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EFFECTS OF THE FINANCIAL CRISIS AND GREAT RECESSION ON AMERICAN  
HOUSEHOLDS

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Michael D. Hurd and Susann Rohwedder  
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### **ABSTRACT**

In this paper we present evidence from high-frequency data collections dedicated to tracking the effects of the financial crisis and great recession on American households. These data come from surveys that we conducted in the American Life Panel – an Internet survey run by RAND Labor and Population. The first survey was fielded at the beginning of November 2008, immediately following the large declines in the stock market of September and October 2008. The next survey followed three months later in February 2009. Since May 2009 we have collected monthly data on the same households. This paper shows the levels and trends of many of these data which summarize the experience and expectations of households during the recession.

We find that the effects of the recession are widespread: between November 2008 and April 2010 about 39 percent of households had either been unemployed, had negative equity in their house or had been in arrears in their house payments. Reductions in spending were common especially following unemployment. On average expectations about stock market prices and housing prices are pessimistic, particularly long-run expectations. Among workers, expectations about becoming unemployed have recovered somewhat from their low point in May 2009 but still remain high. Overall the data suggest that households are not optimistic about their economic futures.

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## 1. Introduction

According to the Case-Shiller 20-city average housing price index, housing prices reached a maximum in May 2006. Problems in the housing market associated with the subsequent decline in prices and with the relaxed lending standards during the run-up in prices spread to the financial sector leading to the financial crisis. At the beginning of the crisis unemployment was quite low: in December 2007 when the economy entered recession the rate was just 5%. However, housing prices continued to decline and stock prices, which had been increasing as measured by the S&P500, began to decline in October 2007. By October 31, 2008 the S&P500 was down 37% from a year earlier and it had dropped 17% in the month of October 2008 alone. The Case-Shiller index was down 18% from a year earlier. The unemployment rate was 6.2% in September 2008 up from 4.7% in September 2007 but the increase was modest relative to the problems associated with the financial crisis. However, the unemployment rate increased to 6.6% in October, to 6.9% in November and to 7.4% in December 2008. The financial crisis had become the Great Recession.

The effects of this recession are likely different from prior recessions because of simultaneous shocks in the stock market, the housing market and the labor market. For example in the recession of 1981-1982 the unemployment rate increased from 7.2% to 10.8% but housing prices were approximately constant and the stock market rose. In the short recession of 2001 associated with the stock market crash, the unemployment rate increased from 4.3% to 5.5%, but housing prices increased by about 4%. Besides the simultaneity of the shocks, circumstances have changed. The transition from a DB pension world to a DC pension world meant that the retirement assets of more older workers were affected by a stock market decline. Balloon loans and small or no down payments for houses meant that many faced increasing mortgage payments even as they had negative equity. Younger or lower paid workers were admitted into the housing market during the boom years, but that same group was more likely to be subsequently unemployed: not being able to make their house payments, many were foreclosed. The sharp decline in the stock market reduced the buffer that might have ameliorated distress from the housing or labor market.

In this paper we present results about the effects of the economic crisis and recession on American households. They come from high-frequency surveys dedicated to tracking the effects of the crisis and recession that we conducted in the American Life Panel – an Internet survey run by RAND Labor and Population. The first survey was fielded at the beginning of November 2008, immediately following the large declines in the stock market of September and October. The next survey followed three months later in February 2009. Since May 2009 we have collected monthly data on the same households.

Our main measures are actual spending, unemployment, home equity, affect and mood, and expectations about the stock market, the housing market and unemployment. While there is some variation in the time path of these measures, mostly they declined from the beginning of our surveys and continued to decline beyond June 2009, the official end of the recession, reaching their low points in June-November 2009. Since then, they have shown little improvement. If we define recession to be a period of negative change, from the point of view of American households the recession has ended. If we define it in terms of levels, the recession is not over and shows few signs of ending.

## 2. The American Life Panel

The American Life Panel (ALP) is an ongoing Internet panel survey of about 2500 persons operated and maintained by RAND Labor and Population. Panel members are recruited from respondents to the University of Michigan Survey Research Center's Monthly Survey (MS). The MS incorporates the long-standing Survey of Consumer Attitudes and produces the Index of Consumer Expectations. Each month, the MS interviews approximately 500 households, of which 300 are a random-digit-dialed sample and 200 are reinterviewed from the RDD sample surveyed six months previously. The MS survey is considered to have good population representation (Curtin, Presser, and Singer, 2005). At the end of an MS interview, respondents are asked to participate in the ALP; about 80% of MS respondents asked have agreed to participate. Those who do not have access to the Internet are provided with a Web TV ([www.webtv.com/pc/](http://www.webtv.com/pc/)), including an Internet access subscription with an e-mail account. Accordingly the sample does not suffer from selection due to a lack of Internet access.<sup>1</sup> Post-stratification weights are provided so that after weighting, the ALP approximates the distributions of age, sex, ethnicity, education, and income in the Current Population Survey. About once a month, respondents receive an email request to visit the ALP website to complete questionnaires that typically take no more than 30 minutes to finish. Respondents are paid an incentive of about \$2 per three minutes of survey time. Response rates are typically between 80 and 95% of the enrolled panel members, depending on the topic, the time of year, and how long a survey is kept in the field.

The ALP has conducted a large number of longitudinal surveys of its respondents, so that over time it has collected data on a very wide range of covariates. For example, ALP respondents have been asked about their financial knowledge, their retirement planning, and hypothetical questions designed to reveal parameters such as risk aversion. They have been given the Health and Retirement Study (HRS) survey instrument in modules one at a time over an extended period, so that we have responses to the wide range of HRS health queries and to the HRS cognitive battery. Most importantly, respondents were administered the HRS wealth module in November 2008, shortly after our first survey.<sup>2</sup>

A strength of the ALP is that it takes advantage of Internet technology. There is a short turn-around time between questionnaire design and the fielding of a survey, facilitating rapid responses to new events or insights. Thus, surveys can be operated at high frequency, reducing risk of missing events or the effects on households. This speed is in sharp contrast to the large household surveys such as the HRS where the time from planning to fielding can be as much as a year, and the time from fielding to data availability can exceed a year.

### *The Financial Crisis Surveys*

The very large stock market declines in October 2008 prompted our first data collection. We designed a survey that was administered to the ALP in November 2008. The survey covered a broad range of topics, including various dimensions of life satisfaction, self-reported health measures and indicators of affect, labor force status, retirement expectations, recent actual job loss and chances of future job loss, housing, financial help (received and given and expectations

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<sup>1</sup> This approach has been used successfully in the Dutch CentER panel for many years.

<sup>2</sup> As of this writing the ALP respondents have not yet been administered the HRS asset module a second time, so we are lacking two longitudinal observations on wealth over a crucial period of the economic crisis. Funding is pending for the second asset measurement planned for October 2010.

about these), stock ownership and value (including recent losses); recent stock transactions (actual and expected over the next 6 months); expectations about future stock market returns (one year ahead, 10 years ahead); spending changes; credit card balances and changes in the amounts carried over; impact of the financial crisis on retirement savings; and expectations about future asset accumulation. We followed up with a second longitudinal interview in late February 2009 covering approximately the same topics.

In our first survey (November 2008) 73 percent of households reported they had reduced spending because of the economic crisis. These spending reductions are of substantial policy and scientific interest, and so there is considerable value in a careful measurement of the magnitude of the reductions. For example the welfare implications of the crisis depend partially on the reduction in consumption. Furthermore, because of the lack of knowledge of how spending responds to economic shocks at high frequency, it is important to establish the empirical connection between the triggering events and the magnitude of consumption reductions. The wide-spread spending reductions prompted us to re-orient the survey, expanding the collection of information on the components of spending.

Beginning with the May 2009 interview we established a monthly interview schedule to reduce the risk of recall error about spending and to collect data at high frequency on items such as employment, satisfaction, mood, affect and expectations. An objective was to permit detailed sequencing of events and their consequences.<sup>3</sup>

Each month we ask about spending in 25 categories during the previous month. These categories comprise about 70% of total spending. Every third month beginning in July 2009 we ask about spending during the previous three months on an additional 11 categories. Spending in these categories tends to be less frequent such as durables. Taken together, the monthly and quarterly surveys measure total spending over a three-month period. This three-month schedule of two shorter monthly surveys and a longer quarterly survey has continued to the present.<sup>4</sup>

These surveys have several unique aspects. The first and most obvious is that they are monthly panel surveys. This design permits the observation of the immediate effects of changes in the economic environment that cannot be captured in low frequency surveys via retrospection. A second unique aspect is our measurement of total spending on a monthly basis. This measurement reduces recall bias for high frequency purchases, yet because the surveys cover an entire year, this measurement also captures low frequency purchases. A third unique aspect is the elicitation of subjective probabilities at a high frequency. In this design both the determinants and the effects of subjective probabilities can be estimated. A fourth aspect is the elicitation of measures of mood and affect that respond quickly to economic events.

A total of 2,693 respondents participated in at least one of the 14 interviews from November 2008 through April 2010. The retention rate in the panel interviews has been high: 73.0 percent (N=1,966) responded to 10 or more interviews and 40.7 percent (N=1,096) responded to all 14 waves. The high retention rate is partly due to respondents being invited to continue to participate in the surveys even if they miss one or more of the interviews.

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<sup>3</sup> To further reduce recall error the survey is only available to respondents for the first 10 days of each month except when the first day of the month falls on a weekend. Then the schedule is shifted by a day or two to accommodate staff work schedules. Thus state variables such as unemployment refer to approximately the first 10 days of a month, not the entire month.

<sup>4</sup> Information about the surveys is given in Appendix Table 1, including survey length, fielding schedule and response rates.

In this paper we use data from 14 surveys covering the period November 2008 through April 2010. In the interest of maintaining an adequate sample size while at the same time basing results on an approximate panel sample, we admit into the sample for panel analyses respondents who missed at most four of the interviews.<sup>5</sup>

### 3. Indicator of financial distress

The main focus of the surveys is the effects of the financial crisis and the subsequent recession on the economic well-being of households and on their reactions to the economic shocks. As a summary measure of the immediate effects we say that a household is experiencing financial distress if the respondent and/or spouse is unemployed, or if the household is more than two months behind on mortgage payments (or in foreclosure), or if the value of the house is less than the amount of the mortgage.<sup>6</sup> Table 1 shows in each wave the percentage of households in a panel sample that experienced financial distress. At the time of the initial survey 13.2% were in financial distress, and in the last survey in April 2010 16.8% were in financial distress. We fit a regression line to these percentages and find an increase of 0.15% per month from the regression or 2.6% cumulative over 17 months. The second column of the table shows the cumulative measure; that is, the percentage of households that since the first interview in November 2008 were in financial distress in at least one of the surveys. By April 2010, 39% of households had experienced financial distress. Thus the effect of the recession as measured by the fraction of households experiencing financial distress is not improving and it is widespread. This is to be expected because unemployment has not declined by any important amount and housing prices are approximately constant at levels much below their peaks in many cities.

Those with lower incomes are more likely to experience financial distress: the rate is 22% among households in the lowest income quartile but just 13% in the highest income quartile (not shown). Younger people are more likely to be in households in financial distress: 23% of those aged 18-34 are in households in distress versus 8% aged 60-69.<sup>7</sup>

### 4. Housing

Whether home owners have been affected by the large drops in home values, and how seriously they have been affected, depends on where they live and when they bought their home. Figure 1 shows Case-Shiller house price indices normalized to 100 in January 2003 for a 20-city

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<sup>5</sup> Results that use the spending data are based on the third through the 14<sup>th</sup> wave. A total of 2,623 respondents answered at least one of these 12 interviews. Among these, 48.2 percent (N=1,264) participated in all 12 waves. In the panel analysis of spending we include respondents who missed at most four of the 12 interviews. This restriction is met by 77.8 percent or 2,041 respondents. Thus the sample used for spending analyses is slightly different from the sample based on all 14 waves.

<sup>6</sup> This measure of immediate financial distress does not account for households who have fallen behind with rent payments because we did not initially collect this information. In later waves very few households report being more than two months behind with rent payments, so the omission is not expected to affect the results in a material manner. For longitudinal consistency of the measure of financial distress we excluded the event of “being behind with rent payments” from all waves.

<sup>7</sup> The statistics by age band and by income quartile are based on pooled observations from all waves. Income quartiles are based on households’ average income computed over the entire survey period, stratified by marital status (single vs. couple households).

average and for four representative cities, Phoenix, Los Angeles, Denver and Detroit. The 20-city average peaked in May 2006 at about 50% above its level at the beginning of 2003. Since reaching its peak it has fallen to about that initial 2003 level. The average conceals substantial intercity variation. As is evident in the graph, in Denver there was a moderate increase in housing prices, followed by a small decline, but this variation is not remarkable compared with historical price changes. In Los Angeles or Phoenix, by contrast, there were dramatic swings in home prices. However, the consequences of these price changes depend importantly on the date of purchase. Consider a family who bought a house in 2003. Although the value of the home is now below its 2006 peak of twice the purchase price, it is, nonetheless, at the 2003 level. Provided the mortgage was reasonable in relation to family income, this family could have sound finances, even having paid off some of the principal on the loan. However, if a family bought at the top of the market with a small percentage down payment and a balloon loan, it would find itself with substantial negative home equity and increased mortgage costs which might be unaffordable.

It is noteworthy that substantial declines in housing prices are not limited to bubble markets. A family buying a home in Detroit in late 2003 would now see a decline in value of about 40%. The downturn in the auto industry and the departure of other large employers, such as Pfizer, have taken their toll.

Our survey asks respondents about the value of their houses. These data have the virtue of being reports on the same house over time and of being nationally representative. Other commonly used data sources are based on recent actual property sales (possibly including refinanced properties) or in the Case-Shiller index confined to 20 large cities. Table 2 shows mean and median cross-section house values. We note that the ALP statistics are similar to those reported in the Federal Housing Finance Agency "Monthly House Price Indexes for Census Divisions and U.S. Purchase-Only Index" which is the only index available on a monthly basis.<sup>8</sup> The reports from ALP respondents show a decline: Based on the regression of the log house value on calendar time, both the mean and median value declined by about 0.4% per month for a cumulative decline of about 7% over the 17 month period. This change does not account for inflation. While it does represent a decline in the most important asset of many households, it is not nearly as large as might be expected from the publicity about the crisis in the housing market. However, most of the losses in housing value were prior to our initial survey. Additionally only a subset of cities experienced very large declines in property values, but because of the prominence of the Case-Shiller Index they tended to receive considerable publicity which may have distorted expectations. This selective publicity may explain why respondents rate their local housing market more favorably than the housing market in the U.S. as a whole.<sup>9</sup>

We ask respondents about the value of their mortgages which allows us to calculate the percentage of owners with negative equity. These percentages of homeowners with negative equity are more representative of the population than those obtained from sources such as lenders or property records which are either incomplete or outdated. In Nov 2008, 5.6% of homeowners owed more than their house was worth. By Feb 2009 this percentage had increased to 8.1%.

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<sup>8</sup> The "All Transactions Index," which uses sales prices and appraisals but is only available quarterly, shows somewhat higher appreciation than the purchases only index.

<sup>9</sup> This finding is based on questions asking respondents to rate on a 5-point scale the "housing market in the U.S. as a whole" and then the "housing market in [your] area." The fraction rating the U.S. housing market as fair or poor (85.9%) is persistently 20 percentage points higher than the fraction rating the local housing market as fair or poor (65.8%).

After that there has been little trend in this percentage, hovering between 8 and 9 percent of homeowners in each wave whether measured in cross-section or in panel.<sup>10</sup> Younger homeowners were much more likely to have negative home equity: 12.4% of homeowners under age 50 had negative equity compared with 5.2% among those 50 or older. Although negative home equity may not in itself lead to financial trouble, it makes the household vulnerable to other economic shocks such as unemployment. Unemployment tends to be greater among younger households.

A common measure of noncompliance with mortgage payments is being more than two months behind on payments. Table 3 shows that in panel data the number of such households reached a peak of 5% in October 2009 and has fallen since then to 3.8% in April 2010.

People with negative home equity do not keep up their mortgage payments as well as those with positive equity. Those with negative home equity are over 6 times as likely to be behind on their mortgage payments. Those falling behind are at great risk of losing their homes, lacking equity for possible refinancing. The observed negative equity positions therefore suggest further foreclosures in the future.

We asked respondents who were homeowners and had a mortgage whether they were being foreclosed. The fraction in foreclosure reached its peak in October 2009 with 2.7% and then declined. It was 1.3% in January 2010, and 1.2% in April 2010. Cumulating the foreclosures over time starting with the first survey in November 2008 through April 2010 we find that among those who had a mortgage at some time during this period, 4.8% had gone through foreclosure by April 2010.<sup>11</sup>

### *House price expectations*

Respondents are asked about expectations of price appreciation in the form of a subjective probability as follows:

On a scale from 0 percent to 100 percent where 0 means that you think there is no chance and 100 means that you think the event is absolutely sure to happen, what do you think are the chances that by next year at this time your home will be worth more than it is today.

In addition the quarterly surveys ask the same question but with a time horizon of five years.

Table 4 shows the average subjective probabilities. The most notable feature of the results is the very pessimistic expectations. The mean and median subjective probability of a gain over the next 12 months was about 40% in May 2009 through July 2009, indicating that, according to respondents' beliefs, a decline in prices was more likely than a gain in prices. Households holding that view are likely to be conservative in spending or in borrowing against the value of their house. These expectations are very much at odds with historical frequencies. Based on changes in the monthly house price index of the Federal Housing Finance Agency "Monthly House Price Indexes for Census Divisions and U.S. Purchase-Only Index" the

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<sup>10</sup> Among homeowners with a mortgage about 12% had negative equity.

<sup>11</sup> In cumulating the observations of experiencing foreclosure over time we include respondents who have missed some waves.

estimated probability of a gain in house value over one year would be 88%.<sup>12</sup> One explanation for this discrepancy is that the past offers little guidance to the future due to the exceptional nature of the recession. A second, more general explanation, is that expectations of future price changes are dependent on recent price changes as has been found for stock market expectations (Hurd, 2009).

One-year expectations increased between February 2009 and May 2009. Between May 2009 and January 2010 housing prices were approximately constant (Table 2) and one-year average expectations were also approximately constant. But in April 2010 the median probability of a one-year gain declined to just 30%, possibly reflecting recent declines in reported housing values.

While five-year expectations are greater than 50% they still show considerable pessimism and are at odds with historical price changes: the historical estimate based on the “Monthly House Price Indexes” is 100%.<sup>13</sup> That is, in every five-year interval since 1992 (taken month-by-month) house prices have increased. In distinction to one-year expectations, five-year expectations were lower in April 2010 than in February 2009. Apparently people have become somewhat more optimistic about the short-run as measured by the one-year expectations while at the same time they have become more pessimistic about the long-run as measured by the five-year expectations.

## 5. Spending

### *Spending expectations*

In normal times, most people should expect approximately stable spending over a six month horizon. To the extent that they anticipate changes, most of the changes would be positive because spending increases with age until old age. In addition nominal spending should increase over time both because of inflation and because of increases in incomes. However, in November 2008 just 8% of respondents expected an increase in spending over the next six months whereas about 20% expected a decrease (Table 5). The low point was reached in February 2009 where 22% expected a decrease. The expectations of a decrease likely resulted from pessimism about the stock market and the housing market, heightened concerns about unemployment, and about the vulnerability of income. By the metric of expected spending change, the low point of the recession was reached in about February or March 2009 which coincided with the low point of the stock market and a cessation in the decline in house prices.

Expectations are now stable with more expecting an increase than a decrease. This does not necessarily mean that people have become more optimistic about the future course of the economy: it could be that spending has been reduced to a level such that people do not expect that further reductions are necessary.

There is a remarkable match between expectations of spending change and recollections of actual change. Respondents were asked in July 2009 about whether they had reduced spending over the preceding six months. Table 6 shows expectations of spending change

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<sup>12</sup> Calculated as the percentage of 12-month intervals over which the housing price index increased between January 1, 1991 to November 1, 2009.

<sup>13</sup> Calculated as the percentage of five-year intervals over which the housing price index increased between January 1, 1991 to November 1, 2009.

collected in February 2009 with recollections of spending change collected in July 2009 in panel. Although the temporal comparison is not completely exact, the expectations were very accurate when they are compared with recollections.

*Self-reported spending changes*

In Wave 1, 73% of respondents said they reduced spending because of the financial problems in the economy. In Wave 2, 30% said spending was lower compared to spending in November 2008. We found little variation in reported spending reductions by age and income except that fewer reduced spending among those aged 60+ and fewer reduced spending in the highest income quartile. Many respondents reduced spending on health care such as doctor visits and prescription drugs (self-reports): in wave 1, 22% said they had reduced such spending over the last 6 months and in wave 2, 25% since the November 2008 interview. These reductions in health care spending may lead, of course, to negative health consequences over the longer term.

In the climate of the recession it is natural to think that reductions in spending are due to reduced economic resources or to pessimistic expectations about future economic resources such as an increased likelihood of unemployment and the associated reduction in income. But spending reductions could also reflect changes in “needs” such as changes in family composition. Similarly spending could increase because of an unanticipated increase in resources or because of increased requirements for spending due to, say, higher out-of-pocket spending for health care. To separate changes in actual or anticipated resources from changes in needs, we asked about the reasons for spending changes.

Among those who reported an increase in spending we find a combination of an increase in economic resources and an increase in spending requirements. Of particular interest is that in the 2009 interviews 24% of households reported an increase due to higher required mortgage payments; this percentage declined to 19% in the 2010 interviews. However, there was a substantial decline in the percentage reporting an increase in spending because of increases in economic resources or better employment.

Reasons for Increase in Spending among those Reporting an Increase.  
Percent indicating “very or moderately important”

	Earlier quarterly interviews (Feb09, Jul09, Oct09)	Later quarterly interviews (Jan10, Apr10)
increase in income or wealth	47.1	34.7
better actual employment	32.9	20.7
higher required mortgage payments	24.1	18.6
other increased spending needs	86.1	80.3
<i>Percent of respondents reporting increase in spending since previous quarterly interview</i>	<i>11.7%</i>	<i>13.0%</i>
<i>N</i>	<i>648-654</i>	<i>517-522</i>

Note: Respondents could check more than one reason.

Among those who reported a reduction in spending, about 80% cited a need to reduce debt and 68% cited a reduction in income. According to the self reports, the decline in stocks and in the

house value directly led to a reduction in spending. There was little change in these percentages between the earlier and later waves. However, the overall percentage of households that reduced spending was lower in the 2010 interviews than in the 2009 interviews. Possibly prior reductions in spending were deemed sufficient by some households so that further reductions were not necessary in the later waves. But the lower percentage of households is also consistent with the improvement in expectations reported in Table 5, and with stabilized conditions.

Reasons for a Decrease in Spending among those Reporting a Decrease.  
Percent indicating “very or moderately important”

	Earlier quarterly interviews (Feb09, Jul09, Oct09)	Later quarterly interviews (Jan10, Apr10)
need to reduce debt	81.1	78.6
reduction in income	68.5	67.7
change in employment status	46.2	45.6
decrease in value of stock holdings	35.0	39.7
decrease in housing value (homeowners only)	46.0	48.8
<i>Percent of respondents reporting decrease in spending since previous quarterly interview</i>	<i>26.1%</i>	<i>16.8%</i>
<i>N</i>	<i>1656-1660</i>	<i>656-658</i>

Note: Respondents could check more than one reason.

### *Actual spending*

Because of the large and wide-spread declines in spending reported in the first two surveys we began in the May 2009 interview to ask detailed questions about amounts spent in the preceding month. Our strategy was to ask about spending in 25 categories that are purchased at high to middle frequency every month. Then, every three months we asked about the purchase over the past three months of 11 more infrequently purchased categories. With possibly a few minor exclusions the total of the three monthly surveys and the quarterly survey add to total spending over the quarter.

The 25 categories queried in the monthly surveys are shown in Appendix Table 2 grouped as they would have been displayed. The grouping by broad types of spending or by frequency of spending is meant to facilitate placement of reported amounts in the proper category: Respondents are sometimes unsure about category placement and they are helped by seeing other possibly relevant categories. The grouping should reduce the risk of either omission or double counting. For example, the following categories were displayed at the same time because they are associated with household operations.

Mortgage
Rent
Electricity
Water
Heating fuel for the home

Telephone, cable, Internet
Car payments: interest and principal

A major innovation was the development of a “reconciliation” screen. Outliers are a problem in self-administered data collection such as Internet interviewing because there is no interviewer to question extreme values. Therefore, we designed a new strategy for the ALP to help with outliers: following the queries about spending last month on the 25 items we presented the respondent with a summary table which listed the responses and added them to produce the implied monthly spending total. The respondent was invited to correct any items. This produced two very favorable results. Item nonresponse was reduced from an already low level to a trivial level: in the initial survey of spending (May09) the maximum item nonresponse (rent) was reduced from 2.6% to 0.7%, and in the following wave the maximum item nonresponse (again rent) was reduced from 2.7% to 0.9%.<sup>14</sup> The maximum rate of item nonresponse over all 25 items following the summary table was 0.8% in May09 and 0.9% in June09. This means that almost no imputation for missing values is required. The second favorable result was a sharp reduction in outliers. Combining both waves, the standard deviation of total spending (on the 25 items) was reduced from \$14,045 to \$5,624. The reduction was the result of a small number of revisions, on average 2.5% of responses in each category of spending. However, eliminating outliers in each category has an enormous impact on standard errors of the total that is constructed as the sum of these 25 spending categories. The importance of a reduction of this size can be seen directly in standard errors in models that explain spending: roughly speaking the standard errors on estimated coefficients in regression models will be reduced by a factor of about 2.5, making estimates that were formerly marginally significant, highly significant. See Appendix Table 4 for more details.

*Comparison with the Consumer Expenditure Survey*

The CEX has the most authoritative survey measure of spending at the household level, and so we would like to compare annual spending in the CEX with annual spending in our survey. However, the latest published tables from the CEX cover the year 2008, which, even after adjusting to 2009 prices, will make the comparison with ALP spending data for 2009 inexact: based on the trends in spending in our survey to be discussed below and in the decline in spending in the National Income and Product Accounts, spending in 2009 was likely lower than spending in 2008. We therefore expect that the price-adjusted level from the CEX for 2008 will be higher than our more recent spending measure.

In the ALP we calculate spending over a year by summing spending in the second, third and fourth quarters of 2009 and in the first quarter of 2010. Spending in each quarter is the sum of spending on the 25 items that are measured each month plus the 11 additional items that are measured every quarter.

Average spending in 2008 as reported in the CEX was \$44,721 (in 2009\$); average spending in the ALP was \$41,723. Thus ALP spending is 93% of CEX spending. In our view

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<sup>14</sup> In the reconciliation screen, missing items were filled with zeros, and in a very few cases respondents corrected these zeros to positive values. The item nonresponse rates are calculated under the assumption that the remaining zeros were affirmed by the respondent. The remaining missing values are due to some respondents quitting the survey before reaching the spending questions.

these levels are remarkably similar, particularly because the CEX levels for 2009 will likely be lower than the 2008 levels.

### *Trends in spending*

Table 7 has average and median spending in the 25 categories both in cross-section and in panel. There is almost no difference between the cross-section medians and the panel medians both with respect to levels and trends, and the only substantive difference between the cross-section and panel means is in the initial wave. All show a reduction in spending between April 2009 (as recorded in the May survey) and March 2010 as recorded in the April survey. The rates of decline based on the regression of log spending on calendar time range from about 0.5 percent per month to one percent per month for a cumulative decline of 5-10%. These, of course, are substantial changes in spending over a short time period. Were income constant, the household saving rate would have increased considerably. Except for the decrease in spending in the first four months, the time pattern is unclear: a minimum was reached in January 2010 but the data do not show a definite pattern of increase since then.

Certain components of spending are of interest as well as the total. Table 8 shows spending on food, disaggregated into food purchased for consumption at home (food in) and food purchased away from home such as in restaurants (food out). As measured at the mean, spending for “food in” declined at about 0.5% per month for a total decline of 5.5% whereas spending for “food out” declined at a somewhat higher rate. When measured at the median, however, the differences are greater: median spending for “food in” did not decline at all whereas the cumulative decline for “food out” was 33%. Apparently households substitute for (cheaper) eating at home. It is noteworthy that the declines for total spending on food were close to the declines on total spending on the 25 categories (Table 7). Although food is a necessity, the substitution between spending on “food in” and “food out” led to approximately constant budget shares on total spending for food.

Table 9 has spending on two categories of health care: prescription drugs and health care services such as doctor visits. The decline in spending on the two components and on the total was substantially greater than the decline in spending on the 25 categories, indicating that the budget share declined. The decline is particularly sharp if spending in March 2010 (April 2010 survey) is excluded: for example, the median in February 2010 was just half of the level in April 2009. Because spending on health care is protective against future health declines, economizing in this way has potentially long-term negative consequences.

### *Credit cards*

Respondents were asked about ownership and use of credit cards. Table 10 shows that the ownership of credit cards declined by about 0.2% of households per month for a cumulative decline of 2.8 percent of households. At the same time the percentage of credit card holders that paid the balance each month and escaped interest charges increased by about 3.8 percent of households. However, credit card debt conditional on carrying debt over from one month to the next increased by about \$1,000 or 25%. Averaged over the entire population (not just those that carried debt), by February 2010 credit card debt on which interest is assessed had increased by \$500. At an interest rate of 16% this is an increase in monthly interest payments of \$80 per month or \$960 per year.

## 6. Stock Market

Over the past 20 years defined contribution plans have become an increasingly common form of employer-provided pension plans. As a result the fraction in the population holding stocks, even if indirectly in their pension plans, has increased over the years (Curcuro et al. (2009)). The large declines in the stock market at the onset of the financial crisis likely threatened retirement security, especially of those near retirement. We asked in the first two waves whether the “recent financial problems in the economy reduced the value of [the respondent’s (and/or spouse’s)] retirement savings,” by how much and whether respondents actively changed how their retirement savings were invested. About 28% said that they did not have any retirement savings, a response that is naturally most common among younger households who have not had much opportunity to accumulate retirement savings.<sup>15</sup> Among those with retirement savings, 71 percent reported losses due to financial problems in the economy. This percentage varies substantially by socioeconomic status as measured by household income averaged over the entire survey period: in the lowest income quartile 47 percent reported losses, and in the highest income quartile 93 percent reported losses in their retirement savings.

The self-reported magnitude of the losses was about 20% at the median in November 2008 and about 30% both at the mean and median by the time of our second interview in February 2009. Since November 2008 the stock market continued to decline until its low point in March 2009 when it was about 32% below its early November level.

Prior research suggests that households rarely rebalance their retirement savings portfolios. See, for example, Agnew et al. (2003), Ameriks and Zeldes (2004) or Mitchell et al. (2006). However, these findings are based on administrative data from retirement plan providers which only record partial retirement asset holdings such as Vanguard proprietary data. Furthermore, the findings come from “normal” times when there is no large event prompting investors to rebalance their portfolios. We asked households about “active changes in how [their] retirement savings are invested.” With this question wording we elicit changes in households’ entire retirement assets (not just one part of their portfolio). 21% of those with retirement savings reported in the February 2009 survey having made “active changes to how retirement savings are invested” since the November interview. This seemed like a large fraction over a short period of time—just three months—even though we do not know what this fraction would be in normal times. Such investment moves may have a large impact on the long term performance of portfolios – either through locking in losses by getting out of the stock market in response to large declines, or through creating the potential for large gains by getting into the stock market at that time. Beginning in the May 2009 survey we asked detailed questions about asset allocation in retirement accounts with special emphasis on whether changes involved increasing or decreasing stock market exposure. The objectives of these questions are twofold: first, we wanted to find whether the large fraction of respondents reporting “active changes” to their retirement investment allocations would be verified by quantitative measures of investment activity. Second, we wanted to quantify the amount of asset reallocation.

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<sup>15</sup> Among those under the age of 35, half report not having any retirement savings, while just 5% of those age 70 and older reported no retirement savings.

As of May 2009, 64.5 percent of households in our sample had an IRA, 401k, KEOGH or similar retirement saving accounts. 28.6% of retirement account holders had made a change in the investment of new funds and/or the allocation of old balances since the beginning of October 2008, that is, since the beginning of the financial crisis. Among retirement account holders who also responded to wave 1 or wave 2 of the survey the fraction reporting having made “active changes” to their retirement savings was 28.0 percent.

About 10 percent of retirement account holders changed the investment allocation of new contributions. The fraction of respondents that increased the amount of new funds allocated to stocks is similar to the fraction that decreased the amount of new funds allocated to stocks (4.6 percent vs. 5.2 percent, respectively). However, with respect to reallocations of account balances we find that a much larger fraction decreased their exposure to stocks (16.4 percent) than increased (6.3 percent).<sup>16</sup> Overall respondents decreased stock holdings in retirement accounts. Under unchanging expectations finance theory would call for rebalancing, an increase in stock holdings following the long period of losses. The most obvious explanation for this discrepancy is that expectations were not determined by historical averages, but by more recent experience, leading to considerable pessimism about the future course of the stock market.

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Percent of households making changes to retirement accounts (among holders), October 2008 to May 2009, N=1,513	
Allocation of new funds	
increased amount to stocks	4.6
decreased amount to stocks	5.2
Allocation of balances	
increased amount in stocks	6.3
decreased amount in stock	16.4
Sold all stocks in retirement accounts	3.0

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### *Stock market expectations*

We asked about expectations of gains in the stock market in the form of the subjective probability that a broad measure of the stock market such as the Dow Jones Industrial Average would be higher in one year than today.<sup>17</sup> We also asked about a gain over a 10-year horizon. The one-year subjective probabilities exhibit considerable pessimism: the average subjective probability is just 40% (Table 11). The historical record for the Dow is that in 70% of the one-year periods since January 1, 1970 the stock market had a gain, so that an average subjective probability based on the historical record should be 70%. The median probability of a gain was 50% in most months which implies that the distribution had a fairly fat left tail; that is, a

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<sup>16</sup> Biliias et al. (2010) compare trends in stock market participation before and after the 2000 stock market downturn and find that in the first years following the downturn nonparticipants were less likely to enter the stock market while there was no sign of substantially higher exit rates. Their analysis of trading behavior is restricted to stock holdings outside of retirement accounts.

<sup>17</sup> The question has the same form as the question about housing price expectations.

considerable number of respondents assign a small probability of a gain. The average subjective probability of a gain over a 10-year horizon began at a considerably higher level, almost 61%, but then in distinction to the probability of a gain over one year, it has declined by about 10 percentage points. The historical probability calculated from all 10-year periods since Jan 1, 1970 is 93%.

While the subjective probability of a short-term gain has been approximately constant, the subjective probability of a long-term gain has decreased substantially, and the average probabilities are much below their historical averages. Thus the stock market subjective probabilities are similar to the housing price subjective probabilities in that both show a narrowing of the difference between the long horizon and short horizon probabilities. One interpretation is that people are quite pessimistic about the long-run prospects of the economy. Under this interpretation households are likely to be conservative in their spending decisions.

## 7. Health and Affect

A cost of the financial crisis in terms of well-being is its effect on the emotional and physical health of the population. Respondents were asked to rate their satisfaction about several aspects of their lives, about their health and about indicators of happiness or depression. Table 12 shows the percentage of respondents who affirmed the lowest two categories on a five point scale about life satisfaction, and income and economic satisfaction; that is, it shows the percentage who were “dissatisfied” or “very dissatisfied.”<sup>18</sup> For life satisfaction, just 7.1% of respondents were dissatisfied or very dissatisfied in May 2009. Since then the percentage has slowly increased reaching a maximum in March 2010. Dissatisfaction with income or with the economic situation is considerably higher with about one-third of respondents expressing dissatisfaction. Except for the initial drop in May 2009, there has been no noticeable trend.

Table 13 shows the percentage of respondents who affirmed the bottom categories of self-rated health and of scales related to happiness and to depressive symptoms. There are five categories of self-rated health and the table shows the percentage who rated their health as fair or poor.<sup>19</sup> That percentage initially declined from 16.0% in November 2008 to 13.8% in May 2009. Since then the percentage has shown little trend. The next column of the table shows the percentage that feel worn out (during past 30 days) all of the time, most of the time, or a good bit of the time.<sup>20</sup> There has been no trend in mood according to this measure. The results about happiness (during the last 30 days) show the percentage who were happy none, a little or some of the time. There was improvement between November 2008 and June 2009, but little change until the last several interviews when the percentage increased. About one-third of respondents reported moderate to extreme difficulty sleeping in November 2008.<sup>21</sup> There has been a substantial reduction in that percentage. Problems with depression have mostly been unchanging.

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<sup>18</sup> The scale is very satisfied, satisfied, neither satisfied nor dissatisfied, dissatisfied, very dissatisfied.

<sup>19</sup> The self-rated health scale is excellent, very good, good, fair and poor.

<sup>20</sup> The scale for “worn out” and for “happiness” is all of the time, most of the time, a good bit of the time, some of the time, a little of the time, none of the time

<sup>21</sup> The scale for difficulty sleeping is none, some, moderate, severe, extreme.

Overall, the results for health and affect mainly indicate improvements from November 2008 to May 2009. In the subsequent months there has been much less improvement and in some cases a worsening.

## 8. Retirement

Our survey has not been in the field long enough to observe any substantial number of actual retirements. However, we ask respondents about their subjective probability of working past age 62 (*P62*) and past age 65. These subjective probabilities have been asked in the HRS for many years and they have been shown to be predictive of actual retirement (Hurd, Reti and Rohwedder, 2009). They have an advantage over data on actual retirement because changes in the subjective probability control for individual fixed effects such as unmeasured permanent taste differences. Such fixed effects are difficult to control when using actual retirement data.

We expect that the financial crisis and subsequent recession could have two opposing effects on retirement. In theory, the decline in stock values should have delayed retirement because of the unexpected wealth loss. However, our survey had not yet been fielded during the period of the greatest stock market losses when *P62* would have increased the most. The second effect on retirement is the worsening of the labor market, and particularly the difficulty of finding a job following unemployment in the older population. The labor market effect would likely lead to a reduction in expected retirement age. The net effect is an empirical matter.

Table 14 shows average values of *P62* in cross-section for the population 45-61 and for selected subpopulations. For the 45-61 year-olds, whether working or not, the average value of *P62* was approximately constant from February 2009 to January 2010, but then dropped by 3.3 percentage points in April 2010. To put that change in perspective, the labor force participation rate of the older population has been increasing during the 1990s and particularly in the 2000s: in 2003 the rate among those 60-64 was 51%, and the rate was 54.1% in 2008. The increase over five years was 3.1 percentage points about the same as the three-month decline in *P62*. If the actual labor force participation of ALP respondents is well-predicted by *P62*, these data suggest a sharp reversal of the trend toward higher participation.<sup>22</sup>

The level of *P62* is higher among those 45-52 than among those 53-61 because some in the older age group have already retired. Although the decline in *P62* between January 2010 and April 2010 occurred in both age groups, disaggregation by work status shows a remarkable difference between the two groups. In the older age group the overall trend as measured between February 2009 and April 2010 was moderately negative among those working and moderately positive among those not working. In the younger age group the trend was also negative among those working, but it was sharply negative among those not working. The contrast is greatest between July 2009 and April 2010: *P62* was approximately 13 percentage points lower among the younger non-workers but two percentage points higher among the older non-workers. This decline suggests an increase in pessimism about the future course of the labor market, which is likely due to the persistence of high rates of unemployment.

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<sup>22</sup> Whether *P62* will be a good prediction of labor force participation at age 62 will depend on the future course of the economy. Should job prospects improve, *P62* will likely increase and actual realized labor force participation be higher than *P62* measured currently

## 9. Unemployment

We ask respondents about their current labor force status. As shown in the following table, they can check a number of options one of which is "unemployed."

What is your current employment situation? Please check all that apply.

1. Work for pay
2. Unemployed, looking for work
3. Temporarily laid off
4. On sick or other leave
5. Disabled
6. Retired
7. Homemaker
8. Self-employed
9. Student
10. Other

Respondents are employed if they check 1, 4 or 8. They are unemployed if they check 2 or 3. The unemployment rate is the number unemployed divided by the sum of the unemployed and employed.

Because the status of being unemployed is subjective, rather than based on specific objective activities related to job search as in the Current Population Survey (CPS), our measure should include those who consider themselves to be unemployed but have not performed any of those activities. Our measure generally tracks national statistics which come from the CPS but it is higher because it includes some who are not actively looking for work.

We also ask about the labor force status of the spouse so that we are able to calculate a household unemployment rate in the case of couples.

### *Coping with Unemployment*

For most households, unemployment is associated with a substantial loss in income. There are many different ways in which households might cope with this reduction in income. Broadly speaking the household may alter its spending or it may seek replacements for the loss of income. Which ones a household relies on depends on the household's circumstances. Beginning with the May 2009 survey (wave 3) we asked follow-up questions in case a household (respondent and/or spouse) experienced unemployment over the last three months to find out how affected households deal with the loss in income. Table 15 shows the distribution of responses. "Reducing spending" is by far the most wide-spread response used by 85 percent of households who experienced unemployment. 46% reduced the amount going into savings. Not paying bills on time is also common.

Households may also undertake activities to replace the income lost from unemployment such as the application for and receipt of unemployment benefits or the support from the extended family. Table 16 shows the distribution of responses by those who experience unemployment or by those whose spouses experience unemployment.

About one-third of households took money out of savings, and 27% received financial help from family or friends. Forty percent received unemployment benefits. The low level of

benefit receipt is likely due to a combination of variation in how fast laid off workers decide to claim benefits, lack of qualification for benefits, and failure to take up benefits.<sup>23</sup>

We distinguish two types of labor supply response to unemployment: efforts by the respondent or by the spouse (as reported by the respondent) in reaction to own unemployment; efforts by the respondent in reaction to the spouse's unemployment and by the spouse in reaction to the respondent's unemployment. A labor supply response was far from universal: to own unemployment about 13% of respondents took up a temporary job, and about 9% of spouses who became unemployed took up a temporary job. In addition, about 5-8% of married persons began to work or increased hours after their spouses became unemployed. A likely reason for these rather small labor supply responses is that we do not distinguish between short-run and long-run responses: many of the unemployed have been unemployed for just a few weeks and a maximum of three months to be asked these follow-up questions. It is likely that as the unemployment duration increases the labor supply response will increase.

### *Unemployment Expectations*

Expectations about unemployment as well as actual unemployment should be an important component in a household's determination of spending. To track expectations about unemployment we asked workers about their subjective probability of becoming unemployed in the next 12 months. Table 17 shows the average probability in successive cross-sections. The average probability began at about 20% and increased to almost 22% in May 2010. If each person accurately assessed his or her probability the twelve-month actual fraction of workers who would experience unemployment would be 22%. There has been some improvement since then: based on a fitted regression line the average probability decreased by about 2.2 percentage points over the 18 months of our surveys. The decline is likely due to improvements in the housing and stock markets and to the stabilizing of the actual unemployment rate and the subsequent modest reduction.

We can compare the expected percentage who will be unemployed over 12 months with the realized percentage who actually became unemployed by tracing actual unemployment at the individual level in the monthly surveys. The within-person comparison shows that 19.4% experienced unemployment between November 2008 and October 2009 (Table 18). Their average subjective probability reported in November 2008 was 20%. Thus workers predicted quite accurately on average what their unemployment experience would be. In later waves workers predicted more unemployment than what was experienced: for example, in May 2009 the average subjective probability of unemployment was 22% and the actual was 17%.

### *Unemployment and home ownership*

Table 19 shows the relationships among home ownership, unemployment and mortgage delinquency. In the entire population some 65.5% own a home, but the ownership rate is just 46.4% among the unemployed. Despite the lower ownership rate, about 3.5% of the unemployed are in arrears on their mortgage payments versus 1.7% in the population. Conditional on owning a home, the unemployed are more likely to have a mortgage (79% versus 75%), and, conditional

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<sup>23</sup> Questions about responses to unemployment are asked only of workers who lost a job some time over the previous three months so that the unemployed who are slow to take up benefits are not recorded as receiving them.

on having a mortgage, they are more likely to be delinquent (more than two months behind on payment) on their mortgage (10% versus 3%).

Households experiencing unemployment are much more likely to have negative home equity than those who are not. Among homeowners with a mortgage about 12% have negative equity compared with 17% of those unemployed. Although negative home equity does not necessarily imply financial difficulties, the combination with unemployment does, as then the household risks an inability to make its mortgage payments, and possible loss of the home.

### *Unemployment and spending*

Prior research has found mixed results with respect to spending changes following unemployment, but those studies were based on very different types of data.<sup>24</sup> Our method is to classify people according to whether they are initially employed or unemployed. Then we study changes in spending associated with month-to-month transitions between those states. Table 20 shows those transitions over the May 2009 to April 2010 waves. Thus 14,053 respondents were employed in adjacent waves. Among those respondents average spending in the initial wave (wave t) was \$2,551; spending was lower in the following wave (wave t+1) by 1.8%. Median spending was lower than mean spending, and it declined by about 0.7% between waves t and t+1. The last column shows the median of the household changes and it shows a decline of 0.3%. 350 persons transitioned from employed to unemployed. Both mean and median spending by their households was lower even when employed (wave t) than spending by households who were employed in both waves. Mean spending in households that became unemployed declined by 3.5%. Median spending increased by 2.4% but the median of household level changes was negative 2.8%. At least according to two of the measures, the transition into unemployment was accompanied by a greater decline in spending than the transition from employment to employment. However, the transition from unemployment to employment was also associated with a decline in spending whereas we would have expected an increase. Part of the reason for this discrepancy is that spending is measured over the prior month during which the respondent was unemployed for at least part of the time. Additionally the adjustment to the new economic situation may require some time so that it would appear in later waves.

Table 21 presents some alternative evidence about the effects of job loss on spending. We asked in the quarterly surveys (July 2009, October 2009, January 2010 and April 2010) whether over the previous three months the respondent or spouse had lost a job that he or she wanted to keep, and if so, whether any income was lost in association with the job loss. The table shows spending in the month at the beginning of the recall period (wave t-3) and in the current month (wave t): thus spending changes are over three months. This comparison is likely more valid than Table 20 because most would have been unemployed during the month when spending was measured.

Among those who did not report a job loss, spending declined at the mean by 1.7% over the three month period or about 0.6 percent per month, and at the median by 1.2% or about 0.4% per month. Particularly when measured at the median the decline in spending was substantially higher among those who lost a job and lost income: the median decline was 10.7%.

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<sup>24</sup> Prominent studies using panel data include Gruber (1997), Gruber (2000), Stephens (2001), Bentolila and Ichino (2008) and Sullivan (2008), which tend to find mixed evidence with regard to the size of the response of spending to shocks to income and employment.

### *Unemployment and Health and Affect*

Because of stresses associated with job loss we expect that those who became unemployed would exhibit symptoms of stress such as sleeplessness. The unemployed would also have a reduction in several domains of satisfaction about life. Figure 2 shows the change in the percentage giving negative reports about these and other aspects of feelings and lives according to their labor market transition between two adjacent waves.<sup>25</sup> The upper left graph shows that among those who were employed in two adjacent waves about eight percent were dissatisfied or very dissatisfied with their lives and that in the follow-up wave the percent dissatisfied declined slightly. Among those who became unemployed, the percentage expressing dissatisfaction with life was higher even when employed, and it increased by about three percentage points in the follow-up wave. Among those who transitioned from unemployment to employment the percent expressing dissatisfaction with life declined by half, and among those unemployed in two adjacent waves dissatisfaction with life was very high in both waves.

It is notable that in the graphs about economic and income satisfaction, the fractions dissatisfied are much higher than with respect to life satisfaction: even among those employed in two adjacent waves 30-35% expressed dissatisfaction. The changes accompanying employment transitions have the same pattern as those with respect to life satisfaction.

In general the graphs for sleeplessness, depression, being worn out and feeling happy show the same pattern. The exception is self-rated health: those employed in adjacent waves have better health than those unemployed in any wave, but there is no systematic relationship with employment transitions. Most likely changes in self-rated health take longer to materialize following a transition.<sup>26</sup>

### *Unemployment and Health Insurance*

A particular concern is that those who become unemployed may lose health insurance, exacerbating the economic impact of unemployment. We ask respondents about health insurance coverage which may come from own employment or a spouse's employment. Table 22 shows how such coverage is related to employment transitions by showing coverage rates as a function of the transition from one month to the next. For example, 3,231 single persons are observed to transit from employed to employed. Of them, 82.8% had health care insurance in the initial wave and 82.9% had such insurance in the succeeding wave.

Single persons who became unemployed were initially much less likely to have health insurance even when employed, and the coverage rate declined by about 23 percentage points on becoming unemployed. This decline is much sharper than for married persons where it was just three percentage points. Part of the difference is, of course, due to spouse coverage. Part may also be due to the greater economic resources of couples where they may be able to afford COBRA coverage. In addition, the impacts in the table are immediate impacts: on average newly unemployed respondents had only been unemployed for two weeks as of wave  $t+1$ , and over longer periods the fraction lacking insurance may increase. For example, some employers may provide temporary coverage as part of a separation package, but this coverage is not permanent.

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<sup>25</sup> The explanation of the scales is given in connection with the discussion of Tables 12 and 13.

<sup>26</sup> The longer-term dynamics of the measures of health, affect and mood undoubtedly show different quantitative relationships than the one-month changes shown here.

## 9. Conclusions

The economic problems leading to the recession began with a housing price bubble in many parts of the country and a coincident stock market bubble. These problems evolved into the financial crisis. Following very large declines in the stock market in September and October, 2008, we fielded our first survey which we called the Financial Crisis survey because at that time the news was dominated by the financial problems in the banking sector, the stock market bust, and the housing market. Unemployment had been increasing but it was still at a relatively modest 6.9%. Although we were not in the field to capture the immediate effects of the largest part of the stock and housing declines, those prices did decline for a few more months following our first survey, so we were able to observe at least some immediate effects. Even as prices in the housing market stabilized and the stock market partially recovered, the unemployment rate continued to increase, reaching 10.1% in October 2009. The financial crisis became the Great Recession. With our monthly surveys we have observed the immediate effects of these large changes.

According to our measures almost 40% of households have been affected either by unemployment, negative home equity, arrears on their mortgage payments, or foreclosure. Additionally economic preparation for retirement, which is hard to measure, has undoubtedly been affected. Many people approaching retirement suffered substantial losses in their retirement accounts: indeed in the November 2008 survey, 25% of respondents aged 50-59 reported they had lost more than 35% of their retirement savings, and some of them locked in their losses prior to the partial recovery in the stock market by selling out. Some persons retired unexpectedly early because of unemployment, leading to a reduction of economic resources in retirement which will be felt throughout their retirement years. Some younger workers who have suffered unemployment will not reach their expected level of lifetime earnings and will have reduced resources in retirement as well as during their working years.

Spending has been approximately constant since it reached its minimum in about November, 2009. Short-run expectations of stock market gains and housing prices gains have recovered somewhat, yet are still rather pessimistic; and, possibly more telling, longer-term expectations for those price increases have declined substantially and have shown no signs of recovery. The implication is that long-run expectations have become pessimistic relative to short-run expectations.

Expectations about unemployment have improved somewhat from their low point in May 2009 but they remain high: they predict that about 18% of workers will experience unemployment over a 12 month period. Despite the public discussion of the necessity to work longer, expectations about working to age 62 among those not currently working declined by 10 percentage points. In our view this decline reflects long-term pessimism about the likelihood of a successful job search.

The recession officially ended in June 2009. A main component of that judgment is that the economy is no longer declining. According to our data the economic situation of the typical household is no longer worsening which is consistent with the end of the recession defined as negative change. However, when defined in terms of levels rather than rates of change, from the point of view of the typical household the Great Recession is not over.

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## Appendix

To track the effect of the financial crisis on American households, we began collecting data in the American Life Panel in November 2008, shortly after the sharp decline in the stock market in the preceding month. The second wave of the survey was administered to the same households in late February/early March 2009. The next wave was conducted in May 2009 which is when we have adopted a monthly survey schedule: during the first 10 days of every month respondents have been asked to complete one of our surveys. Basic monthly surveys are shorter than the first two waves that we conducted, eliciting just a subset of variables. Every three months we administer a long survey. Appendix Table 1 gives an overview table of the survey schedule and response rates.

Appendix Table 1: Survey schedule, survey length and response rates

Wave	Survey	Length of survey in minutes		Field period	Responses	Response rate [%]
		Mean*	Median			
1	Nov08	19.3	16.6	Initially unrestricted**	2,056	76.4
2	Feb09	24.6	21.2	02/24-03/16/09 = 21 days	2,124	79.0
3	May09	15.0	11.2	05/01-05/10/09 = 10 days	2,086	77.5
4	Jun09	14.1	11.3	06/01-06/10/09 = 10 days	2,117	78.6
5	Jul09	26.2	21.8	07/01-07/10/09 = 10 days	2,139	79.4
6	Aug09	12.2	9.3	08/03-08/12/09 = 10 days	2,123	78.8
7	Sep09	12.3	9.3	09/01-09/10/09 = 10 days	2,157	80.1
8	Oct09	27.3	22.8	10/01-10/11/09 = 11 days	2,053	76.2
9	Nov09	13.9	10.8	11/02-11/11/09 = 10 days	2,082	77.3
10	Dec09	13.7	11.0	12/01-12/10/09 = 10 days	2,112	78.4
11	Jan10	27.5	23.3	01/01-01/10/10 = 10 days	2,129	79.1
12	Feb10	14.9	11.4	02/01-02/10/10 = 10 days	2,123	78.8
13	Mar10	13.8	10.4	03/01-03/10/10 = 10 days	2,084	77.4
14	Apr10	26.7	22.4	04/01-04/11/10 = 11 days	2,077	77.1

\* Calculation of average time to complete survey excludes cases with times of 300 min or more who appear to have interrupted their survey session.

\*\*Over 90% of those who responded did so within the first 28 days.

**Appendix Table 2: Items queried each month, grouped by actual screen display**

Screen 1:

Mortgage
Rent
Electricity
Water
Heating fuel for the home
Telephone, cable, Internet
Car payments: interest and principal

Screen 2:

Food and beverages
Dining and/or drinking out
Gasoline

Screen 3:

Housekeeping supplies
Housekeeping, dry cleaning, and laundry services
Gardening and yard supplies
Gardening and yard services

Screen 4:

Clothing and apparel
Personal care products and services
Prescription and nonprescription medications
Health care services
Medical supplies

Screen 5:

Tickets to movies, sporting events, performing arts, etc.
Sports, including gym and exercise equipment such as bicycles, skis, and boats
Hobbies and leisure equipment

Screen 6:

Personal services, including cost of care for elderly and/or children, after-school activities
Education, including tuition, room and board, books, and supplies
Other child-related spending, not yet reported, including toys, gear, and equipment

### Appendix Table 3

Additional 11 items queried quarterly beginning in the July survey about spending over previous three months

Screen 1:

Big ticket items

- Automobile or truck
- Refrigerator
- Stove and/or oven
- Washing machine and/or dryer
- Dishwasher
- Television
- Computer

Follow-up questions on big ticket items queried amounts, and in the case of cars how the purchase was financed.

Screen 2:

Homeowner's or renter's insurance
Property taxes
Vehicle insurance
Vehicle maintenance: parts, repairs, etc.
Health insurance

Screen 3:

Trips and vacations
Home repair and maintenance materials
Home repair and maintenance services
Contributions to religious, educational, charitable, or political organizations
Cash or gifts to family and friends outside the household

**Appendix Table 4: Effect of reconciliation screen on outliers**

Maxima and standard deviations in spending before and after revision, May 2009				
	max before	max after	std dev before	std dev after
Food and beverages in	100,000	7,000	3,809	254
Food out	150,120	2,500	3,766	135
Gasoline	8,000	2,000	586	119
Clothing	3,000	2,000	263	120
Telecommunication	17,900	1,800	942	72
All	520,490	85,630	14,909	2,332

Table 1  
Percent of households with indicator of financial distress, panel

	In month	Cumulative
Nov08	13.2	13.2
Feb09	15.0	19.3
May09	16.1	24.6
Jun09	16.9	27.7
Jul09	16.6	28.6
Aug09	17.4	30.9
Sep09	16.8	33.4
Oct09	17.2	34.9
Nov09	16.8	35.2
Dec09	16.2	36.1
Jan10	16.1	37.1
Feb10	16.4	38.4
Mar10	17.3	39.4
Apr10	16.8	39.0
<i>Average monthly change (ppts)</i>	<i>0.15</i>	
<i>Total change Nov08-Apr10 (ppts)</i>	<i>2.6</i>	

Note: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Financial distress indicator is any of the following: unemployed, negative equity in house, behind more than two months on mortgage, in foreclosure. Average monthly change based on regression of percent of households on calendar time. Total change is compounded change over 17 months. Average N = 1846

Note: Age < 50 had cumulative of 48%; Age > 64 had cumulative of 16%

Table 2  
Self-reported housing values, thousands, cross-section

	Mean	Median
Nov08	248,251	185,000
Feb09	235,631	175,000
May09	237,343	183,000
Jun09	227,694	175,000
Jul09	236,162	180,000
Aug09	238,827	180,000
Sep09	234,421	180,000
Oct09	228,059	180,000
Nov09	234,471	175,000
Dec09	229,619	179,000
Jan10	246,299	175,000
Feb10	226,421	175,000
Mar10	222,672	175,000
Apr10	222,011	167,000
<i>Average monthly change (%)</i>	-0.42	-0.33
<i>Total change Nov08-Apr10 (%)</i>	-7.0	-5.5

Notes: Average monthly change based on regression of log house value on calendar time. Total change is compounded monthly change over 17 months. Observations in cross-section vary between 1509 and 1612.

Table 3  
Percent of homeowners with mortgage who are currently more than two months behind on their mortgage payments, panel

May09	3.2
Jun09	3.0
Jul09	4.4
Aug09	4.1
Sep09	3.7
Oct09	5.0
Nov09	4.4
Dec09	4.8
Jan10	3.9
Feb10	3.8
Mar10	3.1
Apr10	3.8
<i>Average monthly change (ppts)</i>	0.02
<i>Total change May-April (ppts)</i>	0.2

Notes: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Average monthly change based on regression of percent of homeowners on calendar time. Total change is compounded monthly change over eleven months. Average N = 1018.

	one-year		five-year	
	Mean	Median	Mean	Median
Feb09	31.5	25.0	56.4	55.0
May09	38.5	40.0		
June09	38.8	40.0		
July09	38.4	40.0	55.0	50.0
Oct09	39.5	45.0	55.7	55.0
Jan10	39.3	50.0	53.6	50.0
Apr10	36.3	30.0	51.3	50.0

Note: Average N = 1570

	N	Increase	Same	Decrease	All
Nov08	2053	8.3	71.3	20.4	100.0
Feb09	2116	11.6	66.7	21.6	99.9
Jul09	2115	13.4	70.8	15.8	100.0
Oct09	2029	16.7	70.6	12.7	100.0
Jan10	2085	16.9	71.0	12.0	99.9
Apr10	2035	16.0	71.9	12.2	100.1

	Higher	Same	Lower	All
Expectations, Feb/Mar 2009	9.4	67.0	23.5	99.9
Recollections, July 2009	10.1	65.9	24.1	100.1

N= 1093

Table 7  
Monthly spending on 25 categories, seasonally adjusted

Month of survey	cross-section		panel	
	Mean	Median	Mean	Median
May09	2,639	2,069	2,585	2,020
Jun09	2,364	1,971	2,364	1,963
Jul09	2,465	1,955	2,403	1,943
Aug09	2,225	1,881	2,224	1,875
Sep09	2,374	1,884	2,386	1,866
Oct09	2,381	1,942	2,394	1,897
Nov09	2,140	1,808	2,125	1,802
Dec09	2,147	1,826	2,125	1,815
Jan10	2,256	1,796	2,210	1,762
Feb10	2,376	1,980	2,345	1,933
Mar10	2,313	1,979	2,284	1,965
Apr10	2,214	1,881	2,189	1,868
<i>Average monthly change (%)</i>	-1.0	-0.5	-1.0	-0.5
<i>Total change (%)</i>	-9.9	-4.9	-10.2	-5.0

Notes: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Spending refers to the month prior to the survey month. Average monthly change based on regression of log spending on calendar time. Total change is compounded monthly change over 11 months. Observations in cross-section vary between 2025 and 2130. Observations in panel average 1894.

Month of survey	Mean			Median		
	Food in	Food out	Total	Food in	Food out	Total
May09	352	140	492	300	100	440
Jun09	332	130	462	300	100	400
Jul09	330	123	453	300	100	400
Aug09	316	119	435	300	80	375
Sep09	312	117	429	300	80	390
Oct09	322	119	441	300	80	400
Nov09	314	114	427	300	70	375
Dec09	313	109	422	300	65	375
Jan10	337	121	458	300	75	400
Feb10	316	105	421	300	60	375
Mar10	317	108	424	300	70	379
Apr10	320	116	436	300	80	385
<i>Average monthly change (%)</i>	<i>-0.5</i>	<i>-1.8</i>	<i>-0.9</i>	<i>0.0</i>	<i>-3.6</i>	<i>-0.8</i>
<i>Total change (%)</i>	<i>-5.5</i>	<i>-17.5</i>	<i>-9.0</i>	<i>0.0</i>	<i>-32.8</i>	<i>-8.3</i>

Notes: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Spending refers to the month prior to the survey month. Average monthly change based on regression of log spending on calendar time. Total change is compounded monthly change over eleven months. Observations average 1894.

Table 9  
Monthly spending on prescription drugs, health care services, and total, panel

Month of survey	Mean			Median		
	Drugs	Health care services	Total	Drugs	Health care services	Total
May09	60	109	169	30	15	70
Jun09	62	88	150	26	0	57
Jul09	50	92	142	20	0	50
Aug09	51	88	139	20	0	45
Sep09	48	65	113	20	0	40
Oct09	50	72	123	22	0	45
Nov09	52	67	118	20	0	40
Dec09	50	60	110	20	0	35
Jan10	54	91	144	25	0	46
Feb10	50	71	122	20	0	35
Mar10	48	64	111	20	0	35
Apr10	50	91	141	20	0	45
<i>Average monthly change (%)</i>	<i>-1.4</i>	<i>-2.4</i>	<i>-2.0</i>	<i>-2.0</i>		<i>-4.2</i>
<i>Total change (%)</i>	<i>-13.8</i>	<i>-23.0</i>	<i>-19.7</i>	<i>-20.0</i>		<i>-37.3</i>

Notes: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Spending refers to the month prior to the survey month. Average monthly change based on regression of log spending on calendar time. Total change is compounded monthly change over eleven months. Average number of observations is 1894.

Table 10  
Credit card holdings, payments and debt, cross-section

	Percent with credit card	Percent of credit card holders who pay off balance	Debt carried over, conditional, mean	Debt carried over, conditional, median
Nov08	78.2	41.8	8,540	4,000
Feb09	75.6	43.3	8,383	4,000
May09	77.3	43.2	9,339	5,000
Jun09	76.4	41.1	8,973	5,000
Jul09	75.6	42.2	9,985	5,000
Aug09	75.1	41.6	9,606	5,000
Sep09	76.1	42.8	9,608	5,000
Oct09	73.5	41.8	9,805	5,000
Nov09	75.8	43.4	10,348	5,000
Dec09	75.4	44.3	10,280	5,300
Jan10	74.8	42.7	10,122	5,000
Feb10	75.4	45.5	10,674	5,600
Mar10	74.6	45.2	10,398	5,000
Apr10	74.6	46.6	9,859	5,000
<i>Average monthly change</i>	<i>-0.2</i>	<i>0.2</i>	<i>1.3</i>	<i>1.4</i>
<i>Total change</i>	<i>-2.8</i>	<i>3.8</i>	<i>24.6</i>	<i>27.5</i>

Note: Average monthly change based on regression of percent or log debt on calendar time. Total change is compounded monthly change over 17 months. First two columns show percentage point changes; last two show percentage changes. Observations range between 2030 and 2143.

	One-year		10-year	
	Mean	Median	Mean	Median
Nov08	40.3	50.0	60.8	65.0
Feb09	36.6	36.0	58.0	60.0
May09	41.0	50.0	59.4	60.0
Jun09	41.0	50.0	56.9	50.0
Jul09	39.2	45.0	52.8	50.0
Aug09	39.9	45.0	55.2	50.0
Sep09	40.3	50.0	53.6	50.0
Oct09	41.5	50.0	52.3	50.0
Nov09	43.1	50.0	55.3	50.0
Dec09	41.4	50.0	53.2	50.0
Jan10	41.7	50.0	50.8	50.0
Feb10	40.7	50.0	52.3	50.0
Mar10	40.8	50.0	52.0	50.0
Apr10	40.3	50.0	50.4	50.0

Observations range between 1996 and 2118.

Table 12  
Percent of respondents expressing dissatisfaction, panel

	Life satisfaction, dissatisfied or very dissatisfied	Household income satisfaction, dissatisfied or very dissatisfied	Economic situation, dissatisfied or very dissatisfied
Nov08	--	33.8	44.9
Feb09	--	33.9	42.4
May09	7.1	30.2	35.0
Jun09	7.3	30.7	34.3
Jul09	7.9	33.7	36.3
Aug09	9.6	32.9	38.6
Sep09	9.1	33.4	34.7
Oct09	9.5	33.4	35.9
Nov09	9.7	35.4	36.8
Dec09	10.7	33.2	35.6
Jan10	10.2	33.2	35.3
Feb10	11.3	33.2	35.7
Mar10	11.5	31.3	35.9
Apr10	10.3	32.0	33.7

Note: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Average observations are 1817. Life satisfaction measure in Nov08 and Feb09 not comparable with later waves because of difference in scales.

Table 13  
Percent of respondents expressing low levels of health and of affect, panel

	Self-rated health, fair or poor	Feeling worn out all to a good bit of the time	Feeling happy some to none of the time	Difficulty sleeping, moderate to extreme	Depression problems, moderate to extreme
Nov08	16.0	27.9	25.2	33.8	17.0
Feb09	16.3	26.1	26.6	29.3	18.4
May09	13.8	29.0	24.0	31.7	16.5
Jun09	13.4	23.9	21.1	29.8	16.3
Jul09	14.2	27.4	21.9	24.9	16.1
Aug09	13.5	28.8	22.4	26.2	17.6
Sep09	12.7	28.1	21.8	27.3	15.5
Oct09	12.9	25.8	23.2	25.6	17.5
Nov09	15.0	27.4	24.0	25.4	17.2
Dec09	14.2	28.8	23.9	25.3	16.3
Jan10	15.5	26.6	23.1	25.4	16.8
Feb10	14.4	26.9	25.4	24.5	18.0
Mar10	13.5	27.5	26.4	23.5	17.0
Apr10	13.5	28.9	25.2	24.7	16.6

Note: "Panel" consists of individuals who answered 10 or more of the 14 surveys. Average N varies between 1701 and 1888 depending on item.

Wave	Age 45 - 52			Age 53 - 61			All			
	Fraction working for pay	P62			Fraction working for pay	P62			N	P62
		Yes	No	All		Yes	No	All		
Nov08		71.3	--	--		71.8	--	--	--	--
Feb09	0.742	67.9	39.6	60.6	0.588	71.9	26.7	53.3	988	57.5
Jul09	0.733	68.1	42.0	61.1	0.567	70.2	29.0	52.4	980	57.5
Oct09	0.792	66.9	37.3	60.7	0.601	69.8	29.8	53.8	932	58.0
Jan10	0.758	69.1	34.6	60.8	0.559	68.7	33.2	53.0	948	57.6
Apr10	0.762	65.2	29.2	56.7	0.570	67.5	28.9	50.9	932	54.3
All	0.757	68.1	36.7	60.0	0.577	70.1	29.5	52.7	4,780	57.0

Note: N does not include Nov08 observations because in that wave P62 was only asked of workers.

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Table 15

Actions taken in response to unemployment, percent  
of households

Reduced spending	85.2
Reduced saving	46.4
Behind on mortgage	8.6
Behind on rent	16.9
Behind on other bills	36.1
Other	2.4

N = 699

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Table 16

Replacement for income loss, % of households

Unemployment benefits	39.2
Took money out of savings	35.6
Financial help from family or friends	27.0
Borrowed money or increased credit card debt	18.0
Respondent took temporary job	13.3
Spouse/partner took temporary job	9.4
None of the above. Found a job soon	8.5
Respondent began working or increased working hours	7.9
Spouse/partner began working or increased working hours	4.5

N= 699

Table 17

Subjective probability of losing job over next twelve months, workers, cross-section

	N	Probability
Nov08	1188	20.2
Feb09	1192	20.3
May09	1154	21.9
Jun09	1162	19.1
Jul09	1147	17.9
Aug09	1143	19.1
Sep09	1181	18.5
Oct09	1119	19.6
Nov09	1128	19.5
Dec09	1153	19.2
Jan10	1147	18.4
Feb10	1159	18.8
Mar10	1154	18.9
Apr10	1145	17.8
<i>Average monthly change (percentage points)</i>		<i>-0.1</i>
<i>Total change (percentage points)</i>		<i>-2.2</i>

Note: Average monthly change based on regression of percent probability on calendar time. Total change is compounded monthly change over 17 months.

Table 18

Average subjective probability of unemployment over next 12 months and actual frequency (%) among workers in initial wave, panel

Initial wave	N	Average probability	Actual frequency
Nov08	1188	20.2	19.4
May09	1153	21.9	16.9
Jun09	1161	19.1	13.5
Total	3502	20.4	16.6

Table 19  
Distribution (%) of homeownership, mortgage ownership, and mortgage delinquency by  
unemployment status

Unemployed	Not home owner	Home owner			All
		no mortgage	mortgage, not delinquent	mortgage, delinquent	
no	32.2	19.7	46.6	1.5	100.0
yes	53.6	11.5	31.4	3.5	100.0
Total	34.5	18.8	45.0	1.7	100.0

Note: N = 29,278. "Unemployed" is unemployed of either respondent or spouse.  
Unemployment rate is 10.8%. Delinquency defined as more than two months behind on  
mortgage payment.

Table 20  
Spending before (wave t) and after (wave t+1) a household employment transition

Employment transition	N	mean spending			median spending			Median of individual changes (%)
		Wave t	Wave t+1	% change	Wave t	Wave t+1	% change	
E to E	14,053	2551	2505	-1.8	2135	2120	-0.7	-0.3
E to U	350	2208	2125	-3.7	1884	1930	2.4	-2.8
U to E	378	2303	2248	-2.4	1931	1853	-4.1	-2.7
U to U	1,587	1883	1850	-1.7	1535	1490	-2.9	-3.0
All	16,368	2460	2415	-1.8	2062	2042	-1.0	-0.6

Note: Employment transitions of respondent or spouse. E refers to employed and U refers to unemployed.

Table 21  
Spending prior to and following a job loss

	N	Mean			Median		
		Wave t-3	Wave t	percent change	Wave t	Wave t+3	percent change
No job loss	3,035	2,777	2,731	-1.7	2,270	2,243	-1.2
Job loss, no income loss	40	2,145	1,983	-7.6	1,859	1,840	-1.0
Job loss, income loss	323	2,286	2,019	-11.7	1,925	1,719	-10.7
All	3,398	2,711	2,638	-2.7	2,218	2,173	-2.0

Note: Respondents are categorized according to whether they lost a job they wanted to keep as reported in wave t. The reference period is the last three months. Spending is recorded at wave t and at the wave three months earlier (t-3).

Table 22  
Employment transitions and percent of persons with health insurance

Employment transition	Singles			Couples			All		
	N	wave t	wave t+1	N	wave t	wave t+1	N	wave t	wave t+1
E to E	3231	82.8	82.9	7705	88.5	88.6	10936	86.5	86.6
E to U	85	55.0	32.4	94	72.7	69.4	179	62.3	47.7
U to E	88	47.2	46.6	121	66.6	69.3	209	56.5	57.5
U to U	532	28.3	29.8	487	60.6	60.4	1019	41.2	42.0
All	3936	72.7	72.3	8407	86.1	86.3	12343	80.9	80.8

Note: Employment transitions of respondent: E refers to employed and U refers to unemployed.

Figure 1. Housing price indices for four cities and 20-city average

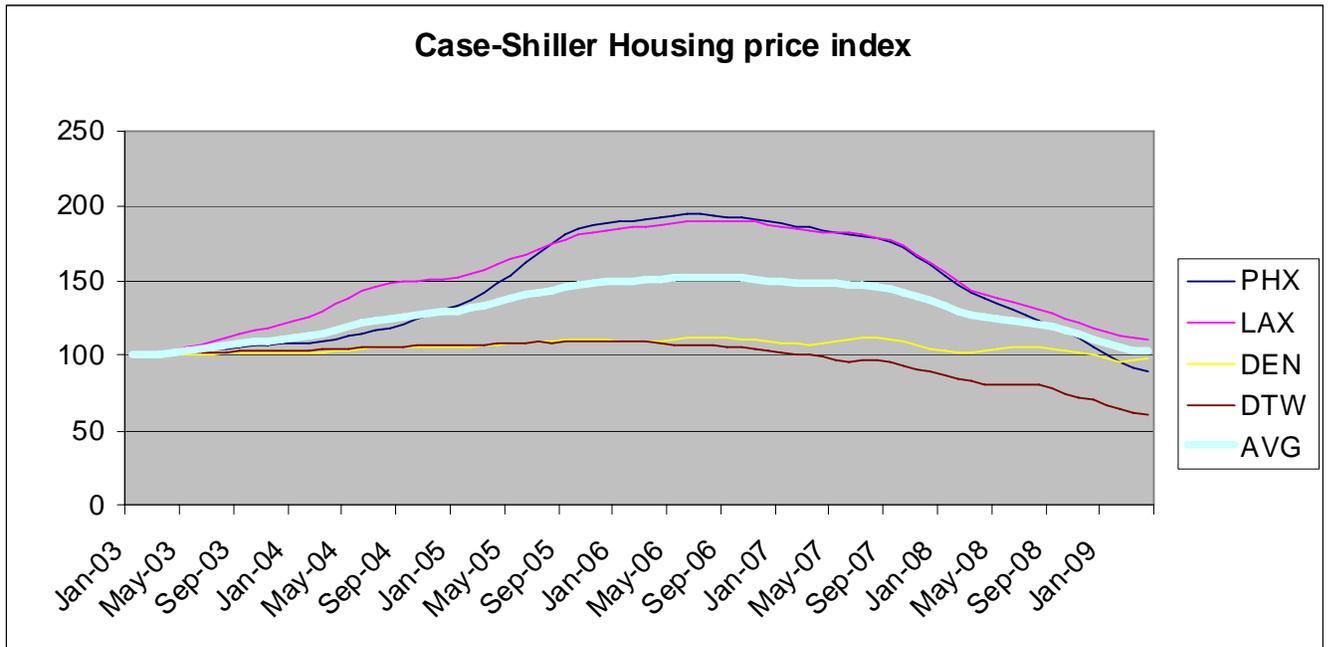


Figure 2. Employment transitions, and health and affect

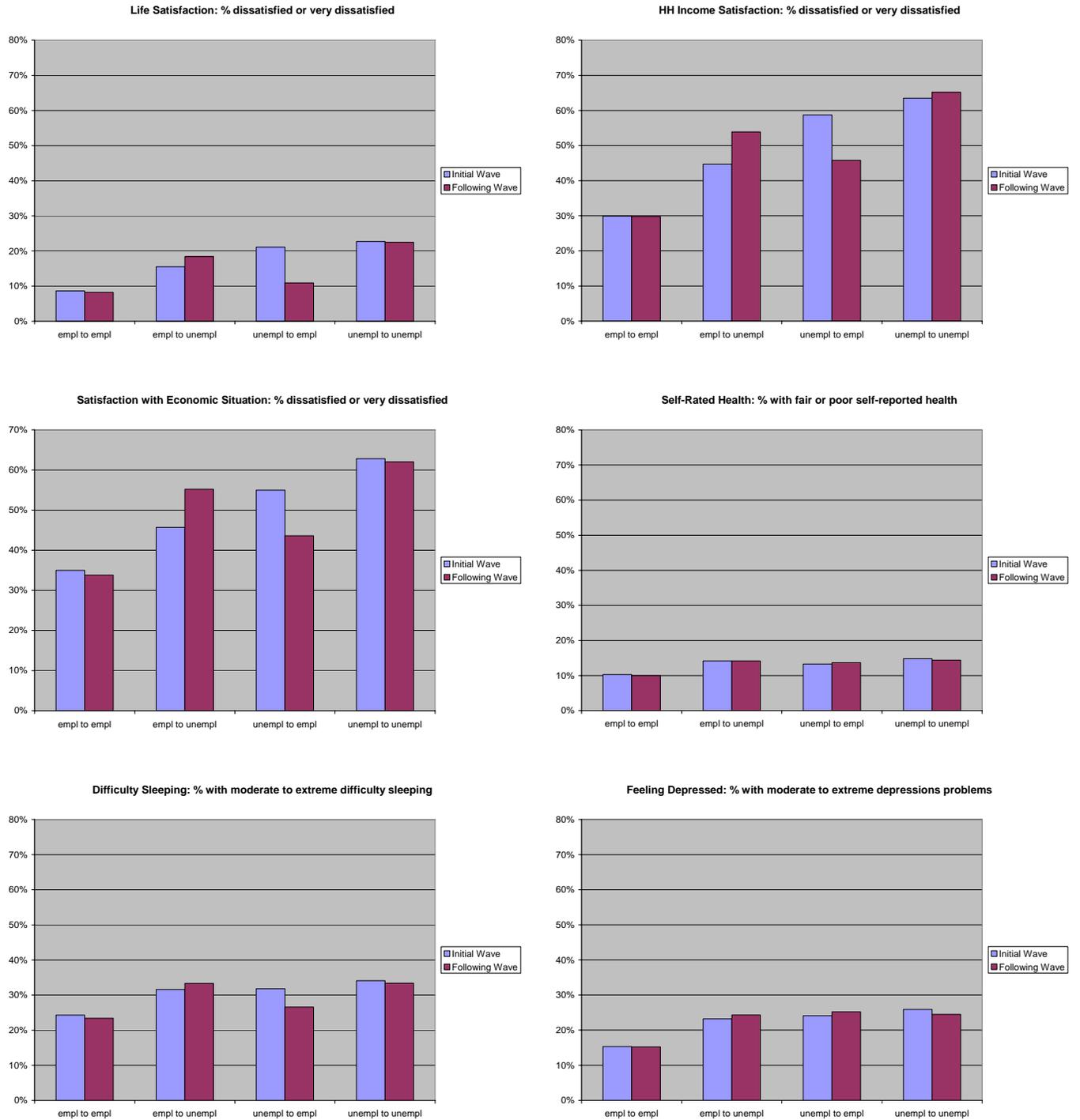
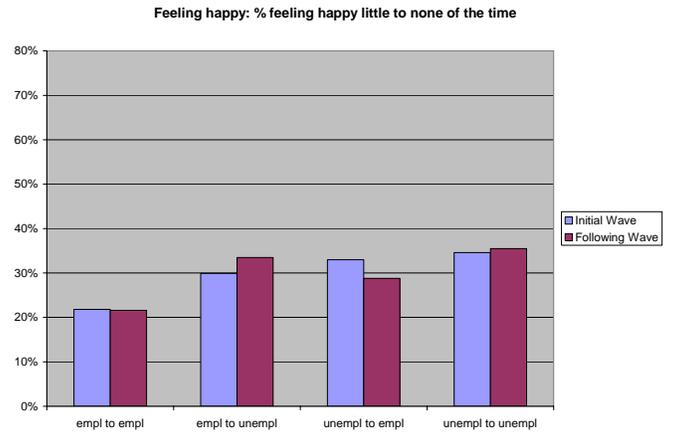
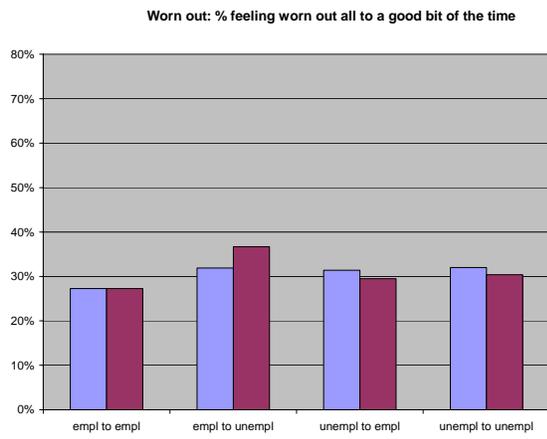


Figure 2 continued



Note: all figures are weighted averages