

# FINANCIAL HEALTH IN KENYA

Exploring a multi-dimensional measurement  
framework using FinAccess 2016 data

The multidimensional financial health index (MFHI) identifies people's ability to manage their finances in ways that help them address daily needs, cope with unforeseen risks and invest in their future. MFHI is modeled on the Multidimensional Poverty Index (MPI) methodology pioneered by Alkire and Santos (2010) and uses data from the FinAccess household survey. This note applies an adaptation of the MPI methodology to estimate the financial health or well-being of Kenya's population using data from the nationally representative 2016 FinAccess household survey.

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## The multidimensional financial health index

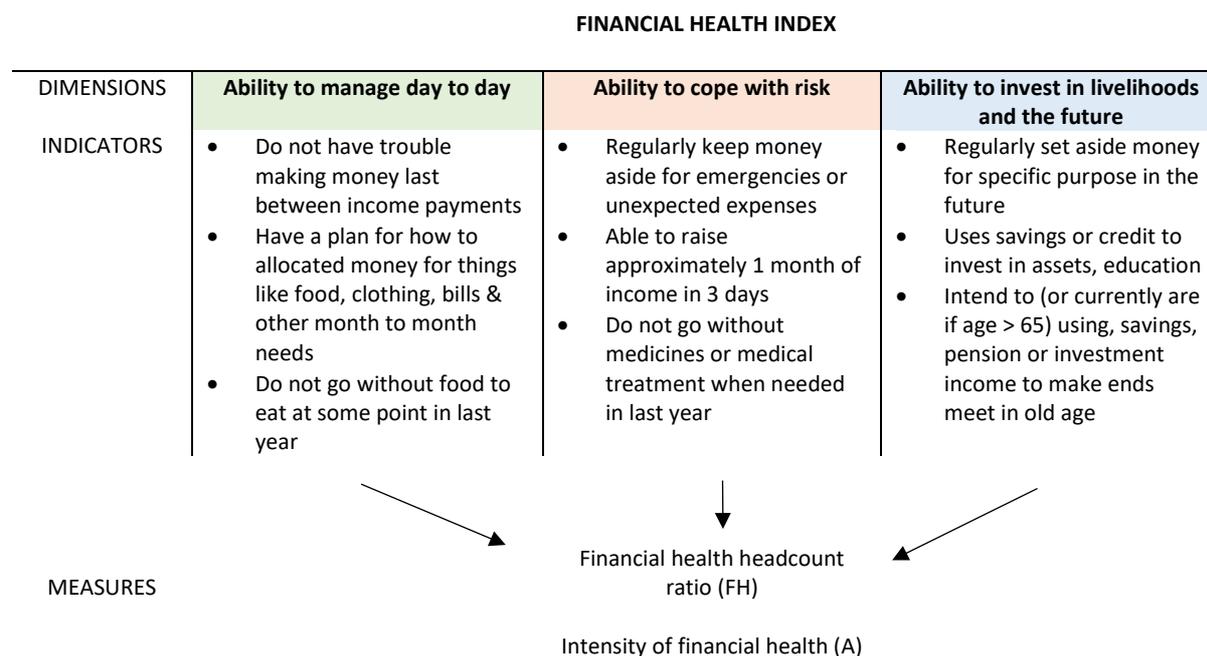
The multidimensional financial health index (MFHI) attempts to identify people’s ability to manage their finances in ways that help them address daily needs, cope with unforeseen risks and invest in their livelihoods and their future. MFHI is modeled on the Multidimensional Poverty Index (MPI) methodology pioneered by Alkire and Santos (2010) and uses data from household surveys.

### Overview

Each person in a nationally representative survey, such as FinAccess, is assigned a score according to behaviors or outcomes in each of 9 component indicators (Figure 1)<sup>1</sup> that map to three dimensions of financial health: ability to manage day to day, ability to cope with risk and ability to invest in the future. The maximum score is 100 percent and each dimension is weighted equally so that the maximum financial health score for each dimension is 33.3 percent. Since each dimension has three indicators in total, each indicator has a weight of 33.3/3 or 11.1 percent. Each person in the survey receives a financial health score  $fh_p$ , which is the sum of each health indicator multiplied by its weight. Individuals with a financial health score greater than 60% are considered “financially healthy”.<sup>2</sup>

The financial health headcount ratio ( $FH$ ), is the proportion of the population that is financially healthy. The intensity of financial health ( $A$ ) represents the proportion of the weighted component indicators in which, on average, financially healthy individuals are “capable”. The Financial Health Index (MFHI) is the product of the financial health headcount ratio and the intensity of financial health.

Figure 1. Conceptual overview



<sup>1</sup> These indicators were selected by first identifying a candidate list of relevant indicators from FinAccess and selecting from these indicators that were simple and most closely aligned conceptually with the dimensions of financial health. All candidate indicators are included in Table A1 in the annex. An additional issue is that indicators should be applicable to all individuals to avoid missing values, so for example, pulling kids out of school due to a lack of school fees is only applicable to families with school going children.

<sup>2</sup> It is important to note that the selection of both the weights for each component indicator and the financial health threshold is somewhat arbitrary. In this application, equal weights have been given to each indicator and a threshold value of 60% was selected because it ensures that a financially healthy individual has satisfied criteria in at least two of the financial health dimensions.

## Methodology

1. All 9 indicators,  $k$ , have equal weight  $w$

$$w_k = 1/9$$

2. Each indicator,  $i$ , takes on a value of 1 or 0 for each person,  $p$ , in the population.

$$i_{k,p} = \begin{cases} 1 & \text{if indicator } k \text{ is TRUE for } p \\ 0 & \text{if indicator } k \text{ is FALSE for } p \end{cases}$$

3. The total financial health score,  $fh$ , for person  $p$ :

$$fh_p = \sum_{k=1}^9 w_k \cdot i_{k,p}$$

4. A person is “financially healthy” if  $fh_p > t$ , where  $t$  is a threshold set at 0.60. The total number of “financially healthy” people in the population,  $q$ , is:

$$q = \sum_{p=1}^N fh_p > t$$

5. For any given population, the Financial Health headcount ratio can be computed as follows, where  $N$ , is the total size of the population.

$$FH = \frac{q}{N}$$

6. For “financially health” individuals only, the intensity of financial health is defined as the proportion of the weighted component indicators which are true for those individuals.

$$A = \frac{\sum_p^q i_{k,p}}{q}$$

7. Finally, an overall multi-dimensional financial health index (an adjusted headcount ratio) can be constructed by computing the product of the financial health headcount ratio and the intensity as follows:

$$MFHI = FH \cdot A$$

Table 1 provides an example of how the multidimensional financial health index would be applied to a hypothetical population of 4 individuals.

**Table 1.** Example of applying the methodology to a hypothetical dataset of 4 individuals

	Individual			
	1	2	3	4
<b>Ability to manage day to day</b>				
Do not have trouble making money last between income payments	1	0	0	1
Have a plan for how to allocated money	0	1	0	1
Do not go without food to eat at some point in last year	0	1	0	1
<b>Ability to cope with risk</b>				
Keep money aside for emergencies or unexpected expenses	1	1	0	1
Able to raise approximately 1 month of income in 3 days	0	0	0	1
Do not go without medicines or medical treatment when needed	0	0	0	1
<b>Ability to invest in livelihoods and the future</b>				
Regularly set aside money for specific purpose in the future	1	1	0	1

Uses savings or credit to invest in assets, education	0	1	0	1
Intend to (or currently are if age > 65) using, savings, pension or investment income to make ends meet in old age	1	1	0	1
<b>Results</b>				
Financial health score (fh), weighted sum of 9 indicators	44.4%	66.6%	0	100%
Is the individual financially healthy? (fh > 60 percent)	No	Yes	No	Yes

In the example in Table 1, among this population of 4 individuals, the financial health headcount ratio is 50%.

## Results

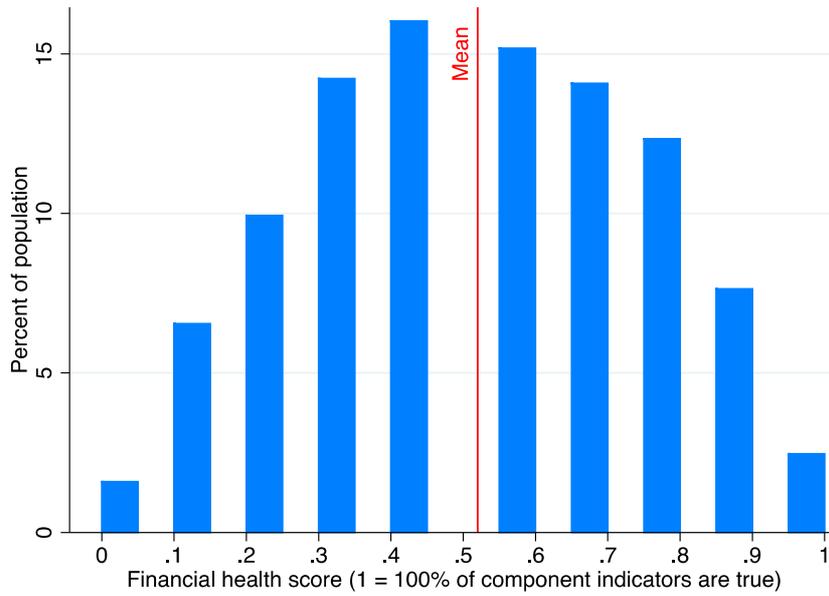
Table 2 displays estimates of each of the nine financial health component indicators, while figure 2 displays the population distribution of the weighted sum of the component indicators (the financial health score).

**Table 2.** Population estimates of financial health component indicators (% of adults age 18+)

Dimension	Indicator	Mean	95% confidence Interval	
			lower bound	upper bound
Managing day to day	Does not often have trouble making money last between income payments	42%	40%	43%
	Has plan for how to allocate money for basic household needs	74%	72%	75%
	In last year, never went without enough food to eat	58%	56%	60%
Coping with risk	Can raise lump sum (equivalent to 1 month of income) in 3 days	37%	35%	39%
	In last year, set money aside for emergencies or unexpected expenses	57%	55%	58%
	In last year, never went without medicine or treatment when needed	65%	63%	66%
Investing in livelihoods or the future	In last year, regularly set aside money for purpose in future	56%	54%	58%
	Uses savings or credit to invest in productive assets or education	40%	38%	42%
	Intends to (or currently is if age > 65) make ends meet in old age with savings or investments (as opposed to working or relying on children)	44%	42%	46%

The mean financial health score in Kenya's adult population is 52.4% which means that on average, adults satisfy between 4 or 5 of the 9 component indicators (Figure 2).

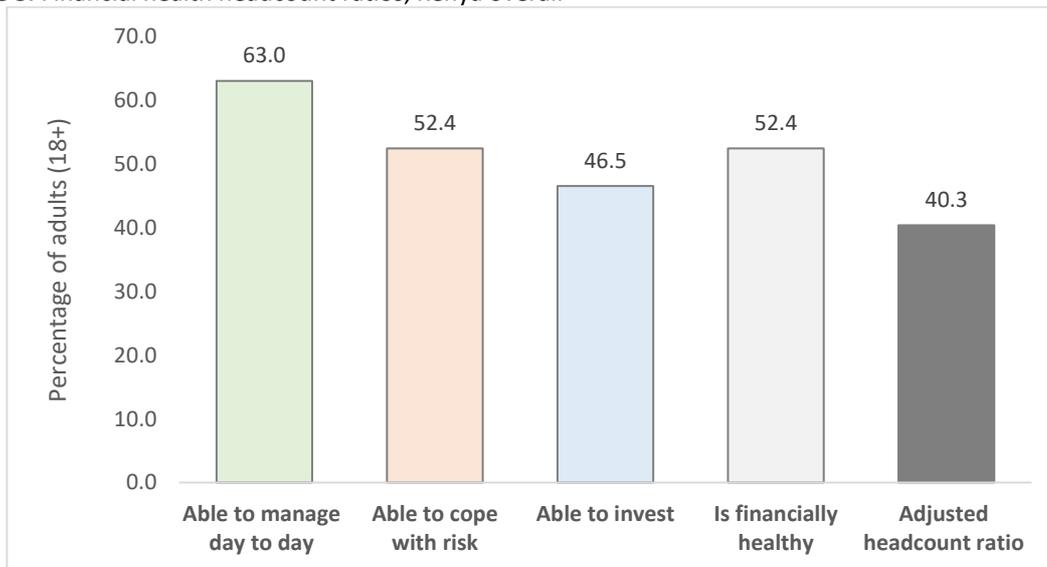
**Figure 2.** The population distribution of the overall financial health score ( $fh_p$ )



Source: 2016 FinAccess household survey

Figure 3 displays the computed financial health headcount ratios for Kenya’s adult population overall and for each dimension of financial health. Table A2, in the annex, provides more detailed results, including the financial health scores, headcount ratios and adjusted headcount ratios for Kenya overall and for several population sub-groups. Overall, the findings suggest that just over half of Kenya’s adult population have financial lives that simultaneously support everyday money management, risk management and investment. The survey data suggest that Kenya’s adults have the greatest capabilities in the domain of managing day to day (63 percent of adults satisfied 2 of the 3 indicators in this dimension) and the fewest capabilities in the domain of investing in their livelihoods 47 percent of adults satisfied 2 of the 3 indicators in this dimension), quality of life or the future.

**Figure 3.** Financial health headcount ratios, Kenya overall



Source: 2016 FinAccess household survey

## Example application: Correlates of financial health

The results of a simple linear probability model quantifying the statistical relationship between financial health status ( $FH$ ) and a host of socio-demographic and financial service usage indicators, is displayed in Table 3. As the financial health score is a binary variable that takes on the values of 0 or 1, a coefficient in the range of 0.10 means that a 1-unit difference in the covariate is associated with a 10 percentage point increase in the probability of being financially healthy, all else equal. For example, in Model 1 (Table 1) the wealthiest 20% of the population are 26 percentage points more likely than the poorest 20% of the population to be financially healthy, holding all other covariates constant. The usual caveats with respect to regression models on observational data apply here – the estimated relationships quantify correlation not causation.

Given the large sample size ( $N > 8,000$ ), most of the demographic and socio-economic covariates included in the regression are statistically significant, however the most independently and consistently influential covariate categories (those with the largest coefficients) are educational attainment, wealth and self-reported income – individuals with more education, more asset wealth and reportedly more income are substantially more likely to be financially healthy compared to relatively less educated, less wealthy and income poor individuals. Females are about 2 percentage points less likely than males to be financially healthy. Interestingly, urban households (either in Nairobi or other urban areas) are between 7 and 10 percentage points less likely to be financially healthy compared to non-northern rural households. This may be due to the fact that rural households can smooth their food consumption by growing their own crops.

The regression models in Table 3 explore the relationship between financial health and use of financial services. Model 1 looks at relationship of the regulatory status of the individual's most "formal" product (the "access strand") with financial health, Model 2 explores the relationship between the provider of the services currently in use and financial health while Model 3 explores the relationships between the type of financial service currently in use with financial health.

Individuals whose most formal financial service in use is prudentially regulated are 21 percentage points more likely to be classified as financially healthy than people who are excluded (do not use either informal or financial service), all else equal (Table 3, Model 1). On average, individuals in the informal access strand are no different than individuals in the excluded strand in terms of their financial health, all else equal. Individuals whose most formal financial service currently in use is formal but not prudentially regulated (such as mobile money) are 3 percentage points more likely to be financially healthy than individuals who are excluded.

Usage of financial services from SACCOs, commercial banks, mobile banking (such as M-Shwari or KCB M-PESA), insurance providers or savings groups are associated with financial health, controlling for other factors. Users of commercial bank and SACCO services (excluding mobile banking) are 16 and 9 percentage points more likely to be classified as financially health than individuals who do not use bank or SACCO services, respectively, all else equal. Mobile banking, savings groups and insurance providers were also associated, but less strongly, with financial health. Use of financial services from microfinance institutions, mobile money and social networks (for example, borrowing from friends and family) were not independently correlated with financial health.

Savings behavior is most strongly correlated with financial health. Individuals reporting that they are currently using any type of savings service or product (formal or informal) are 19 percentage points more likely to be financially healthy, all else equal, than those who aren't saving. Users of health insurance are 10 percentage points more likely to be financially health and users of mobile money are 3 percentage points to be financially healthy, all else equal. People who currently use a loan (either from a formal or informal source) are 2 percentage points less likely to be financially healthy, controlling for other factors, compared to those who are not borrowing.

**Table 3. Linear regression models exploring the relationship between financial health, socio-economic characteristics and financial service use.**

		Model 1		Model 2		Model 3	
		Coef	P-value	Coef	P-value	Coef	P-value
Age	Age (years)	0.00	0.001	-0.01	0	-0.01	0
	Age squared	0.00	0.087	0.00	0.013	0.00	0.036
Gender	[Male: Omitted]						
	Female	-0.02	0.024	-0.04	0.001	-0.04	0
Livelihood	[Agriculture: Omitted]						
	Employed	-0.05	0	0.00	0.832	-0.06	0
	Own business	0.05	0.002	-0.05	0	0.05	0
	Dependent or other	-0.02	0.251	0.05	0.002	-0.01	0.641
Educational attainment	[Primary: omitted]						
	Secondary	0.07	0	0.06	0	0.07	0
	Tertiary	0.15	0	0.11	0	0.13	0
Household residence	[Rural: omitted]						
	Nairobi	-0.10	0	-0.09	0	-0.08	0
	Other urban	-0.08	0	-0.07	0	-0.06	0
	Northern Arid	-0.07	0	-0.04	0.01	-0.01	0.343
Household wealth (Asset Index)	[Poorest 20%: omitted]						
	2nd wealth quintile	0.05	0	0.05	0	0.05	0.001
	3rd wealth quintile	0.09	0	0.09	0	0.08	0
	4th wealth quintile	0.18	0	0.17	0	0.18	0
	Wealthiest 20%	0.26	0	0.24	0	0.26	0
Monthly income (self reported)	[Ksh 0-1500: omitted]						
	Ksh 1,500-3,000	0.02	0.165	0.03	0.124	0.02	0.202
	Ksh 3,000 - 7,500	0.06	0	0.06	0	0.05	0.001
	Ksh 7,500 -15,000	0.11	0	0.10	0	0.11	0
	Ksh 15,000 - 30,000	0.19	0	0.16	0	0.18	0
	Ksh above 30,000	0.24	0	0.20	0	0.22	0
Financial access strand (mutually exclusive groups)	[Excluded: omitted]						
	Formal prudential	0.21	0				
	Formal (other)	0.03	0.062				
	Informal	0.00	0.877				
Financial service provider currently used	SACCO			0.09	0		
	Microfinance institution			0.02	0.394		
	Commercial bank (excluding pure mobile offers)			0.16	0		
	Commercial bank - Mobile banking			0.05	0		
	Mobile money			0.02	0.077		
	Insurance provider			0.07	0		
	Savings group			0.06	0		
	Social networks			-0.02	0.053		
	Secret store of cash			0.10	0		
Financial service type currently used (formal or informal)	Any health insurance					0.10	0
	Any non-health insurance					0.06	0.037
	Any pension					0.02	0.222
	Mobile money					0.03	0.02
	Any savings					0.19	0
	Any type of loan					-0.02	0.031

	<b>Model 1</b>		<b>Model 2</b>		<b>Model 3</b>	
	Coef	P-value	Coef	P-value	Coef	P-value
Any type of investment					0.07	0

## Annex

**Table A1:** Candidate financial health indicators, by financial health dimension

Dimension	Candidate indicator (limited to availability in FinAccess 2016)	Financial health component indicator	Notes
Ability to manage day to day	Uses savings or loans to meet day to day households needs		Only applies to individuals that own livestock
	In last year, never went without a veterinarian for livestock if needed		
	In last year, never went without food	X	Only applies to farmers
	In last year, never went without fertilizer for crops		
	In last year, never went without transport to attend important family event		Only applies to borrowers
	In last year, did not sell an asset to repay a loan		
	In last year, did not borrow to repay a loan		Only applies to borrowers
	Has a plan to allocate money for everyday needs	X	
	Does not often have trouble making money last between income payments	X	
Can live without a bank account			
Ability to invest in livelihood or the future	Using savings or loans to invest in productivity (asset or education)	X	Only applies to families with school-age children
	Saves frequently (daily, weekly or monthly)		
	Not worried about having enough in old age		
	In last year, regularly set aside money for a specific purpose in the future	X	
	Intend to make ends meet in old age with savings or investments	X	
	Intends to make ends meet in old age with children		
	Intends to make ends meet in old age by working		
	In last year, never had child sent from school due to inability to pay school fees		
	Has saved		
	Has a plan for making ends meet in old age		



Table A2.

		Managing day to day		Coping with risk		Investing in the future		Financial health overall			
Population sub-group	Population share (%)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score overall (max = 1)	Financial health headcount ratio (% of adults with financial health score > 0.6)	Intensity of financial health	Multidimensional financial health index
Female	52%	0.19	60.8	0.16	47.4	0.14	41.7	0.34	49.4	0.76	37.5
Male	48%	0.20	65.3	0.19	57.8	0.17	51.7	0.45	55.6	0.78	43.4
<b>Wealth group</b>											
Bottom 60%	60%	0.18	54.8	0.15	40.6	0.12	35.1	0.26	44.8	0.75	33.6
Top 40%	50%	0.22	75.3	0.22	70.2	0.20	63.8	0.60	63.8	0.79	50.4
<b>Livelihood</b>											
Agriculture	32%	0.19	61.7	0.16	48.2	0.14	39.4	0.31	48.8	0.76	37.1
Casual	19%	0.17	52.8	0.15	43.1	0.14	39.3	0.28	46.0	0.75	34.5
Dependent	16%	0.19	62.1	0.16	47.4	0.13	35.5	0.35	48.0	0.76	36.5
Employment	12%	0.22	73.2	0.22	71.1	0.23	72.6	0.65	67.1	0.80	53.7
Other	2%	0.18	58.8	0.17	47.0	0.17	54.2	0.47	52.3	0.79	41.3
Own-business	18%	0.21	70.0	0.20	62.1	0.18	58.0	0.52	59.3	0.78	46.3
<b>Geographic residence</b>											
Nairobi	11%	0.20	67.4	0.21	66.5	0.20	66.1	0.55	61.5	0.78	48.0
Northern Arid	7%	0.17	50.5	0.13	35.5	0.09	25.9	0.24	38.7	0.76	29.4
Non-north Rural	57%	0.19	61.5	0.17	48.9	0.14	41.9	0.35	50.2	0.77	38.7
Urban (Non-Nairobi)	25%	0.20	68.4	0.19	59.7	0.18	55.3	0.48	57.7	0.78	45.0
<b>School-age children</b>											
With school age children	33%	0.19	60.6	0.17	50.3	0.15	46.3	0.37	51.4	0.77	39.6
Without school age children	67%	0.20	67.9	0.19	56.8	0.16	47.0	0.44	54.5	0.78	42.5
<b>Borrowing status</b>											
Current borrower	34%	0.20	64.0	0.19	57.2	0.19	59.4	0.47	57.3	0.79	45.3
Not currently using credit	66%	0.19	62.5	0.17	49.9	0.14	39.9	0.35	49.9	0.77	38.4

**Table A2.**

		Managing day to day		Coping with risk		Investing in the future		Financial health overall			
Population sub-group	Population share (%)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score (max = 0.33)	Headcount ratio (% of adults with financial health score > 0.2)	Financial health score overall (max = 1)	Financial health headcount ratio (% of adults with financial health score > 0.6)	Intensity of financial health	Multidimensional financial health index
<b>Financial access strand</b>											
Formal prudential	42%	0.22	73.8	0.22	68.5	0.21	69.6	0.65	60.6	0.79	47.9
Formal other	33%	0.18	58.6	0.16	47.1	0.13	36.5	0.48	28.3	0.75	21.2
Informal	7%	0.17	51.9	0.12	33.2	0.10	27.1	0.40	18.6	0.73	13.6
Excluded	17%	0.16	49.8	0.12	31.6	0.08	17.8	0.36	17.8	0.73	13.0