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Do We Know What We Owe? A Comparison of Borrower- and Lender-Reported Consumer Debt

Meta Brown
Andrew Haughwout
Donghoon Lee
Wilbert van der Klaauw

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Abstract

Household surveys are the source of some of the most widely studied data on consumer balance sheets, with the Survey of Consumer Finances (SCF) generally cited as the leading source of wealth data for the United States. At the same time, recent research questions survey respondents' propensity and ability to report debt characteristics accurately. We compare household debt as reported by borrowers to the SCF with household debt as reported by lenders to Equifax using the new FRBNY Consumer Credit Panel (CCP). Moments of the borrower and lender debt distributions are compared by year, age of household head, household size, and region of the country, in total and across five standard debt categories. The debt reports are strikingly similar, with one noteworthy exception: the aggregate credit card debt implied by SCF borrowers' reports is less than 50 percent of the aggregate credit card debt implied by CCP lenders' reports. Adjustments for sample representativeness and for small business and convenience uses of credit cards raise SCF credit card debt to somewhere between 52 and 66 percent of the CCP figure. Despite the credit card debt mismatch, bankruptcy history is reported comparably in the borrower and lender sources, indicating that not all stigmatized consumer behaviors are underreported.

Key words: consumer debt, measurement

The state of scientific knowledge regarding U.S. consumers' affluence and relationship to financial markets is based in many ways on survey data, and on the Survey of Consumer Finances (SCF) in particular. For example, an extensive and influential line of research, including Fissel and Jappelli (1990), Jappelli (1990), Cox and Jappelli (1993), Jappelli, Pischke, and Souleles (1998), Johnson and Li (2010) and others, establishes the prevalence and importance of consumer liquidity constraints in the U.S. using SCF debt and related data. Much of our understanding of U.S. wealth inequality over recent decades derives from analysis of SCF net worth figures, as in Wolff (1992), Davies and Shorrocks (1999), Keister (2000), Gokhale et al. (2001), Castaneda et al. (2003), De Nardi (2004) and Cagetti and De Nardi (2008).[1] Recent papers including Cagetti and De Nardi (2006), Bucks and Pence (2008), Iacoviello (2008), Sullivan (2008), Scholz and Seshadri (2009), Han and Li (2010) and Kiyotaki et al. (2011) use SCF debt data to address a wide variety of topics relating to consumer balance sheets.

However, other recent findings bring into question survey respondents' propensity and ability to report debts accurately. Lusardi and Tufano (2010) pose simple questions on the functioning of debt contracts to U.S. survey respondents. They report discouraging findings: "…debt literacy is low: only about one-third of the population seems to comprehend interest compounding or the workings of credit cards." Karlan and Zinman (2008) find that, among first time applicants to a leading South African "cash loan" firm, 50 percent of borrowers fail to report their high-interest loans in a subsequent survey. Most pertinent to the question at hand is Zinman (2009), who compares the aggregate credit card debt levels implied by the SCF for 1989-2004 to aggregate credit card debt levels from the administrative G.19 data also provided by the Board of Governors. Zinman finds an undercounting of credit card debt in the SCF relative to administrative data of roughly 50 percent, and a divergence of the survey and

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[1] Net worth calculations using the SCF rely on households' debt reports.

administrative measures over the 12 years.

The quality of survey-based debt data is of clear concern for researchers. An understanding of the debt behaviors on which households can and do report accurately, and those where they may not, is of use in evaluating the existing body of survey-based inference regarding household debt practices, and also in the design of future research. Which questions are best answered using survey-based debt measures depends heavily on households' reporting tendencies, including both their level of accuracy and the informativeness of any common inaccuracies.[2]

Further, information on the accuracy of household debt reporting may be relevant to the nature and effectiveness of household financial decision-making. Households with limited awareness of their debt positions may both misreport debts in surveys and make less informed financial choices as a result. The possibility of intentional misreporting implies that households' exact debt awareness cannot be inferred from evidence on the match between survey and administrative debt data. However, debt awareness is arguably a necessary precondition to closely matched survey and administrative debts.[3]

This paper examines the correspondence between borrower- and lender-reported debts in recent years, at a relatively disaggregated level, with the objective of shedding light on both the quality and potential uses of survey-based debt data and the nature of household financial decision-making. We employ SCF data from 2001, 2004, and 2007 on household debts for the borrowers' picture of consumer obligations. For the lenders' side, we turn to the new FRBNY Consumer Credit Panel (CCP). The CCP is a panel of individual credit report data drawn from

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[2] For example, Bucks and Pence (2008) demonstrate informative patterns in the "don't know" responses to questions on mortgage characteristics.

[3] Here we assume that very similar debt findings are produced only in the case of accurate reporting on both sides. A remaining possibility is that borrowers and lenders make similar reporting errors. Given the very different nature of the reporting activities and objectives on the two sides, we judge this a low probability event and set aside the issue for the remainder of the paper.

Equifax, one of the three national credit reporting agencies. Its frequency and duration are sufficient to match the timing and, arguably, the representativeness of the SCF 2001, 2004, and 2007 waves. We compare both consumer debt aggregates and moments of the household distributions of total debt, mortgage and HELOC debt, vehicle loans, student loans, credit card debt, and other debts in the two sources. The latter comparisons are performed by year, household head age, household size, and region of the country. Differences between the samples are tested using standard methods; the large size of the administrative dataset permits a high degree of precision in such tests. We also compute household bankruptcy rates in the two samples for 2001, 2004, and 2007, surrounding the date of a major bankruptcy law reform.

Our most striking finding is that, overall and in the majority of disaggregated debt category, borrower characteristic and environment cells, debt levels reported in the SCF and CCP are quite similar. Mortgages, HELOCs, vehicle and student loans attain similar levels and follow similar age patterns in the SCF and CCP, for example. The growth of consumer debts over time and the accelerated growth rates of housing and student debt are similarly evident in the two samples. A collection of tables and figures presented below flesh out the comparisons, and the weight of the evidence indicates unexpected accuracy in the correspondence between debts in the two sources.

A second central finding, echoing Zinman (2009), is that credit card debt appears to be heavily under-reported in the SCF. Reasons for the greater than 50 percent raw difference in aggregate credit card balances may include that *(i)* unlike the CCP households, SCF households may not have any member with a credit report, *(ii)* unlike the CCP households, SCF households may omit credit card convenience uses that they intend to repay within the billing cycle and *(iii)* SCF households may not report business uses of personal credit cards that nevertheless appear on households' combined credit reports. We make generous allowances for explanations *(i)* through

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(iii), including attributing *all* credit card charges observed within the most recent payment cycle to convenience uses, and find that a 34 percentage point gap in aggregate credit card debt remains.

Nevertheless, bankruptcy appears to be reported at similar frequencies in the SCF and the CCP (though differences in available measures of bankruptcy in the two datasets impose qualifications on this claim). We find that, among one and two adult households, the CCP's two year household bankruptcy rate in 2001, 2004, and 2007 lies comfortably between the SCF's one and three year bankruptcy rates, and that, if anything, one and three year bankruptcy rates in the SCF appear to be a bit high relative to CCP two year rates. All measures reflect the expected drop in bankruptcy following the 2005 reform.

Finally, the match between SCF and CCP debt levels on certain individual debt measures is significantly closer for households with one single adult than for households with two or more adults, suggesting that survey respondents are more able to report their own debt levels than those of other household members. This insight might help to inform both the design of surveys eliciting consumer balance sheet information and the research applications of such survey data. Further, this may tell us something about the nature of household members' interactions over financial matters.

I. Previous studies

The SCF wealth data have been vetted in a number of studies, produced both by authors of the SCF survey and non-SCF affiliated researchers. The wealth data have been demonstrated to be accurate, based on comparison with several administrative and survey sources.[4] The debt data of

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[4] See, for example, Avery, Elliehausen, and Kennickell (1988), Johnson and Moore (2005), Antoniewicz (2000), Bucks and Pence (2008), and Sierminska, Michaud, and Rohwedder (2008).

the SCF have received somewhat less attention.

Bucks and Pence (2008) ask whether SCF respondents report accurately the terms of their mortgages (and house prices). In distribution-level comparisons between 2001 SCF and lender-reported data, they find that "most homeowners appear to report their…mortgage terms reasonably accurately." Borrowers with adjustable rate mortgages, however, may not be as well informed regarding potential interest rate changes.

Zinman (2009), as mentioned, compares credit card debt figures in the SCF to the Federal Reserve Board of Governors' G.19 releases on consumer debt. Zinman was the first study (of which we are aware) to demonstrate the gap between SCF and administrative data credit card debt findings in print.[5] His lower bound estimate of the undercounting of credit card debt in the SCF is 50 percent. Further, he reports an increasing gap between credit card debt estimates from the SCF and the G.19 between 1989 and 2004, and suggests that such a trend might indicate individual heterogeneity in debt reporting that would undermine standard applications of survey-based debt data. Two steps that we will be able to take in this study of credit card and other consumer debt in the SCF and lender data will be generating further news on the trend in credit card debt reporting and evaluating the level of heterogeneity, by broad observable characteristics, in the extent of debt counting inaccuracies.

Johnson and Li (2009) vet the Consumer Expenditure Study (CE) debt payments and limited debt balance data against the debt payment and balance measures in the SCF, taking the latter to be accurate. They find a match of within five percent on vehicle and credit card debt for the 1989-2004 waves of the SCF and comparable waves of the CE. However, they find that mortgage reports in the CE are substantially below mortgage reports in the SCF, which, given

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[5] Informal discussion indicates that survey authors and users of the SCF were aware of some part of this difference before the publication of the Zinman study.

the quality of the SCF-lender data match on mortgages demonstrated by Bucks and Pence, suggests undercounting of mortgages in the CE.

Antoniewicz (2000) compares consumer assets and liabilities in the 1989-1998 SCF waves to administrative Flow of Funds Accounts data. She finds similar aggregate liabilities, consumer credit, and home mortgage debt in the two sources for 1989 and 1992, and after that a divergence in measured consumer debt. By 1995 the FFA estimate of total consumer credit is over $200 billion higher than the SCF estimate. This divergence aligns with the time patterns observed by Zinman in SCF and administrative debt data.

By and large, the methods used by these studies involve comparing estimates in two data sources of aggregate debt measures or moments of debt distributions, either informally or using simple test statistics. Our approach is similar. No study of which we are aware has access to household-level matches of SCF to other relevant debt data for the purpose of comparison. In fact, to our knowledge this paper represents the most recent, most granular, and broadest validation of SCF debt data available. All of this derives from the richness of the administrative data available to us for comparison, described below.

II. Data and comparability

a. Survey of Consumer Finances

The Federal Reserve's Survey of Consumer Finances is a triennial survey of U.S. households, focusing primarily on household assets and liabilities. The survey was first fielded in 1983, and we consider recent fieldings in 2001, 2004, and 2007. The Board of Governors anticipates the release of data from the 2010 fielding in the first half of 2012, at which point we will be able to add a post-crisis comparison to our analysis. Sample sizes are roughly constant; in 2001 the

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survey included 4442 households, in 2004 4522 households, and in 2007 4422 households. The

survey includes both a geographically-based representative sample of households and an over-

sample of wealthy households. All results for the SCF reported here are weighted to be

representative of the population of U.S. households, using the Kennickell-Woodburn consistent

weights provided by the survey.[6] Further, we rely on the survey's multiple imputation methods

where relevant data are missing.[7] Bucks, Kennickell, Mach, and Moore (2009) provide a detailed

description of the 2001, 2004, and 2007 data.

b. FRBNY Consumer Credit Panel

The FRBNY Consumer Credit Panel is based on data supplied to the Federal Reserve by

Equifax, one of the three national credit reporting agencies. The CCP comprises a 5% random

sample of US individuals with credit files and all of the household members of those 5%.[8] In all,

the data set includes files on more than 15% of the population, or approximately 40 million

individuals. We observe information from the credit reports for those individuals each quarter for

the last 11 years, with current data through June 2011. The data will continue to be updated

every quarter in the future: data for 2011Q3 will be available by November 2011.

The sampling procedure generates a random sample of U.S. credit report holders, and

ensures that the panel is dynamically updated in each quarter to reflect new entrants into credit

markets. In addition, the data provider matches the primary individual's mailing address to all

records in the data in order to capture information about other members of the primary

individual's household. These individuals are also added to the sample. This procedure enables

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[6] We use the revised Kenickell-Woodburn consistent weights for the 2007 data.
[7] Kennickell (1991, 1998) describes the imputation methods used in the SCF.
[8] See Avery et al. (2003) for a detailed discussion of the contents, sources, and quality of credit report data. See Lee and van der Klaauw (2010) for a discussion of contents and sampling design of the FRBNY Consumer credit Panel.

us to track individuals and households consistently over time, thus allowing us to study richer dynamics of consumer debt and related policy issues at both the individual and household levels.

Our credit report data includes residential location at the census block level and the individual's month and year of birth. The data also contain detailed information on each individual mortgage loan, including

- Origination date

- Origination balance

- Current balance

- Scheduled payment

- Current status (i.e., current, 30 days delinquent, etc.)

While the mortgage information in the dataset is very detailed and, we believe, complementary to loan-level information available from sources like First American CoreLogic and LPS (McDash), it differs in important ways from these. Some advantages are that in most cases the CCP is able to provide the seniority of a residential loan, and that, because the CCP data are collected at the borrower level, they offer a new perspective on mortgage debt that is unavailable in standard loan-level datasets.

In addition to information on debts secured by residential real estate, the data set includes information on individuals' and households' other loans, such as credit cards, auto loans and student loans. Here, the data include the following:

- Total number of each kind of account (e.g., the total number of bank-issued credit cards)

- The credit limit on each type of account (e.g., the combined credit limit on all credit cards)[9]

- Total balance on each type of account in each status (e.g., the total student loan balance that is current, 30 days delinquent, etc.)

More general information on the credit report includes the following:

- Indicators for whether the individual has a foreclosure or bankruptcy, both within 24 months and ever, on the report

- Number of collection accounts and the amount of collection

- The national credit reporting agency's credit score, analogous to the well known FICO score.

In the present study, we use the primary sample members and associated household members to establish a representative sample of all U.S. households in which at least one adult has a credit record. Due to computational demands, the findings reported below are based on a random subsample of CCP households: we retain a randomly determined 10 percent of CCP households.[10] Thus, for example, the estimation sample for 2007 contains 1,090,880 households.

Finally, note that all figures reported below from the two data sources are reported in 2007 U.S. dollars.

c. Comparability

An immediate difficulty arises from the fact that, while the (weighted) SCF is representative of all U.S. households, the CCP is a representative sample of only those U.S. households in which

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[9] This field is known as the "high credit" amount in the credit report data. It refers to either the credit limit (for credit cards, home equity lines of credit and other revolving debt) or the highest balance (for mortgages, auto loans and other installment debt). There are instances in which credit limits on revolving accounts are unreported, in which case the high credit variable reflects the historical high credit level for the account. Avery et al. (2003) and Hunt (2002) point out that reporting of credit limits in credit reports has improved considerably in recent years.
[10] Though sampling is done at the individual level, and this would generate over-representation of larger households, we reweight the sample based on probability of inclusion to be representative at the household level.

at least one adult has a credit record. According to Jacob and Schneider (2006), 10 percent of U.S. adults had no credit record in 2006. Assuming that individuals do not sort perfectly into households on the basis of the presence or absence of credit records, this would imply that fewer than 10 percent of U.S. households contain no adult with a credit record.

We observe that 77 percent of SCF households claim credit report-worthy debts, and 84 percent of CCP households' collective reports include positive debt levels. Begin by assuming that these two groups represent the same population, U.S. households with any conventional debts. Further note that the CCP data represent two populations, those with conventional debts and credit reports and those without conventional debts but with credit reports. The SCF represents both of these populations, along with those without credit reports. We infer that it must be the case that the ratio of the sizes of the conventional debt and report and the no conventional debt and report populations must be the same in the two samples. If 84 percent of CCP households have reports and debt, 16 percent reports and no debt, and 77 percent of SCF households have reports and debt, then it must be the case that 14.67 percent of SCF households have reports and no debt. The residual, 8.33 percent of SCF households, must then have no credit reports. Note that this figure meets our expectations, based on Jacob and Schneider, that fewer than 10 percent of U.S. households have no member with a credit report.

One difficulty remains, which is that whether SCF respondents report all of their debt, and hence all of their credit report-generating debt, is precisely the question at hand. To establish methods based on an inference that assumes SCF reporting to be accurate threatens the credibility of our findings. Let us consider the consequences of assuming reporting accuracy in the above determination of the proportion of SCF households not represented by the CCP in the event that SCF households in fact underreport their debt. Assuming some SCF households who

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have credit report-generating debt report having none, 77 percent is an underestimate of the proportion of the sample with credit report-generating debt. Suppose that the rate of underreporting in percentage terms is $r > 0$. Then $77 + r$ percent actually have credit report-generating debt. We seek the percent of SCF households with no credit report-generating debt but with credit reports, x, that solves the expression $\frac{16}{84} = \frac{x}{77+r}$. At $r = 0$, $x = 14.67$, and x is increasing in r. Hence the share of SCF households with no conventional debt but credit reports increases from 14.67 percent where SCF respondents underreport debt, and the residual share with no conventional debt and no credit reports has an upper bound of 8.33 percent.

Alternatively, one could attempt to infer the proportion of SCF households with no debt and no credit reports based on available SCF measures. For example, if we assume that only the 2007 wave SCF households that have no conventional debts, do not include property owners and in which no household member reports holding a credit card, including store cards, have no credit reports, then we arrive at a no credit report rate below 8.33 percent. Since the validity criteria for this type of approach are unclear, we focus on the 8.33 percent figure.

In the analysis that follows, we estimate aggregate debt levels, as well as debt holding rates and conditional median and mean balances, for total debt and various debt categories using the SCF and CCP data. The distinction between SCF non-debtors with and without credit reports is clearly irrelevant to our comparison of aggregate debt levels and of conditional mean and median debt levels; each category of non-debtors contributes zero to the aggregate and is omitted from the conditional calculations. However, the proportion of SCF non-debtor households not represented in the CCP is crucial in the comparison of the rates at which households hold various types of debt. In what follows, we compare SCF and CCP debt rates with no adjustment for households without credit reports, and then after removing 8.33 percentage points' worth of non-

debtor households from the SCF calculations. Note that, should underreporting of debt lead the 8.33 percent to be an overestimate of the true rate at which SCF households have no credit reports, this method would lead the rate at which SCF households hold debt to be inflated relative to the rate at which CCP households hold debt.

In the interest of establishing comparable dates of observation, we select CCP data for the third quarter of each 2001, 2004, and 2007. The fielding dates of the SCF are roughly April to December of the survey year. Our CCP data are drawn at the midpoint of this range of months, which we hope maximizes comparability. An alternative approach would be to average CCP figures for quarters 2-4 in each relevant year. The drawback to this method is that it would require constructing a short panel on each household. Households with missing or irregular data in the context of such short panels would need to be dropped or subjected to arbitrary corrections in order to complete the relevant averaging. In order to avoid these issues we have adopted a single quarter approach, though we believe that each method has appealing features.

An additional comparability issue is who exactly constitutes the household. While the FRBNY Panel includes all adults with credit reports living at the primary sample member's address (up to an apartment number), most SCF debt questions concern the debt holdings of the "primary economic unit" (PEU) of the household. A PEU consists of the primary earner, partner, and any agents dependent on this unit. Children or elderly parents dependent on a primary earning couple, for example, would be PEU members. However, households also at times contain non-PEU members. These non-PEU members' debt would appear in the CCP but not the SCF. We have limited opportunity to infer non-PEU members' debts by category and add them into the household debt calculations given the data collected on non-PEU members. However, it is possible to determine the overall level of debt held by non-PEU members, and hence to infer

the likelihood that such debt changes could influence our conclusions.[11] We return to this issue later in the paper.

Other comparability issues related to specific debt categories and associated survey questions or credit reporting are addressed as they arise in the course of the analysis below. In general, we endeavor to make all appropriate adjustments where possible to ensure that the household debts in question are comparable across the two data sources. Where this is impossible, we attempt to understand the likely direction of the resulting bias in our comparison, and its likely effect on our conclusions.

III. Findings

a. The match between SCF and CCP-derived estimates of aggregate debt and household-level debt distributions is close

Though the data collection methods and respondent incentives in the SCF and CCP differ greatly, the primary insight that arises from their comparison is that the two sources generate strikingly similar debt patterns.

(i) Aggregate debt estimates

Table 1 reports aggregate debt levels estimated using the SCF 2007 wave and 2007Q3 of the CCP. Overall debt is quite similar, at 11.26 trillion in the SCF and 11.98 trillion in the CCP. Mortgage estimates are nearly identical, at 9.56 trillion for both the SCF and the CCP, indicating that the accuracy in reporting mortgage features demonstrated by Bucks and Pence (2008) continues to hold in 2007, and holds for comparisons using multiple lender sources. Education installment loans are similarly well matched, at 379 billion in the SCF and 380 billion in the

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[11] Note that other observable characteristics of non-PEU members tend to be associated with low debt levels

CCP.[12]

A few categories show discrepancies that we feel we understand reasonably well as the result of measurement differences between the two sources. Mortgages and home equity loans are estimated at 8.04 trillion in the SCF and 8.9 trillion in the CCP. Home equity lines of credit (HELOCs) are estimated at 387 billion and 630 billion, respectively. The difference is a result of the treatment of vacation and investment properties in the two sources. While credit reports cannot typically distinguish between primary residence and other types of properties, and hence the CCP must pool all residential mortgages, the SCF asks separate questions about loans collateralized by the primary residence and by other residential real estate. The SCF questions on loans collateralized by other residential real estate do not allow us to distinguish among mortgages, home equity loans, and HELOCs. As a result, our SCF estimate of overall home-secured debt contains vacation and investment property debt, but our estimates for the residential real estate debt subcategories do not. The very precise match between the overall home-secured debt estimates suggests that the residual gaps in the residential real estate debt subcategories are explained entirely by vacation and investment property debts.

Vehicle installment loan estimates are $592 billion for the SCF and $820 billion for the CCP, leaving a sizable gap. One reason for the difference is that the CCP, as credit reports in general, includes leased vehicles in its vehicle loan figures, while SCF respondents are unlikely to report leases as auto loan debt. According to Experian, 12.1 percent of vehicles that were financed in 2008Q1 were leased. Further, leasing is considerably more common in luxury auto

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[12] Each dataset, however, has potential sources of underreporting of education loans. The SCF excludes institutional populations, which encompasses dormitory residents. This should lead to an undercounting of more recent education loans. The Consumer Credit Panel may have excluded a previously small, but rapidly growing number of miscellaneous student loans reported by a subset of servicers. Mark Kantrowitz of Finaid.org calculates a higher summer 2010 aggregate student loan balance than that generated by the Consumer Credit Panel for 2010Q2 (WSJ August 9, 2010). We are currently investigating this issue further and hope to obtain corrected statistics soon.

financing, with lease rates among financed luxury brands commonly between one half and two thirds, and lease rates among higher end non-luxury brands often on the order of one third. Hence the proportion of vehicle financing balances attributable to leasing is considerably greater than 12.1 percent.[13]

Credit card balances are estimated at 391 billion in the SCF and 820 billion in the CCP. We analyze what proportion of this gap may be attributable to simple measurement and reporting differences, and what proportion appears to be due to true underreporting, in Section IIIb.

(ii) Household debt distributions by debt category

Table 2 demonstrates the correspondence between SCF and CCP debt distributions across households, both overall and for the seven major debt categories. Panels a and b of Table 2 are identical, with the exception that the debt frequencies in panel a are raw frequencies that use the full sample and standard weights in each case, and in panel b are adjusted to remove SCF households with no credit reports, in the interest of comparability. The adjustment removes the 8.33 percentage points of SCF households we approximate to be non-debtors without credit reports.

Overall, the figures in Table 2 reflect similar rates of debt holding, similar median debt levels among households with positive debt, and similar mean debt levels among households with positive debt, both in total and across debt categories. Adjusted HELOC debt rates are 9.3 and 9.6 percent in the SCF and CCP, respectively. Adjusted vehicle installment loan rates are 38.1 and 39.7 percent, respectively, and adjusted educational installment loan rates are 16.6 and 13.4 percent. The overall conditional mean household debt level is $126,000 in the SCF and $116,000 in the CCP. The analogous conditional median and mean HELOC level comparisons

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[13] The absence of lease debt from SCF responses is less of a problem for the comparison of household-level vehicle debt rates and medians. One reason is that lease dollars are concentrated among high vehicle value transactions involving a small minority of households.

are $24,000 SCF versus $30,000 CCP, and $39,200 SCF versus $52,100 CCP. For vehicle installment loans, conditional median and mean balance comparisons are $11,600 versus $13,000 and $14,600 versus $16,800. For educational installment loans, the equivalent comparisons are $12,000 versus $12,300 at the median, and $21,500 versus $23,300 at the mean. Mortgage and home equity installment loan balances have a conditional median of $110,000 in the SCF and $119,900 in the CCP. The difference in the means, however, is more substantial and presumably reflects the difference in vacation and investment property reporting.

Some modest differences are worth noting. Home-secured debt rates are 53.1 percent in the SCF and 42.3 percent in the CCP after adjustment for SCF households without credit reports (the raw comparison is 48.7 versus 42.3 percent). It is not clear why we would observe a somewhat higher rate of home-secured debt in the SCF than in the CCP, or why the dollar amounts associated with these debts would nevertheless align so closely in the aggregate. The conditional median total debt level in the SCF is $67,300, while the conditional median for the CCP is $42,800. The means compare more favorably. It is not clear why the debt distribution reported by households in the SCF would include higher mass over middling debt levels and lower mass over debt levels in the upper tail of the debt distribution than we see in the CCP.

The credit card debt rates, conditional medians, and conditional means are, once again, quite different. In the adjusted data, 50.3 percent of SCF respondents report any credit card debt. Yet 76.1 percent of CCP households' collective credit reports include positive credit card debt as reported by lenders. The conditional medians and means are more similar, with $3000 versus $3564 in credit card debt at the median, and $7300 versus $9375 in credit card debt at the mean. So it appears that less credit card debt is reported in the SCF than in the CCP, and that the major source of the difference in reporting (and presumably the difference in the aggregates evident in

Table 1) is the low (high) rate at which SCF borrowers (CCP lenders) report any credit card debt at all.[14]

Finally, the residual "other debt" category is not large or different enough to suggest a major discrepancy in the reported levels of less common debt types (that still appear on credit reports, i.e. not payday or pawn loans), or to explain any gaps in the other major categories. The unconditional household average of other debt is $3235 for the SCF and $1830 for the CCP. In sum, we find similar household debt distribution features for the two data sets, with slightly more debt dollars (on the order of 3 to 11 percent) appearing in the CCP for several categories. The primary exception is credit card debt, which shows substantially lower prevalence and somewhat lower conditional dollar amounts in the SCF than the CCP.

(iii) Patterns by age, region, and year

Credit reports contain limited demographic information, and hence we are unable to use a more detailed household-level matching estimator to examine the difference between SCF and CCP debts. But the reports do contain location, date, and in many instances age of borrower data, and we exploit these data to produce a more granular comparison of the debt distributions in the two samples.

First we consider age. In the SCF we are able to identify a household head (defined to be the single adult in the PEU in PEUs with one adult, the male partner in male-female couple PEUs, and the older member of the pair in same sex PEUs). The SCF data contain ages of household members, and so we have a self-reported age of the household head available. In the CCP, as in credit reports, we cannot identify a household head. But we do have ages of household members. In response, we experiment with a variety of rules for predicting household head and evaluate

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[14] In fact, the conditional distributions of credit card debt levels in the two datasets are reasonably similar. Appendix Table 1 compares centiles of the conditional distributions; SCF figures lie a modest distance below Consumer Credit Panel figures at each point.

their effectiveness in the SCF data. The most effective simple rule we developed was to assign the household head age as the median age among adult household members (implying the age of the one adult household member in single-headed households, the average of the two ages in two-adult households, the middle of three ages in three-adult households, and so on). This approach generates the age of household head distribution reported for 2007Q3 of the CCP in Table 3. Table 3 then compares this household head age distribution to the actual age of household head distributions in both the weighted 2007 SCF and Census projections for 2007. The distributions are quite similar, with perhaps a slight underrepresentation of older households and a slight overrepresentation of middle-aged households in the CCP. We use our household head prediction method to predict household head ages in the CCP and SCF, and we compare features of the household debt distribution across six resulting household head age bins.

Figure 1 depicts debt prevalence, conditional median and conditional mean by debt type and age, comparing estimates from the SCF and CCP. Households are grouped by age of head into 6 bins, < 35, 35-44, 45-54, 55-64, 65-74, and 75+, shown along the horizontal axis. The vertical axis of the first panel of the figure represents the percentage of the sample with any debt in a given category. We depict five debt categories in this and the following figures, mortgage, HELOC, student loan, vehicle loan, and credit card debt. Each debt category is indicated by a color. The age trajectories for a given debt category are traced by a solid line representing SCF estimates and a dashed line representing CCP estimates. A perfect match between the SCF and CCP across all age groups for a given debt category would be represented by coincident solid and dashed curves of the same color.

In the first panel of Figure 1, we see that the mortgage, HELOC, vehicle, and student loan prevalences follow similar age patterns in the two data sets. Younger households appear to report

slightly higher rates of mortgages and lower rates of vehicle loans in the SCF than in the CCP, but overall each pair of lines remains quite close over the full age distribution. Only the credit card debt prevalence curves are very different for lenders and borrowers. The differences in reported credit card debt rates range from 23 to 40 percentage points for the various age groups, and conventional tests of means reject the null hypothesis that credit card debt prevalence is the same in the two sources with high degrees of confidence. One interesting insight from this figure is that, though credit card debt prevalence is so different in the two sources, the age patterns are similar. Credit card debt is initially low, increases with a similarly small positive slope and then falls off relatively steeply at older ages for both data sets.

The second and third panels of Figure 1 depict conditional medians and means for the five debt categories in the two samples, respectively. Several of these line pairs are nearly coincident. The SCF mortgage and HELOC amounts lie below the CCP amounts for most age groups, but these differences are of a magnitude that may be largely explained by the exclusion of vacation and investment properties from the SCF measures.[15] The age patterns of conditional debt holding are remarkably similar in the two data sets.[16]

Figure 2 depicts similar comparisons by year. The levels and time trends in the prevalence and sizes of the various debt categories match well in the two data sets. Some minor variation in mortgage and HELOC patterns arise from their differing treatment of vacation and investment property: mortgage prevalence is a bit higher in the CCP in this figure, and recent increases in the dollar amounts of mortgages and HELOCs in the CCP are muted in the SCF. However, we find that the majority of the difference in each of these cases does not appear in comparisons of

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[15] Note however that the mortgage differences are greatest for young and middle-aged borrowers, a profile somewhat at odds with what we expect for vacation and investment properties.

[16] We do observe a divergence in student loan medians at very old ages, but it is helpful to recall that households with heads 65 or older and student loans are a small group, and it may not be surprising to see unusual behavior in this region.

total home-secured debt, where we are able to account for vacation and investment properties more comparably. In addition, we observe that auto loans grew somewhat more in the CCP than in the SCF between 2004 and 2007. Experian reports strong growth in auto leasing preceding the 2008 recession, which might explain the difference. Student loan debt in 2004 is a bit higher in the SCF than in the CCP. Credit card debt prevalence and amounts in the SCF remain well below those in the CCP. By and large, however, the time trends in the two data sets are quite similar.

Figure 3 looks at the patterns by region of the country. The figures for the SCF are derived from Bucks et al. (2009), since Census region is not available in the public data set. The figure shows comparable regional variation in the two samples for most debt categories. Again, exceptions in home-secured debt categories arise from and are largely reconciled by vacation and investment property treatment, and as always credit card debt is greater in the CCP. The only new deviation from a close match demonstrated in this figure is a much lower level of vehicle debt reported for the Northeast in the SCF than in the CCP. Otherwise, regional patterns match closely.

We have executed pairwise difference in means tests for the various comparisons depicted in Table 2b and in Figures 1-3, and the results generally reinforce the above discussion.[17] Credit card debt differences, as expected, are not only large but differ significantly from zero. Tests of the null hypothesis that credit card prevalence differences are zero generate very large t-statistics. Given sample sizes, most other prevalence and mean comparisons in Table 2b and Figures 1-3 meet standard significance criteria. In other words, credit card debt aside, the differences reported in Table 2b and Figures 1-3 are both small (as the point estimates indicate) and precisely measured. Examples of the rare cases in which the difference in means is insignificant

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[17] Since Census region is not publicly available in the SCF, SCF sample sizes for the difference in means tests of comparisons in Figure 3 have been inferred from population densities in the regions and SCF national sample sizes.

include the Table 2b overall debt and HELOC prevalence rates and the Figure 2b 2001 and 2004 HELOC prevalence rates.

b. Borrower-reported credit card debt in the SCF is substantially lower than lender-reported credit card debt in the CCP

As Zinman, our empirical findings indicate a large difference between credit card debt as reported in the SCF and credit card debt as reported in lender-derived administrative data. The raw CCP-SCF difference in aggregate credit card debt, in Table 1, is more than 50% of the CCP credit card debt estimate. Figure 4 depicts the age profile of credit card debt prevalence, conditional medians, and conditional means by debt category, re-scaled to appear on the same figure. We see that the major reporting discrepancy is in prevalence, with only two thirds as many SCF households as CCP households showing any credit card debt. However, conditional on positive debts, household median and mean debt levels are off by 16 and 22 percent, respectively. Figure 4 demonstrates that the underreporting of credit card debt prevalence is universal, but greater among older households. The underreporting of credit card debt levels conditional on having credit card debt is concentrated among younger households. Accounting for both age patterns, the age pattern of net credit card debt reporting discrepancies is approximately flat: all age categories but the oldest have unconditional credit card debt means in the SCF of about half those in the CCP, and the oldest age group, 75+, have an SCF credit card debt mean of about one third of the CCP mean.

Two major differences between the data sources may account for the large raw differences in credit card debt. In this subsection we attempt to make the most generous allowances for these two explanations that reason permits, in order to see how much of the reporting discrepancy they might possibly explain.

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(i) As discussed previously, some non-debtor SCF households may not have credit reports, and therefore represent a group of households that do not appear in the CCP. To address this concern, we apply the correction for the upper bound rate of non-debtor, no report households described in Section II. We remove 8.33 percentage points' worth of SCF non-debtor households from the credit card debt calculations.

(ii) Perhaps more importantly, credit card users may intend to repay credit card balances at the end of each billing cycle, and as a result may not regard debt held during the cycle as true credit card debt.[18] The CCP credit card debt measures are derived from credit reports that record credit card balances at arbitrary points in the payment cycle, and not necessarily after the most recent payment. Therefore they contain both true long-term credit card debt and debt that appears only during a single payment cycle. SCF respondents, however, may report only credit card balances that they intend to carry from cycle to cycle as true credit card debt. In particular, the relevant SCF question regarding credit card balances is: (regarding previously listed credit card accounts) "After the last payments were made, roughly what was the total balance still owed on all these accounts?" Hence SCF respondents are likely not to report convenience uses of credit cards that generate balances they pay off before the close of the billing cycle.

One extremely generous correction for the convenience use explanation that one could make might be to attribute all recent credit card transactions to convenience uses, and not to true credit card debt. Consider 2007: The 2007Q3 estimate of aggregate credit card debt using the CCP is $817 billion 2007 dollars. VISA and MasterCard-sourced data show 2007Q3 transactions of $115 billion between the two credit card brands. Data for 2007Q3 from the Nilson Report show VISA and MasterCard with a 75 percent combined share of the market, leaving the remaining 25 percent to Discover an American Express. Extrapolating to account for Discover and American

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[18] See Johnson (2007) on the growth in transactions demand for consumer credit cards.

Express transactions, we get roughly $153 billion in credit card transactions in 2007Q3. This implies that a lower bound of 81.27 percent of CCP 2007Q3 credit card balances are attributable to longer-term credit card debt, and not to transactions that may be paid off within the billing cycle. Hence the unconditional mean long-term household credit card debt level in the CCP is at least $5798.11.

Adjusting the SCF credit card balance measures for (a maximum of) 8.33 percent of households without credit reports, we find an unconditional mean credit card debt in the 2007 SCF of $3671.10. Together, these mean debt levels imply that SCF credit card debt reports are at most 63 percent of CCP credit card debt reports, and this holds only where one makes extremely aggressive adjustments to the two data sets to account for concerns *(i)* and *(ii)*.

Alternatively, we could apply a set of relevant SCF survey measures to the issue of the reporting of transactions uses of credit cards. The SCF asks respondents with credit cards whether they "always or almost always", "sometimes", or "hardly ever" pay off the full billing cycle balance on their credit cards. Among households with credit cards, 68 percent report always or almost always paying off balances, 15 percent report sometimes paying off balances, and 17 percent report that they hardly ever pay off their credit card balances.[19] The survey also asks for the total of new charges on the household's most recent credit card statements. Given the rates at which SCF households report paying off balances, adding all new charges to the reported post-payment balances constitutes a generous allowance for convenience use of cards. If we add the new charges reported by SCF households, and we adjust for the same 8.33 percent of SCF households that we approximate to be without credit reports, then we arrive at an adjusted unconditional credit card balance average for the 2007 SCF of $4492.03, still just 63 percent of

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[19] Note that these rates are at odds with the 46.1 percent of SCF households that report positive credit card balances following their most recent payments.

the CCP unconditional average of $7134.38.[20]

(iii) A third, though perhaps less consequential, factor is that some part of the household credit card debt evident in the CCP is generated by small business uses of personal credit cards. Such uses may or may not be reported by SCF respondents in response to the questions, "Do you or anyone in your family living here have any credit cards or charge cards?" and "After the last payment was made, roughly what was the balance still owed on this account?" [21] (However, note that the interviewer is instructed to tell respondents not to report any cards used entirely for business.) Data from the Survey of Small Business Finances (SSBF) shed light on the prevalence and amount of borrowing for business purposes on personal credit cards. The most recent wave of the survey was fielded in 2003. Given that the major discrepancy between the SCF and the CCP is in the prevalence of credit card debt, we first consider the potential effect of unreported small business use of personal credit cards on credit card debt prevalence in the SCF. In the 2003 SSBF, 46.5 percent of businesses with 50 or fewer employees used personal credit cards for transactions (Federal Reserve 2010). The SSBF sample represents a population of 9,493,732 businesses with fewer than 50 employees, among others. Assuming that each of these firms borrows on the personal credit cards of only one household, that none of this business borrowing on personal cards was reported in the SCF, and that personal credit card borrowing was identical in 2003 and 2004, this generates an estimate of the prevalence of unreported business borrowing on personal cards in the 2004 SCF of 3.81 percent. Though this doesn't close the 2004 SCF-CCP credit card debt prevalence gap of roughly 25 percentage points, it may account for a nontrivial

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portion of the gap.[22]

Turning to the amount of small business borrowing on personal cards, the SSBF shows average monthly transactions on personal cards, among the 46.5 percent of small businesses using personal cards, of $2161. Further, 13.3 percent of small businesses carry balances on personal cards for business purposes, and these balances average $9353.[23] Assuming that balance carriers are among the 46.5 percent with any transactions, and that their carried balance average excludes transaction uses, we infer an average transactions plus debt balance on the 9,493,732 small businesses' personal cards of $2248.81. Distributing this amount of business borrowing among the full population represented by the 2004 SCF, and inflating to 2007 dollars as done throughout the paper, we calculate a contribution to average SCF credit card debt of $207.97.[24] Again, this amount does not explain a majority of the large SCF-CCP discrepancy, but it is not insubstantial.

For the purpose of tallying the total amount of the 2007 SCF-CCP credit card debt discrepancy that can be explained by generous allowances for explanations *(i)-(iii)*, assume for the moment that small business spending on personal credit cards is the same, in real terms, in 2003 and 2007. Adding the $207.97 small business contribution to the SCF unconditional credit card debt average of $4492.03 that results from adjustment for explanations *(i)* and *(ii)*, we arrive at a grand total of $4700.00, or 66 percent of the $7134.38 CCP unconditional household credit card debt average.

One final possibility worth mentioning, noted by a lead SCF investigator, is that SCF respondents do not report debt in long-dormant accounts, which they may regard as no longer

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[22] Note that the gap between SCF and Consumer Credit Panel credit card debt rates is quite consistent from 2004 to 2007. If the prevalence of small business borrowing on personal cards is similarly consistent, this explanation addresses a similar proportion of the 2007 gap.

[23] Small businesses here are again defined as those with 50 or fewer employees. Source Federal Reserve (2010).

[24] Again, we assume each small business borrows on the cards of only one household.

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relevant or may have forgotten. This is not a measurement explanation, but rather an aspect of

what we might term underreporting. The CCP data include information on accounts that have

been updated by the creditor within 3 months of the date on which the quarter's data were

collected. This standard may lead the data to include some positive dormant account balances

that lenders continue to report, and exclude other dormant account balances lenders no longer

report.[25] This may explain some of the difference in aggregate balances. It leaves the question of

what consumer behaviors generate dormant, forgotten accounts.

c. The gap between borrower-reported SCF and lender-reported CCP credit card debt narrows

from 2001 to 2007

Zinman (2009) demonstrates a widening gap between aggregate credit card debt estimates from

the SCF and G.19 over the 1989-2004 period. We are able to revisit the question for 2001-2007,

and in terms of household-level debt distribution characteristics in addition to aggregates. Figure

5 shows credit card debt prevalence, conditional means, and conditional medians over time.

Though the gap in credit card prevalence has closed only very slightly, the differences in the

mean and the median are roughly twice as large in 2001 as they are in 2007. This is encouraging

news, as it suggests substantial improvement over time in the one dimension of recognized

inaccuracy in debt measurement for the SCF.

d. Evidence of meaningful reporting heterogeneity in 2007 debt data among these observable

categories is limited

One method of correcting for the apparently low level of credit card debt measured by the SCF

in research on net worth and consumer balance sheets has been to multiply observed credit card

debt up by a common factor for each SCF household.[26] This is an appropriate correction if credit

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[25] See Lee and van der Klaauw (2010) for further detail on inactive accounts.
[26] Examples include Bertaut and Haliassos (2009), Gross and Souleles (2002), Telyukova

card debt underreporting is relatively homogenous within the sample. Based on his finding that SCF-G.19 credit card debt discrepancies grew over time from 1989 to 2004, Zinman raised the concern that marginal entrants to the credit card market, who likely differ in important ways from previous credit card users, were reporting credit card debt less effectively. This would suggest the presence of meaningful heterogeneity in the quality of credit card debt reporting, which in turn suggests that homogenous corrections for underreported credit card debt are inappropriate.

Our results show relatively homogenous underreporting of net credit card balances by age and region of the country. Though these findings fall far short of being able to rule out all (observable and unobservable) types of reporting heterogeneity, this paper tests for and fails to find meaningful evidence of reporting heterogeneity by age or region. In other words, we fail to find evidence that making a common adjustment for SCF credit card debt underreporting is inappropriate.

e. Bankruptcy

Two leading candidate explanations for the remaining gap between SCF and CCP credit card debt levels are the possibility of social stigma applied to the use of uncollateralized debt, and the possibility that borrowers are not well informed of their credit card debt levels. The SCF records whether interviews occur in person or via phone. In 2007, 64 percent of interviews were conducted in person and the residual over the phone.[27] In either instance, the respondent interacts over a long period of time with an interviewer, who grows increasingly familiar with the respondent's personal and financial circumstances. If the respondent suspects that credit card debt, or other consumer attributes, might be looked upon unfavorably by the interviewer, then

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(2008), Telyukova and Wright (2008), and Zinman (2007).

[27] The unweighted figure is 55 percent in person.

the respondent may have reason to answer questions regarding such attributes inaccurately. As in most surveys, respondents in the SCF experience no material cost of responding inaccurately. These factors together could lead to inaccurately low reports of credit card debt.

Uninformedness could result from willful ignorance, as large credit card balances are not welcome information, from difficulty understanding the growth of credit card balances, as described in Lusardi and Tufano (2009), or from other cognition and information costs. While stigma issues in reporting are primarily a data quality concern, uninformedness regarding one's debt position may have meaningful consequences both for survey data quality and for the effectiveness of consumers' decision making. Therefore it would be valuable to find a way to distinguish between stigma and uninformedness.

Bankruptcy is a consumer behavior that is both memorable and relatively likely to be stigmatized. Hence we may be able to learn something about the importance of stigma in debt reporting in the SCF from the accuracy of its bankruptcy figures.

In addition, a new literature has emerged on consumers' post-bankruptcy experiences, an increasingly important issue as rates of consumer bankruptcy approach pre-bankruptcy reform levels.[28] Han and Li (2010) look at post-bankruptcy access to credit using the SCF. Cohen-Cole, Duygan-Bump, and Montoriol-Garriga (2009) examine post-bankruptcy experiences using credit bureau data. We believe that information on the relative quality of bankruptcy measures in the two data sources would be of value to this discussion.

Past default is possibly the most relevant consumer behavior to potential lenders, and hence the accurate reporting of bankruptcy is a leading concern of credit reporting agencies. Given the care taken in recording and reporting bankruptcies, we believe the bankruptcy data in the Consumer Credit Panel to be fairly accurate. In this section we examine the similarity between

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[28] See Federal Reserve (2011).

self-reported bankruptcy in the SCF and credit bureau-reported bankruptcy in the CCP.

One difficulty we face in comparing bankruptcy rates in the two surveys is a difference in the terms of measurement. The SCF asks whether the respondent or spouse/partner has filed bankruptcy, and if so how long ago. The publicly available SCF data report less than one year as -1, and then round all durations since bankruptcy to the nearest odd integer. Hence we can identify the proportion of responding individuals or couples who have declared bankruptcy less than two years ago, less than four years ago, and so on. If respondents answer in years, then this allows us to identify the proportion who have declared bankruptcy in the past year, past three years, and so on. The CCP, on the other hand, reports whether an individual has declared bankruptcy within the past 24 months. We can aggregate these individuals into households but, as noted above, we cannot identify the relationships among the household members. Therefore we are unable to restrict household-level bankruptcies to those of a single household head or married/partnered couple.

Table 4 reports 2001, 2004, and 2007 bankruptcy rates in the SCF and CCP under various conditions. We find that the SCF 3 year bankruptcy rates, 2.90, 2.91, and 2.25 in 2001, 2004, and 2007, respectively, are very similar to the FRBNY 24 month household bankruptcy rates of 2.76, 3.13, and 2.10. This appears to indicate that bankruptcy is underreported in the SCF. *However*, this comparison does not account for the difference in the members of the household whose bankruptcy experiences are being reported. When we restrict each sample to households with either one or two adult members, we find little change in the SCF 3 year bankruptcy rates. Presumably this is because the SCF asks only about bankruptcies experienced by the respondent and spouse in any case. The FRBNY Panel 24 month bankruptcy rates, however, fall to 1.52, 1.76, and 1.17, respectively. Further, the analogous FRBNY Panel individual 24 month

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bankruptcy rates are 1.72, 1.87, and 1.17. This suggests both that members of large households have relatively high collective bankruptcy rates, and that households with only one or two adult members are a selected group with particularly low bankruptcy rates.

Put together, the bankruptcy rate estimates in Table 4 suggest little if any underreporting of bankruptcy in the SCF. The rates for one or two adult households might even raise the question of a small degree of overreporting of bankruptcy in the survey. In any case, the evidence we are able to assemble on bankruptcy reporting in the two sources does not indicate that bankruptcy stigma plays an important role in the collection of survey data on bankruptcy.[29]

The lack of evidence of stigma from the case of bankruptcy, arguably a more stigmatized consumer behavior than credit card borrowing, might suggest that uninformedness, rather than stigma, drives the borrower-lender credit card debt reporting gap.[30] One caveat, however, comes from a marketing literature on conditions under which subjects are likely to lie. Evidence indicates that subjects tolerate committing dishonesty of limited magnitude without updating their self-concept (Mazar, Amir and Ariely 2008), but may not tolerate committing more serious dishonesty. If reporting inaccurately low credit card balances or omitting small credit card balances is perceived as a more tolerable lie than omitting a bankruptcy, then evidence that SCF respondents avoid big lies about bankruptcy, despite stigma, may not be decisive regarding the importance of stigma in credit card usage reporting.[31]

f. Singles versus Couples

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[29] Kennickell, in private discussion, notes that bankruptcy questions are fielded late in the SCF survey. At this point the interviewer and respondent may have built a level o familiarity, and the interviewer has a great deal of information about the respondent's personal and financial position. These factors, he hypothesizes, may contribute to the accuracy of bankruptcy reporting.

[30] Given the evidence that credit card debt reporting has improved over the past decade, one might also seek evidence on trends in knowledge of debt and the stigmatization of uncollateralized borrowing in order to distinguish between the two explanations.

[31] The authors thank Dean Karlan for this observation.

Figure 6 makes comparisons similar to those in Figures 1-3 based on household size. Household size in this case refers to number of adults in the household, as children in the household are unobserved in the CCP. Further, the problem remains that roughly 10 percent of U.S. adults are without credit reports. Therefore some CCP households that truly contain two adults will be miscategorized as single households, some with three adults will be miscategorized as two, and so on. One might expect this process to inflate CCP debt estimates for a given household size relative to SCF estimates, if slightly.

We do see evidence of slightly more common and higher debt in the CCP estimates than the SCF estimates by household size. The main insight from Figure 6, like that from Figures 1-3, however, is that debt patterns by household size and debt type are quite similar in the two data sets. Finally, we see some evidence that the match between debt estimates is closer for single households than for larger households. This might be expected given the standard survey practice of collecting information on household debts from a single "financial" respondent. Financial respondents who report only on own debts may be better informed than those reporting on debts of other household members. This effect appears to be stronger for vehicle and credit card debt.[32]

g. *Non-Primary Economic Unit (PEU) members*

One remaining comparability issue is that, while our CCP data contain debt information for all adults with credit reports residing in the household, the SCF detailed debt figures typically exclude the debt of non-Primary Economic Unit (PEU) members, where PEU members are as described in Section II on data and comparability. The SCF does ask about the presence and

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[32] We thank Robert Pollak and Midwest Economic Association session participants for suggesting a household size comparison. Sierminska et al. (2008) discuss family size and wealth reporting accuracy. Johnson and Li find differences between the SCF and CE housing debt measures that differ more for married than for single households. One additional possible source of difference between single and larger households is that, while relationship types are not an issue in single households, the Consumer Credit Panel cannot distinguish among relationship types in larger households. This may lead to categorization of some non-PEU household members as, effectively, PEU members, to borrow SCF terms, and may lead the debt of two or more person Consumer Credit Panel households to deviate more from the debt of two or more person SCF households.

magnitude of any debt held by non-PEU members, and whether the respondent included any of

this debt in his or her previous debt responses. The answer to the latter question is not included

in the public access SCF data, and hence we are not able to correct even total debt figures for the

subset of non-PEU debts that were previously unreported. However, we can use the reported

prevalence and magnitude of non-PEU members' debt to infer something about the effect of

omitting it on our central conclusions.

We find that 4.4 percent of 2007 SCF households contain a non-PEU member with positive

debt. The unconditional mean of non-PEU member debt among our SCF households is $619.

Hence non-PEU member debt is a concern where our conclusions regarding debt comparisons

might be swayed by the addition of $619 to the SCF debt level in question or 4.4 percentage

points to the relevant debt prevalence. We claim that such instances are rare. In terms of the

aggregate debt level, addition of the non-PEU debt under the assumption that none of it is

reported elsewhere raises the SCF estimated aggregate debt level to roughly 11,336,000,000,000,

a bit closer to the CCP estimated aggregate debt level of 11,980,000,000,000 than the original

estimate in Table 1.

IV. Implications of reporting accuracy for debt repayment

As discussed above, the match between borrower and lender credit card debt reports is shown to

be quite weak in our SCF-CCP comparison, and elsewhere. Credit card and student loan debt,

both uncollateralized, are generally recognized to be the weakest repayment quality consumer

debt categories.[33] However, student loan debt is reported surprisingly similarly in our borrower

and lender sources.[34] Hence it is not clear when looking by debt type that inaccurate debt

reporting is associated with weak repayment outcomes.

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[33] See, for example, Ionescu (2009), among others.
[34] Though, again, each dataset has potential sources of student loan underreporting.

One might also consider reporting and delinquency by borrower characteristics. In Figures 1a-c, we observe debt reporting matches that, in many cases, strengthen slightly with age.[35] In the CCP, as well as other sources, we see that delinquency declines almost monotonically in the age of the household head, or the age of the borrower. These observations may suggest a modest positive association between debt reporting accuracy and repayment, when comparisons are made across consumer age groups. But the association is modest indeed.

On net, there appears to be mixed to weak evidence of a positive association between debt reporting quality and repayment. Reporting quality is not a strong predictor of repayment outcomes. This may be surprising, given that one expects borrowers with limited knowledge of their debts to have more difficulties with financial decision-making.

V. Conclusions

This paper reports the results of the most complete vetting of SCF debt information to date, to our knowledge. Our central finding is the surprising similarity in the patterns of debt holding evident in the borrower-reported SCF and lender-reported CCP, both in the aggregate and by debt category, year, region, age and household structure.

Nevertheless, we find a substantial gap in credit card debt reporting between the SCF and the CCP, with the raw gap equal to roughly 50 percent of the lender-reported debt level. Generous accounting for differences in the two data sources' sampling design and generous treatment of convenience and small business uses of credit cards has a not insignificant effect on the magnitude of the discrepancy in credit card debt between the SCF and the CCP, narrowing the difference in unconditional average household credit card debt to 34 percent of the lender-reported debt level. However, more realistic assumptions would presumably leave a somewhat

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[35] The exception is the case of credit card debt, in which SCF households in all but the 75+ category report roughly half the unconditional credit card balances observed in the FRBNY Panel, while SCF households in the 75+ category report roughly one third of the credit card debt observed in the FRBNY Panel.

larger difference, and these adjustments stop far short of reconciling the two measures.

Bankruptcy, like heavy reliance on uncollateralized debt, is arguably a stigmatized consumer behavior. Despite the mismatch in credit card debt reporting, SCF borrowers and CCP lenders report recent personal bankruptcy filings at similar rates (though differences in available measures of bankruptcy in the two datasets impose some qualifications on this claim). We infer from this finding that not all stigmatized consumer behaviors are similarly underreported. Whether this indicates that something other than stigma, such as ignorance of debt positions, underlies the credit card debt discrepancy, or that consumers feel differently about reporting major life events, such as bankruptcy, and more marginal financial position changes remains an open question.

Clearly all of this relies on the validity of comparisons at the distributional level. It would be preferable to make the lender-borrower debt report comparison at the level of the household or individual. Therefore we continue to seek opportunities to observe linked consumer self-reports and lender-reported data.[36] Until such data are available, however, the detailed comparisons permitted by the rich SCF and CCP data provide our most complete picture of the reliability of debt reporting. Finally, while existing survey data provides limited opportunity to separate unwillingness to report financial information from lack of knowledge of financial information, experimental data might permit a distinction between knowledge of debt and willingness to report debt.

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[36] Unfortunately, even a direct match of Consumer Credit Panel to SCF households would be of limited value, as coverage of the roughly 4500 SCF households in the Panel would be restricted to somewhere upwards of 5 percent, leading to a small matched sample.

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Table 1: SCF 2007 v. CCP September 2007 Household Debt

Debt Category	Aggregate balance	
	SCF	CCP
Overall debt	$11,264,022,000,000	$11,980,000,000,000
Overall home-secured debt	$9,556,713,450,000	$9,560,000,000,000
Mortgages or home equity loans	$8,036,267,850,000	$8,930,000,000,000 *
Home equity lines of credit	$386,845,200,000	$630,000,000,000 *
Vehicle installment loans	$591,575,940,000	$820,000,000,000 *
Education installment loans	$379,414,800,000	$380,000,000,000
Credit card balances	$390,711,330,000	$820,000,000,000
Other debt	$343,690,830,000	$410,000,000,000

*Differences in reporting practices account for aggregate differences in these three categories. See text for details.

Table 2a: SCF 2007 v. CCP September 2007 Household Debt by Account Type

Debt Category	% of households		Median		Mean	
	SCF	CCP	SCF	CCP	SCF	CCP
Overall debt	77.0	84.0	$67,300	42,776	126,000	116,465
Overall home-secured debt	48.7	42.3	107,000	120,360	149,000	183,830
Mortgages or home equity loans	46.3	40.5	110,000	119,866	149,500	179,910
Home equity lines of credit	8.5	9.6	24,000	29,994	39,200	52,093
Vehicle installment loans	34.9	39.7	11,600	13,002	14,600	16,841
Education installment loans	15.2	13.4	12,000	12,332	21,500	23,282
Credit card balances	46.1	76.1	3000	3,564	7300	9,375
Other*	10.1	11.0	2800	6,233	2960.3	1,830
(SCF entries are other installment	1.7		3800		*other here is unconditional	
loans, other lines of credit and	6.8		5000			
other debt, respectively.)						

Table 2b: SCF 2007 v. CCP September 2007 Household Debt by Account Type, adjusted

Debt Category	% of households SCF	CCP	Median SCF	CCP	Mean SCF	CCP
Overall debt	84.0	84.0	$67,300	42,776	126,000	116,465
Overall home-secured debt	53.1	42.3	107,000	120,360	186,000*	183,830
Mortgages or home equity loans	50.5	40.5	110,000	119,866	149,500	179,910
Home equity lines of credit	9.3	9.6	24,000	29,994	39,200	52,093
Vehicle installment loans	38.1	39.7	11,600	13,002	14,600	16,841
Education installment loans	16.6	13.4	12,000	12,332	21,500	23,282
Credit card balances	50.3	76.1	3000	3,564	7300	9,375
Other*	11.0	11.0	2800	6,233	3235.2	1,830
(SCF entries are other installment	1.9		3800		*other here is unconditional	
loans, other lines of credit and	7.4		5000			
other debt, respectively.)						

*Calculation includes vacation and investment properties.

Table 3: Age of household head distributions in the SCF and the CCP

Age group	SCF	CCP*	Census	
< 35	21.7	20.64	20.70	
35-44	19.6	24.21	20.27	
45-54	20.8	21.84	21.69	
55-64	16.8	15.34	16.84	
65-74	10.5	8.89	20.50	**
75+	10.6	7.56		

* Age of household head inferred from the median age household member.
**Note that the Census projection category is 65+.

Table 4: Percent of consumers or households filing for bankruptcy

|	All household sizes		
	SCF 1 year	SCF 3 years	CCP 24 mos
2001	1.18	2.90	2.76
2004	1.20	2.91	3.13
2007	0.93	2.25	2.10

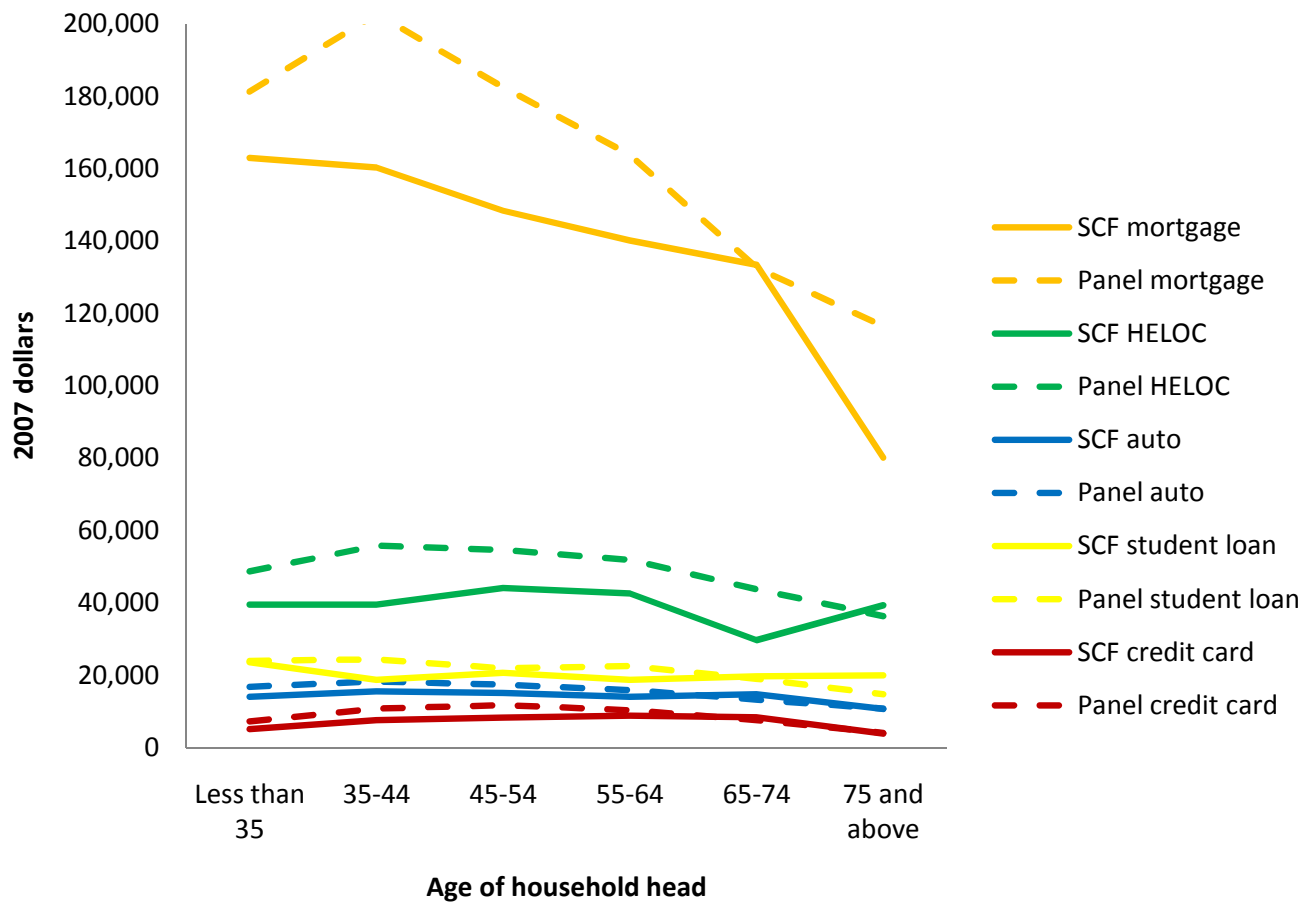|	1 or 2 adults in household			Individual
	SCF 1 year	SCF 3 years	CCP 24 mos	CCP 24 mos
2001	1.21	2.97	1.52	1.72
2004	1.17	2.87	1.76	1.87
2007	0.96	2.34	1.17	1.15

Appendix Table 1: Conditional Distributions of Credit Card Debt in the SCF and Consumer Credit Panel, 2007

Centile	SCF	CCP
10	290.00	325.00
25	900.00	1,085.00
50	3,000.00	3,564.00
75	8,880.00	10,733.00
90	19,250.00	24,457.00
95	28,000.00	37,467.00

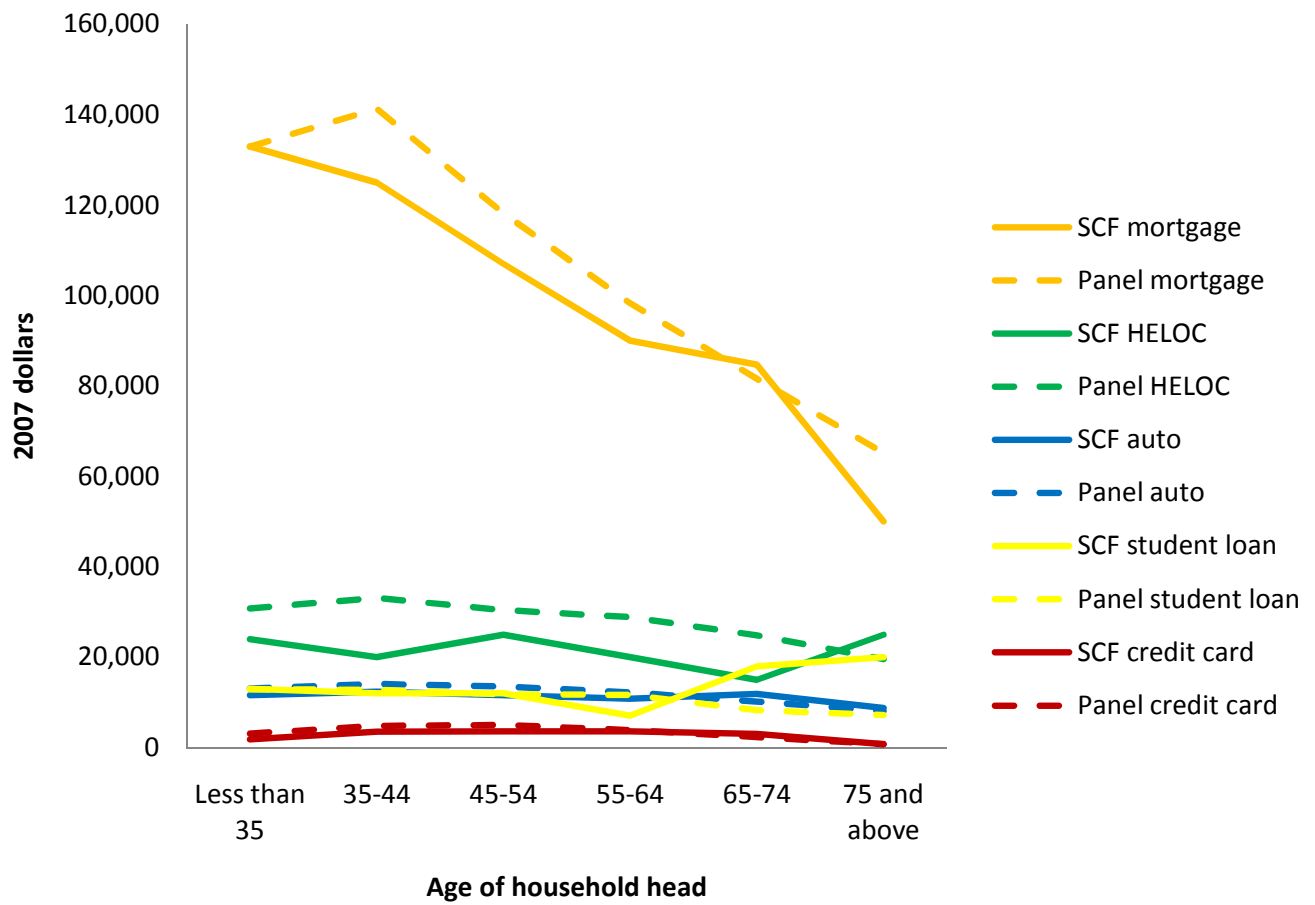**Figure 1a: SCF v. FRBNY Panel Consumer Debt Rates, by Age**
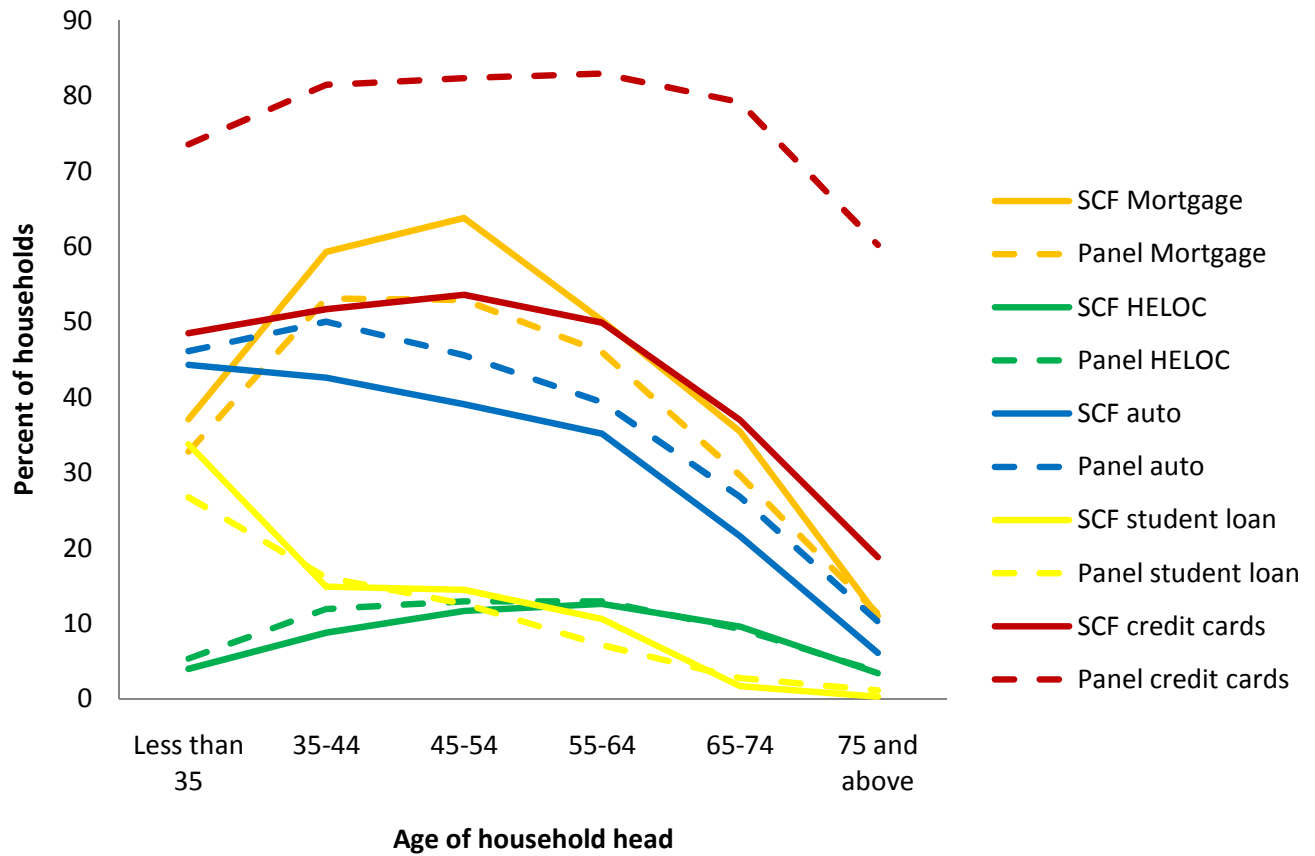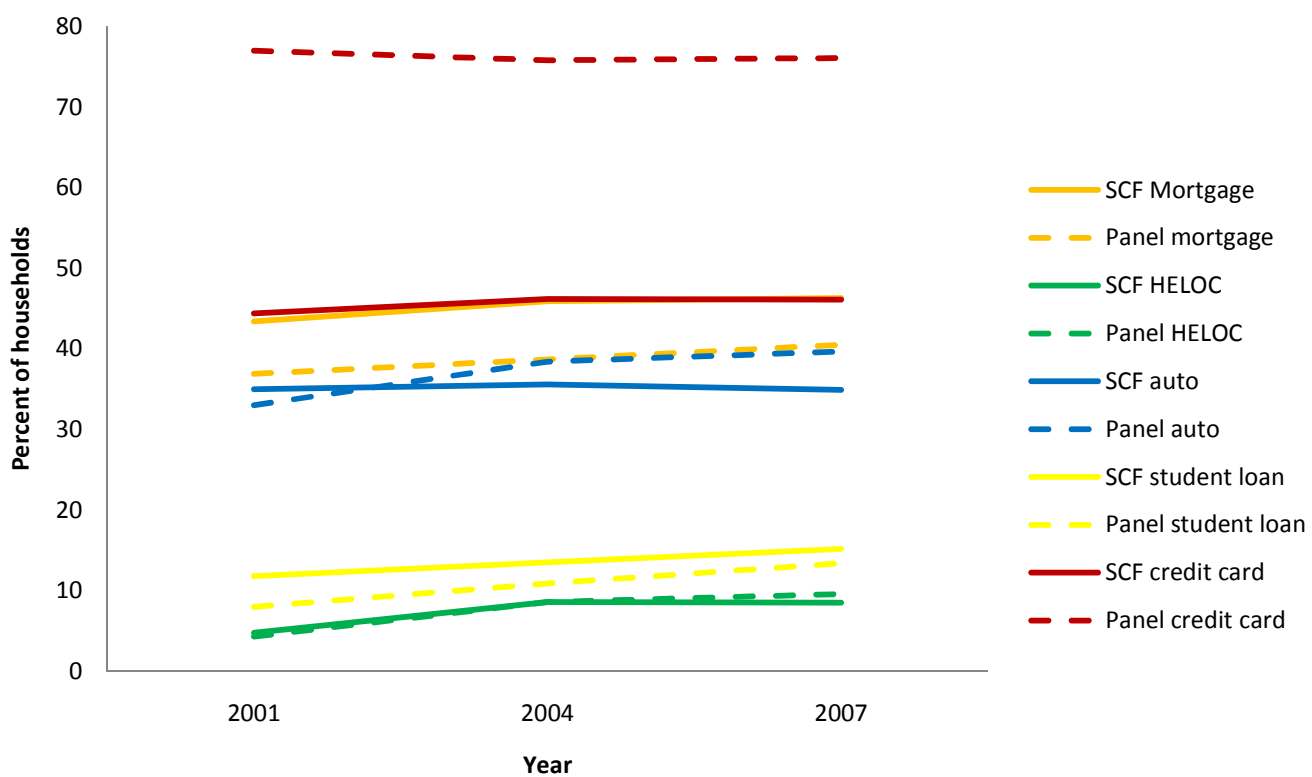
Figure 1b: SCF v. FRBNY Panel Consumer Debt Means, by Age

Figure 1c: SCF v. FRBNY Panel Consumer Debt Medians, by Age

Legend:
- SCF mortgage
- Panel mortgage
- SCF HELOC
- Panel HELOC
- SCF auto
- Panel auto
- SCF student loan
- Panel student loan
- SCF credit card
- Panel credit card

Y-axis: 2007 dollars

X-axis: Age of household head (Less than 35, 35-44, 45-54, 55-64, 65-74, 75 and above)

Figure 2a: SCF v. FRBNY Panel Consumer Debt Rates, by Year

Legend:
- SCF Mortgage
- Panel mortgage
- SCF HELOC
- Panel HELOC
- SCF auto
- Panel auto
- SCF student loan
- Panel student loan
- SCF credit card
- Panel credit card

Y-axis: Percent of households (0 to 80)
X-axis: Year (2001, 2004, 2007)
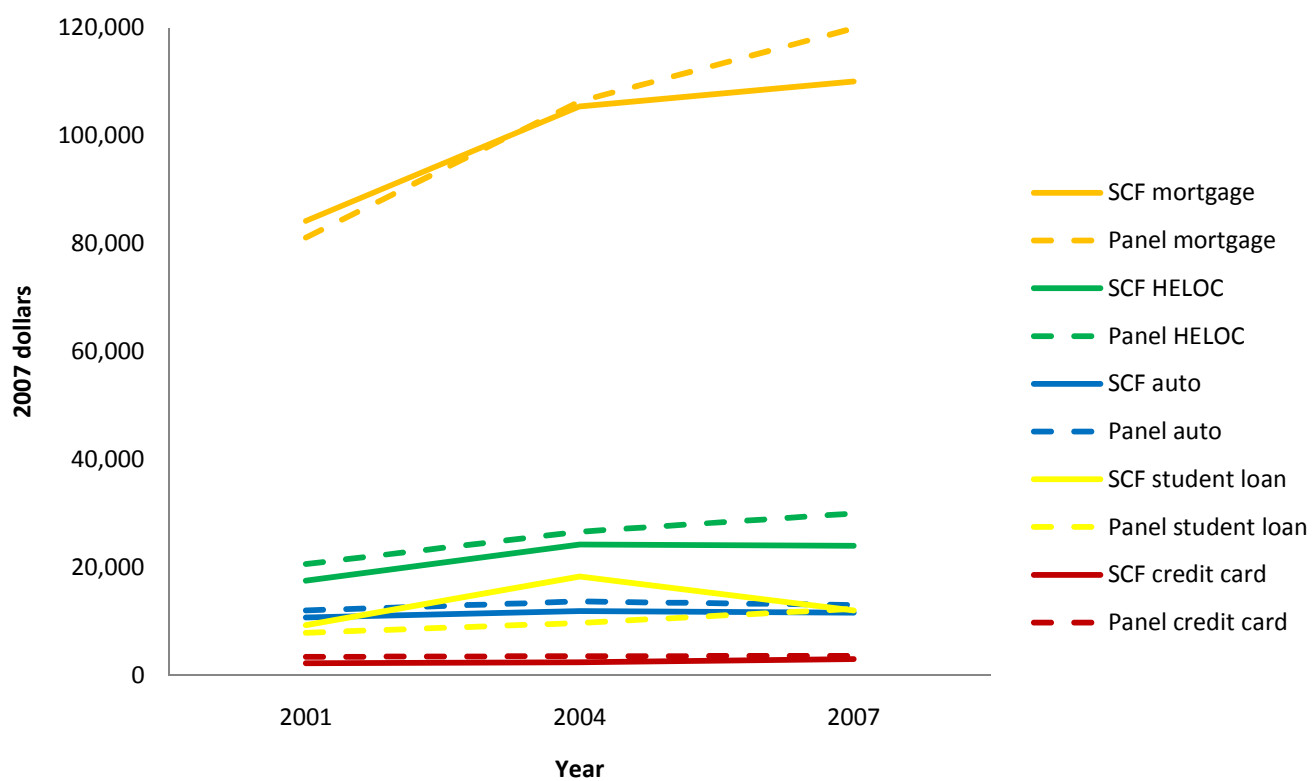
Figure 2b: SCF v. FRBNY Panel Consumer Debt Medians, by Year

Figure 2c: SCF v. FRBNY Panel Consumer Debt Means, by Year

Legend:
- SCF mortgage
- Panel mortgage
- SCF HELOC
- Panel HELOC
- SCF auto
- Panel auto
- SCF student loan
- Panel student loan
- SCF credit card
- Panel credit card
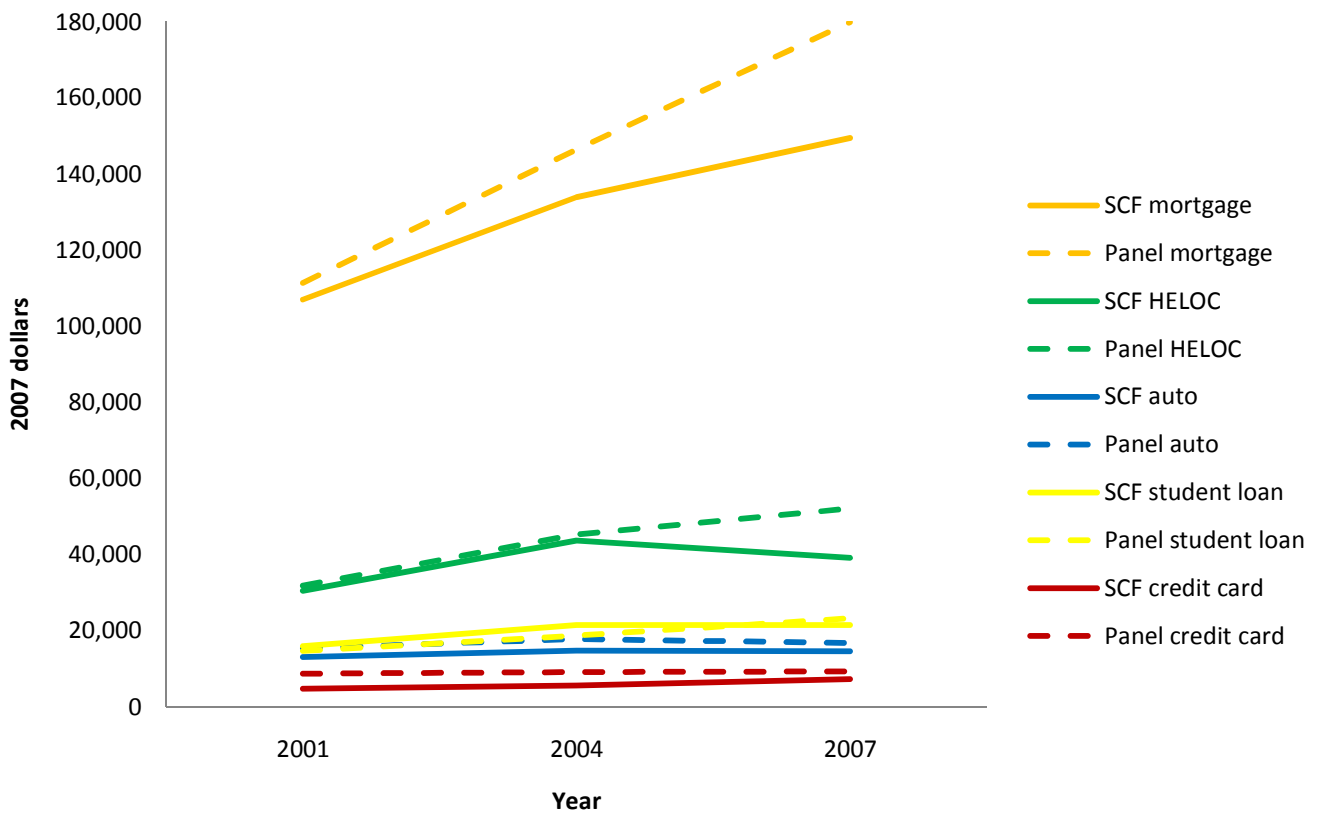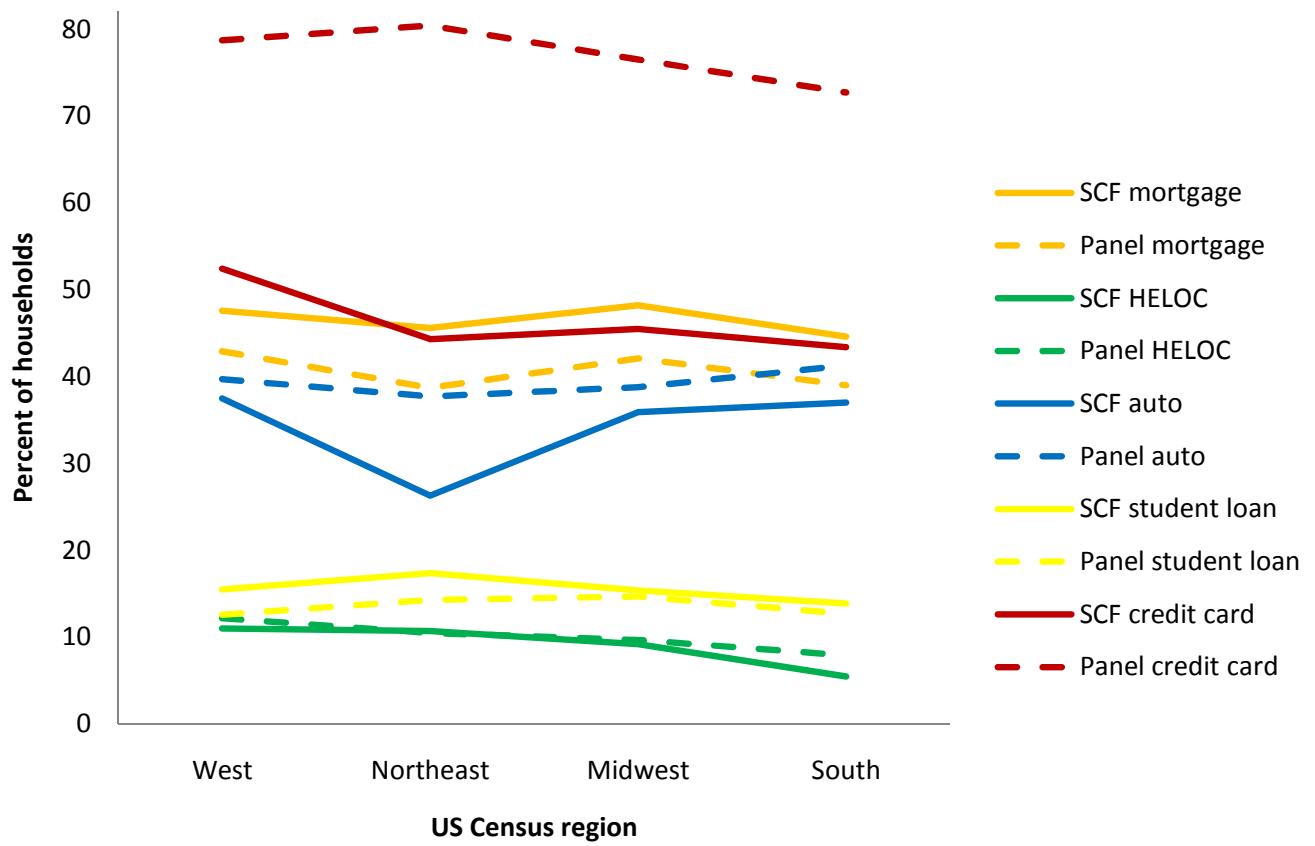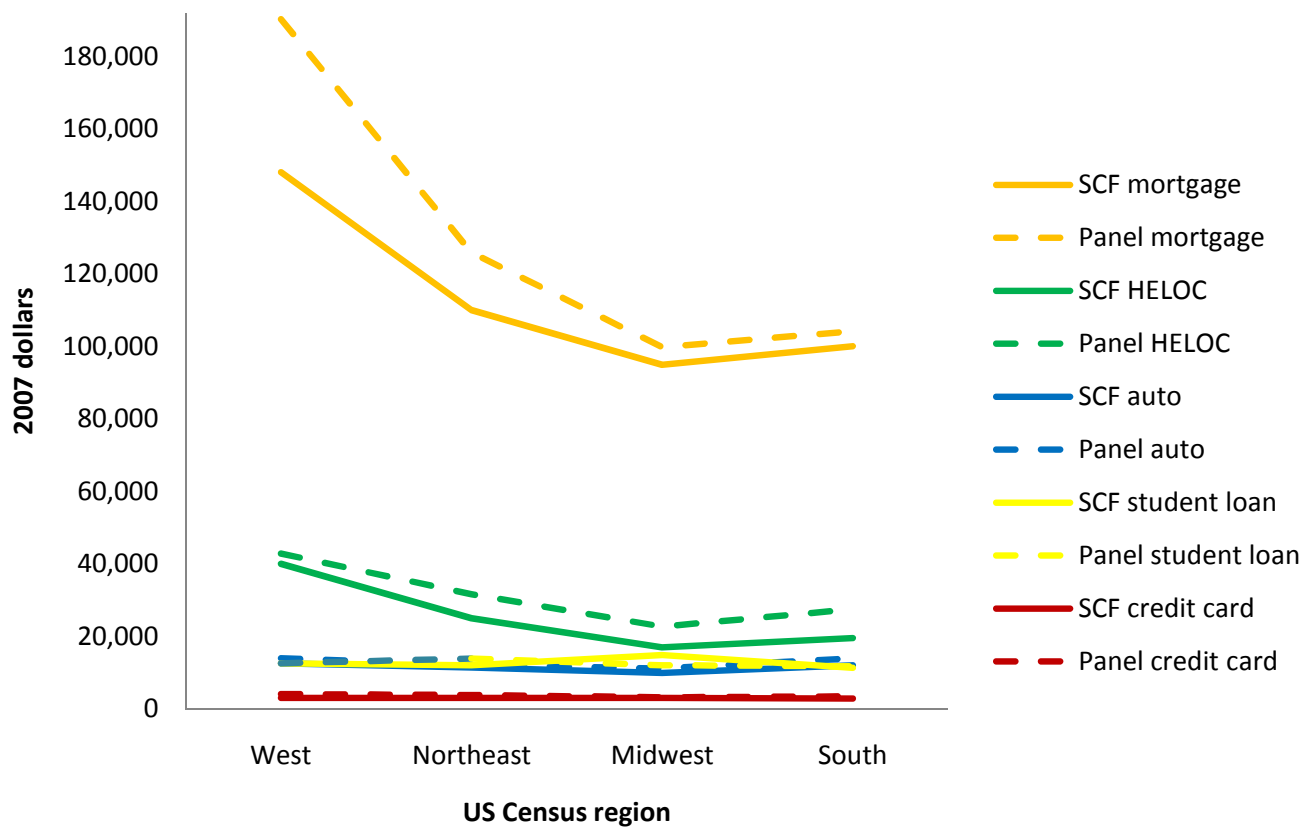
Y-axis: 2007 dollars

X-axis: Year (2001, 2004, 2007)

Figure 3a: SCF v. FRBNY Panel Consumer Debt Rates, by Region

Legend:
- SCF mortgage
- Panel mortgage
- SCF HELOC
- Panel HELOC
- SCF auto
- Panel auto
- SCF student loan
- Panel student loan
- SCF credit card
- Panel credit card

Y-axis: Percent of households (0 to 80)
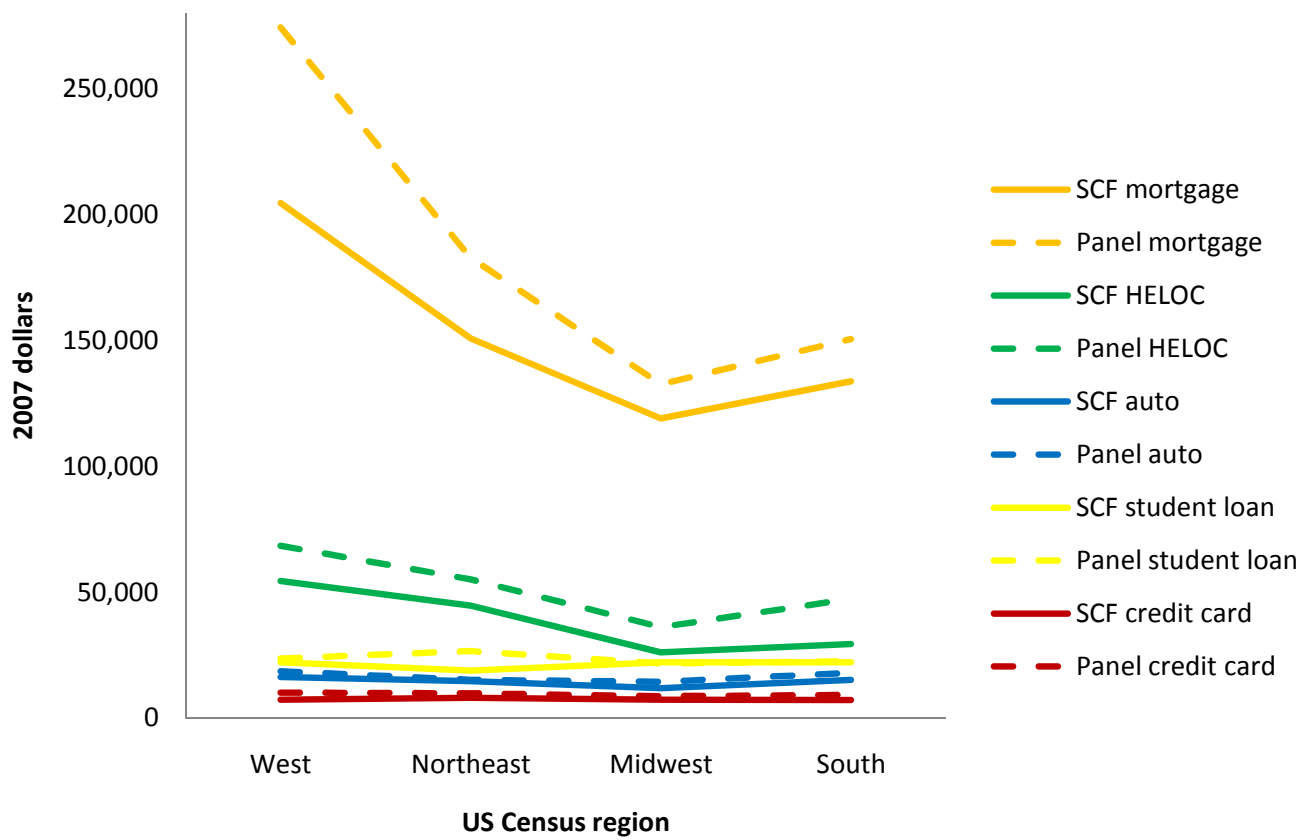X-axis: US Census region (West, Northeast, Midwest, South)
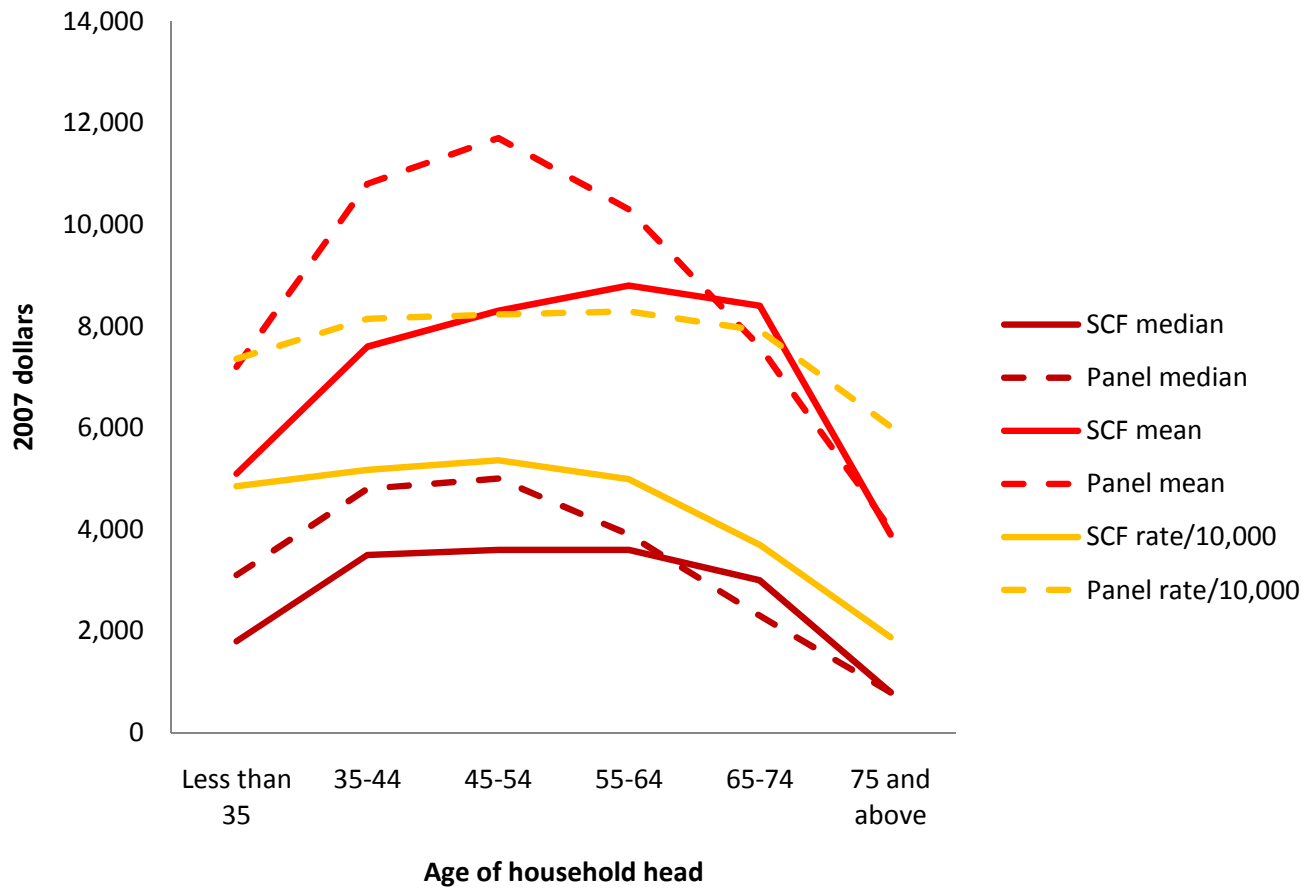
Figure 3b: SCF v. FRBNY Panel Consumer Debt Medians, by Region

Figure 3c: SCF v. FRBNY Panel Consumer Debt Means, by Region

Legend:
- SCF mortgage
- Panel mortgage
- SCF HELOC
- Panel HELOC
- SCF auto
- Panel auto
- SCF student loan
- Panel student loan
- SCF credit card
- Panel credit card

Y-axis: 2007 dollars (0, 50,000, 100,000, 150,000, 200,000, 250,000)

X-axis: US Census region (West, Northeast, Midwest, South)

Figure 4: SCF v. FRBNY Panel Credit Card Debt, by Age

2007 dollars

14,000
12,000
10,000
8,000
6,000
4,000
2,000
0

Less than 35 · 35-44 · 45-54 · 55-64 · 65-74 · 75 and above

Age of household head

— SCF median
--- Panel median
— SCF mean
--- Panel mean
— SCF rate/10,000
--- Panel rate/10,000

Figure 5: SCF v. FRBNY Panel Credit Card Debt, by Year

Legend:
- SCF rate x 10,000
- Panel rate x 10,000
- SCF medians
- Panel medians
- SCF means
- Panel means

Y-axis: 2007 dollars (0 to 10000)
X-axis: Year (2001, 2004, 2007)
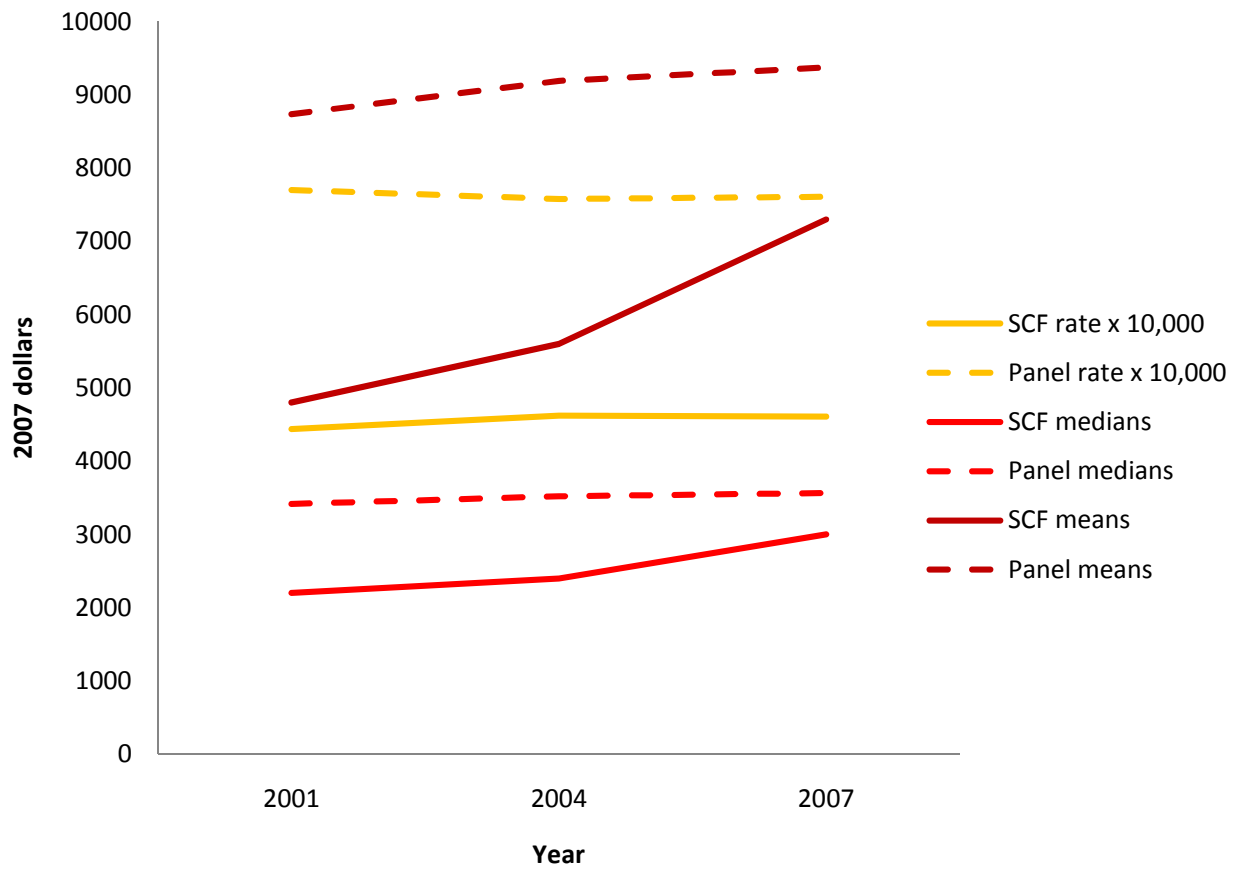
Figure 6a: SCF v. FRBNY Panel Consumer Debt Rates, by Household Size
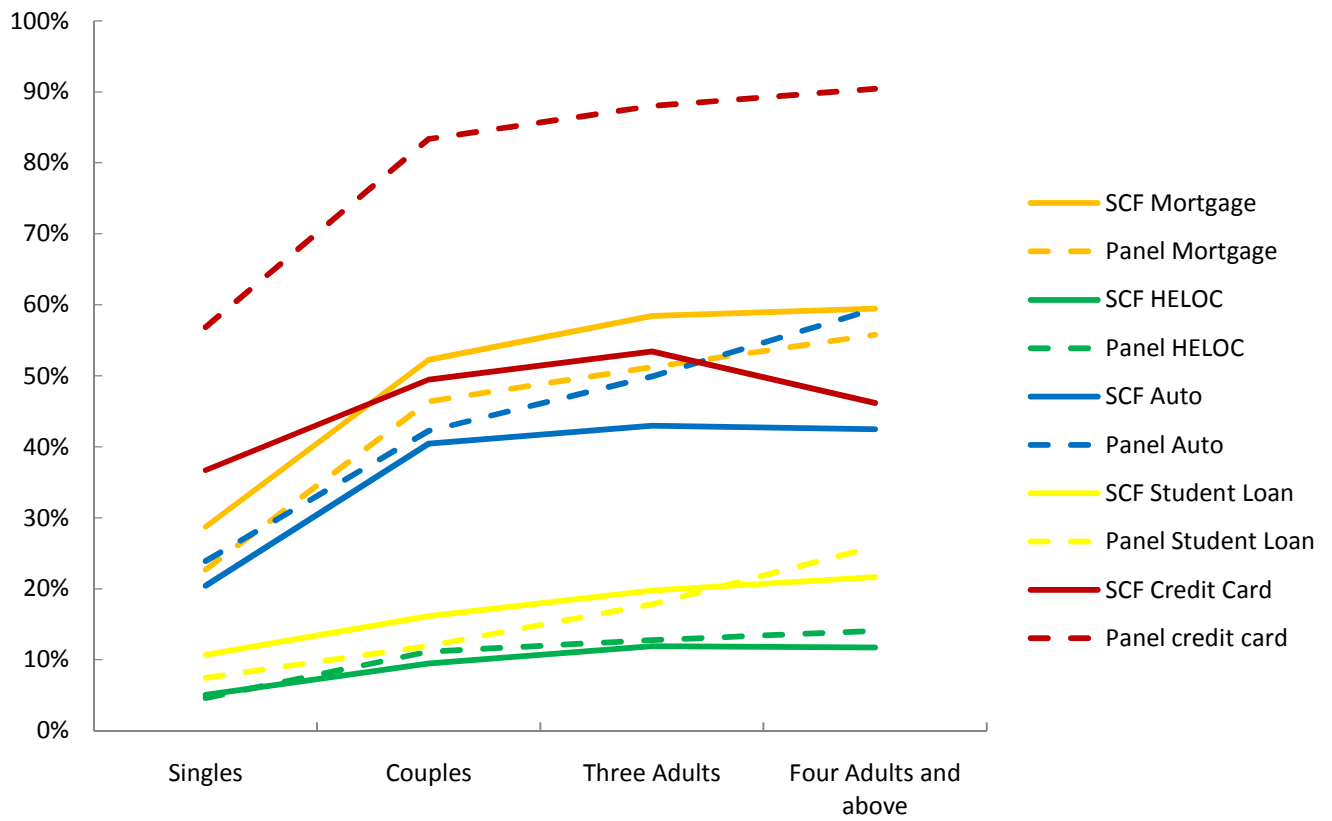
Figure 6b: SCF v. FRBNY Panel Consumer Debt Means, by Household Size