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

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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. Our central finding is that the SCF and CCP debt patterns are strikingly similar. There are, however, two noteworthy exceptions: The aggregate credit card debt implied by SCF borrowers' reports is estimated to be between 60 and 63 percent of that implied by CCP lenders' reports, and the aggregate student debt implied by the SCF is roughly 75 percent of that implied by the CCP. 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

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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).<sup>1</sup> 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, such as the role and use of debt by low-income, unemployed and bankrupt households.

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

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<sup>1</sup> Net worth calculations using the SCF rely on households' debt reports.

relative to administrative data of roughly 50 percent, and a divergence of the survey and administrative measures over the 12 years.

The quality of survey-based debt data is of clear importance 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.<sup>2</sup>

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.<sup>3</sup>

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, 2007, and 2010 on household debts for

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

<sup>3</sup> 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.

the borrowers' picture of consumer obligations. For the lenders' side, we turn to the new FRBNY Consumer Credit Panel/Equifax (CCP). The CCP is a panel of individual credit report data drawn from 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, 2007, and 2010 waves. We compare both consumer debt aggregates and moments of the household distributions of total debt, mortgage and HELOC debt, vehicle loans, credit card debt, student loan, 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 delinquency and bankruptcy rates in the two samples for 2001, 2004, 2007, and 2010, 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, and vehicle 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 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 up to 40 percent lower in the SCF than in the CCP. Reasons for the 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 and (ii) 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) and (ii), and find that a 37 percentage point gap in aggregate credit card debt remains.

Further, the aggregate student debt balances implied by the SCF are roughly 25 percent lower than those implied by the CCP, which, in turn, are similar to or lower than aggregates drawn from other student debt sources. We discuss sampling differences that may contribute to this gap. Information available in the two sources provides less opportunity to reconcile the difference in the case of student loans. By far, the largest differences between borrowers' debt reports in the SCF and lenders debt reports in the CCP lie in the unsecured debts.

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 rates in 2001, 2004, 2007, and 2010 fall 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. In particular, survey measures appear to fall further below administrative measures for larger households, especially in the case of auto and credit card debt. This suggests 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.<sup>4</sup> The debt data of 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.<sup>5</sup> 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

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

<sup>5</sup> 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.

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 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, 2007, and 2010. Sample sizes were roughly constant through 2007, with some growth in 2010: in 2001 the survey included 4442 households, in 2004 4522 households, in 2007 4422 households, and in 2010 6492 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.<sup>6</sup> Further, we rely on the survey's multiple imputation methods where relevant data are missing.<sup>7</sup> Bucks, Kennickell, Mach, and Moore (2009) provide a detailed description of the 2001, 2004, and 2007 data. Bricker, Kennickell, Moore, and Sabelhaus (2012) detail the 2007 and 2010 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%.<sup>8</sup> 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

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<sup>6</sup> We use the revised Kennickell-Woodburn consistent weights for the more recent data.

<sup>7</sup> Kennickell (1991, 1998) describes the imputation methods used in the SCF.

<sup>8</sup> 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.

the last 13 years, with current data through June 2013. The data will continue to be updated every quarter in the future: data for 2013Q3 will be available by November 2013.

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 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 include residential location at the census block level and the individual's year of birth. The data also contain detailed information on each individual home-secured loan, including origination date and balance, current balance, scheduled payment, and current repayment status. 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 and auto 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)<sup>9</sup>
- Total balance on each type of account in each status (e.g., the total auto loan balance that is current, 30 days delinquent, etc.)

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<sup>9</sup> 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.

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
- Equifax'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.

<sup>10</sup> 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 denominated in 2010 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 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.

We observe that 75 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

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<sup>10</sup> 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.

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 credit report and the no conventional debt and credit 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 75 percent of SCF households have reports and debt, then it must be the case that 14.3 percent of SCF households have reports and no debt. The residual, 10.6 percent of SCF households, must then have no credit reports.<sup>11</sup> Note that this figure is near the rate calculated by Jacob and Schneider.<sup>12</sup>

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 calculations in the event that SCF households in fact underreport their debt. Assuming some SCF households who have credit report-generating debt report having none, 75 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  $75 + r$  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  $\frac{16}{84} = \frac{x}{75+r}$ . At  $r = 0$ ,  $x = 14.3$ , and  $x$  is increasing in  $r$ . Hence the share of SCF households with no conventional debt but credit reports increases from 14.3 percent when SCF respondents underreport debt, and the residual share with no conventional debt and no credit reports has an upper bound of 10.6 percent.

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<sup>11</sup> Figures are rounded for ease of discussion, and hence contain some rounding error.

<sup>12</sup> Assuming households do not sort perfectly on the presence or absence of credit reports, we would expect the household level rate of missing credit reports to be smaller. For the 2007 waves of the two datasets, which are considerably closer to Jacob and Schneider's period of observation, we find a missing report rate of 8.33 percent, in line with our expectations under imperfect sorting.

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 2010 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 10.6 percent. Since the validity criteria for this type of approach are unclear, we again focus on the 10.6 percent figure as an upper bound.

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 10.6 percentage points' worth of non-debtor households from the SCF calculations. Note that, should underreporting of debt lead the 10.6 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 2001, 2004, 2007, and 2010. 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, though household composition may change. 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, such as roommates and boarders. 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.<sup>13</sup> 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.

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<sup>13</sup> Note that other observable characteristics of non-PEU members tend to be associated with low debt levels.

### **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 2010 wave and 2010Q3 of the CCP. Overall debt is quite similar, at 11.51 trillion in the SCF and 11.84 trillion in the CCP. Home-secured debt estimates are nearly similarly comparable, at 9.65 trillion for the SCF and 9.28 trillion for the CCP, indicating that the accuracy in reporting mortgage features demonstrated by Bucks and Pence (2008) continues to hold in 2010, and holds for comparisons using multiple lender sources.<sup>14</sup>

Vehicle installment loan estimates are \$596 billion for the SCF and \$710 billion for the CCP. 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. For the purpose of our comparison, we attempt to remedy this discrepancy by adding auto lease balances in the SCF to the SCF auto debt calculation. Though the SCF does not supply public data on the make, model, and year of leased vehicles, their public data do include an industry guidebook-derived value of the leased vehicle. We take this value as an approximation of the remaining balance of the (implicit) loan that would be reflected in the lessee's credit report. To the extent that the industry guidebook value is an overestimate of the remaining principal after the elapsed series of lease

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<sup>14</sup> The aggregate home-secured debt for 2007 is nearly identical, at 10.0 trillion dollars in each source.

payments, this approach will exaggerate the auto balance we infer from the SCF. We find that, even with a generous allowance for lease balances, the aggregate auto debt implied by the reports of SCF households is approximately 16 percent lower than that implied by the CCP credit reports. Hence the auto debt balances implied by the borrower- and lender-sourced data are fairly similar, but not perfectly matched.

Credit card balances are estimated at 440 billion in the SCF and 731 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.

Household-level student debt balances that rely on current measurement practices are unavailable in the CCP prior to 2011Q3. However, we do have individual-level student debt measurements based on current practices for 2010Q3, 2007Q3, and 2004Q3. In Table 1, we compare the aggregate student debt implied by household-level SCF data to the aggregate student debt implied by individual-level CCP data. Assuming representativeness in each case, these measures should be comparable. We find that the debt balances reported by SCF households imply an aggregate student loan balance in 2010 of 578 billion dollars. Individual credit reports in the CCP, however, imply an aggregate student debt balance of 778 billion dollars. Once again we infer a higher aggregate balance using lender-side data than we do using borrower-side data; in this case, borrowers appear to report 25.7 percent less debt than lenders do.

Other available measures of aggregate student debt for 2010 are limited. Those that exist tend to be similar to or greater than the CCP figure. Mark Kantrowitz (WSJ August 9, 2010) estimated aggregate student debt at roughly \$830 billion in the summer of 2010. The Consumer Financial Protection Bureau estimates that aggregate student debt crossed the trillion dollar

threshold in late 2011 (Chopra 2012). The Department of Education documents that the portfolio overseen by the office of Federal Student Aid (FSA) alone at the start of 2011 was \$722 billion (Department of Education 2011).

*(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 five 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 10.6 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 8.1 and 9.2 percent in the SCF and CCP, respectively. Adjusted vehicle installment loan rates are 36.6 and 38.3 percent, respectively. The overall conditional mean household debt level is \$130,700 in the SCF and \$114,900 in the CCP. The conditional median and mean HELOC level comparisons are \$26,400 SCF versus \$34,700 CCP, and \$54,500 SCF versus \$62,700 CCP. For vehicle installment loans, conditional median and mean balance comparisons are \$11,000 versus \$12,400 and \$15,500 versus \$16,200. Mortgage and home equity installment loan balances have a conditional median of \$110,000 in the SCF and \$130,100 in the CCP. The difference in the means, however, is more substantial and presumably reflects a difference in vacation and

investment property reporting.<sup>15</sup>

Some modest differences are worth noting. Home-secured debt rates are 52.6 percent in the SCF and 42.6 percent in the CCP after adjustment for SCF households without credit reports (the raw comparison is 47.0 versus 42.6 percent). It is not clear why we would observe a somewhat higher rate of home-secured debt in the SCF than in the CCP. The conditional median total debt level in the SCF is \$71,900, while the conditional median for the CCP is \$42,500. 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.

Credit card debt is observed at arbitrary points in the billing cycle for each report-holder in the CCP, and not at the start or end of the cycle in any systematic fashion. Hence our CCP measure contains both carried balance and some share of new charges that will be repaid during the billing cycle, before any interest accrues. We refer to the latter as convenience uses of credit cards. The SCF asks household financial respondents for two separate credit card debt amounts. First, respondents are asked to report the balance on each card after the most recent payment was made. We expect this measure to reflect the borrower's recollection of the carried balance on each card. Next, the respondent is asked the amount of any new charges on the latest bill for the account. If all new charges are repaid during the billing cycle, then this amount represents the convenience use of the card. If some are carried into future billing cycles, however, this figure represents a combination of carried and convenience balances. We generate an upper bound

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<sup>15</sup> 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 estimates for the residential real estate debt subcategories do not contain vacation and investment property debt. 5.3 percent of 2010 SCF households report any residential debt not secured by the primary residence.

measure of the amount of credit card debt observed in the SCF by adding the two figures together, so that our measure of SCF credit card debt consists of all carried balances currently held by borrowers plus all new charges from the last completed billing cycle on each card held by the borrower, and may therefore contain some double counting.<sup>16, 17</sup> This approach is used in generating the Table 1 aggregate balances and the Table 2 distributional characteristics.

The credit card debt rates, conditional median, and conditional mean comparisons suggest greater agreement between the borrower- and lender-side measures than one might infer from the aggregates. Table 2b indicates that, after correcting for SCF households without credit reports, 74.0 percent of SCF households and 73.6 percent of CCP households hold any credit card debt. The conditional medians and means reflect some difference in balances, however, with \$2000 versus \$3500 in credit card debt at the median, and \$5700 versus \$9600 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 balances reported by SCF borrowers (or high balances reported by CCP lenders).

Our ability to compare student debt distributions in the two sources suffers from the above-mentioned restrictions in the availability of household-level student debt measures in the CCP. We have chosen to generate the aggregate U.S. student debt balances implied by the SCF household-level and CCP individual-level observations for 2010 (April-December survey and third quarter data, respectively), and to infer from these measures, and the numbers of

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<sup>16</sup> The authors thank Joanne Hsu and Kevin Moore for suggesting this approach.

<sup>17</sup> We infer that this approach is generous from other SCF data. The 2007 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. 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.

households represented by the two datasets, the household-level mean student loan balance. The household means are reported in Table 2. Unlike other figures in Table 2, these reported means do not condition on holding positive debt in the category, as we are unable to determine from available data the proportion of CCP households with positive student debt balances in 2010Q3.

As suggested by the 25.7 percentage point gap in aggregate student debt between the SCF and CCP, the mean household-level student debt we infer for the SCF in 2010 is markedly lower than the debt we infer for the CCP in 2010. After removing households without credit reports, SCF households claim \$5500 in student debt balances on average, while CCP households show an average balance of \$7500.

Though the discussion in this section emphasizes prevalence, medians, and means, other moments of the SCF and CCP debt distributions may be of interest. Figure A1 depicts the mortgage and credit card balance densities in the SCF and CCP, after adjusting the SCF cells for a 0.106 proportion of households whose members have no credit reports. The resulting mortgage and credit card densities are fairly similar in the two data sources, excepting a higher reported mortgage prevalence in the SCF than in the CCP, and the lower credit card dollar amounts in the SCF than in the CCP, as described above.

We conclude that the prevalence of consumer use of each major debt category is unexpectedly similar in the two sources. The pattern of median and mean balances, conditional on borrowing, is also similar. However, reported household balances tend to be lower in the borrower-sourced data than they are in the lender-sourced data. The two categories in which we observe substantial mean balance gaps between the SCF and the CCP are credit card and student loan debt. Even under our most inclusive assumptions regarding SCF debt levels, unconditional mean credit card balances are 40 percent lower in the SCF than in the CCP, and unconditional

mean student loan balances are 27 percent lower in the SCF than in 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 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.<sup>18</sup> 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

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<sup>18</sup> As elsewhere in the paper, we use household weights in the comparison of CCP household head ages to those in the SCF and Census.

and a slight overrepresentation of middle-aged households in the CCP. We use our household head prediction method to predict household head ages in both the CCP and the SCF, and we compare features of the distribution of household debt 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 examine four debt categories in this and the following figures: mortgage, HELOC, vehicle loan, and credit card debt. Debt categories are color-coded. The age trajectories for each 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 loan, and credit card debt prevalences follow similar age patterns in the two data sets. Younger households appear to report slightly lower rates of credit card debt and vehicle loans in the SCF than in the CCP, but overall each pair of lines remains quite close over the full age distribution. The credit card debt prevalence curves for lenders and borrowers show the widest discrepancy. The differences in reported credit card debt rates range from -6 to 13 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 for most age groups with high degrees of confidence. However, the economic significance of the largest observed differences in debt rates

is comparatively modest, and the similarity in the levels and shapes of each pair of age profiles is striking.

The second and third panels of Figure 1 depict conditional medians and means for the four 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.<sup>19</sup> The age patterns of conditional debt balances are remarkably similar in the two data sets. The single exception to this pattern is credit card debt, whose levels again differ meaningfully in the two sources, though the scale of the difference is diminished in Figure 1 by comparison with mortgage means.<sup>20</sup>

Figure 2 depicts analogous 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 the case of total home-secured debt, where we are able to account for vacation and investment properties more comparably. Auto debt was significantly more prevalent in the SCF in 2001, and then significantly more prevalent in the CCP in 2010. Credit card 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.

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<sup>19</sup> Note however that the mortgage differences are approximately constant across the age groups, a profile somewhat at odds with what we expect for vacation and investment properties.

<sup>20</sup> Appendix Figure A2 demonstrates very similar age profiles of debt for 2007, indicating a high degree of stability of the age dependence of debt, and of the SCF-CCP similarity in these patterns, over the three years.

We can infer mean household student debt from CCP aggregates and the number of households represented by the CCP in each of 2004, 2007, and 2010, and therefore we are able to compare the time paths of unconditional mean student debt in the CCP and SCF. Since the patterns in the unconditional means are obscured by the scale of Figure 2 (a)-(c), we present the unconditional student debt means on their own in panel (d). While the proportional gap between SCF and CCP aggregate student debt estimates in Table 1 is reasonably stable over time, the unconditional mean student debt we estimate at the household level based on the SCF and CCP diverges over this time period. In 2004, the SCF student debt mean estimate is 76 percent of the CCP estimate. In 2007 it has fallen to 71 percent, and by 2010 the SCF estimate is only 66 percent of the CCP estimate.<sup>21</sup>

The potential explanations for the student debt gap are varied. The difference in the populations represented by the two sources as a result of the presence or absence of credit reports should play little role, as most student debts generate reports. There is the possibility that not all student loan servicers report all student debts to Equifax, but this should reduce the CCP means and hence the measured gap with the SCF. The non-institutional sample of the SCF may lead to omission of debt held by students living in dormitories and other institutional housing. Its use of household-level financial reporting by a single “financial respondent” may lead to undercounting of student debts held by grown children or other household members that are not fully known to the household’s financial respondent. And of course respondents may not be fully aware of their current debt balances. A combination of the latter three factors could produce the type of balance gaps we observe in Figure 2(d).

Figure 3 looks at the patterns by region of the country. The figures for the SCF are derived from Bricker et al. (2012), since Census region is not available in the public data set. As a result,

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<sup>21</sup> See Table 4 for details.

we are unable to adjust Bricker et al.'s SCF credit card debt use and balances to add new charges on the last bill to the balance after the last card payment, reducing the credit card debt prevalence and balances substantially relative to Figures 1 and 2. Further, we are unable to add lease balances to the auto debt measures in Bricker et al., leading to slightly lower auto debt prevalence and balances. 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 removal of new credit card charges required by the limited availability of the SCF regional data allows us to demonstrate the effect of new charges on our credit card debt comparisons. Without new charges, the Figure 3 credit card debt prevalence is much lower for the SCF than for the CCP. Differences by region vary from 32 to 38 percentage points. However, balances conditional on positive debt are now approximately coincident for the CCP and SCF. Hence the inferred source of the measured gap in credit card debt between the borrower- and lender-side data depends heavily on one's treatment of new charges. If one includes all SCF new charges in credit card debt, the difference is attributed almost entirely to reported balances. However, if one omits new charges from SCF balances, then the difference is attributed almost entirely to the rate at which borrowers report any credit card use.

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.<sup>22</sup> Credit card and student loan mean debt differences, as expected, are not only large but differ significantly from zero. Given sample sizes, most other prevalence and mean comparisons in

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<sup>22</sup> 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.

Table 2b and Figures 1-3 meet standard significance criteria. In other words, credit card and student debt balances 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 include the Table 2b credit card debt and vehicle loan prevalence rates and the Figure 2a 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 roughly 40% of the CCP credit card debt estimate.<sup>23</sup> 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 balances, with SCF households reporting only 40 percent of the balances that appear on CCP households' credit reports. As discussed, the prevalence of credit card use inferred from each source is quite similar. Figure 4 demonstrates that the underreporting of credit card debt balances is universal, but greatest among prime-aged households. Borrowers under 35 and over 75 show the closest match between lender- and borrower-side credit card debt reports. This pattern appears to be stable over time. However, we observe a substantial improvement in the SCF-CCP match for middle aged borrowers from 2007 to 2010, as well as some weakening of the match for borrowers nearing retirement.

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<sup>23</sup> Note that this gap is already smaller than the over 50% gap discussed by Zinman. We discuss the time trend in the gap since Zinman's study in the following subsection.

A factor that we have ignored to this point 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?,” “After the last payment was made, roughly what was the balance still owed on this account?,” and “On your last bill(s), how much were the new charges made to (this account/these accounts)?”

<sup>24</sup> (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. 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 2010, this generates an estimate of the prevalence of unreported business borrowing on personal cards in the 2010 SCF of 3.81 percent.<sup>25</sup>

Regarding balances, 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

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<sup>24</sup> The authors thank Neil Bhutta for data on the magnitude of business uses of personal credit cards.

<sup>25</sup> Some of these 3.81 percent of households with small business credit card debts would, of course, also hold personal credit card debts, implying that the change in the prevalence of credit card borrowing that we measure in the SCF would be less than 3.81 percent.

average \$9353.<sup>26</sup> 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 2010 SCF, and inflating to 2010 dollars as done throughout the paper, we calculate a contribution to average SCF credit card debt of \$218.37.

This amount does not explain a majority of the large SCF-CCP balance discrepancy, but it is not insubstantial. Adding this generous estimate of small business usage, and removing the inferred portion of SCF households without credit reports, leads to a 2010 SCF unconditional mean credit card balance of \$4437, which may be compared to the CCP unconditional mean of \$7066, leaving a gap of 37 percent of the CCP mean household balance.

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 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.<sup>27</sup> 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 narrowed*

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<sup>26</sup> Small businesses here are again defined as those with 50 or fewer employees. Source Federal Reserve (2010).

<sup>27</sup> See Lee and van der Klaauw (2010) for further detail on inactive accounts.

*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 2001-2010, 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.

While the SCF-CCP match between credit card prevalence and conditional median balance are quite stable over time, the difference in conditional median balances narrowed from 53 to 36 percent of the CCP value between 2001 and 2007. By 2010, however, the gap had returned to 41 percent. The overall trend in the similarity of lender and borrower-reported credit card balances is encouraging.

*d. Evidence of meaningful reporting heterogeneity in 2010 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.<sup>28</sup> This is an appropriate correction if credit 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

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<sup>28</sup> Examples include Bertaut and Haliassos (2009), Gross and Souleles (2002), Telyukova (2008), Telyukova and Wright (2008), and Zinman (2007).

inappropriate.

Our results show relatively homogenous underreporting of unconditional credit card balances by region and age, with the exception of retirees, who under all measures maintain low credit card balances. Further, we find these patterns to be very stable over time. Though these findings fall far short of being able to rule out all (observable and unobservable) types of reporting heterogeneity, 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.<sup>29</sup> 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 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), from limited information on other household members'

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<sup>29</sup> The unweighted figure is 55 percent in person.

debts, 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.<sup>30</sup> 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 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

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<sup>30</sup> See Federal Reserve (2011).

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 filed for 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 5 reports 2001, 2004, 2007, and 2010 bankruptcy rates in the SCF and CCP under various conditions. We find that the SCF 3 year bankruptcy rates, 2.90, 2.91, 2.25, and 2.70 in 2001, 2004, 2007, and 2010, respectively, are very similar to the CCP 24 month household bankruptcy rates of 2.70, 2.98, 1.97, and 2.65. 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 CCP 24 month household bankruptcy rates, however, fall to 2.06, 2.34, 1.61, and 2.17, respectively. Further, the analogous CCP individual 24 month bankruptcy rates are 1.74, 1.88, 1.20, and 1.59. 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 5 suggest little if any underreporting of

bankruptcy in the SCF. CCP two year rates fall squarely between SCF one and three year rates for one to two adult households. 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.<sup>31</sup>

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.<sup>32</sup> 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.<sup>33</sup>

#### *f. Singles versus Couples*

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, and thus not included in the CCP. Therefore some CCP households that

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<sup>31</sup> 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 of 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.

<sup>32</sup> 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.

<sup>33</sup> The authors thank Dean Karlan for this observation.

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. However, as average debt levels were higher in the CCP overall, it is not entirely surprising to see this to be true for any given 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.<sup>34</sup>

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

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<sup>34</sup> 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.

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.<sup>35</sup>

#### **IV. Implications of reporting accuracy for debt repayment**

As discussed above, the match between borrower and lender credit card and student loan debt reports is shown to be weak relative to other debt categories in our SCF-CCP comparison, and elsewhere. Credit card and student debt are generally recognized to be of relatively low repayment quality.<sup>36</sup> Mortgages, HELOCs, and vehicle loans carry substantially lower delinquency rates. Given that reporting quality for credit card and student debt appears to be substantially worse than reporting quality for mortgages, HELOCs, and vehicle loans, the relationship we observe between reporting quality and repayment quality by debt type is consistent with a claim that inaccurate debt reporting is associated with poor repayment outcomes.

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<sup>35</sup> 2010 figures are similar. We focus on (late) 2007 in determining the possible magnitude of non-PEU members' debt as it is near the peak of consumer debt to date.

<sup>36</sup> Gross and Souleles (2002b), for example, report an 8.2 percent 3-cycle delinquency rate among a large, representative pool of 1995 U.S. credit card accounts. Further evidence is available in Federal Reserve Bank of New York (2011).

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. 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 some evidence of a positive association between debt reporting quality and repayment. This may be unsurprising, 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 also find a substantial gap in credit card debt reporting between the SCF and the CCP, with the raw gap equal to roughly 40 percent of the lender-reported debt level. Generous accounting for differences in the two data sources' sampling design and small business uses of credit cards narrows the difference in unconditional average household credit card debt to 37 percent of the lender-reported debt level. However, more realistic assumptions would presumably leave a somewhat larger difference, and these adjustments stop far short of reconciling the two measures.

We also find a noteworthy gap in the lender- and borrower-reported levels of the other major uncollateralized debt category, student loans. Aggregate student loans inferred from the

SCF are 25.7 percent lower than those inferred from the CCP. This gap may be explained by various measurement differences that would lead debts evident in the CCP not to appear in the SCF.<sup>37</sup> Outside measures of aggregate student debt, though limited, tend to be similar to, or greater than, the CCP figure, and hence far larger than the SCF figure. Overall we observe a pattern of (evident) under-reporting of uncollateralized debts, along with comparatively reliable reporting of collateralized debts. Given the poorer repayment rates we observe for uncollateralized debts, this may suggest an association between debt awareness and debt repayment quality.

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-

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<sup>37</sup> Though, as discussed above, any limitation in servicer reporting could lead some debts appearing in the SCF to be omitted by the CCP.

reports and lender-reported data.<sup>38</sup> 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 provide 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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<sup>38</sup> 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: Comparison of SCF and CCP Aggregates**

Debt Category	Year	Aggregate balance		Debt Category	Year	Aggregate balance	
		SCF	CCP			SCF	CCP
<i>Total debt</i>				<i>Student debt</i>			
	2004	10,192	10,158		2004	291	380
	2007	11,800	12,740		2007	397	555
	2010	11,512	11,844		2010	578	778
<i>Home-secured debt</i>				<i>Credit card debt</i>			
	2004	8,522	7,631		2004	424	812
	2007	10,012	10,034		2007	519	858
	2010	9,648	9,282		2010	440	731
<i>Auto debt</i>				<i>Other debt</i>			
	2004	747	864		2004	448	472
	2007	785	859		2007	360	434
	2010	596	710		2010	449	343

Aggregate balances reported in billions of 2010 US dollars.

**Table 2a: SCF 2010 v. CCP 2010 Household Debt by Account Type**

Debt Category	% of households		Median		Mean	
	SCF	CCP	SCF	CCP	SCF	CCP
Overall debt	75.1	84.0	\$71,900	42,500	130,700	114,900
Overall home-secured debt	47.0	42.6	109,600	123,400	154,300	181,400
Mortgages or home equity loans	45.2	40.3	110,000	130,100	151,800	186,700
Home equity lines of credit	7.2	9.2	26,400	34,700	54,500	62,700
Vehicle installment loans	32.7	38.3	11,000	12,400	15,500	16,200
Education installment loans	19.2	--	13,000	--	5,500	7,500
Credit card balances	66.2	73.6	2,000	3,500	5,700	9,600

**Table 2b: SCF 2010 v. CCP 2010 Household Debt by Account Type, corrected prevalence**

Debt Category	% of households		Median		Mean	
	SCF	CCP	SCF	CCP	SCF	CCP
Overall debt	84.0	84.0	\$71,900	42,500	130,700	114,900
Overall home-secured debt	52.6	42.6	109,600	123,400	154,300	181,400
Mortgages or home equity loans	50.6	40.3	110,000	130,100	151,800	186,700
Home equity lines of credit	8.1	9.2	26,400	34,700	54,500	62,700
Vehicle installment loans	36.6	38.3	11,000	12,400	15,500	16,200
Education installment loans	21.5	--	13,000	--	5,500	7,500
Credit card balances	74.0	73.6	2,000	3,500	5,700	9,600

\*Note: Per capita student loan balance for the CCP is calculated by dividing the aggregate student balance measured for 2010Q3 by the number of households represented by the CCP in 2010Q3. It is an unconditional figure, and hence is compared to the unconditional per household student debt in the SCF.

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

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: Comparison of SCF and CCP Average Student Debt Balances**

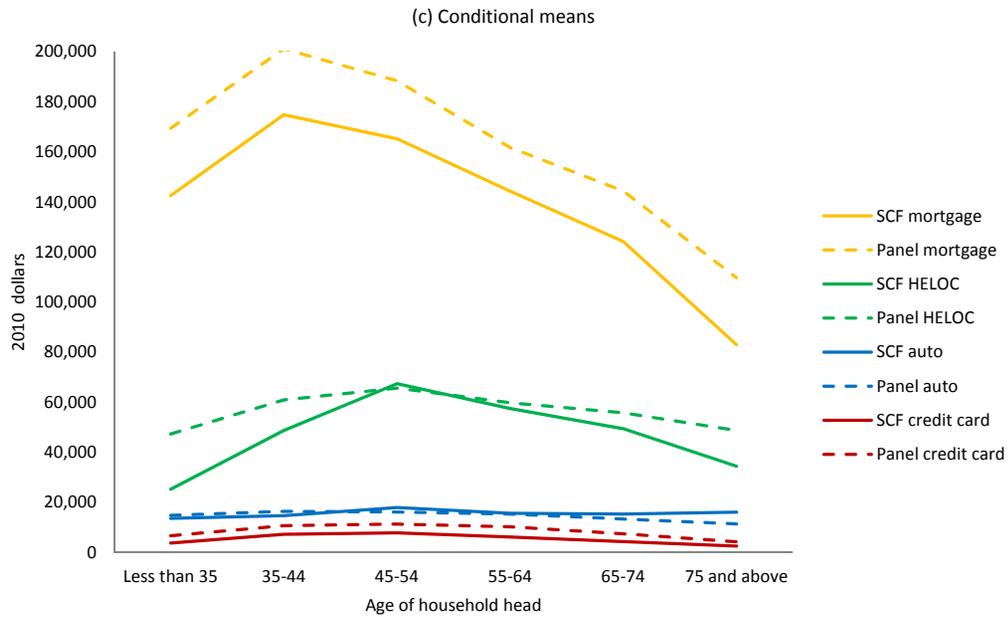
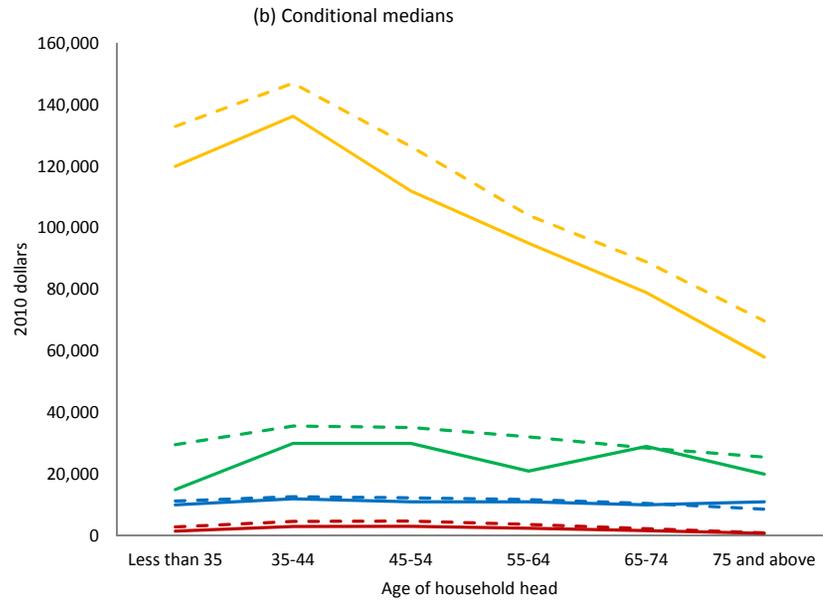
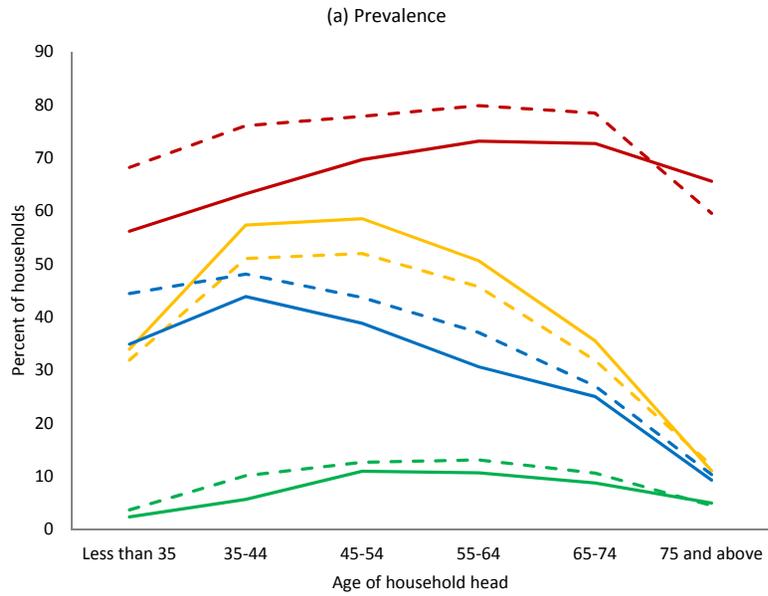
Year	Unconditional mean balance per household		
	SCF	CCP	SCF as % of CCP
2004	2,592	3,419	0.76
2007	3,420	4,850	0.71
2010	4,915	7,496	0.66

Household balances reported in 2010 US dollars.

**Table 5: Percent of consumers or households filing for bankruptcy**

Year	All household sizes			Individual CCP 2 year
	SCF 1 year	SCF 3 years	CCP 2 year	
2001	1.18	2.90	2.70	
2004	1.20	2.91	2.98	
2007	0.93	2.25	1.97	
2010	1.45	2.70	2.65	
Year	1 or 2 adults in household			Individual CCP 2 year
	SCF 1 year	SCF 3 years	CCP 2 year	
2001	1.21	2.97	2.06	1.74
2004	1.17	2.87	2.34	1.88
2007	0.96	2.34	1.61	1.20
2010	1.27	2.47	2.17	1.59

Figure 1: SCF and CCP Consumer Debt Rates by Age, 2010



- SCF mortgage
- - Panel mortgage
- SCF HELOC
- - Panel HELOC
- SCF auto
- - Panel auto
- SCF credit card
- - Panel credit card

Figure 2: SCF and CCP Consumer Debt by Year

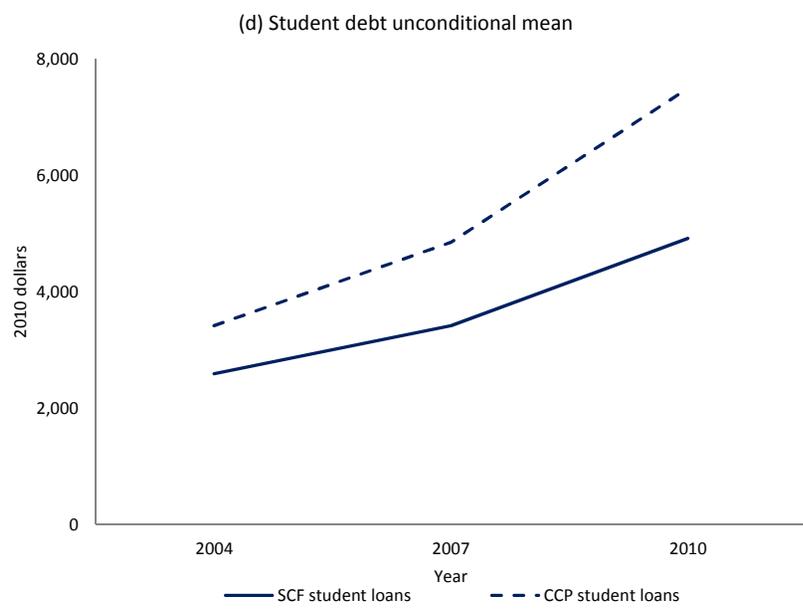
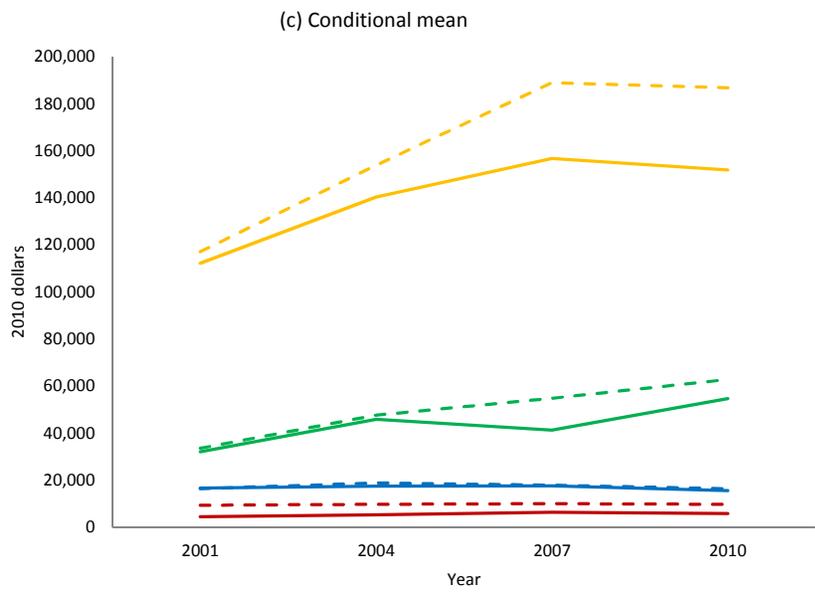
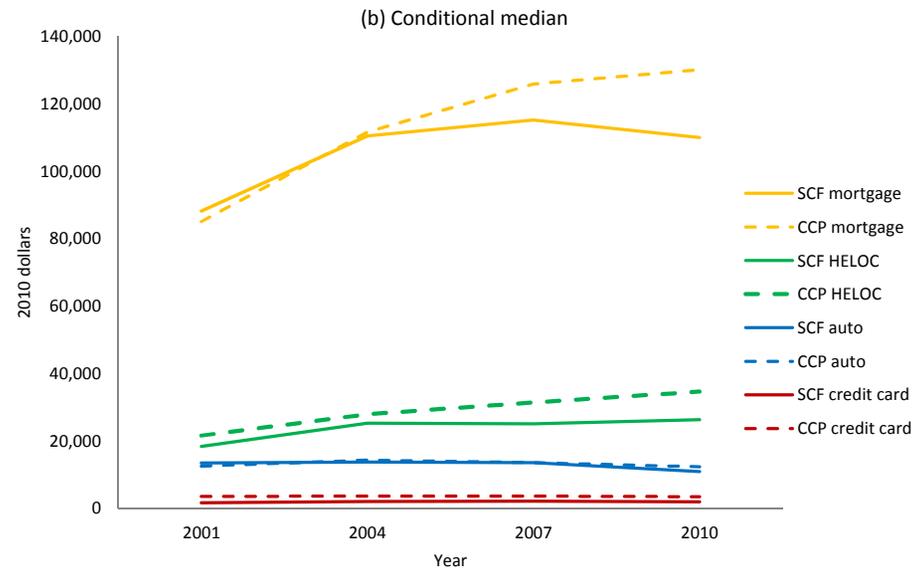
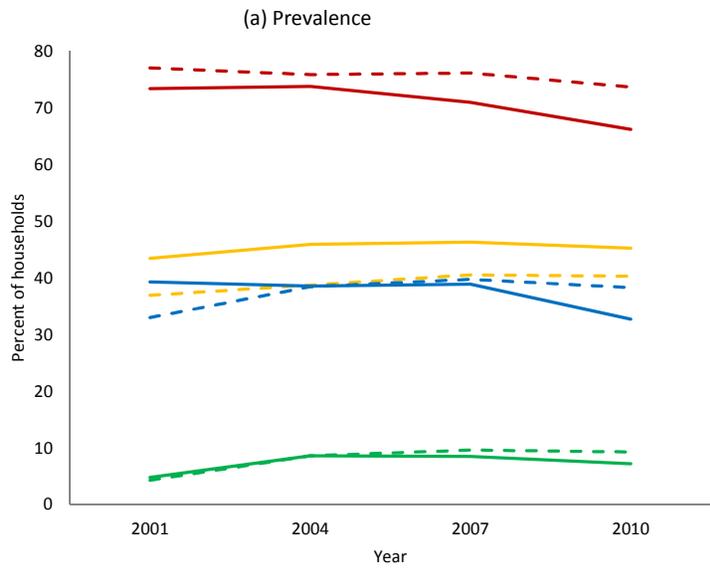
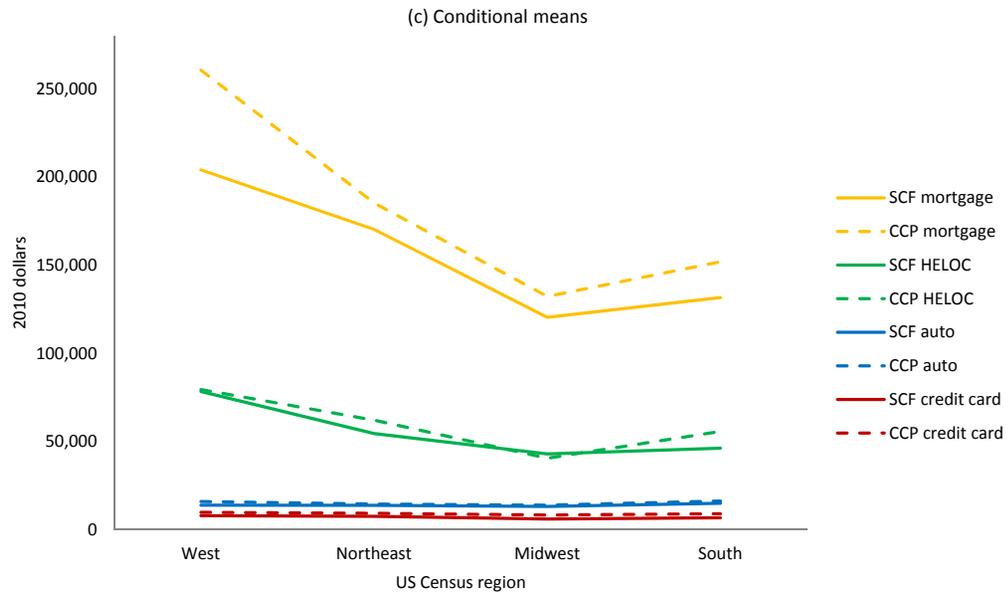
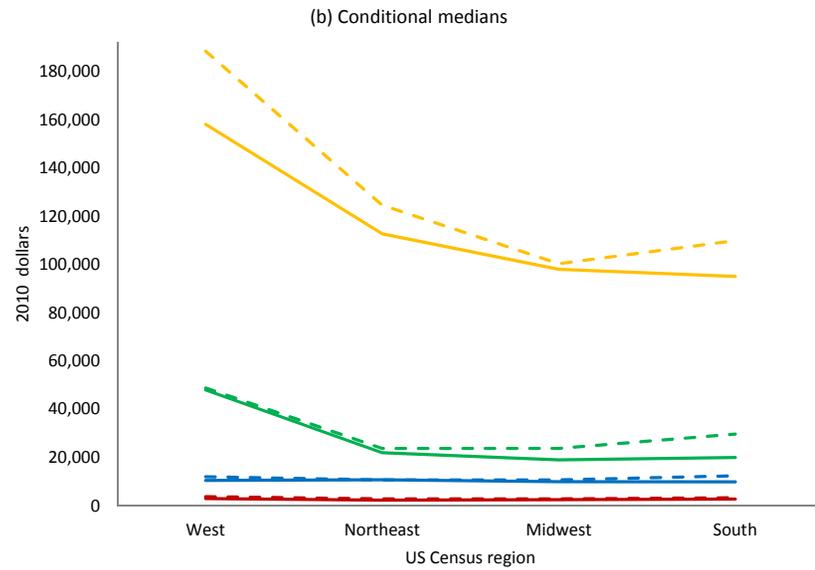
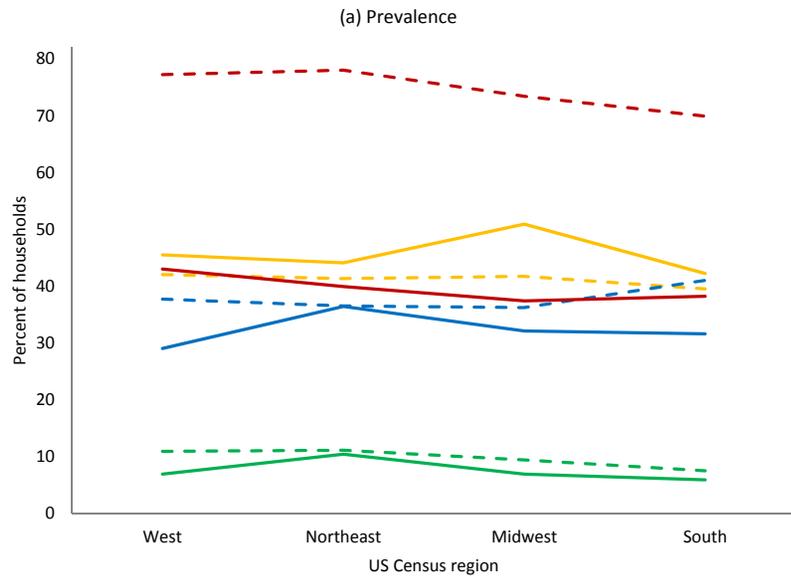


Figure 3: SCF and CCP Consumer Debt Rates by Region, 2010



- SCF mortgage
- - - CCP mortgage
- SCF HELOC
- - - CCP HELOC
- SCF auto
- - - CCP auto
- SCF credit card
- - - CCP credit card

Figure 4: SCF and CCP Credit Card Debt by Age

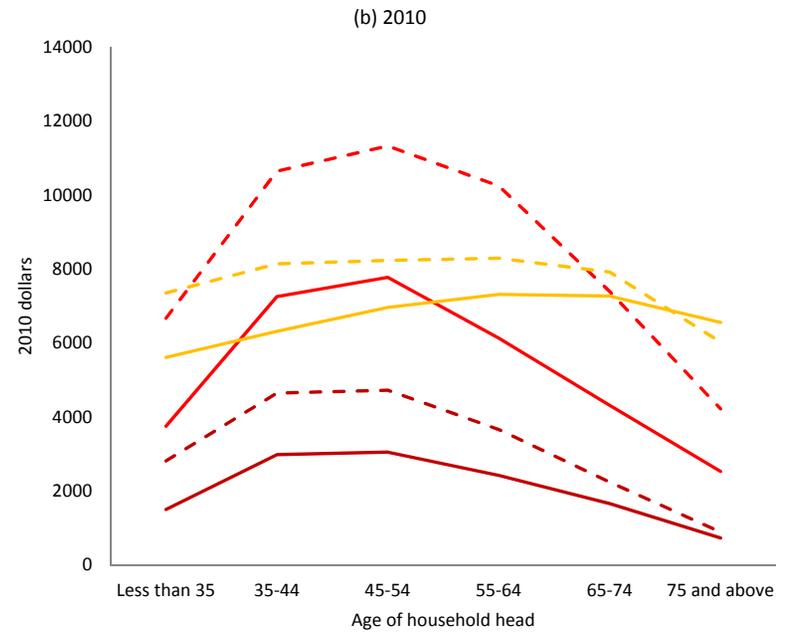
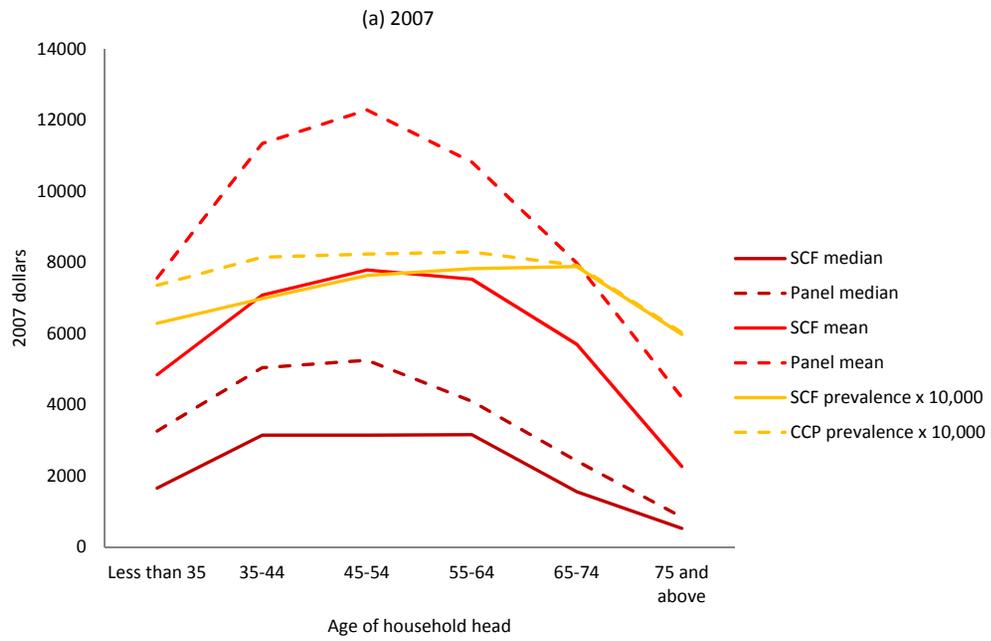


Figure 5: SCF and CCP Credit Card Debt by Year

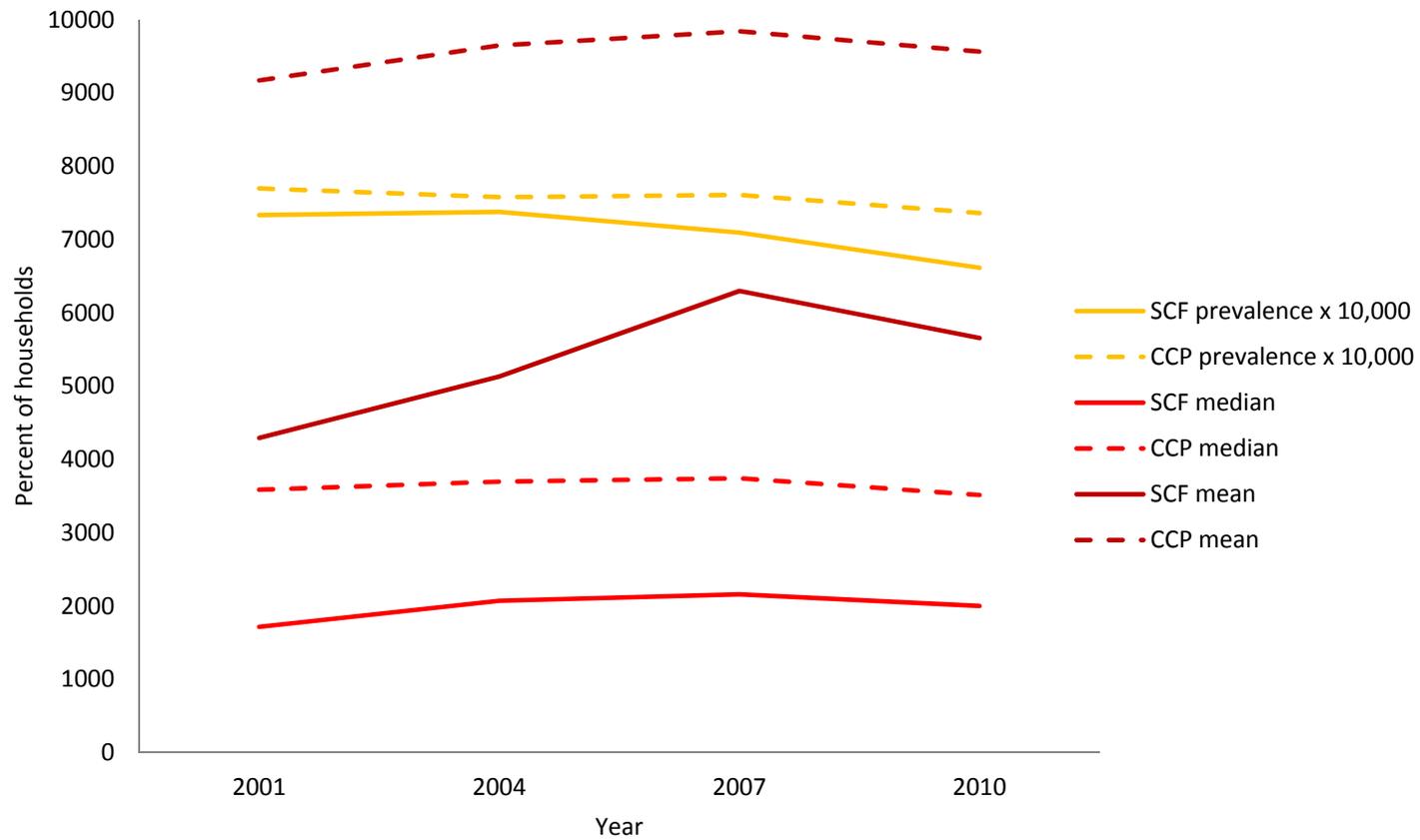


Figure 6: SCF and CCP Consumer Debt by Household Size, 2010

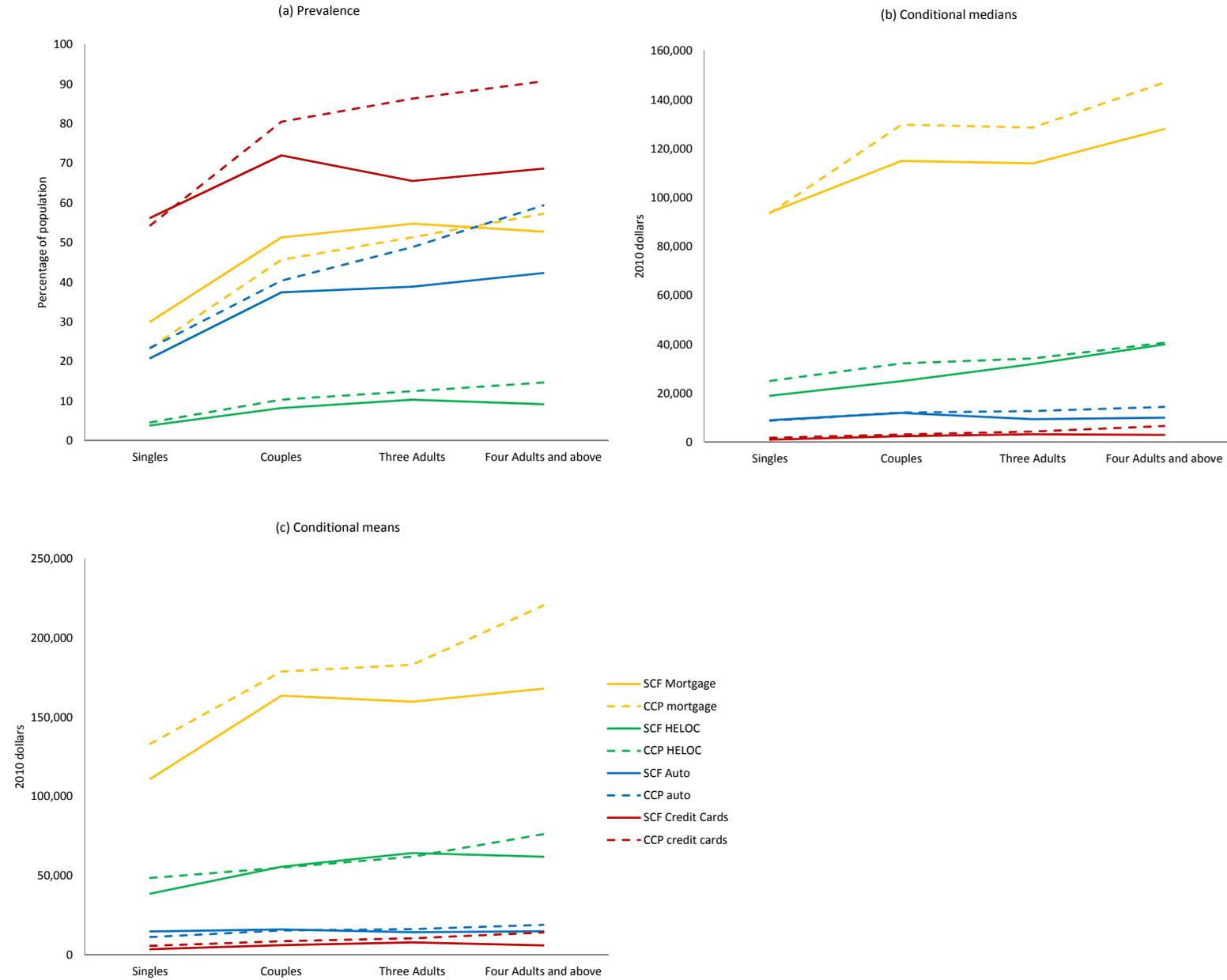


Figure A1: Mortgage and Credit Card Densities in the SCF and CCP, 2010

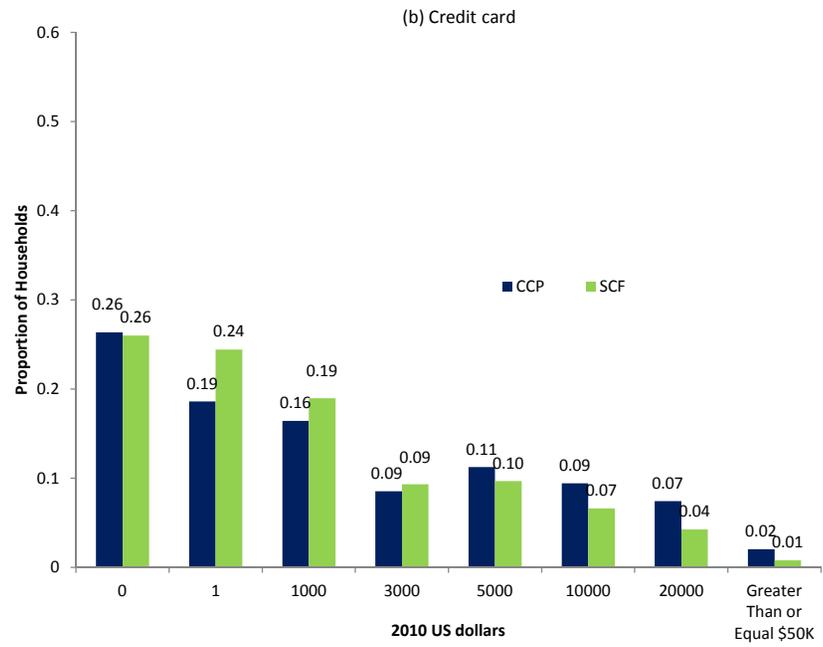
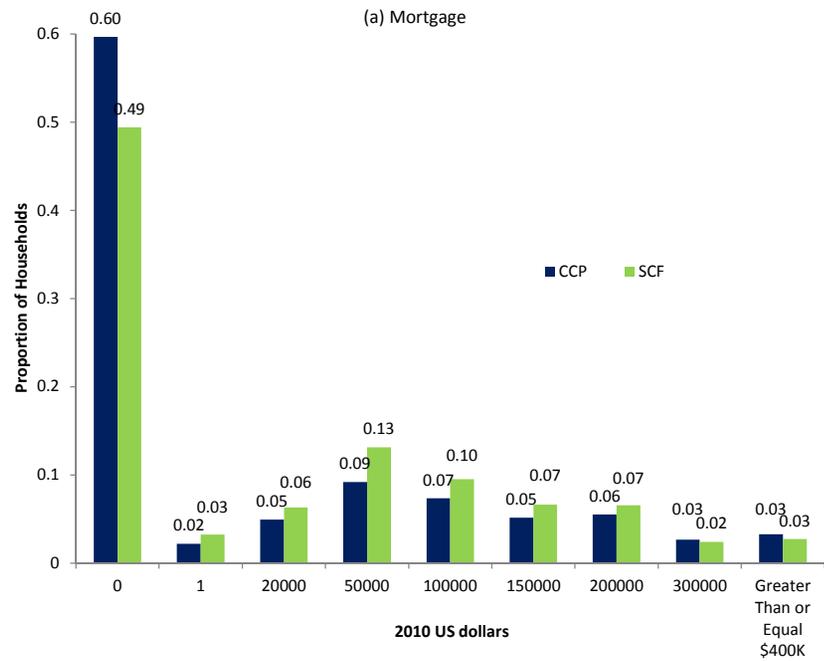


Figure A2: SCF and CCP Consumer Debt by Age, 2007

