Does Community Access to Alternative Financial Services Relate to Individuals' Use of These Services? Beyond Individual Explanations

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Abstract

There is concern that the increasing number of alternative financial services in communities across the US is risking individuals' financial health by increasing their use of these high-cost services. To address this concern, this study used restricted-access, zip code data from nationally representative samples of adult individuals and examined whether the density or concentration of alternative financial services within communities related to individuals' use of these services. The associations between community density and individuals' use varied by annual household income: Communities' higher density of alternative financial services was associated with the increased probability that modest and highest income individuals ever used these services, while higher density was associated with more chronic use among lowest income individuals. State regulation that prohibited payday lenders was protective for modest and highest income individuals, but had no effect for lowest income individuals. Policy implications are discussed.

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Introduction

An individual's use of alternative financial services—including auto title lenders, payday lenders, tax refund and anticipation lenders, pawn shops, and rent-to-own stores—is likely more than an individual phenomenon. Residential community characteristics may also shape an individual's use of these services, in addition to other financial behaviors. This is not meant to discount individual explanations of financial behavior; instead, a fuller explanation of financial behavior may be offered by simultaneously considering whether and how community characteristics relate to financial behavior. In order to understand the potential effects of community characteristics, consider an example regarding physical health. The amount of income that an individual earns may interact with the characteristics of their community, such as the accessibility of grocery stores and pharmacies, for explaining their physical health outcomes like premature death (Roux, 2001; Yen & Kaplan, 1999). From this perspective, declines in physical health by individual income may occur more rapidly when communities have fewer health-related resources (Roux, 2001). Something similar may be true of an individual's financial behaviors. Gradients of financial behaviors by individual income may become stronger depending on the accessibility of financial services within communities. Specifically, access to alternative financial services within communities may help to explain individuals' use of these services—with and beyond individual characteristics like income or financial literacy.

The accessibility of alternative financial services is increasing within communities across the US, due in part to policy interventions that have shifted the financial services landscape over

the last few decades. Federal deregulation of the financial services industry in the 1990s had the dual effects of allowing mainstream banks to pivot from primarily serving the communities in which they were located to serving larger geographic regions and providing alternative financial services with opportunities to expand into the communities once served by mainstream banks (Apgar & Herbert, 2006; Federal Deposit Insurance Corporation [FDIC], 1997, 2009). As a result of these trends, the number of alternative financial services increased nearly five-fold between 1986 and 1994 alone (Caskey, 1994) and has grown at a steady annual rate of 15% since the mid 1990s (Apgar & Herbert, 2006). Currently, the alternative financial services industry is estimated to earn around $300 billion annually by charging high interest rates on products and services from customers who are more likely to earn lower and modest incomes and to have limited credit histories (FDIC, 2009).

While alternative financial services fill a void for those who need money and may not be able to access or have been turned away by mainstream banks and credit unions, individuals risk their financial health when they use these services (Baradaran, 2013, 2015; Caskey, 1994). Some evidence suggests that using alternative financial services is associated with carrying more debt, having lower credit scores, and struggling to pay bills (Bhutta, 2014; Bhutta, Skiba, & Tobacman, 2015; Melzer, 2011). Taken together, of concern is that more alternative financial services are opening in communities across the US and individuals may increase their use of these services as they become more accessible. These trends have the potential to do more harm than good if individuals find themselves financially worse off after using these services.

To date, there is relatively little empirical support for the concern that increased community access to alternative financial services relates to an individual's use of these services. In other words, even amidst evidence that suggests using these services can relate to poorer financial health (Bhutta, 2014; Bhutta, et al., 2015; Melzer, 2011), there is no direct test of

whether increased access relates to increased individual use. The study presented in this article[1] tests whether the accessibility of alternative financial services within communities is associated with individuals' use of these services and whether income and accessibility interact to explain this association. Making use of restricted-access, zip code data from a nationally representative sample of adult individuals, we measure the density of alternative financial services within communities—in other words, the concentration of these services—and link that density to individuals' services use. This article begins by reviewing the literature on individual and community explanations of alternative financial services use. Next, a theoretical framework is presented to explain these relationships. This is followed by the presentation of the data and results. The article concludes by discussing the findings and their implications for policy.

Individual Explanations of Alternative Financial Services Use

There are several popular explanations in the existing literature for why individuals use alternative financial services. A first explanation suggests that individuals lack the financial and mathematical knowledge necessary for understanding complicated financial products and making rational financial decisions (Anderson, Zhan, & Scott, 2007; Bertrand & Morse, 2011; Lusardi & de Bassa Scheresberg, 2013). For example, individuals would not borrow from alternative financial services if they knew how much the loans could cost them in interest. Twenty percent interest on a $500, two-week loan can translate into an annualized percentage rate (APR) of over 1,000%. Unquestionably, this APR is exorbitant compared to the average APR of 4% on loans from mainstream banks (Saunders & Schumacher, 2000). A second explanation is one of credit constraints (Bhutta et al., 2015; Birkenmaier & Fu, 2015; Servon & Castro-Cosío, 2015). Without access to credit from mainstream banks, individuals may be willing to pay exorbitant interest

[1] During the analyses and write-up of this current study, several previous studies on payday lending were implicated in an open-records investigation into the influence that the alternative financial services industry had on previous studies' results. We chose not to cite the studies that were implicated and for more information on this investigation, please visit the following website: http://www.huffingtonpost.com/entry/payday-loan-study_5633d933e4b00aa54a4e4273. We also note that we did not receive any funding to conduct our current study.

rates tomorrow for being able to borrow the money they need today. Access to credit from mainstream banks may be impeded by a variety of individual characteristics, such as having poor credit history or lacking the necessary identification or documentation to use these services. Regardless of the reasons for being credit constrained, individuals tend to use alternative financial services after they have exhausted their options in the financial mainstream (Bhutta, Skiba, & Tobacman, 2015; Lusardi, Schneider, & Tufano, 2011).

Community Access and Alternative Financial Services Use

Recent efforts to regulate and place limits on access to alternative financial services suggest that there may be another explanation for an individual's use of these services, one that considers community access. States have increased their regulation of payday lenders over the last few years, with 20% of states in 2006 prohibiting payday lenders from operating within their borders to 29% in 2011 (Bhutta, 2014). Payday lenders are a specific type of alternative financial service that sells short term loans at high interest rates and is often credited with keeping borrowers in a cycle of debt (Pew Charitable Trusts, 2015). While regulation is increasing in response to an expanding alternative financial services industry, it is unclear whether regulation has actually led to a reduction in these services given that legislative loopholes allow their operation to continue (Bhutta, 2014; Chin, 2004). The Consumer Financial Protection Bureau (CFPB; 2015), which is a government agency tasked with protecting consumers and regulating the financial services industry, recently proposed that auto title and payday lenders take borrowers' income and expenses into consideration when issuing a loan, cap loans at $500, and help borrowers repay their loans and get out of debt (Pew Charitable Trusts, 2015). One could assume that these regulations would be unnecessary if alternative financial services use was purely an individual phenomenon.

Empirical evidence on community access to or density of financial services is just beginning to emerge. Most of this research aims to determine whether alternative financial

services target vulnerable communities, such as by locating more often in communities with higher percentages of poor and or minority populations (Burkey & Simkins, 2004; Dunham & Foster, 2015; Gallmeyer & Roberts, 2009; Graves, 2003; Graves & Peterson, 2005; Smith, Smith, & Wackes, 2008; Temkin & Sawyer, 2004). This research tends to focus on payday lenders and the evidence supports the contention that vulnerable communities are targeted by these services. For example, measuring the density of payday lenders within 2000 Census block groups in Colorado, Gallmeyer and Roberts (2009) found that higher concentrations of these lenders were associated with communities that had higher percentages of residents who were living in poverty and were minority and foreign born. Across four counties in Pennsylvania, Smith, Smith, and Wackes (2008) similarly found that higher concentrations of payday lenders were associated with 2000 Census block groups whose residents had lower incomes. Moreover, these alternative financial services tended to locate in communities that had been avoided or vacated by mainstream financial services like banks and credit unions (Burkey & Simkins, 2004; Smith, Smith, & Wackes, 2008). Taken together, this research assumes that individuals use these services more often and experience poorer financial health when alternative financial services are more densely located within their communities; however, existing research has been unable to test this assumption directly.

A few studies have linked the density of alternative financial services within communities to individuals' financial health (Bhutta, 2014; Bhutta et al., 2015; Melzer, 2011; Morgan, Strain, & Seblani, 2012; Morse, 2011). Bhutta (2014) analyzed 10 years of data from the Federal Reserve Bank of New York's Consumer Credit Panel, finding that residents living in counties situated closer to states that authorized payday lending also used these lenders at higher rates. While payday lending use had a small, negative effect on individuals' credit scores, there was no effect on new credit delinquencies or overdrawn credit (Bhutta, 2014). A follow-up study found little effect of payday lending use on borrowers' credit scores (Bhutta, Skiba, & Tobacman,

2015). In other words, using and continuing to use payday lenders had rather small consequences for the credit ratings of individuals who already had very poor credit ratings. One of the more comprehensive studies to test the effects of alternative financial services on individuals' financial health used data from the National Survey of American Families. This study found that greater access to payday lenders was associated with individuals' increased financial problems like delaying medical treatment and struggling to pay bills (Melzer, 2011). These relationships became more pronounced as access to payday lenders increased over time, such as by having more lenders open businesses within communities. Moreover, the relationship between individuals' income and alternative financial services use was nonlinear (Elliehausen, 2006; Melzer, 2011), suggesting a potential interaction. The effects of payday lending on individuals' financial health were strongest for those whose annual incomes fell between $15,000 and $50,000. Individuals with incomes below $15,000 or above $50,000 were less likely to use payday lenders. In other words, individuals with modest incomes—who could more easily meet payday lenders' eligibility criteria like having a regular income and owning a checking account when compared to their lowest income counterparts—were most likely to use payday lenders and did so with greater risk to their financial health. While none of these studies directly measures individuals' use of alternative financial services, they test an important link between increased access to these services and individuals' financial health.

The Hypothesized Roles of Social and Structural Mechanisms

Increased access leading to increased use provides a parsimonious explanation of financial behaviors. In reality, community access to alternative financial services may relate to an individual's increased use of these services, beyond an individual using these services solely out of convenience due to increased access. We propose that social and structural mechanisms may help to explain the relationship between increased access and increased use and that their hypothesized roles are worthy of consideration. In particular, the collective institutional efficacy

of a community may be one underlying social mechanism that can explain these effects, if in fact a community's individual members hold collective beliefs about their ability to exercise control over outcomes (Bandura, 2000; Morenoff, Sampson, & Raudenbush, 2001) and if those beliefs are related to the density of a community's existing financial services.

Collective institutional efficacy is rooted in theory and research on self-efficacy (Bandura, 1997) and institutional efficacy (Elliott & Sherraden, 2013). In Bandura's (1997) conceptualization of self-efficacy, individuals are agents who are capable of applying behaviors to produce outcomes. The term, 'collective efficacy,' which is an extension of self-efficacy, refers to an emergent effect that arises from shared beliefs about the community's ability to exercise control over outcomes (Bandura, 2000) and is often used to explain community violence and crime (Morenoff, Sampson, & Raudenbush, 2001; Sampson, 1997). For example, a community's level of violence may be reduced when collective efficacy is high (e.g., the extent to which trust exists among neighbors, whether neighbors intervene on behalf of the community; Garbarino & Kostelny, 1992; Morenoff, Sampson, & Raudenbush, 2001; Sampson, 1997, 2008). The term 'institutional efficacy' is used to refer to community members' beliefs that "using institutional resources" can produce "designated levels of performance that influence events that affect their lives" (Elliott & Sherraden, 2013, p. 38). In this context, institutional resources may include alternative financial services, which individuals perceive can be leveraged to achieve designated or desired financial outcomes. We propose that these individual perceptions of alternative financial services create an emergent effect, such that the exposure to alternative financial services within a community may shape community members' shared beliefs about using these services, perhaps with greater frequency, to pay bills or deal with an unexpected financial emergency.

It may be that an individual member of a community develops beliefs about the extent to which their community and the financial services within it—based on the concentration,

accessibility, or density of these services—can enable or hinder the achievement of their life outcomes. The more these services are accessible or densely concentrated within a community, the more likely that the community's residents are to collectively believe these services can be leveraged to achieve their desired outcomes. An individual may adopt their community's shared beliefs about alternative financial services, thus relating to their own use of these services. Given that individual members of the same family often adopt similar financial behaviors (Pinto, Parente, & Mansfield, 2005; Shim, Barber, Card, Xiao, & Serido, 2010), it is reasonable to assume that an individual can adopt their community's shared beliefs about alternative financial services and that these beliefs can relate to their use of such services. As a preliminary test, this study explores whether the density of alternative financial services with a community relates to an individual resident's use of these services.

Structural mechanisms like employment opportunities or income levels offer a competing explanation of the relationship between increased access and increased use. For example, the percentage of residents living in poverty could explain any links between a community's access to alternative financial services and an individual's use of these services. An individual might be more likely to use alternative financial services when they live in a community that has a high density of these services and a higher percentage of residents living in poverty. Taken together, the presence of alternative financial services and poverty may suggest that the community has limited structural capacity for protecting residents from relying on risky or high-cost financial services. Along these lines, this study measures structural mechanisms that have been controlled for in previous research, including the percentages of the population that were from racial or ethnic minority groups, living at or below 150% of poverty, and were unemployed (Bhutta, 2014; Gallmeyer & Roberts, 2009; Graves, 2003; Melzer, 2011).

Research Questions

This study provides one of the first, direct tests of whether the density of alternative financial services within a community relates to an individual's probability of using these services and using these services with increased frequency. Given the nonlinear relationship between income and alternative financial services use that emerged in previous research (Elliehausen, 2006; Melzer, 2011), we conduct a direct test of interaction between income and the density of alternative financial services among a total sample of adult individuals. We also test the relationship between community density of alternative financial services and individuals' use of these services within three separate income groups: individuals whose reported annual household incomes are lowest (< $15,000), modest ($15,000 to < $50,000), and highest (≥ $50,000).

Methods

Data Sources

The 2012 National Financial Capability Study was commissioned by the FINRA Investor Education Foundation and was completed online by a sample of 25,509 adults in the United States between July and October 2012, which was nationally representative when population weights were applied. Lusardi (2011) has provided a detailed description of the NFCS and the data can be freely downloaded from the FINRA Investor Education Foundation website.[2] Although the NFCS was cross-sectional and causal interpretations of findings produced from the observational data would be ill-advised, the NFCS was designed for the express purpose of studying various aspects of financial health and behavior and was one of the few data sets to ask detailed questions about owning financial products like checking and savings accounts, gaining financial knowledge, and using alternative financial services.

Zip codes served as a proxy for residential community areas given research that suggests individuals' actual use of geographic space is larger than smaller geographic units (Crawford,

[2] For more information, please visit the FINRA Investor Education Foundation website: http://www.usfinancialcapability.org/

Jilcott Pitts, McGuirt, Keyserling, & Ammerman, 2014). Restricted-use zip code files were available to match individual respondents with their zip codes of residence at the time of the 2012 NFCS survey, making it possible to link individual respondents with their residential community conditions, including alternative financial services density. Community data were collected through several sources and linked with individual data from the 2012 NFCS. Data on alternative financial service locations by zip code were drawn from Esri Geographic Information System (GIS). Twelve codes from the North American Industry Classification Systems (NAICS) from 2011 were used to identify alternative financial services in Esri GIS and included auto title loan, payday loan, tax refund, pawn shop, and rent-to-own services. A data quality check resulted in 10 out of a possible 29,340 possible locations being excluded due to use of PO Box address; these addresses typically do not align with actual physical location of the services. Additional community demographic data were drawn from 2012 Geolytics Professional Estimates, which provided aggregate population estimates by Census Bureau zip code tabulation areas (ZCTAs).

Since ZCTAs are approximations of zip code boundaries based on census boundaries, some zip codes were combined to address ZCTAs that encompass multiple, smaller zip codes (U.S. Census Bureau, 2015). To address this issue, all zip code information was cross-walked to 2010 Census ZCTA boundaries to allow for data linkage across data sets. When all data was linked together, the final community sample consisted of 9,599 ZCTAs. Fifty-three percent of the sample had only one respondent residing within an identified ZCTA (range 1 to 50 respondents per ZCTA).

Sample Characteristics

The full analytic sample after listwise deletion of missing cases included 23,590 adult individuals ages 18 and older, with an average age of 46. Approximately 67% were white, with the remainder representing Blacks (12%), Latinos/as (14%), and other racial or ethnic minority groups (Asian / Pacific Islander, bi- or multi-racial, Native American / American Indian; 7%). A

slightly higher percentage of respondents was female (51%). Fifty-three percent of the sample was employed and 38% were not in the labor force due to being retired or a student. From the total sample, smaller subsamples were created based on amounts of annual household income in order to address the potential nonlinear relationship between income and alternative financial services use (Elliehausen, 2006; Melzer, 2011). The samples were based on individuals whose reported annual household incomes were lowest (< $15,000; *N* = 2,952), modest ($15,000 to < $50,000; *N* = 8,807), and highest (≥ $50,000; *N* = 11,831; see Table 1). On average, lowest and modest income individuals were more often female (55%), non-white (over 35%), had lower educational attainment (high school degree or less, over 45%) when compared to their highest income counterparts. In addition, lowest income individuals more often self-reported being unemployed (27%) when compared to their modest and highest income counterparts (9% and 3%, respectively).

[Insert Table 1 about here]

Measures

Alternative financial services use dependent variable. Individual respondents answered a series of five questions about their alternative financial services use, reporting the frequency at which they used auto title loans, payday loans, tax refunds, pawn shops, or rent-to-own stores within the last five years (never = 0; 1 time = 1; 2 times = 3; 4 or more times = 4). Individuals' reporting of their alternative financial services use allowed us to separately consider whether they had ever used any of these services during this time period and, of those who used these services at least once, the frequency at which they used these services. About 42% of individuals with the lowest incomes had ever used alternative financial services, compared to 39% and 19% for their respective modest and highest income counterparts (see Table 2).

[Insert Table 2 about here]

Alternative financial services density. Two key independent variables were used to represent alternative financial services, including the density of or concentration of access to these services within a community and state regulations of payday lending services. The density of alternative financial services was calculated by aggregating the 2011 business locations by ZCTA and calculating the total number of locations per 1,000 population within a ZCTA. Density measures were then matched with the ZCTA for individual respondents from the 2012 NFCS. Individuals from the 2012 NFCS with no matching alternative financial service density measure were coded as zero and considered to not have any of these services located within their communities. Thirty-eight percent of respondents resided within ZCTAs that did not have any alternative financial service locations. Among respondents that did reside in ZCTAs with alternative financial services, the number of these services ranged from 1 to 29 per ZCTA. Alternative financial services density averaged 1.65 locations per 1,000 population for lowest income respondents, 1.63 per 1,000 population for modest income respondents, and 0.80 per 1,000 population for highest income respondents.

State regulations for payday lenders. Given that regulation may have played a role in the density of alternative financial services within a zip code and an individual's use of these services (Bhutta, 2014; Melzer, 2011), the states in which individual respondents lived were coded for their regulation of payday lenders in 2011 (no regulation = 0; light or heavy regulation = 1; prohibited regulation = 2). The measures for an individual's use and a community's density of alternative financial services were more comprehensive than just payday lending services, also including auto title loans, tax refunds, pawn shops, and rent-to-own stores that may not have been affected by payday lending regulation. However, in some cases individuals have been found to adjust their use of alternative financial services depending on the regulatory environment, perhaps relying more often on auto title loans or pawn shops when payday lenders are prohibited (Carter, 2015; McKernan, Ratcliffe, & Kuehn, 2013). Some of this behavior may be observed by

measuring state regulation of payday lending. Moreover, while previous studies have considered using state regulation as an instrument to account for unobserved bias in their analyses (Melzer, 2011; Morgan, Strain, & Selbani, 2012), our outcome variable (individuals' use of alternative financial services) was likely correlated with state regulation, making these regulation more appropriate as an independent variable than as an instrument (Johnston, Gustafson, Levy, & Grootendorst, 2008). Sixty-two percent of states did not have any regulation in 2011 regarding payday lenders.

Community variables. Community variables that were controlled in the analyses were consistent with those controlled in previous studies of alternative financial services (Bhutta, 2014; Gallmeyer & Roberts, 2009; Graves, 2003; Melzer, 2011) and were drawn from the 2012 Geolytics. These variables measured the percent of the population within a ZCTA that was Black, Latino/a, and Asian / Pacific Islander, at or below 150% of the poverty line, and unemployed. For example, the US Census Bureau calculated the unemployment rate in a ZCTA by dividing the total number of the unemployed by the total number of the population ages 16 years and older who reported participating in the labor force. Population density equaling 1,000 residents per square mile was also controlled, which controls for variation in geographic size across ZCTAs. Table 2 provides a detailed overview of the distributions for these variables across the lowest, modest, and highest income groups.

Individual variables. Individual demographic variables previously found to have associations with financial knowledge or financial behaviors were taken from the 2012 NFCS and controlled for in the analyses (Fernandes et al., 2014; Sherraden, 2013). These variables were recoded from the original questions and included age, race (white = 0; Black = 1; Latino = 2; other = 3), gender (female = 0; male = 1), education level (high school diploma or less = 0; some college = 1; college degree or more = 2), employment status (unemployed = 0; full-time student = 1; employed = 2), checking account ownership (does not own a checking account = 0; owns a

checking account = 1), financial literacy (does not answer financial literacy questions correctly = 0; answers all financial literacy questions correctly = 1), household income drop (did not experience an unexpected drop in income in the previous 12 months = 0; experienced an unexpected drop in income in the previous 12 months = 1), and difficulty paying monthly bills (no difficulty paying monthly bills = 0; somewhat or very difficult paying monthly bills = 1). Table 2 provides a detailed overview of the distributions for these variables across the lowest, modest, and highest income groups.

Analysis Plan

Individuals' alternative financial services use was analyzed with STATA (version 13) using zero-inflated negative binomial modeling (ZINB; Hilbe, 2011). We used the *svyset* function with the national weights provided by the original designers of the NFCS (Lusardi, 2011). The analyses were conducted with the full analytic sample (N = 23,590) and separately among the samples created based on the amounts of annual household income (lowest: < $15,000; modest: $15,000 to < $50,000; highest: ≥ $50,000). The *subpop* domain was used within the *svy* function, allowing us to run analyses by each income group while still accounting for the excluded categories when calculating the standard errors (Lusardi, 2011; Pitblado, 2009). The ZINB consisted of two models: (1) an "inflate" or logit model that measured the probability of never using alternative financial services and (2) a "count" or regression model that measured the frequency of alternative financial services use among those who were likely to use these services. Within our data, an observed value of zero could have represented an individual's preferences not to use alternative financial services or their inability to do so, such as by trying to avoid accumulating high-interest debt or by not having any of these services within their community. ZINB models created a latent variable that allowed us to model previously unobserved heterogeneity arising from the inability to distinguish individuals who would have never considered using alternative financial services compared to those who would use these services

but did not have access (Long, 1997). In other words, we were able to separately model the likelihood of factors being associated with never using alternative financial services from factors associated with the frequency of use among those who were likely to use alternative financial services regardless of actual use (Hilbe, 2011). This procedure also has been shown to provide more accurate standard errors and regression coefficients than similar models like probit and double-hurdle models when there is an excess of zeros with count data (Elhai, Calhoun, & Ford, 2008). Both probabilities within the inflate model and count model were exponentiated to create odds ratios and incidence rate ratios to be used for easier interpretation within the text.

Results

The results from the ZINB analyses are presented as follows. The results for variables associated with never using alternative financial services (inflate model) and, for likely users, with the frequency of alternative financial services use (count model) are presented by the total sample and by samples grouped by income level. The results presented for the total sample emphasize the findings from the test of cross-level interaction between annual household income level and density of alternative financial services. Complete results for the full sample are available from the authors upon request. The complete results are presented for the analyses undertaken separately with the lowest, modest, and highest income samples.

As aforementioned, the inflate model measured the probability that an individual *never* used alternative financial services. This distinction is important because the directions of the relationships in the inflate model results may seem counterintuitive. In other words, rather than identifying the characteristics of individuals that were associated with the increased probability of ever having used alternative financial services, these models identified the characteristics that were associated with potentially protecting individuals from using these services.

Full Sample Analysis with Annual Household Income x Density Interaction

For the inflate model, no significant interactions were observed between individual income groups and community density. When the interactions were removed from the inflate model for parsimony, individuals residing in communities with high densities of alternative financial services were less likely to be non-users (b = - 0.861, 95% CI = [-1.251, -0.471], $p <$ 0.001), holding all other variables constant. In addition, individuals residing in states with regulations restricting payday lenders (compared to no restrictions; $p = 0.015$ for light or heavy restrictions and $p < 0.001$ for prohibited) were more likely to be non-users. Finally, modest income respondents were less like than lowest income ($p < 0.001$) and highest income ($p < 0.001$) respondents to be a non-user of alternative financial services, controlling for all other variables. In other words, individuals reporting modest incomes had the highest likelihood of using alternative financial services, and individuals exposed to communities with no state restrictions or high density of alternative financial services were more likely to be users of these services.

[Insert Figure 1 about here]

In regards to predicted frequency of alternative financial services use, the results indicated significant main effects for density (b = 0.101, 95% CI = [0.031, 0.172], $p = 0.005$) and income (modest compared to lowest income; b = 0.169, 95% CI = [0.081, 0.256], $p < 0.001$; highest compared to lowest income; b = 0.117, 95% CI = [< 0.001, 0.234], $p = 0.049$). In other words, the density of alternative financial services with an individual's community was positively associated with frequency of use across all groups, and individuals reporting lowest incomes were expected to use alternative financial services at a lower frequency on average than those reporting modest or highest incomes. A significant interaction effect was observed with significant differences in predicted frequency of individual alternative financial services use. Figure 1 shows the predicted frequency of alternative financial services use by individual income level groups for the full analytic sample ($N = 23,590$) across a range of community density of alternative financial services. In sum, significant differences in predicted frequency were observed across density of

alternative financial services between individuals reporting modest income compared to lowest (p = 0.043) and highest incomes (p = 0.022). The subsequent results further explore model variables by individuals' annual household income to examine if distinct service use profiles exist by income group.

Lowest Income Individuals

The results of the ZINB for lowest income individuals (annual household income below $15,000) are reported in Table 3. The inflate model identified a profile of individuals who were likely to never use alternative financial services.[3] For the individuals with the lowest incomes, neither the density of alternative financial services nor state regulation was related to the probability of never using these services. Instead, individuals residing within communities with higher percentages of the population who self-identified as Black, Latino/a, or Asian American/Pacific Islander were more likely to have never used alternative financial services in the past 5 year. In contrast, a black individual was 66% less likely to be a non-user of alternative financial service when compared to a white individual. Having some college education served as a protective factor, positively relating to being a non-user of alternative financial services use when compared to having a high school degree or less. Whereas owning a checking account also had a protective relationship with alternative financial services use, experiencing an unexpected drop in income and financial hardship appeared to decrease the probability of being a non-user of alternative financial services by a factor of 0.48 and 0.76, respectively. Being financially literate, compared to not, was unrelated to a lowest income individual's probability of using alternative financial services.

[Insert Table 3 about here]

[3] As aforementioned, the directions of the relationships in the inflate model can seem counterintuitive. For example, among the results for the lowest income individuals that are presented in Table 3, the relationship between owning a checking account and probability of never using alternative financial services is positive. An individual's ownership of a checking account increased the probability of *never* having used these services. Or, phrased another way, an individual who owned a checking account was less likely to have *ever* used alternative financial services.

Even though the density of alternative financial services was unrelated to the likelihood of using these services, there was a significant relationship with how frequently individuals are likely to engage with these services. Holding all other factors constant, individuals with the lowest income range residing within a community with a density of 1 more location per 1,000 population used these services about 10% more of the time on average. Thus, a higher density of these services was related to more chronic alternative financial services use. Higher population density, younger age, and being employed are also predictors of positive counts. Individuals residing in more densely populated communities, such as would be expected within urban environments, was associated with a higher frequency of alternative financial services use. Age appeared to have a protective relationship with the frequency at which an individual used alternative financial services. An individual who was older used these services with decreased frequency. Compared to an unemployed peer, a lowest income individual used alternative financial services with increased frequency when they were employed or not in the labor force.

Modest Income Individuals

The results of the ZINB for modest income individuals (annual household income between $15,000 and < $50,000) are reported in Table 4. The density of alternative financial services within a community was associated with a decrease in a modest income individual's likelihood of never using these services. For every additional alternative financial service per 1,000 population located within the community, an individual was 61% less likely to be non-users holding all other variables constant. Heavy state regulation appeared to have the intended effect on alternative financial services use. Heavy state regulation, compared to none, was positively related to a modest income individual's probability of never having used alternative financial services by a factor of 1.32. However, other community conditions associated where individuals reside were not significantly associated with their likelihood of being a non-user. Among individual characteristics, a modest income individual who was older had an increased probability

of never using these services. Compared to a white peer, a modest income individual was 54% less likely to never use these services when they were Black and 31% less likely when they were from another racial or ethnic minority group. Males were about 21% less likely to be non-users when compared to females holding all other variables constant. A modest income individual with a four-year college degree or higher had an increased probability of never using alternative financial services, compared to a modest income individual with a high school degree or less. Owning a checking account and being financially literate were related to the increased likelihood of being a non-user (by 186% and 49% respectively). In contrast, experiencing an unexpected drop in income and financial hardship were related to the decreased likelihood of being a non-user (by 35% and 29% respectively).

[Insert Table 4 about here]

The density of alternative financial services and their regulation at the state level were unrelated to the frequency at which a modest income individual used these services. However, living in a community with a higher percentage of poverty was related to using alternative financial services with increased frequency. Age had a negative relationship with the frequency of alternative financial services use and male individuals used alternative financial services with increased frequency when compared to females. Holding all other variables constant, there is a decrease in the expected frequency of alternative financial services use by a factor of 0.90 when individuals own a checking account and by a factor of 0.84 when individuals as financially literate, compared respectively to not owning a checking account and not being financially literate. A modest income individual who experienced an unexpected drop in income and financial hardship also used alternative financial services with increased frequency compared to their respective counterparts.

Highest Income Individuals

The results of the ZINB for highest income individuals (annual household income at or above $50,000) are reported in Table 5. For an individual with the highest income, the density of alternative financial services within their community was unrelated to the probability of never using such services. However, heavy state regulation was related to an increased probability of being a non-user of alternative financial services when compared to no state regulation. A highest income individuals' increased probability of never using alternative financial services was related to living in a community with higher percentages Black or Asian American/Pacific Islander populations. However, living in a community with a higher percentage of poverty was related to a 21% decreased likelihood that a highest income individual would be a non-user. Age was positively related to the probability that a highest income individual would never used alternative financial services. A highest income individual who was Black or Latino/a had more than a 25% decrease in likelihood of being a non-user when compared to their white counterparts. Being male was related to the decreased probability of never using these services when compared to being female. A highest income individual with a four-year college degree or higher had an increased probability of being a non-user, compared to their counterpart with a high school degree or less. Owning a checking account and being financially literate were related to an increased likelihood of being a non-user (by 152% and 53% respectively), while experiencing an unexpected drop in income and financial hardship were related to the decreased likelihood of never using alternative financial services (by 45% and 38% respectively).

[Insert Table 5 about here]

Having more alternative financial services concentrated in their community was associated with a highest income individual's increased frequency of using these services. Holding all other factors constant, individuals with the highest income range residing within a community with a density of 1 more location per 1,000 population used these services about 39% more of the time on average. State regulation was unrelated to the frequency at which these

individuals used alternative financial services. Higher population density of a community was also related to an individual's more frequent use of alternative financial services. Age had a negative relationship with the frequency of alternative financial services use, and male within this income group used alternative financial services with increased frequency when compared to their female counterparts. A black, highest income individual also used alternative financial services with greater frequency when compared to their white counterpart. A highest income individual who was employed are expected to use alternative financial services 1.45 times more than a highest income individual who was unemployed. Owning a checking account and being financially literate were related to a highest income individual's decreased frequency of using alternative financial services, as compared to their respective counterparts. A highest income individual who experienced an unexpected drop in income and financial hardship appeared to use alternative financial services with increased frequency.

Discussion

Individuals' use of alternative financial services poses a risk to their financial health (Baradaran, 2015; Melzer, 2011), particularly when they find themselves trapped into carrying more debt, lowering their credit scores, or delaying payments on rent or utilities (Caskey, 1994; Melzer, 2011; Pew Charitable Trusts, 2015). Individuals' use of these services could be attributed to having limited financial literacy or being credit constrained; however, the accessibility of alternative financial services within their communities may also relate to individuals' use of these services. Amidst the concern that the increasing number of alternative financial services in communities across the US is risking the financial health of more individuals, this study examined whether the density of alternative financial services within a community related to individuals' increased probability of ever having used these services and using them with greater or more chronic frequency.

Our first key finding is that the association between the density of alternative financial services and an individual's use of these services varied by annual household income. For example, the density of alternative financial services appeared to have no bearing on the probability that a lowest income individual ever used these services; however, density was significantly related to modest and highest income individuals' probability of using these services. This provided preliminary evidence that collective institutional efficacy may help to explain the relationship between a community's density of alternative financial services and individuals' use of these services. Our second key finding is that a state's heavy regulation of alternative financial services—specifically, state prohibition of payday lenders—was most protective for modest and highest income individuals. State regulation was unrelated to a lowest income individual's use of these services. Our third key finding is that financial inclusion in mainstream financial services—such as by owning a checking account—protected an individual from ever having used and/or chronically using alternative financial services regardless of their income level. Though, for a lowest income individual who by definition had limited financial resources, owning a checking account was not enough to protect them from repeated use of these services. Finally, our fourth key finding is that financial literacy had no bearing on a lowest income individual's use of alternative financial services; however, it had a protective relationship for modest and highest income individuals. In other words, no amount of financial knowledge may have been able to replace the shortfall in a lowest income individual's household budget in the same way as getting a cash advance on a paycheck or selling possessions to a pawn shop. Taken together, these findings provide compelling insights into the use of alternative financial services and the potentially influential role of the community. These findings are discussed in greater detail below.

Variation in Alternative Financial Services Use Exists by Household Income

Individuals have been found to use alternative financial services differently depending on their income level (Elliehausen, 2006; Melzer, 2011), and this study confirmed findings from previous research. Variations by annual household income in relation to density of alternative financial services was associated with individuals' alternative financial services use. When the density of alternative financial services within communities was higher, modest and highest income individuals had higher probabilities of ever using these services. In other words, the more concentrated the alternative financial services within a zip code, the greater the probability that modest and highest income individual used these services. There was no relationship between the density of alternative financial services and the use of these services among lowest income individuals. For these individuals, accessibility within the community may have had little influence on their probability of using alternative financial services.

In contrast to the probability of using these services, density related to lowest and highest income individuals' increased frequency of using alternative financial services. This suggests that a lowest or highest income individual may have been more likely to be a repeat customer when alternative financial services were more accessible within their communities. With increased geographic access, a lowest or highest income individual may have more frequently rolled over their original payday loan or pawned their belongings for extra cash. That being said, the descriptive findings indicate highest income individuals typically live within communities with a lower concentration of alternative financial services, which is not surprising in light of earlier studies indicating these services target lower-income communities (Gallmeyer & Roberts, 2009; Smith, Smith, & Wackes, 2008), and thus have less exposure to high-risk environments compared to their lowest income counterparts.

On the whole, these findings can be viewed from the theoretical lens of collective institutional efficacy to begin to understand how social mechanisms may work for explaining the relationship between increased access and increased use of these services. In this case, collective

institutional efficacy refers to the beliefs that a community's residents develop about alternative financial services. A modest income individual may interpret greater accessibility to alternative financial services within community as an indicator that their community endorses the presence of these services and their utility for meeting financial needs. As such, a modest income individual may be more likely to have ever used these services. Collective institutional efficacy may operate differently for lowest and highest income individuals since the density of alternative financial services only relates to the frequency at which they use these services.

State Regulation has a Protective Relationship for Modest, Highest Income Individuals

State regulation appeared to have a protective relationship with alternative financial services use among modest and highest income individuals. When living in states where payday lending was prohibited, modest and highest income individuals were significantly less likely to use alternative financial services. It is important to remember that our measures of alternative financial services included services that were both explicitly prohibited by state regulation, such as payday lenders that charge high interest rates for making cash advances on paychecks, and those that were not, like rent-to-own and pawn shops. It may be that state regulation reduced the probability that modest and highest income individuals used payday lenders that were prohibited by law. This suggests that the findings may have been driven by these individuals' decreased frequency of using a specific type of alternative financial service: prohibited payday lenders (Carter, 2015).

When considering alternative financial services use among the lowest income individuals, there was some evidence that individuals may have shifted their use of these services depending on state regulation. State regulation had no relationship with a lowest income individual's alternative financial services use, even for an individual who lived in a state where payday lending was explicitly prohibited. A lowest income individual may still have made use of other types of alternative financial services even when there was limited access to payday lenders.

In other words, a lowest income individual who lived in a state that prohibited high-interest, payday lending may instead have used other, non-prohibited alternative financial services (Carter, 2015; McKernan, Ratcliffe, & Kuehn, 2013). Another way of putting it is that different types of services like pawn shops may supplement the alternative finances market when payday lenders are prohibited.

Financial Inclusion may Help While Financial Hardship may Hinder

For individuals of all incomes, being included in the financial mainstream by having a checking account may have helped them to avoid using alternative financial services. That is, owning a checking account from a mainstream bank or credit union may have given individuals another resource for getting money when they needed it and protected them from relying on alternative financial services. Individuals with the lowest incomes, however, did not experience the same benefit when it came to the frequency at which they used alternative financial services. Even owning a checking account may not have been enough to protect a lowest income individual against continuing to roll over their payday loan or pawn belongings when they needed money. This could be especially true if their checking account had a $0 balance. From this perspective, the frequency at which a lowest income individual used alternative financial services may have depended more on accessibility within their communities.

Individuals of all incomes were vulnerable to using alternative financial services when they needed money. Experiencing an unexpected drop in income and having difficulty paying monthly bills related to individuals' increased probability of ever having used alternative financial services. When money is tight and regardless of income, an individual may need extra money and may be more likely to find it from alternative financial services (Bhutta et al., 2015). However, there were some differences by income when it came to the frequency at which individuals used alternative financial services. For modest and highest income individuals, experiencing an unexpected drop in income and having difficulty paying monthly bills related to

using these services with increased frequency. By comparison, these same hardships were unrelated to the increased frequency at which lowest income individuals used these services. Individuals of different income levels experienced different rates of unexpected income drops and difficulty paying bills, perhaps explaining the differences in the frequency of their alternative financial services use. Twenty percent of highest income and 43% of lowest income individuals experienced an unexpected drop in income. Likewise, 40% of highest income and 81% of lowest income individuals had difficulty paying monthly bills. In other words, these events may have been more remarkable in the lives of individuals with modest and highest incomes, prompting them to use alternative financial services more frequently in an emergency despite appearing to have more financial resources. Financial hardships occurred more frequently for lowest income individuals—over 50% of the time—and suggested that these experiences may have been a part of day-to-day life for individuals whose households earned below $15,000 annually. As such, these hardships may have had little association with the frequency of lowest income individuals' alternative financial services use.

Financial Literacy Appears to Have No Effect For Lowest Income Individuals

Financial education is one intervention that is often proposed for improving individuals' financial health (Lusardi & de Bassa Scheresberg, 2013). Generally, the idea is that increased financial literacy through education can help an individual make better decisions like avoiding high-cost, alternative financial services. Based on the findings from this study, there may be some supportive evidence for this idea with regard to modest and highest income individuals; however, there is no evidence to support a protective relationship of financial literacy on alternative financial services use among lowest income individuals. Being proficient in financial knowledge was not significantly associated with a lowest income individual's probability of ever having used alternative financial services or the frequency at which they used these services. In other words, a financially literate, lowest income individual was just as likely to use alternative financial

services and to do so with increased frequency compared to a lowest income individual who was not financially literate. From this perspective, financial literacy may have only been effective for protecting individuals' alternative financial services use when they had more financial resources. Unsurprisingly, higher percentages of individuals with modest and highest incomes were financially literate compared to their lowest income counterparts. For example, on average, 53% of the highest income individuals answered correctly all questions regarding financial knowledge compared to only 17% of lowest income individuals. While these descriptive findings could be interpreted to suggest that lowest income individuals could benefit from becoming more financially literate, it remains to be seen whether any improvements in literacy impact their alternative financial services use.

Study Strengths, Limitations, and Directions for Future Research

This study is one of the first to link the density of alternative financial services within a community to an individual's use of such services. Previous research has examined relationships between the density of these services and other individual outcomes, like credit score, bankruptcy, or financial hardship (Bhutta, 2014; Bhutta et al., 2015; Melzer, 2011); however, no known studies have been able to address whether the accessibility of these services is associated with an individual's increased use. Thus, this study makes an important contribution despite its limitations.

The following limitations should be taken into consideration when interpreting this study's findings. First, this study does not make any claims regarding causality given that the NFCS data were cross-sectional data and that their sampling strategy did not allow for uniform modeling of the density of alternative financial services within communities. A second and related limitation is that, given the correlational nature of the relationships, the findings may be explained by other and unobserved variables, such as an individual's duration of exposure (length of residency) to the alternative financial services within their community. To minimize concerns

about selection bias and unobserved heterogeneity, we included a number of community and individual controls in our analyses that were based on previous theory and research and known to relate to alternative financial services use. In addition, ZINB was used to model unobserved heterogeneity that could have arisen due to difficulty distinguishing between individuals who used and did not use alternative financial services for different reasons (Long, 1997). A third limitation stems from the use of zip codes and ZCTAs. Compared to Census block groups, zip codes are large and imprecise geographic boundaries that change over time and might not accurately represent an individual's immediate community or the services located within it. Individual respondents from the 2012 NFCS did not provide their street addresses and we could only rely on zip codes as a proxy for community. Further, ZCTAs are geographic approximations of zip codes developed by the Census Bureau and their data may not have perfectly corresponded to zip codes.[4] However, given that zip codes and ZCTAs are large and imprecise geographic boundaries, the effects of alternative financial services density may have been underestimated and analyses with more precise geographic boundaries may yield stronger effects. Finally, despite proposing a hypothesized role for social mechanisms, we were unable to directly measure and test collective institutional efficacy. As such, the explanatory power of collective institutional efficacy for explaining the relationship between increased access and increased use should be interpreted cautiously until it can be vetted by future empirical research.

These limitations give insight into and provide opportunities for future research. There is need for longer, longitudinal assessments to examine how the density of alternative financial services within a community relates to an individual's use of these services over time. Moreover, future research should conduct more precise modeling of the accessibility of financial services, beyond alternative financial services in residential communities. This means modeling the densities and distributions of mainstream banks, credit unions, and alternative financial services

[4] For more information on ZCTAs, please visit the following Census Bureau website: https://www.census.gov/geo/reference/zctas.html

and how individuals access these services near where they work and live. In addition, future sampling strategies should be strategic in order to capture a broader and more uniform range of densities across communities. This would allow for better assessment of within-group variability; for example, does lowest income individuals' use of alternative financial services differ by communities with high and low density, all else being equal? Finally, future research should measure and test the relationship between collective institutional efficacy and individuals' alternative financial services use in order to identify underlying social mechanisms that can explain these relationships. The current study provides a foundation for exploring these directions in future research.

Concluding Implications

There are several implications that can be drawn from this study's findings. One implication is that policy interventions may be needed to better capacitate communities for providing their residents with access to financial services, given that the concentration of or exposure to different types of financial services within the community may impact an individual's financial behavior and health. This implication suggests that there are opportunities for increasing local policy interventions related to community economic development. Community economic development leverages local resources and undertakes local initiatives to improve the financial health of its residents. Examples of community economic development interventions include the Community Development Financial Institutions Fund (CDFI Fund) through the US Department of Treasury that supports community-based financial services operating in lower income communities, the Cities for Financial Empowerment (CFE Fund) and their Bank On coalitions that leverage local partnerships to advocate for safer and more affordable financial services within communities, and the California Reinvestment Coalition (CRC) that advocates for local policies that protect consumers from high-cost alternative financial services, such as using zoning ordinances to limit the accessibility of alternative financial services.

Another implication is that policy interventions, in order to be effective, may need to take into advance consideration the varying ways in which individuals use alternative financial services. This implication is based on the significant cross-level interaction between income and the density of alternative financial services. This implication suggests that flexibility should be imbedded into policy and or that multiple policies may need to work together to address the use of alternative financial services. This may mean anticipating potential tradeoffs between a policy's scalability or efficiency and effectiveness and considering how policies may be able to complement one another for achieving mutually beneficial goals. Interventions capable of being delivered through national policy such as those being undertaken by the Consumer Financial Protection Bureau (CFPB) are ideal for achieving scale and national policy is an appropriate level of scale given that alternative financial services use is a nation-wide concern (Pew Charitable Trusts, 2015). However, at the same time, national policy that is designed with a "one-size-fits-all" approach may be simultaneously unable to account for individual variability. This does not necessarily mean that we need to choose between scalability or efficiency and effectiveness or between one policy and another; instead, variability must be taken into consideration at the forefront of policy design so that both scalability and effectiveness can be achieved.

Take, for example, the Earned Income Tax Credit (EITC) that has been touted as one of the most important interventions delivered via the tax code for keeping lower-income, working families out of poverty. Despite its seemingly widespread success, many eligible families—including those who could benefit the most—do not know that the EITC exists or apply for the tax credit (Blank, 2002; Smeeding, Phillips, & O'Connor, 2000). This "one-size-fits-all" national policy intervention that is easily scalable from an administrative perspective also fails to reach all who are eligible in part because the intervention was not designed to consider things like families' varying knowledge about or experience with filing taxes. Instead, regional, labor-intensive, and volunteer-driven tax preparation sites offered by the Volunteer Income Tax

Assistance (VITA) program intervene and assist EITC-eligible families with filing their taxes (O'Connor, 2001). Together, a scalable, efficient national policy and a localized, flexible program are working to improve the effectiveness of the EITC's approach to poverty.

The lessons learned from EITC are relevant for creating policy interventions that are designed to improve financial health and decrease reliance on alternative financial services. For instance, based on the results presented in this paper, increasing the number of states that prohibit certain alternative financial services may be effective for protecting modest and highest income individuals from using these services; however, other approaches may be necessary for protecting lowest income individuals. For the lowest income individuals, complementary policies that help stabilize their income and provide a safety net for when they experience an unexpected drop in income may be packaged together for achieving effectiveness and reducing their alternative financial services use. National policies like those being considered by the CFPB for regulating alternative financial services can be combined with local policies like the community economic development interventions undertaken by the CDFI Fund, CFE Fund and Bank On coalitions, and CRC.

The final implication, while not drawn exclusively from this study's findings, is that policy interventions are needed to better address the conditions that allow alternative financial services to operate in the first place. A series of legislative changes in the 1990s allowed banks to grow in size, serve larger geographic regions, and take on additional risks (FDIC, 1997). These changes shifted the financial services landscape by giving mainstream banks permission to serve the national community and providing an opportunity for alternative financial services to fill the voids in local, residential communities that were created when mainstream banks moved out. Based on these trends, some researchers have suggested that the accessibility of alternative financial services within communities is an indicator of a much deeper problem (Baradaran, 2015; Servon & Castro-Cosío, 2015). From this perspective, policy interventions should address

the source of alternative financial services use by providing stronger regulation and oversight of the financial services industry, using incentives to encourage mainstream banks to improve services within their local communities, and creating new options for financial services that are safer and more affordable than alternative financial services. Two examples of policy interventions include leveraging Community Reinvestment Act (CRA) credits to incentivize mainstream banks' service to lower-income communities (Getter, 2015) and returning to offer basic, safe, and affordable financial services through the US Postal Service (Baradaran, 2015). Policy interventions such as these have the potential to address the source of the accessibility of alternative financial services and its potential detrimental effects on individuals' financial health.

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Table 1: Weighted Sample Characteristics

	Full Analytic Sample	**Lowest Income** (< $15,000)	**Modest Income** ($15,000 to < $50,000)	**Highest Income** (≥ $50,000)
	N = 23,590	*n* = 2,952	*n* = 8,807	*n* = 11,831
	Weighted % or Mean (SD)	Weighted % or Mean (SD)	Weighted % or Mean (SD)	Weighted % or Mean (SD)
Age	46.21 (16.26)	39.09 (15.96)	45.58 (16.50)	48.67 (15.46)
Gender				
Male	48.78	44.90	44.81	52.97
Female	51.22	55.10	55.19	47.03
Race				
White	67.17	62.72	64.15	70.78
Black	11.52	16.06	14.13	8.21
Latino/a	14.34	15.01	15.88	12.94
Other	6.98	6.21	5.85	8.08
Education level				
High school degree or less	36.86	57.42	47.02	23.17
Some college education	36.41	33.33	36.10	37.51
College degree or higher	26.73	9.25	16.88	39.32
Employment status				
Unemployed	8.68	26.55	9.27	3.26
Not in the labor force	37.88	48.33	41.40	32.23
Employed	53.44	25.12	49.34	64.51

Source: Data from the 2012 NFCS

Table 2: Descriptive statistics for dependent and independent variables (N = 23,590)

	Lowest Income (< $15,000)	**Modest Income** ($15,000 to < $50,000)	**Highest Income** (≥ $50,000)
	n = 2,952	*n* = 8,807	*n* = 11,831
	n (weighted %) or weighted Mean (SD)	*n* (weighted %) or weighted Mean (SD)	*n* (weighted %) or weighted Mean (SD)
Dependent variables			
Frequency of AFS[1] Use	1.65 (2.78)	1.63 (2.91)	0.80 (2.45)
AFS Use			
None	1,731 (58.30)	5,504 (61.29)	9,776 (80.84)
Use	1,221 (41.70)	3,303 (38.71)	2,055 (19.16)
Key Independent variables			
AFS Density [2]	0.12 (0.33)	0.11 (0.25)	0.08 (0.12)
State regulations			
No regulation	1,868 (62.45)	5,678 (64.36)	7,246 (61.66)
Light or heavy regulation	232 (5.34)	680 (5.66)	961 (5.53)
Prohibited regulation	852 (32.20)	2,449 (29.98)	3,624 (32.81)
Community control variables			
Population density per 1,000 [3]	3.12 (8.14)	3.06 (7.39)	3.68 (9.37)
Percent Latino/a	11.57 (18.13)	11.59 (18.16)	9.85 (15.16)
Percent Black	14.76 (22.00)	13.37 (21.19)	10.81 (18.55)
Percent Asian/Pacific Islander	3.36 (8.61)	3.84 (9.81)	5.66 (11.83)
Percent ≤ 150% of poverty	25.26 (12.79)	23.46 (12.70)	18.15 (11.39)
Percent unemployed	7.99 (4.49)	7.86 (4.88)	6.79 (4.43)
Individual control variables			
Owns a checking account			
No	784 (27.53)	853 (10.72)	203 (1.99)
Yes	2,168 (72.47)	7,954 (89.28)	11,628 (98.01)
Financially literate [4]			
No	2,458 (84.07)	6,221 (73.04)	5,545 (50.10)
Yes	494 (15.93)	2,586 (26.96)	6,286 (49.90)
Unexpected income drop			
No	1,690 (57.34)	5,622 (62.79)	9,465 (78.95)
Yes	1,262 (42.66)	3,185 (37.21)	2,366 (21.05)
Financial hardship[5]	1.55 (1.13)	1.12 (1.04)	0.56 (0.83)

Notes. [1]AFS = Alternative financial services. [2]The density of alternative financial services was calculated as total number of locations divided by 1,000 population within a ZCTA in order to estimate the accessibility of these services while controlling for approximate population variation across zip codes. [3]Population density measured 1,000 population per square mile. [4]Individuals were determined to be financially literate when they correctly answered all financial knowledge questions, based on research by Lusardi (2011). [5]Financial hardship was measured by self-reported difficulty paying monthly bills on a scale from 0 to 3.

Table 3: Weighted Zero Inflated Negative Binomial Regression Predicting Alternative Financial Services Use among Lowest Income Adults (< $15,000 Annual HH Income) from the 2012 NFCS (*N* = 2,952)

	Model 1			
	Inflate Model		**Count Model**	
	Probability of Never Using AFS		Frequency of Using AFS	
	β	(LSE)	β	(LSE)
Alternative Financial Service (AFS) Variables				
AFS Density	- 0.721	(0.374)	0.094**	(0.029)
State regulations of AFS				
(Ref: No regulation in 2011)				
Light regulation	0.137	(0.246)	- 0.079	(0.143)
Heavy regulation	0.204	(0.144)	0.020	(0.076)
Community Variables				
Population density per 1,000	- 0.001	(0.009)	0.008*	(0.003)
Percent Black	0.009*	(0.004)	0.002	(0.002)
Percent Latino/a	0.009*	(0.004)	0.001	(0.002)
Percent Asian American/Pacific Islander	0.022*	(0.009)	0.001	(0.007)
Percent at or below 150% of poverty	- 0.006	(0.007)	0.010*	(0.004)
Percent unemployed	- 0.004	(0.022)	- 0.022*	(0.009)
Individual Variables				
Age	0.004	(0.004)	- 0.008**	(0.003)
Male	0.024	(0.132)	0.079	(0.073)
Race (Ref: White)				
Black	- 1.082***	(0.254)	- 0.132	(0.100)
Latino/a	- 0.409	(0.241)	- 0.170	(0.125)
Other	- 0.084	(0.210)	- 0.105	(0.153)
Education level (Ref: Less than HS)				
Some college education	0.457**	(0.144)	0.113	(0.084)
College degree or higher	0.918***	(0.207)	0.109	(0.123)
Employment status (Ref: Unemployed)				
Not in the labor force	0.065	(0.169)	0.227**	(0.084)
Employed	- 0.138	(0.185)	0.392***	(0.092)
Owns a checking account	0.795***	(0.170)	- 0.085	(0.070)
Financially literate	0.324	(0.178)	- 0.174	(0.107)
Unexpected income drop	- 0.725***	(0.145)	0.133	(0.075)
Financial hardship	- 0.278***	(0.060)	0.051	(0.033)
Model Constant	- 0.219	(0.329)	0.944***	(0.183)
Ln α	- 0.420**	(0.131)		

Source: Data from the 2012 NFCS, 2011 Esri GIS, and 2012 Geolytics.
Notes. β = regression coefficient; LSE = Linearized standard error.
***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

Table 4: Weighted Zero Inflated Negative Binomial Regression Predicting Alternative Financial Services Use among Modest Income Adults ($15,000 to < $50,000 Annual HH Income) from the 2012 NFCS (*N* = 8,807)

	Model 1			
	Inflate Model		**Count Model**	
	Probability of Never Using AFS		Frequency of Using AFS	
	β	(LSE)	β	(LSE)
Alternative Financial Service (AFS) Variables				
AFS Density	- 0.946**	(0.294)	0.001	(0.016)
State regulations of AFS				
(Ref: No regulation in 2011)				
Light regulation	0.267	(0.140)	- 0.071	(0.085)
Heavy regulation	0.278**	(0.084)	- 0.072	(0.050)
Community Variables				
Population density per 1,000	0.005	(0.007)	0.002	(0.003)
Percent Black	- 0.000	(0.002)	0.001	(0.001)
Percent Latino/a	- 0.000	(0.003)	0.001	(0.001)
Percent Asian American/Pacific Islander	0.006	(0.005)	- 0.003	(0.003)
Percent at or below 150% of poverty	- 0.007	(0.004)	0.005*	(0.002)
Percent unemployed	- 0.000	(0.010)	- 0.010	(0.006)
Individual Variables				
Age	0.029***	(0.003)	- 0.009***	(0.002)
Male	- 0.225**	(0.075)	0.092*	(0.042)
Race (Ref: White)				
Black	- 0.768***	(0.140)	- 0.003	(0.062)
Latino/a	- 0.245	(0.134)	- 0.008	(0.072)
Other	- 0.375*	(0.157)	- 0.026	(0.083)
Education level (Ref: Less than HS)				
Some college education	0.087	(0.082)	0.016	(0.047)
College degree or higher	0.558***	(0.098)	0.013	(0.061)
Employment status (Ref: Unemployed)				
Not in the labor force	- 0.117	(0.147)	0.091	(0.070)
Employed	- 0.093	(0.144)	0.110	(0.067)
Owns a checking account	1.049***	(0.172)	- 0.110*	(0.051)
Financially literate	0.397***	(0.084)	- 0.179**	(0.055)
Unexpected income drop	- 0.437***	(0.079)	0.203***	(0.045)
Financial hardship	- 0.333***	(0.040)	0.087***	(0.021)
Model Constant	- 1.321***	(0.299)	1.303***	(0.119)
Ln α	- 0.442***	(0.092)		

Source: Data from the 2012 NFCS, 2011 Esri GIS, and 2012 Geolytics.
Notes. β = regression coefficient; LSE = Linearized standard error.
***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

Table 5: Weighted Zero Inflated Negative Binomial Regression Predicting Alternative Financial Services Use among Highest Income Adults (≥ $50,000 Annual HH Income) from the 2012 NFCS (*N* = 11,831)

	Model 1			
	Inflate Model		**Count Model**	
	Probability of Never Using AFS		Frequency of Using AFS	
	β	(LSE)	β	(LSE)
Alternative Financial Service (AFS) Variables				
AFS Density	- 0.660*	(0.324)	0.326*	(0.159)
State regulations of AFS				
(Ref: No regulation in 2011)				
Light regulation	0.208	(0.172)	0.036	(0.147)
Heavy regulation	0.262**	(0.098)	- 0.133	(0.068)
Community Variables				
Population density per 1,000	- 0.004	(0.005)	0.007*	(0.003)
Percent Black	0.005*	(0.003)	0.002	(0.002)
Percent Latino/a	0.001	(0.003)	0.001	(0.002)
Percent Asian American/Pacific Islander	0.013**	(0.004)	- 0.001	(0.003)
Percent at or below 150% of poverty	- 0.018***	(0.005)	- 0.002	(0.003)
Percent unemployed	- 0.010	(0.012)	- 0.006	(0.008)
Individual Variables				
Age	0.041***	(0.004)	- 0.017***	(0.003)
Male	- 0.250**	(0.084)	0.258***	(0.060)
Race (Ref: White)				
Black	- 0.649***	(0.147)	0.250**	(0.085)
Latino/a	- 0.280*	(0.137)	0.158	(0.090)
Other	0.010	(0.169)	0.077	(0.116)
Education level (Ref: Less than HS)				
Some college education	0.177	(0.115)	- 0.020	(0.078)
College degree or higher	0.474***	(0.119)	0.037	(0.079)
Employment status (Ref: Unemployed)				
Not in the labor force	- 0.128	(0.274)	0.351	(0.183)
Employed	- 0.326	(0.265)	0.370*	(0.172)
Owns a checking account	0.925**	(0.267)	- 0.257*	(0.121)
Financially literate	0.424***	(0.090)	- 0.480***	(0.070)
Unexpected income drop	- 0.601***	(0.094)	0.386***	(0.064)
Financial hardship	- 0.473***	(0.055)	0.138***	(0.028)
Model Constant	- 1.021*	(0.418)	1.262***	(0.227)
Ln α	- 0.075	(0.124)		

Source: Data from the 2012 NFCS, 2011 Esri GIS, and 2012 Geolytics.
Notes. β = regression coefficient; LSE = Linearized standard error.
***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

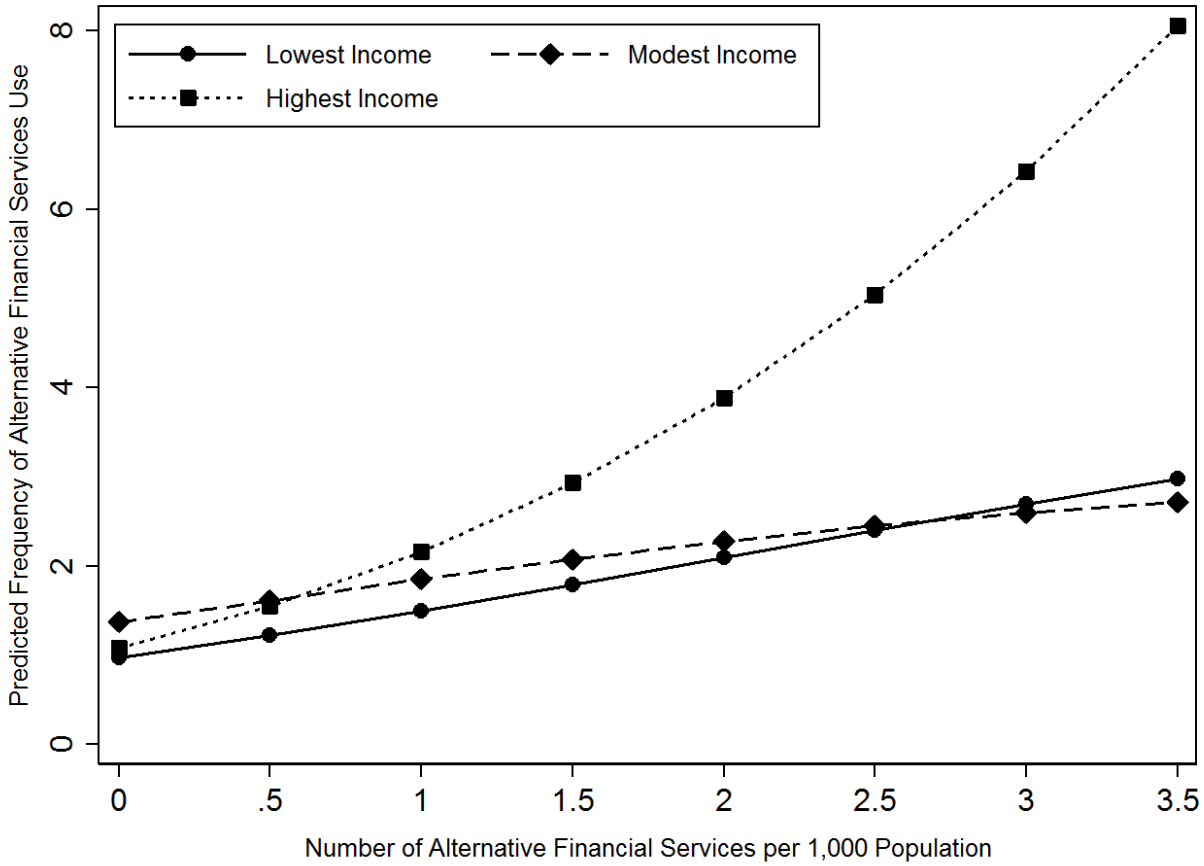

Figure 1. Predictive margins of alternative financial services use across community density of services by annual household income