

**High-frequency Data on Total Household Spending:
Evidence from Monthly ALP Surveys**

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Abstract

Beginning in May 2009 we fielded a monthly Internet survey designed to measure total household spending as the aggregate of about 40 spending components. This paper reports on a number of outcomes from 30 waves of data collection. These outcomes include sample attrition, indicators of data quality such as item nonresponse and the variance in total spending, and substantive results such as the trajectory of total spending and the trajectories of some components of spending. We conclude that high-frequency surveying for total spending is feasible and that the resulting data show expected patterns of levels and change.

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1. Introduction

A very extensive battery of questions about spending along the lines of the CEX is not feasible in a general purpose household survey because of space limitations. In the absence of panel measures of total household spending a large number of empirical papers have been based on the panel measure of food consumption in the Panel Study of Income Dynamics (PSID).¹ However, food consumption as a proxy for total consumption has limitations for some research questions: in the CEX the fraction of total consumption accounted for by food varies with income² and with age, making it difficult to estimate life-cycle models based on food consumption. An example of measuring consumption with just a few questions – but more than one – comes from the Survey of Health, Ageing and Retirement in Europe (SHARE). The first wave of SHARE included these measures of consumption: Food consumed at home, food consumed outside the home, telephoning, and total expenditure on non-durable goods and services.³ While the data on food consumption was useful, the data on total nondurable consumption was deemed unreliable (Browning and Madsen, 2005).

As an approach that tries to strike a middle ground between the extensive detail collected in the CEX and just collecting information on a handful of categories, the Health and Retirement Study introduced the Consumption and Activities Mail Survey (CAMS). Collecting total household spending in a self-administered format (mail survey), the CAMS asks about spending in 36-38 categories and allows respondents to choose the length of the recall period (last month, last 12 months) for most categories. The self-administered nature of the survey has the advantage that respondents can take the time to think about their answers, even consult records if they are so inclined, without the social pressure arising from the presence of an interviewer. Hurd and Rohwedder (2009) show that the CAMS data collection on spending has overall proven to be a success. The spending totals aggregate quite closely to CEX totals and more importantly, the age patterns of saving derived from the CAMS data (taking total income minus taxes minus spending) are quite close to the age patterns of savings implied by data on wealth change, much closer than the age patterns of saving that would be implied by CEX data (Hurd and Rohwedder (2011)).

¹ See, among others, Hall and Mischkin (1982), Zeldes, (1989), Altug and Miller (1990), Shea (1995).

² Bureau of Labor Statistics, 1978.

³ The last item on this list included a number of cues, prompting respondents to include ‘groceries, utilities, transportation, clothing, entertainment, out-of-pocket medical expenses and any other expenses the household may have and to exclude housing payments (rent or mortgage), housing maintenance, and the purchase of large items such as cars, televisions, jewelry and furniture.’ (p. 318, Browning and Madsen, 2005).

However, whenever respondents are asked to recall their spending over a long period of time (say, one year), recall error becomes very important (Hurd and Rohwedder, 2009). This observation gave rise to the idea of attempting high-frequency elicitation of spending. Building on our experience with the CAMS data, we designed a spending module that we administered as part of the *Financial Crisis Surveys* that we were conducting in the American Life Panel, which interviews some 2,500 households over the Internet.⁴ The timing for a high-frequency elicitation of spending seemed particularly suitable in view of the high volatility in the economic environment which would make it likely that spending would be more volatile than usual as well. In fact, back in November 2008, just shortly after the large and sudden drops in the stock markets, about 75% of all households reported reductions in spending in response to the economic crisis. We decided to attempt a monthly elicitation of household spending.

In this paper we describe in detail our survey methods, including an important innovation – the spending reconciliation screen – designed to catch large outliers that can be more frequent in self-administered surveys, for example, due to typos, and no interviewer to verify unusually large numbers. The reconciliation screen allows respondents to review all of their entries and the resulting total on one screen. Beyond the catching and self-correction of outliers the reconciliation screen also allows respondents to fine tune their entries, most likely reducing the noise in the data and leading to more accurate reports overall. Section 2 provides background on the American Life Panel, the Financial Crisis Surveys and the specifics of the design of the spending survey module. Section 3 reviews unit and item response rates, and various other indicators of data quality. In Section 4 we present some examples of empirical applications that exploit the unique high-frequency nature of the spending data. Section 5 concludes.

2. Data and Survey Design

2.1 The American Life Panel

The American Life Panel (ALP) is an ongoing Internet panel survey operated and maintained by

⁴ In the summer of 2011 the ALP embarked on recruiting new panel members increasing the total ALP sample size to about 5,000. However, the data collections that we report on in this paper were only administered to the sample of ALP respondents that were active panel members at the time of the first Financial Crisis Survey in November 2008.

RAND Labor and Population. It covers the U.S. population age 18 and over. Those who do not have access to the Internet at the time of recruitment are provided with a Web TV (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.⁵ 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 twice 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 \$20 per 30 minutes of survey time, and pro-rated accordingly for shorter surveys. Response rates are typically between 75 and 85% of the enrolled panel members, depending on the topic, the time of year, and how long a survey is kept in the field.

Since inception of the American Life Panel in 2006, there have been four sample recruitment efforts. In this paper we report on high-frequency data collections that were part of the so-called *Financial Crisis Surveys*, covering the period from November 2008 following the onset of the turmoil in the U.S. financial markets, up to the latest survey that was completed in October 2011. Back in 2008 the majority of active ALP panel members had been recruited from 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. The MS survey is considered to have good population representation (Curtin, Presser, and Singer, 2005).

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 the 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 ALP has conducted a large number of longitudinal surveys of its respondents, so that

⁵ This approach has been used successfully in the Dutch CentER panel for many years.

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, income and asset data and to the HRS cognitive battery.

2.2 The Financial Crisis Surveys

The very large stock market declines in October 2008 prompted our first financial crisis 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 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.⁶

Each month we ask about spending in 25 categories during the previous month. These categories comprise about 70% of total spending according to CEX published annual spending tables.⁷ Every third month beginning in July 2009 we ask about spending during the previous three months on an additional 10 categories plus seven big-ticket items. 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.⁸

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 (almost) 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. The use of a reconciliation screen in the consumption module, described in detail below, reduces noise in the spending data substantially, allowing meaningful analyses even in a small sample. Furthermore, the combination of spending data with a very rich set of covariates, elicited at high-frequency, allows for a wide variety of analyses, with much more careful information on timing and sequencing of events to investigate determinants and the effects.

A total of 2,693 respondents participated in at least one of the 30 interviews from November 2008 through August 2011. The wave-to-wave retention rate has been consistently high throughout this entire period, averaging 90.5 percent without showing any decline over time. Respondents are invited to continue to participate in the surveys even if they miss one or more interviews resulting in a higher retention rate across multiple waves than would be implied by the wave-to-wave retention rate. For example, 73.0 percent (N=1,966) responded to at least ten of the first 14 interviews. Beginning with wave 15, facing budgetary constraints, we had to restrict the

⁶ To further reduce recall error the survey is only available to respondents for the first 10 days of each month, with only minor variation (e.g. adding the weekend if the 10th falls on a Friday or to accommodate staff work schedules when the beginning or end of the survey coincides with a major holiday such as New Year). Thus state variables such as unemployment refer to approximately the first 10 days of a month, not the entire month.

⁷ See for example, <http://www.bls.gov/cex/2010/Standard/age.pdf>, accessed in November 2011.

⁸ Information about the surveys is given in Appendix Table 1, including survey length, fielding schedule and response rates.

sample and decided to exclude the most sporadic respondents, dropping those who had responded to less than five of the first fourteen interviews, leaving us with 2,338 eligible respondents. Since then another 30 respondents either requested to be dropped from the monthly surveys or they died.

In this paper we use data from 30 surveys covering the period May 2009 through October 2011. Calculated over the eligible sample of 2,338 respondents retained since wave 15, we obtain a unit response rate for the spending module that averages 82.5 percent (N=1928) in cross-section over 30 waves. In the interest of maintaining an adequate sample size while at the same time basing results on an approximate panel sample, we present results for the sample of respondents who missed at most four of the 30 interviews, resulting in an average sample size of 1,457 respondents per wave, translating into an average unit response rate for this sample of 62.3 percent per wave. Restricting the sample to those who completed the spending module in all 30 waves yields a unit response rate of 36.0 percent (N=842).⁹

2.3. Eliciting Total Household 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 10 less frequently purchased categories, and about seven big-ticket items. 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.¹⁰ 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

⁹ Calculated over the entire original eligible sample of 2,693 respondents (which was eligible through wave 14, but reduced thereafter), the cross-sectional unit response rate for the spending module averages 71.6 percent; when focusing on the sample of respondents who completed 26 or more interviews, the unit response to the spending module averages 54.1 percent; for the sample of those who responded to the spending module in all 30 waves the unit response rate would be 31.3 percent.

¹⁰ In November 2010 (wave 21) we added another monthly category (“other transportation expenses”) in reaction to some respondents indicating difficulties allocating some of their expenses.

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 review and edit any items. This produced two very favorable results: most importantly, there was a sharp reduction in outliers which has a large impact on standard errors of the total that is constructed as the sum of these 25 spending categories. Also, respondents had the opportunity to improve the accuracy of their entries, including previously missing entries which should reduce the noise in the data further. We give more details on these outcomes in the next section. See Appendix Table 4 for a display of the reconciliation screen.

3. Results

3.1 Indicators of data quality

Figure 1 shows the time path of the number of respondents who started each survey (blue line). Initially, in the first 10 days of May, 2009, about 2100 people responded to the survey.

This number was fairly constant until wave 15 (May, 2010) when it declined by about 300 persons. The main reason for the decline is that due to budgetary constraints some infrequent responders were dropped from the survey.¹¹ Since then the number of observations has stabilized hovering between 1,750 and 1,850 observations. The red line shows the number of respondents for each wave that participated in the spending section. The difference is on average 25 observations which largely pertain to respondents who started, but never completed the survey.

The measurement of spending, which is the focus of this paper, is embedded in a longer survey of the effects of the great recession. For the spending part of the survey only, Figure 2 shows the median time for completion.¹² These times include time spent on the reconciliation screen. For all ages, the median time to complete the 25 item monthly survey on spending was about 3.3 minutes. The median time to complete the additional quarterly items (10 items plus 7 big-ticket items) was about 2.3 minutes.

There is a very substantial age gradient: those age 65 or older take about twice as much time as those less than 40. As for the variation over time, completion times in the first several waves were greater than the times shown in Figure 2 (by roughly one minute), but fairly quickly reached the levels shown.

Item non-response is generally very low in the ALP and that holds also for the spending items. The average rate of item non-response across all waves and all 25 monthly categories is 1.3 percent. Examining the rate of item non-response averaged across the 25 monthly categories by wave shows that there has been no trend over time (Figure 3). There is some variation across categories of spending, but it is rather small. For example the category with the highest rate of item non-response is “heating fuel for the home” (1.5 percent) compared to the lowest rate of 1.2 percent for “telephone, cable, Internet.” In the reconciliation screen previously missing items are replaced with the value \$0. Respondents have the opportunity to correct this value on the reconciliation screen. It turns out that only rarely does a respondent replace a zero pertaining to a category previously missing with a positive amount. It could be that the initial missing entry was

¹¹ Many analyses will use the panel aspect of the survey to study change: Infrequent responders have less or no value in such analyses.

¹² Mean times are not meaningful in a self-administered survey such as an Internet survey because respondents may interrupt the survey without disconnecting.

due to the respondent not having that type of spending or that the respondent left the entry blank, because s/he already accounted for that type of spending elsewhere in the survey.¹³ If that was the case – and one could argue that respondents affirmed this view by not updating the zeros on the reconciliation screen – then no further imputation for missing values is required. This is the approach we apply in this study when calculating total spending. Because the rates of item non-response are so low, any other decision how to deal with missing information would not affect any of the statistics we present in a material manner.

The reconciliation screen invites the respondent to correct entries. In the initial wave that elicited spending (wave 3 of the financial crisis surveys), about 2 percent of the entries were corrected (modified or updated) by the respondent (Figure 4). The rate of correction declined steadily until about wave 12. Since then it has fluctuated between 0.6 and 0.4 percent. Although this seems like a small rate of correction the effect on outliers can be substantial if the corrections are for entries that are extreme. The average rate of updating is smaller for the quarterly items (Figure 5) when calculated over the entire population which is mainly due to the fact that many more respondents have zero spending in those less frequent quarterly items and those zeros are not usually updated. In the initial wave in May 2009, 16.9 percent of respondents altered at least one entry on the reconciliation screen for the monthly items. Four waves later (September 2009), this group had declined to 7.6 percent and has stayed about that size since then. For the quarterly items we do not observe such a decline. The fraction of respondents updating any quarterly spending items has hovered around its average size of just under 4 percent all along.

The frequency and magnitude of outliers can be a problem in self-administered surveys because there is no interviewer to question extreme values. The reconciliation screen is meant to reduce this problem. A measure of the extent of the problem is the standard deviation of spending: while some fraction of the measured standard deviation reflects true variation in spending across individuals, some fraction is the result of measurement error and often it is the result of extreme outliers. Figure 6 shows the standard deviation of total spending in the monthly

¹³ A conscientious respondent may feel hesitant entering a zero when s/he had that type of spending (i.e. it was not truly zero), but had already included it elsewhere.

surveys before and after the reconciliation screen.¹⁴ In the first two waves the reduction was very substantial: from an average of \$17.7 thousand to \$4.1 thousand. In subsequent waves the reductions alternated between being very small in some waves and sizeable in others. The average standard deviation (averaged over 30 waves) was 64 percent higher before the reconciliation screen. This reduction will have a substantial effect on the standard errors in the estimation of models of spending.

Because the corrections induced by the reconciliation screen tend to involve large outliers, the corrections will reduce mean values of spending. We present the effects of the corrections on the mean (and the median) in Figures 7, 8 and 9 for the monthly items, the quarterly items and the quarterly totals (monthly plus quarterly items). The statistics in these figures are unweighted and cross-sectional. We have applied some very limited data processing for large outliers. Thus the differences between the before and after measures in the Figures indicate the additional value from the reconciliation screen beyond what could be achieved by limited data cleaning methods. Each figure shows mean and median spending before and after the reconciliation screen. The main observation from these figures is that the updates from the reconciliation screen do not affect measures of spending at the median, but they result in lower population averages at the mean in those waves where large outliers are caught.

Comparison with the Consumer Expenditure Survey

The CEX has the most authoritative survey measure of spending at the household level, and so we compare annual spending in the CEX with annual spending in our survey. We choose the calendar year 2010 for this comparison as this is the first complete year of monthly data on household spending in the ALP. 2010 is also the latest calendar year for which published tables from the CEX are available. For ALP we calculate spending over a year by summing all 26 monthly spending items from the 12 monthly surveys and the quarterly reported spending items from the quarterly surveys referring to 2010. Average spending in 2010 as reported in the CEX was \$42,736. Average weighted spending in the ALP was quite close at \$41,278, or 97% of CEX spending. In our view these levels are remarkably similar.

¹⁴ The figure excludes an extreme outlier in wave 13 of about \$800,000 and in wave 16 of about \$1,800,000.

3.2 Trends in spending

To examine trends in spending over time we apply seasonal adjustments and weight the statistics.¹⁵ We define three samples: a 30-wave panel sample composed of those who responded to all 20 waves of the spending surveys (wave 3-32 of the financial crisis surveys); a 26-wave panel sample composed of those who responded to 26 or more waves; and a cross-section sample composed of those who responded in a particular wave. Approximately the sample sizes of these three samples are 850, 1460 and 1900.

Fig 10 shows mean spending on monthly items, seasonally adjusted and weighted for the three samples. With the exception of the first several waves all samples produce similar results both with respect to levels of spending and with respect to trends. Spending reached a minimum in about May 2010 after which it recovered, increasing by about 11% from its minimum. However, the spending trends make no adjustment for inflation, which if applied would reduce the recovery in real terms.

Fig 11 shows median spending on the monthly items. The median shows similar trends with spending recovering since May 2010, but the recovery is smaller according to the median, about an 8% gain since the minimum.

These figures do not include spending on durables and other low-frequency items whose pattern and trend may differ from spending on high frequency items. Fig 12 shows average total quarterly spending, seasonally adjusted, and weighted, including spending over three months on the monthly items and on the low frequency items. It is not obvious that there is any trend in quarterly spending based on any of the three samples. For example in the 8-quarter sample spending in II-09 was \$11,010 and it was \$10,965 in III-11. Because this is not adjusted for inflation, however, spending declined in real terms over this period. Figure 13 has median total quarterly spending, seasonally adjusted, and weighted for the three samples. The medians do show a minimum in about II-10, but as with mean, spending is not higher in the latest quarter than in the initial quarter even in nominal terms.

¹⁵ We calculate our own seasonal adjustment factors.

Besides total spending, the components of spending are of interest. Figures 14 onward show the evolution of spending for a number of such components. The spending numbers are not seasonally adjusted, and accordingly a number of them show local peaks at waves 11 and 22 which are the January 2010 and 2011 surveys covering spending in December 2009 and 2010.

Spending on food reached a minimum in November 2009. The decline since wave 3 was about 9 percent, which is somewhat less than the comparable number for total spending on the monthly items. The decline in spending for food for consumption at home was somewhat smaller than for food consumed outside the home. Since the minimum food spending has increased by about 10 percent. Figure 15 shows little difference between the three samples.

Spending on utilities was essentially flat with considerable variation from wave to wave. Spending on health declined sharply from wave 3 to wave 10. Since then it has been relatively constant.

Spending on clothing has been constant except for large spikes in December 2009 and 2010.

Spending on car payments declined initially, then remained flat. Spending on gasoline varied substantially reflecting price changes as well as possibly changes in quantities purchased.

4. Conclusions

Before the initiation of our financial crisis surveys it was not clear whether high frequency surveying about a repetitive yet complex topic such as spending was feasible. We were unsure whether respondents would respond to the survey by attriting or by providing meaningless data. Neither of these fears appears to have been warranted. The main reduction in sample size occurred when we dropped some 300 respondents from our sample pool. Measures of data quality such as item nonresponse or outliers have also stabilized.

In our view the reconciliation screen has been an important innovation. It allows the respondent to efficiently review his/her prior response and make appropriate changes. Consequently our level of data cleaning and outlier adjustment is minimal. Possibly more importantly is that the level of changes via the reconciliation includes many changes that are unrelated to outliers and would not be detectable by conventional data cleaning methods. For example a household may correct a spending level from \$1000 to \$100. When fitting models of

spending change, these minor corrections could have a substantial effect on significance levels of estimated coefficients. A topic of future research will be to investigate the importance of such changes.

We found that spending for 25 monthly categories declined until about May 2010 and has increased since then. According to the median, total quarterly spending increased in subsequent quarters, but not according to the mean.

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Appendix Table 1

Basic monthly surveys are shorter, eliciting just a subset of variables. Every three months we administer a long survey (shaded in grey). The size of the initial eligible sample was N=2,693. Starting with wave 15 (May10) we restricted the sample to those respondents who had participated in 5 or more of the 14 prior surveys (N=2,338), excluding the most sporadic of respondents. This decision was motivated by budgetary constraints. As a result response rates among the (somewhat reduced) set of eligible respondents is higher on average in wave 15 and beyond.

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

Wave	Survey	Time to complete survey		Field period	Completed Responses N	Response rate [%]
		Mean	Median			
1	Nov08	19.1	16.7	Initially unrestricted	2,052	76.2
2	Feb09	24.6	21.4	02/24-03/16/09 = 21 days	2,119	78.7
3	May09	14.6	11.8	05/01-05/10/09 = 10 days	2,080	77.2
4	Jun09	14.5	11.7	06/01-06/10/09 = 10 days	2,109	78.3
5	Jul09	26.8	22.7	07/01-07/10/09 = 10 days	2,100	78.0
6	Aug09	12.5	9.9	08/03-08/12/09 = 10 days	2,074	77.0
7	Sep09	12.4	9.7	09/01-09/10/09 = 10 days	2,123	78.8
8	Oct09	27.9	23.5	10/01-10/11/09 = 11 days	2,016	74.9
9	Nov09	13.9	11.1	11/02-11/11/09 = 10 days	2,056	76.3
10	Dec09	14.1	11.3	12/01-12/10/09 = 10 days	2,059	76.5
11	Jan10	28.5	24.3	01/01-01/10/10 = 10 days	2,069	76.8
12	Feb10	15.1	11.7	02/01-02/10/10 = 10 days	2,075	77.1
13	Mar10	14.0	10.7	03/01-03/10/10 = 10 days	2,057	76.4
14	Apr10	27.4	22.9	04/01-04/11/10 = 11 days	2,019	75.0
15	May10	10.4	7.9	05/03-05/12/10 = 10 days	1,861	79.6
16	Jun10	10.3	7.8	06/01-06/10/10 = 10 days	1,924	82.3
17	Jul10	25.9	21.5	07/01-07/11/10 = 11 days	1,814	77.6
18	Aug10	12.1	9.2	08/02-08/11/10 = 10 days	1,750	74.9
19	Sep10	11.8	9.2	09/01-09/10/10 = 10 days	1,836	78.5
20	Oct10	27.4	22.6	10/01-10/10/10 = 10 days	1,797	76.9
21	Nov10	12.0	9.3	11/01-11/10/10 = 10 days	1,851	79.2
22	Dec10	12.3	9.3	12/01-12/12/10 = 12 days	1,874	80.2
23	Jan11	34.5	29.1	01/03-01/12/11 = 10 days	1,836	78.5
24	Feb11	13.8	10.5	02/01-02/10/11 = 10 days	1,840	78.7
25	Mar11	12.8	9.8	03/01-03/10/11 = 10 days	1,845	78.9
26	Apr11	34.2	29.4	04/01-04/10/11 = 10 days	1,774	75.9
27	May11	16.4	12.4	05/01-05/10/11 = 10 days	1,768	75.6
28	Jun11	15.4	12.1	06/01-06/12/11 = 12 days	1,753	75.0
29	Jul11	31.0	26.3	07/01-07/14/11 = 14 days	1,838	78.6
30	Aug11	15.2	11.8	08/01-08/14/11 = 14 days	1,832	78.4
31	Sep11	14.8	11.5	09/01-09/11/11 = 11 days	1,785	76.3
32	Oct11	31.6	26.4	10/01-10/10/11 = 10 days	1,777	76.0

Notes: Time to complete the survey is calculated for completed survey responses, excluding any interviews that took 2 hours or longer. These respondents presumably interrupted the interview and returned to it later. The response rates for each wave are calculated over the initial eligible sample for the two periods and do not adjust for the fact that some few respondents declined future participation at some point and therefore were no longer part of the eligible sample. For example in Oct11, a total of 2,212 respondents were still eligible and active. The adjusted response rate for that wave would be 80.3% (=1,777*100/2212).

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

Screen 1:

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

Screen 2:

Food and beverages: food and drinks, including alcoholic, that you buy in grocery or other stores
Dining and/or drinking out: items in restaurants, cafes, bars and diners, including take-out food
Gasoline
Other transportation expenses: parking, tolls, public transport, taxi and similar (please exclude spending on trips and vacations)

Category added in wave 21
(Nov10)

Screen 3:

Housekeeping supplies: cleaning and laundry products
Housekeeping, dry cleaning and laundry services: hiring costs for housekeeping or home cleaning, and amount spent at dry cleaners and laundries
Gardening and yard supplies: yard, lawn and garden products
Gardening and yard services: hiring costs including materials they provided

Screen 4:

Clothing and apparel: including footwear, outerwear, and products such as watches or jewelry
Personal care products and services: including hair care, shaving and skin products, amount spent at hair dresser, manicure, etc.
Prescription and nonprescription medications: out-of-pocket cost, not including what's covered by insurance
Health care services: out-of-pocket cost of hospital care, doctor services, lab tests, eye, dental, and nursing home care
Medical supplies: out-of-pocket cost, not including what's covered by insurance

Screen 5:

Entertainment: tickets to movies, sporting events, performing arts, etc
Sports: including gym, exercise equipment such as bicycles, skis, boats, etc.
Hobbies and leisure equipment: such as photography, stamps, reading materials, camping, etc.

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 or pet-related spending, not yet reported: including toys, gear, equipment and veterinarian
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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 4: Selected Screen Shots from ALP Spending Module

Sample screen shot from the monthly spending survey module

Mortgage, rent, utilities, car

Please, provide your best estimate of how much in total your household spent in the following categories. Please include spending by all members of your household, that is, by you or anyone living with you. Even if the amount your household spent last calendar month was unusual, please report that amount.

	Amount spent last month	No money spent on this last month
Mortgage	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Rent	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Electricity	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Water	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Heating fuel for the home	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Telephone, cable, internet	\$ <input type="text"/> .00	OR <input type="checkbox"/>
Car payments: <i>interest & principle</i>	\$ <input type="text"/> .00	OR <input type="checkbox"/>



The logo for the RAND American Life Panel, featuring the text "RAND American Life Panel" in a serif font, with a stylized figure of a person sitting and reading a book above the word "Life".

Screen shot of the reconciliation screen

According to your entries your household's spending in on the described categories was: **\$.00**. Below is a summary of your entries. If you would like to make any changes to your entries, you can change the amounts in the table below and then click the 'Update total' button in the lower right corner of the screen to recalculate your total. Once you are satisfied with your entries, please just click 'Next'.

<i>Category</i>	<i>Amount spent last month</i>
Mortgage	\$ <input type="text"/> .00
Rent	\$ <input type="text"/> .00
Electricity	\$ <input type="text"/> .00
Water	\$ <input type="text"/> .00
Heating fuel for the home	\$ <input type="text"/> .00
Telephone, cable, internet	\$ <input type="text"/> .00
Car payments	\$ <input type="text"/> .00
Food and beverages	\$ <input type="text"/> .00
Dining and/or drinking out	\$ <input type="text"/> .00
Gasoline	\$ <input type="text"/> .00
Housekeeping supplies	\$ <input type="text"/> .00
Housekeeping, dry cleaning and laundry services	\$ <input type="text"/> .00
Gardening and yard supplies	\$ <input type="text"/> .00
Gardening and yard services	\$ <input type="text"/> .00
Clothing and apparel	\$ <input type="text"/> .00
Personal care products and services	\$ <input type="text"/> .00
Prescription and nonprescription medications	\$ <input type="text"/> .00
Health care services	\$ <input type="text"/> .00

This screen shot displays the top portion of the reconciliation screen. In the actual interview the first sentence includes an additional fill so that it says “[...] your household’s total spending on the described categories last calendar month ([display applicable reference month]) was: [fill sum of all reported spending items, bold face, large font.] All dollar amount fields are filled with the respondent’s previously provided entries. Any missing categories are filled with a zero. Using the scroll bar to the right the respondent can scroll through the entire list of categories and edit any entries. At the bottom is a field that displays the “Total”, an update button to have the total (displayed at the top and bottom) recalculated and the usual “Back” and “Next” buttons.

Figure 1. Number of observations. Cross-section.

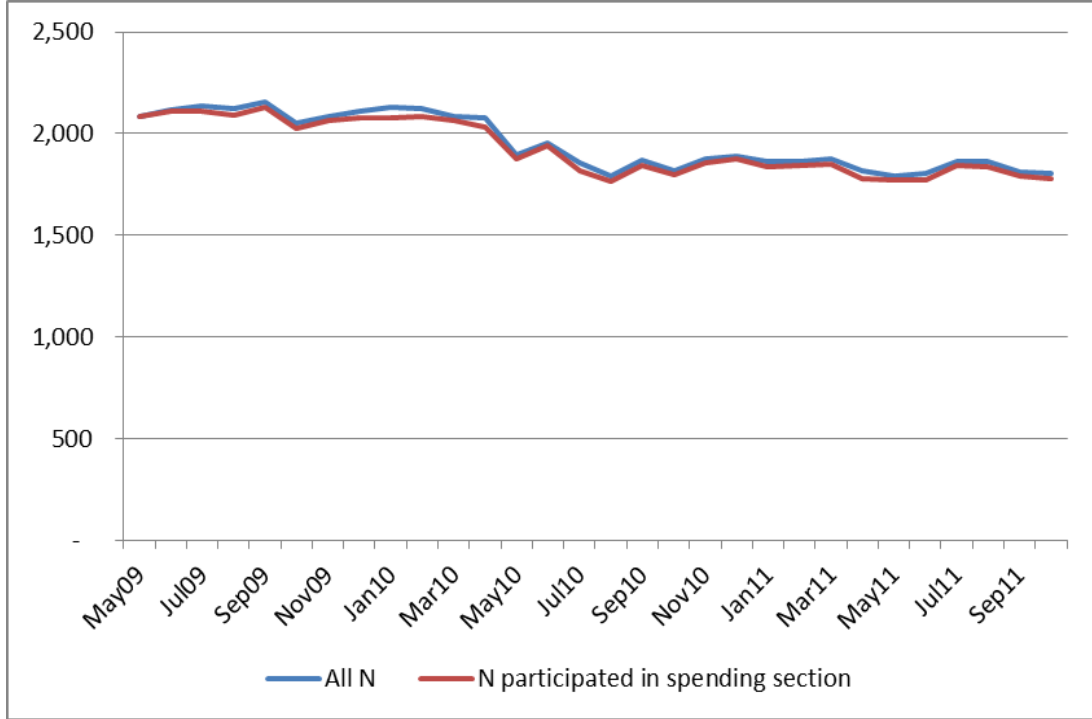


Figure 2. Median time in minutes to complete monthly and quarterly spending section

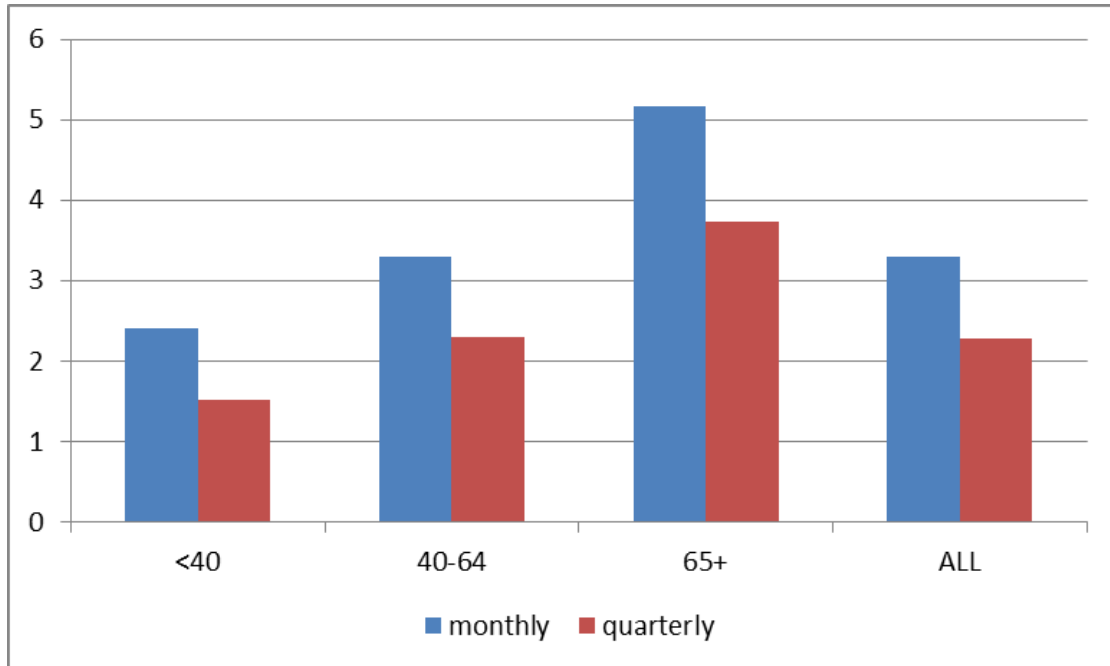


Figure 3. Remaining item non-response for monthly items after the reconciliation screen, unweighted.

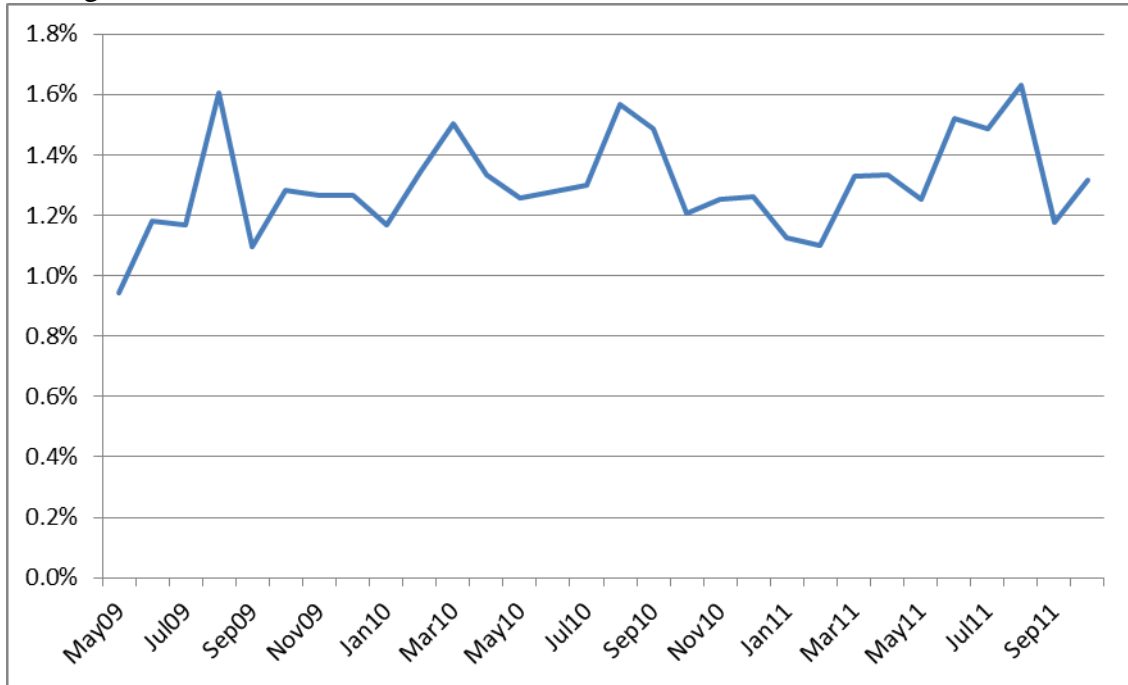


Figure 4. Percent of monthly spending categories updated, unweighted.

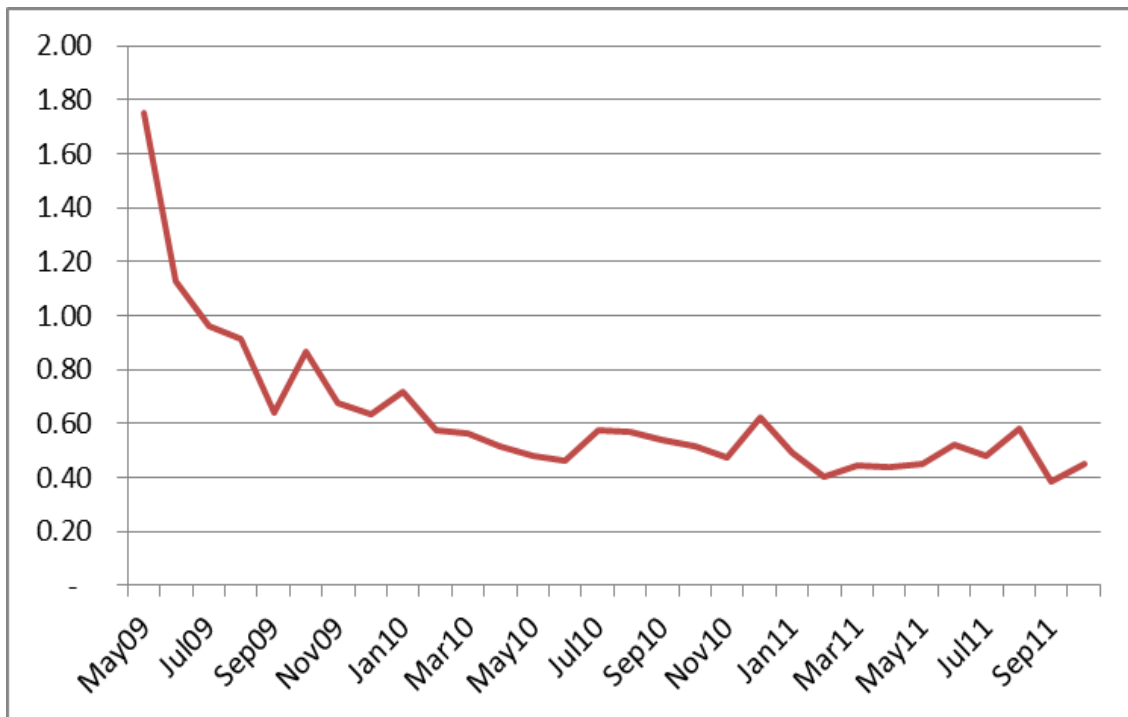
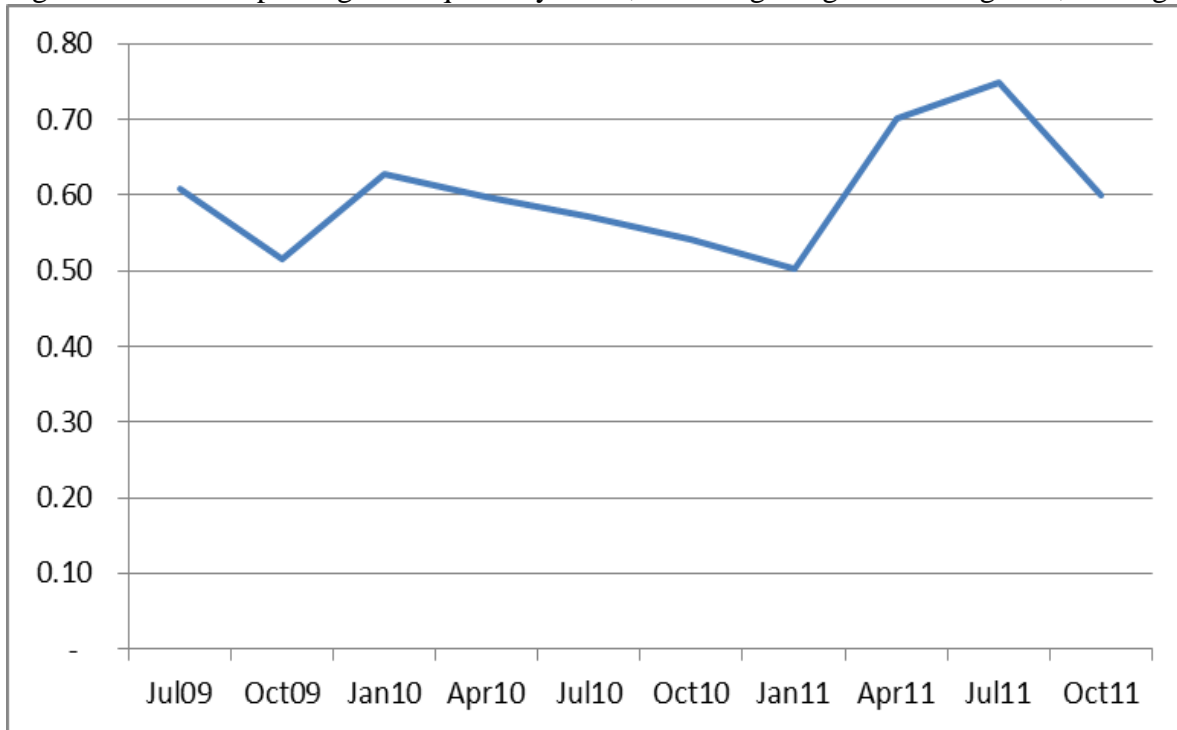
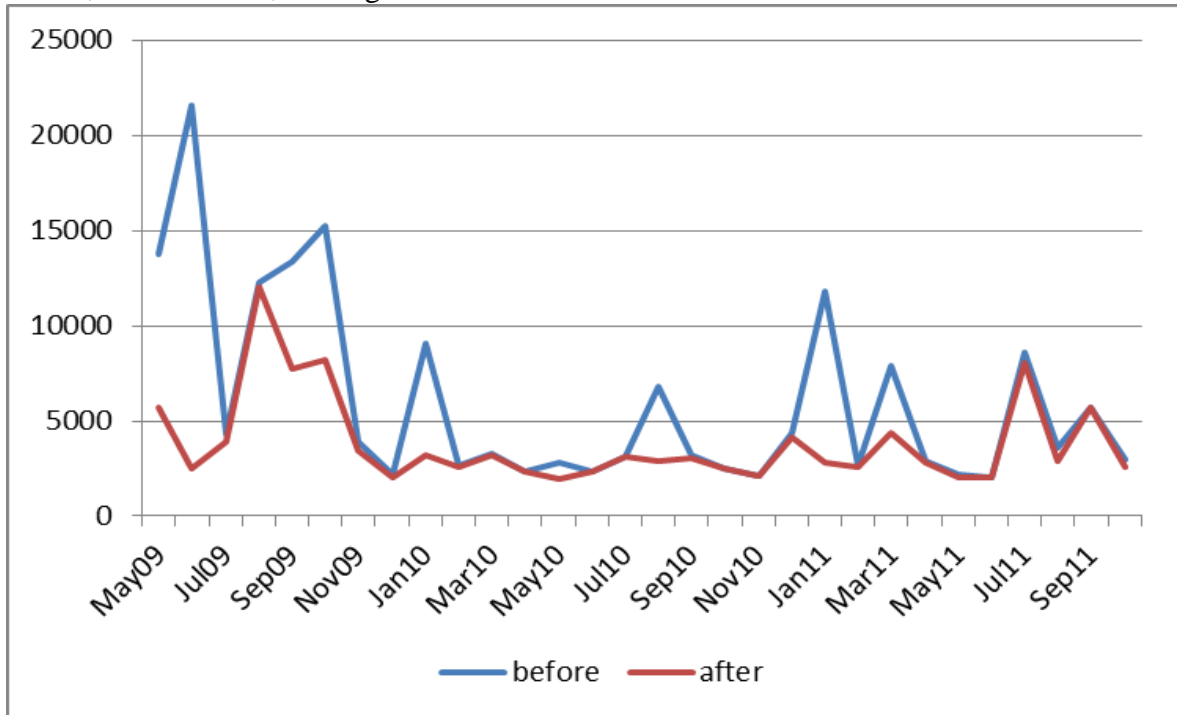


Figure 5. Percent updating of 17 quarterly items, including 6 big-ticket categories, unweighted.



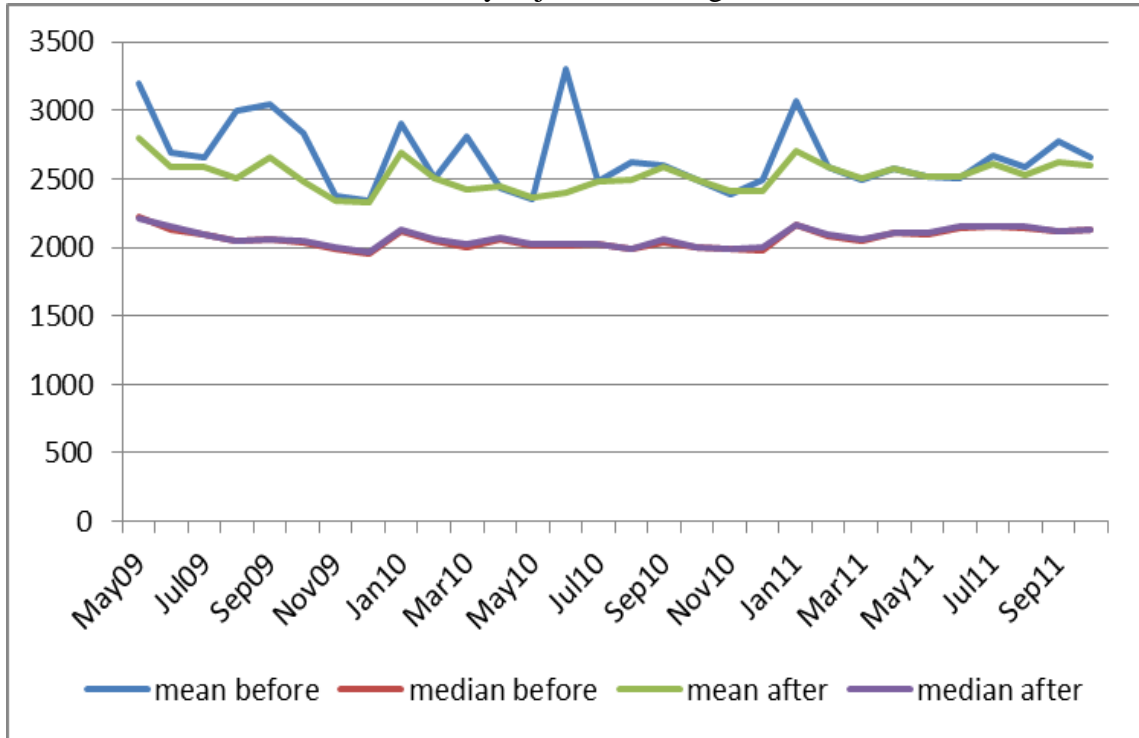
Note: The reported amount for automobile purchases was not offered for updating, because of the complexities arising from the many different financing options.

Figure 6: Standard deviation of sum of 25 monthly items before and after the reconciliation screen, cross-section, unweighted.



Note: Removed one outlier each in wave 13, 16 and 27.

Figure 7: Mean and median spending on 25 categories before and after reconciliation screen, cross-section, not seasonally adjusted, unweighted



Average number of observations per cross-section = 1928.

Figure 8. 17 quarterly spending items before and after reconciliation screen, cross-section of quarters, not seasonally adjusted, unweighted

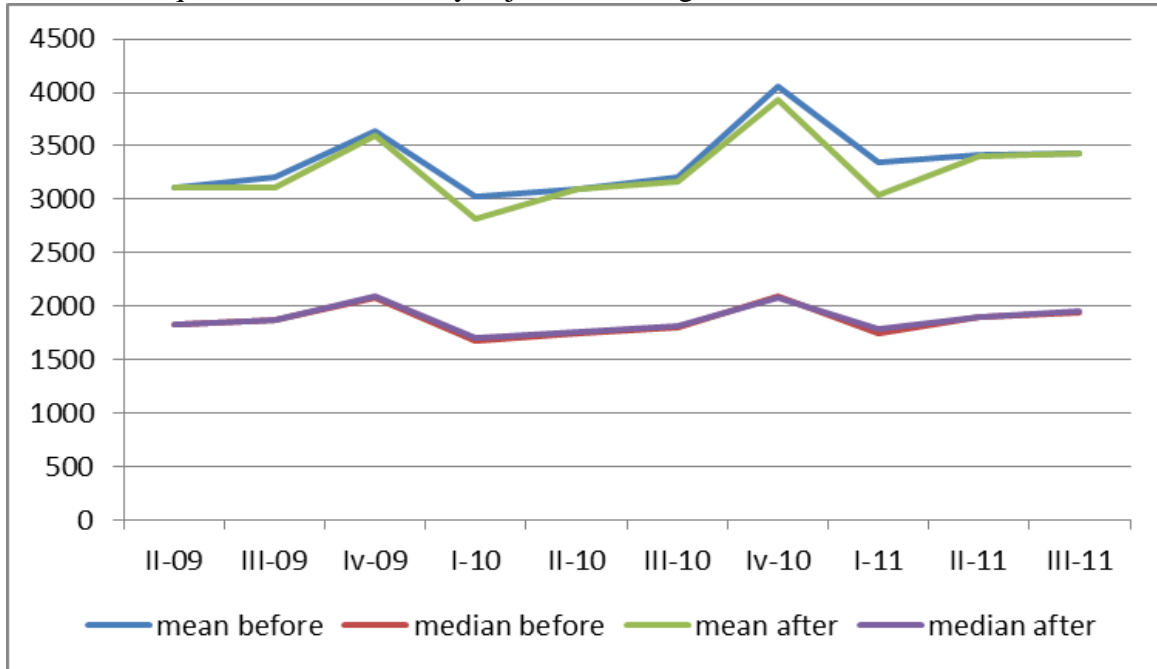


Figure 9. Total quarterly spending before and after reconciliation screen, cross-section of quarters, not seasonally adjusted, unweighted.

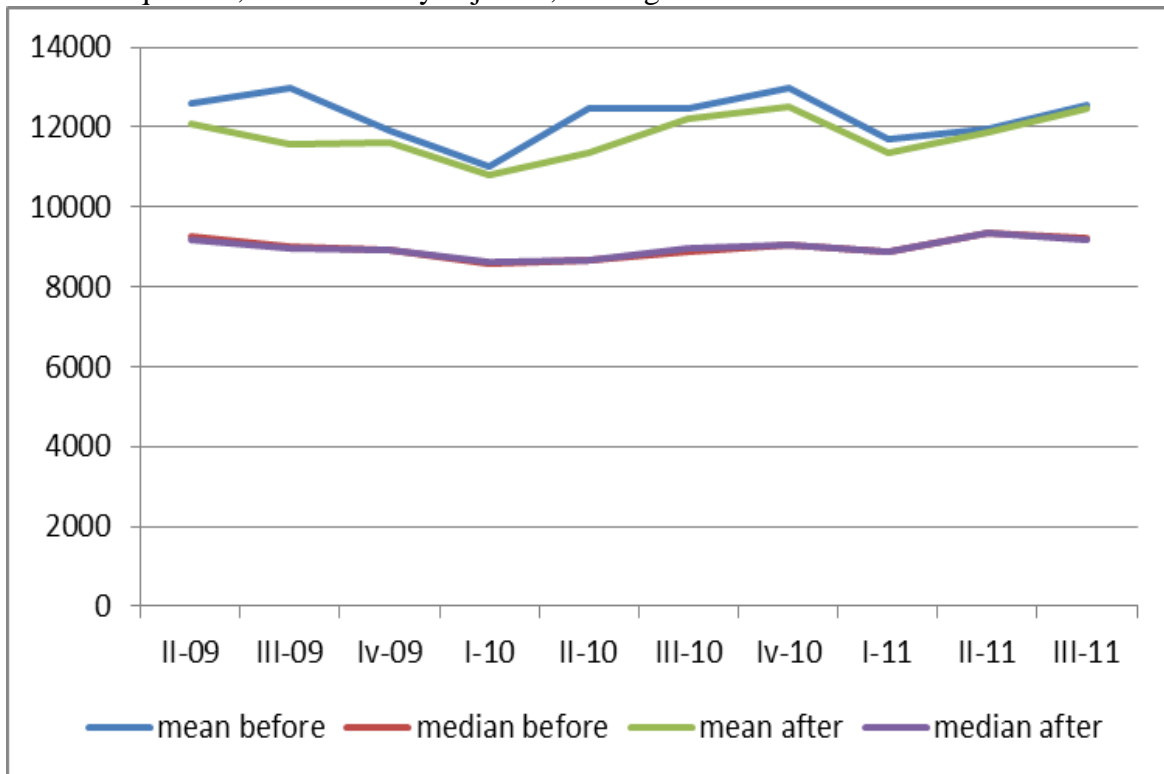


Figure 10. Mean spending on 25 monthly items (after correction), seasonally adjusted and weighted. Three samples.

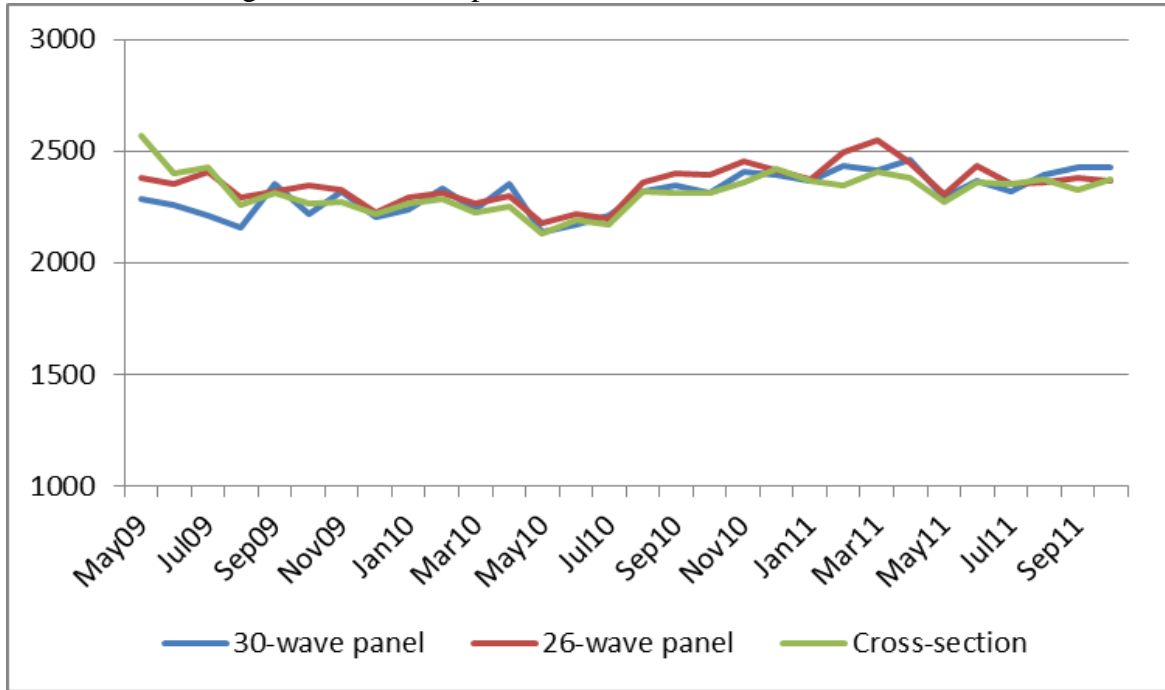


Figure 11. Median spending on 25 monthly items (after correction), seasonally adjusted and weighted. Three samples.

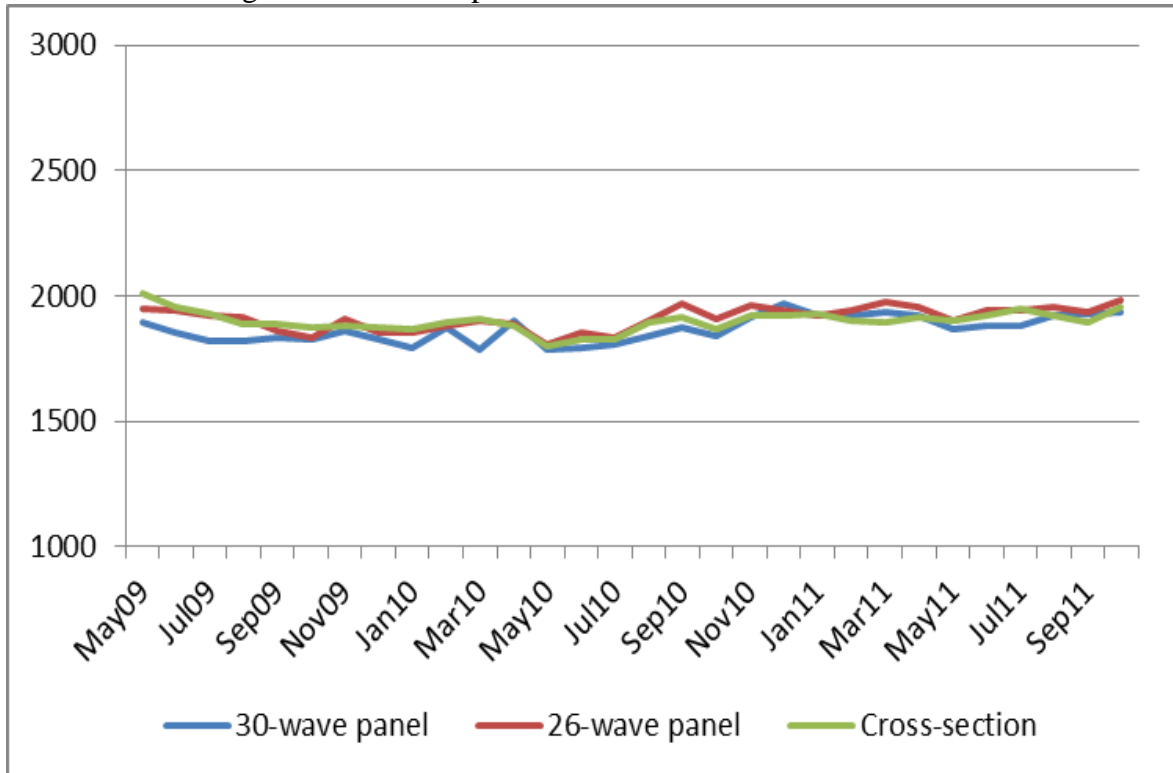
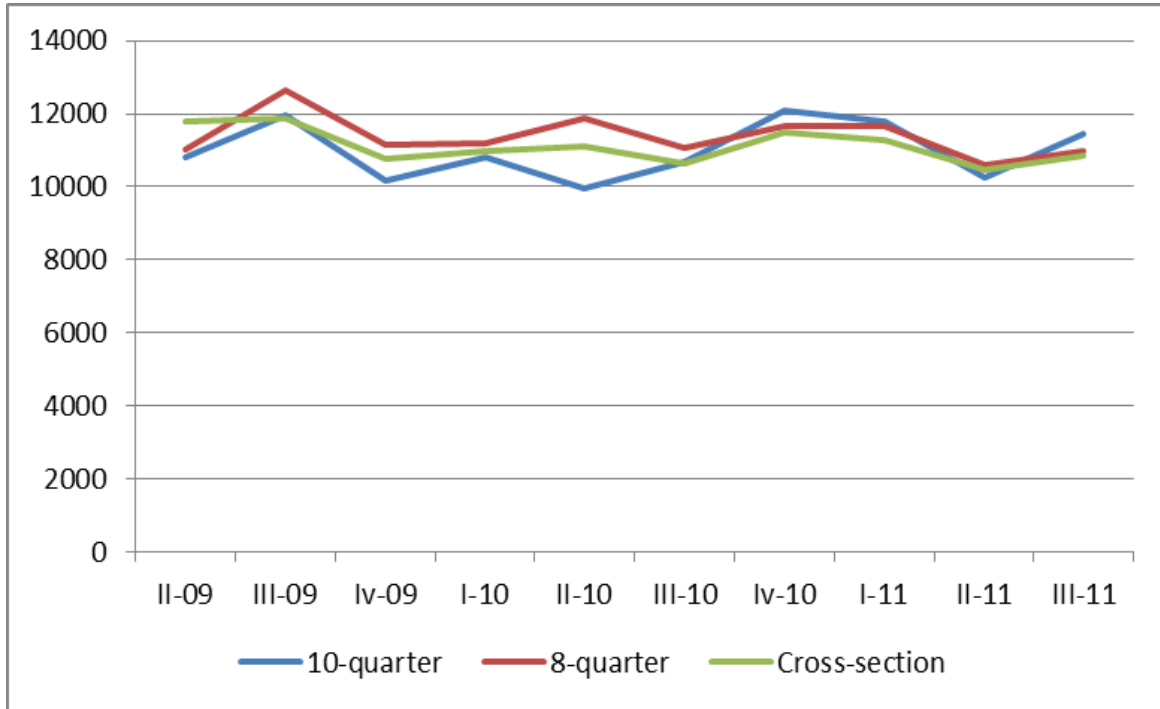


Figure 12. Average total quarterly spending, seasonally adjusted, weighted. Three samples.



The 10-quarter panel has N= 838 observations per quarter. Respondents who completed at least 8 quarters or more yield a sample size that averages N=1,294 per quarter. Cross-sections of quarters average 1,657 observations per quarter.

Figure 13. Median total quarterly spending, seasonally adjusted, weighted. Three samples.

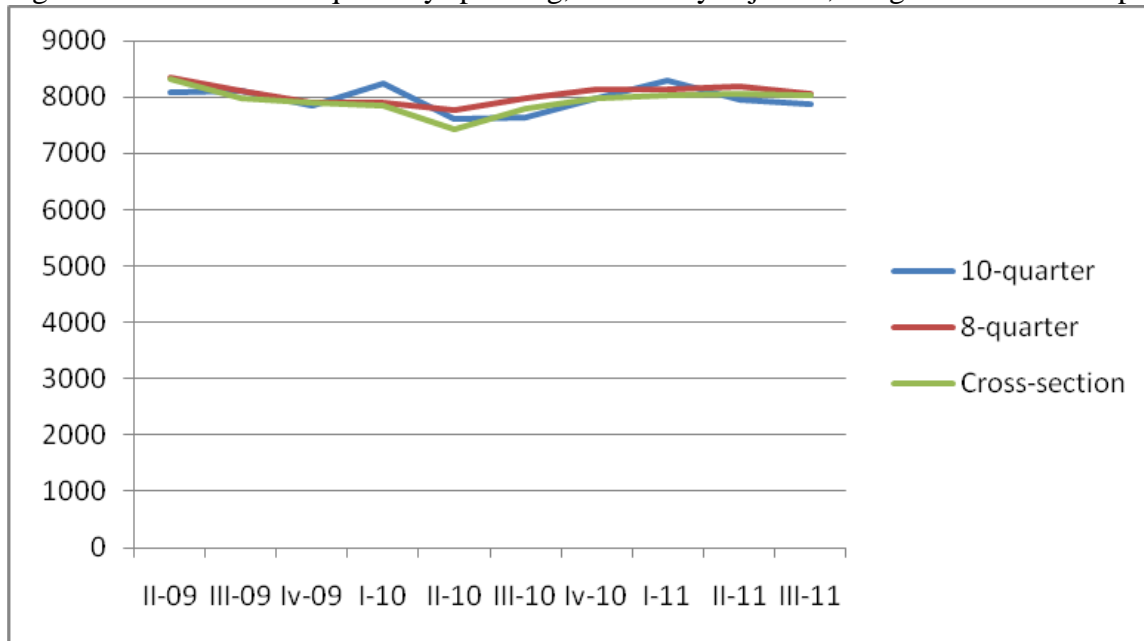


Figure 14. Average spending on selected components, not seasonally adjusted, weighted cross-section: Food in, food out and total food

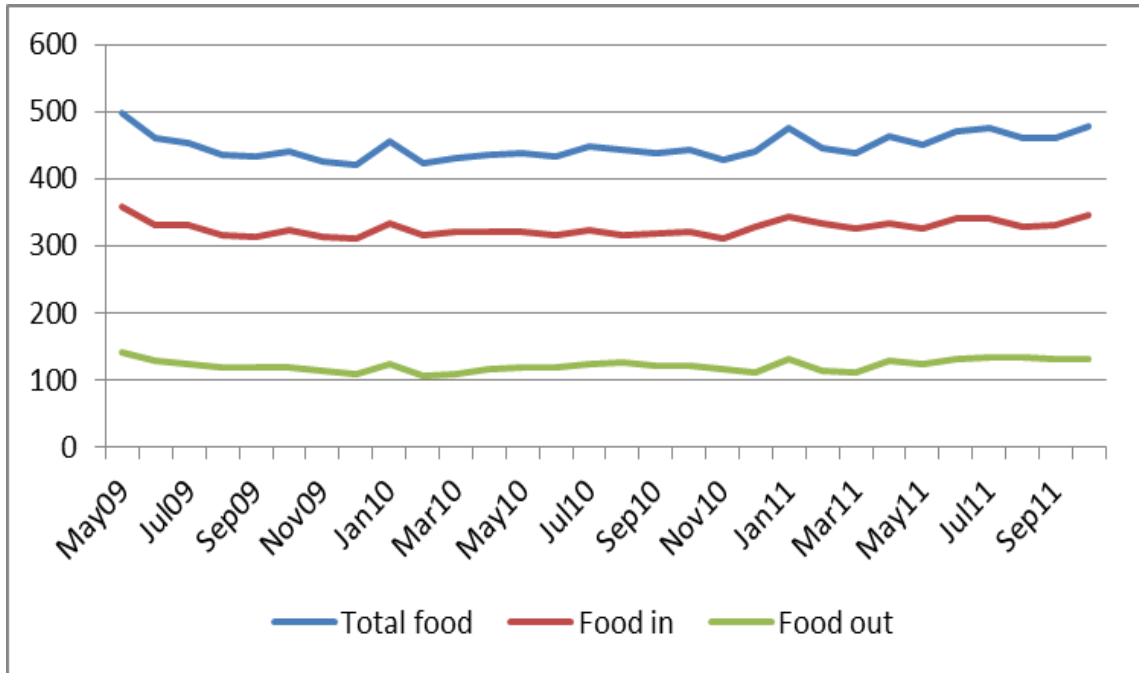


Figure 15. Average spending on total food, weighted, three samples.

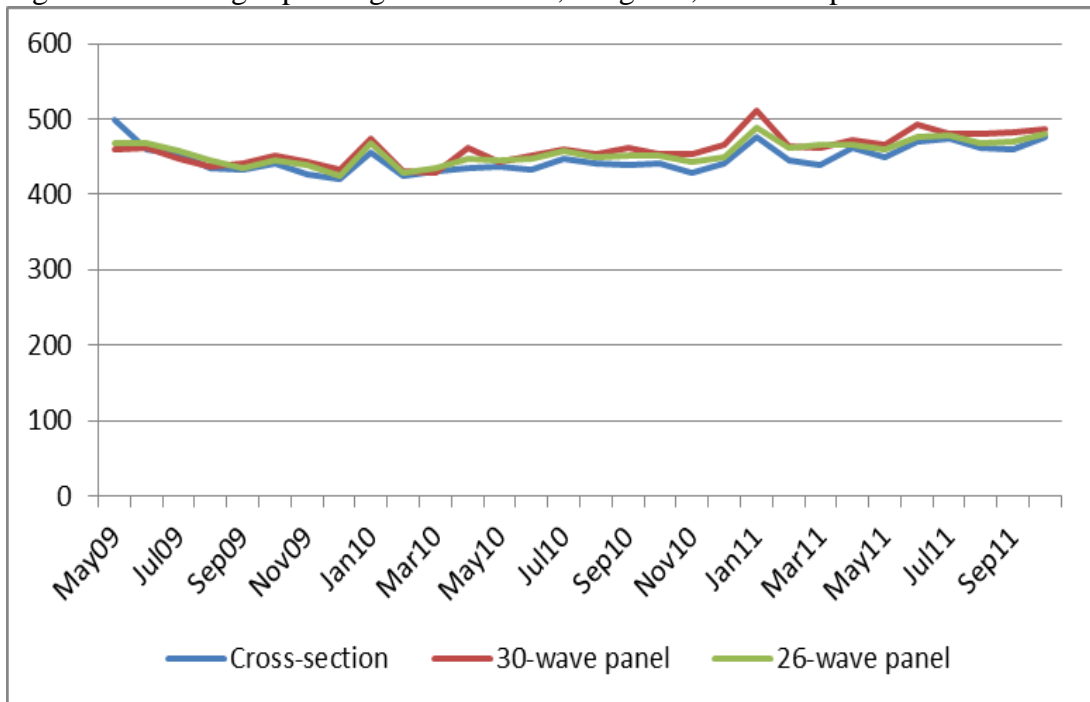


Figure 16. Average spending on utilities, not seasonally adjusted, weighted, three samples

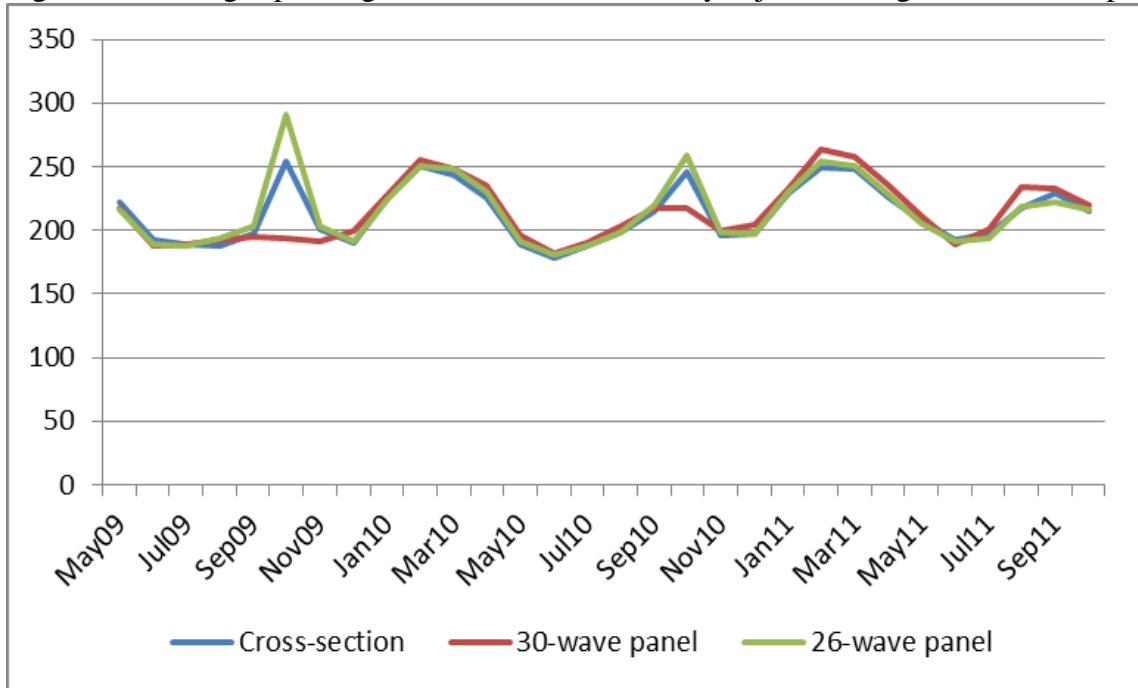
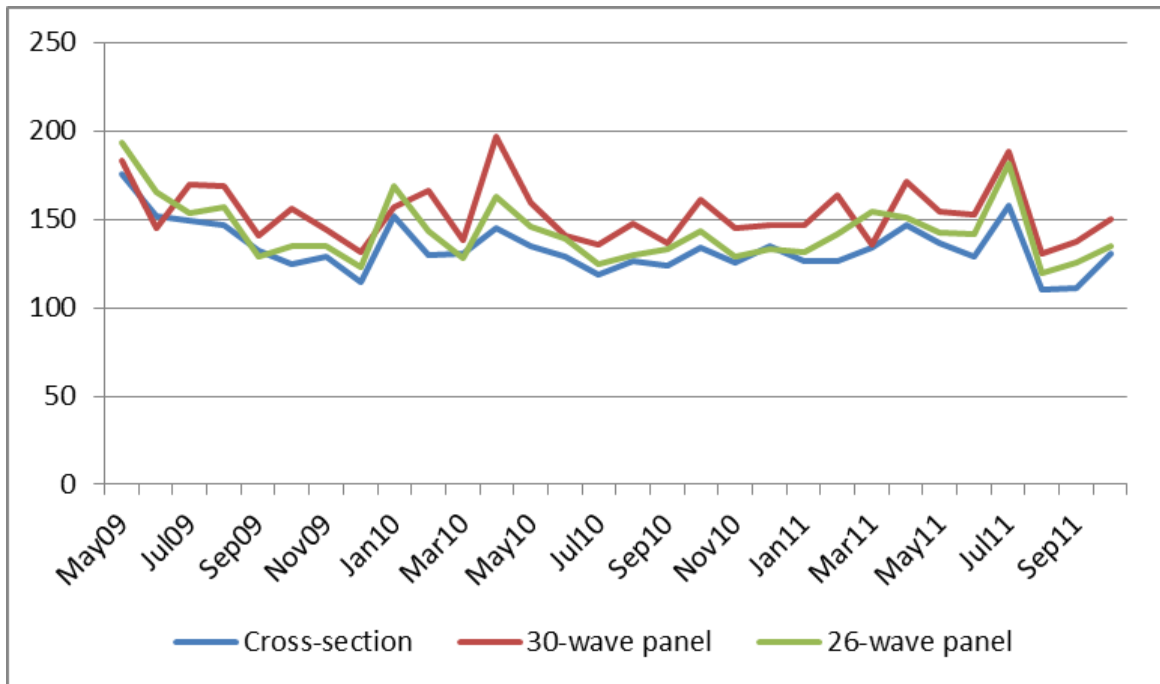


Figure 17. Average spending on health care, not seasonally adjusted, weighted, three samples



Note: Utilities are water, electricity and heating. Health care is prescription drugs, health care services and medical equipment

Figure 18. Average spending on clothing, not seasonally adjusted, weighted, three samples

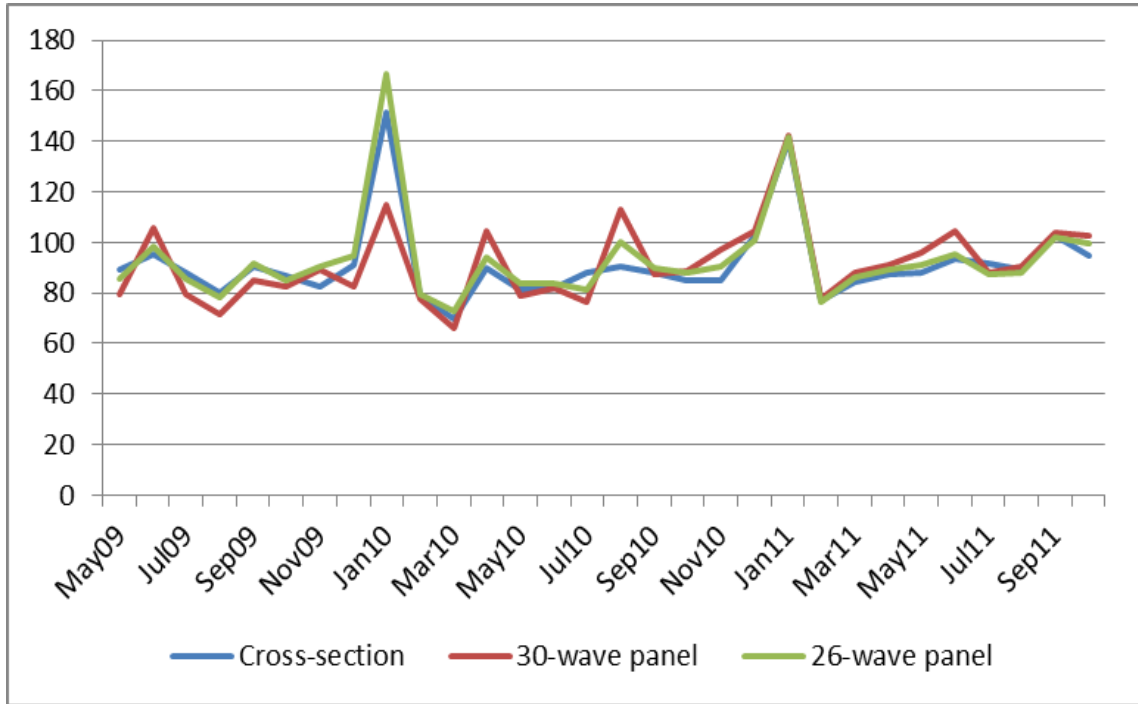


Figure 19. Average spending on car payments, not seasonally adjusted, weighted, three samples

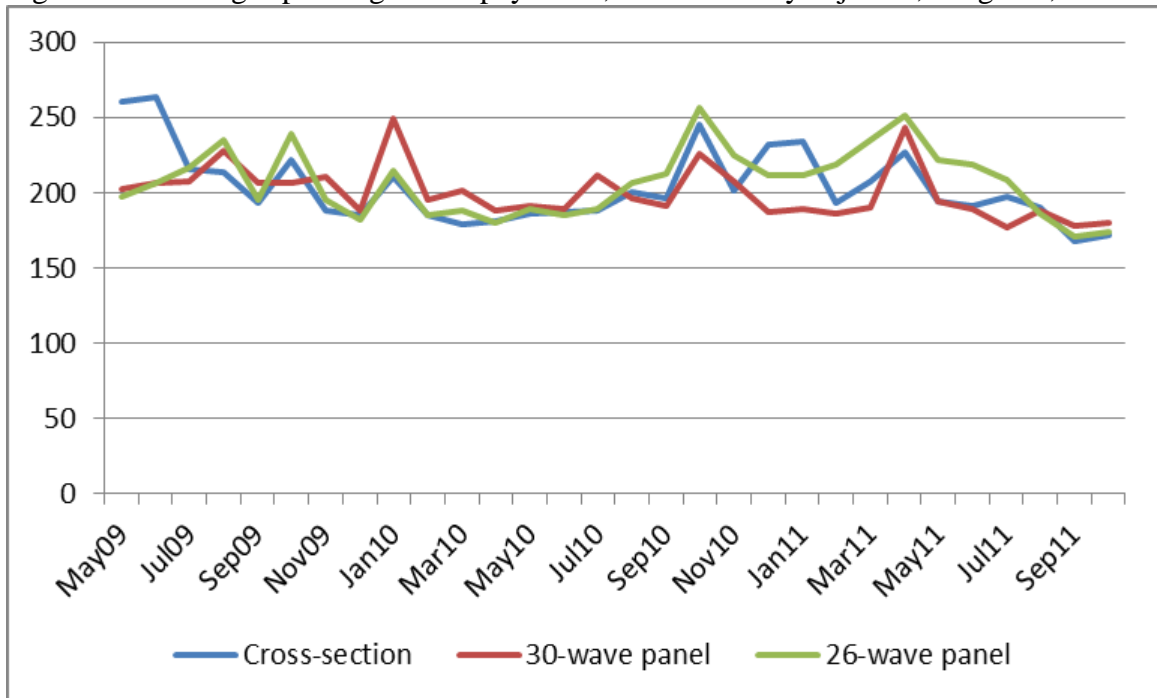


Figure 20. Average spending on gasoline, not seasonally adjusted, weighted, three samples

