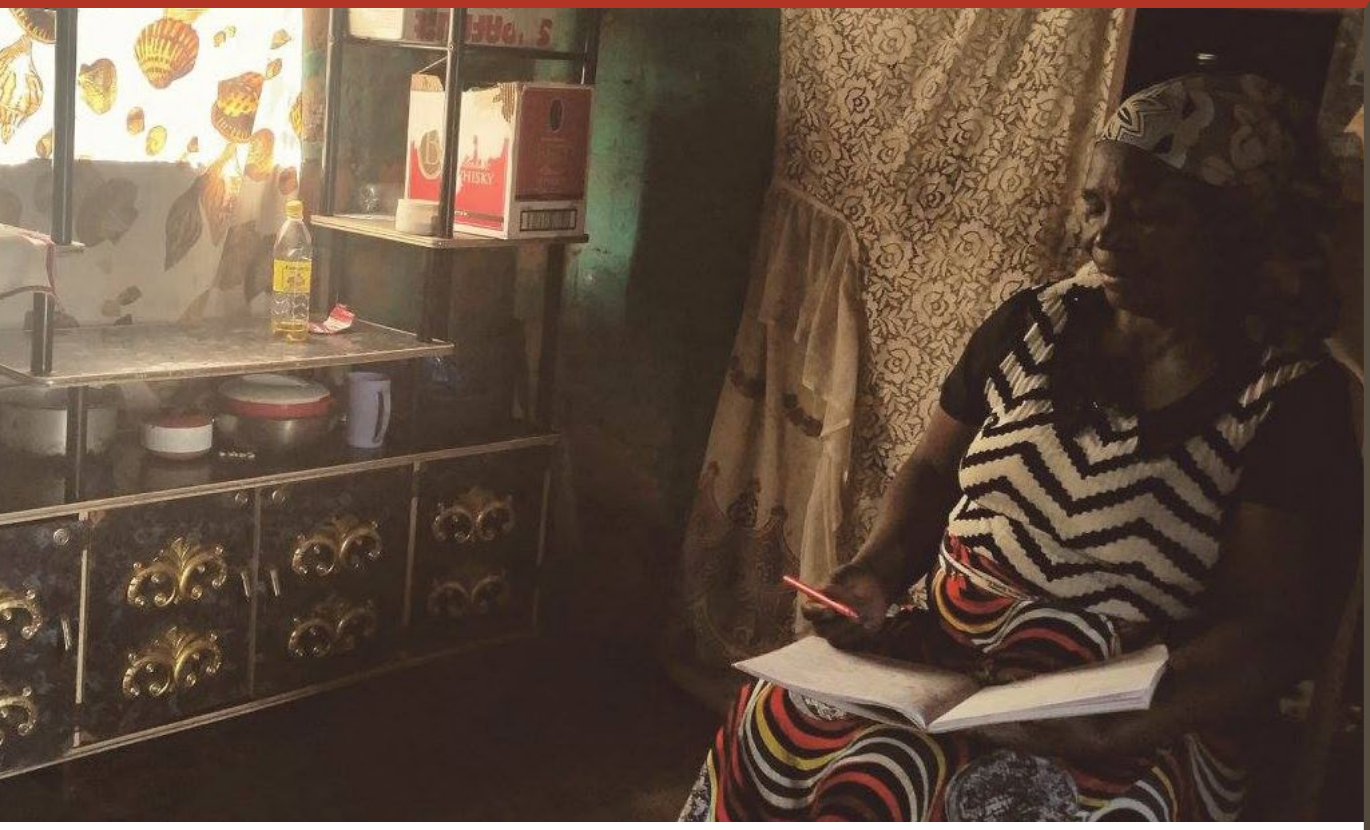
Zambia Financial Diaries: Interim Report



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Expanding Financial Inclusion

MFO
microfinance opportunities

AUTHORS

This report was authored by Guy Stuart, Ph.D. and Eric Noggle with support from Conor Gallagher.

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GLOSSARY

Transaction	Includes all sales and purchases, income earned from informal or formal labor, giving or receiving cash transfers, use of financial tools, and exchanges of in-kind goods or services.
Financial Tool	Financial tools include savings, credit, insurance, and payments/transfers. They can be provided by 'self' (i.e. saving at home), family/friends, and informal and formal financial service providers.
Financial Network	This refers to all of the different people and organizations with whom a person may use a financial tool.
Financial Service	A financial service is a financial tool offered by either an informal or formal financial service provider. It does not include the use of a financial tool when provided by friends/family or self.
Formal Financial Service	A financial tool offered by a financial service provider that is regulated or officially supervised.[1]
Informal Financial Service	A financial tool offered by a financial service provider that is not regulated or supervised, excluding services provided by family and friends or home based savings.
Financial Service Transaction	A transaction with a formal or informal financial service provider using a financial tool.
Financial Inclusion	A person is financially included if they use one or more financial services (formal or informal).
Financial Exclusion	A person is financially excluded if they do not use any financial services (formal or informal). They may use financial tools but only those provided by family or friends, or by saving at home.
Dependent	A person who relies on money from someone else inside or outside of the household to cover his or her expenses.
Smallholder Farmer	A person who owns small plots of land on which they grow mainly subsistence crops but also earn money through selling some agricultural products.
Informal Worker	A person who earns money for work that he/she does outside of formal employment, or a person who earns money from a micro-enterprise that he or she owns.
Salaried Worker	A person who receives a regular salary or wage for his/her labor from an employer.
Cash Transfer	Transfer of cash from one person to another where the transfer does not involve the purchase or sale of goods or services, wage or salary payments, a loan, a savings deposit or withdrawal, or an insurance payment. Also can be referred to as a cash gift.
Income or Earned Income	Income earned through the sale of goods or services, wage or salaried labor. Earned income does not include cash transfers.
Household Expenditures	Any expenditure which was not explicitly stated as having a business purpose.
Lump Sum	A sum of money which is unusually large for the individual in question and which can serve a number of purposes, such as buying an asset, purchasing business stock, buying items in bulk, etc.
Expenditure	Transactions in which an individual exchanges cash, electronic payments, or in-kind goods or services for products or services.

[1] For our definition of Formal and Informal transactions, we drew from those used by the recently completed FinScope Zambia 2015.

ACRONYMS

FSP	FINANCIAL SERVICE PROVIDER
MNO	MOBILE NETWORK OPERATOR
MFO	MICROFINANCE OPPORTUNITIES
FSDZ	FINANCIAL SECTOR DEEPENING ZAMBIA
ZMW	ZAMBIAN KWACHA

EXECUTIVE SUMMARY

The Zambia Financial Diaries is a year-long panel study that collects data each week on all transactions performed by respondents—all sales and purchases, income earned from informal or formal labor, uses of financial tools, and exchanges of in-kind goods. The purpose of the study is to develop an in-depth understanding of the transaction behavior, particularly financial service use, of low-income Zambians and apply that understanding to the development of financial products and services as well as policy that promotes financial inclusion. This interim report presents initial findings from the study with that aim. The analysis is instructive of the different findings the Financial Diaries can offer but not all avenues of inquiry have been exhausted.

Through 32 weeks of data collection, fieldworkers have recorded nearly 50,000 transactions from 352 respondents. We selected those 352 respondents from a purposively developed sample frame that included individuals working in the major sectors of the Zambian economy and broadly representative of the urban and rural divide.

Our analysis shows that the number of income sources an individual has and how much they rely on their principal source of income varies throughout Zambia. Smallholder farmers, for instance, earned income from four different sources on average, and salaried workers often had at least two income sources. Our analysis also shows that relying predominantly on demographic or socio-economic characteristics to understand earnings behavior is potentially misguided. A simple market segmentation model that separates respondents into groups based on the level and patterns of their earnings shows that people with the same characteristics can have significantly different earning and expenditure patterns.

The largest share of respondents' non-financial expenditures were devoted to buying food while products for the home, like candles and washing powder, also composed an important portion of expenditures. There was very little spending on things we define as discretionary, like entertainment or alcohol. Expenditures on airtime were notable though—after food and household items, these were the most common transactions. We also apply the level and pattern of income segmentation to show that individuals with lower week-to-week variation in their incomes were more likely to have a lump sum expenditure than those respondents with higher variation.

The analysis of livelihoods and expenditures give context to the real power of the Financial Diaries—analyzing the different ways in which people use financial tools to manage their cash flow and to address their need for lump sums of cash. Respondents appear to be financially excluded. They relied predominantly on home savings and cash transfers from family and friends to help meet their financial needs and we demonstrate that individuals with higher income variation relied on financial tools more often than their low variation peers.

These early findings provide three major insights for financial service providers (FSPs) and policy-makers. First, financial service providers and policy-makers in Zambia need to emphasize understanding respondent behavior rather than just socio-economic and demographic characteristics prior to developing initiatives and product or service offerings that target single livelihood groups. Targeting people by behavior avoids inefficiencies in efforts to promote financial inclusion. Second, the Financial Diaries show that respondents' spending behavior is concentrated at informal locations like local markets and mini-buses. These locations are potential touch-points to

reach consumers with new marketing campaigns and products. Third, FSPs and policy-makers should recognize the prominence of home savings and informal cash transfer networks between family and friends. Zambia's mobile operators already offer cash transfer options, but revisiting tariff structures and marketing to different economic behaviors may be a way to refine these products.

INTRODUCTION

Researchers use the Financial Diaries methodology—introduced in *The Poor and Their Money*[2] and popularized by *Portfolios of the Poor*[3]—to understand the complex financial behavior of people in low-income households. In our iteration of the methodology, fieldworkers perform interviews with a group of respondents every week for a year. During each interview, fieldworkers record all transactions performed by respondents, including purchases and sales of goods, sources of income, uses of financial tools, and in-kind transactions. From these data, we utilize quantitative and qualitative techniques to identify patterns of financial behavior that can inform the development of financial products and services. The broad nature of data collection can also give insight into numerous other issues such as how respondents prioritize education and health expenditures or the gender dynamics that underpin financial decision-making.

Financial Sector Deepening Zambia (FSDZ) aimed to harness the power of the Financial Diaries to look at the dynamic financial behavior of Zambians along three demographic characteristics: gender, province, and economic livelihood. To that end, we selected a sample of 352 respondents from four provinces—Copperbelt, Eastern, Lusaka, and Western Provinces—that broadly, but not statistically, represented the financial realities of most Zambians. Through 32 weeks of data collection, we have completed almost 7,000 interviews and collected almost 50,000 transactions. This interim report presents an analysis of those transactions.

This report is organized into five sections. The first section provides a brief overview of the project including the sampling procedure, sample description, the Financial Diaries survey instrument, and summary of the data collected to date. The second section takes a deep dive into the livelihoods of our respondents across the three characteristics listed above. In this section, MFO also introduces a fourth characteristic that segments our respondents based on their level and pattern of income. The third section explores household expenditures while the fourth explores what financial tools respondents used and how they used them, including how respondents used financial tools to finance lump sum expenditures and respond to major life events. The report concludes with implications for FSPs and policy-makers.

[2] Rutherford, Stuart. "The Poor and Their Money: An Essay about Financial Services for Poor People." DFID. January 1999.

[3] Collins, Daryl, Jonathan Morduch, Stuart Rutherford, and Orlanda Ruthven. "Portfolios of the Poor: How the World's Poor Live on $2 a day." Princeton University. April 2009.

PROJECT OVERVIEW

SAMPLING METHODOLOGY

The Zambia Financial Diaries sample was selected from a purposively developed sample frame.

The priority was to develop a sample that, while not statistically representative, was still reflective of the varying levels of financial service access and livelihoods of low-income Zambians. We selected four provinces—Copperbelt, Eastern, Lusaka, and Western Provinces—that contained a diverse mix of urban and rural respondents, various levels of financial access, and a preponderance of individuals involved in informal businesses (Lusaka Province), the mining sector (Copperbelt Province), or farming (Eastern and Western Provinces).

Within each of these provinces, we purposively selected districts to meet the logistical requirements of the methodology. The two major requirements were that the districts needed to include a town with sufficient services to support a field team for a year (especially reliable telephone network access) and the ability for field teams to reach field sites within one and a half hours of the town.

We randomly selected standard enumerator areas, defined by Zambia's Central Statistical Office, within each district, and we selected households using a random walk. The field team used Kish grids to select a respondent within a household.

SAMPLE DESCRIPTION

The Financial Diaries sample consists of 352 individuals and includes more women than men.

Respondents who live in the Copperbelt and Lusaka Provinces tend to be younger than those who live in Eastern and Western Provinces. Women are younger than men in all provinces (Table 1).

Table 1: Respondent Age and Gender Distribution

	Copperbelt		Eastern		Lusaka		Western		Total	
	Count	Avg. Age	Count	Avg. Age	Count	Avg. Age	Count	Avg. Age	**Count**	**Avg. Age**
Male	21	35	48	44	33	34	51	39	**153**	**39**
Female	33	30	54	41	60	33	52	37	**199**	**36**
Total	**54**	**32**	**102**	**42**	**93**	**33**	**103**	**38**	**352**	**37**

The median household size for all respondents is five people per household. A majority of our respondents reported being the head of the household with a much greater proportion of men reporting this than women. The most common household role reported by women in our study is spouse to the household head (Table 2).

Table 2: Respondents' Reported Household Roles

Household Role	Male	Female	Total
Head of House	84%	27%	**52%**
Spouse	0%	57%	**32%**
Adult Child	14%	15%	**14%**
Adult In-Law of Household Head	1%	1%	**1%**
Other Dependent	1%	1%	**1%**
Total	**100%**	**100%**	**100%**

Nearly three-quarters of respondents reported not owning a bank account with women reporting this at greater rate than men (81 percent vs. 61 percent). A majority of respondents, and an equal rate of men and women, reported that someone in the household owned a mobile phone (81 percent).

Roughly 43 percent of respondents work in the informal sector as micro-entrepreneurs, piece workers, or laborers. Smallholder farmers represent about 26 percent of the sample and are concentrated in the Eastern and Western Provinces. Salaried workers are the smallest proportion of income earning respondents (14 percent). Non-income earning dependents are 17 percent of all respondents (Table 3).

Table 3: Respondent Livelihood by Province

Livelihoods	Copperbelt	Eastern	Lusaka	Western	Total
Dependent	20	5	31	4	**60**
Farmer	-	48	7	37	**92**
Informal	13	42	40	57	**152**
Salaried	21	7	15	5	**48**
Total	**54**	**102**	**93**	**103**	**352**

THE FINANCIAL DIARIES SURVEY

Our Financial Diaries survey methodology utilizes weekly face-to-face interviews with a sample of respondents to capture data on all transactions carried out by a respondent during the previous week. During each week, local fieldworkers visit respondents and ask them to recount all resources that came into the household/business and all resources that left the household/business over the past week—every bar of soap bought, every basket of tomatoes sold, and every cash gift received.

The standard survey instrument is a simple one-page document that collects the following information about each transaction:

- **Who** performed the transaction and with whom was it performed (including those individuals' gender)?
- **What** item or service was purchased, sold, or traded? What income was earned? What financial service was used? What was the value of the transaction?
- **Where** did the transaction take place? (Both a generic identifier such as home, work place, bank, etc., and specific geographic location, like a village or town name, are included.)

- **When** did the transaction take place?
- **Why** was the transaction performed (i.e. was it for a household or business purpose or both)?
- **How** was the transaction conducted? Did respondents pay cash directly or did they use a form of electronic payment through a third party?

In addition to these details, respondents report important events that happened during the previous week. Our approach is less prescriptive than other surveys and relies heavily on the interviewing skills of fieldworkers and the trust developed during frequent interviews between fieldworkers and respondents. We train fieldworkers to ask probing questions and use weekly balance checks to ensure that all transactions are collected. For this project, the survey instrument was translated into electronic form for use on handheld devices.

In an effort to simplify data collection, simple purchases that are performed multiple times per week—like daily purchases of cooking oil or tomatoes—are aggregated, while all inflows and transactions involving the use of financial tools are disaggregated, even if they happen multiple times per week. In some cases, this practice has depressed average weekly transaction counts. When especially notable, we address the issue in footnotes.

DATA SUMMARY

The Financial Diaries capture a variety of transaction types, but they fall into four basic categories:

- Expenditures
- Earnings
- Financial Tools
- In-Kind Transactions

During the course of 6,723 interviews that occurred during the first 32 weeks of the study, the field team recorded 48,670 transactions in one of these four categories (Table 4).

Table 4: Transaction Categories

	Share of All Transactions	Average Number of Transactions Per Week	Average Weekly Value (ZMW)
Expenditures	76%	5.5	289
Earnings	8%	.6	275
Financial Tools	15%	1.1	299
In-Kind	1%	.1	NA
Total	**100%**	**7.2**	**863**

UNDERSTANDING LIVELIHOODS

Understanding individuals' livelihoods is critical for designing financial products and services that add value to consumers' financial lives. For the purposes of this paper, we define a person's livelihood based on their income from the sale of goods or services or earned through labor as well as their self-reported occupation. We do not include cash transfers or income from other financial sources when determining livelihoods.

The analysis of livelihoods shows that respondents relied on three different income sources on average, but respondents' primary income source accounted for 75 percent of their earnings. How much respondents earned varied considerably, ranging from dependents—who earned no income through 32 weeks—to an informal shop owner in Western Province who earned almost ZMW 7,000 a week on average. Average earnings for the entire sample were ZMW 250 per week. Earning no income in a given week—regardless of gender, province, or livelihood— was also common: respondents reported no earned income in roughly 56 percent of interviews. The pattern of earnings also varied. There are respondents who earned small, regular sums every week and others who had lumpy earnings, getting a windfall in one week and relying on it for several weeks after.

Additionally, the analysis shows that these variations in the level and pattern of income were not specific to a demographic group. Two farmers with similar demographic profiles, for instance, displayed very different earnings patterns, and while that may be intuitively obvious, it is an important point given that financial services in countries with shallow financial sectors often target individuals based on demographics or certain socio-economic characteristics. To help address this, we have developed a simple segmentation model based on individuals' level and pattern of income that can assist financial service providers as they work to better tailor products for financially excluded individuals.

DIVERSITY OF EARNINGS

The data show that there are distinct differences in the number of income sources, respondents' dependency on those sources, and the rate at which respondents experienced a week in which they earned no income across genders, provinces, and livelihoods.

GENDER

There are significant differences between men and women on all of the above mentioned variables. Many of these are driven by the gendered nature of employment. Of the 60 dependents in the sample, 51 (85 percent) were women. This group had lower income and a higher number of weeks in which they earned no income (Table 5).

Table 5: Diversity of Earnings by Gender[4]

	Average Number of Income Sources	Average Weekly Income (ZMW)	Share of Income from Primary Source	Share of Weeks with No Earned Income
Male	3.6	361.5	72%	49%
Female	3.2	234.7	76%	49%
Total	**3.4**	**297.3**	**74%**	**49%**

By almost every measure, men had a more dynamic livelihood profile than women regardless of whether the women were in the paid workforce or not. Men in the paid workforce earned roughly ZMW 1.5 for every kwacha earned by a woman in the paid workforce, and that gap widens to almost two to one if dependents are included. Men and women had a similar number of income sources, but both genders relied on one income source for most of their earnings. Men and women in the paid workforce were also equally likely to experience a week in which they earned no income.

PROVINCE

The provincial breakdown shows notable distinctions within the two predominantly urban sites (Copperbelt and Lusaka Provinces) and rural sites (Eastern and Western Provinces), although this similarity is likely driven by the sampling procedure which targeted similar livelihoods within urban and rural districts (Table 6).

Table 6: Diversity of Earnings by Province

	Average Number of Income Sources	Average Weekly Income (ZMW)	Share of Income from Primary Source	Share of Weeks with No Earned Income
Copperbelt	1.7	384.4	92%	74%
Eastern	3.1	96.2	74%	60%
Lusaka	1.4	214.3	86%	66%
Western	4.8	360.5	62%	36%
Total	**2.9**	**249.0**	**75%**	**57%**

A plurality of respondents in the two urban locations work in the formal sector or work for informal businesses of some kind. They had fewer income sources (about 1.5 on average) and were dependent on their primary income source for about 90 percent of their income. Respondents at the rural sites had three to five income sources and depended on their primary income source for 70 percent of their earnings. Respondents in Western Provinces earned no income less frequently and earned a comparatively high amount each week while Eastern province respondents earned the least amount per week.

LIVELIHOOD

Respondents who worked in the formal economy had the highest average weekly earnings in the study. Despite their formal employment, they still engaged in other work, averaging 2.2 income sources, but this additional work brought in little additional money. The nature of their pay

[4] Figures in this table excluded dependents so as to gain a better understanding of women in the workforce who were greatly outnumbered by the number of female dependents.

schedules (many employers paid them monthly) caused them to have a high proportion of zero income weeks when compared to other livelihoods (Table 7).

Table 7: Diversity of Earnings by Livelihood

	Average Number of Income Sources	Average Weekly Income (ZMW)	Share of Income from Primary Source	Share of Weeks with No Earned Income
Dependent	0.7	14.0	88%	95%
Farmer	4.3	141.1	63%	54%
Informal	3.3	349.5	77%	39%
Salaried	2.2	430.9	85%	70%
Total	**2.9**	**249.0**	**75%**	**57%**

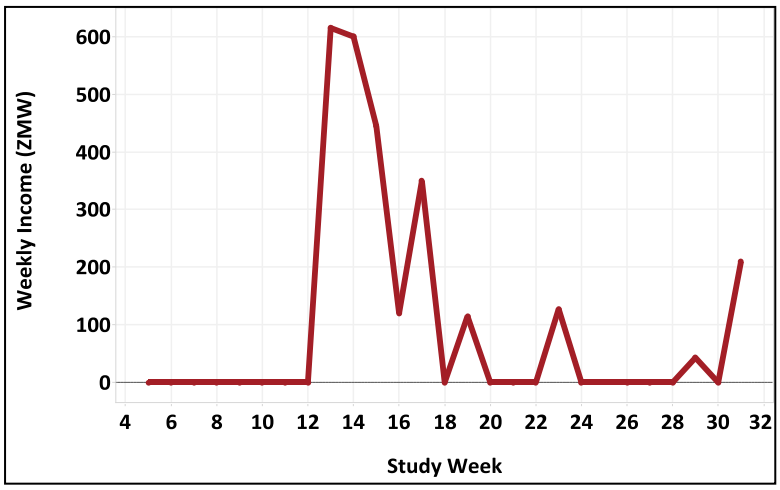
Farmers and those who engage in the informal economy had more income diversity. They relied on three to four income sources, and their non-primary income sources made up somewhere between a quarter and a third of their total earnings. Informal workers were the least likely to experience a week in which they earned no income and tended to have higher earnings.

THE CASE FOR SEGMENTING BY LEVEL AND PATTERN OF INCOME

As the above analysis shows, there were distinct differences in how respondents earned income based on demographics alone, and while demographics are a necessary condition for understanding income level and patterns, they are insufficient for developing a holistic picture. The case of smallholder farmers in Zambia demonstrates the pitfalls of relying on just demographics to segment populations.

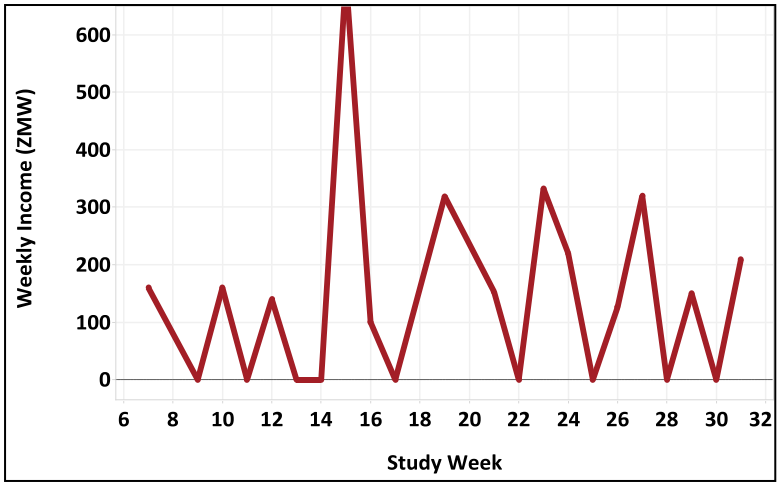
Farmer 1 is a male household head. He is 52 years old and lives in the Luangeni region of Eastern Province. Although primarily a farmer, he reported having two different income sources—vegetable sales and piece work. His vegetable sales accounted for roughly two-thirds of his total earned income. The farmer had periodic spikes in his income from large vegetable sales (weeks 14 and 15) and a large wage payment by an employer (week 13). However, he also had many weeks in which he did not earn any income. His average income was ZMW 100 per week (Figure 1).

Figure 1: Farmer 1



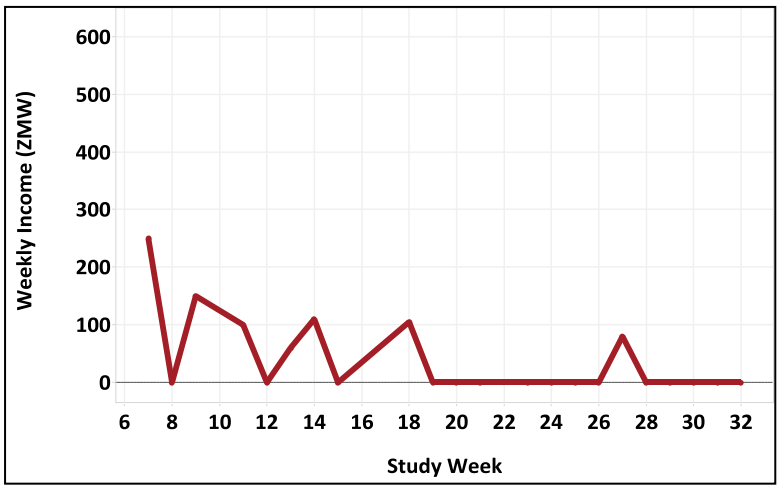
Farmer 2 is a male household head. He is 54 years old and lives in the Luangeni region of the Eastern Province. Although also a farmer, Farmer 2 did not have lumpy income like Farmer 1. Unlike Farmer 1 he did not support himself with sales of farm produce. He supported himself doing various types of piece work including borehole maintenance, repairing a water pump, and repairing a motorcycle. He earned a good, steady income from this work—about ZMW 140 per week on average (Figure 2). Despite his earnings from piece work, this respondent self-identified as a farmer and engaged in farming activities for subsistence purposes.

Figure 2: Farmer 2



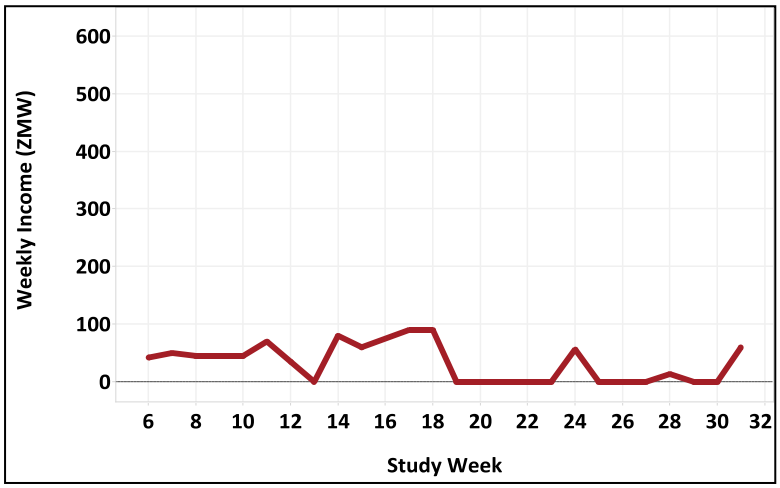
Farmer 3 is a male household head who is also the primary breadwinner for the family. He is 45 years old and lives in the Kasenengwa region of the Eastern Province. He reported earning income from the sale of livestock such as chickens, goats, and pigs; the sale of maize; and piece work. His best earning week was week 7, when he sold a pig. His income was very low, earning an average of ZMW 39 per week. Furthermore, he had considerable periods when he earned no income (Figure 3).

Figure 3: Farmer 3



Farmer 4 is a male household head who is also the primary breadwinner for his family. He is 56 years old and lives in the Kasenengwa region of the Eastern Province. His primary income comes from selling small amounts of vegetables. He earned only ZMW 31 per week during the study (Figure 4).

Figure 4: Farmer 4



Farmers 1 and 2 both earned more per week on average compared to the other two farmers. But Farmers 1 and 2 had very different patterns of earnings. Farmer 1 had large sales of vegetables in weeks 13, 14, and 15 of the study but then sales dropped off. In contrast, Farmer 2 earned a steady income from regular, skilled piece work. For the lower-income farmers, there are also differences in their patterns of earnings. Farmer 3 earned a fairly regular income for some weeks earlier in the study and then earned nothing for an extended period of time. In contrast, Farmer 4 earned a small but steady income throughout much of study period, although he did have a few weeks with no earnings.

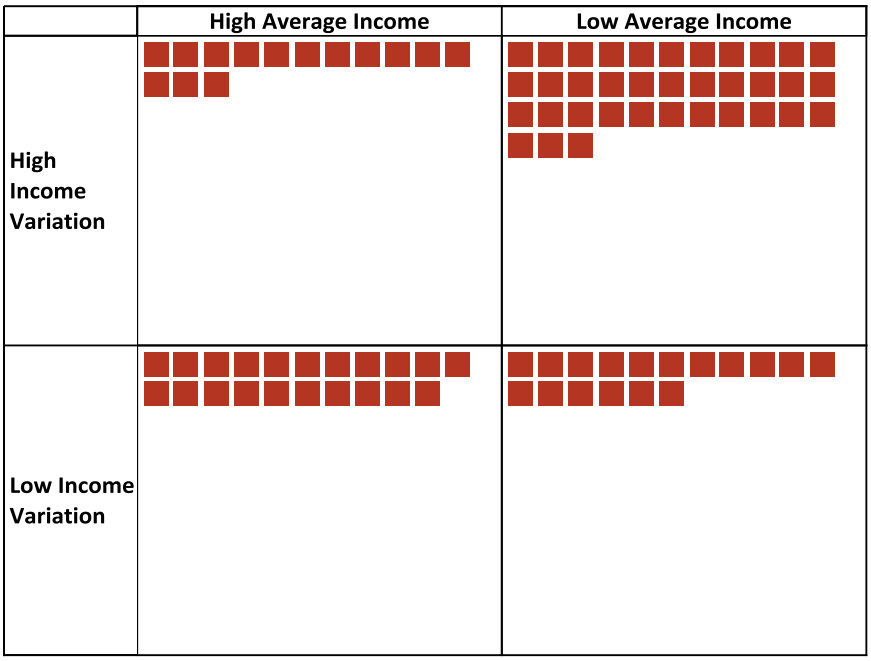
These figures speak to the problem of demographic segmentation—Farmers 1, 2, 3, and 4 are all male heads of household who range in age from 45 to 56 years but show very different levels and patterns of earning. This demonstrates the difficulty of designing useful financial services based on individuals' demographics alone. As a result, we developed a simple framework to summarize the different combinations of levels and patterns of income to shift the conversation about how to use

market segmentation to promote financial inclusion from a focus on demographics to one on behavior.

All respondents who reported earned income during the study period were divided into either the high average or low average income group depending on whether they were above or below the median of average weekly earned income (ZMW 89.6). The second dimension of the matrix looks at relative income variation by classifying people into the high variation group or low variation group based on the dispersion of their earnings.[5] We refer to this as the 'pattern of earning.' For example, people in the high variation group have incomes that are more erratic and irregular than those in the low variation group.

This approach to segmentation is especially useful for looking at two groups of people that are targeted primarily for their livelihood: smallholder farmers and informal workers. The data suggest that people who earn income in these broad livelihood sectors vary considerably (Figures 5 and 6).

Figure 5: Segmentation and Livelihood—Farmers

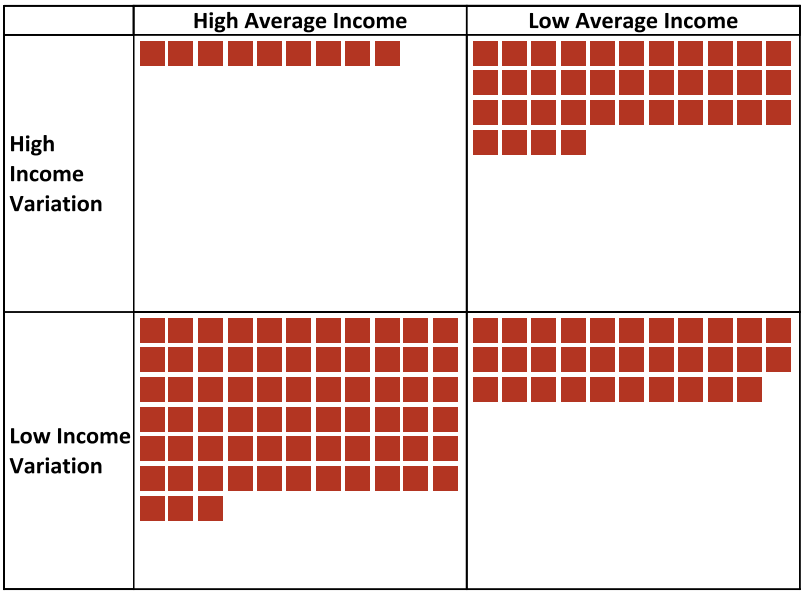


This matrix excludes four respondents who had self-reported themselves as farmers during interviews with field staff but who had not made a farm sale as of week 32. Each box in this and the following figures represents one respondent.

This distribution is not anomalous. We see that informal workers are represented in three out of the four segments (Figure 6).

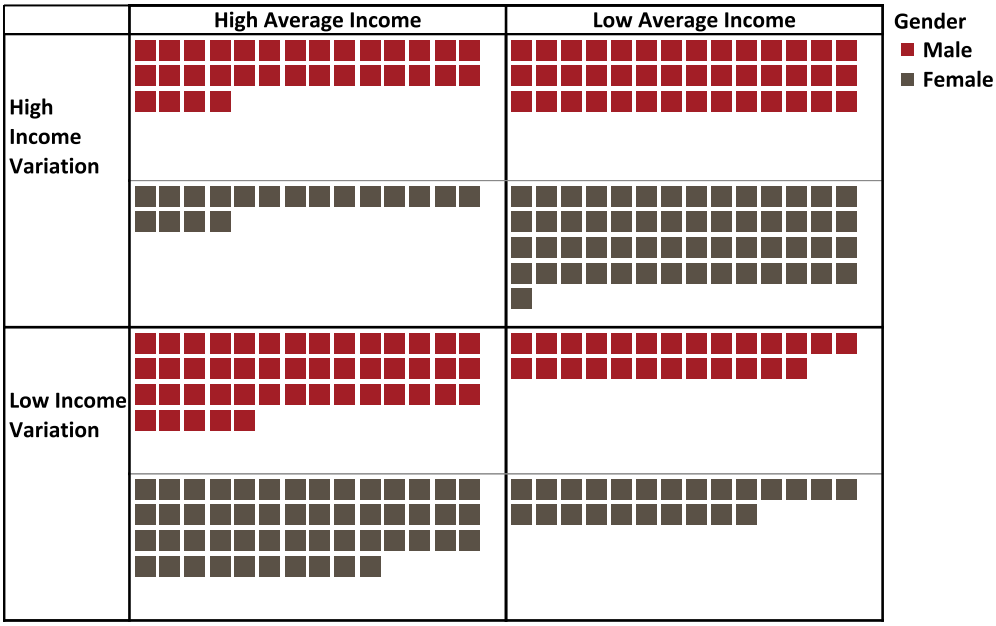
[5] The measure of variation we used is the coefficient of variation for the study period. This is calculated by dividing the standard deviation of income by average weekly income. The average coefficient of variation for the sample of respondents for whom there is sufficient data in the Diaries to calculate the coefficient is 1.81

Figure 6: Segmentation and Livelihood—Informal Workers



In addition, we see that no one segment is dominated by a particular gender (Figure 7).

Figure 7: Segmentation and Gender



UNDERSTANDING EXPENDITURES

The Financial Diaries provide insight into how people prioritize spending. Expenditures—transactions in which individual exchange cash, electronic payments, or in-kind goods or services for products or services—were by far the most common transactions in the data, accounting for 74 percent of all transactions.[6] Of these, the overwhelming majority—94 percent of expenditure transactions—were for a household purpose.[7] Household expenditures form the basis for this analysis.

[6] The remaining 26 percent of transactions are income earned by respondents or involved financial tools.

[7] Household expenditures are expenditures that respondents made that were not explicitly for a business purpose.

A respondent in our sample spent an average of ZMW 165 per week on household expenses, and the vast majority of this—54 percent or almost ZMW 94—was devoted to food purchases. Expenditures on household items and basic services—daily transportation, communications (predominantly airtime), education, and health—were the next most common types of transactions by volume, but the value of this spending was low. And while the composition of spending varied across gender, province, livelihood, and income segments, food spending remained the dominant category across all dimensions (Tables 8 and 8a).

Table 8: Household Expenditures

	Amount per Week (Kwacha)	Count of Transactions per Week
Food	93.6	3.6
Basic Services	29.3	0.7
Discretionary Spending[8]	13.3	0.2
Household Items	14.3	0.5
Housing	6.1	0.0
Fuel	5.7	0.1
Special Event	2.7	0.0
Total	**165**	**5.1**

Table 8a: Household Expenditures Detail, Basic Services

	Amount per Week (Kwacha)	Count of Transactions per Week
Transport	10.87	0.21
Communication	9.03	0.34
Education	8.08	0.06
Health	1.28	0.04
Total	**29.26**	**0.65**

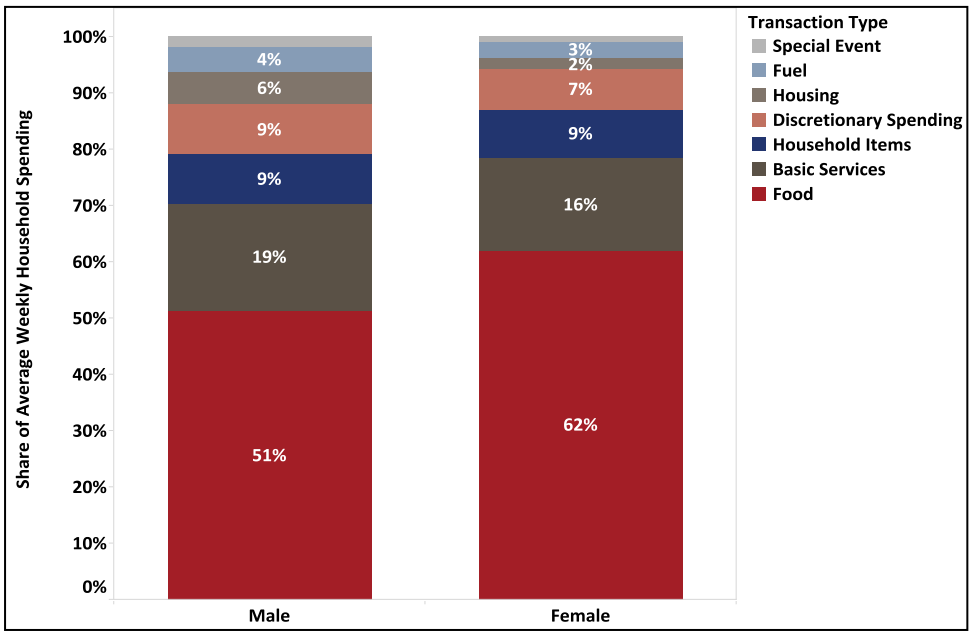
EXPENDITURE SUMMARY

GENDER

Women spent ZMW 163 per week on goods and services for their households, slightly less than the ZMW 184 spent by men, but a much larger share of their spending—62 percent versus 51 percent—was devoted to food expenditures. Both genders devoted similar shares of their income to purchasing household items (such as hygienic products, washing powder, batteries, and candles), basic services, and discretionary spending (Figure 8).

[8] We define discretionary spending as spending on goods or services that are not critical expenditures for the low-income household such as spending on cable bills, beer and alcoholic beverages, paying for help around the house, etc.

Figure 8: Share of Weekly Household Expenditures by Gender



Within basic services, purchases of airtime stand out for their frequency. Respondents, regardless of gender, made an airtime purchase approximately once every three weeks (Table 9).

Table 9: Top 5 Categories of Household Spending by Gender

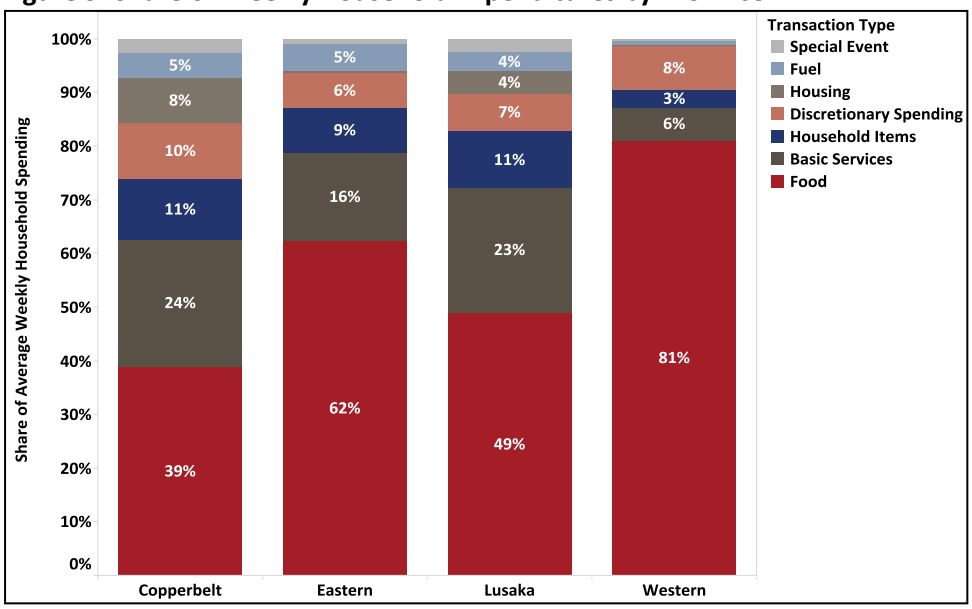
	Average Amount Spent per Week (ZMW)		Average Number of Transactions per Week	
	Male	Female	Male	Female
Food	89.5	97.0	3.11	3.99
Transport	12.9	9.2	0.24	0.18
Communication	8.4	9.5	0.38	0.30
Household item	10.3	7.3	0.39	0.39
Education	10.1	6.4	0.08	0.04

Men spent slightly more than women each week on housing—principally rent—but this distinction was driven by fairly limited activity in this category. Only 52 respondents—29 men and 23 women—reported paying rent during the study and only 27 of those 52 reported paying it more than once.

PROVINCE

Respondents in Copperbelt Province spent the most money on goods and services for their household each week, and as one would expect with their relatively high spending, they devoted proportionately less of their money to food and more toward basic services, particularly transportation and communication. The high proportion of spending on these items in Copperbelt Province is likely a result of miners needing to travel longer distances more frequently to reach their jobs.

Figure 9: Share of Weekly Household Expenditures by Province



Respondents in Lusaka Province also spent more on communication, while respondents in the rural locations appear to devote less to airtime purchases.

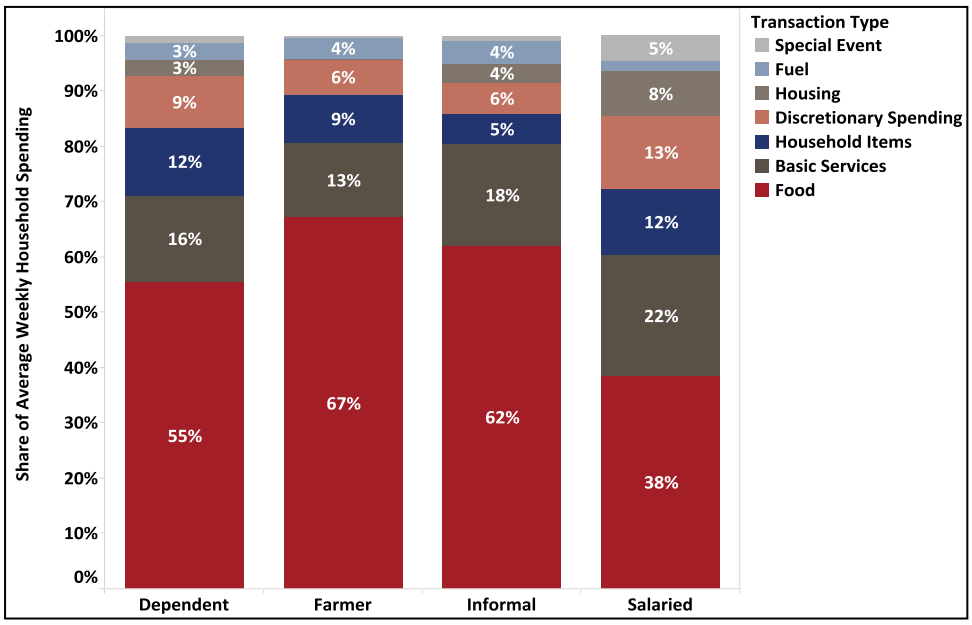
Table 10: Transportation and Communication Expenses across Provinces

	Average Amount Spent per Week (ZMW)		Average Number of Transactions per Week	
	Transportation	Communication	Transportation	Communication
Copperbelt	37.2	21.2	0.62	0.74
Eastern	7.6	3.1	0.12	0.27
Lusaka	9.9	18.0	0.24	0.54
Western	2.4	1.5	0.06	0.03

LIVELIHOOD

Salaried respondents spent an average of ZMW 266 per week on goods and services for the household, the most of any livelihood group, and they devoted the smallest share of their expenditures to food (38 percent). Farmers represent the other end of the distribution, spending only ZMW 140 per week on household expenditures. It is notable that their proportion of food spending was similar to informal workers and dependents despite the high likelihood that famers used some of the food they grew for their own consumption.

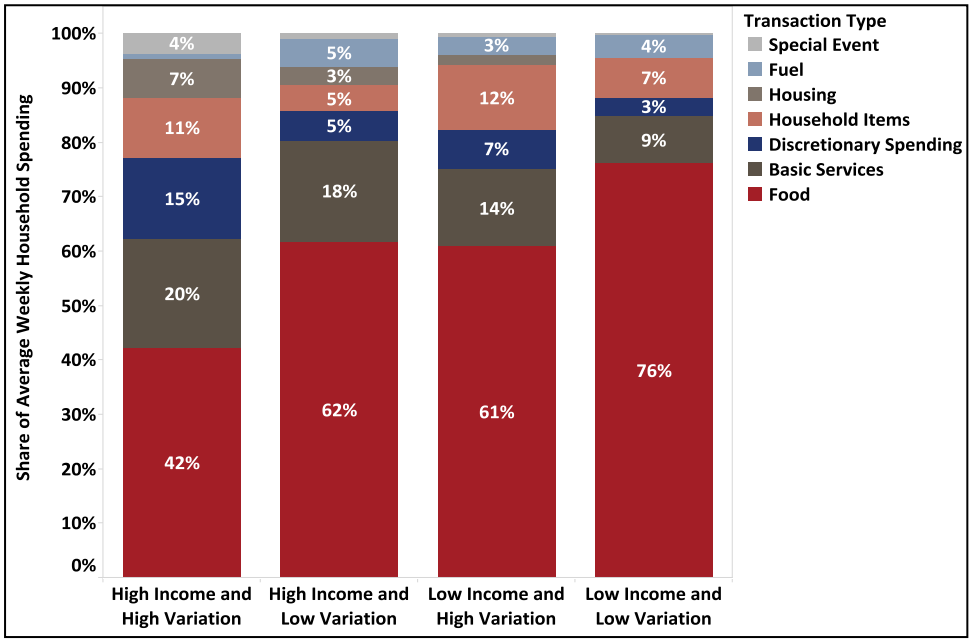
Figure 10: Share of Weekly Household Expenditures by Livelihood



INCOME SEGMENT

Differences in average weekly spending by income segments appear to be more strongly correlated with a respondent's income level rather than his other pattern of earnings. Those in the high income and high variation segment spent the most each week and had the highest levels of spending on non-food goods, particularly basic services. They spent more on education, health, and transportation than any other group. The proportional amount of money spent on food by those with low average weekly income and income variation is striking—76 percent of the ZMW 69 they spent per week on household expenditures went to food.

Figure 11: Share of Weekly Household Expenditures by Income Segment



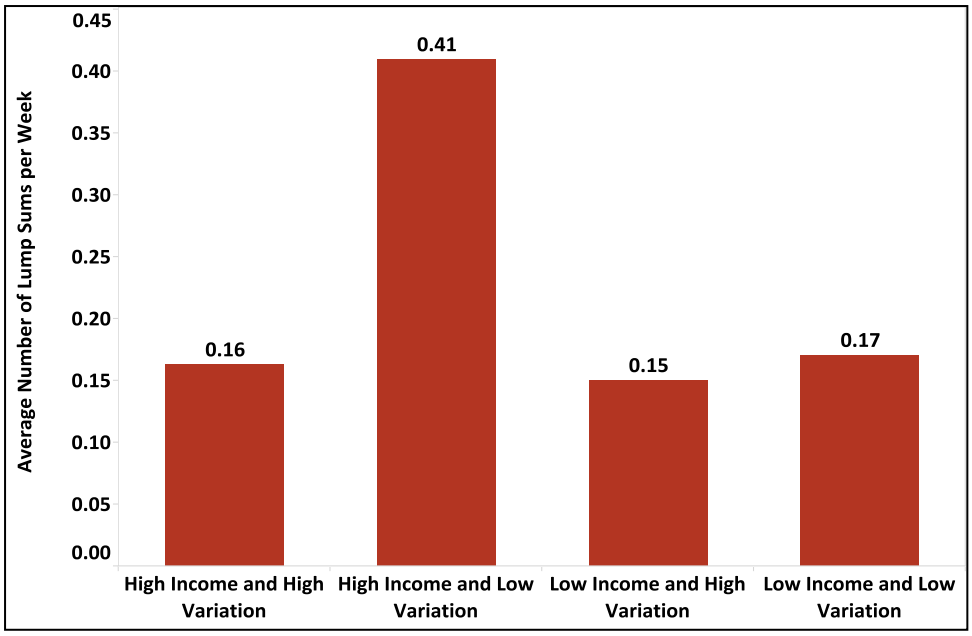
DIGGING DEEPER: LUMP SUM EXPENDITURES

It is especially important to look at the pattern and size of expenditures that constitute "useful lump sums."[9] These sums of money are unusually large for an individual. They can serve a number of purposes, including but not limited to:

- Bulk household purchases, such as a large bag of rice and ground maize;
- Services which, by definition, are expensive such as a long-distance bus trip or school fees;
- Household assets such as a radio, tin roof, or new piece of furniture;
- Business assets, such as a new machine;
- Business inventory

If we look at all expenditures of useful lump sums—including those for business purposes—we see that individuals with high earned income and low income variation were by far the most likely to spend such sums. On average, they made one such expenditure every 2.5 weeks while the other segments made such expenditures about once every six weeks.

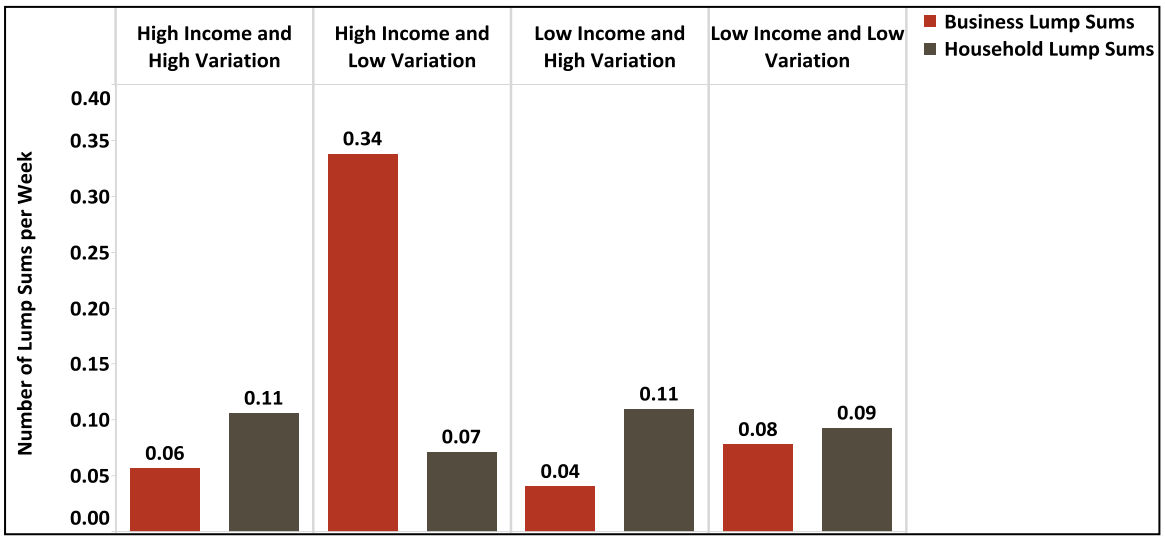
Figure 12: Number of Lump Sums per Week by Income Segment



Digging deeper into these data, we find that the frequency of lump sum spending in the high income and low variation category was driven by market vendors who regularly bought inventory for their businesses. These individuals were far more likely to make lump sum expenditures for business purposes than people in other segments and slightly less likely to make lump sum expenditures for household purposes.

[9] Rutherford, Stuart. (2001) The Poor and Their Money, Oxford India Paperbacks, Delhi

Figure 13: Business and Household Lump Sums by Income Segment



How these lump sum expenditures are financed is explored in the following section.

FINANCIAL TOOLS AND NETWORKS

The purpose of financial tools is to assist in cash flow management or to create useful lump sums that people use to respond to life cycle events, for emergencies, or for investment opportunities. In general, people use four financial tools to manage their financial lives: savings, loans, insurance, and payments or transfers. We define these as financial services when they are provided by a formal or informal financial service provider, but not all tools are used with financial service providers. Individuals can give/receive savings, cash transfers, or loans to/from family and friends, or they can save at home. In other words, people use financial tools in the context of different types of relationships, which may or may not involve a financial service provider. We refer to the variety of relationships of this sort as the financial network of a respondent (Table 11).

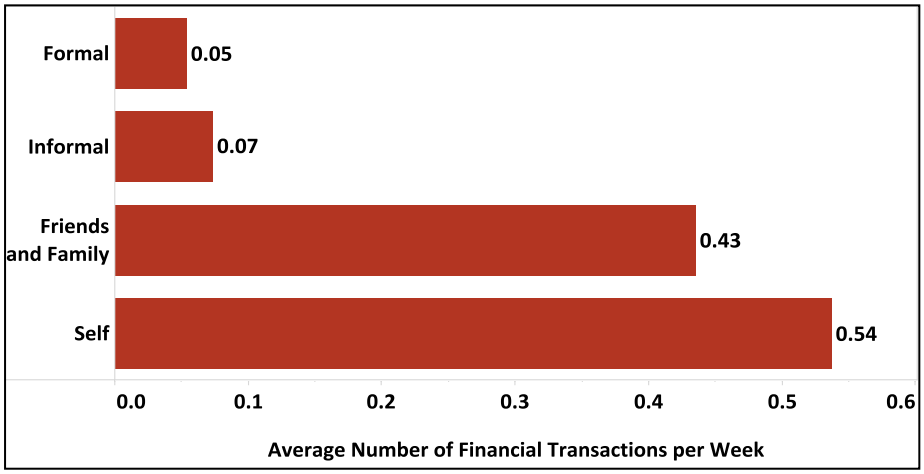
Table 11: Financial Tools and Network

Provider / Tool	Self	Friends and Family	Informal financial service providers	Formal financial service providers
Savings	home savings	one family member holds money for another	savings group and/or chilimba	bank account or mobile money wallet
Loans	N/A	no-interest loan from a friend	loan from a money lender	installment loan
Insurance	self-insurance through savings	cash gift from a family member to cover an emergency	burial fund	life insurance
Transfers (remittances or payments)	N/A	a cash gift	money transfer through a local bus company	mobile money transfer

Respondents performed 7,398 transactions involving a financial tool in the 32 weeks covered in this report, representing 15 percent of all transactions and about one transaction per respondent per

week on average. The data show high rates of financial exclusion, with respondents relying predominantly on home savings and friends and family to smooth income swings and create useful lump sums. Use of formal financial services is limited and those that do use them tend to be employed in the formal sector.

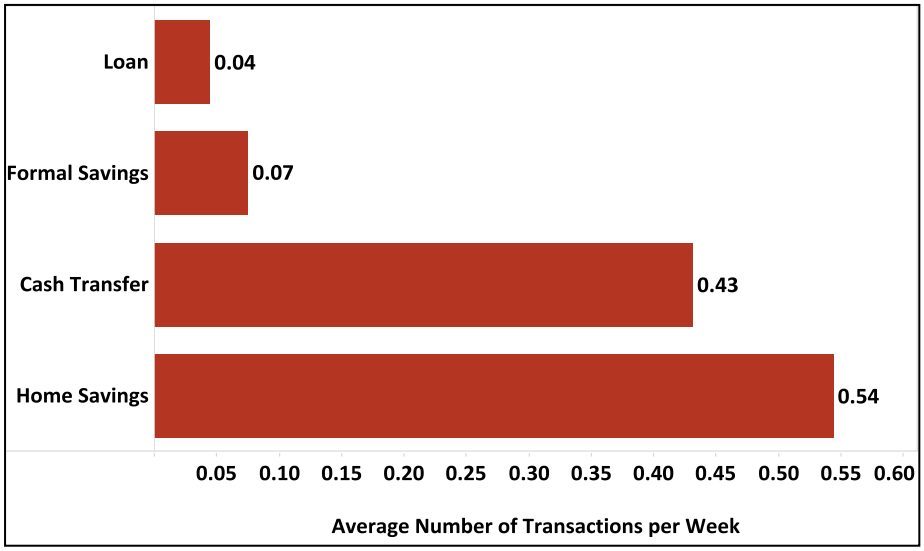
Figure 14: Number of Transactions by Financial Network



FINANCIAL TOOLS AND NETWORKS SUMMARY

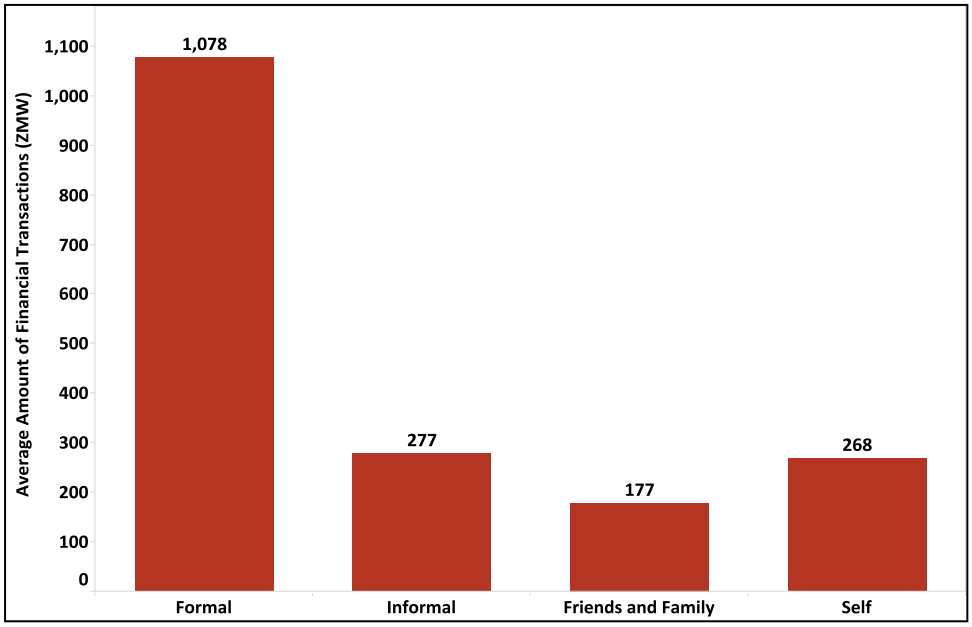
Participants in the study used a number of financial tools. Home savings and cash transfers to and from friends and family were the most common tools respondents used.

Figure 15: Number of Transactions per Financial Tool



The size of the transactions people performed using financial tools varied depending on the network they used. The average size of deposits or withdrawals from home savings and transactions with friends, family, or informal financial service providers were all roughly the same, ranging between ZMW 200 and 300 per transaction. The average size of transactions with formal sector providers was much larger, averaging almost ZMW 1,100 per transaction (see Figure 16: Average Size of Transaction by Financial Network).

Figure 16: Average Size of Transaction by Financial Network



GENDER

Across the entire sample, respondents used about one financial tool per week. There was no difference in how frequently men and women used these tools, but there were slight differences in the composition of their financial networks. Both men and women were most likely to save at home, although women were equally likely to save with or borrow from family and friends. The most notable difference is that men were twice as likely to use a financial tool with a bank or mobile service provider.

Figure 17: Financial Network Share of Financial Tools by Gender

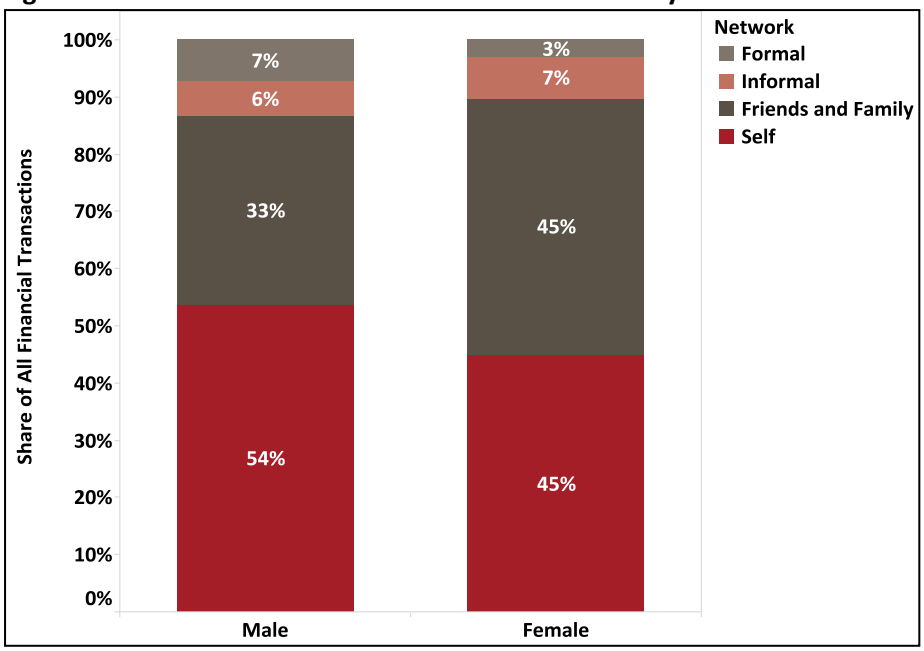


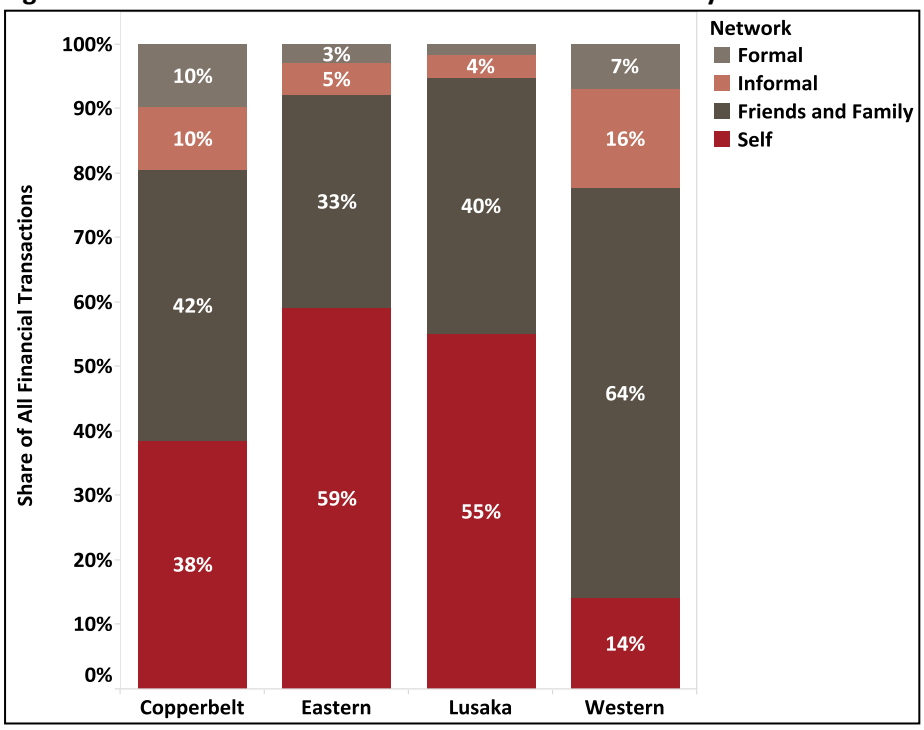
Table 12: Frequency of Use of Financial Tools by Gender

	Average Number of Times Financial Tools were Used per Week
Male	1.08
Female	1.11
Total	**1.10**

PROVINCE

Respondents in Copperbelt Province were more likely to conduct financial services transactions than those in the other provinces. This is a result of the high proportion of formally employed respondents in that province. These respondents, mostly employed in the mines, must have a bank account to receive direct deposits from their employers. The site where respondents were least likely to perform a formal financial service transaction was Lusaka Province. Only two percent of the financial tools used by respondents in Lusaka Province were provided by a formal financial service provider.[10]

Figure 18: Financial Network Share of All Financial Tools by Province



[10] This rate of formal financial service use appears low for a province with a major urban hub (Lusaka City). We think that there are two main explanations for this. First, the Lusaka Province sample contains a higher share of dependents and lower share of salaried workers, which would depress this figure. Second, sizable portions of this sample live in peri-urban and rural areas of the province. These areas tend to have less frequent access to formal financial services.

Table 13: Frequency of Financial Tools by Province

	Average Number of Times Financial Tools were used per Week
Copperbelt	2.27
Eastern	1.27
Lusaka	1.24
Western	0.24
Total	**1.10**

More of respondents' transactions involving financial tools in Eastern and Lusaka Provinces were likely to be home-based savings when compared to the other sites. Respondents in Western Province were also more likely to conduct transactions with family and friends and with informal service providers when compared to other sites.

LIVELIHOOD

Salaried workers were most likely to use formal financial services while all other livelihood segments were extremely unlikely to use such services. With the exception of salaried workers, no other livelihood group performed more than two percent of their transactions with formal providers. Dependents were most likely to perform transactions with family and friends; the plurality of their transactions were transfers from spouse-to-spouse.

Figure 19: Network Share of All Transactions by Livelihood

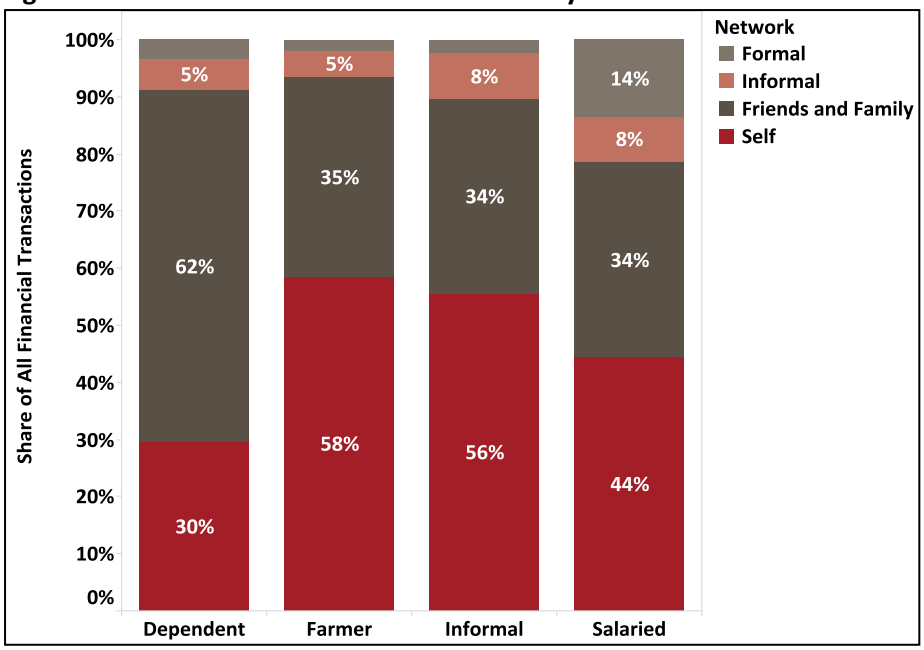


Table 14: Transactions by Livelihood

	Average Number of Times Financial Tools were used per Week
Dependent	1.51
Farmer	0.90
Informal	0.90
Salaried	1.74
Total	**1.10**

USE OF FINANCIAL TOOLS

One of the primary uses of financial tools is to help individuals smooth their cash flows. In Zambia, we find that respondents in the high income variation segments used financial tools more frequently than their low variation peers. A descriptive analysis shows that the difference is driven primarily by more frequent financial interactions with family members and friends. The high income and high variation segment is notable for its higher use of formal financial services. This behavior is driven by the high number of formal, salaried respondents in this segment.

Figure 20: Financial Network Share of Use of Financial Tools by Income Segment

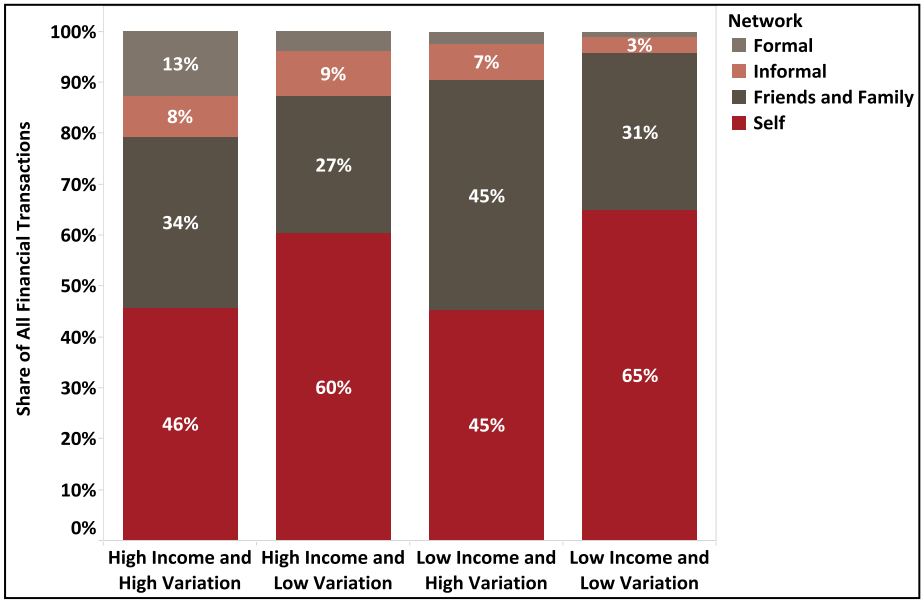


Table 15: Use of Financial Tools by Income Segment

	Average Number of Times Financial Tools were used per Week
High Income and High Variation	0.82
High Income and Low Variation	1.56
Low Income and High Variation	1.10
Low Income and Variation	0.89
Total	**1.10**

DEEP DIVE: DIFFERENTIATING FINANCIAL SERVICE USES

While the descriptive statistics are compelling, they do not allow for an easy analysis of the interplay between the socio-economic, demographic, and behavioral dimensions mentioned throughout this report. For that, we turn to a regression analysis.[11] We created a data set that contains the average weekly frequency and volume of different types of transactions involving financial tools—savings, loans, insurance, transfers or payments—as well as a number of demographic variables such as gender, age, household size, and education. Average weekly income, a variable to control for income variation, as well as the frequency of events and lump sum expenditures were also included. One downside of including the variation variable is that it excludes from the models those individuals with no earned income. Thus, these models are reflective of the portion of the sample that earned income at some point during the study. [12]

Respondents' level of income variation was positively correlated with the frequency of financial inflows. The receipt of cash transfers from family and friends drove this association. There was no association between income variation and the likelihood of withdrawing cash from home savings, all else equal. This suggests that respondents with high income variation were using their social networks rather than their home savings to manage their money. Consistent with this notion, respondents' level of income variation was negatively associated with the frequency of money movement within the home. Respondents with high levels of income variation deposited money into home savings less frequently than other respondents did. They were also less likely to give a cash transfer to a family member in the home. There was no statistical relationship between respondents' income variation and the frequency with which they gave cash transfers to friends. However, respondents who gave transfers were also more likely to receive them, providing evidence of a mutual support network.

We also looked at informal networks and found no statistical difference in how frequently respondents used these services based on income level and income variation. While there were no statistical differences in the frequency of formal financial service use based on these two variables, there was a clear provincial split. Respondents in Copperbelt Province were statistically more likely to use formal financial services.

DEEP DIVE: FINANCING LUMP SUMS

As mentioned above, one of the primary uses of financial tools is to help individuals gain access to funds to pay for lump sum purchases. While it is common for people to engage in mental accounting ("I used money from the sale of X to make a purchase of Y"), it is often difficult to quantitatively

[11] The use of regression analysis to examine Financial Diaries data is a new process for MFO and, as far as we are aware, has not been meaningfully applied to Diaries analysis generally. Consequently, while we are confident that the patterns we identify are accurate, we are aware and expect that changes will need to be made to the assumptions, theory, and model we present here. We welcome comments and guidance on how to better this analysis as we continue our work.

[12] A cross-sectional version of the data set that aggregated the study period was necessary for this analysis. The Diaries panel data set is weekly—the smallest unit of time we believe is adequate—thus calculations of within week income variation are not possible nor would they be useful. While aggregating to the month to create a monthly panel is possible, the small N associated with these variation calculations is dissatisfactory.

All findings presume "all else equal" and are statistically significant at a minimum P-value of .05.

parse out what income sources were used to pay for the lump sum purchases because of the fungibility of money.

The Financial Diaries data can mitigate this problem by using the temporal nature of the Financial Diaries to answer two simple questions:

- Did respondents earn or receive more, less, or the same amount of money from different sources in weeks in which they made a lump sum purchase compared to weeks when a purchase did not occur?
- Did their relative reliance on these different sources, measured as a share of total inflows of money during the week, change in weeks when lump sum purchases were made?

To answer these questions, we utilized a series of simple fixed-effects regression models. Each model included the value of one income source or the source's share of weekly income as a dependent variable and a dummy variable for whether a lump sum expenditure occurred or not. Standard errors were clustered.

Table 16: Financing of Lump Sum Expenditures

	Amount (ZMW)		Share of Weekly Income	
	Weeks with No Lump Sum	Change for Weeks with Lump Sums	Weeks with No Lump Sum	Change for Weeks with Lump Sums
Earned Income	220	510***	38.9%	43.5%***
Home Savings	61	194***	26.1%	18.6%***
Formal Savings	33	141***	2.8%	6.2%***
Intra-household Transfer	29	127***	18.0%	18.5%
Cash Gift, Received	17	31	8.0%	7.4%
Other Income	18	42	4.1%	4.16%

***Signifies that the difference between weeks with a lump sum expenditure and those without an expenditure is statistically significant at P-value <.01

In weeks when there was a lump sum expenditure, the amount of money respondents pulled in from earned income sources, savings tools, and transfers from within the household increased. While there was no difference in how much respondents relied on loans, there was a statistically significant increase in how much money respondents withdrew from formal bank accounts and mobile money agents. We also saw changes in how much respondents relied on these sources as a source of inflows. In weeks in which there was no lump sum expenditures, respondents relied on home savings for 26 percent of their inflows, but this share fell to just under 19 percent in weeks with outliers. The difference was driven by increased reliance on earned income and withdrawals from banks and mobile money operators in those weeks.

INSIGHTS AND IMPLICATIONS

Financial Diaries provide unique insights into the economic behavior of people over time. This report has described the ways in which low-income Zambians earn, spend, and use financial tools to manage their money. As other Financial Diaries studies have demonstrated, low-income people across the globe are not a homogenous group—they display a wide variety of different economic

behaviors. This is also true of the low-income Zambians from whom the Zambia Financial Diaries collected data.

This report has documented the diversity of behaviors that the participants in the study have displayed thus far. Using simple but powerful frameworks, like the segmentation by the level and pattern of income, this report has also demonstrated how researchers can use Financial Diaries data to define common patterns of behavior and the implications of those behaviors for financial service use. This section draws insights from and elaborates on the implications of these findings for FSPs and policy-makers.

FOCUS ON BEHAVIOR, NOT CHARACTERISTICS

The major insight of this report is the need to put greater emphasis on consumer behavior when designing financial products and services and policies to promote financial inclusion. The level and pattern income segmentation model developed here made clear that socio-economic and demographic characteristics are necessary but insufficient conditions in developing an understanding of what financial tools consumers need and how those tools are used. The segmentation of participants by level and variation of income showed that people with the same basic livelihoods had very different patterns of earned income.

The implications of these findings for FSPs and policy-makers are important as the former seek to expand their markets to lower-income Zambians and the latter seek to promote financial inclusion. Without understanding behavior, FSPs and policy-makers are allowing addressable inefficiencies in service development and delivery to persist. An understanding of consumer behavior—regardless of livelihood—is critical for mitigating these inefficiencies by aligning financial offerings with how consumers manage their money day-to-day.

The challenge for FSPs and policy-makers is to be able to collect behavioral data in a cost-effective manner with sufficient consistency to inform their decisions, but a number of practical solutions exist. FSPs can start with their internal data on the transactions of their customers. At the very least, these data can be used to better understand and serve the markets which the FSPs are already serving. They can go further with these data if they can calibrate them with data that they gather externally. One option is to undertake brief, mini Financial Diaries-like surveys of their customers that focus on their behavior rather than their characteristics. They can use these to identify key behaviors that are correlated with particular patterns of transactions customers perform with the FSP. This will give them an understanding of what to look for in new and existing customers.

Policy-makers can also use Financial Diaries-like surveys to focus on the behavior of low-income Zambians. The Financial Diaries data suggest that they should focus on the variability of people's incomes and the diversity of their income sources, as well as their level of home saving activity and the extent of their involvement in mutual support networks.

ACCESS TO INFORMAL PURCHASE POINTS

The analysis of expenditures showed that the vast majority of respondents' purchases involved items for the home, including food and household goods. After these item types, airtime purchases and transportation were the most prominent expenditures. For many Zambians, particularly low-income ones, these transactions most commonly happen in markets, semi-formal shops, and micro-

buses across the country.[13] Understanding transactions at these exchange points is critical and speaks to how FSPs engage with consumers' networks.

While FSPs, especially the mobile network operators (MNOs), have had some success at tapping into existing financial networks by developing cash transfer services, their ability to promote financial inclusion is limited by the disconnect between the agent stand and the tomato seller who sets up shop ten feet away. Services like bill payments are important product developments but tend to target middle and upper class Zambians who have formal electric or television connections. They do not bridge gaps at the base of the pyramid. Specifically, FSPs wishing to expand this market and their role in it need to take into account the relatively small size of the cash transfers that participants in the study reported giving and receiving and the implications of that for pricing their services.

Thus, policy-makers, thought leaders, and FSPs should consider innovative ways to link these informal points of sale to the digital financial ecosystem. Can FSPs design a product that incentivizes point-of-sale money transfers at market stalls? Can they assist bus drivers and conductors in accepting fares electronically so they do not have to travel with large sums of money? Can they target supply chains to promote digital service use amongst micro-entrepreneurs? Taking a consumer-centered approach to understanding how services can make these individuals' money work harder for them will be critical in designing and delivering these services.

HOME SAVINGS AND MUTUAL SUPPORT NETWORKS

The Financial Diaries data suggest that the most commonly used financial tools among the participants in the study were home savings and transfers from and to friends and family.

Saving at home is a quick and convenient tool for managing money, but it carries risks. Savings at home can be too convenient—the easy access to money puts no barrier between individuals and their cash which may result in spending down savings that was meant for an emergency or to purchase an asset. It is also at risk to be lost or stolen. FSPs can use the frequency of home savings along with knowledge of its advantages and disadvantages to explore marketing strategies and product development that capture these flows. As part of the Financial Diaries study, we will conduct in-depth interviews to understand the respondents' perspectives on this issue better.

[13] Future reports will explore this question in depth using Diaries data.