(14.08)	(15.46)
Children	23.06	32.18	-22.43	-23.25	-5.93	-5.70
	(28.58)	(29.38)	(17.81)	(17.23)	(16.47)	(16.04)
Weekend	-60.90***	-65.90***	-58.44***	-56.89***	-62.94***	-63.32***
	(14.30)	(13.42)	(8.86)	(10.97)	(7.57)	(9.17)
Constant	110.73	370.73	-35.20	-115.97	3.54	17.17
	(218.45)	(315.88)	(115.92)	(243.71)	(103.90)	(195.65)
Time and Month Fixed Effects	X	X	X	X	X	X
	285	285	538	538	823	823
F-Statistic for Instrument[c]		12.06		45.80		60.20
R-squared	0.2410	0.1334	0.2046	0.2009	0.1836	0.1833

Note: * ** *** indicate coefficient is statistically different from zero at the 90%, 95%, and 99% confidence level
Regressions are run with robust clustered standard errors at the state level.
For the Replacement and Unemployment Rates: 1=1%.

a: The instrument for Replacement Rate is created through running the entire 2003-2013 sample though the simulation program biannually for each state-year cell and taking the average replacement rate for the entire sample.

b: Predicted Wage and Dispersion Parameter are generated out of sample using CPS data from 2004-2005.

c: F-Statistics are for the significance of the instrument excluded from the structural model.

Table 5: The Determinants of Job Search for UI Eligible Individuals with Macroeconomic Controls Measured in Minutes per day Searching for a Job

	2003-2007		2008-2013		2003-2013	
Specification	OLS	IV-2SLS[a]	OLS	IV-2SLS[a]	OLS	IV-2SLS[a]
Replacement Rate[a]	-2.74**	-7.82**	-0.65	-0.20	-1.25*	-1.61
	(1.11)	(3.93)	(0.74)	(2.16)	(0.63)	(2.14)
log real Predicted Wage[b]	124.08	175.48	-74.62	-82.33	-18.72	-12.97
	(127.53)	(158.37)	(88.33)	(79.94)	(72.97)	(72.98)
Dispersion Parameter[b]	-421.12	-663.25	101.84	148.23	62.17	30.71
	(404.80)	(444.15)	(212.98)	(285.73)	(172.35)	(238.10)
Age	-8.42	-13.27	14.61**	15.16**	7.72	7.26
	(9.80)	(12.61)	(6.77)	(6.89)	(5.45)	(6.33)
Age Squared	0.09	0.13	-0.16*	-0.16**	-0.08	-0.08
	(0.11)	(0.14)	(0.08)	(0.08)	(0.06)	(0.07)
Some College	-7.55	-26.54	40.88**	43.69**	26.93	24.97
	(28.07)	(41.06)	(19.48)	(18.79)	(17.56)	(20.08)
College Degree	-21.25	-101.48	91.05	99.74*	59.72	52.99
	(69.83)	(112.16)	(56.40)	(54.20)	(44.98)	(52.38)
Female	43.35	55.14	-35.84	-38.51	-13.53	-11.84
	(42.94)	(42.37)	(29.82)	(24.89)	(26.42)	(22.82)
Female*Partner	-22.90	9.86	-50.25*	-51.34**	-41.00**	-39.83**
	(27.88)	(39.17)	(25.91)	(25.99)	(17.38)	(19.40)
Female*Children	0.48	-4.29	28.66	28.56	16.16	16.27
	(32.56)	(31.15)	(26.60)	(25.69)	(21.92)	(21.40)
Partner	-1.34	-27.11	12.30	13.73	6.81	5.59
	(23.78)	(27.32)	(21.63)	(21.43)	(14.05)	(15.17)
Children	26.87	36.64	-20.30	-20.69	-4.40	-4.03
	(27.89)	(28.94)	(17.94)	(17.31)	(16.21)	(15.77)
Weekend	-57.93***	-64.07***	-56.37***	-55.31***	-61.85***	-62.54***
	(14.26)	(13.26)	(8.66)	(10.60)	(7.97)	(9.35)
State Unemployment Rate	7.31	10.91	-0.86	-0.86	-1.34	-1.32
	(10.38)	(13.36)	(3.78)	(3.55)	(3.61)	(3.57)
Home Owner	-562.71	-852.62	125.89	152.85	109.57	103.33
	(817.65)	(898.01)	(921.46)	(872.91)	(234.45)	(233.96)
log Case-Shiller	-504.05	-445.79	157.94	167.49	-47.14	-48.25
	(572.91)	(551.22)	(335.84)	(314.78)	(234.70)	(227.19)
Home Owner x Case-Shiller	98.03	151.02	-26.66	-31.77	-24.39	-23.33
	(152.91)	(168.18)	(182.95)	(173.28)	(45.38)	(45.00)
log Real-S&P500	-45.47	-35.05	52.94	59.66	59.96	55.04
	(294.97)	(294.00)	(65.81)	(70.69)	(68.83)	(75.99)
Constant	3166.34*	3123.84*	-1243.37	-1381.18	-152.95	-84.88
	(1806.98)	(1616.48)	(1463.13)	(1372.99)	(1197.28)	(1252.05)
Time and Month Fixed Effects	X	X	X	X	X	X
	285	285	538	538	823	823
F-Statistic for Instrument[c]		21.20		54.52		67.13
R-squared	0.2410	0.1251	0.2095	0.2081	0.1884	0.1876

Note: * ** *** indicate coefficient is statistically different from zero at the 90%, 95%, and 99% confidence level
Regressions are run with robust clustered standard errors at the state level.
For the Replacement and Unemployment Rates: 1=1%.

a: The instrument for Replacement Rate is created through running the entire 2003-2013 sample though the simulation program biannually for each state-year cell and taking the average replacement rate for the entire sample.

b: Predicted Wage and Dispersion Parameter are generated out of sample using CPS data from 2004-2005.

c: F-Statistics are for the significance of the instrument excluded from the structural model.

Table 6: Robustness Checks for Coefficient Estimates of Replacement Rate for Various Specifications

	2003-2007		2008-2013		2003-2013	
Specification	OLS/Tobit	IV-2SLS[a]	OLS/Tobit	IV-2SLS[a]	OLS/Tobit	IV-2SLS[a]
Baseline Model:						
(1) Including Unemployment Duration	-2.53**	-7.03*	-0.72	-0.02	-1.23*	-1.45
	(1.18)	(4.06)	(0.75)	(2.19)	(0.65)	(2.11)
(2) Including Continuous Weeks Remaining	-2.56**	-7.04*	-0.72	-0.03	-1.24*	-1.47
	(1.19)	(3.96)	(0.75)	(2.19)	(0.65)	(2.11)
(3) Tobit Model	-5.22***	-13.31	-1.76	-1.44	-2.61**	-4.81
	(1.90)	(8.91)	(1.22)	(5.11)	(1.02)	(4.62)
(4) Including ln(Real WBA)	-2.61**	-6.53*	-0.75	-0.10	-1.28*	-1.34
	(1.24)	(3.46)	(0.85)	(1.81)	(0.73)	(1.81)
(5) Excluding 2009-2010			-0.64	-4.08	-1.56**	-5.60***
			(1.00)	(3.00)	(0.66)	(2.08)
Baseline Model with Macro Controls:						
(1) Including Duration	-2.61**	-7.82**	-0.65	-0.20	-1.25*	-1.62
	(1.10)	(3.94)	(0.75)	(2.15)	(0.63)	(2.13)
(2) Including Continuous Weeks Remaining	-2.65**	-7.84**	-0.65	-0.41	-1.25*	-1.71
	(1.11)	(3.88)	(0.75)	(2.07)	(0.63)	(2.06)
(3) Tobit Model	-4.90**	-15.38*	-1.75	-2.47	-2.72***	-5.83
	(1.89)	(9.24)	(1.24)	(5.10)	(1.03)	(4.72)
(4) Including ln(Real WBA)	-2.48**	-7.30**	-0.68	-0.24	-1.30*	-1.49
	(1.15)	(3.38)	(0.86)	(1.79)	(0.72)	(1.83)
(5) Excluding 2009-2010			-0.62	-4.33	-1.72***	-5.88***
			(0.96)	(2.79)	(0.60)	(1.91)

Note: * ** *** indicate coefficient is statistically different from zero at the 90%, 95%, and 99% confidence level
Regressions are run with robust clustered standard errors at the state level.
For the Replacement Rate: 1=1%.
a: The instrument for Replacement Rate is created through running the entire 2003-2013 sample though the simulation program biannually for each state-year cell and taking the average replacement rate for the entire sample.