



Do relationships with financial providers influence financial health outcomes in Kenya?

Observational evidence from demand-side surveys





FSD Kenya

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Introduction

FSD Kenya, the Central Bank of Kenya and the Kenya National Bureau of statistics have been exploring financial health as a framework to position customer financial outcomes more firmly at the center of decision- and policymaking. Initial efforts have focused on conceptualizing financial health and measuring the concept in national surveys, specifically using an experimental index that draws on several existing questions in the national Fin Access surveys¹.

While these prior efforts have focused on inferring levels and trends of population financial health from survey data, the survey data also provide an opportunity to move beyond descriptive analysis, towards answering questions about the specific enablers and risk factors to financial health, in a way that can pin-point policy areas that deserve closer attention. As a starting point in that direction, the analysis in this paper seeks to answer the following question: To what degree are active relationships with the most common informal or formal financial providers associated with financial health outcomes in the Kenyan context?

¹ For more details on FSD Kenya's financial health measurement work, see: <https://www.fsdkenya.org/financial-health/financial-health/>

A conceptual framework for financial health

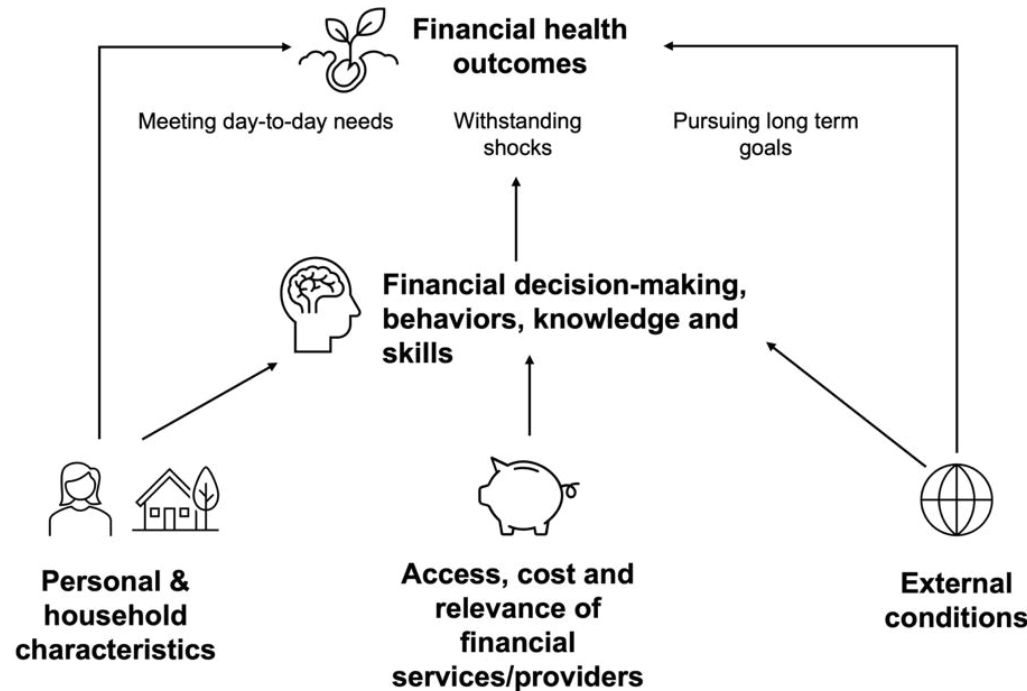
Financial health is a concept which describes the elements of a well-functioning financial life, namely managing money to meet day to day needs, withstand shocks and pursue long term goals². The framework in Figure 1 provides one example of how financial health can be conceptualized³. Here, financial health has four broad sets of determinants: (1) financial behaviors and decision-making (encompassing financial knowledge and skills) (2) personal and household characteristics (such as income level, livelihoods, gender, and place of residence), (3) access to financial services and (4) external conditions (including economic conditions and social protection programs). In the short run, people have most control of their financial decisions and behaviors and least control of their household characteristic and external conditions, but people make financial decisions subject to their personal and household conditions, such as the amount and frequency of income payments and the level of need in the household (e.g., number of dependents). Furthermore, external conditions can also influence financial behaviors, an economy experiencing steadily rising costs, a society with weak inter-personal trust, or a government that provides few formal safety nets, for example, are all factors that will shape the incentives, opportunities and constraints that underpin financial decisions. In other words, to understand financial health outcomes at the individual level, it is important to also take a systems view.

However, statistically modeling the relationships between all the elements in an economic system that are relevant to people's financial health status at any given point in time is beyond the scope of this analysis. Rather, the goal of this paper is to use a minimal statistical model to generate observational estimates of the influence that six of Kenya's most common financial providers have on financial health outcomes, accounting for confounding factors. The focus on financial services as a cause of interest in this analysis is a choice given the financial sector mandate of FSD Kenya and its partners and it shouldn't suggest that other institutions or sectors are irrelevant to financial health.

² For a fuller introduction to the concept and definition of financial health, see a recent set of reports produced by the United Nations Secretary-General's advocate for inclusive finance for development: <https://www.unsgsa.org/publications/financial-health-introduction-financial-sector-policymakers>

³ Different stakeholders have conceptualized the drivers and determinants of financial health in a variety of ways, the version presented here does not represent a consensus view but does incorporate common points.

Figure 1



A minimal causal diagram of financial health

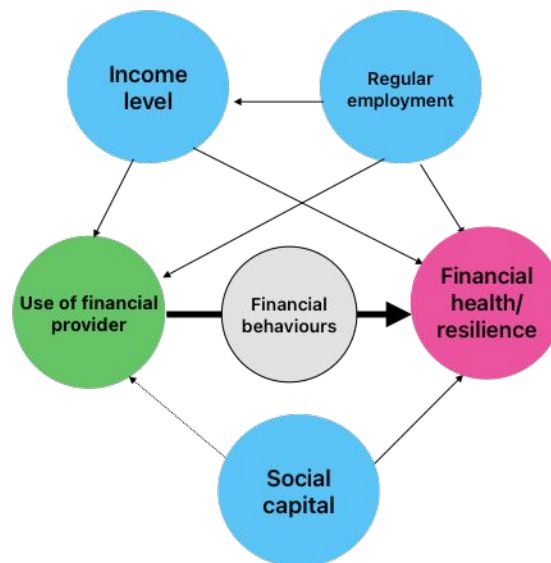
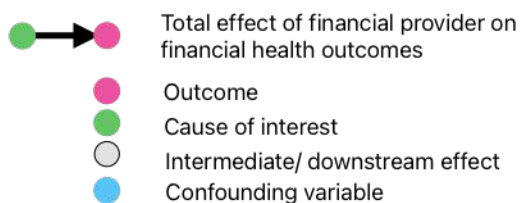
The model in Figure 2 shows how four contextually relevant factors influence financial health outcomes (FH): relationship with a financial provider (P), income-level (I), employment status (E) and social capital (S). Only one of the pathways in the diagram represents the causal effect of interest: $P \rightarrow FH$. This pathway runs through financial decision-making or behaviors that financial services might induce, such as a marginal increase in allocations of income to savings (that could follow from the opening of a secure and interest-bearing savings or investment account) or purchasing a greater share of goods on credit (that could be induced by a credit facility). The three other pathways linking financial services with financial health: $P \leftarrow I \rightarrow FH$, $P \leftarrow E \rightarrow FH$ and $P \leftarrow S \rightarrow FH$, create a statistical association between financial services and financial outcomes, but these pathways are not causal, as explained in more detail below:

- Income confounds the relationship between financial services and financial health because individuals with higher incomes can afford formal financial services that have higher direct monetary costs (such as interest payments on loans, ledger fees or withdrawal fees on an account)⁴. At the same time income influences financial health because, all else equal, higher incomes can facilitate surplus cash that can be channeled to savings, insurance, or investments.
- Similarly, adults with formal employment and regular salary inflows are more likely to be targeted and selected by formal financial service providers as customers due to the visibility and reliability of their cash flows. In addition, formal employment often has non-monetary benefits that can help individuals cope with shocks and the loss of income during retirement (such as paid-leave, health insurance and pension programs).
- Finally, in the Kenyan context, social relationships are important for financial resilience and risk-coping. These relationships can also influence adoption of financial services (such as membership in a community savings group or take-up of a mobile money account).

⁴ Higher income acts as a proxy for other factors such as literacy and education which also can influence adoption of financial services.

Figure 2

Causal diagram for use of a financial provider and financial health outcomes



Data and Methods

The analysis in this paper uses the nationally representative FinAccess surveys collected in 2016, 2019 and 2021. For every sampled household, these surveys interview one randomly selected adult from the household roster and collect a wide variety of information about personal use of financial services, as well as several household-level variables. This analysis focuses on adults in ‘prime’ working ages, defined as between 25 and 64 years. The rationale for a selective focus on prime working age adults is that they are more likely to be in a primary breadwinner, caretaker or decision-making role in a household unit and therefore have an outsized influence on family financial well-being.

⁵ Five of the nine indicators used in the multi-dimensional health index (MFHI) are used here. Four indicators from the MFHI are excluded as they were weaker measures of objective outcomes (has a plan for how to allocate money; has trouble making money last between income payments; intends to use savings, pension or investment income to make ends meet in old age; and is setting aside money for a specific purpose in the future), and three additional outcomes are incorporated: a measure of debt burden (debt-to-income ratio), a measure of debt repayment stress and a subjective outcome (whether respondents felt like their financial life had improved in the year prior). These decisions were informed during stakeholder discussions.

Survey year	Sample size:	Sample size:
	All adults 18+	Prime working age adults (25-64)
2016	8,208	5,838
2019	8,267	5,941
2021	20,909	14,868

The effect of relationships with six distinct financial service providers on seven financial health outcomes is estimated, adjusting for employment, income, poverty, and social capital⁵. How these variables are constructed is described in detail in Table 2 and their mean values across each survey round are provided in Table 3. To estimate the effect of relationships with financial providers on financial health, a logistic regression is used that models the probability of each binary financial health outcome as follows:

Equation 1

$$\text{logit}(\text{Pr}(Y_{i,y}=1)) = \beta_0 + \beta_1 * FS_p + \beta_2 * INC + \beta_3 * EMP + \beta_4 * POV + \beta_5 * SOC$$

- $Y_{i,y}$ represents outcome i : {food security and can pay for medical care when needed, access to emergency funds, high debt:income ratio, default or debt stress}, in year y : {2016, 2019, 2021},
- FS_p represents a relationship with a financial provider of type p : {family and friends, community group, mobile money operator, mobile bank, digital lender, traditional bank, MFI or SACCO}.
- Each regression adjusts for self-reported monthly income (INC), employment (EMP), a proxy for household-level poverty status (POV) and social capital (SOC).

Once the parameters of each regression are estimated, a simulation-

based inference is used to estimate average marginal effects, represented as a risk ratio. For example, to estimate the average marginal effect that relationships with community groups have on people's ability to raise emergency funds in 2021, this procedure starts by simulating 1,000 sets of coefficients from their implied distribution obtained after fitting the model in equation 1 to the 2021 survey data. For each simulated set of coefficients, among adults who are members of a community group in the survey sample, a prediction for the probability of raising emergency funds is computed for two conditions, when $FS_{community\ group} = 1$ and when $FS_{community\ group} = 0$ yielding estimates of: $\Pr(Y_{emergency\ funds, 2021} | (FS_{community\ group} = 1))$ and $\Pr(Y_{emergency\ funds, 2021} | (FS_{emergency\ funds, 0} = 0))$ for each observation in the data. The ratio of these two probabilities (the risk ratio) is then computed for each simulation yielding a distribution of the marginal effect of community groups on financial resilience⁶ which can be used for inference.

Limitations

Two considerations complicate the interpretation of these marginal effects as unbiased causal effects resulting from an adults' relationship with a financial provider. The first is that even though the analysis controls for conceptually relevant confounds, there may be other influential factors that either obscure or exaggerate the statistical association between relationships with providers and financial health outcomes. The second relates to the directionality of the effects. The model explores the effect of financial service use on financial health outcomes. However, given the observational nature of this study, it is possible for the arrow of causality to be reversed; running from financial health to the usage of a relationship or service. The implications of this possibility are important for interpreting some of the results and are explored further in the discussion section.

Table 2. Description of variables

Category	Variable	Definition
Financial health outcome (independent variable)	<u>Managing day-to-day needs:</u> Food secure and can pay for medical care when needed	Adults meeting both of the following conditions: <ul style="list-style-type: none"> In past year, reports never going without enough food to eat In past year, reports never going without medicine or medical treatment that was needed
	<u>Managing day-to-day needs:</u> Default or debt re-payment stress	In the past 12 months, adult had to sell asset to repay a loan, borrow or reduce expenditure on food to repay a loan. OR In the past 12 months, defaulted on a loan.
	<u>Financial resilience:</u> Ability to raise funds in an emergency	Affirmative answer to the following question: If you needed "KSh 3,500 for rural/ KSh 6,000 for urban" within three days in case of an emergency, would you be able to get it? ⁷
	<u>Financial resilience:</u> Emergency savings habit⁸	Affirmative answer to the following question: "You keep money aside for emergencies or unexpected expenses"
	<u>Investing in the future:</u> Uses savings or credit for investment	Adult is using savings or credit to invest in productive assets (e.g., land, securities, housing, agricultural inputs), education or old age

⁶ This measure is analogous to estimates of the average treatment effect on the treated obtained in experimental studies (such as randomized control trials).

Category	Variable	Definition
	<u>Confidence:</u> Financial life has improved	Answering “Improved” to the following question: ‘In the past year, your financial life has: Improved, Stayed the same, Worsened?’
	High debt to income	Debt-to-income ratio of over 50%, calculated by summing up the total outstanding debt on all loans divided by respondent’s self-reported in-come
Cause of interest (predictor)	Financial relationship with social network	Adult is currently saving or borrowing from friends or family
	Financial relationship with a community group	Adult is currently saving or borrowing from a community group (eg. chama/savings group).
	Financial relationship with a mobile money provider	Adult currently uses a registered mobile money account
	Financial relationship with a mobile banking provider	Adult currently uses a registered mobile banking account

Category	Variable	Definition
	Financial relationship with digital app lender	Adults currently uses loans from a digital app lender
	Financial relationship with a traditional bank, MFI or SACCO	Adult currently uses an account, card, savings or loan product from a commercial bank, microfinance bank, microfinance institution or deposit taking SACCO.
Confounders	Income-level	Personal monthly income in shillings (KSh), self-reported
	Employment	Among all sources of income, employment is the dominant source of income in past year.
	Social capital	For 2019 and 2021: Adults agrees with the statement “I have people in my life who can help me financially if I ever need it” For 2016: Adult receives some income via transfers from friends and family
	Poverty status (proxy)	HH ranks in the bottom 40% of an asset index computed using quality of housing, water and toilet facility data.

Table 3. Mean (population weighted) estimates of variables used in analysis by survey round

Category	Variable	Unit	2016	2019	2021
1. Outcome	Food secure and can access medical care when needed	%	0.25	0.20	0.14
	Default or debt repayment stress	%	--	0.34	0.49
	Can access lump sum in emergency	%	0.39	0.21	0.18
	Keeps money aside for emergencies	%	0.58	0.44	0.37
	Uses savings or credit for investment	%	0.58	0.57	0.63
	Financial status in past year: Improved	%	0.37	0.24	0.07
	Debt-to-income ratio > 50%	%	0.09	0.21	0.26
2. Cause of interest	Uses financing from family and friends	%	0.20	0.20	0.24
	Member of a savings group	%	0.46	0.35	0.33
	Registered mobile money account	%	0.77	0.84	0.87
	Registered mobile bank account	%	0.18	0.26	0.26
	Registered digital loan app account	%	0.00	0.07	0.02
3. Confounder	User of traditional bank/MFI/SACCO services	%	0.43	0.38	0.34
	HH is among poorest 40%	%	0.39	0.37	0.35
	Self-reported monthly income	KSh	20,385	12,506	10,490
	Employed	%	0.14	0.15	0.14
	Transfers from social network	%	0.23	--	--
	Has people in life that can help financially	%	--	0.40	0.31

Results

The average marginal effects (presented as risk ratios) of different financial provider relationships on financial outcomes for prime working age adults (25-64) are shown in Figure 3 and separately for men and women in Figure 4. The reported risk ratios adjust for income, an asset-based proxy for household-level poverty status, employment, and social capital, and are referred to as “adjusted RRs” in the text below.

Managing day to day

Two of the outcomes explored in this analysis relate to people’s ability to consistently pay for (rather than forego) two fundamental material needs (food and health care) and financial obligations (debt). Conceptually, financial providers support these outcomes by providing tools and strategies that enable people to manage liquidity and smooth consumption with more ease and security than they could otherwise.



What do the data suggest about the extent to which financial providers influence people’s ability to cover short-term financial obligations?

Relationships with most of the financial providers explored here are associated with higher levels of food security and access to medical care. This association is strongest and most consistent among individuals with relationships with formal banks, SACCOs or MFIs. For example, in 2016 and 2021, adults with a bank or NBF1 relationship were 1.6 times (60 percent) more likely to answer that they had been able to meet their food or medical care needs in the past year. The effects of community groups, mobile money and mobile banking providers on these welfare outcomes are not as strong and less consistent across survey rounds. However, during the COVID-19 pandemic in 2021, adults using these providers were between 1.27 and 1.4 times more likely to have been able to meet their food or medical care needs, suggesting the services provided through these relationships improved people’s ability to meet their short term needs during a

difficult economic period. Membership in a community group has a greater influence on being able to pay for food and medical care for women than for men (adjusted RR of 1.4 for women vs. 1.16 for men).

- Digital lending apps and financial relationships with family and friends are two exceptions to these patterns. Digital lending apps are not associated with food security and being able to access medical care when needed. Adults that have active financial relationships with friends and family were 15 and 25 percent less likely to have been able to meet their food and medical needs in 2019 and 2021. As mentioned above, this could be because of reverse causality, with those who are especially vulnerable turning to these services in this period.
- Before turning to people's ability to manage loan repayments, we first consider the association between use of specific financial providers and a high debt-to-income ratio- e.g. total outstanding debt (across all types of loans) greater than 50 percent of personal monthly income. Relationships with banks or NBFIs have the strongest and most consistent influence on high debt-to-income. Bank or NBFIs customers are more than twice as likely than others to have high debt-to-income meaning that their incomes are highly leveraged to enable borrowing. The association between the use of several financial providers and high debt-to-income increased sharply in 2021 compared to 2019. For example, the adjusted RR of high debt-to-income for users of digital lenders increased from 1.38 to 2.34 in 2021; the RR for users of mobile banking providers increased from 1.3 to 1.85 and the RR for users of friends and family financing increased from 1.68 to 2.75. In contrast, the effect of users of community groups on high debt-to-income ratios fell over successive survey rounds, especially among women. For women in community groups, the adjusted RR associated with high debt-to-income decreased from 2.77 to 1.34 between 2016 and 2021.
- These results suggest that an important effect of relationships with informal or formal financial providers is to meet the demand for loans. It is important at this

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stage, however, not to assign high debt-to-income ratios a normative value. On its own, a metric measuring outstanding levels of debt relative to income is neutral and may imply different levels of burden to the borrower depending on number of factors, including the number and duration of the outstanding loans. To gauge whether debt is causing stress, we next turn to the effects of financial provider relationships on default or debt repayment stress.

- Relationships with friends and family and digital lenders are strongly associated with default or loan repayment stress, such as having to reduce food expenditures or sell assets to make a payment. Adults that have financial relationships with either friends and family or digital lenders were 1.8 to 2.15 times more likely to have difficulty repaying loans in 2019 and 2021. While high debt-to-income is strongly associated with use of banks and NBFIs, relationships with these institutions exert much less influence on repayment stress than others (adjusted RRs from banks or NBFIs on default or repayment stress were 1.12 and 1.24 in 2019 and 2021).

Financial resilience

In addition to supporting short-term liquidity management, another putative benefit of relationships with financial providers is the insurance those relationships can help provide against shocks that can threaten people's standard of living. Financial providers can help by making it safe or convenient to save and accumulate funds in an account with some illiquidity features, drawing on an existing credit limit (such as from a credit card or lending app), requesting a new loan or with payments networks that reduce the transaction costs of receiving remittances from social networks (e.g., mobile money). The two survey measures examined here as evidence of a person's ability to manage unexpected shocks effectively include one outcome and one behavior: (1) being able to access funds in an emergency (from any source) and (2) setting aside money for emergencies or unexpected expenses.



What do the data suggest about the extent to which financial providers help people manage unexpected shocks?

- Ability to access emergency funds is most strongly influenced through relationships with traditional financial institutions. Across all three survey rounds, adults that have an active relationship with a bank or NBF were between 1.5 and 1.9 times more likely to report being able to raise emergency funds than others, adjusting for employment, income, and social capital. Digital financial services (mobile banking, mobile money or digital lending apps) are also associated with an enhanced ability to access emergency funds (adjusted RRs between 1.3 and 1.6), though not as consistently across survey rounds. In 2021, having a relationship with a digital lender had a positive effect on resilience for women, but not for men. The effects of social networks and community groups on financial resilience are positive but relatively weak (adjusted RRs between 1.09 and 1.3) across survey rounds for the working age population. However, for women, the financial resilience effects of community group membership are consistent and larger than those for men, increasing the likelihood of being able to raise emergency funds by 30 to 43 percent.
- Except for digital lenders, relationships with financial service providers modestly raise the likelihood that adults set money aside for emergencies. For women, these effects are strongest for relationships with financial institutions, mobile banking and community groups. For men, these savings effects are strongest for relationships with mobile money providers, which could be a proxy for social network borrowing or could reflect the prevalence of saving on a mobile wallet as a digital alternative to saving under the mattress.

Investing in the future

People have long term goals: they want to put their kids through school, they want to invest in their own education, projects and livelihoods that can help them achieve higher incomes, they want to save for retirement or to buy a home. Financial service providers play a key role in helping individuals and families raise usefully large lump sums for longer term investments. One survey measure of people's ability to invest in the future is examined here: whether adults say they are currently using savings or credit for productive assets, education, or old age goals.



What do the data suggest about the extent to which financial providers help people pursue their long-term goals?

- Community groups and mobile money are the two providers with the largest marginal effects on the use of savings or credit for investment. Adults using either of these two providers were between 1.5 and 1.7 times more likely than others to report using finance for productive or long-term investments. The effects on investment of membership in community groups is notably larger for women (adjusted RRs in the range of 1.7-2) than men (adjusted RRs in the range of 1.4-1.5).
- The marginal effect on the use of savings or credit for investment from relationships with formal institutions (banks or NBFs) is also large but declined from 2016 to 2021 (adjusted RR of 1.76 in 2016 to 1.49 in 2021). This suggests that use of bank finance is shifting towards being associated with managing liquidity and shocks than investing, if we compare with 2016.
- Use of digital lending apps are not associated with use of savings or credit for investment in 2019 and have small marginal effect in 2021 (adjusted RR 1.21).



Discussion

Financial providers in Kenya are diverse, embodying a wide array of institutional forms and offering different possibilities in terms of the services and tools they provide and the technology that underpins them. Some, such as borrowing and exchange networks between friends, family, neighbors, or shopkeepers are governed by social and cultural norms and trust, while others such as borrowing relationships with digital lenders are impersonal and governed primarily by data and algorithms and the regulations surrounding their design and use. The reality of the financial landscape in Kenya is complex and consumers, motivated in their pursuit to meet daily needs, cope with risk or achieve long term goals, manage their money in ways that involve relationships with multiple financial providers⁹. People adopt different tools and strategies at different times depending on their needs. Viewed from this perspective, a linear causal model that starts with a relationship with a provider, influencing financial decision-making and behaviors and ultimately towards financial outcomes is overly simplistic and misses important dynamics. For example, a sudden lowered state of financial health, say due to an illness or injury that impedes an informal workers ability to earn income, could motivate coping strategies that offer short term solutions, such as taking a high-cost short term loan, at the expense of long-term financial health outcomes as debt mounts.

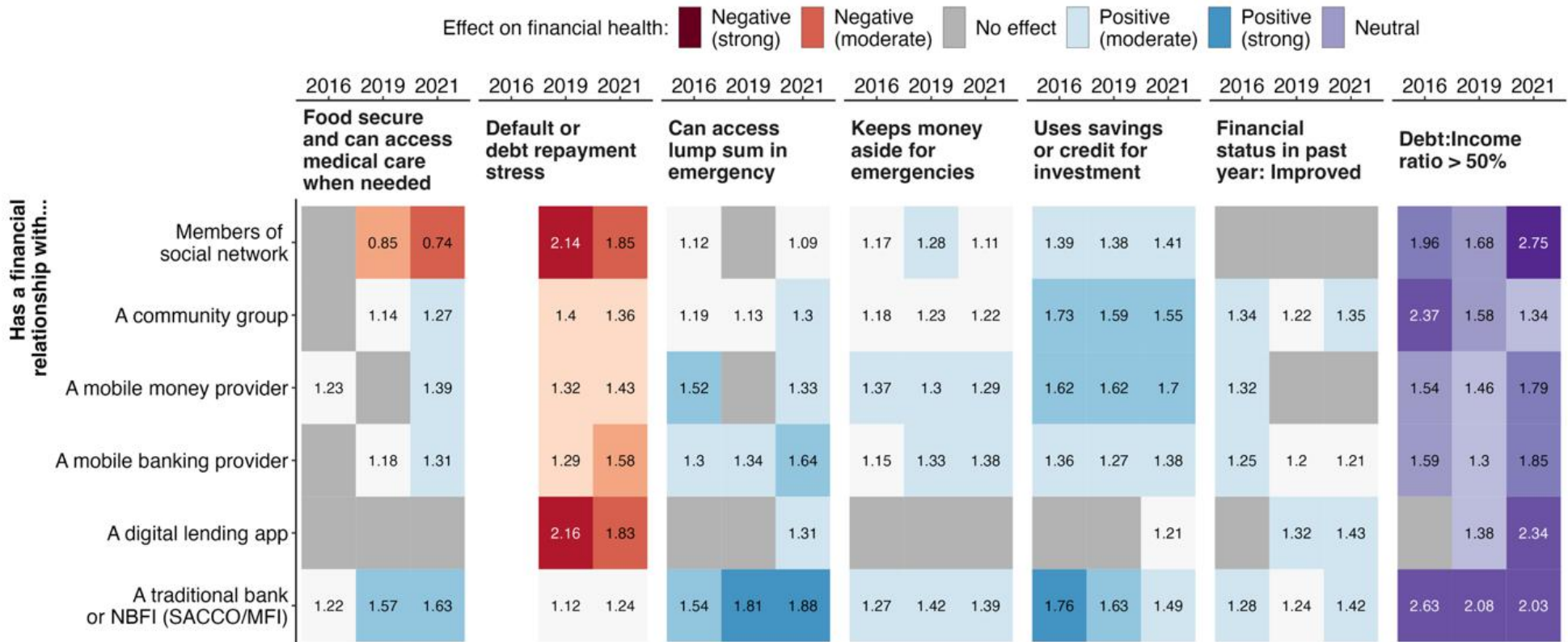
For these reasons, the results presented here need to be interpreted with caution and must leave open the possibility, discussed earlier, of reverse causation. For example, the strong association between default or debt repayment stress and the use of social network financing and digital lending (Figure 3), could include cases where a state of low financial health (for example resulting from sustained mismanagement of money from making risky bets or overspending or a health shock) drives borrowing from a relative or an app, as well cases where the credit relationship creates financial stress (e.g. as a result of hidden fees, misunderstood terms, or inappropriate design) or invites default (e.g. in the absence of effective enforcement).

Even though the causal arrow of the empirical associations presented in this analysis isn't definitive, it provides a starting point to help more precisely describe the role of Kenya's most common financial relationships both in terms of the different needs they meet and the financial health benefits they generate. By comparing the results across outcome indicators that span daily needs, risk management and long-term investment we can get a rounded picture of the risks and benefits of financial relationships. For example, the results explored here suggest that women who participate in community groups have a higher propensity to save, invest in productive assets and feel good about their financial status compared to relationships with other providers. But when it comes to risk protection, the marginal effect on ability to access emergency funds is relatively larger among women who are customers of traditional banks or NBFIs than among women who participate in a community group. These findings open a plethora of research questions which invite us to investigate the pathways through which Kenya's expanding financial inclusion landscape is creating positive and negative effects on financial health.

⁹ In the Kenya Financial Diaries research project for example, respondents used on average 11 different financial devices to manage their money needs.

Observational estimates of the effect of relationships with financial providers on financial health outcomes

Average marginal effect as risk ratio



Source: Author's calculations using FinAccess survey data. The risk ratios are derived from a logistic regression model that adjusts for employment, income, household-level poverty and social capital.

Figure 3

Observational estimates of the effect of relationships with financial providers on financial health outcomes

Average marginal effect as risk ratio

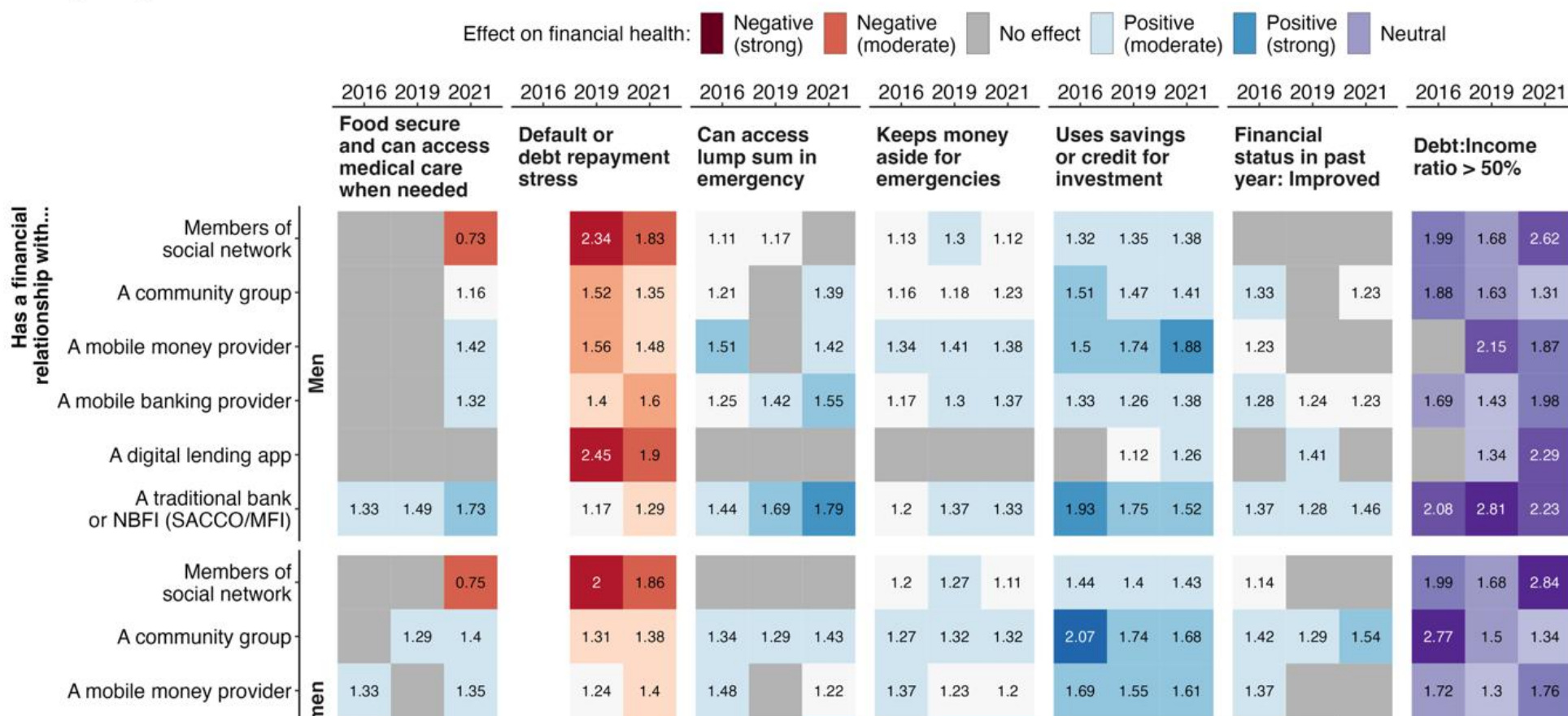


Figure 4





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