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Federal Reserve Bank of Kansas City

Which Types of Unbanked Households Are More (or Less) Likely to Open a Bank Account?

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Abstract

Using multi-year survey data, we conduct a regression model analysis to examine which types of unbanked households are more likely to open a bank account and which types are less likely. We proxy for households' likelihood of opening a bank account using their prior banking status and interest in having a bank account. Among unbanked households, those who previously had a bank account and are interested in having a bank account are more likely to open an account. These households tend to be more educated, to be native-born, to have access to digital technology, and to use alternative financial services. In contrast, households who never had a bank account and are uninterested in a bank account are less likely to open an account. These households tend to be less educated, to be of a racial minority, to be foreign born, to lack access to digital technology, and to rely heavily on cash. Moreover, they tend to distrust banks. Advancing financial inclusion for this group will require strategies to increase their trust in the financial services industry.

Keywords: Unbanked, financial inclusion, nonbank financial services, consumer choices

JEL codes: D12, G21, G23, G41

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1. Introduction

Over the past decade, the share of unbanked households—those who do not have a checking or savings account—declined steadily from 8.2 percent in 2011 to 4.5 percent in 2021 in the United States (Federal Deposit Insurance Corporation (FDIC) 2022). This decline in the unbanked rate implies that some unbanked households became banked over this period. According to FDIC (2022), about half of the decline in the unbanked rate between 2011 and 2021 was associated with changes in the socioeconomic circumstances of U.S. households, such as increases in income and educational attainment. The other half of the decline may be at least partially explained by efforts both the public and private sector entities have made to promote bank account ownership (Toh 2022). Still, approximately 5.9 million households did not have a bank account in 2021 and income, educational, and racial gaps in unbanked rates persist, suggesting that there is room for further increasing bank account ownership.

To develop effective policy and strategies to promote bank account ownership, it is important for policymakers, community leaders, and financial services providers to recognize that unbanked households differ in many dimensions—sociodemographic characteristics, access to technology, use of alternative financial services, and reasons for not having a bank account. Especially, understanding which types of unbanked households are more likely to open a bank account and which types are less likely to do so may help design tailored strategies.

A large body of literature has examined characteristics of unbanked households and why some people do not have a bank account.[1] Many household surveys in the 1990s and 2000s found that households were more likely to be unbanked when they were lower-income, less wealthy, less educated, not working, younger, renters, and a racial minority (see for example, Hogarth and O'Donnell 1999; Kennickell, Starr-McCluer, and Surette 2000; Stegman and Faris 2005; Rhine and Greene 2006). These findings are consistent with the results from more recent rounds of survey by the FDIC (Burhouse et al. 2014; FDIC 2022). Using the 2015 FDIC survey, Hayashi and Minhas (2018) found that low-income households without internet access were more likely to be unbanked than those with internet access. Regarding the reasons for not having a bank account, household surveys consistently found "do not have enough money" to be the most frequently cited reason (see for example, U.S. Treasury 1997; Caskey 1997; FDIC 2022).

[1] Boel and Zimmerman (2022) reviewed the recent literature on the causes and consequences of the lack of bank account ownership in the United States.

Other common reasons for not having a bank account include: "bank fees are too high," "bank minimum balance requirements are too high," "want to keep financial records private," and "do not trust bank or are not comfortable dealing with a bank." Hogarth, Anguelov, and Lee (2004) found that households' reasons for not having a bank account were related to their characteristics (such as income, race, marital status, and education) and previous account experiences.

However, little research has been conducted on the dynamics of bank account ownership—the transition from being unbanked to banked or vice versa. Notable exceptions are Rhine and Greene (2013) and FDIC (2022). Rhine and Greene (2013) examined the dynamic process within which changes in families' circumstances contribute to their becoming unbanked. They found that families were significantly more likely to become unbanked when they experienced a decline in income, loss of employment, or loss of health insurance coverage. FDIC (2022) (as well as their previous studies) examined households' previous bank account ownership, their interest in having a bank account in the future, and how these two factors are correlated with each other or with reasons for not having an account. They found that previously banked unbanked households are more likely to be interested in having a bank account than those who were never banked. They also found that reasons for not having a bank account were generally similar across unbanked households with a few exceptions: "problems with past banking or credit history" was more likely to be cited by those who were previously banked and those who were interested in having a bank account, while "do not trust banks" and "avoiding a bank gives more privacy" were more likely to be cited by those who were not interested in having an account.

In our study, we extend the analysis of FDIC (2022) by further exploring the heterogeneity across unbanked households in their likelihood of becoming banked. Two dimensions of unbanked households—whether they are interested or uninterested in having a bank account and whether they are previously or never banked—may indicate the households' likelihood of opening a bank account in the future. Multiple years' data from the FDIC National Survey of Unbanked and Underbanked Households (FDIC survey) suggest that unbanked households who had been interested in having a bank account were more likely to become banked than those who had been uninterested. Additionally, unbanked households who had been previously banked were more likely to become banked than those who had never been banked. An unbanked household's interest in having a bank account may reflect whether their being

currently unbanked is by choice or due to circumstances or barriers that prevent them from having a bank account. Unbanked households who are not interested in having a bank account are more likely to be unbanked by choice and thus they may be less likely to become banked. Prior banking status may reveal unbanked households' past preferences for using banking services. Households being never banked may reflect their past strong preferences for remaining outside the banking system or for using cash for their transactions. Given that consumer preferences are generally sticky, their present preferences may be similar to their past preferences, and thus those who are never banked may be less likely to become banked. Based on these two dimensions, we divide unbanked households into four groups and our analysis focuses on two groups: one group is unbanked households who are interested in having a bank account and previously banked (hereafter "interested-previously-banked" households), who may be more likely to open a bank account than other unbanked households; and the other group is unbanked households who are uninterested in having a bank account and never banked (hereafter "uninterested-never-banked" households), who may be less likely to open a bank account.

To examine what factors are highly correlated with each of the two groups of unbanked households, we conduct a regression model analysis by using the data of multiple years from the FDIC survey. We use a bivariate probit model to incorporate a potential correlation between the two dependent variables—whether a given unbanked household is uninterested in opening a bank account and whether that unbanked household has never been banked.

We find clear differences in characteristics between the two groups of unbanked households. Compared to other unbanked households, interested-previously-banked households tend to be more educated, native-born, having access to digital technology such as a smartphone and internet, and using prepaid cards and nonbanks' transaction and credit services (such as money orders, check cashing, money transfers, and payday, pawn shop, auto title loans). In contrast, uninterested-never-banked households tend to be less educated, a racial minority, foreign born, lacking access to digital technology, and not using prepaid cards and nonbanks' transaction and credit services. Moreover, these two groups of unbanked households differ sharply in their reasons for not having a bank account. Relative to other unbanked households, interested-previously-banked households were more likely to have cited "do not have enough money to meet minimum balance requirements" and "bank account fees are too high or unpredictable" and significantly less likely to have cited "do not trust banks." In contrast,

uninterested-never-banked households were significantly more likely to have cited distrust of banks but significantly less likely to have cited high or unpredictable fees.

Our findings have important implications for financial inclusion strategies. Our results provide suggestive evidence that uninterested-never-banked households are excluded from the banking system and the digital payment system altogether. Uninterested-never-banked households are less likely to use prepaid cards and other nonbank transaction products and have lower ability to access online nonbank transaction account alternatives, implying that they are likely to rely heavily on cash. Therefore, advancing payment inclusion—or affordable access to a bank account or a nonbank transaction account—for these households is critical to ensure that they can receive funds quickly and securely from the government, their employers, or other individuals and that they can participate more fully in the economy, which has increasingly shifted to online and mobile spaces in recent years. In contrast, many interested-previously-banked households are already included in digital payments as they use prepaid cards and nonbank online payment services (such as Venmo and PayPal), and therefore, financial inclusion efforts for this group may focus more on ensuring that they are adequately protected when using nonbank services and improving their access to affordable credit. To attract interested-previously-banked households to the banking system, developing products that address their pain points may be effective. However, to attract uninterested-never-banked households, financial inclusion efforts need to start with earning their trust in the financial services industry.

The contribution of our study is two-folds. First, we contribute to the literature on unbanked households by considering the dynamics of bank account ownership, particularly from being unbanked to being banked. We examine heterogeneity across unbanked groups with different propensities of transitioning to being banked, as indicated by previous bank account ownership status and their interest in having a bank account. Second, our findings provide practical insights on financial inclusion strategies. We find that four groups of unbanked households differ widely in their characteristics, access to technology, use of alternative financial services, and reasons for being unbanked. In particular, unbanked households who are less likely to become banked rely on cash, and thus they are more likely to benefit from a bank account or nonbank transaction account ownership. This finding suggests that it may be especially important for policymakers, community leaders, and financial services providers to focus on this group.

The rest of the paper is organized as follows. Section 2 provides characteristics of unbanked households and trends of unbanked rates. Section 3 describes the data and methodology used in this study. Section 4 provides the results. Section 5 discusses implications of our results for financial inclusion strategies. Section 6 concludes.

2. Unbanked households: Characteristics, unbanked rates, and probabilities of becoming banked

Some household characteristics are highly correlated with unbanked rates. Table 1 shows unbanked rates across all households and by household characteristic for 2013, 2017, and 2021, according to FDIC (2022) and Burhouse et al. (2014).[2] The unbanked rate in the overall population was 7.7 percent in 2013, 6.5 percent in 2017, and 4.5 percent in 2021, while the unbanked rate by household characteristic varied widely but in a consistent fashion. Low-income, less-educated, racial minority (excluding Asian), unemployed, and disabled households have had unbanked rates well above the national average in all three years of the survey. In addition to these characteristics, non-homeowner, foreign-born, and female-householder family (or single-mother) households have had higher unbanked rates. Furthermore, households without access to technology (such as internet access and a smartphone) have had much higher unbanked rates than those with access to technology. The difference in the unbanked rate is most striking in the income category: households with income less than $15,000 have had the highest unbanked rate of 27.7 percent in 2013, 25.7 percent in 2015, and 19.8 percent in 2021, while households with income greater than $75,000 have had the lowest unbanked rate of 0.5 or 0.6 percent.

Table 1: Unbanked Rates by Household Characteristic, 2013, 2017, and 2021 (percent)

Category	Characteristic	2013	2017	2021
All		7.7	6.5	4.5
Household income	Less than $15,000	27.7	25.7	19.8
	$15,000 to $29,999	11.4	12.3	9.2
	$30,000 to $49,999	5.1	5.1	4.0
	$50,000 to $74,999	1.7	1.5	2.1
	$75,000 or greater	0.5	0.6	0.6
Education	Less than high school	25.1	22.4	19.2
	High school	10.8	9.4	6.8

[2] Creamer and Warren (2022) reported similar unbanked rates by household characteristic for the 2013-2019 period using three different surveys, including the Survey of Consumer Finance, the Survey of Income and Program Participation, and the FDIC survey.

	Some college	5.6	5.1	3.3
	College degree	1.1	1.3	0.9
Race	Black	20.5	16.8	11.3
	Hispanic	17.9	14.4	9.3
	Asian	2.2	2.6	2.9
	American Indian / Alaska Native	16.9	18.0	6.9
	Native Hawaiian / Pacific Islander	6.1	2.8	n.a.
	White	3.6	3.0	2.1
Employment	Employed	5.4	4.5	2.6
	Unemployed	23.0	19.9	11.8
	Not in labor force	9.9	9.0	6.8
Disability	Disabled	18.4	18.1	14.8
	Not disabled	7.2	5.7	3.7
	Not applicable	5.7	4.9	3.2
Homeownership	Homeowner	2.6	2.3	1.8
	Non-homeowner	17.3	14.0	9.4
Age of householder	24 or younger	15.7	10.0	5.8
	25 to 34	12.5	8.5	5.1
	35 to 44	9.0	7.8	5.1
	45 to 54	7.5	6.9	5.2
	55 to 64	5.6	5.9	4.8
	65 or older	3.5	3.9	2.7
Nativity	U.S. born	6.9	5.9	4.0
	Foreign born	13.1	10.1	7.3
Marital Status	Married	3.4	2.5	1.8
	Unmarried female-householder family	18.4	15.4	9.2
	Unmarried male-householder family	13.2	9.9	7.4
	Female nonfamily	7.4	7.6	4.9
	Male nonfamily	10.3	9.2	6.7
Metropolitan status	Principal city	11.4	9.4	6.3
	Suburb	5.5	4.5	2.8
	Rural	8.5	7.5	6.2
Region	Northeast	6.8	6.0	4.1
	Midwest	6.4	5.4	4.2
	South	9.2	7.7	4.9
	West	7.4	6.0	4.2
Internet access	Has access	4.5	2.7	n.a.
	No access	20.4	21.0	n.a.
Mobile phone	Smartphone	4.7	4.7	n.a.
	Featured phone	10.0	12.1	n.a.
	No mobile phone	16.4	15.8	n.a.

Sources: FDIC and authors' calculations.

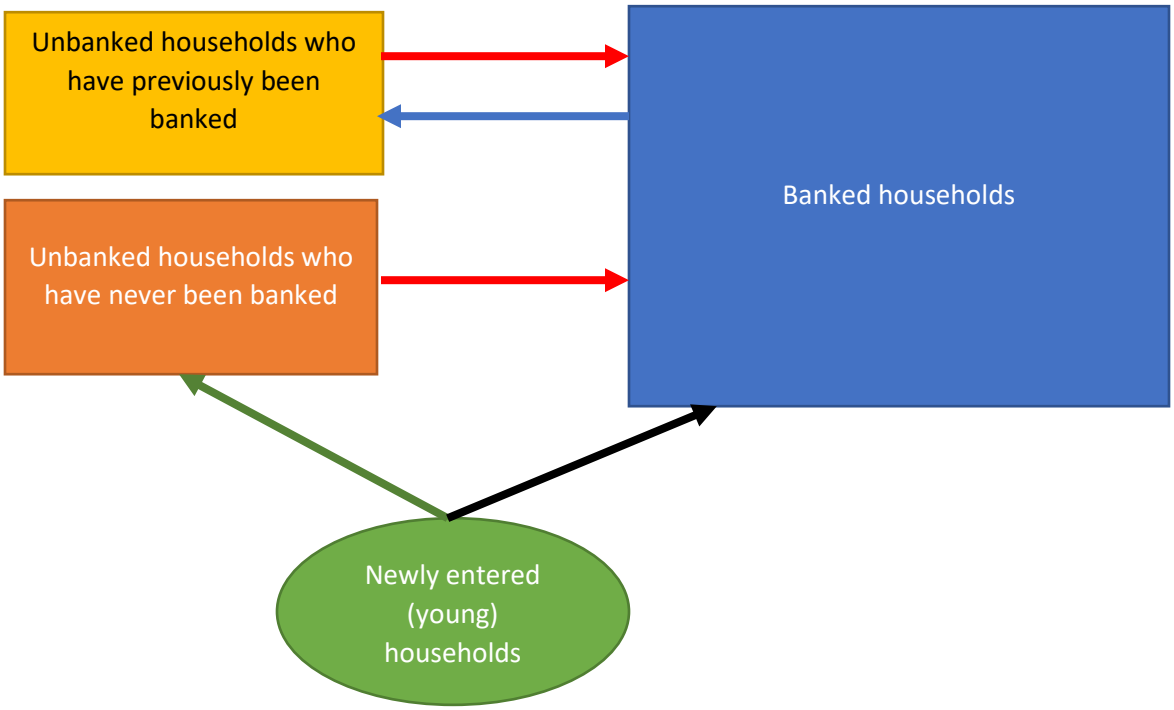
While Table 1 shows mere correlation between household characteristics and unbanked rates, earlier studies found that some characteristics are associated with unbanked rates even after controlling for other characteristics. For example, Hayashi and Minhas (2018) conducted a

regression model analysis among low-income households (income less than $30,000) in 2015 to examine which households' characteristics are independently and strongly associated with unbanked rates. They found that education, age, race, employment status and technological factors contribute to a low-income households' probability of being unbanked. Of the technological factors, they found that low-income households without internet access are much more likely to be unbanked than those with internet access.

Table 1 also reveals that unbanked rates have declined for almost all household characteristics from 2013 to 2021, suggesting more households with a given characteristic have transitioned from being unbanked to being banked than the other way around. The declines in unbanked rates have been particularly sharp (by more than 8 percentage points from 2013 to 2021) for the lowest income, Black and Hispanic, unemployed, non-homeowner, the youngest, and female-householder family households. Although unbanked rates still vary within most characteristic categories, they no longer vary very much within age category. Across age groups, the difference in unbanked rates was only 3.1 percentage points in 2021 (5.8 percent for 24 or younger and 2.7 percent for 65 or older) down from 12.2 percentage points in 2013.

To better understand the dynamics of bank account ownership, Figure 1 describes the transitions from being unbanked to being banked and vice versa. Unbanked households are divided into two groups: one group is those who have previously been banked (yellow box), and the other group is those who have never been banked (orange box). From each of the two groups, some households become banked (red arrows). From banked households (blue box), some households become unbanked (blue arrow), joining the group of unbanked households who have previously been banked. Newly entered households (green oval) are among the youngest households (age 15 to 24), who have entered the market since the last survey. For simplicity, we assume that individuals in these households have never been banked. Some of them become banked (black arrow), while others remain unbanked, joining the group of unbanked households who have never been banked (green arrow).

Figure 1: Transition from being unbanked to being banked and vice versa



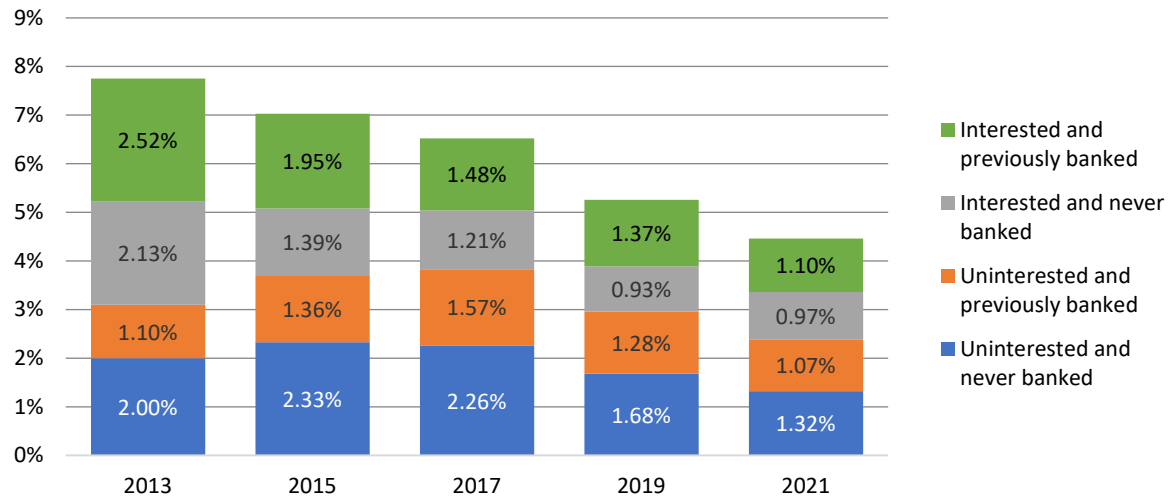
Approximately 30 percent of unbanked households, which is equivalent to 1.8 percent to 2.5 percent of all households, became banked between the two consecutive surveys or every two years from 2013 to 2021. About 1.0 percent to 1.6 percent of all households transitioned from being banked to being unbanked between the two consecutive surveys.[3] Among the youngest group of households (age 15 to 24) in the survey data, we assume that one-third to one-fourth of these households are newly entered households in every survey year and calculate that 6 percent to 15 percent of those new entrants (which is equivalent to about 0.09 percent to 0.26 percent of all households) do not have a bank account and have likely never been banked.

We further divide unbanked households in the FDIC data by their interest in having a bank account, obtaining four groups of unbanked households. The two dimensions, (1) whether unbanked households are interested or uninterested in having a bank account and (2) whether unbanked households have previously been banked or never been banked, which define these four groups of unbanked households, may indicate the households' likelihood of opening a bank

[3] We assume that the share of households who transitioned from being banked to being unbanked between the survey years y and y+2 is twice the share of unbanked households who had a bank account in the past 12 months in the survey year y+2.

account in the future. An unbanked household's interest in having a bank account may reflect whether their being currently unbanked is by choice or due to circumstances or barriers that prevent them from having a bank account. Unbanked households who are not interested in having a bank account are more likely to be unbanked by choice and thus they would be less likely to become banked. Prior banking status may reveal unbanked households' past preferences for using banking services. Households being never banked may reflect their past strong preferences for remaining outside the banking system or for using cash for their transactions. Given that consumer preferences are generally sticky, their present preferences may be similar to their past preferences, and thus, those who have never been banked would be less likely to become banked.

Chart 1: Decomposition of unbanked rates for 2013-2021



Notes: For 2019, a small share of unbanked households' previous banking status and interest in having an account is unknown. The share of such households in all households in 2019 is 0.12 percent.

Sources: FDIC and authors' calculations.

Chart 1 shows the share of the four groups of unbanked households among *all* households from 2013 to 2021. In this chart, "uninterested" households are those who were "not at all interested" in having a bank account for the 2019 and 2021 surveys or those who were "not at all likely" to open a bank account for the 2013, 2015, and 2017 surveys. "Interested" households are those who provided more positive responses: namely, very interested/likely, somewhat interested/likely, and not very interested/likely. Each of the four groups declined in its share from 2013 to 2021; however, because the declines in share varied by group, the composition of

unbanked households has changed over this period. In 2013, interested-previously-banked households had the largest share (2.52 percent) among the four unbanked groups, followed by interested-never-banked households (2.13 percent) and uninterested-never-banked households (2.00 percent). Since 2015, however, uninterested-never-banked households have had the largest share and interested-previously-banked households have had the second largest share. Since 2017, uninterested-previously-banked households have had the third largest share. In 2021, unbanked households were almost evenly distributed across the four groups.

To assess which of the four unbanked groups would be more likely (and less likely) to become banked, we calculate what percent of unbanked households in each group in a survey period (say 2013) became banked before the next survey period (say 2015). For this calculation, we consider two scenarios with respect to whether "uninterested" unbanked households would become "interested" before becoming banked. In scenario 1, we consider the simplest case where the transition from being unbanked to being banked is direct, regardless of whether the household was interested in becoming banked. In scenario 2, we consider a more intuitive case where unbanked households who had been uninterested became interested before becoming banked. For simplicity, we assume that unbanked households do not transition from being interested to being uninterested in both scenarios.[4]

Under scenario 1, unbanked household group g's probability of becoming banked between the survey year y and y+2 is calculated as follows:

$$P_{g,y:y+2} = \{S_{g,y} - (S_{g,y+2} - A_{g,y:y+2})\}/S_{g,y}, \quad (1)$$

where $S_{g,y}$ is the share of unbanked household group g in all households in survey year y, and $A_{g,y:y+2}$ is the share of households who were newly added to unbanked household group g between the survey year y and y+2, such as those who transitioned from being banked to being unbanked or those who newly entered the market (i.e., young households) without opening a bank account.

Under scenario 2, for each previous banking status—either previously banked or never banked—households who transitioned from unbanked to banked were more likely to be interested households, though we do not exclude the possibility that some uninterested

[4] One exception is that we assume some interested-never-banked households transitioned to uninterested-never-banked households between 2013 and 2015 to account for the increase in the share of uninterested-never-banked households which cannot be explained by the newly entered households.

households may also directly become banked (without first becoming interested). Specifically, we consider the extreme case where unbanked households that became banked from each of the banking status were drawn as much as possible from the interested groups, which gives us the upper bounds on the probabilities of interested unbanked households becoming banked between two survey years. For each previous banking status, b, Equations (2) and (3) are the probabilities of becoming banked between the survey years y and y+2 for interested and uninterested households, respectively.

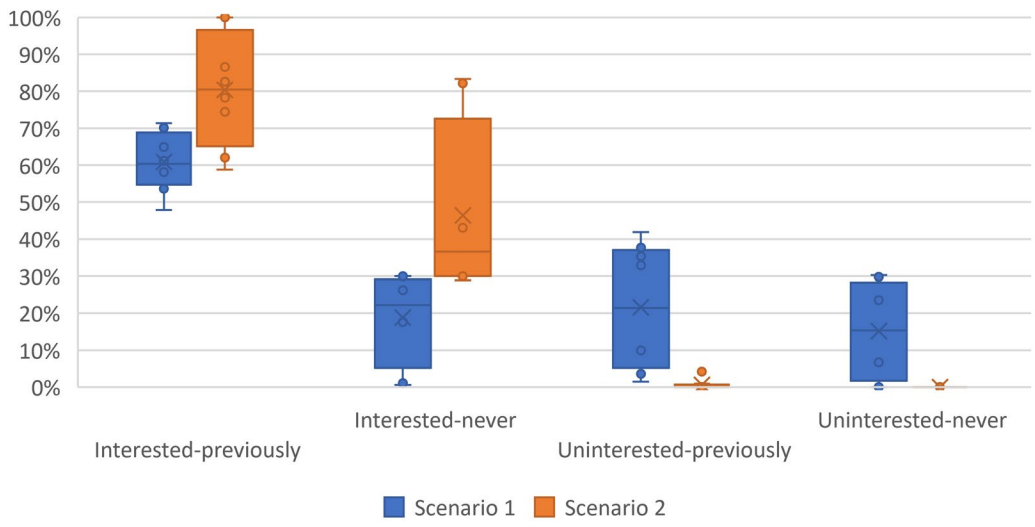
$$P_{b\_I,y:y+2} = Min\,\{S_{b\_I,y},\ S_{b,y} - (S_{b,y+2} - A_{b,y:y+2})\}/S_{b\_I,y}, \quad (2)$$

$$P_{b\_UI,y:y+2} = Max\{S_{b,y} - \left(S_{b,y+2} - A_{b,y:y+2}\right) - S_{b\_I,y},\ 0\}/S_{b\_UI,y}, \quad (3)$$

where $S_{b,y}$ is the share of unbanked households whose previous banking status is b in all households in survey year y, $S_{b\_I,y}$ and $S_{b\_UI,y}$ are the shares of interested and uninterested unbanked households whose previous banking status is b, respectively, and $A_{b,y:y+2}$ is the share of households who were newly added to unbanked households whose previous banking status is b.

Equations (2) and (3) imply that if the share of interested-previously (or never)-banked households in the survey year y is large enough, all previously (or never) banked households who transitioned to banked between the survey years y and y+2 were interested-previously (or never)-banked households. No uninterested-previously (or never)-banked households transitioned to banked but some transitioned to *interested*-previously (or never)-banked. If, instead, the share of interested-previously (or never)-banked households in the survey year y is small, all interested-previously (or never)-banked households transitioned to banked and some of uninterested-previously (or never)-banked households also transitioned to banked.

Chart 2: Probabilities of becoming banked



Sources: FDIC and authors' calculations.

Chart 2 shows the range of probabilities of becoming banked between a survey period to the next for each group for each scenario. Regardless of the scenario, interested-previously-banked households have higher probabilities than any other unbanked groups. Uninterested-never-banked households have lower probabilities than any other unbanked groups, although their probabilities are lower just slightly than interested-never-banked households under scenario 1. Which of the two middle groups—interested-never-banked households and uninterested-previously-banked households—have higher probabilities is inconclusive because it depends on the scenario. Chart 2 confirms that unbanked households' interest in opening a bank account and their prior banking status are highly correlated with their probabilities of becoming banked. Conditional on their prior banking status, interested households have higher probabilities of becoming banked than uninterested households. Similarly, conditional on their interest, previously banked households have higher probabilities than never banked households.

3. Data and Methodology

Our study focuses on unbanked households and examines what factors are highly correlated with each of the two groups of unbanked households: namely, interested-previously-banked households and uninterested-never-banked households. We focus on these two groups because, as discussed in the previous section, interested-previously-banked households are more

likely than other unbanked households to become banked while uninterested-never-banked households are less likely than other unbanked households to become banked. We conduct a regression model analysis using data on unbanked households for multiple years.

3.1. Data

We use five rounds of the FDIC survey data from 2013 to 2021. The FDIC survey is a biennial survey conducted since 2009 as a supplement to the U.S. Census Bureau's Current Population Survey. The FDIC survey is highly reliable because its sample size is large (more than 30,000 households were included in the sample each year) and its weighted sample is nationally representative.

The respondents were asked about their banking status and use of alternative financial services, including prepaid cards and nonbank financial transaction and credit services. Unbanked households were asked for additional information, such as reasons for not having a bank account, their previous banking status, and their interest in (or likelihood of) having a bank account. From all respondents, the survey also gathered information on each household's characteristics. Sociodemographic characteristics include income, education, age, race, employment status, disability status, homeownership, marital status, and more. Geographic characteristics include state, metropolitan statistical area (MSA), and proximity to urban areas. Until the 2019 survey, the respondents were asked about their technology adoption, such as whether they have internet access and whether they have a smartphone, a featured phone, or no mobile phone. But in the 2021 survey, such questions were not asked. Therefore, we create a proxy for internet access or mobile phone ownership from other questions, including whether the respondents used nonbank online payment services and whether they made online purchases with a prepaid card.

For our analysis, we use a pooled sample of 9,810 unbanked households from the total of 175,742 households in the five rounds of the FDIC survey. Among 9,850 unbanked households, we exclude 40 households who did not respond to previous banking status, their interest in having a bank account, and their reasons for not having a bank account. All these households are in the 2019 survey.

Table 2 reports summary statistics for the weighted pooled sample of unbanked households.[5] We divide unbanked households into four groups in the same way as we do for Chart 1 in the previous section. Uninterested-never-banked households have the largest share (31.0 percent) followed by interested-previously-banked households (27.1 percent). The remaining unbanked households are distributed almost evenly between interested-never-banked and uninterested-previously-banked households (20.7 percent and 21.3 percent, respectively).

Table 2: Summary Statistics for Unbanked Household Characteristics

Category	Characteristic	Share of sample
Interest in having an account and previous banking status	Interested, previously banked	0.271
	Interested, never banked	0.207
	Uninterested, previously banked	0.213
	Uninterested, never banked	0.310
Household income	Less than $15,000	0.495
	$15,000 to $29,999	0.276
	$30,000 to $49,999	0.148
	$50,000 to $74,999	0.050
	$75,000 or greater	0.030
Education	Less than high school	0.349
	High school	0.371
	Some college	0.219
	College degree	0.061
Race	Black	0.360
	Hispanic	0.285
	Asian	0.023
	American Indian / Alaska Native	0.024
	Native Hawaiian / Pacific Islander	0.002
	White	0.307
Employment	Employed	0.415
Disability	Disabled	0.235
Homeownership	Homeowner	0.223
Age of householder	24 or younger	0.085
	25 to 34	0.228
	35 to 44	0.203
	45 to 54	0.184
	55 to 64	0.166
	65 or older	0.133
Nativity	U.S. born	0.759
Marital Status	Married	0.199
	Unmarried female-householder family	0.275
	Unmarried male-householder family	0.078

[5] Summary statistics for the weighted sample of unbanked households for 2013, 2017, and 2021 are shown in Appendix C.

	Female nonfamily	0.195
	Male nonfamily	0.247
Metropolitan status	Principal city	0.424
	Suburb	0.297
	Rural	0.162
	Unknown	0.117
Region	Northeast	0.157
	Midwest	0.185
	South	0.450
	West	0.207
Technology access	Internet access or mobile phone (proxy)	0.556
Alternative financial services use	Prepaid cards	0.280
	Nonbank transaction services	0.545
	Nonbank credit services	0.144
Reasons for not having a bank account	Lack of money to meet minimum balance	0.545
	Do not trust banks	0.333
	Fees too high or unpredictable	0.330
	Avoiding gives more privacy	0.313
	ID, credit, or banking history problems	0.182
	Banks do not offer needed products/services	0.155
	Inconvenient hours or locations	0.128
Year of survey	2013	0.241
	2015	0.225
	2017	0.212
	2019	0.173
	2021	0.148

Sources: FDIC and authors' calculations

Consistent with the unbanked rates shown in Table 1 in the previous section, higher shares of the sample are from low-income, less-educated, racial minority, not employed, non-homeowner, and unmarried households. Relative to overall households, unbanked households are more likely to be disabled, younger, foreign born, living in the principal city of a metropolitan area, and lacking technology access. Unbanked households are also three to four times more likely to use prepaid cards and nonbank financial services than banked households.[6]

Unbanked households cited multiple reasons for not having a bank account. Among them, a lack of money to meet minimum balance requirement or keep in an account is the most cited reason, with more than half of unbanked households citing this reason. Distrust of banks, high or unpredictable fees, and "avoiding banks gives more privacy" are the second, third, and fourth most cited reasons, with more than 30 percent of unbanked households cited one of these

[6] Among banked households, 7.4 percent used a prepaid card, 14.3 percent used nonbank transaction services, and 5.1 percent used nonbank credit services.

reasons. The other three reasons, "ID, credit, or banking history problems," "banks do not offer needed products or services," and "bank hours or locations are inconvenient," were cited by less than 20 percent of unbanked households.

Unbanked households from the earlier rounds of the survey make up larger shares of the pooled sample than those from the latter round. This is because the number of unbanked households steadily declined over the five rounds of the FDIC survey.

3.2. Methodology

We use a regression model to examine the factors independently correlated with being uninterested-never-banked and interested-previously-banked, respectively. We run a bivariate (weighted) probit model to simultaneously estimate two binary dependent variables: whether an unbanked household is uninterested or interested, and whether an unbanked household has never been banked or previously been banked. This model is described as follows:

$$y_{1i}^{*} = \alpha_1 + \beta_1 . X_i + \varepsilon_{1i}, \;\; y_{1i} = 1(y_{1i}^{*} > 0), \tag{4}$$

$$y_{2i}^{*} = \alpha_2 + \beta_2 . X_i + \varepsilon_{2i}, \;\; y_{2i} = 1(y_{2i}^{*} > 0), \tag{5}$$

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right], \tag{6}$$

where y_{1i} = 1 if unbanked household *i* is uninterested and 0 otherwise, and where y_{2i} = 1 if unbanked household *i* is never banked and 0 otherwise. X_i is a vector of explanatory variables common for both Equations (4) and (5). The assumptions of error terms in Equations (4) and (5) are shown in (6) and ρ is the tetrachoric correlation between y_1 and y_2.

To interpret the coefficients estimated from the model, we calculate marginal effects to quantify the degree to which each explanatory variable is individually associated with the probability of being uninterested-never-banked or being interested-previously-banked. Marginal effects indicate the change in the probability of being uninterested-never-banked (or being interested-previously-banked) when an explanatory variable increases by one unit, holding all other explanatory variables fixed.

Using a bivariate probit model has both advantages and disadvantages. An advantage is that the model enables us to incorporate a correlation between two binary dependent variables. FDIC (2022) reported that unbanked households who have previously been banked are more likely to be interested in having a bank account. Therefore, we expect ρ to be positive. Another

advantage is that the model also allows us to examine how each explanatory variable is correlated with the probability of being uninterested (or interested) and the probability of being never banked (or previously banked) separately. A downside of the model is less flexibility in estimating marginal effects. The marginal effect of a given factor on the probability of being uninterested-never-banked (i.e., $y_1 = 1$ and $y_2 = 1$) is the complete opposite to that of the same factor on the probability of being interested-previously banked (i.e., $y_1 = 0$ and $y_2 = 0$); in other words, these two marginal effects have the opposite sign and almost the same absolute value. This downside, however, is less problematic for our estimation. A robustness check in the Appendix A confirms that the marginal effects obtained from the bivariate model are very similar to those obtained from a multinomial logit model, which is more flexible in estimating marginal effects but cannot incorporate the correlation between the probability of being uninterested and the probability of being never banked.

4. Results

As expected, the tetrachoric correlation between the two binary dependent variables (ρ) is estimated to be 0.256 and statistically significantly different from zero (p-value is less than 0.01). This confirms that an unbanked household's probabilities of being uninterested and being never banked are correlated.

The two groups of unbanked households—uninterested-never-banked and interested-previously-banked—have clear differences in sociodemographic characteristics, technology access, alternative financial service use, and reasons for not having a bank account. Our model specification includes all four sets of explanatory variables: (1) sociodemographic and geographic characteristics, (2) technology access and alternative financial service use variables, (3) reasons for not having a bank account, and (4) year dummies.[7]

Table 3 shows the marginal effects of sociodemographic and geographic characteristics on the probability of being uninterested-never-banked and the probability of being interested-previously-banked. We list the characteristic categories from the one that has the strongest marginal effects to the one that has the weakest marginal effects.

[7] We also run a bivariate probit model using other specifications. See Appendix B.

Table 3: Marginal Effects: Sociodemographic and Geographic Characteristics

Category	Characteristic	Uninterested-never-banked		Interested-previously-banked	
Education	Less than high school	0.105***	(.012)	-0.099***	(.012)
	High school	0.055***	(.011)	-0.054***	(.012)
	College degree	0.027	(.019)	-0.029	(.019)
Race	Black	0.033***	(.011)	-0.028***	(.011)
	Hispanic	0.092***	(.015)	-0.081***	(.013)
	Asian	0.098***	(.035)	-0.084***	(.028)
	American Indian / Alaska Native	0.006	(.025)	-0.002	(.026)
	Native Hawaiian / Pacific Islander	0.003	(.081)	-0.007	(.089)
Nativity	U.S. born	-0.085***	(.014)	0.080***	(.013)
Disabled		0.037***	(.013)	-0.034***	(.012)
Metropolitan status	Principal city	-0.024**	(.010)	0.022**	(.009)
	Rural	0.020*	(.012)	-0.018*	(.011)
Homeowner		-0.021**	(.011)	0.020**	(.010)
Age of householder	24 or younger	0.006	(.021)	-0.034*	(.019)
	25 to 34	0.009	(.014)	-0.014	(.013)
	35 to 44	0.007	(.014)	-0.008	(.013)
	55 to 64	0.003	(.014)	-0.008	(.014)
	65 or older	0.024	(.017)	-0.047***	(.016)
Household income	Less than $15,000	0.038*	(.021)	-0.032	(.021)
	$15,000 to $29,999	0.027	(.021)	-0.022	(.021)
	$30,000 to $49,999	0.030	(.022)	-0.025	(.022)
	$75,000 or greater	0.047	(.031)	-0.042	(.029)
Marital Status	Unmarried female-family	-0.008	(.014)	0.012	(.013)
	Unmarried male-family	0.008	(.019)	-0.002	(.017)
	Female nonfamily	0.017	(.015)	-0.012	(.014)
	Male nonfamily	0.009	(.014)	-0.003	(.013)
Employed		0.014	(.011)	-0.013	(.010)
Region	Northeast	0.005	(.015)	-0.004	(.014)
	Midwest	0.002	(.014)	-0.002	(.013)
	South	0.000	(.012)	-0.000	(.011)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristics are some college (education), white (race), suburb and unknown (metropolitan status), 45 to 54 (age of householder), $50,000 to $74,999 (income), married and other (marital status), and west (region).

Among sociodemographic characteristics, education, race, and nativity are strongly associated with both the probability of being uninterested-never-banked and the probability of being interested-previously-banked, even after controlling for all other characteristics. Within education category, relative to the unbanked households with some college (which is the base characteristic), unbanked households without a high school diploma have a significantly higher probability of being uninterested-never-banked—by about 10 percentage points—and a

significantly lower probability of being interested-previously-banked—by about 10 percentage points. Unbanked households with a high school diploma have a similar tendency, though the magnitude of marginal effects is almost a half of those without a high school diploma (0.055 and -0.054, respectively).

Within race category, Hispanic and Asian unbanked households are much more likely to be uninterested-never-banked (marginal effects ranging between 0.09 and 0.10) and much less likely to be interested-previously banked (marginal effects are around -0.08). Black unbanked households have a similar tendency, though the magnitude of marginal effect is much smaller.

U.S.-born unbanked households are significantly less likely to be uninterested-never-banked (marginal effect of -0.085) and significantly more likely to be interested-previously-banked (marginal effect of 0.08). This implies that foreign-born unbanked households are significantly more likely to be uninterested-never-banked, even after controlling for other characteristics. Hispanic and foreign-born are highly correlated, but our results suggest that each of these two characteristics is independently and strongly associated with the probability of being uninterested-never-banked.

Disability status, metropolitan status, and homeownership are also associated with both probabilities, though the magnitudes of their marginal effects are moderate (the absolute value of marginal effects is smaller than 0.04). Unbanked households with a disability have a higher probability of being uninterested-never-banked and a lower probability of being interested-previously-banked, while unbanked households living in a principal city and those who are homeowners have the opposite tendency.

Age is strongly associated with only one probability. Unbanked households with an older householder (aged 65 or older) are significantly less likely to be interested-previously-banked, but their likelihood of being uninterested-never-banked is not statistically different from other age groups.

Income, marital status, employment status, and region are barely associated with the probabilities of being uninterested-never-banked and being interested-previously-banked. This may be somewhat surprising because except for region, these categories are highly correlated with the probability of being unbanked (as shown in Table 1).

Unbanked households' access to technology and use of alternative financial services are strongly associated with both probabilities (Table 4). Unbanked households who have internet

access or a mobile phone have a significantly higher probability of being interested-previously-banked (9.5 percentage points) than unbanked households who have no internet access and no mobile phone. Conversely, unbanked households who lack those two technologies are significantly more likely to be uninterested-never-banked (by about 10 percentage points) than unbanked households who have those technologies.

Table 4: Marginal Effects: Technology Access and Alternative Financial Services Use

Category	Characteristic	Uninterested-never-banked		Interested-previously-banked	
Technology access	Internet access or mobile phone	-0.101***	(.010)	0.095***	(.009)
Alternative financial services use	Prepaid cards	-0.073***	(.010)	0.069***	(.009)
	Nonbank transaction services	-0.063***	(.009)	0.059***	(.008)
	Nonbank credit services	-0.082***	(.012)	0.077***	(.011)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ).

Although the magnitude of marginal effects is slightly smaller, unbanked households who use alternative financial services, such as prepaid cards, nonbank transaction services, and nonbank credit services, are more likely to be interested-previously-banked and less likely to be uninterested-never-banked than those who do not use alternative financial services. These results suggest that uninterested-never-banked households tend to be less technologically savvy and rely heavily on cash, while interested-previously-banked unbanked households tend to have access to technology and use alternative financial services.

Most of the reasons for being unbanked are also associated with both probabilities (Table 5). Among those reasons, "do not trust banks" has the strongest association, followed by "fees to high or unpredictable." Those who cited "do not trust banks" have a higher probability of being uninterested-never-banked and a lower probability of being interested-previously-banked than those who did not cite "do not trust banks" by about 9 percentage points. In contrast, relative to those who did not cite "fees are too high or unpredictable," those who cited that reason have a 7-percentage point higher probability of being interested-previously-banked and a 7-percentage point lower probability of being uninterested-never-banked. Although the magnitude of marginal effects is smaller, those who cited "lack of money to meet minimum balance" or "inconvenient hours and locations" are more likely to be interested-previously-banked and less likely to be uninterested-never-banked. On the other hand, those who cited "avoiding banks gives more

privacy" or "banks do not offer needed products (and services)" are more likely to be uninterested-never-banked and less likely to be interested-previously-banked. One reason, "ID, credit, or banking history problems," is not associated with either probability.

Table 5: Marginal Effects: Reasons for Being Unbanked and Year

Category	Characteristic	Uninterested-never-banked		Interested-previously-banked	
Reasons for not having a bank account	Do not trust banks	0.094***	(.011)	-0.087***	(.010)
	Fees too high or unpredictable	-0.074***	(.011)	0.069***	(.010)
	Lack of money to meet min. balance	-0.050***	(.009)	0.046***	(.008)
	Inconvenient hours or locations	-0.044***	(.014)	0.040***	(.013)
	Avoiding banks gives more privacy	0.038***	(.011)	-0.035***	(.010)
	Banks do not offer needed products	0.029**	(.014)	-0.027**	(.013)
	ID, credit, or banking history problems	-0.001	(.012)	0.001	(.011)
Year	2013	-0.068***	(.014)	0.059***	(.013)
	2015	0.004	(.015)	-0.002	(.013)
	2017	0.033**	(.015)	-0.028**	(.013)
	2021	-0.058***	(.016)	0.058***	(.016)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristic is 2019 (year).

Interestingly, reasons that are positively associated with being interested-previously-banked are regarding features of bank products, such as fees, minimum requirements, and bank hours and locations. In contrast, reasons that are positively associated with being uninterested-never-banked are regarding households' views or perceptions on banks, such as trust, privacy, and needed products/services.

Finally, the marginal effects of year dummies suggest that even after controlling for other explanatory variables, the probability of being uninterested-never-banked trended up from 2013 to 2017 then trended down from 2017 to 2021 (u-shaped), while the probability of being interested-previously-banked shows the opposite trend (inverse u-shaped).

In addition to the marginal effects discussed above, the bivariate probit model allows us to separate each explanatory variable's association with the probability of being uninterested (or interested) and the probability of being never banked (or previously banked). We use these results to validate that uninterested-never-banked households would be less likely than interested-never-banked households and uninterested-previously-banked households to become banked. Table 6 shows the partial effects of each explanatory variable on the probability of being uninterested and the probability of being never banked.

Table 6: Partial Effects

Category	Characteristic	Uninterested		Never banked	
Education	Less than high school	0.056***	(.016)	0.148***	(.016)
	High school	0.022	(.015)	0.087***	(.015)
	College degree	-0.032	(.026)	0.088***	(.025)
Race	Black	-0.041***	(.014)	0.103***	(.014)
	Hispanic	0.005	(.019)	0.168***	(.018)
	Asian	0.026	(.042)	0.156***	(.043)
	American Indian /Alaska Native	-0.069**	(.035)	0.078**	(.033)
	Native Hawaiian / Pacific Islander	0.019	(.114)	-0.009	(.089)
Nativity	U.S. born	-0.002	(.019)	-0.163***	(.017)
Disabled		0.071**	(.016)	-0.000	(.016)
Metropolitan status	Principal city	-0.048***	(.013)	0.001	(.012)
	Rural	0.009	(.015)	0.029**	(.014)
Homeowner		-0.023	(.014)	-0.019	(.013)
Age of householder	24 or younger	-0.084***	(.026)	0.124***	(.024)
	25 to 34	-0.034*	(.018)	0.057***	(.018)
	35 to 44	-0.014	(.018)	0.029*	(.017)
	55 to 64	0.046**	(.019)	-0.035*	(.018)
	65 or older	0.133***	(.022)	-0.062***	(.021)
Household income	Less than $15,000	0.081***	(.028)	-0.010	(.027)
	$15,000 to $29,999	0.065**	(.028)	-0.016	(.027)
	$30,000 to $49,999	0.064**	(.029)	-0.009	(.028)
	$75,000 or greater	0.060	(.041)	0.029	(.039)
Marital Status	Unmarried female-family	0.020	(.017)	-0.040**	(.017)
	Unmarried male-family	0.043*	(.024)	-0.034	(.023)
	Female nonfamily	0.095***	(.019)	-0.066***	(.018)
	Male nonfamily	0.072***	(.018)	-0.060***	(.017)
Employed		0.014	(.014)	0.012	(.013)
Region	Northeast	-0.017	(.019)	0.026	(.019)
	Midwest	-0.011	(.018)	0.015	(.018)
	South	-0.022	(.015)	0.022	(.015)
Technology	Internet or mobile phone	-0.077***	(.013)	-0.119***	(.012)
Alternative financial services use	Prepaid cards	-0.040***	(.013)	-0.102***	(.012)
	Nonbank trans. services	-0.055***	(.012)	-0.067***	(.011)
	Nonbank credit services	-0.055***	(.016)	-0.103***	(.015)
Reasons for not having a bank account	Do not trust banks	0.122***	(.014)	0.058***	(.013)
	Fees too high or unpredictable	-0.041***	(.014)	-0.102***	(.014)
	Lack of money to meet min. balance	-0.076***	(.012)	-0.020*	(.011)
	Inconvenient hours or locations	-0.070***	(.019)	-0.014	(.018)
	Avoiding banks gives more privacy	0.051***	(.014)	0.022	(.013)
	Banks do not offer needed products	0.020	(.018)	0.037**	(.017)
	ID, credit, or banking history problems	-0.020	(.015)	0.018	(.015)
Year	2013	-0.143***	(.018)	0.016	(.017)
	2015	-0.011	(.018)	0.017	(.017)
	2017	0.031*	(.018)	0.031*	(.018)
	2021	-0.074***	(.022)	-0.042**	(.021)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristics are some college (education), white (race), suburb and unknown (metropolitan status), 45 to 54 (age of householder), $50,000 to $74,999 (income), married and other (marital status), west (region), and 2019 (year).

Education, race, and nativity are strongly associated with the probability of being never banked but their association with the probability of being uninterested is somewhat limited. Unbanked households with less than high school are more likely to be uninterested as well as to be never banked. Black and American Indian / Alaska Native unbanked households are more likely to be never banked but less likely to be uninterested, and as a result, their likelihood of being uninterested-never-banked is lower than that of Hispanic and Asian unbanked households (as shown in Table 3).

In contrast, disability status and income are associated with the probability of being uninterested but are not associated with the probability of being never banked. Income's association with the probability of being uninterested is not strong enough to make its association with the probability of being uninterested-never-banked statistically significant.

Among metropolitan characteristics, principal city is strongly associated with the probability of being interested, while rural is associated with the probability of being never banked. Each association contributes to a statistically significant association with the probability of being uninterested-never-banked or interested-previously-banked.

Age and marital status are strongly associated with both probabilities. Unbanked households with older householders are more likely to be uninterested and less likely to be never banked. Similarly, unmarried unbanked households are more likely to be uninterested and less likely to be never banked. As a result, their association with the probability of being uninterested-never-banked is limited.

The remaining sociodemographic and geographic categories—homeownership, employment status, and region—are not strongly associated with either probability.

Technology access and alternative financial services use are strongly associated with both probabilities. Unbanked households who have access to internet or mobile phone and unbanked households who use alternative financial services are more likely to be interested and more likely to be previously banked.

Among reasons for not having a bank account, "do not trust banks," "fees are too high or unpredictable," and "lack of money to meet minimum requirement" are strongly associated with

both probabilities; “inconvenient hours or locations,” “avoiding banks gives privacy,” and “banks do not offer needed products (or services)’ are strongly associated with one probability; and “ID, credit, or banking history problem” is associated with neither probability. Unbanked households who cited reasons that are related to bank service features, such as fees, minimum requirements, hours, and locations, are more likely to be interested and more likely to be previously banked. Unbanked households who cited reasons that are related to their views or perceptions of banks, such as trust and privacy, are more likely to be uninterested and more likely to be never banked.

Year dummies are associated with both probabilities. Their associations suggest that the probability of being uninterested and the probability of being never banked increased until 2017 and decreased from 2017 to 2021.

The results from the bivariate model, especially those related to technology access, alternative financial services use, and reasons for not having a bank account, validate that uninterested-never-banked households would be less likely than interested-never-banked households or uninterested-previously-banked households to become banked. Conditional on being never banked, unbanked households who have technology access and those who use alternative financial services are more likely to be interested. Similarly, conditional on being uninterested, unbanked households who have technology access and those who use alternative financial services are more likely to be previously banked. These imply that relative to interested-never-banked households or uninterested-previously-banked households, uninterested-never-banked households lack the technologies to better utilize bank services and lack familiarity with not only bank services but also alternative financial services. Furthermore, conditional on being never banked or being uninterested, uninterested-never-banked households are more likely than interested-never-banked households or uninterested-previously-banked households to have cited distrust of bank as a reason for not having a bank account. As a result, compared to other unbanked households, uninterested-never-banked households face significant impediments to becoming banked, including the lack of technologies to access bank services, the lack of familiarity with financial services in general, and the lack of trust in banks.

5. Implications for financial inclusion strategies

Because unbanked households are diverse, designing financial inclusion policies or strategies tailored to specific groups would be more effective than applying common strategies to all unbanked households. Our results offer policymakers, community leaders, and financial services providers some insights into designing such policies and strategies.

Advancing bank account ownership may be less critical for interested-previously-banked unbanked households. These households tend to use alternative transaction services, such as prepaid cards and nonbank P2P payment services, which enable them to make and receive digital payments relatively safely at low costs. Moreover, they tend to have access to technologies, such as internet and smartphones, meaning that they have the ability to access digital payment services even if they are not currently doing so.

Further, promoting bank account ownership among the interested-previously-banked unbanked households may be relatively easy not only because they are interested in becoming banked but also because existing inclusion efforts actively address their reasons for being unbanked. Interested-previously-banked unbanked households are more likely to have cited bank service features that do not work for them—high or unpredictable fees, minimum balance requirements that are difficult to meet, and inconvenient hours and locations.[8] Both the public and private sectors are actively engaged in efforts to address the barriers posed by these features (Toh 2022). A notable initiative is the Bank On movement, which seeks to increase the availability of safe, low-cost bank accounts that have low minimum deposit requirements, low or waivable monthly maintenance fees, no overdraft and various other account fees.[9] A growing number of bank branches offer Bank On-certified accounts. As of January 2023, these accounts are available at over 46,000 branches across the United States, and many interested-previously-banked unbanked households likely live close to one of these branches. Thus, boosting awareness of Bank On accounts and connecting interested-previously-banked unbanked households to these accounts may be effective in increasing bank account ownership among these households.

[8] Barr (2012) found that unbanked households surveyed in 2005 and 2006 had cited potential changed that could make them more likely to open a bank account were lower and less confusing fees, lower minimum balance requirements, more convenient bank hours and locations, and faster access to new deposits.

[9] The standards that bank accounts must meet to be Bank On-certified are available at https://bankon.wpenginepowered.com/wp-content/uploads/2022/08/Bank-On-National-Account-Standards-2023-2024.pdf.

In contrast, promoting ownership of a bank account or a nonbank transaction account among uninterested-never-banked households may be more critical. Many uninterested-never-banked households are excluded from digital payment system, as they also tend not to use nonbank transaction services that may serve as substitutes for bank payment services and lack the technologies needed to access many of these services. Instead, these households tend to rely heavily on cash, which is often a less convenient and costlier way of making transactions (Toh 2021). Moreover, uninterested-never-banked households were more likely to have negative views and perceptions of banks and financial service providers more broadly. Many of these households cited distrust and privacy concerns as their reasons for being unbanked and their distrust and privacy concerns may extend to nonbank service providers, which is suggested by their tendency of not using alternative financial services.

To promote account ownership among uninterested-never-banked households, sufficiently addressing their distrust and privacy concerns is a challenging but an essential task. Some existing efforts such as introduction and enforcement of strong consumer protection laws may help increase these households' confidence in bank and nonbank financial services, but whether other efforts such as financial education programs help increase these households' trust is uncertain. Van der Cruijsen, de Haan, and Roerink (2021) found that consumers' trust in financial institutions are positively associated with their financial literacy, suggesting that financial education that improves financial literacy may help increase consumers' trust. However, little research has been conducted to examine the effectiveness of financial education programs in increasing financial literacy in the United States. In addition, Rengert and Rhine (2016) found that households' distrust of banks may be deeply rooted and passed down from generation to generation, which suggests earning their trust is a crucial challenge. To attract this group of unbanked households, policymakers, community leaders, and financial services providers will likely need to continue to develop innovative strategies for earning these households' trust.[10]

[10] Rengert and Rhine (2016) discussed existing bank strategies to build trust and familiarity among unbanked, underbanked, and low-to-moderate-income consumers, such as creating local partnerships, establishing a welcoming local presence in the community, reaching local consumers with appropriate language and communications, and offering branch products and services in convenient locations and during convenient hours. Their qualitative research did not attempt to measure the impact of particular bank efforts or to determine their effectiveness.

Although unbanked households' interest in bank account ownership and prior banking status are not easily observable characteristics, our analysis offers policymakers some guidance on how they can implement these tailored policies. As discussed in the previous section, being uninterested-never-banked and being interested-previously-banked are correlated with distinct sets of observable characteristics. To target the uninterested-never-banked households, policymakers may want to focus their efforts on neighborhoods with lower average education level, higher shares of minorities and immigrants, lower rates of homeownership, or located in rural areas. Further, to reach these consumers more effectively, policymakers may want to focus on using non-digital channels, given that many of these consumers tend to lack smartphones and internet access. To target the interested-previously-banked households, policymakers may want to concentrate their efforts in principal cities, neighborhoods with higher shares of U.S.-born households and lower shares of minorities or older consumers. Digital channels may be effective for reaching these consumers, as many of them have access to necessary technologies.

Finally, a central bank digital currency (CBDC) for retail payments may be a potential alternative to the ownership of bank account or nonbank transaction accounts. Maniff (2020) discussed several design features that address specific problems facing the unbanked. Some of them are particularly important for uninterested-never-banked households. Because uninterested-never-banked households heavily rely on cash, those households may be attracted to CBDC if it were designed to have very similar features to cash, such as low cost and some degree of privacy. CBDC should also be easily converted into cash and vice versa because uninterested-never-banked households may continue to use cash where possible. Furthermore, CBDC should be accessible without internet access or a smartphone because uninterested-never-banked households tend to lack such technologies.

6. Conclusion

Over the past decade, the national unbanked rate steadily declined, implying that some unbanked households in earlier years became banked in later years. In this paper, we use survey data of multiple years to examine which types of unbanked households are more likely to open a bank account and which types are less likely. We first divide unbanked households based on two dimensions—whether they are interested in having a bank account and whether they have previously been banked or never been banked—and then run a regression model to identify

factors that are highly associated with the probability of being interested-previously-banked households and the probability of being uninterested-never-banked households.

We find that the two groups of unbanked households have clear differences in sociodemographic characteristics, technology access, alternative financial service use, and reasons for not having a bank account. Among unbanked households, interested-previously-banked households, who are more likely to open an account, tend to be more educated, native-born, having access to digital technology, and using alternative financial services. They also tend to have cited bank service features that do not work for them such as high or unpredictable fees, minimum balance requirements, and inconvenient bank hours and locations, as their reasons for not having a bank account. In contrast, uninterested-never-banked households, who are less likely to open an account, tend to be less educated, a racial minority, foreign born, lacking access to digital technology, and relying heavily on cash. They also tend to have cited their negative views or perceptions on banks, such as distrust and privacy concerns, as their reasons for not having a bank account.

Our results shed light on the importance of designing tailored policies and strategies in advancing financial inclusion effectively. Our results also offer some insights into designing such policies and strategies. For uninterested-never-banked households, prioritizing payment inclusion may be effective as they still rely heavily on cash, but this may not be the case for interested-previously-banked because many of them have already used digital payments. To attract interested-previously-banked households to the banking system, developing products that address their pain points may be effective. However, to attract uninterested-never-banked households, financial inclusion efforts need to start with earning their trust in the financial services industry.

References

Barr, M.S. 2012. *No Slack: The Financial Lives of Low-Income Americans*. Washington: Brookings Institution Press.

Boel, P., and P. Zimmerman. 2022. "Unbanked in America: A Review of the Literature." Federal Reserve Bank of Cleveland *Economic Commentary* No 2022-07.

Burhouse, S., K. Chu, R. Goodsterin, J. Northwood, Y. Osaki, and D. Sharma. 2014. "2013 FDIC National Survey of Unbanked and Underbanked Households," Federal Deposit Insurance Corporation, October.

Caskey, J. P. 1997. "Lower Income Americans, Higher Cost Financial Services." University of Wisconsin-Madison, School of Business: Filene Research Institute, Center for Credit Union Research

Creamer, J.F., and L.H. Warren. 2022. "Unbanked and Impoverished? Exploring Banking and Poverty Interactions Over Time." U.S. Census Bureau Working Paper SEHSD-WP2022-16.

FDIC. 2022. "2021 FDIC National Survey of Unbanked and Underbanked Households." October.

Hayashi, F., and S. Minhas. 2018. "Who Are the Unbanked? Characteristics Beyond Income." Federal Reserve Bank of Kansas City *Economic Review*, Vol. 103, No. 2.

Hogarth, J.M., C.E. Anguelov, and J. Lee. 2004. "Why Don't Households Have a Checking Account?" *Journal of Consumer Affairs* 38(1), 1-34.

Hogarth, J.M., and K.H. O'Donnell. 2019. "Banking Relationships of Lower-Income Families and the Governmental Trend toward Electronic Payment." *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, July.

Kennickell, A., M. Starr-McCluer, and B.J. Surette. 2000. "Recent Changes in U.S. Family Finances: Results from the 1998 Survey of Consumer Finances." *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, January.

Maniff, J.L. 2020. "Inclusion by Design: Crafting a Central Bank Digital Currency to Reach All Americans." Federal Reserve Bank of Kansas City *Payments System Research Briefing*, December 2.

Rengert, K.M., and S.L.W. Rhine. 2016. "Bank Efforts to Serve Unbanked and Underbanked Consumers: Qualitative Research." Federal Deposit Insurance Corporation, May 25.

Rhine, S.L.W., and W.H. Greene. 2006. "The Determinants of Being Unbanked for U.S. Immigrants." *Journal of Consumer Affairs* 40(1), 21-40.

Rhine, S.L.W., and W.H. Greene. 2013. "Factors that Contribute to Becoming Unbanked." *Journal of Consumer Affairs* 47(1), 27-45.

Stegman, M.A., and R. Faris. 2005. "Welfare, Work and Banking: The Use of Consumer Credit by Current and Former TANF Recipients in Charlotte, North Carolina." *Journal of Urban Affairs* 27(4), 379-402.

Toh, Y.L. 2021. “When Paying Bills, Low-Income Consumers Incur Higher Costs.” Federal Reserve Bank of Kansas City *Payments System Research Briefing*, November.

Toh, Y.L. 2022. “Promoting Payment Inclusion in the United States.” Federal Reserve Bank of Kansas City *Payments System Research Briefing*, October.

U.S. Treasury. 1997. Mandatory EFT Demographic Study. OMB 15100-00-68, Washington, DC: Financial Management Service.

Van der Cruijsen, C., J. de Haan, and R. Roerink. 2021. “Financial Knowledge and Trust in Financial Institutions.” *Journal of Consumer Affairs*, 55(2), 680-714.

Appendix A: Robustness check

As a robustness check, we examine whether the marginal effects obtained from our bivariate probit model are significantly different from those obtained from a multinomial logit model. Equation (A1) mathematically describes the multinomial (weighted) logit model.

$$Prob(Y_i = k) = exp(\alpha_k + \beta_k X_i)/\{1 + \sum_{j=1}^{3} exp\,(\alpha_j + \beta_j X_i)\}, \quad \text{(A1)}$$

where Y_i = 1 if unbanked household *i* is uninterested-never-banked, 2 if unbanked household *i* is interested-previously-banked, 3 if unbanked household *i* is uninterested-previously-banked, and 0 otherwise. X_i is a vector of explanatory variables capturing the household's sociodemographic and geographic characteristics, access to technology, use of alternative financial services, their reasons for being unbanked, and year of survey.

Table A1 shows marginal effects obtained from the multinomial logit model. They are qualitatively and quantitatively very similar to those obtained from the bivariate probit model shown in Tables 3, 4, and 5. Of almost all explanatory variables, marginal effects obtained from the two models have the same sign. Furthermore, the marginal effects from the two models are very similar in magnitude, especially for explanatory variables that have strong marginal effects. Only a few variables (four for uninterested-never-banked and three for interested-previously-banked probabilities) have the opposite sign of marginal effects from the two models, but those marginal effects are not statistically significantly different from zero.

Table A1: Marginal effects obtained from the multinomial logit model

Category	Characteristic	Uninterested-never-banked		Interested-previously-banked	
Education	Less than high school	0.101***	(.015)	0.103***	(.015)
	High school	0.055***	(.014)	-0.054***	(.014)
	College degree	0.014	(.024)	-0.041*	(.024)
Race	Black	0.040***	(.013)	-0.024*	(.013)
	Hispanic	0.096***	(.017)	-0.075***	(.016)
	Asian	0.082***	(.039)	-0.115***	(.039)
	American Indian / Alaska Native	0.010	(.031)	-0.001	(.032)
	Native Hawaiian / Pacific Islander	0.020	(.101)	0.011	(.101)
Nativity	U.S. born	-0.086***	(.016)	0.072***	(.018)
Disabled		0.038**	(.015)	-0.033**	(.014)
Metropolitan status	Principal city	-0.020*	(.012)	0.027**	(.011)
	Rural	0.017	(.015)	-0.021*	(.013)
Homeowner		-0.031**	(.013)	0.011	(.013)

Age of householder	24 or younger	0.031	(.025)	-0.014	(.022)
	25 to 34	0.012	(.017)	-0.011	(.016)
	35 to 44	0.006	(.017)	-0.007	(.016)
	55 to 64	0.002	(.017)	-0.010	(.016)
	65 or older	0.007	(.020)	-0.076***	(.019)
Household income	Less than $15,000	0.032	(.026)	-0.039	(.025)
	$15,000 to $29,999	0.028	(.026)	-0.019	(.025)
	$30,000 to $49,999	0.014	(.027)	-0.037	(.026)
	$75,000 or greater	0.037	(.038)	-0.052	(.037)
Marital Status	Unmarried female-family	-0.010	(.016)	0.007	(.016)
	Unmarried male-family	0.002	(.022)	-0.009	(.022)
	Female nonfamily	-0.002	(.018)	-0.030*	(.017)
	Male nonfamily	-0.000	(.016)	-0.012	(.016)
Employed		0.019	(.013)	-0.007	(.012)
Region	Northeast	-0.002	(.018)	-0.014	(.018)
	Midwest	0.013	(.018)	0.006	(.016)
	South	-0.007	(.014)	-0.008	(.014)
Technology access	Internet access or mobile phone	-0.101***	(.011)	0.093***	(.012)
Alternative financial services use	Prepaid cards	-0.087***	(.013)	0.060***	(.011)
	Nonbank transaction services	-0.068***	(.011)	0.053***	(.011)
	Nonbank credit services	-0.097***	(.017)	0.069***	(.013)
Reasons for not having a bank account	Do not trust banks	0.087***	(.013)	-0.094***	(.012)
	Fees too high or unpredictable	-0.086***	(.013)	0.060***	(.012)
	Lack of money to meet min. balance	-0.039***	(.011)	0.057***	(.010)
	Inconvenient hours or locations	-0.042**	(.018)	0.039**	(.016)
	Avoiding banks gives more privacy	0.037***	(.013)	-0.036***	(.013)
	Banks do not offer needed products	0.020	(.017)	-0.039**	(.016)
	ID, credit, or banking history problems	-0.004	(.014)	-0.000	(.013)
Year	2013	-0.070***	(.016)	0.057***	(.016)
	2015	0.011	(.017)	0.002	(.016)
	2017	0.024	(.017)	-0.039**	(.016)
	2021	-0.075***	(.019)	0.033	(.021)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristics are some college (education), white (race), suburb and unknown (metropolitan status), 45 to 54 (age of householder), $50,000 to $74,999 (income), married and other (marital status), west (region), and 2019 (year).

Appendix B: Bivariate probit model alternative specifications and marginal effects for uninterested-previously-banked and interested-never-banked households

In addition to the full specification, which includes all three sets of variables—(i) sociodemographic and geographic variables, (ii) technology access and alternative financial service (AFS) use variables, and (iii) reasons for being unbanked—we test several specifications as for the bivariate probit model. Year dummies are included in all specifications. Table B1 shows those specifications as well log-likelihood obtained for each specification.

The log-likelihood reveals that including all three sets of variables improves the model fit relative to the models that includes one or two sets of variables. Among the three sets of variables, sociodemographic and geographic variables have the highest explanatory power, followed by technology access and AFS use variables.

Table B1: Model Specifications and a Test Statistic

	Full (1)	(2)	(3)	(4)	(5)	(6)	(7)
Sociodemographic & geographic	Yes	Yes	Yes	No	Yes	No	No
Technology & AFS	Yes	Yes	No	Yes	No	Yes	No
Reason	Yes	No	Yes	Yes	No	No	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-likelihood	-12,038	-12,212	-12,315	-12,796	-12,492	-12,973	-13,234

Table B2, B3, and B4 show how marginal effects of sociodemographic and geographic variables, technology access and AFS use variables, and reasons for being unbanked vary by model specification. In Table B2, income and marital status have statistically significant marginal effects if the specification does not include technology access and AFS use variables (Specifications 3 and 5), otherwise their marginal effects are statistically insignificant (Specifications 1 and 2). This finding suggests that, to some degree, income and marital status variables work as proxies for technology access and AFS use variables. Marginal effects of technology access and AFS use variables are consistent across all relevant specifications (Specifications 1, 2, 4 and 6): the marginal effect of a given variable has the same sign and the same statistical significance, and the magnitude of the marginal effect varies just slightly (Table B3). Similarly, marginal effects of reasons for being unbaked (dummies) are generally consistent across all relevant specifications (Specifications 1, 3, 4, and 7). Only one reason dummy indicating ID, credit, or banking history problems being a reason for not having a bank account has inconsistent signs, but its marginal effect is statistically insignificant or at most marginally significant.

Table B2: Marginal Effects: Technology Access and Alternative Financial Service Use by Specification

		Full		(2)		(3)		(5)	
Category	Characteristic	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous
Education	Less than high school	0.105***	-0.099***	0.108***	-0.101***	0.124***	-0.118***	0.126***	-0.120***
		(.012)	(.012)	(.013)	(.012)	(.013)	(.013)	(.013)	(.013)
	High school	0.055***	-0.054***	0.056***	-0.056***	0.066***	-0.037***	0.067***	-0.068***
		(.011)	(.012)	(.011)	(.012)	(.011)	(.012)	(.011)	(.012)
	College degree	0.027	-0.029	0.024	-0.027	0.037*	-0.041**	0.036*	-0.041**
		(.019)	(.019)	(.019)	(.020)	(.019)	(.020)	(.020)	(.021)
Race	Black	0.033***	-0.028***	0.029***	-0.024***	0.037***	-0.033***	0.033***	-0.028***
		(.011)	(.011)	(.011)	(.011)	(.011)	(.011)	(.011)	(.011)
	Hispanic	0.092***	-0.081***	0.091***	-0.080***	0.110***	-0.098***	0.109***	-0.096***
		(.015)	(.013)	(.015)	(.013)	(.015)	(.013)	(.015)	(.013)
	Asian	0.098***	-0.084***	0.100***	-0.085***	0.112***	-0.096***	0.120***	-0.102***
		(.035)	(.028)	(.036)	(.029)	(.037)	(.029)	(.038)	(.030)
	American Indian / Alaska Native	0.006	-0.002	0.013	-0.008	0.002	0.003	0.007	0.002
		(.025)	(.026)	(.025)	(.025)	(.025)	(.027)	(.025)	(.027)
	Native Hawaiian / Pacific Islander	0.003	-0.007	-0.003	-0.003	-0.032	0.029	-0.040	0.035
		(.081)	(.089)	(.078)	(.087)	(.070)	(.088)	(.067)	(.085)
Nativity	U.S. born	-0.085***	0.080***	-0.081***	0.077***	-0.107***	0.102***	-0.103***	0.099***
		(.014)	(.013)	(.015)	(.014)	(.015)	(.014)	(.015)	(.014)
Disabled		0.037***	-0.034***	0.038***	-0.035***	0.035***	-0.032***	0.035***	-0.032***
		(.013)	(.012)	(.013)	(.012)	(.013)	(.012)	(.013)	(.012)
Metropolitan status	Principal city	-0.024**	0.022**	-0.022**	0.020**	-0.025**	0.023**	-0.024**	0.022**
		(.010)	(.009)	(.010)	(.009)	(.010)	(.010)	(.010)	(.010)
	Rural	0.020*	-0.018*	0.027**	-0.024*	0.024**	-0.021*	0.032***	-0.028***
		(.012)	(.011)	(.012)	(.011)	(.012)	(.011)	(.012)	(.011)
Homeowner		-0.021**	0.020**	-0.016	0.015	-0.011	0.011	-0.006	0.005
		(.011)	(.010)	(.011)	(.010)	(.011)	(.010)	(.011)	(.010)
Age of householder	24 or younger	0.006	-0.034*	0.015	-0.040**	-0.011	-0.015	-0.002	-0.022
		(.021)	(.019)	(.021)	(.019)	(.021)	(.020)	(.021)	(.020)
	25 to 34	0.009	-0.014	0.018	-0.022	-0.011	0.007	-0.002	0.001
		(.014)	(.013)	(.014)	(.014)	(.014)	(.014)	(.015)	(.014)
	35 to 44	0.007	-0.008	0.011	-0.011	-0.003	0.002	0.001	-0.002
		(.014)	(.013)	(.014)	(.014)	(.014)	(.014)	(.014)	(.014)

	55 to 64	0.003	-0.008	0.003	-0.007	0.015	-0.018	0.016	-0.018
		(.014)	(.014)	(.015)	(.014)	(.015)	(.014)	(.015)	(.014)
	65 or older	0.024	-0.047***	0.028	-0.051***	0.068***	-0.078***	0.075***	-0.085***
		(.017)	(.016)	(.018)	(.016)	(.018)	(.015)	(.018)	(.016)
Household income	Less than $15,000	0.038*	-0.032	0.032	-0.027	0.058***	-0.053**	0.052***	-0.047**
		(.021)	(.021)	(.021)	(.021)	(.021)	(.022)	(.021)	(.022)
	$15,000 to $29,999	0.027	-0.022	0.028	-0.023	0.034	-0.031	0.034	-0.031
		(.021)	(.021)	(.021)	(.021)	(.021)	(.022)	(.021)	(.022)
	$30,000 to $49,999	0.030	-0.025	0.036	-0.031	0.034	-0.030	0.039*	-0.035
		(.022)	(.022)	(.022)	(.022)	(.022)	(.023)	(.023)	(.023)
	$75,000 or greater	0.047	-0.042	0.049	-0.044	0.072**	-0.067**	0.075**	-0.070**
		(.031)	(.029)	(.032)	(.030)	(.033)	(.030)	(.034)	(.031)
Marital Status	Unmarried female-family	-0.008	0.012	-0.019	0.022*	-0.017	0.022	-0.025*	0.029**
		(.014)	(.013)	(.014)	(.013)	(.014)	(.014)	(.014)	(.014)
	Unmarried male-family	0.008	-0.002	0.001	0.004	0.009	-0.004	0.008	-0.003
		(.019)	(.017)	(.019)	(.017)	(.019)	(.018)	(.019)	(.018)
	Female-nonfamily	0.017	-0.012	0.014	-0.011	0.032**	-0.027*	0.034**	-0.029**
		(.015)	(.014)	(.015)	(.014)	(.015)	(.014)	(.016)	(.014)
	Male-nonfamily	0.009	-0.003	0.011	-0.006	0.027*	-0.020	0.033**	-0.026*
		(.014)	(.013)	(.014)	(.013)	(.014)	(.013)	(.014)	(.013)
Employed		0.014	-0.013	0.017	-0.016	-0.004	0.004	-0.001	0.001
		(.011)	(.010)	(.011)	(.010)	(.011)	(.010)	(.011)	(.010)
Region	Northeast	0.005	-0.004	0.003	-0.003	0.001	-0.001	0.000	0.000
		(.015)	(.014)	(.015)	(.014)	(.016)	(.015)	(.016)	(.015)
	Midwest	0.002	-0.002	0.004	-0.003	-0.006	0.006	-0.004	0.004
		(.014)	(.013)	(.015)	(.014)	(.015)	(.014)	(.015)	(.014)
	South	0.000	-0.000	0.001	-0.000	-0.005	0.005	-0.003	0.003
		(.012)	(.011)	(.012)	(.011)	(.012)	(.012)	(.013)	(.012)
Technology & AFS		Yes		Yes		No		No	
Reason		Yes		No		Yes		No	
Year		Yes		Yes		Yes		Yes	

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristics are some college (education), white (race), suburb and unknown (metropolitan status), 45 to 54 (age of householder), $50,000 to $74,999 (income), married and other (marital status), and west (region).

Table B3: Marginal Effects: Technology Access and Alternative Financial Services Use by Specification

		Full		(2)		(4)		(6)	
Category	Characteristic	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous
Technology access	Internet access or mobile phone	-0.101*** (.010)	0.095*** (.009)	-0.097*** (.010)	0.091*** (.009)	-0.119*** (.009)	0.111*** (.009)	-0.115*** (.009)	0.108*** (.009)
Alternative financial services use	Prepaid cards	-0.073*** (.010)	0.069*** (.009)	-0.074*** (.010)	0.070*** (.010)	-0.104*** (.010)	0.099*** (.009)	-0.105*** (.010)	0.100*** (.010)
	Nonbank transaction	-0.063*** (.009)	0.059*** (.008)	-0.063*** (.009)	0.059*** (.009)	-0.054*** (.009)	0.050*** (.009)	-0.053*** (.009)	0.050*** (.009)
	Nonbank credit services	-0.082*** (.012)	0.077*** (.011)	-0.087*** (.012)	0.082*** (.012)	-0.102*** (.013)	0.097*** (.012)	-0.106*** (.013)	0.100*** (.012)
Sociodemographic & geographic		Yes		Yes		No		No	
Reason		Yes		No		Yes		No	
Year		Yes		Yes		Yes		Yes	

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ).

Table B4: Marginal Effects: Reasons for Being Unbanked by Specification

	Full		(3)		(4)		(7)	
Reasons	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous	Unint-never	Int-previous
Do not trust banks	0.094***	-0.087***	0.087***	-0.081***	0.092***	-0.086***	0.083***	-0.078***
	(.011)	(.010)	(.011)	(.010)	(.011)	(.010)	(.011)	(.011)
Fees too high or unpredictable	-0.074***	0.069***	-0.093***	0.087***	-0.083***	0.078***	-0.113***	0.107***
	(.011)	(.010)	(.011)	(.010)	(.011)	(.010)	(.011)	(.011)
Lack of money to meet min. balance	-0.050***	0.046***	-0.052***	0.048***	-0.040***	0.037***	-0.037***	0.034***
	(.009)	(.008)	(.009)	(.009)	(.009)	(.008)	(.009)	(.009)
Inconvenient hours or locations	-0.044***	0.040***	-0.033**	0.030**	-0.046***	0.043***	-0.031**	0.029**
	(.014)	(.013)	(.015)	(.014)	(.014)	(.014)	(.014)	(.014)
Avoiding banks gives more privacy	0.038***	-0.035***	0.031***	-0.029***	0.037***	-0.035***	0.028**	-0.026***
	(.011)	(.010)	(.011)	(.010)	(.011)	(.010)	(.011)	(.011)
Banks do not offer needed products	0.029**	-0.027**	0.031**	-0.029**	0.035***	-0.033***	0.041***	-0.039***
	(.014)	(.013)	(.014)	(.013)	(.014)	(.013)	(.014)	(.013)
ID, credit, or banking history problems	-0.001	0.001	-0.021*	0.019*	0.008	-0.008	-0.018	0.017
	(.012)	(.011)	(.012)	(.011)	(.012)	(.011)	(.012)	(.012)
Sociodemographic & geographic	Yes		Yes		No		No	
Technology & AFS	Yes		No		Yes		No	
Year	Yes		Yes		Yes		Yes	

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ).

Table B5 reports marginal effects on the two other unbanked groups, namely interested-never-banked and uninterested-previously-banked households. As shown in Chart 2, these two groups' probabilities of becoming banked are lower than the probability for interested-previously-banked households but higher than the probability for uninterested-never-banked households. Compared to the two extreme groups (in terms of the probabilities of becoming banked), these two middle groups are highly correlated with age, income, and marital status, and marginal effects of technology access and AFS use variables and reason dummies on them are much smaller.

Table B5: Marginal Effects on Interested-Never-Banked and Uninterested-Previously-Banked Households (Full Specification)

Category	Characteristic	Interested-never-banked		Uninterested-previously-banked	
Education	Less than high school	0.043***	(.010)	-0.049***	(.011)
	High school	0.032***	(.009)	-0.033***	(.010)
	College degree	0.061***	(.019)	-0.058***	(.017)
Race	Black	0.070***	(.009)	-0.074***	(.009)
	Hispanic	0.076***	(.013)	-0.087***	(.012)
	Asian	0.058*	(.030)	-0.072**	(.029)
	American Indian / Alaska Native	0.071***	(.024)	-0.076***	(.022)
	Native Hawaiian / Pacific Islander	-0.012	(.049)	0.016	(.068)
Nativity	U.S. born	-0.078***	(.012)	0.083***	(.012)
Disabled		-0.037***	(.010)	0.034***	(.010)
Metropolitan status	Principal city	0.025***	(.008)	-0.024***	(.008)
	Rural	0.009	(.010)	-0.011	(.010)
Homeowner		0.003	(.009)	-0.001	(.009)
Age of householder	24 or younger	0.118***	(.018)	-0.091***	(.013)
	25 to 34	0.048***	(.012)	-0.043***	(.011)
	35 to 44	0.022*	(.012)	-0.021*	(.011)
	55 to 64	-0.038***	(.011)	0.042***	(.013)
	65 or older	-0.086***	(.012)	0.109***	(.017)
Household income	Less than $15,000	-0.048**	(.020)	0.042***	(.016)
	$15,000 to $29,999	-0.043**	(.020)	0.038**	(.016)
	$30,000 to $49,999	-0.039*	(.021)	0.034*	(.017)
	$75,000 or greater	-0.018	(.029)	0.013	(.024)
Marital Status	Unmarried female-family	-0.032***	(.012)	0.028***	(.010)
	Unmarried male-family	-0.041***	(.016)	0.035**	(.014)
	Female nonfamily	-0.083***	(.012)	0.078***	(.012)
	Male nonfamily	-0.069***	(.012)	0.064***	(.011)
Employed		-0.001	(.009)	0.000	(.009)
Region	Northeast	0.021*	(.013)	-0.022*	(.012)
	Midwest	0.013	(.011)	-0.013	(.011)
	South	0.022**	(.010)	-0.022**	(.010)

Technology access	Internet access or mobile phone	-0.018**	(.008)	0.024***	(.008)
Alternative financial services use	Prepaid cards	-0.029***	(.008)	0.033***	(.008)
	Nonbank transaction services	-0.004	(.007)	0.008	(.007)
	Nonbank credit services	-0.021**	(.010)	0.026***	(.010)
Reasons for not having a bank account	Do not trust banks	-0.035***	(.009)	0.029***	(.009)
	Fees too high or unpredictable	-0.028***	(.009)	0.033***	(.009)
	Lack of money to meet min. balance	0.030***	(.008)	-0.026***	(.007)
	Inconvenient hours or locations	0.030**	(.012)	-0.026**	(.012)
	Avoiding banks gives more privacy	-0.016*	(.009)	0.013	(.009)
	Banks do not offer needed products	0.007	(.012)	-0.009	(.012)
	ID, credit, or banking history problems	0.019**	(.010)	-0.019**	(.010)
Year	2013	0.084***	(.011)	-0.075***	(.011)
	2015	0.014	(.011)	-0.015	(.012)
	2017	-0.003	(.011)	-0.003	(.012)
	2021	0.016	(.014)	-0.015	(.015)

Notes: ***, **, *: p-value is less than 0.01, 0.05, and 0.1, respectively. Standard errors are in ( ). The omitted characteristics are some college (education), white (race), suburb and unknown (metropolitan status), 45 to 54 (age of householder), $50,000 to $74,999 (income), married and other (marital status), west (region), and 2019 (year).

Appendix C: Summary statistics of unbanked households for selected years

Our pooled sample of unbanked households can be decomposed into subsamples for each survey year. Table C1 shows summary statistics for 2013, 2017, and 2021 subsamples. The composition of unbanked households changed from 2013 to 2021 and most of those changes are statistically significant. The composition of unbanked households shifted toward higher income, higher education, homeowner, and older-age, but it also shifted toward not-employed and disabled. The most recent trend of technology access is unknown due to the changes in survey questions. The share of unbanked households who used prepaid cards has increased from 2013 to 2021, but the shares of unbanked households who used nonbank transaction services or credit services have declined in the same period. The share of unbanked households who cited "do not have enough money" declined significantly from 2017 to 2021. In contrast, the share of unbanked households who cited privacy, "banks do not offer needed products/services," and inconvenient hours or locations, have increased from 2013 to 2021.

Table C1: Summary Statistics for 2013, 2017, and 2021

Category	Characteristic	Share of sample		
		2013	2017	2021
Interest in having an account and previous banking status	Interested, previously banked	0.325	0.228	0.247
	Interested, never banked	0.142	0.241	0.241
	Uninterested, previously banked	0.275	0.185	0.217
	Uninterested, never banked	0.259	0.347	0.295
Household income	Less than $15,000	0.551	0.488	0.420
	$15,000 to $29,999	0.258	0.288	0.277
	$30,000 to $49,999	0.130	0.154	0.166
	$50,000 to $74,999	0.041	0.041	0.085
	$75,000 or greater	0.021	0.029	0.051
Education	Less than high school	0.363	0.331	0.341
	High school	0.381	0.373	0.371
	Some college	0.209	0.227	0.203
	College degree	0.048	0.069	0.085
Race	Black	0.360	0.364	0.350
	Hispanic	0.280	0.276	0.285
	Asian	0.014	0.020	0.037
	American Indian / Alaska Native	0.026	0.030	0.018
	Native Hawaiian / Pacific Islander	0.002	0.001	0.004
	White	0.319	0.309	0.306
Employment	Employed	0.429	0.424	0.354
Disability	Disabled	0.208	0.242	0.273
Homeownership	Homeowner	0.213	0.221	0.261
Age of householder	24 or younger	0.103	0.078	0.058
	25 to 34	0.267	0.212	0.185
	35 to 44	0.201	0.198	0.197
	45 to 54	0.193	0.190	0.198
	55 to 64	0.133	0.172	0.198
	65 or older	0.103	0.149	0.164
Nativity	U.S. born	0.762	0.771	0.757
Marital Status	Married	0.212	0.184	0.184
	Unmarried female-householder family	0.303	0.277	0.246
	Unmarried male-householder family	0.087	0.077	0.088
	Female nonfamily	0.171	0.218	0.210
	Male nonfamily	0.225	0.237	0.264
Metropolitan status	Principal city	0.412	0.428	0.425
	Suburb	0.293	0.298	0.270
	Rural	0.171	0.154	0.184
	Unknown	0.124	0.120	0.121
Region	Northeast	0.157	0.161	0.155
	Midwest	0.182	0.178	0.203
	South	0.448	0.452	0.423
	West	0.213	0.209	0.219
Technology access	Internet access or mobile phone (proxy)	0.551	0.627	0.284*
Alternative financial services use	Prepaid cards	0.243	0.287	0.328
	Nonbank transaction services	0.621	0.523	0.402
	Nonbank credit services	0.177	0.130	0.091

Reasons for not having a bank account	Lack of money to meet minimum balance	0.598	0.569	0.401
	Do not trust banks	0.356	0.326	0.330
	Fees too high or unpredictable	0.318	0.291	0.338
	Avoiding gives more privacy	0.276	0.312	0.341
	ID, credit, or banking history problems	0.175	0.151	0.216
	Banks do not offer needed products/services	0.109	0.138	0.192
	Inconvenient hours or locations	0.071	0.131	0.154

Sources: FDIC and authors' calculations.

Notes: *In the 2021 survey, questions about technology adoption, such as whether the respondents have internet access and whether they have a smartphone, a feature phone, or no mobile phone. For the 2021 technology access variable, we create a proxy for internet access or mobile phone ownership from other questions, including whether the respondents used nonbank online payment services and whether they made online purchases with a prepaid card. However, the proxy likely underestimates unbanked households' technology access.