

Financial Inclusion and Financial Capability in Morobe and Madang Provinces, Papua New Guinea



An initial report of the Papua New Guinea
National Financial Capability Survey



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The World Bank

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Note to Researchers: This report is an initial output from the study. The dataset is available to bona fide researchers. Data is held in SPSS and Excel versions. The code book is also available. Researchers wanting to use the dataset for analysis are requested to contact: Mr Boniface Aipi at BAipi@bankpng.gov.

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Authorship: This Report reflects the work of the Bank of Papua New Guinea, Institute of National Affairs and World Bank team comprising: Gae Kauzi, Bank of Papua New Guinea; Jonathan Sibley, World Bank consultant (principal author); Paul Barker, Institute for National Affairs; Wei Zhang, World Bank (Team Leader); John Gibson, World Bank consultant (sampling).

Front cover: Artwork by Joe Scott of INA and photographs, all taken in Morobe and Madang Provinces, by Paul Barker.

Foreword

The Bank of Papua New Guinea and the World Bank are glad to present the initial findings from the first national survey of financial capacity among PNG population.

Financial capability refers to the capacity to effectively manage financial sources over the life cycle and engage constructively with financial products and services. It is recognized as an essential skill for individuals in all walks of life and has become a public policy concern throughout the world from advanced economies to developing countries. It is a new challenge to individuals and households in low and middle-income economies where the traditional forms of family and community support are being replaced or blended gradually with formal social protection programs with innovative products and services. Traditional ways of doing business are also changing to cope with increasing competition at local, national and global levels. Understanding financial matters and making informed financial decisions among citizens will contribute to overall financial stability of a country as evidenced by the recent global financial crisis.

Understanding the financial capability of PNG population is of particular relevance to policy makers, educators and researchers in PNG as we all know anecdotally that level of financial exclusion is high in PNG and the ability of many Papua New Guineans to manage money is limited as formal financial services are a rather new concept to the traditional communities in PNG. Increasing our knowledge and understanding is particularly important as the formal financial system continues to develop rapidly in PNG and households, whether urban or rural, are required to use an increasing number of financial instruments and to manage increasingly complex household finances.

This National Financial Capability Survey aims to provide a detailed picture which can support policy and programmes to enhance financial inclusion and increase financial literacy of all Papua New Guineans. The initial findings from the surveys in Madang and Morobe provinces already provide a set of rich data that can be further analysed. Once completed the National Financial Capability study will provide a baseline measure of financial inclusion and financial capability for PNG.

We would like to encourage sharing of key findings of this report among policy makers, researchers, educators and financial services providers so as to support the

development of more diversified, customized and affordable financial services and products to PNG population.

Both the Government and BPNG are committed to increasing financial inclusion and financial literacy in PNG. The government is committed to expanding financial inclusion and enhancing financial literacy by incorporating the financial inclusion agenda in key national plans as a development priority.¹ The World Bank, a development partner with the Government of PNG, is committed to share the technical know-how and international best practices in financial inclusion program design and implementation.

Loi Martin Bakani CMG, Governor, Bank of Papua New Guinea

James Seward, Practice Manager, Finance and Markets Global Practice,
The World Bank

¹ Please refer to: "The Development Strategic Plan (2010–2030)," "The Medium Term Development Plan (2016–2017)," "Vision 2050", "The National Informal Economy Policy (2011–2015)."

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Abbreviations and Acronyms

ADB	Asian Development Bank
AFI	Alliance for Financial Inclusion
BPNG	Bank of Papua New Guinea
CEFI	Centre for Excellence in Financial Inclusion
CU	Census Unit
HIES	Household Income and Expenditure Survey
LFI	Licensed Financial Institution
MEP	Microfinance Expansion Project
MFI	Microfinance Institution
NSO	Papua New Guinea National Statistics Office
PFA	Household principal financial actor
PFIP	Pacific Financial Inclusion Programme
PGK	Kina
PNG	Papua New Guinea
S&L	Savings and Loans Society
SME	Small and Medium Enterprise
SMK	Salim Moni Kwik (remittance)
Sunday-Sunday	A form of informal ROSCA. Typically a small group which meets after the (fortnightly) payday to pool savings and make loans to group members
WB	The World Bank

Glossary

Financial capability	The internal capacity to act in one's best financial interest, given socio-economic environmental conditions. It encompasses the knowledge (literacy), attitudes, skills and behaviours of consumers with regard to managing their resources, and understanding, selecting, and making use of financial services that fit their needs. ²
Financial inclusion	A state in which all working age adults, including those currently excluded by the financial system, have effective access to the following financial services provided by formal institutions: credit, savings, payments, and insurance (GPFI & CGAP, ND).
Financial literacy	Knowledge of the financial products, services, practices and concepts required to make effective money management decisions.
Formal financial sector	Financial services provided by financial institutions supervised by the Bank of Papua New Guinea.
Informal financial sector	Financial services provided by financial institutions and individuals who are not supervised by the Bank of Papua New Guinea. For example informal microfinance and informal money lenders.
Microfinance	Financial institutions that target poor and low-income households.
Financial Institution	Any public or private institution whose main function is the provision of financial services for its customers or members.
Money Lending	An informal lender providing credit, usually short term, usually to individuals. Can also include loans by friends or relatives which need to be repaid.
Principal Financial Actor	A person who is responsible for making financial decisions on behalf of their household.

² <http://responsiblefinance.worldbank.org/~-/media/GIAWB/FL/Documents/Publications/Why-financial-capability-is-important.pdf>.

Executive Summary

OBJECTIVE OF THE REPORT

The study of financial inclusion and financial capability in Morobe and Madang provinces is the first population level study of financial inclusion and financial capability in Papua New Guinea. This report is an initial report of the national study of financial inclusion and financial capability in PNG.

The objective of this report is to examine levels of financial inclusion of adults who make financial decisions on behalf of their households across the key financial product groups of savings, long term savings, and credit and protection products. The report also examines the financial capability of adults who make financial decisions on behalf of their households, particularly in respect to those aspects of financial behaviour which impact the management of household cash flows. The report has examined financial inclusion and financial capability for both women and men who make financial decisions on behalf of their household.

Knowledge of levels of financial inclusion and related understanding of financial capability is currently very low in Papua New Guinea. Increasing our knowledge and understanding is particularly important as the formal financial system continues to develop rapidly in PNG and households, whether urban or rural, are required to use a broad array of financial instruments, manage complex household finances within an extended planning horizon which, increasingly, encompasses the need to provide for retirement.

The report makes a significant contribution to increasing understanding and, whilst limited in geographic scope to Morobe and Madang provinces, provides an important input to the further development of financial inclusion and financial literacy strategy in Papua New Guinea.

The study has been undertaken by the Bank of Papua New Guinea; field work was undertaken by the Papua New Guinea Institute for National Affairs, with the support of the National Statistics Office. Technical assistance was provided by the World Bank. The study was funded by the Korean Poverty Reduction and Socio-Economic Development Trust Fund II.

STRUCTURE OF THE REPORT

The report is structured in six chapters.

Chapter 1 discusses the background to the study. The concepts of financial inclusion and financial capability are briefly discussed. Following this, the development of the survey (within the context of the development of the global World Bank Financial Capability survey instrument) is overviewed. The study objectives, instrumentation, methodology, sampling and field-work are also briefly discussed.

Chapter 2 discusses financial inclusion and financial capability in PNG generally. Increasing levels of financial inclusion and enhancing the financial capability of the population are key strategic objectives of the Bank of Papua New Guinea and policy objectives for the government of Papua New Guinea. The retail financial services landscape in PNG is briefly overviewed.

Chapter 3 provides an overview of Morobe and Madang. Financial inclusion and financial behaviour do not stand alone but are a function of the economic environment, the infrastructure and public services and the education environment. Morobe and Madang provinces in some ways entail a microcosm of many of the diverse geographical and social characteristics of Papua New Guinea. Whilst it is impossible for any province to represent the entire country's range of physical and human characteristics, Morobe and Madang do reflect some of that diversity and the related challenges facing the extension of formal financial services in PNG. The current financial services environment in Morobe and Madang is overviewed.

Chapter 4 examines financial inclusion in Morobe and Madang. The chapter commences with an examination of two facilitators of financial inclusion: confidence in communicating in English and access to and use of a mobile phone. The use of formal financial services is examined across the key product groups of payment services, savings, long term savings (including provident and superannuation), credit and protection (insurance) products. Barriers to the use of financial services are examined, in particular access barriers, gender and affordability. The use of informal financial services is examined.

Chapter 5 examines financial capability in Morobe and Madang. Five aspects of financial capability are explored. The chapter commences with an examination of the management of current household cash-flows, from the perspective of both planning and budgeting cash-flows and the management of flows. Planning future household cash-flows is then examined. Three aspects of future cash-flow management are explored: the planning for major future expenditure, planning for the future of children in the household and planning for older age. Responsibility for household financial

management is examined. Following this the chapter examines relationships with financial services providers and the process used to select financial products and services and understanding of the cost of financial services. The chapter concludes with a brief discussion of the findings from the present study relative to other financial capability studies, in particular studies in PNG and other Pacific Island countries.

Chapter 6 discusses the policy and strategy implications of the study findings, with a particular focus of the implications for the achievement of the Maya Declaration goals.

The Annexes provide detailed information on the survey instruments, the sampling methodology, an English-Tok Pisin Glossary of Financial Terms, and literature review of financial capability measurement.

Key Findings

Financial Services Access

There is good access to formal financial services access points in urban and township locations. Retail banking services, including ATM and EFTPOS services are available at multiple locations in Lae and Madang and also in townships (for example Bulolo and Finschafen). Savings and Loan and microfinance institutions also have outlets, primarily in urban locations.

In addition to accessibility to financial services, households in urban and township communities can access a broad range of formal financial services. A range of payment services, savings, long term savings and investment services and credit services (including asset finance) are offered by multiple financial services providers. Consumers in urban locations appear to have both access and choice.

The situation in rural communities is very different. Only one bank, BSP, has a rural agent network. The number of rural agents, relative to the rural population is, however small. A very significant proportion of the rural population in Morobe and Madang effectively has no, or very limited access to formal financial services. In addition, the range of financial services available to rural communities is very limited. Products and services are limited to those which can be offered by agents. Overall, it appears many consumers in rural locations in Morobe and Madang have neither access to formal financial services or a set of financial products and services from which to select an appropriate product.

Financial Inclusion

A very high percentage of rural respondents (60–80 percent) owned no financial products. Women were more likely to report owning no financial products than

men. By contrast in urban communities men reported owning on average 3.4 financial products and women 1.3. Respondents whose principal source of income was formal sector wages or salary were more likely to report financial product ownership.

Payments for day-to-day purchases were made using cash, irrespective of whether or not the respondent had a bank account with debit card access.

Items which were commonly paid for by electronic channels were school fees, formal loan repayments and rent/lease payments (in urban households). Most wages or salaries were typically received by credit to a bank account. By contrast payment for sales from informal activity or self-employment was almost exclusively cash based.

In urban locations levels of account ownership appear to be similar to those reported by other developing countries. In rural locations, by contrast, 21 percent of men and 9 percent of women owned a savings account. There is some evidence of multiple account ownership. Twenty one percent (21 percent) of respondents who reported owning a debit card based savings account also reported owning a passbook savings account. Given the differences in the product range between banks and S&Ls/microfinance, this suggests approximately 20 percent of bank savings account customers may also have an account at another institution.

Respondents who reported owning a savings account also reported money was kept safe in the account. By contrast, respondents who did not have an account reported keeping money safe by hiding it or using a locked box. Households that owned a savings account were more likely to report the household tried to save money for the future, tried to save regularly and tried to keep funds aside to provide for emergencies or unexpected expenses. Use of informal savings appears to be related to employment. Most respondents who reported having informal savings associated the product with employment.

Urban respondents in formal sector employment were more likely to report long term savings, in particular provident/superannuation fund membership. Approximately 7 percent of adults reported some form of formal borrowing. This is only slightly lower than levels found in other developing countries. Men living in urban communities, whose principal source of income was formal sector wages and salaries were the most likely group to report having formal credit commitments. Levels of insurance product ownership were very low. Even in urban households only 8 percent of households reported having insurance.

Rural households were significantly more likely to report informal borrowing, relative to use of formal credit, than urban households, although overall more urban households reported the use of informal credit than rural households. Reported levels of borrowing from money lenders (6 percent) were only slightly higher than levels reported in other developing countries.

Barriers to Financial Inclusion

The principal barrier to financial inclusion appears to be the limited ability of most adults in Morobe and Madang to access financial services. Generally, as noted above, rural communities do not have access to formal financial services. Overall, the further the household is from an urban area the more likely the household is to be financially excluded.

Women appear to be significantly more likely to be financially excluded than men, particularly women living in urban communities. Globally 58 percent of women report owning an account, compared to 65 percent of men, a seven percentage point difference. As discussed, in rural communities levels of account ownership are very low for both men and women. In urban communities 38 percent of women and 68 percent of men reported owning an account, a thirty percentage point difference.

Most urban respondents, in particular men, were confident of their ability to communicate in English, both spoken and written communication. By contrast most rural respondents, in particular women, stated they could not communicate in English. This may be a barrier to the informed use of financial services, given most documents are written in English.

There is a very significant difference in mobile phone ownership or access, and usage, between urban and rural communities. Rural women in particular appear to be at a significant disadvantage in respect to the opportunity to use a mobile phone for financial services. Without further development of mobile phone access and the capability to text, the opportunity to use the mobile phone as a primary channel for retail savings and transaction services may be limited, at least in some rural areas.

Financial Capability

Cash Flow Management

Most households do not plan or budget but prioritise major expenditure items. Whilst most households reported planning how income would be used, households also reported most plans and budgets were general, covering only major items, and were not written down or usually adhered to.

Slightly over half of households reported having left-over money after meeting household expenses at least some of the time. Households reported saving cash surpluses to cover unforeseen expenses or to pay for food or other necessary items. By contrast 80–90 percent of households reported running short of money after meeting household expenses. Cash flow shortfalls were funded by borrowing from family or friends (in urban households money was also borrowed from informal money lenders or an employer), selling something (in rural households) or simply going without.

Longer Term Financial Planning

Many households appear to plan their income cycle. A significant number of households also reported planning at least six months ahead. Seventy percent (70 percent) of households stated they would not be able to cover a major unexpected expense (equivalent to approximately one month's income) without borrowing. Most households reported planning for their children's future. Households typically used more than one approach to planning for the future, the common being to save money, in particular for the children's education.

Forty four (44) percent of respondents reported they had no strategy to provide for when they were no longer able to work owing to old age. Most respondents who did have a strategy reported they expected to earn income from a business. Respondents who were employed in the formal sector also cited long term savings, in particular provident or superannuation. Respondents who earned formal sector income were more likely to consider they would be able to meet expenses when they were no longer working. Less than 50 percent of those earning informal sector income or self-employed considered they would be able to meet expenses. Approximately one quarter of respondents stated they expected to receive support from family or kinship groups.

Responsibility for Household Financial Management

Men were significantly more likely to cite they are responsible for the management of household expenses than women. Overall, the further out the expenditure horizon, or the less certain the expenditure (for example requests for financial assistance), the more likely that respondents reported no one in the household was responsible for the management of that category of household expenditure.

Financial Knowledge

Urban households appear to be generally more aware and focussed on the household's financial situation than rural households. Overall, however, most respondents stated they considered they were disciplined at managing money and only rarely or occasionally bought unnecessary items before buying necessary items or when they knew they could not afford the item.

Selecting Financial Products and Managing Relationships with Financial Services Institutions

Respondents who were confident in their ability to communicate in English were more likely to search for information from a range of sources and to consider alternatives before purchasing a financial product. Respondents who could not communicate in

English were significantly less likely to check terms and conditions before committing to purchase a financial product.

Knowledge of the cost of money was very limited. Most respondents (80 percent+) did not know how much interest had been paid on loans or received on deposits and did not know the fees which had been paid over the previous year.

POLICY IMPLICATIONS

Overall Implications

The findings from the study suggest that the current National Financial Inclusion and Financial Literacy Strategy may need to be further developed, in particular to facilitate significant strengthening of the rural financial services architecture. This is a pre-condition for enhancing rural financial inclusion. The findings also indicate significant strengthening of financial inclusion and financial literacy programmes, in particular urban programmes, will be required in order to increase financial inclusion by women. Levels of financial knowledge, in particular knowledge of the cost of financial services suggest a continuing commitment is required to further strengthen consumer protection.

Implications for the Achievement of the Maya Declaration Goals

The implications of the study findings for the achievement of the Maya Declaration Goals are discussed within the context of each Goal:

Goal: To reach one million more unbanked low-income people in Papua New Guinea, 50 percent of whom will be women

Situation in Morobe and Madang

Levels of financial inclusion in urban communities in Morobe and Madang provinces may be approaching, or may be at levels found in other developing countries. Urban households, in particular households in which the principal source of income is formal sector wages or salary, appear to be engaging with the formal financial system across a broad range of product groups, extending beyond savings/transaction accounts to long term savings and formal credit. Levels of financial inclusion in rural communities, across all product groups are, however, very low.

Women in urban communities are significantly more likely to have a bank account than women in rural communities and may be accessing financial services indirectly by accessing a bank account owned or controlled by a male. Relative levels of financial exclusion by women living in urban communities are significantly higher than those found in rural communities.

Implications for Policy and Practice

Urban communities have access to a range of financial service providers and financial services. However, many rural communities have, effectively, very limited or no access to formal financial services. Findings from Morobe and Madang suggest that, without *major* development of the rural financial services infrastructure, bringing large numbers of Papua New Guineans, who are currently financially excluded, into the formal financial system will not be possible.

Unless there is a substantive change to financial inclusion products/services/programmes to bring women into the formal financial system, the goal of gender equity will probably not be achieved and the gender gap may be further exacerbated.

Goal: (BPNG) to lead efforts to create a financially competent generation of Papua New Guineans through financial education and financial literacy

Situation in Morobe and Madang

Most households in Morobe and Madang try to plan and budget cash-flows. However, for most households' plans and budgets are informal, cover major items and are not documented. Effectively most households only prioritise spending. Overall, urban households, in particular households which receive regular wages or salary, are more likely to pro-actively manage household finances than rural households.

Women are less involved in *all* aspects of household financial management than men and have less responsibility for the management of household finances than men.

Many adults, in particular rural households and women, do not know how they will fund their own and their household's expenses when they are no longer working.

Implications for Policy and Practice

The focus on budgeting and planning, which is a common feature of financial literacy programmes, would appear to be appropriate. As the use of formal credit expands, inclusion of responsible borrowing modules in financial literacy programmes may also be warranted. Consideration may need to be given to including longer term savings, or asset accumulation modules, in order to increase awareness of the need to prepare for older age and how gradual longer term savings can be achieved.

There is an ongoing need for financial literacy programmes specifically for women.

Goal: To actively support innovative use of technology for scaling-up access to financial services and financial literacy

Situation in Morobe and Madang

Branch, ATM and EFTPOS networks in Morobe and Madang provinces are largely urban. Agent networks do not, at this time, appear to be sufficiently dense to enable most rural households to readily access formal financial services. However, in rural communities, levels of mobile capability (levels of phone ownership combined with adults' ability to use the mobile phone) are low.

Implications for Policy and Practice

Other than BSP Rural, commercial financial services providers are not expanding services into rural areas but are, not unexpectedly, focusing on urban communities.

It may be appropriate to consider the development of financial services delivery architecture for rural communities in PNG. Developing extensive branch networks in rural communities is unlikely to be economic. Technology based solutions are likely to be a key component of a rural financial services architecture. However, the combination of more limited ownership or access to a mobile phone and mobile phone capability in rural communities, in particular by women, suggests that the expansion of mobile phone-based financial services (as opposed to the use of mobile telephony to deliver agent based financial services) in rural areas may require concurrent capacity building.

Goal: To strengthen consumer protection by issuing prudential guidelines and creating a platform for various national regulators and industry networks to monitor consumer protection

Situation in Morobe and Madang

Financial services consumers appear to have a limited understanding of the cost of the financial services they use. Many consumers, in particular consumers who are not confident in communicating in English, do not search for information about financial services before committing to buy a product, they do not consider alternatives or look at alternative products and, perhaps most importantly, they frequently do not check terms and conditions of the products they purchase.

Implications for Policy and Practice

Consumer awareness appears to be limited for many adults and there is therefore potential vulnerability to predatory practices. Few households reported a dispute with a financial services institution. Nevertheless a platform to monitor consumer protection may be warranted.

Goal: To promote regular collection and use of financial access data to inform policy making and help identify key dimensions of financial inclusion in Papua New Guinea

Findings from the present study have contributed to the understanding of financial inclusion and financial capability in PNG. However, the findings are not national. It is recommended funding be sought to complete the survey to obtain a national view on Financial inclusion and Capability in Papua New Guinea.

LIMITATIONS OF THE REPORT AND RECOMMENDATIONS

This report is an initial output from the national financial capability study, and focuses on Morobe and Madang provinces only due to both financial and logistic constraints to conduct a national survey at this stage. The focus of the study is households. The use of financial services by formal and informal businesses has not been examined. The relationship between financial inclusion and financial capability has been examined by financial inclusion and financial capability studies in several countries using the World Bank Financial Capability Survey instrument. As the present study is an initial output from the national study, it has not sought to examine this relationship fully. It is appropriate to examine the relationship between financial inclusion and financial capability once the national survey has been completed.

It is intended that the study will, in time, progress to become a nationally representative study of financial inclusion and financial capability in PNG. The sampling for the present study is representative at the combined population level for Morobe and Madang. Findings cannot be disaggregated to Morobe and Madang separately. In addition, whilst potentially indicative of likely findings from the national study, the findings from the present study cannot be interpreted as nationally representative.

The report is point in time. The economic and financial landscape in PNG is evolving rapidly and regular follow up studies will be required to maintain the currency of the data.

It is thus recommended that the national survey be carried out based on the learning from the regional survey done in Morobe and Madang provinces within the next two years to establish the national mapping of financial capability of PNG population. The survey instrument has been developed and tested in Tok Pisin and can be further adapted and simplified based on the feedbacks from this regional survey. The sampling methodology was established for the national survey and can be readily used for carrying out the national survey. The field implementation management was fully developed and tested and capacity of the field survey teams has been enhanced through training and on-site learning. The data collection methodology has also been piloted and tested and can be replicated for future national surveys.

1. Background

1.1. INTRODUCTION

This report contributes to the developing understanding of financial inclusion and financial capability in PNG. The PNG National Financial Capability study is the first national study of financial inclusion and financial capability in PNG and is one of a small number of studies undertaken in PNG seeking to develop an understanding of financial inclusion, financial knowledge and skill and financial behaviour. The present report is an initial output from the national study, focusing on Morobe and Madang provinces. It is intended that the study will, in time, progress to become a nationally representative study of financial inclusion and financial capability in PNG.

1.2. CONCEPTUALISING FINANCIAL INCLUSION AND FINANCIAL CAPABILITY

Financial Inclusion

Over recent decades, financial inclusion has emerged as a global priority.³ Financial inclusion is an enabler of effective, sustainable, participation in the contemporary money economy. Financial inclusion is an issue in PNG. It is estimated that currently in PNG up to 85 percent of the population does not have access to a bank account. However, financial inclusion, whether in a developed or developing country context, extends beyond basic deposit services. In a developed country context, for example, the UK Treasury has defined financial inclusion as:

“Access to appropriate financial services so that people can manage their money effectively, securely and confidently on a day-to-day basis; plan for the future and cope with financial distress to protect against short term variations in income and expenditure and take advantage of longer term opportunities and deal effectively with financial distress.” (HM Treasury, 2007, p. 25)

³ Refer for example: <http://www.gpfi.org/>.

In a developing country context CGAP has defined financial inclusion as:

“A state in which all working age adults, including those currently excluded by the financial system, have effective access to the following financial services provided by formal institutions: credit, savings, payments, and insurance.” (GPII & CGAP, ND)

This report examines access to, and use of, a broad range of financial products and services by households in Morobe and Madang provinces; with a particular focus on understanding location based differences and gender differences in the use of financial services.

Levels of financial inclusion found in this study can be compared, at a product level, to levels of financial inclusion found in other Pacific island countries and at a product-category level, to levels of financial inclusion in other countries generally. There is considerable homogeneity of product attributes across regions. Whilst financial services fees and value-added services differ widely between countries, core product functionality is relatively consistent globally. For example, savings products, card-based transaction products, credit cards, consumer loans and term investments have broadly similar features in most countries. There is significant homogeneity of product functionality in financial products available across Pacific island countries. This is not surprising perhaps given the same group of commercial banks operate in most Pacific island countries.

Financial Capability

Financial capability has been defined by the World Bank as:

“The (internal) capacity a person has to act in their best financial interest, given socio-economic environmental conditions.”⁴

Financial capability encompasses the knowledge, skills, behaviours and attitudes people employ to manage their resources; their understanding of financial services; and the selection and use of financial products and services to meet their needs. Financial capability is a broader concept than financial literacy which focuses on knowledge of the financial products, financial services, financial practices and financial concepts.

Financial capability can be conceptualised as spanning four domains: Base skills, financial knowledge, financial attitudes and financial behaviours. The key components of each domain are shown in Figure 1.

⁴ <http://responsiblefinance.worldbank.org/~//media/GIAWB/FL/Documents/Publications/Why-financial-capability-is-important.pdf>.

FIGURE 1 FINANCIAL CAPABILITY CONCEPTS

Base Skills	Financial Knowledge	Financial Attitudes	Financial Behaviours
<ul style="list-style-type: none"> ■ Numeracy skills ■ Literacy skills 	<ul style="list-style-type: none"> ■ Knowledge of financial concepts (inflation, compound interest etc.) ■ Awareness of financial products and services ■ Practical know-how (how to make payments, how to open a bank account etc.) 	<ul style="list-style-type: none"> ■ Reasons for or for not saving, borrowing, investing, etc. ■ Attitudes towards the future ■ Confidence in own plans for old age ■ Attitude toward budgeting, saving, lending (etc.) 	<ul style="list-style-type: none"> ■ Money management (managing day-to-day finances) ■ Long-term planning (preparing for emergencies and retirement) ■ Financial decision-making (ability to choose appropriate financial products) ■ Seeking financial advice

This report examines the financial capability of adults in Morobe and Madang who make financial decisions on behalf of their households.

Financial capability is a situated construct. For example, the financial capability required by a subsistence farmer living in a remote rural community is likely to be different than the financial capability required by an employee of a large corporation living in a metropolitan environment. Required levels of literacy and numeracy are likely to differ. The level of financial knowledge required by a person who receives a regular salary and who has a range of borrowing will be different than that required by a subsistence farmer whose cash income is intermittent and who has no formal borrowing. Lifestyle differences, individual attributes and differences in the use of financial products and related levels of required financial knowledge and skill will impact financial attitude. The core elements of financial behaviour are, however, to some extent constant: households engaged in the money economy need to be able to manage current household cash-flows, plan for the future, make decisions about financial products (whether formal or informal) and seek advice about money and finance.

Studies of financial capability in several countries have included the construction of a financial capability scale using factor analysis. Whilst the factors and loadings for each individual country scale are unique, the development of a scale enables comparison between relative levels of financial capability and financial inclusion within jurisdictions and the comparison of levels of required financial capability across jurisdictions.

The present study has not constructed an index of financial capability. There are three reasons for this:

Firstly, this report is an interim report examining financial inclusion and financial capability in two provinces of the Momase Region. The national study has yet to be completed and it is therefore not possible to construct a national index.

Secondly, aspects of financial capability will require further testing before being used to construct an index, in particular attitudinal variables. PNG has three official languages: Tok Pisin, Hiri Motu and English. English is the language of government and business. Hiri Motu is spoken in Papuan regions but not nationally. Tok Pisin has become widely used across PNG as a bridge across the great diversity of languages and dialects. Tok Pisin began as a trading language ('broken English') and continues to develop as a discrete language. However, there is, at present, no formal grammar for Tok Pisin and translating complex constructs effectively into Tok Pisin can be difficult, in particular translation of abstract concepts. Nevertheless, the study has translated attitudinal questions from the core World Bank Financial Capability instrument and responses are reported (with caution). Further testing will be required to determine the validity of including psychological/attitudinal questions in the financial capability scale.

Thirdly, evidence from this study suggests the components of financial capability may differ very significantly between urban and rural communities and, therefore, it may not at this time be appropriate to develop a single national index of financial capability for PNG. Differences in levels of financial inclusion and the use of money between urban and rural communities revealed by the present study suggest it may be more appropriate, at least initially, to develop separate urban and rural indices.

Several studies of financial inclusion and financial capability using the instrument developed by the World Bank administered *Russia Trust Fund for Financial Literacy and Education*⁵ (the instrument used for this study) have tested respondents' numeracy and literacy skills. It was decided not to test numeracy for the PNG National Financial Capability study. Given high levels of illiteracy, a numeracy test would need to be administered verbally and could be difficult to translate. For similar reasons, the study has not tested respondents' knowledge of common financial concepts (for example inflation and compound interest) due to language constraints. There is, for example, no construct in Tok Pisin for 'compound interest'. Efforts to translate into Tok Pisin resulted in the concept being explained within the question, which rather defeats the purpose of the question. Other financial capability studies which have tested literacy, have only tested comprehension rather than all aspects of literacy. Tok Pisin is a

⁵ <https://www.finlitedu.org/>.

verbal language and testing written comprehension is not appropriate (at least at this time). Testing English comprehension would require a formal literacy test which is not appropriate as English is not used widely in most of the households participating in the study. Instead, given the widespread use of English in financial services documents, respondents were asked how confident they were in communicating in English (verbal and written) with a bank branch or a government department.

As a consequence of the foregoing, the financial behaviour of adults who make financial decisions on behalf of their households and related levels of financial inclusion are the principal focus of this interim report.

1.3. OVERVIEW OF THE SURVEY

BPNG has supported three studies to increase understanding of financial inclusion and financial capability in PNG.⁶ The present study has its origins in the participation by PNG in the development of a global instrument to measure financial capability.

Development of the Financial Capability Survey

In 2010 teams from eight countries (Papua New Guinea, Zambia, Malawi, Namibia, Tanzania, Uruguay, Mexico and Colombia) met to begin the development of a global instrument to measure financial capability. The development of the instrument was undertaken under the auspices of the World Bank, with funding provided by the *Russia Trust Fund for Financial Literacy and Education*.⁷

The scope of the instrument and the instrument development methodology were agreed at the initial meeting. Development of the instrument was completed in 2011. The instrument was then extensively tested in the context of low and middle income countries. The Financial Capability survey is currently used or planned to be used in 14 countries in Latin America, Africa, Middle East and East Asia and the Pacific.

PNG National Financial Capability Survey

PNG piloted the financial capability survey in 2012. It was determined the survey could be successfully deployed in PNG, using a Tok Pisin translation, in both high income and low income households. Preparation for the PNG National Financial Capability Survey commenced in 2013 with funding provided by the *Korean Poverty Reduction and Socio-Economic Development Trust Fund*.

⁶ The other two studies are: 2013 Financial Diaries Study in Port Moresby, Goroka and Kimbe; 2013 Financial Competence study in Port Moresby, Mekeo and Galley Reach districts.

⁷ <https://www.finlitedu.org/>.

A national sample was developed with census units selected from five provinces. Field work for the survey commenced in 2014. Due to logistic and funding constraints it was determined the survey would be deployed initially only in the Momase Region. Two provinces had been selected for field work in Momase: Morobe and Madang. Morobe is the largest and one of the most diverse provinces in PNG. Lae, the Morobe provincial capital, is an accessible central location to train enumerators. Madang province is proximate to Morobe. Momase was considered to be an appropriate region for initial survey deployment and would enable the refinement of the fieldwork methodology for subsequent rounds of data collection.

The financial capability survey instrument is a global instrument and data from each country is comparable. Minor adaptation is required for individual countries (primarily in respect to financial products). Two versions of the survey were developed by the World Bank Project Team: a household version and an individual version. As the objective of the PNG study was to understand household financial inclusion and the financial capability of adults who make financial decisions on behalf of their household, the individual version of the survey was not used.

Enrolment for the generic financial capability survey is based on interviewing a single respondent in each household. This approach was not used for the PNG survey as a principal focus of the surveys supported by BPNG has been to develop a gendered understanding of differences in the level of financial inclusion and financial capability. Both the woman and the man who make most financial decisions on behalf of their household were interviewed. Separate interviews were conducted.

Survey Objectives

The objective of the National Financial Capability survey is to develop a baseline measure of financial inclusion and financial capability for PNG. This will enable, for the first time, an accurate assessment to be made of the situation in respect to financial exclusion in PNG—not simply in respect to bank account ownership, but across the range of products: transaction, savings, long term savings and credit, commonly used by households to manage and develop household resources. This will enable the development of a financial services architecture which can facilitate reducing levels of financial exclusion. The baseline study will also enable the relationship between financial capability (or perhaps more accurately financial capabilities) and financial inclusion to be better understood. This will facilitate the development and targeting of financial literacy programmes and consumer education.

The objective of the financial capability survey of Morobe and Madang has been firstly, to commence data collection for the national survey, and secondly, to provide an initial insight into levels of financial inclusion and patterns of product ownership

in urban and rural communities and by women and men, and to develop an initial understanding of financial capability, in particular financial behaviour, to provide input to the further development of financial inclusion and financial literacy strategy in PNG.

Survey Instrument and Methodology

The PNG National Financial Capability Survey has used the generic financial capability instrument developed by the World Bank Project Team. Several questions have been added to meet local requirements, for example questions to determine respondents' confidence with the use of English and mobile phone usage.

The survey comprises three elements:

Location Fact Questionnaire

The location fact questionnaire was administered during enrolment by interview with a local community leader. The questionnaire collects information in respect to the education, health and financial services available at the location, or the distance required to travel to services (and the mode of transport commonly used to travel), along with the source and quality of electricity and water.

Enrolment Questionnaire

The enrolment questionnaire was completed during the enrolment of the household and comprised a household roster, information in respect to the principal dwelling used by the household and household durables available for use by members of the household.

Financial Capability Survey

The financial capability survey collected data covering a broad spectrum of elements of financial capability and financial inclusion: Management of remittances and payments, planning and management of current cash-flows and future cash-flows (both expected and unexpected), planning for old age, planning for the future of children living in the household, financial products and services used by the household and how these were selected, and understanding of the cost of financial services and relationships with financial services providers.

A standard closed question survey was used. Questions were asked in either Tok Pisin or English (depending on the respondent's preference). All interviewers were bilingual. Forward and back translation was undertaken, with an independent post-translation panel review by a reference panel of bilingual subject matter experts. Both the English

and Tok Pisin versions of the survey were tested in the field. The translation was also work-shopped with the enumerators.

A glossary of financial terms was developed and translated to Tok Pisin (refer to Appendix 5 for the Glossary). An added complication was the need to ensure the questions could be understood by respondents who may have limited formal education. A test of the reading age required to comprehend the survey at first reading in English (Flesch-Kincaid) indicated the survey required a comprehension level approximating that which would be achieved at the completion of primary/early secondary education. Whilst it is not possible to test the comprehension level in Tok Pisin, it was considered reasonable to assume that the level of comprehension would, in general terms, be able to be preserved in the translated version.

Respondents were required to answer all (relevant) questions. Each question allowed for refusal. Interviews were conducted at a location and at a time suitable to the respondent. A female and male interviewer visited the household. Women were interviewed by women and men by men. Interviews were confidential.

Sampling

National Sample

When fully implemented, the National Financial Capability survey will be representative of the adult population in PNG. Sample selection has been based on a stratified four-stage random sample design, with preliminary counts from the 2011 Census of Population providing the sampling frame. Stratifying according to female literacy and predicted poverty, the first two stages selected 19 Districts from seven provinces, with probability proportional to estimated size. The provinces include three from the Highlands (Western Highlands, Jiwaka, Eastern Highlands), two from Momase (Madang and Morobe), and one each from the New Guinea Islands (East New Britain) and Papuan (Central) regions. Additionally, the National Capital District (NCD) is a separate survey strata.

Within each District, five Census Units (CUs) were selected with probability proportional to estimated size (PPeS). Within each CU, ten households are selected by the interview teams, using circular systematic sampling. This yields an overall sample of 50 households per District and 950 households in total. A further 150 households will be surveyed from the National Capital District (NCD), with a target of six households per CU, in 25 CUs that have been selected with a PPeS approach. Combining the strata, a total of 1100 households will be surveyed, and in each household an adult male and adult female will be interviewed. Since not all households will have both an adult male and an adult female, the final sample size will be less than 2200 but should be approximately the sample of 2000.

Morobe and Madang

As discussed, due to funding and logistical constraints the scope of the field work was contracted to Morobe and Madang provinces. The census units and districts selected for Morobe and Madang were not resampled. The selected census units were surveyed and the completed surveys were re-weighted to reflect the completed surveys and the revised scope. Data was collected from 8 Districts and 36 census units (4 census units could not be accessed due to environmental conditions). Three hundred and fifty nine (359) households from the sampled census units participated in the survey and 688 individual surveys were completed.

Please refer to Appendix 3 for the sampling note prepared by the sampling consultant Dr. John Gibson in respect to the national sample and the subsequent note discussing the re-weighting for Morobe and Madang.

Please refer to Appendix 1 for a brief overview of the districts in Morobe and Madang in which field-work was undertaken.

Please refer to Appendix 2 for a brief overview of the households interviewed in Morobe and Madang.

Field Work

Field work for the survey was undertaken by the PNG Institute for National Affairs (INA), with support from the National Statistics Offices in Port Moresby, Lae and Madang. Enumerators were recruited locally and were trained by the BPNG, INA and World Bank project team members and senior NSO staff. Field work was undertaken between July and December 2014. The Location Fact Questionnaire and the Enrolment Questionnaire were completed using paper based survey forms. Data entry was undertaken by INA. The Financial Capability survey was completed using off-line tablet based data collection. The tablets were provided by BPNG and mobile phone wi-fi data upload capacity was provided by Digicel.

Please refer to Appendix 4 for a timeline of the field work and key activities.

2. Financial Inclusion and Financial Services in PNG

Improving access to financial services continues to be a very significant challenge for PNG. There are significant barriers to increasing financial access, in particular operational challenges and infrastructure weaknesses which result in high provider costs, and the limited financial capability of clients (IMF & World Bank, 2011).

2.1. FINANCIAL INCLUSION IN PNG

Estimates of the number of adults who have accounts with regulated financial institutions vary between approximately 435,000 and 800,000 adults. ADB estimated approximately 15 percent of the adult population (approximately 600,000 adults) is included in the formal financial sector (ADB, 2008).⁸ The 2011 Financial Services Sector Assessment (IMF & World Bank, 2011) estimated between 500,000 and 800,000 people were included in the formal financial system. BPNG (Anderson, Kunjil, Ngodup, & Tongia, 2013) estimated the number of account holders at regulated financial institutions to be 435,316, and that approximately 7 percent of the adult population had at least one loan with a regulated financial institution.

BPNG estimates the unmet demand for deposit services from the economically active adult population to be approximately 5.38m people (Anderson, et al., 2013) and the unmet demand for credit to be between 54–64 percent of the economically active adult population.

2.2. PNG GOVERNMENT COMMITMENT TO INCREASING FINANCIAL INCLUSION

Financial inclusion is a development priority for the Government of PNG. Expanding financial inclusion and enhancing financial literacy have been incorporated in key national plans: *The Development Strategic Plan 2010–2030* (Department of National Planning and Monitoring, 2010) and *Vision 2050* (National Strategic Plan Taskforce,

⁸ The present study found 15 percent of the adult population in Morobe and Madang reported owning a bank account.

2011). The *National Informal Economy Policy (2011–2015)* identified financial inclusion as a priority action area to facilitate the development of the informal economy in Papua New Guinea and stated increasing levels of financial inclusion should be a major economic policy objective (DfCD & INA, 2011).

2.3. BANK OF PAPUA NEW GUINEA COMMITMENT TO INCREASING FINANCIAL INCLUSION AND FINANCIAL LITERACY

The Bank of Papua New Guinea (BPNG) has taken the lead role in increasing financial inclusion and financial literacy in PNG. Financial inclusion is one of BPNG's two strategic goals (BPNG, 2011). BPNG is a member of the Alliance for Financial Inclusion (AFI) and signed the Maya Declaration in 2013,⁹ committing to seven financial inclusion and financial literacy goals (AFI, 2013).

1. To reach 1 million more unbanked low-income people in Papua New Guinea, 50 percent of whom will be women
2. To lead efforts to create a financially competent generation of Papua New Guineans through financial education and financial literacy
3. To actively support innovative use of technology for scaling-up access to financial services and financial literacy
4. To strengthen consumer protection by issuing prudential guidelines and creating a platform for various national regulators and industry networks to monitor consumer protection
5. To begin the process of integrating financial inclusion in local and national government, including getting the National Executive Council to endorse the National Financial Inclusion and Financial Literacy Strategy by quarter 4 of 2013
6. To promote regular collection and use of financial access data to inform policy making and help identify key dimensions of financial inclusion in Papua New Guinea
7. To optimize these results through knowledge sharing and effective coordination of stakeholders, including development partners, by the newly established Centre of Excellence for Financial Inclusion chaired by the Bank of Papua New Guinea.

⁹ http://www.afi-global.org/sites/default/files/publications/maya_declaration_bank_of_papua_new_guinea.pdf.

The Maya Declaration goals provide a foundation for financial inclusion and financial literacy policy and strategy. In 2013, with the support of the Pacific Financial Inclusion Programme, BPNG brought together a broad cross-section of stakeholders to identify regulatory and market conditions necessary to encourage innovation and scale in financial inclusion and financial literacy.¹⁰ The workshop provided a key input to the development of the *National Financial Inclusion and Financial Literacy Strategy 2014–2015* (BPNG, 2013). The principal objective of the Strategy is to implement PNG’s seven commitments in the Maya Declaration on Financial Inclusion. BPNG is currently implementing several key strategic action items:

1. BPNG has sponsored and led the establishment of the *Centre for Excellence in Financial Inclusion* (CEFI). The primary objective of CEFI is to coordinate and monitor the implementation of the National Financial Inclusion and Financial Literacy Strategy.
2. BPNG has supported (in conjunction with ADB) the establishment and management of the *Microfinance Expansion Project* (MEP). The MEP is seeking to both strengthen the supply of microfinance services and increase the demand for microfinance services.
3. BPNG has committed to increasing financial inclusion data, in particular supply-side data.

2.4. RETAIL FINANCIAL SERVICES IN PNG

Financial services accessibility has significantly increased over the last two years in Papua New Guinea as a result of financial inclusion programs rolled out by the Bank of PNG in collaboration with the partner financial institutions. Financial services access points has increased from 9,257 in December 2012 to 11,015 in March 2015, an increase of 13.51 percent due to expansion of Agents, ATMs, branches, sub-branches and EFTPOS by financial institutions.¹¹

There are a broad range of financial services institutions providing retail financial products and services in Papua New Guinea, including in Morobe and Madang.

Savings and Loan Societies (S&Ls) are the earliest established retail financial institutions in PNG. S&Ls are mutual societies established by people ‘sharing a common bond of membership’ (for example common location or industry). S&Ls

¹⁰ <http://www.afi-global.org/news/2013/8/28/bank-png-reveals-basis-its-upcoming-maya-declaration-commitment>.

¹¹ Source: BPNG/PFIP Financial Sector Assessment (2013) and updates provided by BPNG (2015).

provide deposit and credit services to members. There has been a steady reduction in the share of retail financial services held by S&Ls. In the 1970s there were over 120 S&Ls in PNG. There are currently 21 S&Ls. BPNG is seeking to strengthen and support S&Ls to ensure longer term sustainability (Bakani, 2014). Legislation is being revised to allow for the merger of S&Ls and for S&Ls to be able to borrow and access the payments system. S&L membership will also be broadened; the current 'common bond' requirement will be abolished.

There are four commercial banks in Papua New Guinea, three of which offer retail financial services. The commercial banks are the largest providers of retail financial services in PNG and dominate the financial sector (Conroy, 2000). Relative to other regulated financial institutions in PNG, commercial banks have significant capacity which spans all aspects of financial services operations and management: governance, operational management, balance sheet and risk management, financial products and services and financial infrastructure. Each commercial bank has developed national distribution capacity, albeit primarily metropolitan, and offers a basic bank account (refer to Table 1).

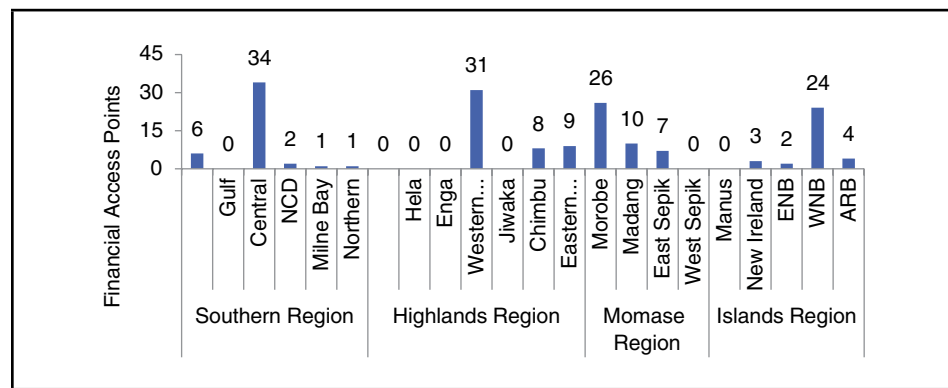
Whilst each of the three commercial banks has demonstrated a commitment to savings mobilisation through the provision of deposit and transaction services to poor and lower income customers, only one bank (BSP) has developed a branch and agent network of sufficient reach to achieve broad based geographic penetration. No commercial bank has developed a basic credit product targeted to financially excluded individuals, households and informal sector participants.

TABLE 1 COMMERCIAL BANK RETAIL BANKING SERVICES

	ANZ BANK	BANK SOUTH PACIFIC (BSP)	WESTPAC BANK
Network	12 branches and 42 ATMs	39 branches and 301 ATMs	17 branches and 37 ATMs
Agents	72 GoMoney merchants	242 agents across PNG	100 in-store merchants
Mobile banking	Yes	Yes	Yes
Rural banking	Primarily metropolitan	41 dedicated BSP Rural locations	Strategy is to focus on locations within two hours of an urban area ¹²
Basic bank account	Go Money: Electronic only mobile banking service. Transaction and savings capability. No credit capability	Kundu Account: Branch and electronic access. Transaction and savings capability. No credit capability	Choice Basic Account: Branch and electronic access. Transaction and savings capability. No credit capability
Financial literacy programme	Yes	Yes	Yes

¹² Key informant interview: Westpac Head of Retail Banking.

FIGURE 2 MICROFINANCE OUTREACH



Source: BPNG (BPNG, 2015)

There are five regulated microfinance institutions in PNG. Microfinance institutions provide deposit and credit services. Only one microfinance institution, MiBank (Nationwide Microbank) has nationwide representation (12 branches). As shown in Figure 2, Microfinance outreach is highly concentrated in a small number of provinces.

2.5. ACCESSING RETAIL FINANCIAL SERVICES

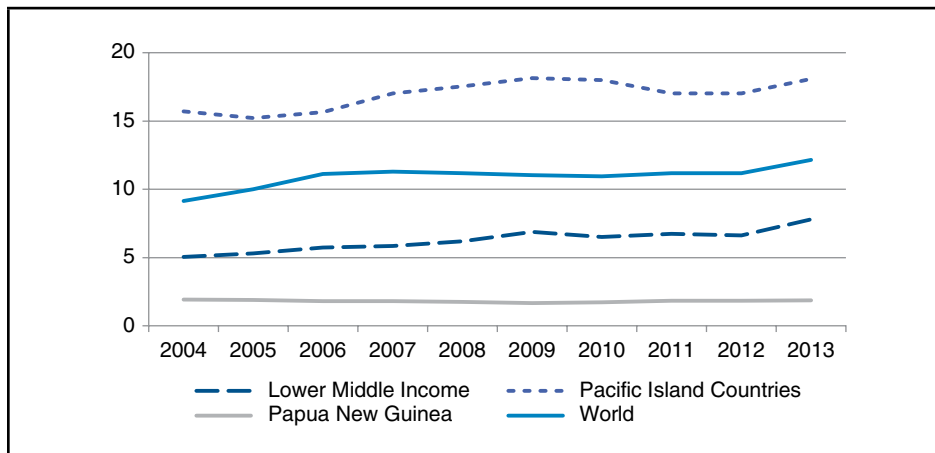
Access to retail financial services in PNG is bifurcated. In urban areas consumers have a range of institutions and products and services to select from. In the townships surveyed, consumers appear to have access to formal financial services. However, this is not the case with most rural communities where the principal issue is not choice or selection, but access to any form of formal retail financial services. PNG has one of the lowest levels of access point density globally.

Financial Services Branches

Of the 164 countries for which data is available for 2004, PNG ranked 138th. By contrast, of the 179 countries for which data is available for 2014, PNG ranked 169th. As shown in Figure 3, the average financial services branch density in PNG is 1.9 branches per 100,000 adults. By contrast, globally, financial services branch density is 12.16 branches per 100,000 adults.¹³ The average branch density in lower-middle income countries is 7.8 per 100,000 adults (2004 = 5.06). In Pacific island countries (excluding PNG) the average branch density in is 18.9 branches per 100,000 adults. Branch density in PNG has remained constant between 2004 and 2013, whilst over the

¹³ <http://data.worldbank.org/indicator/FB.CBK.BRCH.P5>.

FIGURE 3 BRANCH DENSITY PER 100,000 ADULTS



Source: World Bank¹⁴

same period the average number of branches in other Pacific island countries grew by 20 percent and globally by 33 percent.

It appears the situation in rural areas may have exacerbated in recent years, with an increasing concentration of branches in urban areas: '... licensed banks and savings and loan societies have been reducing their coverage in regional and rural areas over a period of decades' (Conroy, 2000).

Financial Services Agents

Agents are often used to provide physical access points in locations in which it is not economical to open a branch. As examples, Bradesco (a Brazilian bank) operates an agent network with 24,500 locations nationwide (16.4 per 100,000 adults). In Kenya, a network of almost 70,000 agents¹⁵ services ten banks in addition to Safaricom M-PESA (268 per 100,000 adults). Tanzania has nearly 17,000 mobile money agents¹⁶ (57 per 100,000 adults). There are currently 26,000 agents (across multiple financial services providers) in Peru¹⁷ (118 per 100,000 adults).

There are currently approximately 771 agents in PNG providing services on behalf of regulated financial institutions (Anderson, et al., 2013). Overall agent density is modest (16.5 per 100,000 adults).

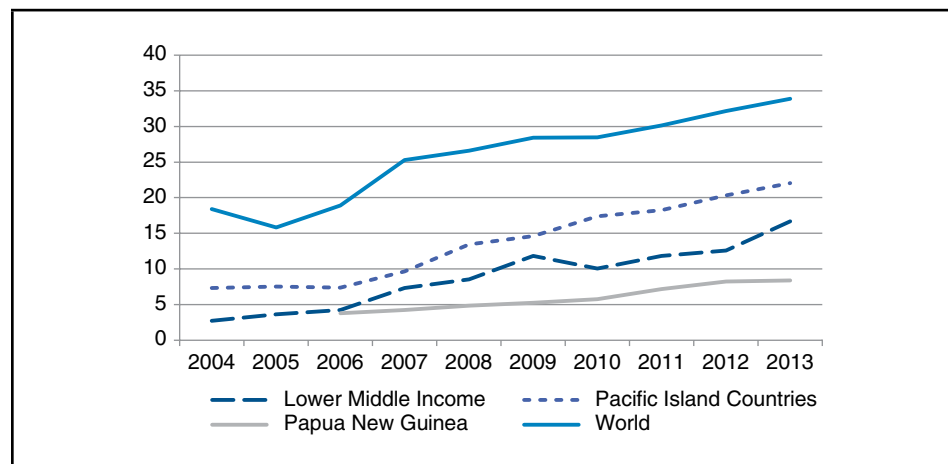
¹⁴ <http://data.worldbank.org/indicator/FB.CBK.BRCH.P5>.

¹⁵ <http://www.afdb.org/en/news-and-events/article/fostering-financial-inclusion-with-mobile-banking-12125/>.

¹⁶ <http://www.cgap.org/blog/geography-cash-points-tanzania>.

¹⁷ <http://www.asbaweb.org/E-News/enews-40/fin/03fin.pdf> (CGAP, 2015).

FIGURE 4 ATM DENSITY PER 100,000 ADULTS



Source: World Bank¹⁸

ATM and EFTPOS

Globally, ATM density has increased significantly over the past ten years. Global average ATM density (2013) has now reached 34 ATMs per 100,000 adults.¹⁹ Similarly, ATM density has been growing quickly in Pacific island countries, having grown from 7.4 ATMs per 100,000 adults in 2004 to 22.0 ATMs per 100,000 adults in 2013. This represents a compound annual growth rate of 11.6 percent.

The increase in ATM density in PNG has been slower than that of other Pacific island countries (refer to Figure 4). There are 398 ATMs deployed in PNG (BPNG, 2015). The compound annual growth rate is 8.0 percent. ATM density in PNG is 8.4 ATMs per 100,000 adults (2013).

Globally there continues to be strong growth in the number of EFTPOS terminals.²⁰ There are approximately 13,500 EFTPOS terminals deployed in PNG (BPNG, 2015). There is no publically available country level data to enable a comparison of the density of EFTPOS terminals in PNG against other countries.

Mobile Phone

The 2009–2010 HIES found that overall, 49.1 percent of households in PNG owned a mobile phone. A slightly lower percentage of households in rural communities reported owning a mobile phone (42.5 percent). By contrast 89.2 percent of

¹⁸ <http://data.worldbank.org/indicator/FB.CBK.BRCH.P5>.

¹⁹ <http://data.worldbank.org/indicator/FB.CBK.BRCH.P5>.

²⁰ <http://www.thepayers.com/cards/asia-pacific-gets-ahead-of-north-america-in-eftpos-terminals/757391-23>.

households in urban communities reported owning a mobile phone. Given the work undertaken by mobile phone providers in PNG to extend rural mobile phone coverage, it is likely the percentage of the rural population owning or accessing a mobile phone has increased since the 2009–2010 HIES.

BPNG has responded positively to the mobile banking opportunity. Mobile Network Operators have been given exemptions under Banks and Financial Institutions Act 2000 to conduct mobile phone banking.

Levels of mobile phone banking penetration are currently not known, but are considered to be low relative to other financial services access channels.

3. Overview of Morobe and Madang

3.1. OVERVIEW

Morobe and Madang provinces are two adjoining provinces within what is termed the Momase (or sometimes the Mamose) region (an abbreviation of Morobe, Madang and Sepik one of the four regions of Papua New Guinea. The other regions are: the Highlands, New Guinea Islands and Papuan (or Southern) regions.

PNG is geographically, economically and ethnically extremely diverse, from its communities in remote valleys in the Highlands provinces, to coastal and lowland communities on some of the country's islands, coasts and accessible and inaccessible major valleys. Morobe and Madang are in some ways a microcosm of many of the diverse geographical and social characteristics of Papua New Guinea. It is impossible

MAP 1 PAPUA NEW GUINEA (HIGHLIGHTING MOROBE AND MADANG PROVINCES)



Source: Ezilon Inc ©

for any province, or small selection of provinces to represent the entire country's range of physical and human characteristics, nevertheless, Morobe and Madang do reflect some of that diversity.

Both provinces span broad altitudinal ranges, from the country's highest mountains, notably in the Bismarck, Finisterre and Sarawaget ranges, to the major lowland valleys of the Markham and Ramu rivers, and an array of wide and narrow coastal plains, with wet and drier climates, and large and smaller offshore and more remote islands.

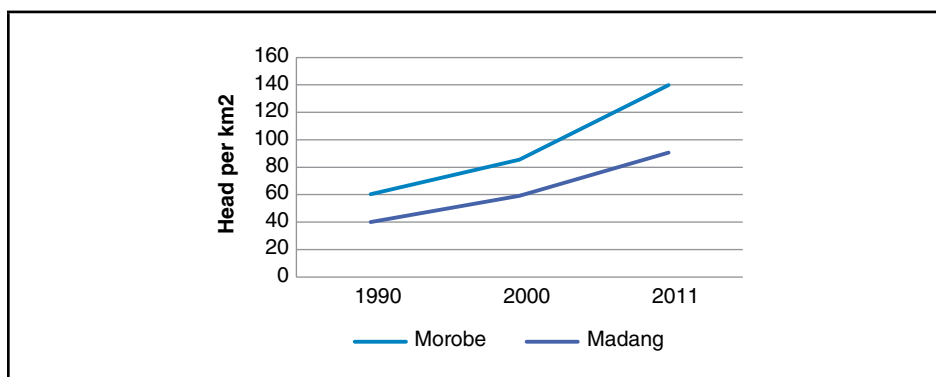
3.2. POPULATION

Population Overview

Momase has the second highest population by region, according to the 2011 National Census, with 1.9 million, comprising 26 percent of the country's population. The largest region by population is the Highlands, recorded with 39 percent of the total population.

Morobe province is the largest province in PNG by population (674,810 persons recorded in the 2011 National Census—9 percent of the National population), and the fifth largest by physical area, at 33,525 sq. km. Madang province has the fourth largest provincial population according to the 2011 Census (493,906—7 percent of PNG's population), after Morobe, Eastern Highlands and Southern Highlands, and is also one of the larger provinces in the country by physical area.

FIGURE 5 POPULATION DENSITY ON ARABLE LAND (PER SQ. KM)



Source: NSO & PNGFA

MAP 2 MOROBE AND MADANG POPULATION DENSITY

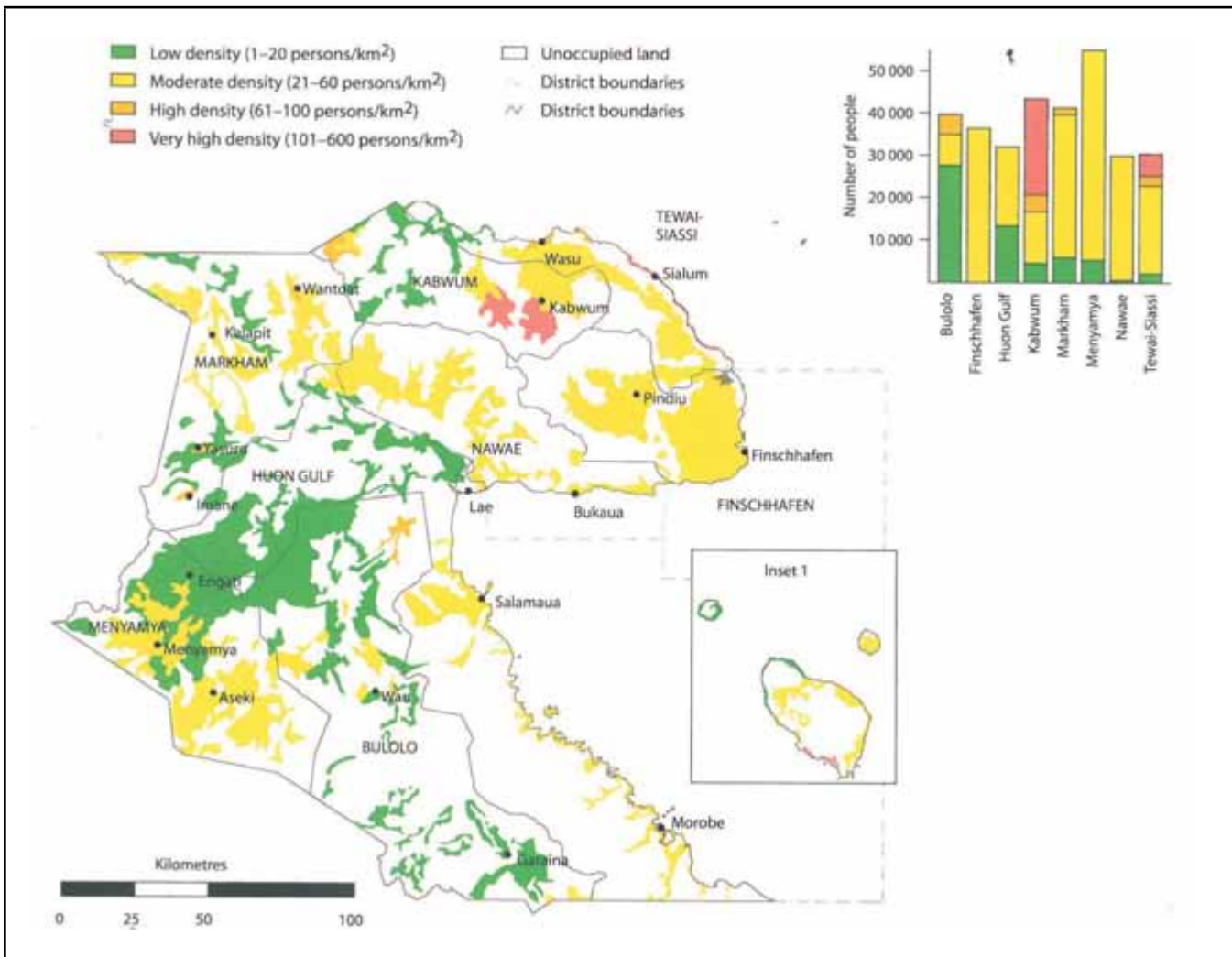
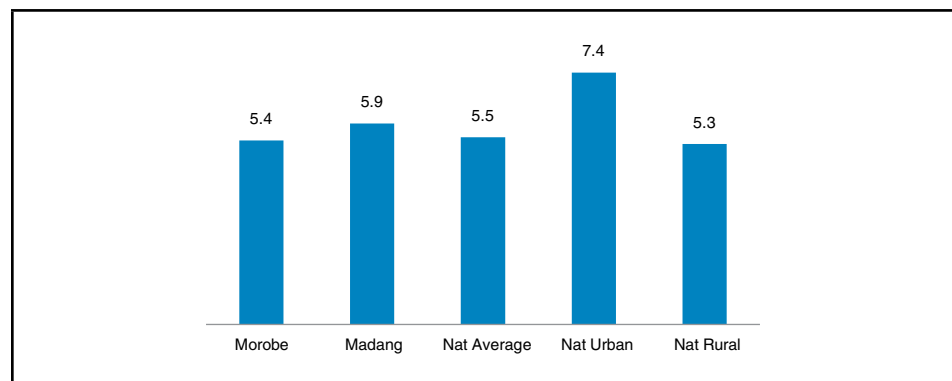
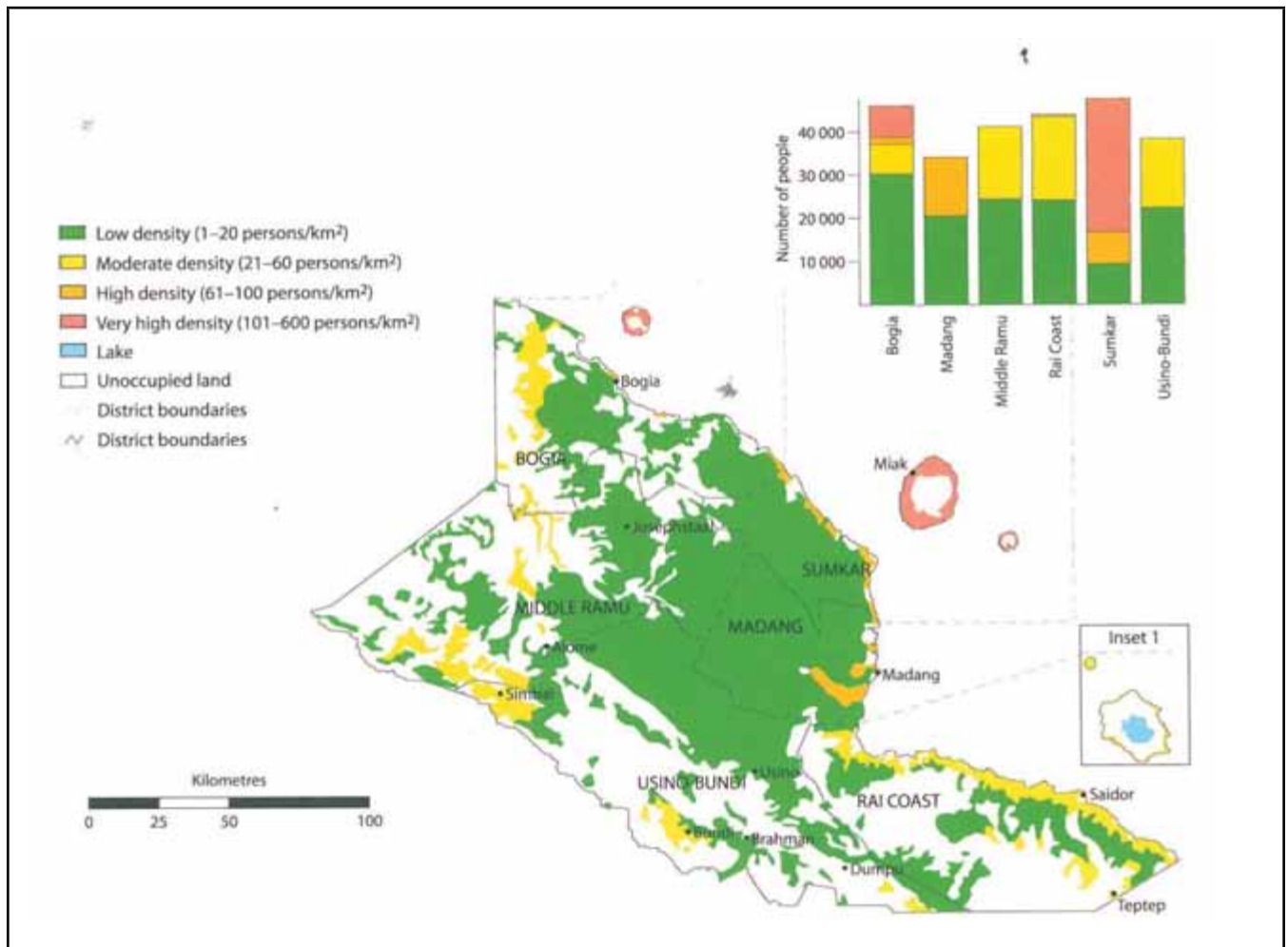


FIGURE 6 AVERAGE HOUSEHOLD SIZE—2011



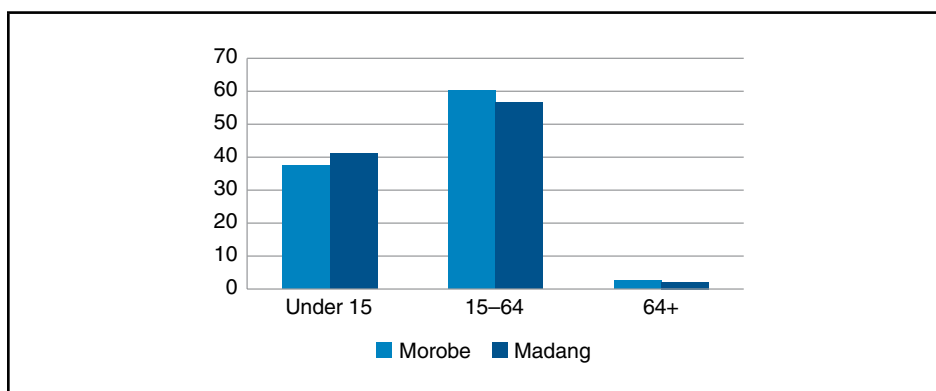
Source: NSO 2000/2011 Census

MAP 2 MOROBE AND MADANG POPULATION DENSITY (continued)



Source: Papua New Guinea Rural Development Handbook.²¹

FIGURE 7 AGE PROFILE—YEARS OF AGE (PERCENT)



Source: NSO 2000/2011 Census

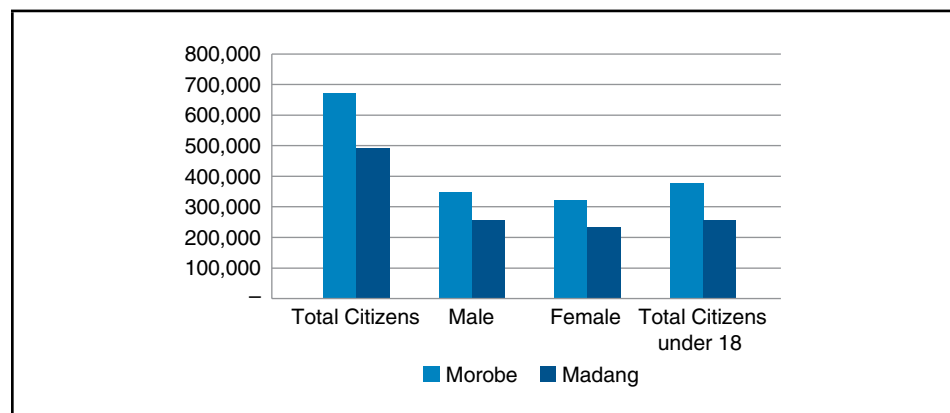
²¹ Hanson, Allen, Bourke & McCarthy (2001).

The populations of the two major urban centres, and the smaller towns of Morobe province, reflect the wide hinterland, with residents, including settlements, both from the local communities (notably Ahi in Lae) and from other parts of the two respective provinces and elsewhere across the Momase and Highlands regions. This provides both these centres with a diverse social and ethnic mix, as well as a wide range of household incomes. Papua New Guinea has a high proportion of its population under 20. The median age recorded in the 2011 National Census for the whole country was 21.4, in Morobe province it was 21.0 and for Madang province it was 19.0, with a national urban median of 21.9 and rural median of 21.3.

Population Change

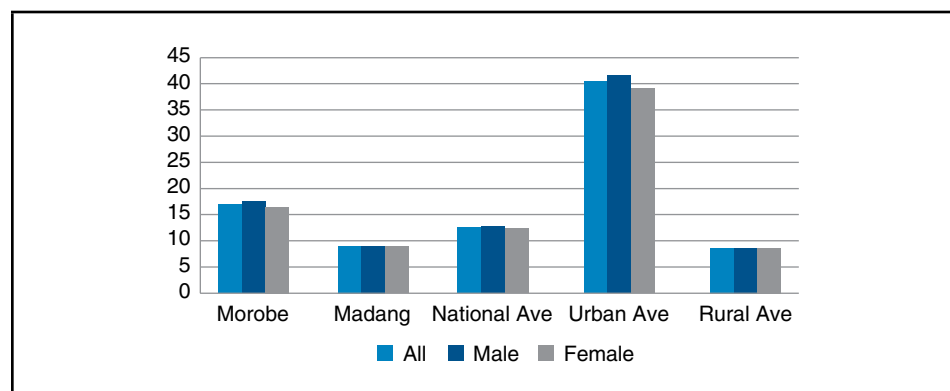
According to the National Statistical Office, (based upon 2000 and 2011 Censuses), Papua New Guinea’s total population grew at an annual rate of 3.1 percent from 2000 to 2011, up from 2.9 percent during the 1990–2000 decade. 13 percent of PNG’s

FIGURE 8 AGE/GENDER BREAKDOWN



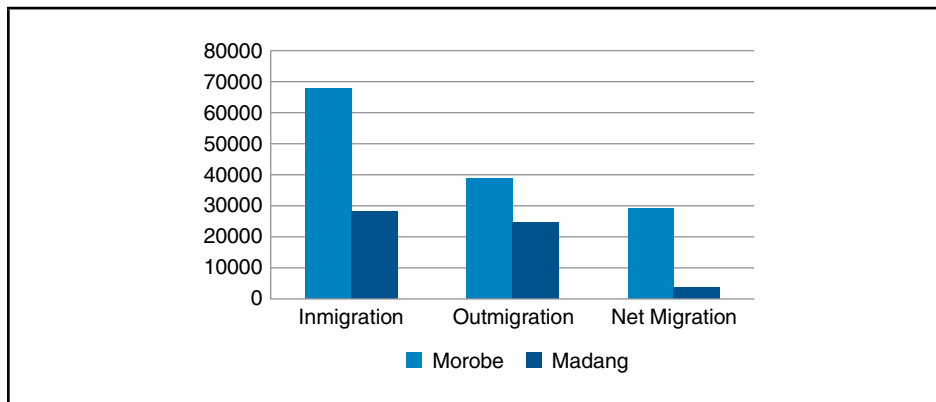
Source: NSO 2000/2011 Census

FIGURE 9 MIGRANTS 2011 (PERCENTAGE OF TOTAL POPULATION)



Source: NSO 2000/2011 Census

FIGURE 10 INTERPROVINCIAL MIGRATION 2011



Source: NSO 2000/2011 Census

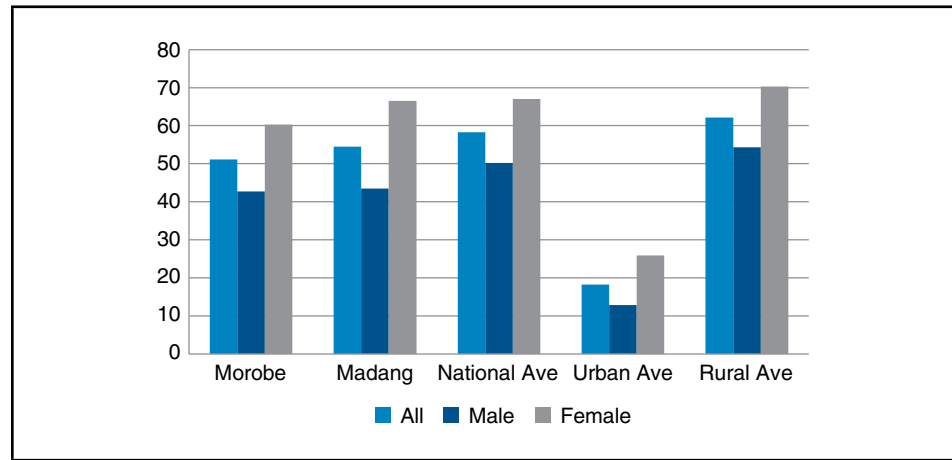
total population was recorded as migrants in 2011 (i.e. not born where they were enumerated in the Census), with 40 percent of urban citizens recorded as migrants and 9 percent of rural citizens. Morobe, which includes the large urban centre of Lae, was above the national average and Madang province, with relatively small urban centres, was below the national average. In-migration comes from both rural areas within the respective provinces, and from other provinces, particularly heading for the main urban centres, like Lae and Madang, and commercial projects, in agriculture and mining. Major out-migration from Morobe and Madang provinces heads to the National Capital District particularly.

3.3. ECONOMY AND LIVELIHOODS

The provinces are diverse economically, with major mining and agricultural projects, from gold and nickel mining (notably in Bulolo District, Morobe, and Usino-Bundi in Madang) to oil palm, sugar, cattle and other livestock in the major Ramu and Markham valleys, coffee, vegetable and plantation forestry in the upland valleys, such as around Wau-Bulolo, and cocoa and copra, particularly on the major Madang island of Karkar. Commercial fisheries (and fish processing) are centred on the Madang and Lae ports and urban vicinities, tourism particularly in Madang and its lagoon hinterland, and logging also prevalent in certain coastal areas, particularly Madang province and parts of Morobe's Siassi islands. Just over half the population of the two provinces recorded in 2011 was employed in subsistence agriculture (particularly women), just below the national average recorded, whereas about 12 percent of the Morobe population was recorded as engaged in wage employment, and just below 10 percent in Madang, both near the national average, and with higher percentages in paid employment amongst males.

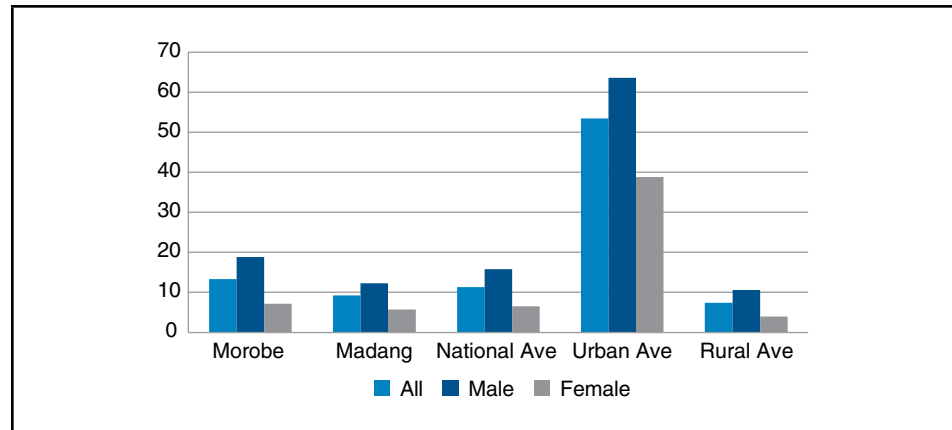
Both Morobe and Madang provinces recorded 70–80 percent of households growing food crops (around the national average); although the large urban population of Lae

FIGURE 11 PERCENTAGE OF EMPLOYED POPULATION IN SUBSISTENCE EMPLOYMENT 2011



Source: NSO 2000/2011 Census

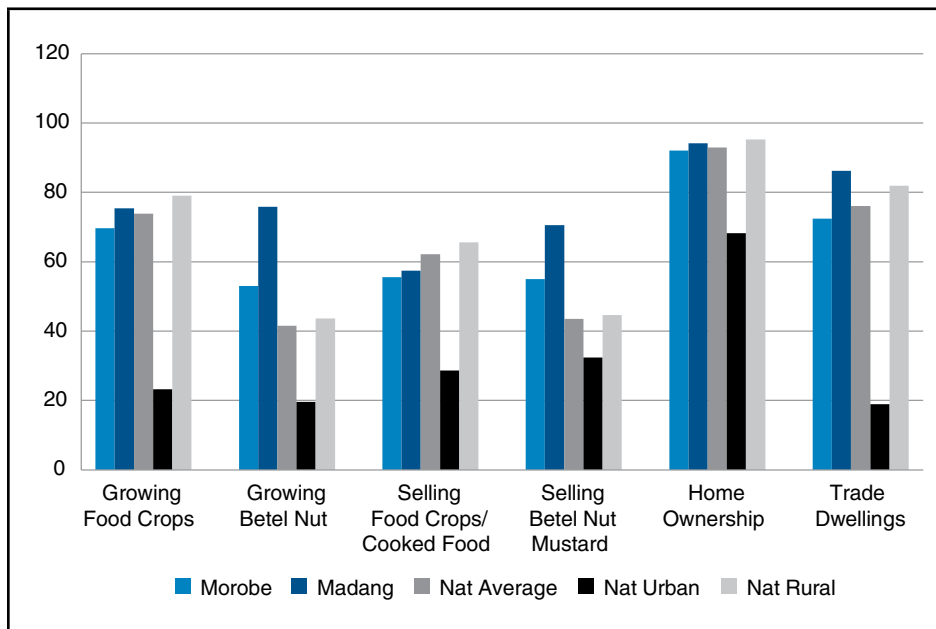
FIGURE 12 PERCENTAGE OF EMPLOYED POPULATION IN WAGE EMPLOYMENT—2011



Source: NSO 2000/2011 Census

pulled Morobe slightly below the average (only 20 percent of urban households are recorded as growing food crops). The record also shows that nearly 80 percent of Madang households participate in growing betel nut, significantly above the national average. Over 90 percent of households in the two provinces also recorded selling betel nut (and associated mustard), almost as many as growing, and food crops (somewhat lower the portion producing). Over 90 percent of households in the two provinces live in their own homes, roughly the national average, and these houses are largely made of traditional materials.

FIGURE 13 HOUSEHOLD PROFILE—LIVELIHOOD AND HOME OWNERSHIP—PERCENT 2011



Source: NSO 2000/2011 Census

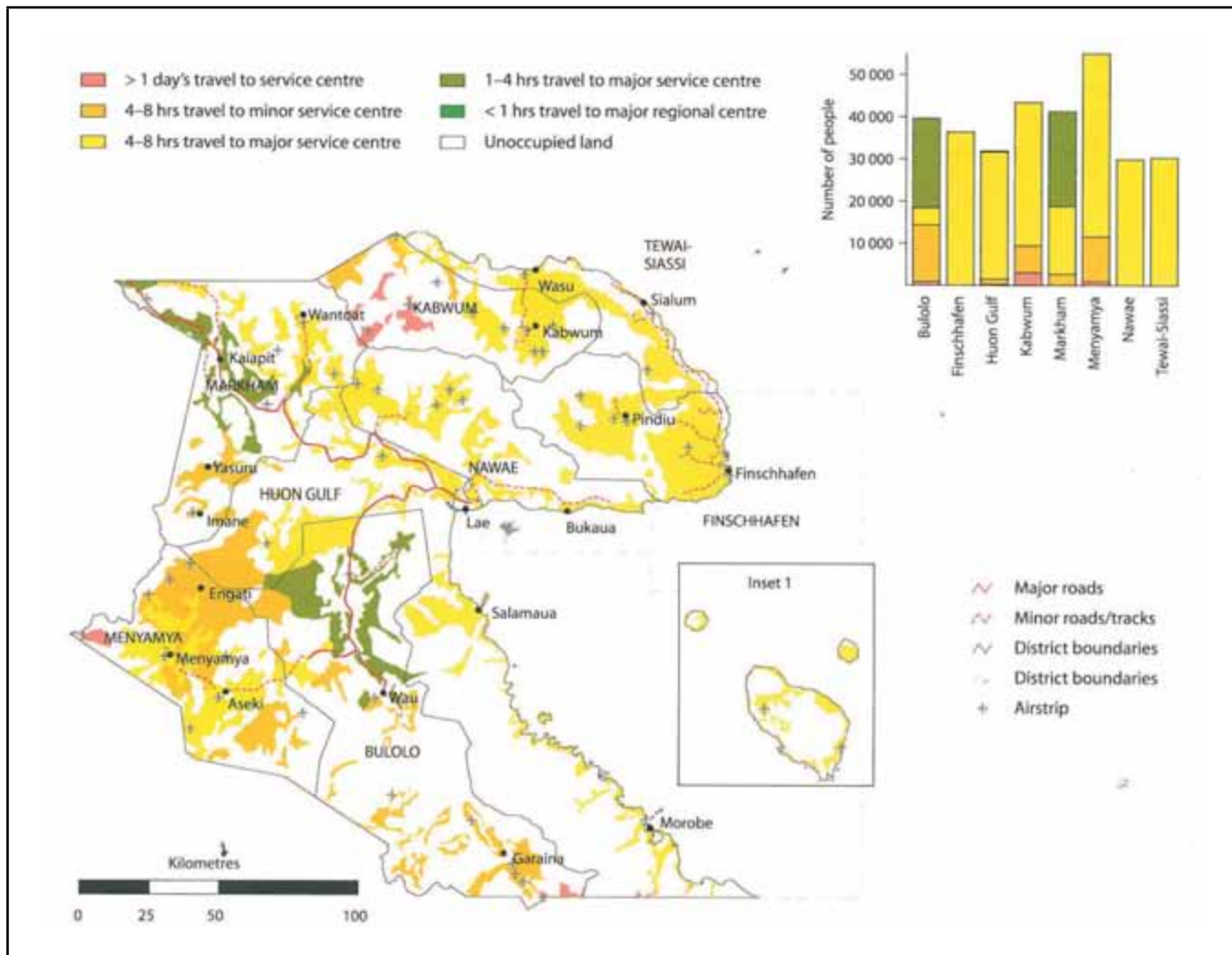
Lae and to a lesser extent Madang have become hubs not only of formal sector business but extensive informal sector trade, with a hinterland, particularly for Lae, stretching well beyond, as well as being major administrative and education centres, each with universities, teacher training and technical colleges and research institutes.

3.4. INFRASTRUCTURE AND SERVICES

Transport

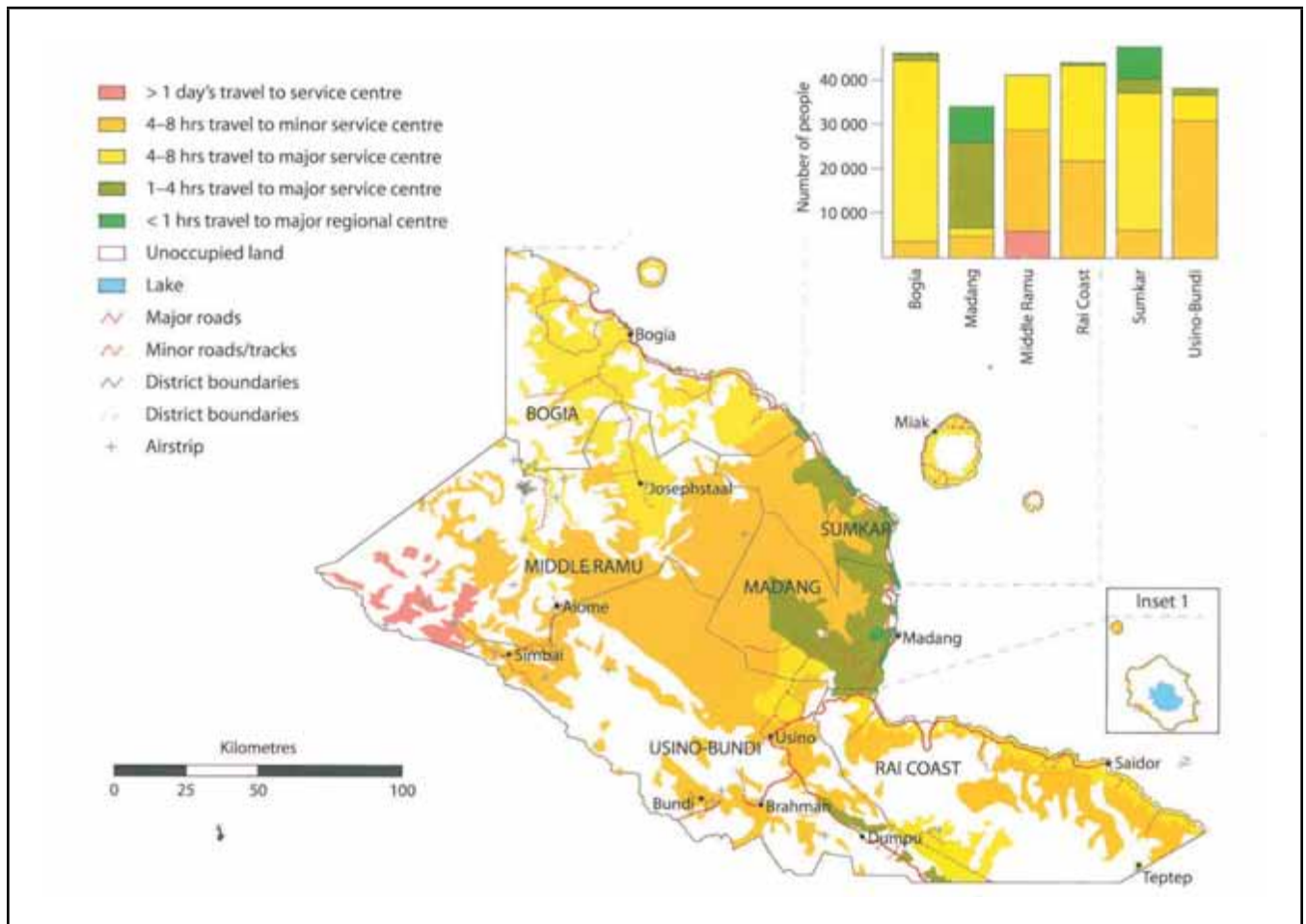
As across much of Papua New Guinea, transport infrastructure in Morobe and Madang provinces is rudimentary, with large portions of the provinces inaccessible by road, particularly during the wet season. The two provinces include some of the country's major national highways, notably the Highlands (or Okuk) Highway up the Markham valley and the Wau-Bulolo road in Morobe province, and the Ramu-Madang Highway and north coast road to Bogia in Madang province. Nevertheless, these National Highways suffer from poor maintenance, and even become impassable at times. The provincial and local access roads into the districts suffer from much worse maintenance funding and, as with the rural airstrips, extensive stretches of these roads have closed down temporarily or permanently over the past two decades,

MAP 3 ACCESS TO SERVICE CENTRE



leaving whole communities dependent upon pedestrian access only, and undermining access to markets and public services. As stated in the NEFC (National Economic and Fiscal Commission) report, 'The Thin Blue Line' (NEFC, 2014) "a large proportion of the road network has deteriorated to the point where 'routine maintenance' is not possible and major maintenance or rehabilitation is now necessary." Yet, as that report highlighted, the cost of rehabilitation is much greater ("reconstruction of public assets can be 40–130 times more expensive than the annual cost of routine maintenance"), and that restoration of the entire network is unaffordable in the short–medium term. A World Bank sector study (2003) found that the severe decline in funding for maintenance, notably during the 1990s, resulted in a severe deterioration in the state of the country's road assets and an accumulated backlog of work to be addressed. It found that only 49 percent of what was needed for road maintenance was provided in 1991, declining to 30 percent in 1994 and a mere 10 percent by 2001. Funding for

MAP 3 ACCESS TO SERVICE CENTRE (continued)



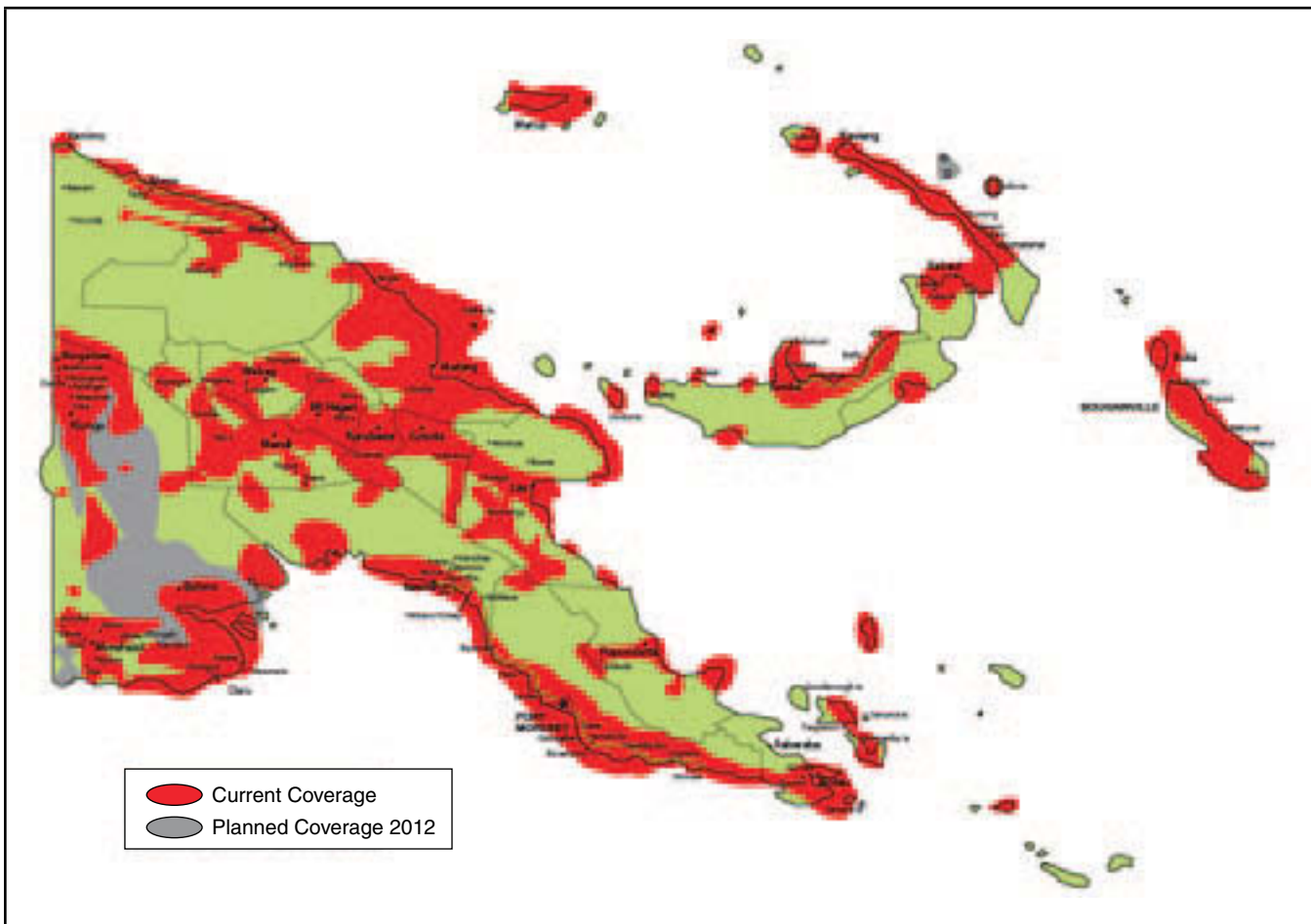
Source: Papua New Guinea Rural Development Handbook²²

infrastructure maintenance and restoration remained at only a fraction of the level required through the 2000s, only starting to improve modestly from the end of the decades, along with improved revenue.

Following the 1995 Organic Law on Provincial and Local Level Government the different roads and other infrastructure were meant to be classified as falling under National, Provincial and Local Level Government responsibility, respectively, with unconditional grants provided accordingly. Such classification of specific roads and airstrips, etc., and associated funding, did not materialise, and for at least a decade there was uncertainty, with much infrastructure left in a vacuum of responsibility for most non-national roads and airstrips. With the discontinuation of the Works Department in many provinces, there was also little or no human capacity or equipment at the District or LLG levels to undertake routine maintenance, and, as with

²² Hanson, Allen, Bourke & McCarthy (2001).

FIGURE 14 NATIONWIDE COVERAGE BY DIGICEL IN 2011/2012



Source: Digicel

rural airstrips, which were closing at a steady rate, the limited maintenance which did occur was often left to ad-hoc community action and activity organised by service providers (such as mission air service providers). Based upon the 2005 Department of Works Road Asset Management System (RAMS) report, and their 2011 update, it has been calculated that an allocation of K15.2 million was required for basic maintenance of existing provincial, district and local level infrastructure (largely rural roads) in Morobe province and K12.6 million for Madang province, when unsealed provincial roads were estimated to cost K10,500 per km to maintain.²³ Only a fraction of these amounts have been available during these years and even smaller fraction of this level of funding has been provided for this purpose, although in recent years under the District Support Improvement Program (DSIP), K3 million has been provided per District for roads/transport. The planning and capacity have been largely deficient and much funding has been used on new facilities. However, in some districts, such as Bulolo and

²³ 2011 estimate—K15,000 PNG Department of Works.

Huon Gulf, substantial expenditure had been provided for restoration of certain roads and bridges in recent years.

Telecommunications

Whilst PNG's main urban centres have been connected by telephone since the 1970s, using then state of the art microwave signals and mountain-top repeater stations, mobile phone access was only rolled out in the main urban centres in the early 2000s, with only very limited subscribers and access until mid-2007. The commencement of a competitor in 2007, and new investment in urban and rural services, saw the number of subscribers more than double within 3 weeks. Although still costly by world standards, access to mobile telephony and subsequently data services expanded considerably since 2007, unit costs fell and reliability and speed increased particularly in the urban centres, such as Lae and Madang, where 3G (and later 4G) services were introduced; in rural areas 2G services have remained predominant, although a program of upgrading has been ongoing. All the urban households in Morobe and Madang provinces have ready access to mobile-phone based telecommunications, and in 2014 most of the rural population had access, at least within a short walk from their villages. Only one of the current two operators of mobile telephone services provides any significant rural coverage.

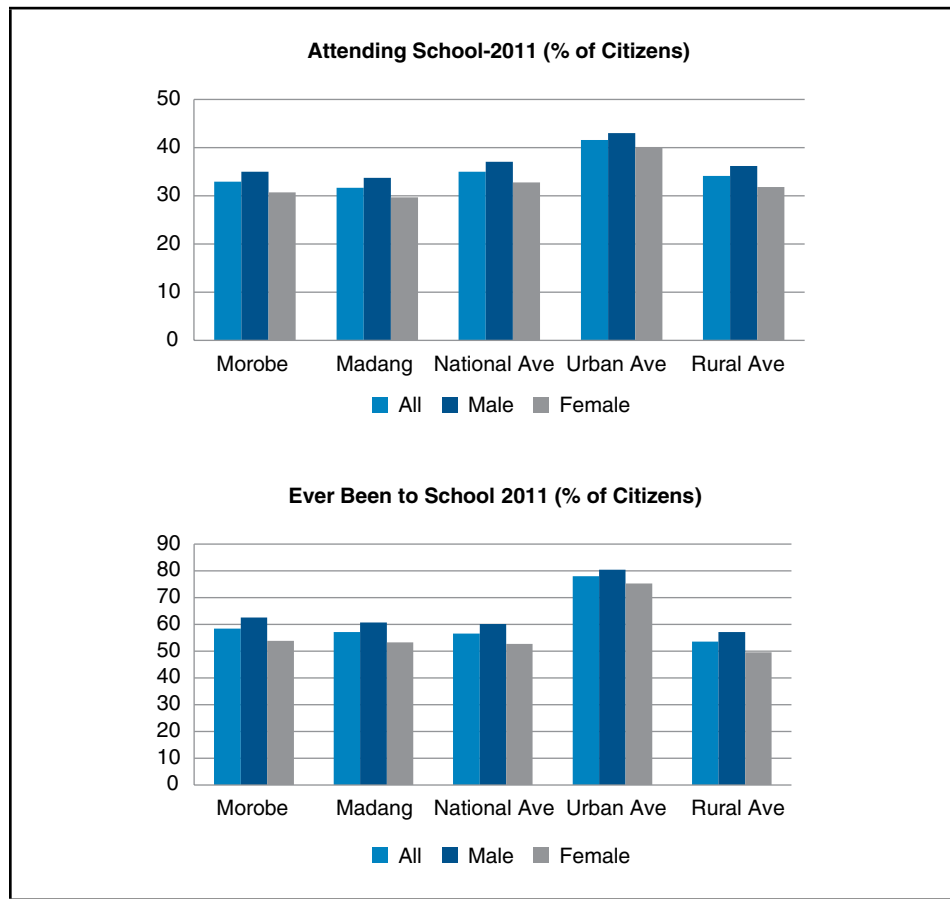
Electricity

Power is only accessible in the main urban centres in Morobe and Madang provinces, in small townships and villages along the main highways and in the some district centres. The 2008 Household Income and Expenditure Survey (HIES) found that nationwide only 16.7 percent of the population had access to electricity from the grid in their households, 6.3 percent in rural areas, and 67.8 percent in urban areas, with a further 2.8 percent having access to privately generated power. In the Momase region (including Morobe and Madang provinces) the figure for access to the grid fell to 5.9 percent of the population, despite the presence of larger cities like Lae, and 1.8 percent private generation.

Education

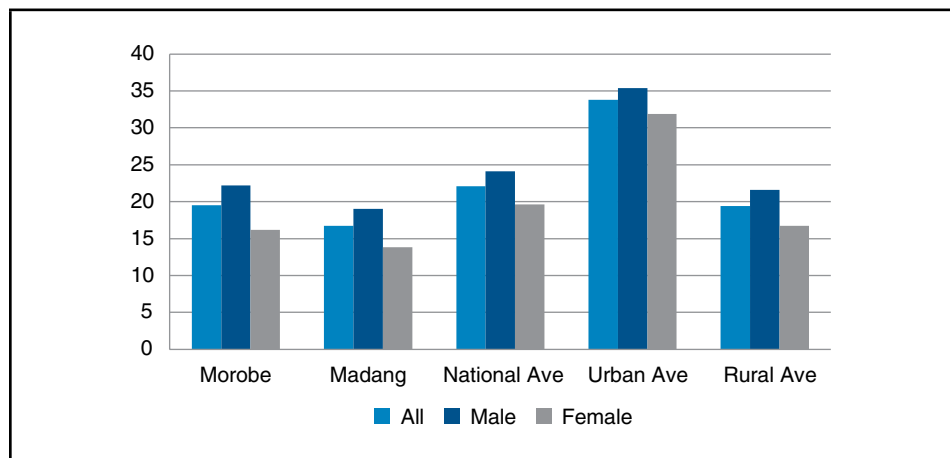
School enrolment has been improving over the past decade, but enrolment, retention, standards and levels of literacy and numeracy remain low, especially in rural communities. Morobe and Madang provinces were both close to the national average in the 2011 National Census in terms of the percentage of citizens recording ever having been to school, at about 57–58 percent for the two provinces, as against approximately 56 percent nationwide. About 10 percent more males recorded having been to school in Morobe and nearer 7 percent in Madang, which was almost identical to the national average. Urban areas recorded almost 80 percent of citizens having attended school at some stage, as opposed to just over 50 percent in rural

FIGURE 15 SCHOOL ATTENDANCE



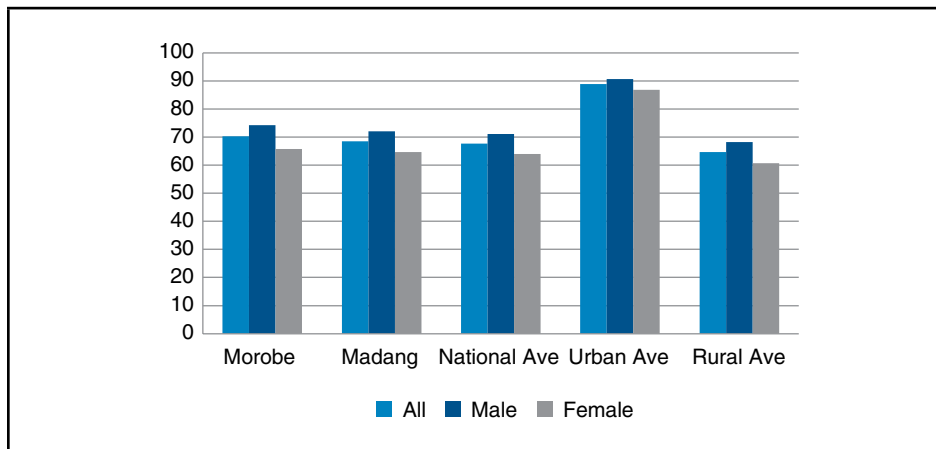
Source: NSO National Census 2011

FIGURE 16 GRADE 10 HIGHEST GRADE (PERCENT OF CITIZENS)



Source: NSO National Census 2011

FIGURE 17 LITERACY 2011 (PERCENT OF CITIZENS)



Source: NSO National Census 2011

areas. 70 percent literacy was recorded amongst citizens in the Census in 2011 for Morobe province, and about 68 percent for Madang province, which was also about the national average, with rates amongst females about 4–5 percent lower than males. Urban areas again showed markedly higher literacy rates, at almost 80 percent average, than rural areas, at somewhat above 60 percent.

Health

Papua New Guinea health indicators are poor and although there have been some improvements, for example in reduced malarial incidence over the past decade, key indicators (including health Millennium Development Goals for maternal and child health and mortality rates) remain extremely unsatisfactory. For example infant (under 1 year of age) mortality rates were recorded as reducing from 69.3 deaths per 1,000 live births, to 56.7 deaths between 1996 and 2006.²⁴ The equivalent figures for MOMASE region were 76/1,000 in 1996 and 55/1,000 in 2006. Urban infant mortality rates are 32 per 1,000 live births, but rural rates of 62/1,000, and major variations relate to levels of education, than with infant mortality rates more than twice as great for those with no education, than those with grade 7 or more. Health is determined by multiple factors, including access to information, women's education and empowerment, access to economic opportunities, as well as natural environment and access to quality health services.

In much of Papua New Guinea health services have been recorded as having deteriorated over the past decade, in both range of the services provided and quality (Howes et al., 2014). The cost of health service provision varies considerably from one

²⁴ Papua New Guinea Demographic and Health Survey 2006, National Statistical Office, October 2009.

part of the country to another, as determined particularly by remoteness. The largest portion of costs (approx. 84 percent) was calculated by NEFC to be needed at the District level. Morobe was estimated by NEFC to require approximately K11 million for health sector costs, and Madang around K 9 million, with a substantial portion of that explicitly for patient transfers. Based upon the Department of Health’s policy on patient transfers and the NEFC’s costs of services study (reflecting the portion of the population living in relatively isolated locations and other factors), Morobe, with both its large population and large rural population requires K3.6 million for patient transfers alone, and Madang requires K2.6 million: the highest transfer costs by province. This level of funding was not made available. According to the report ‘Below the Glass Floor’ (World Bank, 2013a) frontline spending in Morobe province was ‘low’ compared to what was required (with consistently low levels of funding for health services, including water supply and sanitation, notably in 2009/10), and ‘medium’ for Madang province (where funding was increased markedly in 2009 and 2010).

Please refer to Appendix 1 for a brief overview of the Districts in Morobe and Madang in which field-work was undertaken.

3.5. FINANCIAL SERVICES

There is good access to formal financial services access points in urban and township locations. Commercial banking and finance company services are available in the two provincial capitals (Lae and Madang). Retail banking services, including ATM and EFTPOS services are available at multiple locations (refer to Table 2) in Lae and Madang and also in the townships of Bulolo and Finschafen. ATMs are principally co-located with bank branches. There are, however, several stand-alone ATMs in Lae and Madang (on the Divine World university campus for example).

TABLE 2 ACCESS TO FINANCIAL SERVICES MOROBE AND MADANG²⁵

		BANKS				S&Ls	MICRO-FINANCE
		ANZ	BSP	WBC	TOTAL		
Branches	Urban	3	4	2	9	2	2
	Township	0	1	0	1	0	2
ATMs	Urban	5	16	6	27	NA	NA
	Township	0	1	0	1	NA	NA
Agents/ In store	Urban	11	4	ND		NA	NA
	Rural	ND	23	ND		NA	NA

²⁵ Information sourced from financial services provider websites and BPNG.

Savings and Loan and microfinance institutions also have outlets in the provinces. Similar to the commercial banks and finance companies, S&Ls and microfinance organisations are located in urban and township locations. Post PNG has six outlets in Morobe and Madang, and also in urban or township locations.

Overall, for 1st Quarter 2015, Momase had a total of 2,579 formal financial services access points (including EFTPOS). Morobe province had 1,586 and Madang 475. The number of financial services access points has increased by 38.7 percent in Morobe and 18.31 percent in Madang over the last three year (2012–2015).²⁶

In addition to accessibility to financial services access points, households in urban and township communities in Morobe and Madang have access to a full range of formal financial services. Savings, long term savings and investment services and credit services (including asset finance) are offered by multiple financial services providers. Levels of competition have not been examined by the present study. However, a range of products, within product categories and price points, can be selected. Consumers in urban location appear to have both access and choice.

The situation in rural communities in both Morobe and Madang is very different to that of urban and township communities. Only one bank, BSP, has a rural agent network. The number of rural agents, relative to the rural population is, however small. A very significant proportion of the rural population in Morobe and Madang effectively have no, or very limited access to formal financial services. In addition, the range of financial services available to rural communities is very limited. Products and services are limited to those which can be offered by agents. Complex products and products which require financial advice prior to purchase (for example credit and long term savings products) have very limited availability. Overall, it appears most consumers in rural location in Morobe and Madang have neither access to formal financial services or a set of financial products and services from which to select an appropriate product.

²⁶ Source: Bank of PNG.

4. Financial Inclusion in Morobe and Madang

4.1. FACILITATORS OF FINANCIAL INCLUSION

In addition to examining use of financial services, respondents' confidence in communicating in English, both oral and written, and access to and ability to use a mobile phone was also examined.

Confidence with Communicating in English

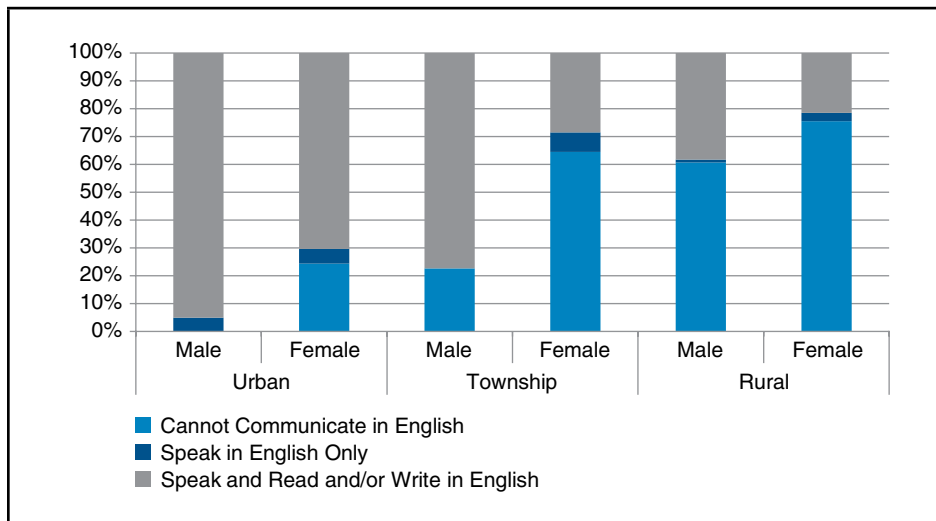
The ability to communicate in using English facilitates financial inclusion. The ability to communicate in English is not a pre-requisite for financial inclusion. It is likely many counter interactions will be undertaken in Tok Pisin. However, most documents are written in English. This includes account opening and contract documents, many brochures and EFTPOS and ATM receipts. The ability to communicate in English, in particular the ability to be able to read documents written in English facilitates financial inclusion.

Nearly 60 percent of respondents stated they could not communicate in English. Responses tended to bifurcate. Most respondents stated that either they could not communicate in English at all, or they could communicate in English both verbally and using written media (read and/or write). Very few respondents stated they could only speak English. Overall men were more likely than women to state they were able to communicate in English (46.8 percent of men compared to 26.1 percent of women). There were significant location based differences in respondents' confidence in communicating in English. Eighty-two percent (82 percent) of urban respondents and 56 percent of township respondents stated they could communicate in English, compared to 29 percent of rural respondents. All men and 75 percent of women living in urban communities stated they could speak English. By contrast only 38 percent of men and 23 percent of women living in rural communities stated they could speak English. The location and gender differences in respondents' confidence in communicating in English are summarised in Figure 18.

Use of Mobile Phones

The lack of financial services infrastructure in many rural communities suggests the extension of financial services to rural communities will require the use of mobile

FIGURE 18 CONFIDENCE IN COMMUNICATING IN ENGLISH



phone telephony, to both enable agents and merchants to connect to the payments system and to enable financial services customers to access their accounts. Access to a mobile phone and the ability to use mobile phone text functions therefore facilitates financial inclusion.

There are significant differences in the level of mobile phone ownership and ability to use mobile phone functionality between urban and rural communities and men and women. As discussed above, the 2009–2010 HIES found that, overall, 49.1 percent of households in PNG owned a mobile phone. A slightly lower percentage of households in rural communities reported owning a mobile phone (42.5 percent). By contrast 89.2 percent of households in urban communities reported owning a mobile phone. Overall it is considered likely the level of ownership or access to mobile phones in rural communities in PNG will have increased since the last HIES.

The present study found similar levels of mobile phone ownership to those reported in the 2009–2010 HIES. As shown in Table 3, in urban and township communities, access to a mobile phone is high. Most respondents who owned or had access to a mobile phone were also able to use the phone to text as well as using the phone for calls. By contrast, levels of mobile phone access in rural areas were low, particularly by women. This may be due, at least in part, to several of the CUs sampled having no mobile phone access.

Mobile phone capability was also more limited, again particularly by women. The combination of access and capability suggests that there is a high capacity for mobile phone based financial services in urban communities. At present, however, the capacity to extend mobile phone banking into rural communities may be constrained by access and capability issues, in particular for women. It appears that, without capacity development, approximately 30 percent of men and 10 percent of women living in rural communities in Morobe and Madang may currently be able to use a mobile banking service.

TABLE 3 OWNERSHIP AND USE OF MOBILE PHONES

	URBAN		TOWNSHIP		RURAL	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Own/access a mobile phone	94.40%	83.60%	96.60%	76.10%	48.40%	21.80%
Make calls and texts	85.90%	87.90%	80.50%	36.10%	61.20%	44.90%
Capacity for mobile phone banking	81.20%	73.50%	77.8%	27.5%	29.60%	9.80%

The remoteness of the rural community from an urban area does not appear to be a principal driver in mobile phone access and usage. Seventy three percent (73 percent) of respondents living within an hour of an urban area stated they owned or could access a mobile phone. This reduced to 40 percent for respondents living 1–3 hours, and 31.6 percent for respondents living 3–9 hours from an urban area. However 56.7 percent of respondents living more than 9 hours from an urban area stated they owned or had access to a mobile phone. It is, of course, likely the respondents' ownership/access to a mobile phone is related to the presence in the area of a mobile phone tower.

4.2. USE OF FORMAL FINANCIAL SERVICES

This section of the report examines the number of financial products owned by respondents, and the range of products owned across the following categories: Savings, long term savings and credit. Respondents' payment and remittance activity is also overviewed.

Number of Financial Products Owned

The number of financial products (both formal and informal) owned by respondents, varied significantly by gender, location and source of livelihood. As shown in Table 4, in rural communities 60.2 percent of men and 81 percent of women reported owning no financial product; by contrast, in urban communities men reported owning 3.4 financial products on average and women own only 1.3 financial products. There were significant differences in financial product ownership by principal source of livelihood. Perhaps not surprisingly, those in formal employment were significantly more likely to report owning financial products than those in informal employment. However, even within livelihood categories, men were more likely to report product ownership than women. Nearly 93 percent of men employed in the formal sector reported owning at least one financial product, compared to 66 percent of women. Whilst information on a specific occupation was not collected, it is possible the higher level of account ownership by men working in the formal sector may relate to employment in organisations which pay wages by credit to a bank account, rather than in cash.

TABLE 4 NUMBER OF FINANCIAL PRODUCTS OWNED²⁶

	URBAN				TOWNSHIP				RURAL	
	MALE		FEMALE		MALE		FEMALE			
	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	MALE	FEMALE
0	7.30%	22.30%	36.20%	43.90%	10.30%	25.00%	29.70%	66.40%	60.20%	81.00%
1	14.00%	21.30%	23.00%	35.10%	9.70%	50.00%	27.70%	16.80%	18.80%	9.20%
2	7.30%	10.20%	8.20%	10.00%	14.80%	0.00%	0.00%	16.80%	8.40%	5.10%
3>	71.40%	46.20%	32.70%	11.00%	65.20%	25.00%	42.60%	0.00%	12.60%	4.70%

Account ownership by urban and township respondents who were self-employed or working in the informal sector was lower than for respondents working in the formal sector (refer to Table 4). Levels of financial inclusion were, however, significantly higher than those reported by respondents employed in the informal sector in rural communities. Fifty-six percent (56 percent) of women and nearly 78 percent of men reported owning at least one financial product. Overall, whilst there continues to be a significant number of urban dwellers who do not have at least one financial product, in particular women, the large scale financial exclusion appears to be far more pervasive in rural communities than in urban communities.

Overview of Financial Products Owned

Financial products were grouped by category. The savings category included debit card based savings and transaction products, and passbook based products from banks, S&Ls and microfinance providers. The long term savings category included term deposits, provident/superannuation, unit trust/shares and life insurance. Credit included any form of formal credit and Protection covered house/contents or car insurance.

Overall, as shown in Table 5, those employed in the formal sector were more likely to own financial services in each of the product categories, in particular savings and long term savings. Men were more likely to report product ownership in each product category than women. Overall men were twice as likely as women to report product ownership.

²⁶ Responses by urban and township respondents are presented by gender and by livelihood. Rural respondents are presented by gender only as 88 percent of respondents were employed in the informal sector/self-employed.

TABLE 5 FINANCIAL PRODUCT OWNERSHIP BY CATEGORY

	URBAN		TOWNSHIP		RURAL		LIVELIHOOD	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED
Savings	68%	38%	83.60%	24.30%	21%	9%	62.30%	13.40%
Long term savings	56%	28%	45.40%	17.10%	10%	5%	59.70%	3.50%
Credit	50%	16%	13.00%	6.80%	6%	1%	25.50%	3.30%
Protection	8%	8%	0%	0%	2%	0%	2.00%	1.50%

Households in urban communities have access to a broad range of financial services from a range of financial services providers. Evidence from Morobe and Madang suggests that, whilst formal sector employment provides a pathway to ownership of a savings/transaction account and long term savings, 50–75 percent of urban respondents deriving informal sector income as their principal form of income were also likely to own at least a savings account. The majority of rural households, however, have little or no access to the formal financial system and own few financial products.

Payments and Remittances

This section examines modalities used for payment for goods and services purchased and the receipt of income, and also remittance modalities used by households, both outward and inward remittances.

Payments

As shown in Table 6, nearly all households reported incurring expenditure on day-day items, community and religious obligations and expenditure on education.²⁷ Not surprisingly few rural households reported expenditure for services (70 percent of urban household reported having mains electricity, compared to 7 percent of rural households)²⁸ and were less likely to incur expenditure for rent/lease payments or taxes. Overall, urban households and households in townships were more financially active and both more likely to incur expenditure across a wider range of expenditure categories and to be more likely to incur expenditure within each category.

²⁷ Any expenditure on education, not necessarily school fees.

²⁸ Refer to Appendix 4 Household Overview.

TABLE 6 HOUSEHOLDS INCURRING EXPENDITURE BY TYPE

	URBAN	TOWNSHIP	RURAL
Day-day items such as food or transport	97.40%	100%	98.40%
Bills (e.g. electricity or water)	61.40%	91.70%	9.60%
School or university fees	75.70%	78.30%	63.70%
Loan repayments	37.50%	35%	12.00%
Rent/lease payments	36.80%	21.50%	10.30%
Community/religious donations	91.90%	93%	80.10%
Levies or taxes ²⁹	36.30%	38%	19.40%

As shown in Table 7, the most common mode of payment for day-day expenditures and bills, irrespective of whether the household had an account, was cash. Nevertheless, approximately 21 percent of urban households and 12 percent of rural households that reported owning a card-based account also reported paying for day-day items using electronic payment. This suggests increased EFTPOS and ATM penetration is resulting in a change to payment behaviour irrespective of location, shifting payments away from

TABLE 7 PAYMENT MODALITY FOR EXPENSES INCURRED BY THE HOUSEHOLD

		HAS ACCOUNT			DOES NOT HAVE ACCOUNT		
		URBAN	TOWNSHIP	RURAL	URBAN	TOWNSHIP	RURAL
Day-day items such as food or transport	Cash	79.2%	95.5%	88.0%	95.2%	97.2%	99.1%
	Electronic—Bank	20.8%	4.5%	12.0%	4.8%	2.8%	0.7%
Bills	Cash	61.3%	81.5%	93.0%	88.4%	90.3%	100.0%
	Electronic—Bank	27.7%	18.5%	0.0%	11.6%	9.7%	0.0%
	Mobile phone	11.1%	0.0%	7.0%	0.0%	0.0%	0.0%
School or university fees	Cash	31.4%	74.0%	88.6%	49.2%	72.7%	91.0%
	Electronic—Bank	68.6%	26.0%	11.4%	50.8%	27.3%	8.2%
Loan repayments	Cash	17.1%	17.8%	41.3%	31.7%	0.0%	47.5%
	Electronic—Bank	78.2%	82.2%	58.7%	68.3%	100.0%	52.5%
Rent/lease payments	Cash	38.3%	39.5%	80.0%	84.2%	100.0%	92.5%
	Electronic—Bank	61.7%	60.5%	12.2%	15.8%	0.0%	7.5%
Community/religious donations	Cash	100.0%	100.0%	86.2%	100.0%	100.0%	96.2%
	In-kind/non-cash	0.0%	0.0%	13.8%	0.0%	0.0%	3.8%

²⁹ Includes formal taxation and community levies.

cash. The shift to electronic media is also evident in the use of mobile phone payment. In both urban and rural communities, households with a bank account were more likely to use the mobile phone to pay for services (7 percent of rural households and 11 percent of urban households).

The use of electronic (bank-bank) payment for school/university fees, loan repayments and rent/lease payments was common, irrespective of whether the household had an account. The reasons for this are not immediately obvious and follow-up research may be warranted (or perhaps included in further deployment of the financial capability survey) to determine how households who do not have a bank account make electronic payments (other than through the Post Office or a wire service). It is also possible there are language issues. As discussed in Chapter One, translation of financial constructs from English to Tok Pisin can be challenging due to the lack of construct equivalence.

Receipts

Patterns of income receipt varied between households in urban communities and those in rural communities. As shown in Table 8, urban and township households were significantly more likely than rural households to report receipt of wages (both formal and informal wages). Most households reported receipt of payments for sales. In urban households this appears to be primarily secondary income.³⁰ Urban households were also more likely to report receipt of rent/lease and interest income.

Payment for sales was primarily cash based, irrespective of location or whether the respondent had a bank account (refer to Table 9). A similar issue emerges in respect to receipt of wage/salary income (and also rental income in urban households) as discussed above for electronic payments by respondents who reported not owning a bank account. Reported levels of receipt of wages/salary to an account were high, even for respondents who reported they did not own an account. There are

TABLE 8 HOUSEHOLDS RECEIVING RECEIPTS BY CATEGORY

	URBAN	TOWNSHIP	RURAL
Wages/salary	59.70%	62.00%	15.00%
Payment for sales	75.30%	83.00%	95.00%
Royalty payments	7.50%	10.00%	6.40%
Rent/lease payments	22.60%	15.00%	8.40%
Interest	16.20%	18.30%	8.50%

³⁰ Refer to Appendix 4 Household Overview.

TABLE 9 RECEIPT TYPE FOR INCOME RECEIVED BY THE HOUSEHOLD

		URBAN		TOWNSHIP		RURAL	
		HAS ACCOUNT	DOES NOT HAVE ACCOUNT	HAS ACCOUNT	DOES NOT HAVE ACCOUNT	HAS ACCOUNT	DOES NOT HAVE ACCOUNT
Wages or salary	Cash	21.60%	15.10%	7.80%	17.60%	30.50%	64.10%
	Electronic—Bank	78.40%	84.90%	92.20%	82.40%	69.50%	35.90%
Payment for sales	Cash	100.00%	100.00%	100.00%	95.3%*	97.40%	99.80%
	Electronic—Bank	0.00%	0.00%	0.00%	0%	2.60%	0.20%
Royalty payments	Cash	50.00%	100.00%	100.00%	NA	80.80%	100.00%
	Electronic—Bank	50.00%	0.00%	0.00%	NA	19.20%	0.00%
Rent/lease payments	Cash	60.50%	68.80%	50.00%	20.50%	77.30%	100.00%
	Electronic—Bank	39.50%	31.20%	50.00%	79.50%	10.80%	0.00%
Interest	Cash	32.30%	100.00%	28.30%	NA	40.70%	87.90%
	Electronic—Bank	67.70%	0.00%	71.70%	NA	48.80%	0.00%
	In-kind/non-cash	0.00%	0.00%	0.00%	NA	10.50%	12.10%

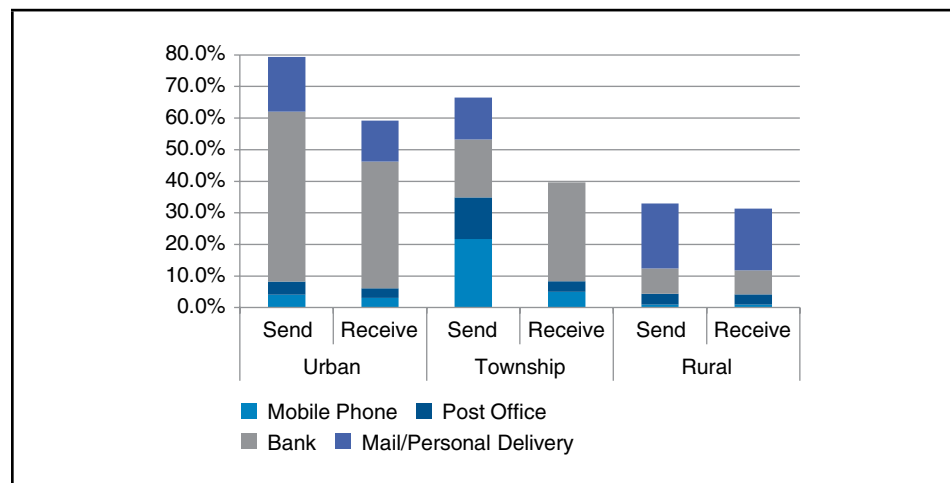
*in-kind 4.7%

instances where one member of the household reported receiving wages or salary by electronic transfer, but it was another member of the household who reported having a bank account. Further investigation is required and there may be value in adding questions to the national survey to explore payment and receipt using a third-party bank account. It is possible income received by household members who do not have a bank account is directed to a bank account held by another household member (within the context of this study typically the partner). It is also possible that some households bank accounts, irrespective of 'ownership', are managed or controlled by one member of the household who may receive income on behalf of other members of the household. The low level of cash receipt of wages/salary by township houses may be due to sampling (in particular Hospital and Forestry employment).

Remittances

Remittance activity (sending or receiving funds to a person in another location) was more common in urban households than rural households. As shown in Figure 19, nearly 80 percent of urban respondents stated they sent remittances and 60 percent that they received remittances. The most common method of sending or receiving a remittance in urban communities was by bank transfer. Interestingly approximately 5 percent of remittances were sent/received using the mobile phone. The use of the mail or personal delivery was also common. The PNG Financial Diaries Study (Stuart,

FIGURE 19 REMITTANCES SENT AND RECEIVED



Noggle, & Sibley, 2014) (also sponsored by BPNG) mapped domestic remittances from participants based in or proximate to Port Moresby, Goroka and Kimbe. The remittance transactions captured by the financial diaries study indicated participants made remittance transfers to a wide spread of locations across PNG. If the pattern found by the financial diaries study is replicated in Morobe and Madang, it is possible that remittance transfers to a large number of rural communities may need to be effected by mail or personal delivery, simply because there is no other way of effecting the remittance. The density of bank branches in rural communities is low across PNG, and Post PNG estimates 60 percent of the PNG population cannot access a postal outlet.³¹ This may also explain the relatively low level of SMK transfers cited by respondents.

Levels of remittance activity in rural communities, both sending and receiving funds, were approximately half those of urban communities. The dominant form of remittance was mail or personal delivery. As stated above, it is likely this is due to the lack of rural financial services and postal services infrastructure in many rural communities.

Savings

How Household Cash Is Kept Safe

In general terms, households that had a bank account tended to use the account for safekeeping of cash, whilst households which did not have a bank account tended to keep money hidden or in a locked box (or similar). Thirty four percent (34 percent) of rural households that had a bank account also kept money hidden. This may be due to the distance required to travel to an access point to lodge or withdraw funds.

³¹ Key Informant Interview Post PNG Operations manager.

Savings Accounts

Globally, 50–60 percent of adults in developing economies report owning an account at a bank or another type of financial institution (Demirguc-Kunt, Klapper, Singer, & Van Oudheusden, 2015). As shown in Table 10, in Morobe and Madang, whilst men are more likely to report savings account ownership than women, overall more than 40 percent of adults living in urban or township areas reported owning a savings account, primarily a savings account with EFTPOS and ATM capability. In rural areas less than 10 percent of the adult population reported owning an account, whether card based or passbook based.

The correlation between ownership of savings account and distance from the nearest bank branch is significant ($r = .229, p < .001$). The average distance to a bank branch for urban or township residents is estimated to be less than 5km, for rural residents it is estimated to be 38km (with a significant number of households living more than 38km from the nearest bank branch). The correlation between savings account ownership and formal employment is also significant ($r = .263, p < .001$). The two factors are, of course related given the concentration of formal employment in urban areas. The relationship between account ownership and distance to a bank branch is shown graphically in Figure 20.

TABLE 10 SAVINGS ACCOUNT OWNERSHIP

	URBAN		TOWNSHIP		RURAL	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Savings/cheque (debit card)	55%	28%	52%	24%	10%	8%
Savings (passbook)	32%	13%	49%	4%	14%	1%

FIGURE 20 BANK ACCOUNT OWNERSHIP AND DISTANCE TO NEAREST BRANCH

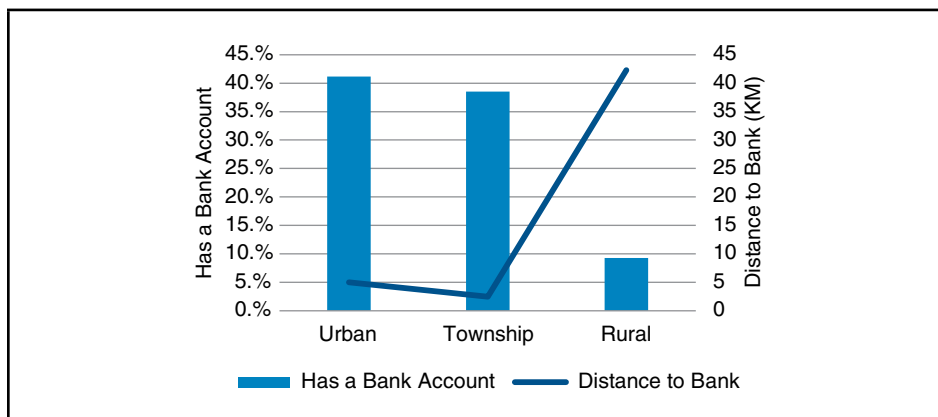
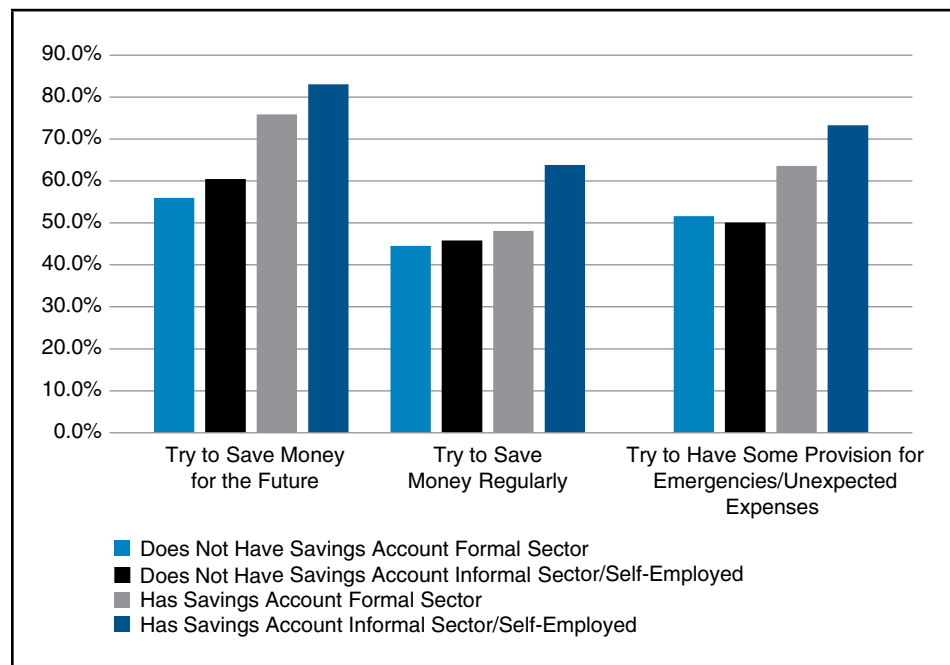


FIGURE 21 PROPENSITY TO SAVE



There is an overlap in the type of savings account owned, 21 percent of debit card based savings account owners also reported owning a passbook account. Dual account ownership was reported for both urban and rural households, and for formal and informal sector livelihoods. Commercial banks in PNG no longer offer passbook based accounts, whilst other financial institutions (in particular microfinance banks) continue to offer passbook based savings account. This suggests up to one in five adults who have an account at a commercial bank may also have an account at another regulated financial institution.

There is tentative evidence that ownership of a savings account increases the propensity to save. As shown in Figure 21, irrespective of whether income is derived from (regular) formal sector wages or salary or (more intermittent) informal sector employment or self-employment, households that have a savings account are more likely to endeavour to save money regularly for the future and to have a provision for emergencies or unexpected expenses.

Long Term Savings and Investments

Ownership of long term savings products, in particular provident fund membership, is associated with employment in the formal sector. Sixty percent (60 percent) of adults employed in the formal sector reported having some form of long term savings

TABLE 11 LONG TERM SAVINGS OWNERSHIP

	URBAN		TOWNSHIP		RURAL	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Fixed term deposit	11%	0%	0%	0%	2%	1%
Unit trust/shares	14%	6%	6%	0%	4%	1%
Life insurance	25%	8%	0%	0%	2%	1%
Provident/ superannuation	44%	25%	45%	17%	7%	4%

product, compared to 3.5 percent of adults employed in the informal sector. Whilst respondents cited ownership of a range of long term products, issues with translation to Tok Pisin may result in the blurring of categories, in particular between provident/superannuation, life insurance and unit trusts.

Approximately 50–55 percent of formal sector employees reported having a provident or superannuation account. The reasons why 45–50 percent of adults who reported formal sector employment did not also report membership of a provident/superannuation fund are not known. It is possible adults who did not report provident fund membership may have been primarily casual wage workers, or employed in small firms.³² As shown in Table 11, the gender-based difference in employment patterns results in men being significantly more likely to report owning long term savings and investment products than women, irrespective of location.

Credit

The Global Findex (Demirguc-Kunt, et al., 2015) found approximately 9 percent of adults in developing countries reported borrowing from a formal financial institution. The present study found approximately 7 percent of households reported some form of formal credit obligation. Urban households were significantly more likely to report a formal loan than rural households (32 percent of urban households, compared to 3 percent of rural households). Within the context of urban households, formal credit obligations are more common in households in which the principal source of income was formal sector wages/salary (42 percent of households) than informal sector income (24 percent of households).

Whilst it is possible that one in five urban households has a secured loan and approximately one in four households has a business loan (refer to Table 12), the levels

³² Provident contribution is only mandatory for employees in firms with at least 10 employees.

TABLE 12 FORMAL CREDIT OBLIGATIONS

	URBAN		TOWNSHIP		RURAL	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Commercial/development loan	27%	7%	0%	7%	3%	1%
Secured personal/house loan	20%	6%	13%	0%	1%	1%
Unsecured personal/house loan	11%	3%	6%	0%	2%	0%
Credit card	8%	3%	0%	7%	4%	0%

of reported urban formal sector credit should be regarded as tentative, in particular when compared to levels of insurance policy ownership (which would usually be associated with security commitments for formal loans). Once the national study has been completed, levels of reported formal sector borrowing should be correlated to levels of consumer lending by banks, savings and loans and microfinance institutions (and potentially finance companies).

Protection

Levels of home and car insurance were measured by the present study and very low levels of insurance were reported. Less than two percent (2 percent) of households in Morobe and Madang reported owning house or motor vehicle insurance. Approximately 8 percent of urban households reported having an insurance policy, compared to 1 percent of rural households. The level of insurance is significantly lower than the reported level of secured borrowing (and underscores caution in respect to reported levels of secured borrowing).

There would appear to be a lot of work to be done in order to progress the use of insurance generally in PNG. Anecdotal evidence³³ indicates the issue of very low levels of insurance may be pervasive in PNG and may not be limited to insurance over domestic property.

4.3. BARRIERS TO FINANCIAL SERVICES USAGE

Access to Financial Services

It is evident that many households in Morobe and Madang, in particular rural households, have limited engagement with the formal financial sector. The estimate of 85 percent of the adult population being excluded from the formal financial sector

³³ Key Informant Interview Insurance Commissioner.

appears to be generally valid for Morobe and Madang. Banks are the only participants in the payments system and therefore debit card issuers. The present study has found levels of debit card based savings account ownership to be 15 percent. Overall 22 percent of the population of Morobe and Madang reported owning some form of savings account.

Whether a narrow measure or broad measure of account ownership is used, the figure masks a *very* major difference in levels of financial exclusion across Morobe and Madang. Urban households, whether deriving income from formal sector employment or participation in the informal sector, exhibit levels of financial inclusion (as measured by account ownership) similar to or greater than those typically found in developing countries. It is to be expected households deriving income from formal sector employment will be more likely to own a bank account and to have some form of long term savings (primarily provident). This appears to be the case for households deriving formal sector income in Morobe and Madang, irrespective of whether the household is located in an urban or rural location. However, formal sector employment in rural communities is limited. Overall, levels of financial inclusion in rural communities are *very* low.

The principal issue appears to be lack of rural financial services infrastructure. Most rural households simply cannot access the formal financial system. The difference in the use of formal financial services between urban and rural communities is pervasive across all product categories. Households in rural communities that have a bank account are more likely to use cash for payments and less likely to remit or receive money electronically than urban households, are significantly less likely to keep cash safe in an account, are less likely to have long term savings and less likely to have a formal loan.

Gender

Women in PNG appear to be significantly more likely to be financially excluded than men and, if women do have an engagement with the formal financial sector, the scope of the engagement is generally more limited than for men. The gender gap in respect to the ownership of financial services appears to be significantly larger in Morobe and Madang than is typical for countries other than PNG. Globally 58 percent of women reported owning a bank account, compared with 65 percent of men, a 7 percentage point difference.³⁴ Levels of financial inclusion (as measured by ownership of a bank account) are lower in Morobe and Madang than the global average. However, as discussed above, in urban households levels of account ownership are significantly

³⁴ <http://www.wsj.com/articles/financial-inclusion-gender-gap-persists-for-bank-account-holders-1429128001>.

higher than in rural communities. Sixty eight percent (68 percent) of men and 38 percent of women in urban households reported owning some form of savings account.

Levels of financial inclusion, across all product categories are lower for women than for men. In part this can be explained by the greater percentage of women earning informal income. However, even for women earning formal sector income, levels of participation in the formal financial sector are lower than those of men. The reasons for this cannot be attributed solely to access. Most households in urban areas need to travel less than 5km to access financial services. The present study has sought to develop an understanding of levels of financial inclusion and product usage. The study has not sought to explain why there is such a pervasive and persistent difference in levels of financial inclusion between men and women, and the range of factors which appear to exacerbate gender difference in financial inclusion in urban communities. The issue is significant and it is possible that, as levels of financial inclusion increase across PNG generally, the gender gap will continue to widen. Further investigation is required to understand gendered drivers of financial exclusion and to facilitate the development of programs to bring greater numbers of women into the formal financial system. Nevertheless, reported urban levels of account ownership by men suggest financial inclusion programmes in Morobe and Madang should focus on women living in urban communities and focus on both men and women living in rural communities.

Affordability

The cost of financial services is often cited as one of the principal reasons for financial exclusion in PNG, in particular financial exclusion by poor and low income households. It is not uncommon, for example, when conducting focus groups to be advised that a member of the focus group either has opened a bank account, or knows someone who has opened a bank account and deposited a sum of money, and then checked the balance sometime later to find the account had been closed as fees had extinguished the balance.³⁵ The veracity of these statements has never been tested.

Typical financial account transaction patterns for poor households in PNG are not known. The PNG Financial Diaries Study suggested 2–3 account transactions per month (one deposit and two withdrawals). However levels of account ownership by participants in the study were very low. In an effort to develop some understanding of the likelihood of account affordability, two transaction scenarios were modelled against the poverty line. It was assumed a household living on the poverty line has a basic bank account and undertakes the following transactions:³⁶

³⁵ This occurred during the development of the Financial Capability Survey instrument.

³⁶ It is stressed the model is tentative and does not reflect actual account usage patterns.

	SCENARIO 1— HIGH TRANSACTION	SCENARIO 2— LOW TRANSACTION
Teller deposit	1 per week	1 per fortnight
ATM withdrawal	2 per week	1 per week
Bill payment (electronic or mobile)	3 per month	NA

Scenario 1: Regular receipt of funds, savings and payments

Scenario 2: Savings only

The poverty line for PNG varies between NCD (Port Moresby) and the rest of PNG. The poverty line in NCD is estimated to be approximately PGK3500pa. The poverty line for the rest of PNG is estimated to be approximately PGK1700pa (World Bank, 2012). The annual cost of financial services (the sum of account keeping and transaction fees) was modelled for the highest cost basic commercial bank account and lowest cost basic commercial bank account³⁷ currently available in Morobe and Madang. Annual account costs are shown in Table 13.

Account keeping costs could range between 3 percent and 22 percent of household income at poverty line if an account is used for savings only and 8 percent and 40 percent of household income at poverty line if an account is used for regular receipt of funds, savings and bill payments. The model suggests the affordability of financial services may be a function of access to a range of financial services. If the lowest cost option is available to poor and low income households, it is likely a significant number of households would be able to afford a basic bank account for savings. The individual income estimates provided by participants in the present study suggest higher levels of affordability.

TABLE 13 ESTIMATE OF BANK ACCOUNT COSTS AS PERCENT INCOME FOR A HOUSEHOLD ON THE POVERTY LINE

		SCENARIO 1— HIGH TRANSACTION		SCENARIO 2— LOW TRANSACTION	
		LOW COST	HIGH COST	LOW COST	HIGH COST
Account cost \$PGK	Per year	\$288	\$688	\$117	\$374
	Per week	\$6	\$13	\$2	\$7
Account cost as percent of household income at the poverty line	NCD	8%	20%	3%	11%
	Rest of PNG	17%	40%	7%	22%

³⁷ Only basic accounts from commercial banks were modelled. Costs would be lower for microfinance or S&Ls.

4.4. USE OF INFORMAL FINANCIAL SERVICES

Understanding of the pervasiveness and use of informal financial services in PNG, both savings and credit, is limited. The financial capability survey collected information in respect to product ownership. Information was not collected in respect to transaction frequency, cost and functionality. The pervasiveness of informal financial services, particularly in rural areas where formal financial services are commonly not available, suggests further research may be warranted.

Savings

Evidence from the present study suggests informal savings is associated with employment (refer to Table 14). Respondents were asked if they participated in a Sunday-Sunday and, in addition to being asked about provident/superannuation savings, respondents were asked if they saved using a scheme provided by their employer. A previous study³⁸ had found employees working on a plantation used an employer provided savings scheme to provide for their children's education. As has been stated in other sections of this report, there are construct issues translating financial terms from English to Tok Pisin. Nevertheless, 34 percent of respondents who stated they contributed to provident/superannuation also stated they saved with their employer. Even allowing for some misinterpretation between employer provided savings, employment based 'Sunday-Sunday' schemes and provident/superannuation contributions, informal savings appears to be closely related to formal sector employment, irrespective of the modality.

Credit

Global evidence indicates adults in developing countries are more likely to borrow from family and friends than other sources. Demirguc-Kunt and colleagues (2015), reviewing Global Findex data found borrowing from family and friends to be the most common source of finance for people in all countries other than high income

TABLE 14 INFORMAL SECTOR SAVINGS

	INFORMAL SECTOR	FORMAL SECTOR
Savings with an employer	1.70%	28.80%
Sunday-Sunday savings	3.00%	8.30%

³⁸ The financial competency study in Port Moresby, Mekeo and Galley Reach.

countries. Findex data indicates 29 percent of adults reported borrowing from family or friends. In several regions more people reported borrowing from a store than reported borrowing from a financial institution. Less than 5 percent of adults around the world reported borrowing from a private informal lender (Demirguc-Kunt, et al., 2015).

As shown in Table 15, levels of borrowing from money lenders found in Morobe and Madang are similar to levels found in countries other than PNG. The characteristics of money lending in PNG are not well understood. Information tends to be anecdotal and is frequently pejorative, equating money lending with loan sharking. Evidence from the focus groups undertaken as part of the development of the financial capability survey instrument indicated that, at least in some rural areas, money lending may not be loan sharking but may be means of augmenting household income as well as being a source of funding for the household: adults in households with surplus liquidity lent the money to households with a liquidity shortfall.

As shown in Table 15, levels of borrowing from family/friends are lower in the present study than those found by the Global Findex, and slightly lower than those found in other Pacific island studies. This may be because the financial capability study (and the financial competency studies in several Pacific island countries) has only examined borrowing from family and friends that must be repaid and does not include loans which create a reciprocal, rather than financial, obligation.

Store credit is an important form of short term finance, in particular for rural households. Anecdotal evidence indicates store credit is typically interest free and the duration is typically days or, at most, weeks. The characteristics of stores which provide store credit (or do not provide store credit) and importantly, the impact of store credit on the viability of trade-stores is not well understood. The levels of store credit found by the present study are significantly lower than those found in other studies in PNG and other Pacific island countries. To some extent this may be due to location differences; the Morobe/Madang study is the only study to explore financial

TABLE 15 INFORMAL SECTOR BORROWING

	MOROBE/ MADANG	PACIFIC
Informal loan (money lender)	6%	6–9%
Loan from family/friends (that has to be repaid)	9%	12–14%
Store credit	15%	32–36%

behaviour in remote rural communities. To some extent it may be due to sampling (the PFIP financial competence studies only examined low income communities). To some extent the lower level of reported use of store credit may be due to a (common) misunderstanding that purchase of goods with deferred payment is a form of credit.

Overall 34 percent of urban households reported formal borrowing and 24 percent informal borrowing. By contrast 3 percent of rural households reported formal borrowing and 18 percent informal borrowing. It would seem there has been little change in rural households' borrowing behaviour over the past twenty to twenty five years. Fernando, in a review of informal finance in PNG (1992),³⁹ noted that in rural areas the major sources of credit appeared to be members of borrowers' extended families and clans, and trade-store owners who extend credit for consumption purposes.

4.5. RESPONSIBILITY FOR SELECTION OF FINANCIAL PRODUCTS

Overall, 37 percent of household financial decision makers stated they were involved in the selection of financial products used by the household. However, thirty nine percent (39 percent) of households stated no one was responsible for financial product selection. There were significant gender differences within households. Approximately half of the men who made financial decisions on behalf of their household stated they were involved (individually or jointly with their partner) in the selection of household financial products. By contrast only a quarter of women stated they were involved in financial product selection. A further 28 percent of women stated they were not involved in the selection of financial products and that this was an activity for which their partner was responsible (less than 2 percent of men stated their partner was solely responsible). The gender difference was further amplified in urban households. Sixty eight percent (68 percent) of men living in urban households stated they were solely responsible for the selection of the household's financial products, compared to 14 percent of women.

Overall women are less involved in all forms of household financial product selection. Women's principal source of livelihood appears to play a role in encouraging active engagement in household financial product selection (as it does in with participation in the formal financial sector generally). As shown in Table 16, whilst overall women were more likely to state their partner was responsible for financial product selection, women employed in the formal sector were three times more likely to state they were

³⁹ Cited in Conroy (Conroy, 2000, p. 230).

TABLE 16 RESPONSIBILITY FOR FINANCIAL PRODUCT SELECTION

	MALE		FEMALE	
	INFORMAL SECTOR	FORMAL SECTOR	INFORMAL SECTOR	FORMAL SECTOR
Respondent only	30.7%	63.0%	5.6%	49.3%
Respondent (solely or with someone else)	43.6%	87.5%	17.9%	58.1%
Respondent's partner (solely or with someone else)	2.0%	4.5%	29.8%	27.2%
Nobody at all	46.8%	8.0%	45.9%	14.7%

involved in the selection of household financial products than women working in the informal sector. Overall, formal sector employment also appears to influence active engagement in the selection of financial products. Formal sector employees were 3–6 times less likely to state no one in the household was responsible for financial product selection than those who derived their income from the informal sector or self-employment.

5. Financial Capability in Morobe and Madang

Financial capability encompasses a broad range of financial knowledge and skill, behaviour and attitudes. As discussed in Chapter Two, the present study has sought to develop an understanding of the financial capability of adults in Morobe and Madang. The Morobe and Madang dataset will contribute to the national dataset. The following analysis has examined financial capability, with a particular focus on gender differences, differences between rural and urban households and differences between respondents whose primary source of income was from formal sector employment and respondents whose primary source of income was from the informal sector or self-employment. Four aspects of financial capability have been examined: the planning and management of current cash flows, the planning and management of future cash flows, responsibility for management of the household's cash flows, and interactions with financial institutions.

5.1. MANAGING CURRENT HOUSEHOLD CASH FLOWS

Planning and Budgeting Household Cash Flows

Household Plans and Budgets

Most households (60 percent) reported planning how income would be used. However, most households (55–75 percent) that reported planning the use of income also reported the plan was only a 'rough plan'. In addition, most households (70 percent) only planned sometimes and less than a quarter of households stated they always kept to the plan. Households in urban communities and those receiving formal sector wages or salary were more likely to report planning cash flows (75 percent of households) than rural households and households receiving informal sector income as the primary source of income (55 percent of households), and were more likely to state that management of cash flow was always planned (50 percent of households).

Overall, whilst many households considered they planned cash flows; in effect households that planned typically did so informally and intermittently. A similar picture emerges in respect to household budgeting. Between 40 percent and 70 percent of

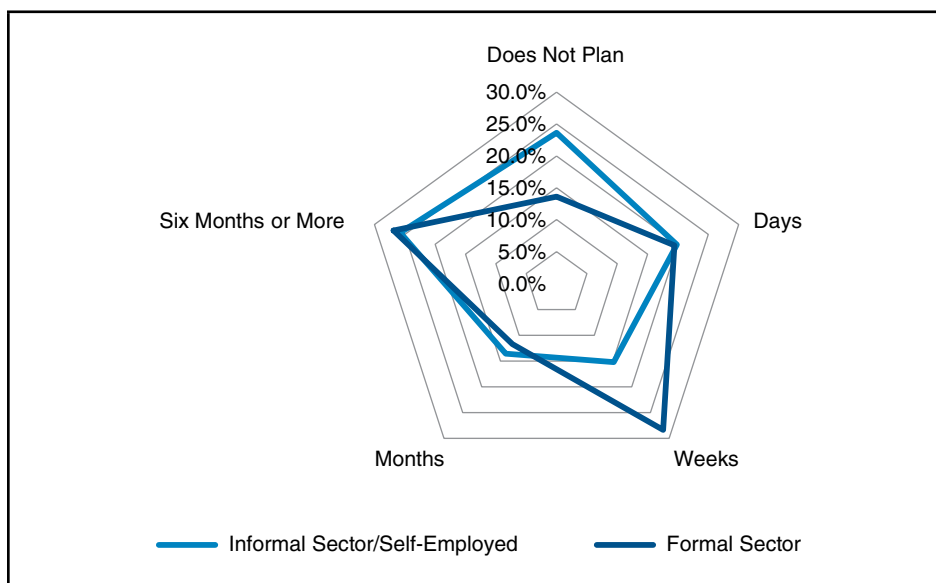
households reported the household had a budget to manage household cash flows. Households living in urban communities and engaged in the formal sector employment were more likely to budget. However, most budgets were not written down.

In general, it appears most households in Morobe and Madang endeavour to plan and budget household cash flows. Planning and budgeting is therefore an activity which is acknowledged as important. However most plans and budgets appear to be general and are neither written down nor usually adhered to.

Planning Horizon

There was a difference in the planning horizon between respondents whose primary source of income was formal sector employment and respondents whose primary source of income was informal or self-employment. As shown in Figure 22 approximately 25 percent of respondents stated they planned ahead six months (or more) and 12–14 percent of respondents stated they planned several months ahead. The planning horizon appears to be influenced by the income cycle. Respondents who derived their income principally from formal sector employment were more likely to adopt a planning horizon spanning a week or several weeks. This is likely to coincide with the wage or salary cycle. By contrast respondents who derived their principal income from the informal sector were more likely to state they did not plan ahead.

FIGURE 22 PLANNING HORIZON



Responsibility for Management of the Household Budget

In most households at least one person accepted responsibility for management of the household budget. Less than 2 percent of households stated no one was responsible for the management of the household budget. Men appear to be more engaged in planning and budgeting household cash flows than women and were more likely to state they were responsible for the management of the household budget than women. Overall 88 percent of men, compared to 57 percent of women stated they were responsible for the household budget, either solely responsible or with their partner. Women were 2.5–3.0 times more likely than men to say they did not plan ahead. The lower level of engagement by women in the management of household finances is consistent across all aspects of financial capability examined by the financial capability study. It is not simply that women are less likely to own a bank account than men, but that, overall, women are less engaged in the management of money than men. Confidence with the use of English in communication and primary source of employment may contribute to a lower level of formal financial product ownership. However, irrespective of, for example, primary source of income, women appear to have a subordinate role in the management of household finances.

Management of Household Expenditure

Management of Cash Surplus

Slightly more than half of the households stated they had money left over after meeting household expenses at least some of the time. Households with formal sector income were more likely to state the household has a surplus than households which did not earn formal sector wages or salary (87 percent of households earning formal sector income, compared to 64 percent of households with only informal sector income). The pattern was similar for urban and rural households, and for men and women.

Households typically saved the surplus to provide for unforeseen expenses for example emergencies or medical fees (30–50 percent of households), or for food and other necessary items (30–45 percent of households). Households also spent the surplus on food and other necessary items (20–35 percent of households). Interestingly, 20 percent of households earning formal sector income stated the surplus was used to support other family members.

Management of Cash Deficit

By contrast 80–90 percent of households reported running short of money after meeting household expenses. Households which only had informal sector income were likely to state the house ran short of funds. As shown in Table 17, a range of causes were cited. All households cited a range of expenditure related causes. Households whose principal source of income was informal sector or self-employed

TABLE 17 REASONS FOR HOUSEHOLD CASH SHORTAGE

	URBAN		TOWNSHIP		RURAL	
	INFORMAL SECTOR/SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/SELF-EMPLOYED	FORMAL SECTOR
Insufficient/low income	33%	18%	31%	61%	42%	23%
Fluctuating/unreliable income	6%	0%	27%	4%	35%	18%
Unexpected expenses/events	38%	22%	23%	22%	11%	32%
Increased cost of food and other necessary items	20%	26%	19%	14%	18%	27%
Need to provide financial help to others	24%	23%	15%	14%	6%	37%
Overspending	31%	44%	27%	37%	16%	34%
Failure to plan ahead/budget	31%	26%	31%	11%	34%	24%

also, not surprisingly, cited income related causes. However, only 4 percent of rural households cited the inability to get to the market as a principal cause of cash shortage. Failure to plan was one of the most commonly cited causes of the household running short of money.

The most common action taken when the household ran short of funds was to borrow money from family or friends, 'sell something' (particularly rural households) or to simply go without essentials. Between 17–30 percent of households earning formal sector income also stated they would borrow from a money lender, or from their employer.

Overall, there appears to be a different pattern used by urban and rural households in respect to funding cash shortfalls. All households stated they would seek to borrow from family or friends. Urban households tended to also state they would borrow money, whereas rural households tended to state they would seek to earn more money.

Overall, however the use of credit to pay for food or other necessary items because the household had run short of money was common. Between 50–60 percent of households, irrespective of location or primary source of income, reported using credit or borrowing money to buy food if there was a cash shortfall.

The pattern of urban households being more willing to borrow money to manage cash shortfalls is also reflected in the use by urban households of credit to repay existing debts. Thirty percent (30 percent) of urban households stated they borrowed money to

TABLE 18 HOUSEHOLD BORROWING LIMIT

	RURAL HOUSEHOLDS, INFORMAL INCOME	URBAN HOUSEHOLDS, FORMAL SECTOR INCOME
I/we could afford to borrow more if I/we wanted or needed to	9.4%	30.8%
I/we have borrowed to my/our limit and could not afford to borrow more	46.0%	44.6%
I/we have borrowed more than I/we can really afford	39.4%	22.2%

repay outstanding obligations and were 2–3 times more likely to state money would be borrowed than rural households. Men were more likely to state they borrowed to pay existing debts, reflective perhaps of the greater control exercised by men over household cash flows and financial obligations

There is a perceptual difference in the ability to borrow additional funds. As shown in Table 18, urban households earning formal sector wages or salary tended to consider they or their household could borrow more money if required and were less likely than rural households to consider the household had borrowed more money than could be afforded.

Overall, women appear to be less confident about household borrowing than men. Sixty percent (60 percent) of women considered they or their household had borrowed to the limit, compared to 25–35 percent of men.

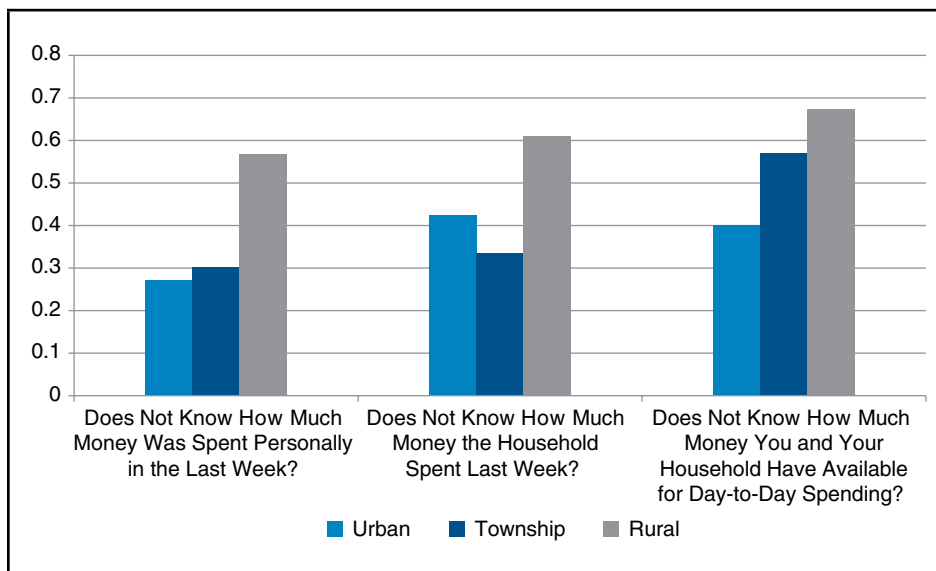
Knowledge of Cash Position and Spending

As shown in Figure 23, there is a difference between urban and township households (which have a higher proportion of adults earning formal sector income) and rural households (which earn primarily informal income). In addition to being more likely to plan ahead, urban households appear to be more likely to know the household's cash position and how much has been spent, both individually and in respect to the household generally. This is indicative of a pattern: households in urban or township communities are more focused on money, and within this context the monitoring and management of money, than rural households.

Self-Discipline Cash Flow Management

Respondents were asked how disciplined they considered they were at managing money. This is not a measure of self-discipline *per se*, but an indication of respondent's confidence in their ability to control their management of money. Three aspects of self-discipline were considered: how disciplined the respondent was at managing

FIGURE 23 KNOWLEDGE OF SPENDING



money generally, whether the respondent learned from other's mistakes at managing their money, and the respondent's propensity to spend on unnecessary items.

The pattern of responses was similar: most adults considered they were very disciplined at managing money; that they learned from other's mistakes and only rarely, or at most occasionally, that they bought things they knew were not necessary before buying essentials, or bought unnecessary items even when they knew they could not afford the item. Urban respondents tended to regard themselves as more disciplined than rural respondents. Men tended to regard themselves as more disciplined than women did, and less likely to purchase unnecessary items.

5.2. PLANNING FUTURE HOUSEHOLD CASH FLOWS

Three aspects of the planning future household cash flows were examined: planning for major future expenses (both expected and unexpected), planning for the children's future and planning for older age.

Planning for Major Future Expenditure

Expected Future Expenses

About half of the households surveyed stated they expected to incur a major expense (equivalent to at least one month's household income) at some time over the coming year. Households in urban communities, in particular households earning formal sector wages or salary as a primary source of income were more likely than rural households

to state the expense could be met without borrowing (50–60 percent of urban households compared to 40 percent of rural households). Households with a savings account were slightly more likely to state the expense could be met without recourse to borrowing.

Most households which stated the expense could not be met without borrowing also stated they had not done anything to be able to meet the expense (50–60 percent of households). There was little difference in responses between men and women, although women were more likely to state they were worried about meeting the expense. Rural households were also more likely to express concern about their ability to meet the expense.

Unexpected Future Expenses

Overall, 70 percent of households stated they would not be able to cover a major unexpected expense without borrowing. Most households (77 percent) had not done anything to be able to meet an unexpected major expense.

Whilst ownership of a savings account did not appear to be a significant factor in household's ability to meet expected expenses, households with a savings account were more likely to state the household could pay a major unexpected expense (equivalent to at least one month's household income) without having to borrow money. Seventeen percent (17 percent) of households that did not own a savings account stated they expected to be able to cover the expense, compared to 35 percent of households with a savings account. Nearly all households (90 percent) expressed concern about the household's ability to cover a major unexpected expense.

Planning for Children's Future

Households typically had been between 3–3.5 dependent children. Rural households tended to have slightly larger families than urban households. Respondents were asked if the household had planned, or was planning for the children's future.⁴⁰ Most households reported planning for their children's future in some way. Urban households were more likely to report they were planning than rural households (90 percent of urban households compared to 70 percent of rural households). Households which were planning for their children's future typically used more than one form of provision. Table 20 shows the percentage of households which reported using each strategy ('cited') and for each strategy the percentage of respondents who also reported using other means of provision for the children's future. As shown in

⁴⁰ Responses were pre-coded and read to respondents.

TABLE 19 PLANNING FOR CHILDREN'S FUTURE

	CITED	ALSO CITED					
		1	2	3	4	5	6
1. Saving money for children's education	44%		37%	15%	13%	9%	41%
2. Saving money to pass on to children	20%	84%		26%	20%	15%	41%
3. Investing money to pass on to children	8%	82%	62%		23%	29%	38%
4. Investing in land/buildings to pass on to children	9%	64%	42%	21%		25%	43%
5. Investing in business to pass on to children	6%	67%	49%	41%	39%		30%
6. Planning for children's future in other way	33%	56%	24%	10%	12%	5%	

Table 19 the most common form of planning for the children's future was to save, in particular to save for the children's education. One third of households stated they were planning for the children's future in an unspecified way. However, over half of these households also reported saving for education. The second most common strategy was also savings based (saving money to pass on to the children).

As shown in Table 20, most households used cash based provision for the children's future. Similar to the longer planning horizon adopted for the management of household cash flows by households with formal sector wages or salary as a principal source of income, these households were more likely to cite longer term strategies (investment) than households which relied on informal sector income or self-employment.

TABLE 20 PLANNING FOR THE CHILDREN'S FUTURE BY PRINCIPAL SOURCE OF INCOME

	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED
Saving money for children's education	56%	40%
Saving money to pass on to children	31%	17%
Investing money to pass on to children	30%	4%
Investing in land/buildings to pass on to children	8%	9%
Investing in business to pass on to children	10%	4%
Planning for children's future in other way	28%	33%

Planning for Older Age

The generic financial competency survey includes a section examining the strategies used to plan for older age when the respondent is no longer working due to age. The section has two paths: one for respondents under the age of sixty, the second for respondents over the age of sixty. The difference in the paths being that the questions for respondents over the age of sixty assume the respondent is no longer working. It was acknowledged during the development of the instrument that the use of a common age for 'retirement' was somewhat arbitrary.

This approach used by the generic financial capability survey to developing an understanding of planning for older age is problematic for PNG for two reasons. Firstly, life expectancy in PNG is 60 years men and 65 years women,⁴¹ with the probability of dying between 15–60 years of 31.9 percent for men and 24.3 percent for women. In absolute terms, therefore, the number of Papua New Guineans over the age the sixty is likely to be very low. This has been the case with the survey in Morobe and Madang provinces. Only 5.4 percent of respondents were 60 years or older. Secondly, and perhaps more importantly within the context of many Pacific island countries, the concept of retirement is derived primarily from the emergence of formal employment and social security in Europe. Retirement provision has become an important policy issue in many developed countries, in particular countries with an aging population and in which most adults earn salary or wage income and the state typically makes some form of provision for citizen's old age. However, the concept of 'retirement' from the workforce does not have the same meaning in the context of Morobe and Madang in which most people live in a rural community which has a high subsistence and self-generated income component and have no expectation of becoming eligible for a pension, whether state or private provision, at a specified age. There is currently only one old age social pension scheme in PNG, the pension scheme provided by New Ireland province for residents sixty years and older. The provident funds in PNG are solely for wage and salary earners.

Typically in Papua New Guinea, people must work until they are no longer able to work. The generic English language question used by the survey is; "what strategies do you have for meeting your/your household's expenses in your old age?" The issue is not age per se, but how people expect to meet expenses when they are no longer able to work due to age. The question used for no longer working used the following To Pisin construct: "taim yu no wok moa bikos yu lapin pinis," with 'old' being self-determined.

Overall, a significant percentage of respondents stated they had no strategies to meet their or their household's expenses when they were no longer able to work due to

⁴¹ www.who.int/countries/png/en/.

age. Forty four percent (44 percent) of respondents had no strategy and therefore did not know how they would meet expenses when they were no longer able to work.

Table 21 shows respondents' expected means of meeting expenses when they can no longer work due to age. The table shows the percentage of respondents who reported each expected strategy ('cited') and for each strategy cited the percentage of respondents who reported they also expected to use other strategies to meet expenses. As shown in Table 22 most respondents expect to use multiple sources to fund their expenses. The issues associated with the concept of 'not working' can be seen in the pattern of responses. The most common response was that respondents expected to earn income from a business. As shown in Table 23 this response was frequently provided by men who derived their principal source of income from the informal sector or self-employment and who already earned business income. Approximately one quarter of respondents expected to receive support from others. The combination of financial support and business income were the most common strategies respondents expected to use to fund expenses when they were no longer working.

Most respondents stated the strategies they expected to use to fund expenses when they were no longer working were already in place. As shown in Table 22, there were important differences in the pattern of responses. Respondents whose principal source of income was informal sector were significantly less likely to state they would use savings or long term savings (for example provident fund) to meet expenses. Men were significantly more likely to state they would use an inheritance to meet expenses. The reasons why only men stated they would be able to access inheritance

TABLE 21 EXPECTED MEANS TO MEET EXPENSES WHEN NO LONGER WORKING DUE TO AGE

	CITED	ALSO CITED								
		1	2	3	4	5	6	7	8	9
1. Financial help/support	26%		12%	6%	2%	0%	10%	31%	36%	2%
2. Savings/other financial assets	13%	25%		17%	3%	6%	12%	18%	48%	7%
3. Employer superannuation	7%	25%	33%		6%	6%	0%	17%	29%	10%
4. Other superannuation	2%	33%	25%	25%		8%	0%	34%	27%	0%
5. Insurance	1%	0%	100%	60%	20%		20%	0%	19%	20%
6. Sale of non-financial assets	8%	34%	20%	0%	0%	2%		29%	58%	8%
7. Inheritance	13%	61%	17%	9%	4%	0%	17%		48%	5%
8. Business	31%	31%	20%	6%	1%	0%	15%	21%		7%
9. Will always work	3%	20%	35%	26%	0%	6%	24%	24%	79%	

TABLE 22 CURRENT AND EXPECTED STRATEGIES

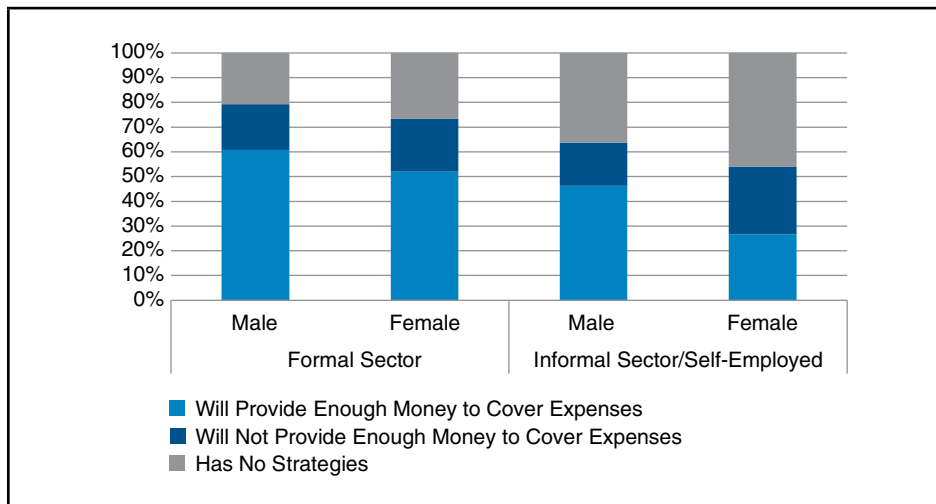
	MALE				FEMALE			
	INFORMAL SECTOR/ SELF-EMPLOYED		FORMAL SECTOR		INFORMAL SECTOR/ SELF-EMPLOYED		FORMAL SECTOR	
	EXPECT TO HAVE	HAS NOW	EXPECT TO HAVE	HAS NOW	EXPECT TO HAVE	HAS NOW	EXPECT TO HAVE	HAS NOW
1. Financial help/ support	25%	22%	21%	20%	27%	24%	20%	20%
2. Savings/other financial assets	10%	10%	40%	36%	4%	3%	20%	24%
3. Employer provident/ superannuation	2%	2%	37%	38%	2%	2%	23%	26%
4. Other provident/ superannuation	1%	0%	11%	12%	0%	0%	6%	6%
5. Insurance	0%	0%	6%	5%	0%	0%	0%	0%
6. Sale of non- financial assets	11%	11%	2%	4%	4%	3%	0%	0%
7. Inheritance	20%	18%	16%	15%	9%	7%	0%	0%
8. Business	41%	39%	28%	23%	20%	19%	15%	9%

were not explored by the survey. It is possible this is due to societies in Morobe and Madang being primarily patriarchal (which may also explain the higher level of business income cited by men).

As shown in Figure 24, respondents who earned formal sector wages or salary were more likely to consider the strategies they expected to use to fund themselves and their household when they are no longer working would provide for all expenses. Less than 50 percent of those earning informal sector incomes expected to be able to meet expenses. Women expressed particular concern. Less than a third of women considered they would be able to meet expenses when they were no longer working. Overall respondents earning formal sector income were significantly less worried about meeting expenses. Twenty four percent (24 percent) stated they were very worried about meeting expenses, compared to 45 percent of respondents earning informal sector income or self-employment.

Approximately 4.6 percent of the Papua New Guinea population is aged 60 years and older (World Bank, 2013c). Assuming a similar percentage of the working age population has no strategy to fund their expenses when they are no longer working as has been found for Morobe and Madang, it is likely that approximately 1.9m adult Papua New Guineans do not know how they will meet their expenses in old age. It is

FIGURE 24 EXPECTATION STRATEGIES WILL COVER ALL EXPENSES



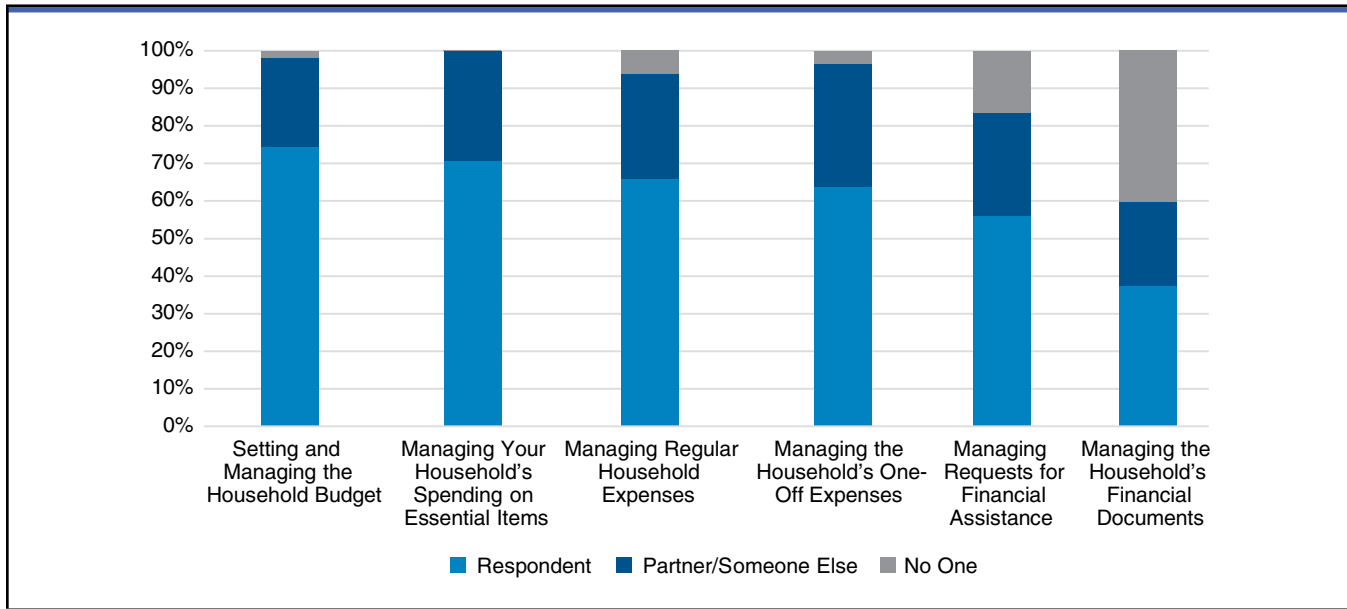
estimated the population aged 60+ in Melanesian countries will rise to 7.2 percent by 2025 (Hayes, 2009). Assuming a population growth rate for PNG of 1.89 percent p.a., this suggests that this figure could rise to approximately 2.3m Papua New Guineans by 2025. Funding expenses in retirement appears to be an emerging policy issue for PNG, in particular for adults living in rural areas. The frequently made assumption that family or clan groups will provide for the elderly may no longer be appropriate.

5.3. RESPONSIBILITY FOR HOUSEHOLD FINANCIAL MANAGEMENT

Adults in Morobe and Madang who are responsible for making financial decisions on behalf of their households are more likely to state they are responsible (either solely or with someone else in the household—usually their partner) for the management of shorter term rather than longer term or less certain expenditure. As shown in Figure 25, the further out the expenditure horizon, or the less certain the expenditure, the greater the likelihood the respondent will state that either their partner is responsible for the expenditure, or that no one is responsible.

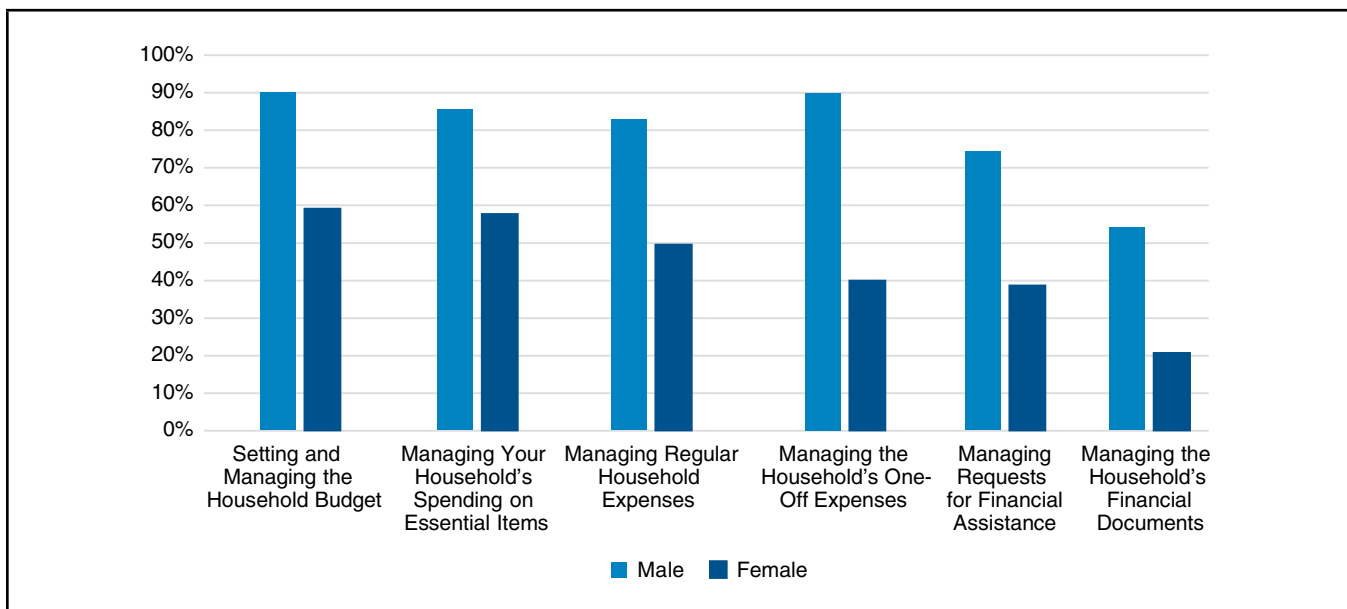
Men are significantly more likely to state they are responsible for the management of *all* aspects of household finances than women (refer to Figure 26). There is no major difference in responses relative to the respondent's confidence at communicating in English, to the respondent's principal source of income, or whether the respondent lived in a rural or urban household: men dominate the management of household finances. Women living in rural households are even less likely to state they are responsible for the management of household finances than women living in urban

FIGURE 25 RESPONSIBILITY FOR MANAGEMENT OF HOUSEHOLD EXPENDITURE



households. Only one aspect of household financial management was consistent across gender: men and women give similar responses in respect to whether no one was responsible for an aspect of household financial management. In other studies in Pacific island countries a different pattern has been found. Men and women were likely to share responsibility for day-to-day expenditure, with men being more likely to have greater responsibility for less frequent expenditure.

FIGURE 26 RESPONSIBILITY FOR THE MANAGEMENT OF HOUSEHOLD FINANCES BY GENDER



5.4. FINANCIAL KNOWLEDGE

The financial knowledge required to effectively use formal financial services and to manage cash flows is a complex topic. The scope and complexity of financial knowledge required by financial services consumers is related to the level of engagement with the formal financial system. Evidence from the present study indicates there a wide range of levels of engagement with the formal financial system, ranging from very limited engagement by many households in rural areas, particularly rural communities with limited access to finance points, to multi-faceted engagement by households whose principal source of income is formal sector salary and who regularly use electronic transaction services, savings, long term savings (including provident or superannuation), and formal credit (including, importantly, secured credit).

Two fundamental aspects of financial knowledge required by financial services consumers irrespective of their level of engagement with the formal financial sector have been examined: the process used to select financial services products and services and understanding of the cost of financial services.

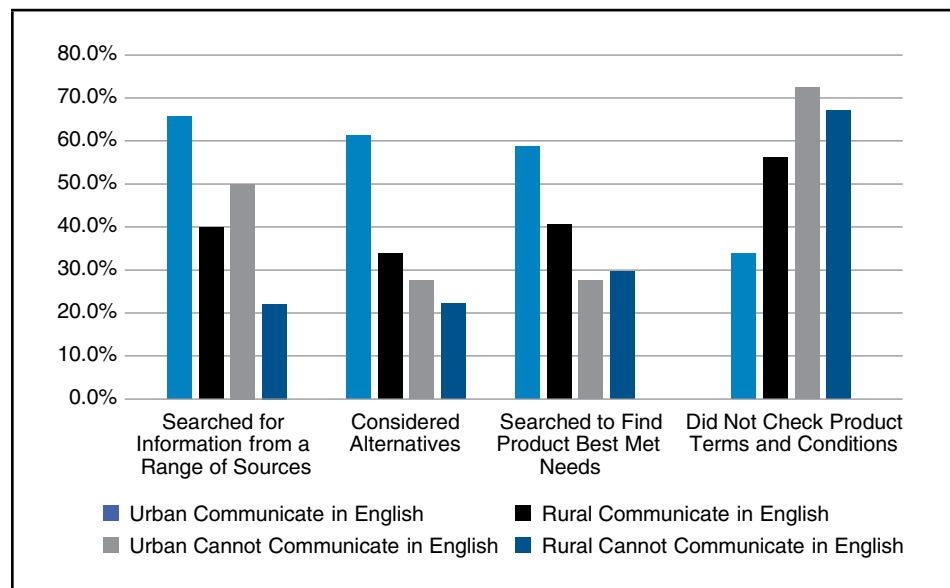
Selection of Financial Products

In respect to the selection of financial services products and services, several aspects of the selection process are critical: whether consumers seek to find a product which best met their needs, whether information is sought about the product from a range of sources not just the financial services product provider, whether alternative products were considered and whether consumers checked the terms and conditions prior to committing to purchase the product.

The range of financial products and services available to urban customers is more extensive than that available to rural customers. In addition, the ability to be able to seek information and to consider terms and conditions is influenced by functional English literacy. As shown in Figure 27, urban consumers who are confident in their ability to communicate in English appear to be more likely to search for information from a range of sources, to consider product alternatives in order to find the product that best meets their needs and to check terms and conditions before purchasing the product. Consumers who are not confident in their ability to communicate in English are less likely to be critical in their product selection and are very likely to purchase a product without reviewing the terms and conditions, irrespective of whether they live in an urban or rural community.

Limited ability to communicate in English creates vulnerability in product selection. The present study has not examined consumer protection as this is still developing in PNG. However it is evident there are significant levels of potential consumer

FIGURE 27 SELECTION OF FINANCIAL PRODUCTS



vulnerability for consumers who have a limited ability to read terms and conditions written in English and/or who live in rural communities with very limited product choice.

Understanding the Cost of Financial Services

Understanding the cost of money is a fundamental financial capability, irrespective of the consumer’s level of engagement with financial institutions (whether formal institutions or informal institutions). As shown in Table 23, most adults in Morobe and Madang do not know how much interest has been paid on borrowing, how much interest has been earned on savings and, in respect to formal financial institutions, the fees paid for financial services. This also suggests there may be considerable vulnerability in the use of financial services by adults in Morobe and Madang and, related to this, significant risk of exploitation.

TABLE 23 KNOWLEDGE OF THE COST OF FINANCIAL SERVICES

Do not know how much interest has been paid on loans over the past year	82%
Do not know how much interest has been received on savings over the past year	86%
Do not know the fees you have paid on financial products over the past year	82%

5.5. MANAGING RELATIONSHIPS WITH FINANCIAL INSTITUTIONS

Most people (66 percent) stated they never went anywhere when they needed to seek financial advice. Those who had sought financial advice reported seeking advice from a broad range of sources. Approximately a quarter of those who had sought advice reported seeking advice from a bank or other financial services professional. Other sources of advice included family, friends or spouse.

Few people (10 percent) reported having had a dispute with a financial services provider. Most people who had had a dispute did not endeavour to resolve the issue with the financial institution providing the product. They reported either doing nothing or talking to family or friends.

The potential vulnerability of financial services consumers in Morobe and Madang is further underscored by the limited understanding of the risks associated with the use of financial services providers. Eighty one percent (81 percent) of adults stated they had never tried to find out about the risks of using the financial services providers they currently use or previously used. Overall most financial services consumers do not appear to search for financial services, check product terms and conditions, understand the cost of the financial services they are using or the risks of the financial services providers whose products they use and do not seek financial advice.

5.6. FINDINGS RELATIVE TO OTHER FINANCIAL CAPABILITY STUDIES

The financial capability study in Morobe and Madang is the only financial capability population study undertaken to date in a Pacific island country. There have been several other studies which had had a more limited scope and have focused on poor and low income households. The studies were undertaken by central banks in Samoa, Fiji, the Solomon Islands and PNG, with the support of the Pacific Financial Inclusion Programme (UN-PFIP).

The focus of the Pacific island studies was similar to the present study in that the studies sought to understand levels of financial inclusion, financial knowledge and skill and financial behaviour. The methodology was slightly different. The studies sought firstly to understand the financial competencies adults in low income households, who made financial decisions on behalf of their households, considered they needed to have in order to manage their household's finances effectively, and to then measure the extent to which adults were able to demonstrate competence. A common competency set (Sibley & Liew, 2011) was used for the studies, as similar

competencies were considered to be necessary by low income households in each country. The PNG Financial competency study examined the financial competence of low income households in several settlements in Port Moresby, villages in Mekeo and Galley Reach.

The findings from the studies are broadly similar across countries and with the findings from the present study:

- Most low income households owned few financial products. Financial products owned were principally savings products. There was very limited use of formal credit.
- Rural households were significantly less likely to own formal financial products and services than urban households and exhibited lower levels of financial capability/financial competence. The findings of the PNG financial competence study in respect differences in the level of bank account ownership were similar to the findings from the present study.
- In Fiji (in respect to both iTaukei and Indo-Fijian households), the Solomon Islands and PNG, women were consistently less likely to be involved in the management of household finances (other than the management of day-day expenditure) and were less likely to own formal financial services.
- Many adults did not know how they would meet expenses when they were no longer working—other than relying on their children or family or friends.
- The overall level of financial knowledge was low and most adults had very limited understanding of the cost of financial services.

There was a significant difference in the use of informal store credit reported by the financial competence studies compared to the present study. Use of store credit, in particular the use of store credit by rural households, was typically at least twice the level reported for Morobe and Madang (32–36 percent compared to 15 percent for Morobe and Madang). The reasons for the difference level in the use of store credit may be, as previously discussed, due to lack of understanding that deferred purchase of goods is a form of credit. It is also possible that the difference in the respective geographic and population scope of the studies may result in lower levels of store credit being found by the present study. The Morobe Madang study includes a significantly broader range of households, in particular households earning formal sector income, than the PFIP studies and also has a wider geographic spread of sampling locations. It is also possible that store credit is not prevalent in Morobe and Madang and that a greater use of store credit will be found in other locations as the national financial capability study progresses.

6. Implications for Policy and Strategy

The findings from the study of financial inclusion and financial capability in Morobe and Madang are discussed in relation to the Maya Declaration Goals which form the basis for financial inclusion and financial literacy policy in PNG and provide the framework for developing strategies and implementing programmes to increase financial inclusion and financial capability in PNG.

This chapter does not make recommendations in respect to possible changes to the National Financial Inclusion and Financial Literacy Strategy. The scope of the present study is limited to Morobe and Madang and it is not appropriate to suggest change or development to a national strategy based on a survey of two provinces. However, on the basis the findings from the present study are likely to be indicative of the situation in other provinces; potential implications for the achievement of the Maya Declaration Goals are discussed.

Goal: To reach one million more unbanked low-income people in Papua New Guinea, 50 percent of whom will be women

Situation in Morobe and Madang

The study of financial inclusion in Morobe and Madang has found a significant difference between urban and rural communities. This is consistent with the findings from the financial competency study in Central province. Evidence from Morobe and Madang suggests levels of financial inclusion in urban communities may be approaching, or may be at levels found in other developing countries. The study also suggests urban households, in particular households in which the principal source of income is formal sector wages or salary, are engaging with the formal financial system across a broad range of product groups, extending beyond savings/transaction accounts to long term savings and formal credit. By contrast levels of financial inclusion in rural communities, across all product groups, are very low.

The study has also found a significant difference between levels of financial inclusion for men and women, particularly in urban communities. Access to financial services appears to have resulted in increased levels of financial inclusion primarily for men. Women in urban communities are significantly more likely to have a bank account than women in rural communities and may be accessing financial services indirectly

by accessing a bank account owned or controlled by a male. However, relative levels of financial exclusion by women living in urban communities are significantly higher than those found in rural communities.

Implications for Policy and Practice

Households need access to financial services infrastructure. Most households in PNG are rural. The findings from the present study suggest that many rural communities, effectively, have no or very limited access to formal financial services. It is possible the Maya Declaration Goal may be achievable in urban communities. However, the findings from Morobe and Madang suggest that, without *major* development to the rural financial services infrastructure, bringing large numbers of currently financially excluded Papua New Guineans into the formal financial system will not be possible.

Increasing access to financial services does not appear to benefit women to the same extent as men. If the finding from the study in Morobe and Madang is found to be the case across PNG, it is likely that, unless there is a substantive change to financial inclusion programmes, and within this context possibly also products and services (whether public or private sector), the goal of gender equity will probably not be achieved and the gender gap may even be further exacerbated. Further investigation is required to understand why women are less likely to own any form of formal financial service, even when the financial service is accessible and likely to be affordable.

Goal: BPNG to lead efforts to create a financially competent generation of Papua New Guineans through financial education and financial literacy

Situation in Morobe and Madang

Most households in Morobe and Madang appear to endeavour to plan and budget cash flows. However, for most households, irrespective of whether the household receives regular formal sector wages or salary, or more unpredictable informal sector or self-employed income, plans and budgets are typically informal, focused only on major items and are not documented. Whilst most households may consider they are planning cash flows, in effect the household has priorities for spending.

Overall, households in urban communities, in particular households which receive regular wages or salary, are more likely to pro-actively manage household finances. This is not surprising as these households engage with the money economy on a daily basis, across a broad range of financial activities. Money is embedded in the life of urban households to a greater extent than in many rural households. It tempting to regard the lower level of money management by rural households as evidence rural households have lower levels of financial capability. This may not, however, necessarily

be the case. Capability is relative to financial activity and it is possible rural households do not need the same level of financial knowledge and skill as is required by urban households.

Irrespective of location or source of income, women are less involved in all aspects of household financial management measured by the study than men and have less responsibility for the aspects management of household finances measured by the study than men. Whilst many respondents stated household finances were managed jointly, in effect the management of household finances in Morobe and Madang appears to be dominated by men. The financial competence study in Central province found a similar pattern of responsibility.

Many adults, in particular rural households and women, do not know how they will fund their and their household's expenses when they are no longer working. Access to provident schemes and formal financial services promotes savings. However, for most adults in Morobe and Madang (and potentially PNG generally), there is little opportunity to make progressive provision for old age.

Implications for Policy and Practice

As the study of financial capability in PNG progresses, it may be appropriate to consider the development of rural and urban capability indices in addition to a national index.

Given the likelihood that budgeting and planning household cash flows is not common across households in PNG, the focus on budgeting and planning which is a common feature of financial literacy programmes would appear to be appropriate. As the use of formal credit expands (and evidence from the present study indicates that formal sector employment may facilitate the use of formal sector credit), inclusion of responsible borrowing modules in financial literacy programmes may also be warranted. It is also suggested that consideration may need to be given to including longer term savings or asset accumulation modules in order to increase awareness of the need to prepare to older age and how gradual longer term savings can be achieved.

Findings from the present study and the financial competence study suggest there may be a requirement for financial literacy programmes specifically for women.

Increasing formal employment and monetisation will inevitably result in an increasing need for Papua New Guineans to provide for their old age. If the findings from the study in Morobe and Madang are replicated across PNG, it is possible that the scope of financial inclusion programmes may need to expand to include longer term planning and the preparation for old age when it is no longer possible to work. In a wider context, the ability to meet expenses in old age is an emergent policy issue in

PNG. Findings from the present study and the national financial capability study, once completed, may provide a useful input to the policy discussion.

Goal: To actively support innovative use of technology for scaling-up access to financial services and financial literacy

Situation in Morobe and Madang

Branch, ATM and EFTPOS networks in PNG are largely urban. This is the case for Morobe and Madang. Agent networks do not, at this time, appear to be sufficiently dense to enable most rural households to readily access formal financial services.

Mobile phone telephony appears to be an important component of extending financial services, in particular to rural communities. However, in Morobe and Madang, there appears to be a significant difference between rural and urban communities in respect to adults' capacity to use the mobile phone, and by extension the potential capacity to use the mobile phone for financial services. Levels of mobile phone ownership, combined with adults' ability to use the mobile phone to text as well as to make calls, suggest mobile phone banking has significant short term potential in urban communities, and rural communities with access to cell-phone telephony.

Implications for Policy and Practice

Developing extensive branch networks or even extensive ATM networks in rural areas is not an option for PNG. Other than BSP Rural, commercial financial services providers are not expanding services into rural areas but are focusing on urban communities. It may be appropriate to consider the development of a financial services delivery architecture for rural communities in PNG. Alternative delivery channels are likely to be required.

There appears to be broad acceptance that the mobile phone has a key role in expanding financial inclusion in PNG and BPNG has been pro-active in facilitating a supportive regulatory environment. Whilst there is some evidence of a correlation between access to formal financial services and financial inclusion, the findings from the present study suggest that an approach based on 'build it and they will come' may not be appropriate for mobile phone based financial services. The combination of more limited ownership or access to a mobile phone and mobile phone capability in rural communities, in particular for women, suggests the expansion of mobile phone based financial services (as opposed to the use of mobile telephony to deliver agent based financial services) in rural areas may require concurrent capacity building

Goal: To strengthen consumer protection by issuing prudential guidelines and creating a platform for various national regulators and industry networks to monitor consumer protection

Situation in Morobe and Madang

Financial services consumers in Morobe and Madang appear to have a limited understanding of the cost of the financial services they use. Many consumers, in particular consumers who are not confident in communicating in English, do not search for information about financial services before committing to buy a product, they do not consider alternatives or look at alternative products and, perhaps most importantly, they frequently do not check terms and conditions of the products they purchase. The financial competence study in Central province found a similar low level of critical purchase behaviour and limited understanding of the cost of formal financial services used.

Implications for Policy and Practice

Findings from the present study, and the earlier study in Central province, suggest consumer awareness is limited for many adults and there is therefore potential vulnerability to predatory practices. This not only exposes households to the risk of high interest and fee charges, but also creates a potentially significant vulnerability to financial scams. Whilst few households appear to have had a dispute with a financial services institution, findings from the present study suggest a platform to monitor consumer protection is likely to be warranted.

Goal: To begin the process of integrating financial inclusion in local and national government, including getting the National Executive Council to endorse the National Financial Inclusion and Financial Literacy Strategy by quarter 4 of 2013

The focus of the present study is not relevant for this goal.

Goal: To promote regular collection and use of financial access data to inform policy making and help identify key dimensions of financial inclusion in Papua New Guinea

Situation in Morobe and Madang

BPNG has been implementing a programme to collect enhanced supply-side data. Collection of field data, in particular field work in rural communities, can pose significant challenges. The reasons for the challenges are well known. Nevertheless, there is a very real need to better understand financial exclusion in PNG and financial capability. Despite initial challenges, the present study has been successful in collecting field data, including field data from remote communities, at an acceptable cost.

Implications for Policy and Practice

Findings from the present study have contributed to the understanding of financial inclusion and financial capability in PNG. The findings are not, however, national. It

is recommended the national financial capability study be completed with periodic follow up to determine change over time. A national baseline is required.

Goal: To optimize these results through knowledge sharing and effective coordination of stakeholders, including development partners, by the newly established Centre of Excellence for Financial Inclusion chaired by the Bank of Papua New Guinea

The focus of the present study is not relevant for this goal, other than the dissemination of findings.

Appendices

APPENDIX 1: OVERVIEW OF DISTRICTS

Morobe Province

Morobe province is divided into nine (9) districts, including Lae (refer to Map 4). The survey was conducted in six (6) of these districts, namely Menyamya, Huon Gulf, Bulolo, Finschafen, Markham, and Lae.

Lae

Lae city had a reported population of 148,934 in the 2011 Census, and is, as stated, the hub of much of the Momase and Highlands region. It is the largest port in the South Pacific, by far, outside Australia and New Zealand, with a major recent upgrade, notably with ADB financing support. As well as serving as export port for the Highlands and Markham/Ramu agricultural industry, and the mines of Porgera, Hidden Valley and smaller projects (and major prospective projects, such as Wafi-Golpu), it has also been the main import terminal for the construction of the facilities in the Highlands,

MAP 4 MOROBE DISTRICTS



including for the Kutubu oil fields, Porgera and more recently the PNG LNG project, based in Hela province. It is the country's main manufacturing centre (from fish processing to plastic containers, metal work, engineering, milling and bottling) and service centre for Morobe and the wider region, as well as a seat of learning, with the University of Technology, polytechnic, teacher training and other colleges, and research facilities, notably for forestry. The population, as indicated, comes from the local (e.g. Ahi) community and adjoining areas within the province, with the city developing from the traditional villages, such as Butibum, but also reinforced with in-migration from across the Momase and Highlands regions, and in smaller numbers from the New Guinea islands, notably neighbouring West New Britain, and neighbouring Oro province, for which Lae is also the main trading centre, with products such as betel nut shipped constantly to the Lae market. This cosmopolitan mix coexists in the city and its settlements in relative harmony, although certain conflicts do arise, particularly between certain communities, fuelled by factors such as alcohol, but also land issues, high crime levels, and indirectly by the high cost of living in recent years in the city, and fluctuating, but inadequate formal sector job prospects.

Menyamya

The remote and mountainous district of Menyamya, with its population (recorded at 87,209 in 2011), has long remained one of the most inaccessible and disadvantaged areas in Papua New Guinea (along with its neighbouring vicinities, and tribal affiliates, in Marawaka District in the Eastern Highlands province and the Kaintiba area in Gulf province). Menyamya District has enjoyed a surfaced road to Menyamya station and Aseki in the past, but this has deteriorated, and much of the rest of the district is inaccessible by road, notably in the wet season, when much of the survey was conducted. The multiple airstrips formerly operating in the district are now closed, except Menyamya's, which only takes charter services. There is some smallholder coffee production in the district, with a small processing factory in Aseki, but poor transport access has undermined this income earning activity, with much produce recorded as un-harvested. During nutrition surveys in the 1980s this was an area with a high prevalence of malnutrition (notably stunting—National Nutrition Survey 1982/3), including goitre amongst 8–11 year old in schools (from lack of iodine) still in the 2000s (WHO Global Database on Iodine Deficiency, 2007).

Huon Gulf

Huon Gulf is the province's largest district by area, and stretches nearly the length of the province, including the extensive lowlands and coastal areas in the lower Markham floodplain and southern Morobe coast, but flanked to the south by, and including some of the mountain ranges, notably the Bowotu range, stretching east

to the border with Oro province. Its population (recorded as 77,564 in 2011) also makes it one of the larger districts in the province, although containing no significant towns (with City of Lae effectively as its hub). Much of the district has relatively good accessibility, with most of the population able to reach roads or travel by boat to markets or service centres within a day's travel, although seasonally sea, road or river travel (e.g. along the turbulent Watut river) can be hazardous. Communities in the Engati area, adjoining Menyama District, are the most isolated and disadvantaged, along with some inland communities in the mountains from the Morobe coast. Economic activities derive from sales of fresh produce, betel nut and some fish to the Lae market, especially, and modest production of cocoa and coconuts from the lower Markham valley and employment on livestock estates and outgrower sales of poultry. There is a little income and employment related to tourism and forestry along the southern coast, around Salamaua and to the east.

Bulolo

The Bulolo District is the most populous in the province, after Lae city, with 101,568 recorded in the 2011 Census. It includes the Bulolo and Snake River valleys and part of the Watut, and the Waria valley around the former tea growing area of Garaina in the south east. The district includes the larger townships of Wau and Bulolo and the Hidden Valley Gold mine and extensive areas of alluvial gold mining, exploration and panning the river systems. These and the former coffee estates have provided opportunities, even going back to the 1920s, for immigration from other parts of PNG (mostly from Momase and the Highlands provinces). Some coffee is still produced in the district, along with plantation pine (auracaria) timber and associated processing, whilst a variety of fresh produce is grown for market in the cooler upland valleys, especially. Most of the larger valleys (normally) have relatively good access to main centres, markets and basic services, except the remote Waria valley, where the former tea production around Garaina has long ceased. Malnutrition rates (notably stunting) recorded in the district during the 1982–83 National Nutrition Survey were relatively high compared with most of the province, but below the rates in the adjoining, and relatively more inaccessible, Menyama District.

Finschafen

Finschafen District, which recorded a population of 54,673 in the 2011 Census, comprises a narrow coastal plain and small offshore (Tami) islands, rising up to the high Cromwell mountain range, and its relatively remote highland valleys. The population is spread across the coastal plain, including township of Finschhafen, and the station of Pindiu and multiple mountain villages. Some cash cropping, including coffee and spices, occurred in the past, but poor access, including cessation of rural

air-services and deterioration of rural roads has undermined opportunities beyond subsistence agricultural away from the coastal strip. The discontinuation of coastal shipping services has also undermined business opportunities and required access by relatively unsafe small craft. Some recent restoration of certain bridges and stretches of access roads may provide the prospects of renewed access to trade and services for some inland rural communities.

Markham

The Markham District, with a widely dispersed population of 62,495 recorded in the 2011 Census, embraces the main upper portion of the Markham floodplain and a short stretch of the adjoining Ramu valley, but also extends up on the northern flanks into the steep valleys, like the Leron and Wantoap, and high mountains of the western Sarawaget range, merging with the Finisterre range, and in the south into the Kratke range and valleys, like the Wafu. As in most districts, the highest population densities are largely in the restricted valleys, and away from the more malaria affected lowland areas, but poor access to these highland areas has more recently encouraged, as in other remoter districts, outmigration to cities and main access routes. The Markham and upper Ramu valleys have been centres in the past for low intensity ranch-style livestock production, but since the 1980s large tracts have been partly turned over first to commercial sugar and over the past decade also to oil palm, with large concentrations of employees, both local, but also from adjoining provinces (notably Madang, Eastern Highlands and Simbu) also employed long term in these estates and processing facilities. Production of lowland produce for sale into the neighbouring Highlands provinces is prevalent in the Markham valley, as well as to Lae city.

Madang Province

Madang is divided into six (6) districts (refer to Map 5), of which 2 were selected for the survey, namely Sumkar (including Census Units on Karkar island) and Rai Coast (including a Census Unit on remote Long Island), plus the Madang urban being added, to supplement the selected sample of (rural) districts and CUs.

Madang

Madang District, including the town had a population of 110,978, as recorded in the 2011 Census. The district covers the town and the lagoon, with its multiple coastal islands, as well as parts of the Gogol valley and eastern end of the coastal Adelbert range. The urban area, which now embraces some of the islands, like Kranket, which are now effectively part of the town, has long been a tourist hub, as well as provincial administrative and trading centre, including for the cocoa and copra trade from the province (especially produce from Karkar island). Latterly the town and adjoining

MAP 5 MADANG DISTRICTS



district have been hub of a growing onshore-based fisheries industry, including local processing (employing mostly young women) and vessel support. It has in recent years also been the administrative base for the Ramu Nickel Company, with periodically large numbers of overseas as well as local staff. The town, which has limited land within the formal township area, with its extensive lakes and inlets, has seen a substantial growth in settlements, particularly housing people from across remoter, including highlands parts of Madang province, plus from across the Momase region, especially East Sepik and other Highlands provinces. Despite poor soils on the limestone coastal plain, agricultural potential is reasonable in the hills and Gogol and other valleys, with access to the urban market for fresh produce able to provide alternatives for more accessible communities to subsistence production. Plantation forestry the Gogol (for a chip-mill in town) has ceased and most logging concessions in the district have already exhausted their resource.

Sumkar

Sumkar, includes the highly populated and agriculturally productive volcanic island of Karkar and its smaller neighbour, Bagabag Island, and also embraces a stretch of less-fertile adjoining limestone coastal plains, rising up into the lower elevation coastal mountain range, the Adelberts. Sumkar's population was recorded as 84,944 in the 2011 Census, with well over half of that on Karkar and Bagabag islands. Karkar is a major centre for the copra and cocoa industries, with a stream of workboats transporting raw copra to Madang for processing as coconut oil or directly for export, as well as cocoa. The island has some of the country's few still operating copra and cocoa estates, as well as smallholder production. Some copra and cocoa are also produced along the coastal plain on the mainland, although many of the estates have ceased to operate, and robusta coffee production has long since ceased. Although

most tourism occurs in the adjoining Madang District, some is centred on lodges in this district. Apart from parts of the Adelbert hills and mountains, access is mostly good along the 'north coast road', and on Karkar Island, and mostly by small craft from the islands, although some larger (and generally safer) work boats operate on these routes. Periodic low prices and outbreaks of pest and diseases, notably cocoa pod borer (and Bogia syndrome in coconuts) have affected production and household incomes, which had been relatively high for rural areas. Other cash crops include betel nuts and some surplus fresh produce for sale in Madang and the Highlands markets, although Madang is a far smaller hub than Lae, but it does have significant and growing industries, including tourism, requiring supplies.

Rai Coast

The Rai Coast District recorded a population of 83,218 in the 2011 Census, largely in the Rai coast rural LLG area within the district. The district covers an extended stretch of relatively straight coastline commencing in the west from flood plains feeding into Astrolabe bay and a progressively rising backdrop to the east, with most of the coast flanked by the Finisterre mountains rising to nearly 4,000 metres, with high population densities in the relatively inaccessible high valleys. The district includes the active volcanic Long island, with its large lake-filled caldera, and the small adjoining Crown Island. The Astrolabe Bay end of the district and into the mountains have high rainfall and a relatively short dry season, whereas in the rain-shadow of the Finisterre (and Sarawaget) ranges to the east, there is a long dry season and agricultural opportunities restrained, with cattle grazing on some of grasslands near Sialum, in Morobe to the east. The western coastal villages have reasonable access by road, when rivers are crossable, and by boat to Madang, but travelling to the remoter eastern parts of the district (including to Long Island, which lies 70 km from the Saidor station, and 130 km from Madang) and inland from the coast involves many hours of travel on foot or by boat, constrained also by the discontinuation of most formal coastal passenger, freight and rural air services. During the wet season, with multiple unbridged rivers, travel is harder and also dangerous by (the predominant) small craft during extended periods of strong winds.

The Ramu nickel and cobalt mine, located in the Ramu valley, transports the extracted ore by 100 km slurry pipeline to a preliminary processing plant in the Basimuk Bay along the Rai coast, from where the product is shipped, with the waste dumped, controversially, offshore. Economic opportunities are very limited in most of the district, with a few employed in the port/processing facility, and a little cocoa, copra (including from old estates near Saidor) and betel nut produced on the coast, although, with years of low prices and lack of coastal shipping, the copra trade has largely dried up. Likewise modest vegetable shipments from the inland valleys have dwindled, leaving subsistence agriculture and coastal fishing as almost the only means of livelihood for most of the district's population.

APPENDIX 2: OVERVIEW OF HOUSEHOLDS

Respondents

The survey was completed by the female and male in the household who made most financial decisions on behalf of the household. Typically this was the husband and wife. Eighty-seven percent of surveys were completed in households in which both a woman and man were interviewed. Overall, interviews were evenly distributed between women and men. Respondent’s mean age was similar, irrespective of location: 38.63 years for urban respondents and 37.56 years for rural respondents. The mean female age was 35.8 years and the mean male age 39.9 years. As shown in Figure 28, the age distribution for women was slightly younger than that for men.

Household Overview

Household Size

The average household size was 6 members. Household size and composition was similar across rural and urban households. The typical household comprised three adults and three children. There was an even gender balance (52 percent male and 48 percent female).

Sources of Income

Households reported between 2.3–2.6 sources of income, across rural and urban households. On average, between 2.3–2.4 household members contributed to household income. The principal income earners were in most households the female and male interviewed for the survey. As shown in Table 24, households in rural communities derived most income from the informal sector or self-employment.

FIGURE 28 RESPONDENT AGE DISTRIBUTION

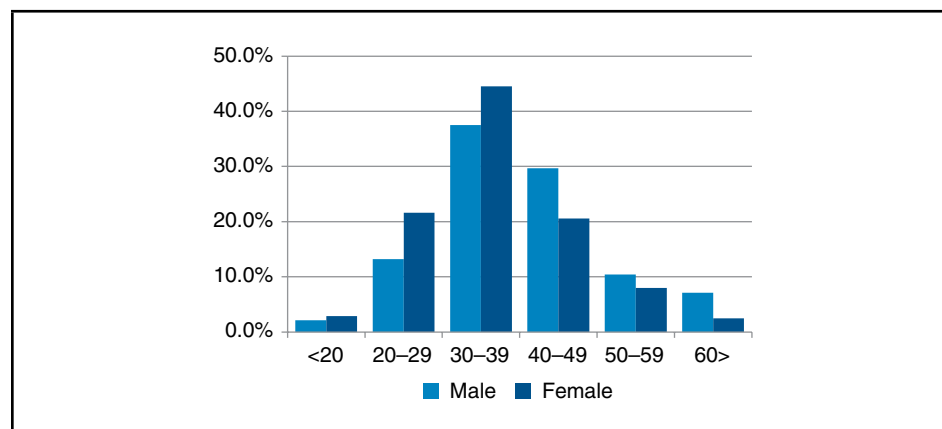


TABLE 24 PRINCIPAL SOURCE OF HOUSEHOLD INCOME

	URBAN	TOWNSHIP	RURAL
Formal sector	51.60%	60.20%	7.60%
Informal sector/self-employed	33.80%	36.40%	88.10%
Other	14.60%	3.40%	4.30%

By contrast, in urban and township communities, approximately 50 percent of households derived most income from formal sector employment. Approximately 15 percent of urban households reported the principal source of income from sources other than formal employment or informal sector income. Sources of income were forms of passive income: income from rents and leases, income from investments, pension income.

For most households, household income varied over the year. Not surprisingly, given the source of income, a larger percentage of rural households stated income was variable (89.1 percent) than urban households (60.6 percent). Household income tended to be variable across both high and low income earning periods. Rural households were more likely to manage income earned by household members jointly as a household (60.1 percent of households) than urban households (46.7 percent of households). Conversely, urban households that earned business income were more likely to keep the income separate to household income (67.3 percent) than rural households (37.9 percent).

As shown in Table 25, sources of income were similar for women and men in rural communities. In urban households, however, men were more likely than women to report formal sector employment.

Individual and Household Income

Respondents were asked to estimate their average monthly individual and household income from all sources. Income was not verified and has not been used in the

TABLE 25 PRINCIPAL SOURCE OF INDIVIDUAL INCOME

	URBAN		TOWNSHIP		RURAL	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
Formal sector	52.20%	35.90%	72.10%	27.10%	10.20%	4.30%
Informal sector/ self-employed	30.90%	53.00%	27.90%	68.80%	84.80%	92.60%
Other	16.90%	11.10%	0.00%	4.10%	4.90%	3.10%

TABLE 26 ESTIMATED MONTHLY INCOME BY DISTRICT PREDICTED POVERTY LEVEL

	PREDICTED POVERTY LEVEL		
	HIGHEST	MIDDLE	LOWEST
	MEAN	MEAN	MEAN
Estimated monthly individual earnings	\$281	\$340	\$539
Estimated monthly household earnings	\$366	\$410	\$691

analysis. As shown in Table 26, respondents' estimate of their personal monthly income and their household's monthly income increases as the predicted poverty level of the district reduces.

Overall, men and women estimated similar levels of monthly household income (men: \$579, women \$556). However, it appears respondents may have limited awareness of the income earned by the household. On average respondents estimated they earned \$445 per month and their household earned \$569 per month. Estimates of individual income earned by urban respondents were approximately 2.3x the estimate of income earned by rural respondents. In rural households men and women estimated similar levels of individual monthly income. However, in urban and township households income estimates by men were higher than estimates by women (refer to Table 27). This is likely to be due to the higher incidence of formal sector employment by men.

Disability

Four percent of households reported a household member with a serious illness or disability. Information as to the nature of the disability or serious illness was not sought. Sixty percent of household members who had a serious illness or disability were under the age of 18 or 60 years or older.

TABLE 27 ESTIMATED MONTHLY INDIVIDUAL INCOME BY GENDER, LOCATION AND LIVELIHOOD GROUP

URBAN		TOWNSHIP		RURAL		URBAN		TOWNSHIP		RURAL
MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	FORMAL SECTOR	INFORMAL SECTOR/ SELF-EMPLOYED	INFORMAL SECTOR/ SELF-EMPLOYED
\$1,581	\$828	\$919	\$303	\$388	\$310	\$1,246	\$679	\$703	\$540	\$278

TABLE 28 HIGHEST LEVEL OF EDUCATION IN HOUSEHOLD

	URBAN	RURAL
No formal education	0.0%	7.2%
Primary	4.9%	57.6%
Secondary	35.0%	20.4%
Tertiary	60.1%	14.9%

Education

As shown in Table 28, reported levels of education suggest there may have been a misunderstanding in respect to the meaning of tertiary education. It is possible there was confusion between post-secondary education and senior high school or vocational school. Twenty-two percent (22 percent) of households reported at least one household member having 'tertiary' education. It is considered unlikely 60 percent of urban households in Morobe and Madang have at least one household member with post-secondary education. Level of education has not been used for the analysis of financial inclusion or financial capability.

Dwelling and Resources

Dwelling

The assessment of the dwelling was undertaken during enrolment, by a combination of observation and questions. Houses in urban communities were typically larger than houses in rural communities (3.7 rooms compared to 3.0 rooms). Houses in urban communities were constructed primarily from concrete, wood or cement sheet (65 percent of properties), or corrugated iron (17.5 percent of properties). A further 17.5 percent of properties were constructed from traditional or makeshift materials. Most properties (89 percent) had an iron roof. In rural communities most houses were constructed from traditional materials (80 percent) or wood or cement sheet (13.6 percent of properties). The roof was either traditional materials (66 percent) or corrugated iron (30 percent). Between 70 percent–80 percent of the dwellings were assessed by the interviewer undertaking the assessment to be in sound condition and to be weatherproof. Twenty percent (20 percent) of urban dwellings were assessed as being in very good condition.

Patterns of land ownership varied. As shown in Table 29, in rural communities households typically either owned the land on which the house was constructed, or owned the land communally. In urban communities approximately 31 percent of land was either owned directly or owned communally. Between 19–47 percent of land in

TABLE 29 LAND OWNERSHIP

	URBAN	RURAL
Freehold owned by dwelling owner	20.60%	43.70%
Communal	10.90%	44.60%
Formal residential settlement	28.50%	2.20%
Squatter settlement	2.70%	3.70%
Leased land	19.10%	3.20%
Other	18.10%	2.60%

urban communities appears to be leased. It is not known to what extent the leases are formal. The mode of land ownership for the remaining 18 percent is not known.

In rural communities 90 percent of dwellings were owned by the household. In urban communities 46 percent of dwellings were owned by the household, 25 percent were rented, and 28.5 percent were government, institutional or employer provided housing.

Services

Seventy six percent (76 percent) of rural households had no access to any form of electricity, 10 percent used solar, 6 percent a generator and 7 percent had access to mains electricity. By contrast in urban communities 70 percent of households had mains electricity to the house, 10 percent used solar, 5 percent used a generator and 15 percent had no electricity available.

In rural communities nearly all households (98 percent) reported using wood for cooking. In urban communities a wider range of forms of cooking was used: 38 percent of households cooked using wood, 28 percent used LPG gas, 29 percent used electricity and 5 percent used kerosene.

The source of water in urban households was mains pipe. In rural households water was sourced from a well, spring or river. Ninety four percent (94 percent) of rural households used a pit latrine toilet, compared to 50 percent in urban households. Fifty percent (50 percent) of urban households used a flush toilet.

Resources

Nearly all rural households (95 percent) had access to land for food cultivation (either farm land, communal land or a back-yard). By contrast only 33 percent of urban households had access to land to cultivate food. Sixty-seven percent (67 percent) of household did not have access to land to grow food for the household.

TABLE 30 SERVICES AND ACCESS

	URBAN	TOWNSHIP		RURAL	
	TRANSPORT	AVGE DIST. (KM)	TRANSPORT	AVGE DIST. (KM)	TRANSPORT
Primary school	Walk	1.95	Walk 35%, Public Transport 65%	2.39	Walk
Secondary school	Walk	17.2	Public transport	25.69	Walk 14% Public transport 76% Private transport 6.5%
Health post or hospital	Walk	1.05	ND	15.32	Walk 76% Public transport 20%

Durables

Urban households had, on average two appliances, typically a refrigerator and a TV (or a PC). Rural households typically had no appliances (to be expected given the lack of mains electricity).

Services

Very few households owned any form of private transport and either walked to services or used public transport. Nine percent (9 percent) of rural households were within 1 hour of the provincial capital (Lae or Madang), 28 percent were between 1–3 hours, and 63 percent of rural households were at least 3 hours travel from the provincial capital (11 percent of households were more than 9 hours from the provincial capital). Modes of transport to services and rural distance to services are shown in Table 30.

APPENDIX 3: SAMPLING

Dr. Gibson prepared two sampling notes for the financial capability survey. The first sampling note was drafted for the national survey. The second sampling note was drafted following the reduction in scope of the study to Morobe and Madang provinces. Both sampling notes are included as the re-weighting undertaken by Dr. Gibson which is discussed in the second sampling note, must be read in the context of the initial sampling for the national study.

Appendix 3a: Sampling Notes for PNG National Financial Capability Survey

John Gibson. 13 November 2013

Summary

Sample selection is based on a stratified four-stage random sample design, with preliminary counts from the 2011 Census of Population providing the sampling frame. Stratifying according to female literacy and predicted poverty, the first two stages selected 19 districts from seven provinces, with probability proportional to estimated size. The provinces include three from the Highlands (Western Highlands, Jiwaka, Eastern Highlands), two from Momase (Madang and Morobe), and one each from the New Guinea Islands (East New Britain) and Papuan (Central) regions. Additionally, the National Capital District (NCD) is a separate survey strata.

Within each district, five Census Units (CUs) have been selected with probability proportional to estimated size (PPeS). Within each CU, ten households are to be selected by the interview teams, using circular systematic sampling. This will yield an overall sample of 50 households per district and 950 households in total. A further 150 households are to be surveyed from the National Capital District (NCD), with a target of six households per CU, in 25 CUs that have been selected with a PPeS approach. Combining the strata, a total of 1100 households are to be surveyed, and in each household an adult male and adult female are to be interviewed (these should be the primary financial decision-makers in cases where there is more than one adult of each gender). Since not all households will have both an adult male and an adult female, the final sample size will be less than 2200 but should be approximately the sample of 2000 that survey organizers have indicated is the maximum that is feasible and affordable.

Survey weights are required to provide nationally representative estimates. These weights reflect deviations between the actual number of households surveyed per CU and the target, differences between the preliminary Census count of households in each CU and the number established during the listing phase of the survey, and between the preliminary and final Census counts for districts and provinces. The oversampling of the NCD is also accounted for with the weights.

Surveying in PNG can sometimes be affected by difficulties in accessing locations due to tribal fighting and other security risks, and more generally due to infrastructure problems. The survey is expected to be in the field from early 2014 and has only a few months before fieldwork is meant to be complete. Consequently it may not be possible to simply wait for an improvement in the circumstances that block access to locations. In the case of localized disruptions, choosing an alternate CU from the same district is sufficient, and a list of 19 replacement CUs has been selected (one per

selected district) using a PPeS draw. Occasionally the disruption is more widespread and may block access to an entire district and choosing a replacement in these cases is a more serious matter (it is varying almost 5 percent of the sample). A 'nearest neighbour' matching approach is proposed, where an unselected district from within the seven selected provinces with the closest probability of selection to that of the blocked district is chosen, using a model with predicted poverty and female literacy as the matching covariates. Any replacement district chosen using this approach will be identified at the time, by the sampling consultant, and only following the approval of the task manager and steering committee for the survey.

Sample Constraints

The discussions in Port Moresby with survey organizers indicated that the survey unit of observation was an individual (adult), that it was desirable to have equal numbers of men and women, and that the available budget was likely to allow a maximum of 2000 observations. The basis of the calculation of this maximum sample that could be afforded was not considered, although there are obviously cheaper and dearer ways to survey 2000 respondents. The survey designer also indicated that spreading these 2000 observations over a full-scale national survey would be impractical, not only due to the high fixed costs of only a small sample size in each area but also because of the limits to supervision capacity, leading to quality control problems, and the likelihood of disruption in one or more sites from infrastructure problems, tribal fighting and other security risks. On the other hand it is important that the sample not degenerate into a limited number of case studies, which might be dismissed as unrepresentative, and which would not be a robust basis on which to develop financial inclusion policies.

Sampling Individuals versus Households

Although the ultimate interest is in a gender-stratified sample of individuals, it is an inefficient use of survey funds to go to 2000 different households to survey 2000 individuals. Such an approach also will preclude the use of some empirical methods for the analysis once the unit record data are available. While there is potentially a gain in statistical efficiency (precision) because a sample built up by having one person selected from each of 2000 different households will have more variation than a sample of 1000 households, each supplying two respondents, this is not sufficient advantage to recommend the design of one-individual-per-household, for the following reasons:

- Surveys on financial topics typically have high rates of refusal, so with a one-respondent-per-household rule, it may be that any differences that emerge between males and females are due to differential non-response. For

example, females in richer households may be more likely to respond and males in poorer households more likely to respond, so what appears to be a male-female difference in the data is in fact driven by an income difference in survey compliance. This lack of ‘balance’ in the gender sub-samples especially matters to this survey since there is no plan to collect detailed household-level data on incomes or consumption (interviews are expected to be only one-hour per respondent) which could otherwise be used as covariates to control for these threats to validity posed by differential non-compliance.

- Surveys of household wealth and financial management often find discrepancies between what males and females in the same household report on ostensibly the same matters (see e.g. various studies from the Household Income and Labour Dynamics in Australia survey). This is an important behaviour to observe since it can be informative about the extent to which financial information, decisions and risks are pooled within the household, and it is impossible to observe this with only one respondent per household.
- The lack of detailed household-level data on consumption, income or wealth makes it possible that statistical analyses of the data are susceptible to omitted-variable bias. Such bias occurs when variables not captured by the survey are relevant to the behaviour under study and are correlated with policy-relevant variables that the survey captures and that analysts use to try to explain behaviour. For example, there may be more joint financial decision making in richer households, but these are also households where women’s education is typically higher, so this difference in financial decision-making could wrongly be attributed to an effect of women’s education rather than to an effect of unobserved household wealth. One partial solution to this problem is use household fixed effects (dummy variables) as follows:

$$y_{ij} = \alpha_j + D_i + X_{ij} + \varepsilon_{ij}$$

where y_{ij} is the outcome of interest for person i in household j , α_j is a household-specific fixed effect that captures average differences between households, D_i is a dummy variable to indicate gender of the respondent, x_{ij} are control variables such as education or age that can vary between individuals in a household and ε_{ij} is a random error. In other words, after controlling for observable covariates of individuals and for differences between each household (the α_j can be considered household-specific conditional means), is there a systematic difference in behaviour y between men and women? However this estimation framework relies on having more than one respondent per household.

- It is only in coastal PNG that rural villages are spatially concentrated (so there is only a low marginal cost to go from one dwelling to a neighbour in order to survey an extra individual). In the Highlands, many rural Census Units are simply clusters of scattered hamlets, so it is expensive in time and energy to reach a particular household, so once there it makes sense to interview more than one respondent.

These advantages of obtaining 2000 respondents by (ideally) surveying one man and one woman per household in 1000 households make this the preferred design and the selection of Census Units outlined below has proceeded on this basis. But survey funders and implementers should be aware of two implications of this design: (a) it requires a minimum of two person teams, so that men can be interviewed by men and women by women, and (b) some redundancy will be needed in the number of households surveyed since it will not be possible to always find one adult male and one adult female per household. The average number of adults (age 18+) per household ranges from 2.4 in Manus to 3.5 in Southern Highlands and NCD, so most households should have at least two adults and these are likely to be a man and a woman. But households with widows and widowers, households where one adult is away temporarily (e.g. at work camps), and units of polygamous households where each wife has an independent dwelling and a husband rotates between these, will all be expected to yield only one adult respondent. Moreover, the gendered nature of many rural tasks means that often it will not be possible to find a male and a female from the same household together at the same time since they are conducting different tasks in different places. The sample design described below allows for a fieldwork schedule where teams are in a CU for approximately 3–4 days, so there is time for return visits to those households where one adult was absent on the initial visit, although interviewers are often unwilling to make these extra efforts. Therefore the sample is designed for 1100 households, assuming that for approximately 100 households it will not be possible to survey both a man and a woman. These ‘unbalanced’ households are still useful in the analysis so this sample redundancy does not imply inefficient use of survey funds.

Target Number of Households per Census Unit

Moving up a sampling level, from the question of how many individuals per household to survey, the next question is how many households per Census Unit (CU) to survey. A discussion of the related issues of how to select households in each CU is (that is, the listing and selection approach) and how to plan for refusals and other non-response is covered later. It is advantageous to require the teams to survey a fixed number of households per CU, so that a standardized fieldwork plan can be adhered to, which reduces interviewer discretion (so that lazy interviewers cannot claim that the CU was smaller than expected so they reduced their quota of interviews accordingly, in a design where the target number of households varies with CU size).

In general, clustered survey designs are less efficient, the more highly correlated within local areas are the behaviours under study. Conversely, where there is a large idiosyncratic component, even designs where up to 20 households are surveyed in each enumeration area (EA) can still see the 20th household providing some new information. In the case of financial literacy or competency, most studies find that this varies with experience of various financial transactions and with education. Both of these factors are likely to be highly correlated within CUs since they reflect the proximity to financial institutions (which is common for everyone in the same CU) and education is highly related to wealth, which affects residential sorting. It is therefore best to allocate the sample of 1100 households over more CUs, with fewer households surveyed per CU. This design is especially recommended because many CUs in PNG are quite small, averaging just 50 households. In the 1996 household survey, out of 80 selected CUs (outside of the NCD), three (4 percent) were too small to enable the target of 12 households to be surveyed, and so had to be combined with neighbouring CUs, with listing and household selection then carried out on the pseudo-CU created from the joining of the two neighbours. This is a complicated process which it is best to avoid at the outset.

The recommendation is that outside of the NCD, ten (10) households per CU should be selected to survey. For the NCD sample (the reason for this being a separate strata are discussed below) the target should be six households per Census Unit. The reason for the different targets is that fieldwork fixed costs (e.g., transportation to the CU) are lower in an urban area like the NCD, so the sampling efficiency advantages of a smaller cluster size outweigh the budgetary advantages of a larger cluster size. Moreover, it may be possible to avoid a listing operation in the selected CUs for the NCD since the NSO mapping of those CUs is relatively recent, allowing selection of dwellings to be done from paper maps. A supplement (or fall-back) to relying on the NSO maps of NCD Census Units is to use Google Maps aerial images, which have sufficiently high resolution for NCD that it allows easy identification of individual dwellings, even in a densely populated urban village like Hanuabada. Consequently, the fixed cost of listing a CU should matter less in NCD, so there is a smaller time and cost disadvantage to offset the statistical efficiency advantages of spreading a given sample size over more CUs. Finally, it is likely that surveying individual dwellings is more difficult in the NCD, because all adults are absent during the day, because night time surveying is infeasible due to security issues, and because of difficulty in gaining access to guarded residences. Therefore more “reserve” households should be allowed for in each CU, which dictates having a smaller number of households initially targeted for selection (allowing more to be kept for reserves).

Stratification and Stage One and Two Selections

Stratification allows us to use prior information to structure a sample so that it reflects the range of conditions in the population, rather than relying on this occurring

by chance (which it would only do in the right proportions if we had the luxury of drawing repeated samples). Another reason to stratify is to introduce uneven sampling weights, if it is desirable to over-sample a particular area. Along these lines, at the outset a decision was made to divide the sample into two main strata: (i) the National Capital District (NCD), and (ii) all other areas of the country. This was to ensure that the NCD was included in the sample, and given almost four-times the sample size than its population would justify, ensuring sufficient sample size in the event of any follow-up survey. While it would be ideal for a follow-up survey to have national coverage, the reality is that it is often easier to obtain (donor) funding for new, baseline surveys than it is for on-going follow-up surveys. Consequently, the logistical and financial constraints on any future follow-up survey may be such that it is restricted to the NCD, so ensuring sufficient sample size in that region at baseline is useful. The different sampling fractions for the NCD and the rest of the country will be controlled for by using weights (expansion factors) when forming national estimates. An additional reason for forcing the NCD into the sample is that this area has the most favourable conditions in the country, in terms of access to financial services and levels of education that should support informed use of financial services. Hence, if the survey identifies major shortfalls that occur in these more ideal conditions in the NCD it is potentially revealing about the scope of the task that financial inclusion interventions will require in more challenging regions of the country. Finally, the experience in the NCD provides a natural comparison point which PNG officials (both elected and appointed) should relate to, given the unfortunate reality that many of them do not have recent first-hand experience of conditions in more remote districts but they do have first-hand experience of the NCD.

Stratification also was applied to the non-NCD sample in order to improve the precision of sample estimates. All provinces were sorted according to the female adult literacy rate, prior to the first-stage PPES selection of provinces. The first reason for using female literacy as the stratifying variable is that gender differences in financial competency, in the degree of discrimination against women in access to and use of financial services, and in household decision-making that leads to gendered effects in the use of money, ultimately rely on variations in female bargaining power, which is plausibly higher, the more educated are females (relative to males). The second reason is that prior studies of financial literacy of Pacific Islanders find that greater formal education is the characteristic that is most predictive of an individual having superior financial literacy. In PNG, the provinces with highest female literacy rates also tend to have the highest overall education levels, so stratifying provinces by female literacy rates ensures that the survey will cover the full range of conditions for these two factors that are likely to be closely associated with the financial competency behaviours under study.

The available data on female adult literacy rates came from the 2000 Census, since final estimates from 2011 were not available. This reliance on prior estimates should

not overly matter since the spatial pattern of female literacy likely changes only slowly. One implication of using data from the 2000 Census is that it was necessary to form estimates for the two new provinces of Jiwaka and Hela (which did not exist in 2000), and also to revise estimates for the Southern Highlands and Western Highlands, which are the two existing provinces that the new provinces have been carved out of. The new provinces were formed by reallocating three districts from each of the existing provinces, so district-level literacy rates were aggregated (weighing by the number of adult females) to form estimates corresponding to the new and revised provinces. The resulting ranking of provinces is shown in Table 31, with the female literacy rate ranging from 29.5 percent in Enga to 83.7 percent in Manus (and 88.7 percent in the NCD, which is in a separate stratum). This variable clearly captures some of the considerable heterogeneity that occurs between provinces in PNG, which it is important to have reflected in the sample that is selected.

In order to select from amongst these ranked provinces, four values are required:

- a) The total number of households from the 2011 preliminary Census counts (1,367,029 excluding the households in the NCD).
- b) The target number of provinces, set here as seven (7) to ensure that a range of circumstances are covered by the sample while not spreading fieldwork too thinly.
- c) The ratio of (a) to (b), which gives the sampling interval of 195,290. Essentially the province containing every 195,290th household is selected after a random start, where this naturally gives higher odds of selection for a province with more households (which is the basis of PPeS selection).
- d) The random starting value, obtained by multiplying the sampling interval by a random number. The random number which was generated in Excel was 0.9121, so the random starting value is $0.9121 \times 195,290 = 178,124$. In other words, the province containing the 178,124th household was the first selected, and then skipping down another 195,290 households, to find the next selected province, which is the one containing the $178,124 + 195,290 = 373,414$ th household, and so forth.

The seven selected provinces outside of the NCD contain 38 districts (out of 87 districts in all of PNG) and the second stage sampling involved selecting 19 of these districts. The first stratifying variable used was the female literacy rate (at district level), with each district put into one of three groups:

- Adult literacy rate for females is ≤ 33 percent ($n = 12$)
- Adult literacy rate for females ranges from 33.1 percent–66.9 percent ($n = 14$)
- Adult literacy rate is ≥ 67 percent ($n = 12$)

TABLE 31 FIRST STAGE SELECTION OF PROVINCES

PROVINCE	FEMALE LITERACY (%)	# OF DISTRICTS	# HOUSEHOLDS	CUMULATIVE	SET
04. National Capital District	88.7	1	57741		
08. Enga	29.5	5	85012	85012	
21. Hela	30.5	3	65309	150321	
09. Western Highlands	32.0	4	78560	228881	1
07. Southern Highlands	33.0	5	94987	323868	
22. Jiwaka	33.4	3	68835	392703	2
10. Chimbu	34.5	6	79888	472591	
15. West Sepik	36.4	4	45863	518454	
11. Eastern Highlands	36.5	8	133425	651879	3
14. East Sepik	46.0	6	89952	741831	
13. Madang	48.8	6	94176	836007	4
02. Gulf	50.9	2	24331	860338	
12. Morobe	57.3	9	132993	993331	5
01. Western	66.1	3	34573	1027904	
06. Northern	66.2	2	33704	1061608	
19. West New Britain	66.9	2	49077	1110685	
03. Central	68.6	4	46662	1157347	6
20. AR Bougainville	75.0	3	47888	1205235	
17. New Ireland	75.8	2	34422	1239657	
05. Milne Bay	76.2	4	57626	1297283	
18. East New Britain	80.7	4	58517	1355800	7
16. Manus	83.7	1	11229	1367029	
Total (a)		87	1367029		
Target number of provinces to select (b)			7		
Sampling interval (a/b)			195290		

The second stratifying variable was based on a ranking of districts according to their predicted poverty rate that came from a poverty mapping exercise using the 1996 PNG Household Survey and the 1990 Census, their ranking according to the "development index" calculated by the National Economic and Fiscal Commission, and their ranking under the "disadvantage index" calculated in the District Planning handbook that the Australian National University produced for the Department of

TABLE 32 CROSS-TABULATION OF FEMALE LITERACY GROUP AND POVERTY/DISADVANTAGE GROUP AMONGST DISTRICTS WITHIN THE SELECTED SEVEN PROVINCES

		DISTRICT-LEVEL DISADVANTAGE AND POVERTY		
		HIGHEST POVERTY	MEDIUM POVERTY	LOWEST POVERTY
Female literacy group	Lowest ($\leq 3\%$)	4	3	5
	Medium (33.1–66.%)	2	2	10
	Highest ($\geq 67\%$)	0	3	9

National Planning and Monitoring.⁴² The rankings of districts according to these three (closely overlapping) measures are discussed in Gibson et al. (2005), focussing on the 20 most disadvantaged districts under each ranking.⁴³ A group of 13 districts are ranked worst according to both the predicted poverty rate and either or both of the other two indexes. These are locations within PNG that are widely agreed upon to be disadvantaged and six of these districts are from the seven provinces selected for the survey so it is important that the survey captures conditions in some of these areas. The next group of 23 less disadvantaged districts have at least one of the three indexes ranking them amongst the 20 most disadvantaged districts, so these are areas for which there is reasonable agreement that people living there face considerable difficulties. Amongst this second group of 23, there are 8 districts that come from the seven selected provinces and it is important for this level of disadvantage to also be represented in the final sample. Finally, the remaining 51 districts, which include urban areas such as Lae, are not typically considered areas of major disadvantage or poverty in PNG and there are 24 such districts within the seven provinces selected.

The cross-tabulation of the two stratifying variables in Table 32 shows one empty cell, for the combination of highest poverty and highest female literacy. All other strata have at least two districts, supporting use of a 'nearest neighbour' approach to selecting a replacement district in exceptional cases where it is impossible to conduct fieldwork in the original selected district.

⁴² The disadvantage index is a composite of five indicators; each ranging from 1–5, measuring land potential, agricultural pressure, access to services, income from agriculture, and child malnutrition. The index thus ranges from 5 (most disadvantaged) to 25 (least disadvantaged), and it is ranks of the index that are used here.

⁴³ Gibson, J., Datt, G., Allan, B., Hwang, V., Bourke, M., and Parajuli, D. (2005). "Mapping poverty in rural Papua New Guinea." *Pacific Economic Bulletin*, 20(1): 14–29.

TABLE 33 SECOND STAGE SELECTION OF DISTRICTS IN THE SEVEN PROVINCES

NAME	PROVINCE	POV_GROUP	LIT_GROUP	# HOUSEHOLDS	CUMULATIVE	SELECTED
GOILALA	3	1	1	6366	6366	1
OBURA/WONENARA	11	1	1	8363	14729	
MIDDLE RAMU	13	1	1	15026	29755	
JIMI	22	1	2	14465	44220	2
BOGIA	13	1	2	15007	59227	
RAI COAST	13	1	2	13595	72822	3
TAMBUL/NEBILYER	9	2	1	16205	89027	
MENYAMYA	12	2	1	16869	105896	4
USINO BUNDI	13	2	1	11706	117602	
KABWUM	12	2	2	9051	126653	
POMIO	18	2	2	12910	139563	5
RIGO	3	2	3	9800	149363	
ABAU	3	2	3	9236	158599	
FINSCHAFEN	12	2	3	11120	169719	6
MUL/BAIYER	9	3	1	19412	189131	
DEI	9	3	1	16960	206091	7
HENGANOFI	11	3	1	14970	221061	
OKAPA	11	3	1	16578	237639	8
LUFA	11	3	1	14892	252531	
MT HAGEN	9	3	2	26022	278553	9
UNGGAI/BENNA	11	3	2	15722	294275	
GOROKA	11	3	2	22405	316680	10
ASARO/WATABUNG	11	3	2	12857	329537	11
KAINANTU RURAL	11	3	2	27650	357187	
BULOLO	12	3	2	20639	377826	12
TEWAE/SIASSI	12	3	2	11124	388950	
MARKHAM	12	3	2	13832	402782	13
NORTH WAGHI	22	3	2	16555	419337	
ANGLIMP/SOUTH WAGHI	22	3	2	37851	457188	14
KAIRUKU/HIRI	3	3	3	21297	478485	15
NAWAE	12	3	3	9260	487745	
LAE	12	3	3	23661	511406	16

TABLE 33 SECOND STAGE SELECTION OF DISTRICTS IN THE SEVEN PROVINCES (*continued*)

NAME	PROVINCE	POV_GROUP	LIT_GROUP	# HOUSEHOLDS	CUMULATIVE	SELECTED
HUON	12	3	3	17515	528921	17
MADANG	13	3	3	22020	550941	
SUMKAR	13	3	3	16980	567921	18
GAZELLE	18	3	3	23046	590967	19
KOKOPO	18	3	3	15609	606576	
RABAU	18	3	3	7076	613652	

The 38 districts in the seven selected provinces are listed in Table 33, sorted according to their stratifying variables, and then according to province code. The number of households in each district, the cumulative number of households and the order of selection are also shown.

The selection of 19 districts from amongst the 38 available in the seven provinces followed the same approach that was used for the first-stage selection. Specifically, four values were required:

- a) The total number of households in all 38 districts from the 2011 preliminary Census counts (613,652).
- b) The target number of districts (19).
- c) The ratio of (a) to (b) gave the sampling interval of 32,297, so the district containing every 32,297th household is selected after a random start (so more populous districts are more likely to be in the sample under this PPeS selection).
- d) The random starting value, obtained by multiplying the sampling interval by the random number (0.1604 generated in Excel) was 5179, where the district containing this household was the first district in the stratified list—Goilala. Thereafter, skipping down another 32,297 households, to find the next selected district and so forth.

The result of this selection process is summarized in Table 34, in terms of the coverage of the various strata. The range of conditions existing in the selected seven provinces are well covered by the selected districts, with every feasible cell (noting there are no districts in these seven provinces in the high literacy-high poverty cell) having at least one representative. Thus, even though only 19 districts out of the 87 districts in Papua New Guinea have been selected into the sample, these cover the varying range of circumstances that households face.

TABLE 34 CROSS-TABULATION OF FEMALE LITERACY GROUP AND POVERTY/DISADVANTAGE GROUP AMONGST SELECTED DISTRICTS

		DISTRICT-LEVEL DISADVANTAGE AND POVERTY		
		HIGHEST POVERTY	MEDIUM POVERTY	LOWEST POVERTY
Female literacy group	Lowest ($\leq 33\%$)	2	1	2
	Medium (33.1–66.9%)	1	1	6
	Highest ($\geq 67\%$)	0	1	5

In terms of the provincial break-down of the selected districts, there are two from each of Central, Western Highlands, Jiwaka, Madang and East New Britain, three from Eastern Highlands and six from Morobe. It may appear surprising that one province supplies six of the selected districts, but this reflects the size and heterogeneity of this particular province, which has the largest number of districts of any province, and the spread of these over five different strata. This spread is symptomatic of the intra-province differences that exist in PNG, which is also exemplified by Central province, where the two selected districts neighbour each other but come from opposite ends of the stratified ranks (Goilala is in the highest poverty-lowest literacy class and Kairuku/Hiri is in the lowest poverty-highest literacy class).

Moreover, it is important to emphasize that the aim of the sampling is not to produce estimates that are representative for a particular province. Instead the aim is to represent the range of conditions found throughout PNG so as to build up representative national estimates. Thus, even with six districts selected from Morobe, the results are not representative for Morobe since three districts are not selected and since the six districts chosen were not meant to be representative at Provincial level. Likewise, even with the same inclusion rate of two-thirds, the results for Jiwaka where two out of the three districts in that province are in the sample, will not be expected to be representative of that province. Instead the selected districts are representing combinations of female literacy and overall disadvantage or poverty that occur in other areas of Papua New Guinea as well, and that are expected to lead to variation in (gendered) financial competency.

Stage Three Selections of Census Units

The logistics of survey organization are likely to be simplified if the same number of Census Units is targeted to be surveyed in each of the selected districts. In this way, it is possible to organize more standard team sizes and workloads, and it removes

discretion from field staff, who may exploit any discretion in the choice of how many CUs to survey in each district by shirking. The recommendation is to survey five Census Units per district, which would provide a workload of approximately 12–15 days per team, under an assumption that teams can interview 3–4 households per day, and depending on the time needed for listing in each CU and for movement of the teams between Census Units in the same district.

One possible concern with a fixed quota of CUs per district is the uneven size of districts, which at the extremes range from 6,366 households in Goilala to 37,851 households in Anglimp/South Waghi (both based on preliminary Census counts). This concern would matter if districts had been selected with equal probability (say, using simple random sampling), since Census Units in small districts then have higher odds of being selected. But in fact, the selection is based on probability proportional to size, and so the odds of a small district like Goilala being selected are much lower than are the odds for a large district like Anglimp/South Waghi. Because the sample weights are the inverse of the selection probabilities, the CUs selected in Goilala already have a large weight (because they represent a large number of households in other small districts in PNG). Selecting fewer CUs from Goilala because of its small size would make the weight for the remaining CUs in that district even larger, causing statistical and economic inefficiency (extreme weights make the results sensitive to the value for particular observations, and indicate a poor spatial budget allocation since money is spent surveying in some CUs that have little impact on the overall weighted results).

This same logic of probability-proportion-to-size selection also explains why it is possible to survey the same number of households (10) in Census Units that can be quite variable in size, ranging from fewer than 20 households to sometimes several hundred. Since larger Census Units already have a higher probability of selection, there is no need to survey more households from a larger CU than a smaller CU, and to do so would be to introduce unequal weights. The advantage of a fixed quota of households to interview per CU is that it reduces incentives for interviewer shirking because it removes any discretion over sample selection.

The selected Census Units for the 19 districts are listed in Table 35, along with the names of the district, of the Local Level Government (LLG) and of the Ward that the Census Unit is part of. The preliminary count of households in each Census Unit is also listed, and it is this preliminary count which influences the selection probability. When updated estimates of the size of each selected CU are available from the listing done by the interview teams, the final survey weights can be calculated, which take into account any difference between preliminary and final counts. It is for this reason, along with ensuring a representative sample of households from each CU rather than an unrepresentative convenience sample, that a listing operation is required.

TABLE 35 SELECTED CENSUS UNITS (OUTSIDE OF NCD)

PROVINCE	DISTRICT	DISTRICT #	LOCAL LEVEL GOVERNMENT	WARD	CENSUS UNIT	# OF HOUSEHOLDS
Central (3)	Goilala	2	04.Guari Rural	03.Rupila	004.Enaugagave	42
Central (3)	Goilala	2	05.Tapini Rural	05.Kataipa	007.Kariaritsi	5
					008.Kataipa	14
Central (3)	Goilala	2	06.Woitape Rural	02.Chirime Valley	014.Kaugeri	142
Central (3)	Goilala	2	06.Woitape Rural	04.Fane	037.Old Gutiva Vosa & Nesa	40
Central (3)	Goilala	2	06.Woitape Rural	07.Ononge	018.Sigufe	36
Central (3)	Kairuku/Hiri	3	07.Hiri Rural	08.Barakau	006.Rabuka	46
Central (3)	Kairuku/Hiri	3	07.Hiri Rural	18.Boteka	424.Siraka Settlement	138
Central (3)	Kairuku/Hiri	3	08.Kairuku Rural	16.Malati	508.Lolorua Sawmill	47
Central (3)	Kairuku/Hiri	3	10.Mekeo Kuni Rural	02.Veifa'a	004.Veifa'a	394
Central (3)	Kairuku/Hiri	3	10.Mekeo Kuni Rural	16.Upper Kuni	003.Deva Deva #1	44
Western Highlands (9)	Dei	2	03.Dei Rural	05.Gumanch.2	005.Gumanch.2	99
Western Highlands (9)	Dei	2	03.Dei Rural	14.Kamund	001.Kamund	119
Western Highlands (9)	Dei	2	14.Kotna Rural	17.Mala 1	030.Kram	52
Western Highlands (9)	Dei	2	14.Kotna Rural	32.Kinjibi	015.Oldor	56
Western Highlands (9)	Dei	2	14.Kotna Rural	48.Rulna	061.Rum	39
Western Highlands (9)	Mt Hagen	3	04.Mt Hagen Rural	03.Kelua 2	018.Puntibulg	100
Western Highlands (9)	Mt Hagen	3	04.Mt Hagen Rural	09.Tiling	033.Wagapil	91
Western Highlands (9)	Mt Hagen	3	04.Mt Hagen Rural	22.Pulgimp	026.Keipilkakona	67
Western Highlands (9)	Mt Hagen	3	04.Mt Hagen Rural	32.Wimbuka	401.Ambra	97
Western Highlands (9)	Mt Hagen	3	05.Mt Hagen Urban	83.Mt.Hagen Town	031.Kerebug Residential Area	67
Jiwaka (22)	Anglimp/South Waghi	1	01.Anglimp Rural	15.Kutibulg 1	009.Nguakona	87
Jiwaka (22)	Anglimp/South Waghi	1	01.Anglimp Rural	27.Kindeng 1	404.Kindeng Dpi	46
Jiwaka (22)	Anglimp/South Waghi	1	02.South Waghi Rural	08.Kungar 1	016.Pepik	88
Jiwaka (22)	Anglimp/South Waghi	1	02.South Waghi Rural	20.Ngunba Tsents	025.Gun	101
Jiwaka (22)	Anglimp/South Waghi	1	02.South Waghi Rural	48.Kia	006.Rutban	42
Jiwaka (22)	Jimi	4	06.Jimi Rural	05.Kwima	009.Deka	131
Jiwaka (22)	Jimi	4	06.Jimi Rural	24.Maikmol	007.Maikmol	151
Jiwaka (22)	Jimi	4	06.Jimi Rural	32.Tabibuga	015.Dapaka	95
Jiwaka (22)	Jimi	4	07.Kol Rural	03.Kilmin	019.Kilmin	56
Jiwaka (22)	Jimi	4	07.Kol Rural	19.Kouila	015.Ziki	111
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	01.Watabung Rural	01.Mangiro	037.Mangiro	49

TABLE 35 SELECTED CENSUS UNITS (OUTSIDE OF NCD) (continued)

PROVINCE	DISTRICT	DISTRICT #	LOCAL LEVEL GOVERNMENT	WARD	CENSUS UNIT	# OF HOUSEHOLDS
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	12.Lower Asaro Rural	01.Mando/Yamaiufa	100.Mambanuhaloka	37
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	12.Lower Asaro Rural	03.Asaro No. 1	403.Obiaka Plantation	23
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	12.Lower Asaro Rural	07.Lunumbeyuho	094.Kofiko	18
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	13.Upper Asaro Rural	02.Kombiangu/Amaiufa	401.Kambiagwe	170
Eastern Highlands (11)	Goroka	5	02.Gahuku Rural	03.Kami-Seigu	126.Hauslain	44
Eastern Highlands (11)	Goroka	5	02.Gahuku Rural	05.Fimito	070.Ekepoka	83
Eastern Highlands (11)	Goroka	5	03.Goroka Urban	80.Goroka Urban	014.Goroka	58
Eastern Highlands (11)	Goroka	5	14.Mimanalalo Rural	01.Zomaga	405.Six Mile	61
Eastern Highlands (11)	Goroka	5	14.Mimanalalo Rural	04.Kabiufa No.2	053.Negemoka	158
Eastern Highlands (11)	Okapa	7	10.East Okapa Rural	01.Purosa	036.Kakuoti	59
Eastern Highlands (11)	Okapa	7	10.East Okapa Rural	08.Yasubi	036.Waniganodo	153
Eastern Highlands (11)	Okapa	7	10.East Okapa Rural	12.Ofafina	006.Famia	156
Eastern Highlands (11)	Okapa	7	22.West Okapa Rural	03.Wayoepa	034.Wayoepa No 1	172
Eastern Highlands (11)	Okapa	7	22.West Okapa Rural	10.Amuraisa	023.Foretu	45
Morobe (12)	Bulolo	1	01.Mumeng Rural	17.Kumalu	007.Mumengtain	95
Morobe (12)	Bulolo	1	03.Watut Rural	02.Hawata	007.Hikiawa	127
Morobe (12)	Bulolo	1	04.Wau/Bulolo Urban	80.Bulolo Urban	008.Forestry Compound	51
Morobe (12)	Bulolo	1	05.Wau Rural	04.4 Mile/Nami	411.Wara Kalap	55
Morobe (12)	Bulolo	1	29.Buang Rural	04.Moniau	001.Moniau	136
Morobe (12)	Finschafen	2	06.Hube Rural	30.Genna	012.Genna	71
Morobe (12)	Finschafen	2	07.Kotte Rural	09.Siki	024.Lecko	44
Morobe (12)	Finschafen	2	08.Yabim Mape Rural	14.Macwaneng	052.Ziao	66
Morobe (12)	Finschafen	2	32.Burum Kwat	08.Sagiyo	002.Dubi	45
Morobe (12)	Finschafen	2	33.Finschafen Urban	01.Timbulim/Tamuc	507.Brown Hospital	107
Morobe (12)	Huon	3	09.Morobe Rural	03.Miama	009.Miama Village	145
Morobe (12)	Huon	3	10.Salamaua Rural	08.Salus	019.Salus	123
Morobe (12)	Huon	3	11.Wampar Rural	08.Labubutu	009.Labubutu	221
Morobe (12)	Huon	3	11.Wampar Rural	13.Busanim	416.Sepik Settlement	93
Morobe (12)	Huon	3	11.Wampar Rural	18.Naromangki	436.Erap C/School	16
Morobe (12)	Lae	5	15.Ahi Rural	82.Lae City	640.Kamkumung Market	202

TABLE 35 SELECTED CENSUS UNITS (OUTSIDE OF NCD) (continued)

PROVINCE	DISTRICT	DISTRICT #	LOCAL LEVEL GOVERNMENT	WARD	CENSUS UNIT	# OF HOUSEHOLDS
Morobe (12)	Lae	5	15.Ahi Rural	82.Lae City	674.Busurum Settlement	258
Morobe (12)	Lae	5	16.Lae Urban	82.Lae City	010.Quail Crest	146
Morobe (12)	Lae	5	16.Lae Urban	82.Lae City	110.Bumbu Police Barracks	235
Morobe (12)	Lae	5	16.Lae Urban	82.Lae City	178.Tent City	130
Morobe (12)	Markham	6	18.Umi/Atzera Rural	01.Ragiampun	501.Umi/Atzera LG Station	28
Morobe (12)	Markham	6	18.Umi/Atzera Rural	09.Yanuf	008.Yanuf	39
Morobe (12)	Markham	6	18.Umi/Atzera Rural	21.Sauruan	018.Sauruan	239
Morobe (12)	Markham	6	19.Wantoat/Leron Rural	04.Arawek	001.Arawek	113
Morobe (12)	Markham	6	19.Wantoat/Leron Rural	20.Ngariawang	005.Wangat Sayang	41
Morobe (12)	Menyamya	7	21.Kome Rural	04.Hengiapa	017.Sengiapa/Hengiapa	98
Morobe (12)	Menyamya	7	21.Kome Rural	12.Kenali	011.Epik	148
Morobe (12)	Menyamya	7	22.Wapi Rural	09.Mabukapu	014.Hazoi	88
Morobe (12)	Menyamya	7	30.Kapao Rural	07.Okaneiwa	004.Okaneiwa (4)	34
Morobe (12)	Menyamya	7	34.Nanima Kariba	19.Poiyu	017.Poiyu	61
Madang (13)	Rai Coast	4	10.Astrolabe Bay Rural	03.Bang	005.Gur	29
Madang (13)	Rai Coast	4	10.Astrolabe Bay Rural	14.Ato	019.Ato Settlement	123
Madang (13)	Rai Coast	4	12.Rai Coast Rural	04.Kepoiak	028.Pisangana	43
Madang (13)	Rai Coast	4	12.Rai Coast Rural	17.Lamtub	029.Singor	42
Madang (13)	Rai Coast	4	12.Rai Coast Rural	35.Bok	001.Bok	80
Madang (13)	Sumkar	5	13.Karkar Rural	04.Kaviak	014.Kinim	101
Madang (13)	Sumkar	5	13.Karkar Rural	15.Muluk	031.Kurubek	109
Madang (13)	Sumkar	5	13.Karkar Rural	26.Marup	020.Marup 1	175
Madang (13)	Sumkar	5	14.Sumgilbar Rural	03.Murukanam	009.Murukanam	345
Madang (13)	Sumkar	5	14.Sumgilbar Rural	17.Kudas	015.Matukar	86
East New Britain (18)	Gazelle	1	01.Central Gazelle Rural	06.Vunagogo	008.Vunagogomor	87
East New Britain (18)	Gazelle	1	02.Inland Baining Rural	08.Liaga	001.Liaga	86
East New Britain (18)	Gazelle	1	03.Lassul Baining Rural	14.Yalam	022.Yalam	105
East New Britain (18)	Gazelle	1	04.Livuan/Reimber Rural	20.Ramalmal	001.Ramalmal	153

TABLE 35 SELECTED CENSUS UNITS (OUTSIDE OF NCD) (*continued*)

PROVINCE	DISTRICT	DISTRICT #	LOCAL LEVEL GOVERNMENT	WARD	CENSUS UNIT	# OF HOUSEHOLDS
East New Britain (18)	Gazelle	1	05.Vunadidir/Toma Rural	16.Bitakapuk No.2	013.Bitakapuk No.3	79
East New Britain (18)	Pomio	3	10.Central/Inland Pomio	19.Mukulu	003.Mukulu	31
East New Britain (18)	Pomio	3	11.East Pomio Rural	10.Bain	019.Bain Village	75
East New Britain (18)	Pomio	3	13.Sinivit Rural	01.Rieit	004.New Camp	61
East New Britain (18)	Pomio	3	13.Sinivit Rural	17.Ivon/Gore	552.Ivon Settlement	161
East New Britain (18)	Pomio	3	14.West Pomio/Mamusi Rural	28.Yauyau	030.Yauyau	34

Note: Census Units with highlighted counts may require segmenting (for large units) and combining for small units.

The selected Census Units include one small CU, Kariaritsi in Goilala District, for which the preliminary Census count suggests there will be insufficient households to allow a quota of ten to be surveyed. It is therefore recommended to create a pseudo-CU by joining Kariaritsi with its neighbour in the same ward, Kataipa. The merged CU should enable a quota of ten households to be surveyed. Conversely there are eight CUs that appear to be so large that listing and surveying may be logistically burdensome if the entire CU is attempted to be covered. These large CUs are candidates for being segmented, where a sub-unit of the CU is selected at random (e.g., using a sequence of coin tosses, if it is one-half, one-quarter or one-eighth of the CU that is to be selected). The listing and household level selection then occurs only within the segment of the CU, and the count of households in the segment is inflated by the inverse of the sampling fraction to estimate the total size of the CU (e.g., if the segment is one-quarter, then four times the count of households in that segment is used as the estimate for the size of the overall CU). It is important that the decision to segment a CU is made *in advance* and not by the team on the ground, otherwise listing efforts are likely to be compromised by shirking teams deciding to only partially list a CU, biasing the sample towards the most easily accessible households.

The survey is likely to face localized disruptions that either prevent interview teams from reaching a Census Unit, or from fielding the survey once there. A set of 19 replacement CUs has been selected (one per selected district) using a PPeS draw and these are listed in Table 36. It is important that survey funders and implementers determine in advance what level of decision-making unit, from team supervisors up through the overall survey organizer, is allowed to make the decision to abandon attempts in one CU and use the replacement CU from the same district. If control over this decision is not determined in advance the sample integrity will be degraded, as it is likely that teams give up on difficult-to-reach CUs, violating the requirements of a representative sample.

TABLE 36 SUBSTITUTE CENSUS UNITS IN CASE OF INACCESSIBILITY OF A SELECTED CU (ONE PER DISTRICT)

PROVINCE	DISTRICT	DISTRICT #	LOCAL LEVEL GOVERNMENT	WARD	CENSUS UNIT	# OF HOUSEHOLDS
Central (3)	Goilala	2	06.Woitape Rural	08.Aduai	001.Aduai	78
Central (3)	Kairuku/Hiri	3	10.Mekeo Kuni Rural	16.Upper Kuni	022.Ifonobu	19
Western Highlands (9)	Dei	2	14.Kotna Rural	20.Timbi	055.Timbi	76
Western Highlands (9)	Mt Hagen	3	04.Mt Hagen Rural	31.Baisu	010.Tibi	37
Jiwaka (22)	Anglimp/South Waghi	1	02.South Waghi Rural	26.Pukamil	024.Pukamil 2	65
Jiwaka (22)	Jimi	4	06.Jimi Rural	23.Tsenga	014.Tsenga	84
Eastern Highlands (11)	Asaro/Watabung (Daulo)	1	12.Lower Asaro Rural	06.Gamiyuhu	063.Noliligeto	18
Eastern Highlands (11)	Goroka	5	14.Mimanalo Rural	04.Kabiufa No. 2	403.Gizameka	69
Eastern Highlands (11)	Okapa	7	10.East Okapa Rural	05.Yagareba	020.Kume	105
Morobe (12)	Bulolo	1	29.Buang Rural	11.Mapos 1	014.Mapos 1	98
Morobe (12)	Finschafen	2	06.Hube Rural	29.Qwakugu	009.Qafin	39
Morobe (12)	Huon	3	11.Wampar Rural	19.Chivasing	004.Chivasing	134
Morobe (12)	Lae	5	16.Lae Urban	82.Lae City	065.Sumiho Street	150
Morobe (12)	Markham	6	19.Wantoat/Leron Rural	16.Gumia	008.Kawan	23
Morobe (12)	Menyamya	7	21.Kome Rural	14.Hartingli	004.Lagai	188
Madang (13)	Rai Coast	4	12.Rai Coast Rural	09.Kakimar	040.Kalaleng	36
Madang (13)	Sumkar	5	13.Karkar Rural	12.Kaul 1	009.Kaul 2	122
East New Britain (18)	Gazelle	1	05.Vunadidir/Toma Rural	10.Vunakabi	010.Vunakabi	126
East New Britain (18)	Pomio	3	12.Melkoi Rural	17.Lausus	026.Lausus	78

In the NCD there are fewer logistical barriers to reaching selected CUs, but the rate of refusal or non-contact of households is likely to be much higher. It is not clear therefore that replacement CUs are needed for the NCD, so only the target of 25 selected CUs are listed (in Table 37). These have been selected using PPeS, where the implicit stratification is according to Census Division (Ward) numbering, starting from Gerehu, proceeding through Waigani, Gordons, Boroko, Town, and out to Bomana. This is broadly a North to South and then a West to East direction; with the selected CUs including urban villages, settlements, and employer-based housing schemes. Several of the selected CUs are quite large and will require segmenting prior to the selection of households, and this may be aided with the Census maps and also the aerial images from Google Maps which have a high resolution for NCD.

TABLE 37 SELECTED CENSUS UNITS IN NCD

WARD (CENSUS DIVISION)	CENSUS UNIT	# OF HOUSEHOLDS
80.Gerehu Urban	005.Karukas 245/1	97
80.Gerehu Urban	027.Hariva Street 300	99
80.Gerehu Urban	047.Agolo Dr. 242/238	83
81.Waigani/University	007.Heduru Pl.	50
81.Waigani/University	028.Gull St. 39 & 40	84
82.Tokarara/Hohola Urban	001.Helai Avenue	576
82.Tokarara/Hohola Urban	015.Iduhu St.	92
82.Tokarara/Hohola Urban	037.Taraga Rd.	109
82.Tokarara/Hohola Urban	052.Murray Barracks	704
83.Gordons/Saraga Urban	013.Henao Dr. 73	170
83.Gordons/Saraga Urban	038.Air Niugini Village	290
83.Gordons/Saraga Urban	046.Dunlin Cres. 97	103
83.Gordons/Saraga Urban	059.6 Mile Dump S'mnt	121
84.Boroko/Korobosea Urban	037.Korobosea Dr.	57
84.Boroko/Korobosea Urban	074.Taurama Barracks	470
84.Boroko/Korobosea Urban	081.Pari Village	595
85.Kilakila/Kaugere Urban	015.Kila RPC Police Barracks	102
85.Kilakila/Kaugere Urban	032.Pruth St.	142
85.Kilakila/Kaugere Urban	057.Savalea/Bundi S'mnt	176
86.Town/Hanuabada Urban	022.Brampton St.	85
86.Town/Hanuabada Urban	036.Elevala,Lahara,Gabi	562
86.Town/Hanuabada Urban	058.Red Sea area/yard	220
87.Laloki/Napanapa Urban	512.8-Mile S'mnt	601
88.Bomana Urban	407.Popondetta S'mnt (ATS)	421
88.Bomana Urban	8508.NDST Company	35

Note: **Bold** values are Census Units that are likely to require segmenting.

Stage Four Selection of Households (and Listing)

Listing of all households in the selected CU is required for two purposes: for ensuring that all parts of the CU are represented amongst the surveyed households, and for checking on the size of the CU that affected its selection probabilities (with the actual size from the listing used to reweight compared with the estimated size used for the initial selection). The team walks around in every part of the CU, accompanied by a

guide who is a member of the community. If possible, find a person who worked with the Census in this community or someone with similar knowledge of the community and ask them to be your guide. Make sure you go to all parts of the CU, including outlying hamlets. In hamlets, or in any place far from the centre, always check: "Do these people belong to (Name) village or Census Unit" In every part of the village, ask the guide about every house: "Who lives in this house? What is the name of the household head?" *Note* that you do not have to visit every household. At best, you just need to see each house but you do not need to go inside it or talk to anyone who lives there. Even the rule of seeing each house may be relaxed if there are far away households for which good information can be provided by the guide. The most important thing in the listing is to be sure that you list *all* the households and *only* the households belonging to the named village or Census Unit (or subset of the Census Unit if it is to be segmented). It does not matter in what order you list the households as long as they are *all* listed.

If the Census Unit is large, such that it exceeds approximately 200 households, or is very dispersed (as in parts of the Highlands) it is not practical to attempt to list the whole Census Unit, so a decision is made *in advance* to split the Census Unit into smaller areas (perhaps groupings of clans, or based on a geographical feature). First, a local informant should communicate the boundaries of the Census Unit and any natural or administrative sub-units within the larger Census Unit (such as hamlets or canyons/valleys). The sub-units should be big enough to allow for the selection of a set of households (about 40 or more), Once the sub-unit is defined, its boundaries should be clearly described. Then one of the smaller units is randomly selected and the procedures outlined above are then followed to complete the listing and interviewing just in that sub-unit.

After the listing is complete, check that all lines on the listing form are numbered consecutively with no gaps, from start to finish. The number on the last line should be exactly the number of households listed. If the list is long (say more than 50 households) interviewers may encounter difficulties when looking for their selected household. One useful way to avoid this is to show approximately the place in the list where certain landmarks are. This can be done by writing in the margin, CHURCH or STORE or whatever.

The sampling within the CU uses circular systematic selection, which differs from the selection procedure described above for provinces, districts and CUs. Let M be the total number of households listed, and the sampling interval L is calculated as $(M \div 10)$, rounding to the nearest whole number. Let R be a random number with 3-digit decimals between 0.000 and 0.999 (if the proposal to use tablets for interviewing is implemented, the random number can be calculated in the field, otherwise the listing forms may need to have random numbers pre-written on them). Multiply M by R and round to the nearest whole number, which gives the 1st selection. Note that this could

occur anywhere on the list since the random number lies in the 0–1 interval. Enter SEL against this line in the selection column of the list. Count down the list, beginning after the 1st selection, a distance of L lines to get the 2nd selection, then another L to get the 3rd, etc. When you come to the bottom of the list, jump back to the top as if the list were circular. Stop after the 10th selection. There is now a systematic sample of the households in the Census Unit (or segment of the Census Unit).

In order to allow for replacement households in case of refusals, advance down L lines from the 10th selection, and that household is a Reserve (if this happens to be an already selected household, go down one further line). Additional reserves can be found by moving down L lines each time, as needed. It is important that the Listing Form be kept as a record of the selection, and that records be kept when replacement households are used. These details also are needed because the count of households in the CU is important for calculating the final sampling weights.

Weights and Variance Calculations

The overall sampling weight attached to each household is the product of three intermediate weights: the first stage (province) weight, the second stage (district) weight, and the third stage (CU) weight adjusted for the selection of a particular number of households within the selected Census Unit. Consequently, the final survey weights can only be calculated once the survey fieldwork is complete, since the achieved sample size may differ from the target sample size in some Census Units (and this is only known *ex post*), and also because the estimate of the number of households in the CU from the survey listing is needed in the calculation of the final weights. However, the structure of the required calculations for each of the weights can be outlined in advance, as follows:

- First stage weight, which represents the inverse of the first-stage selection probability assigned to each province. This Province Weight (PW) depends on five values, where only three of these were known at the time of selection: the number of provinces to be selected (7), the preliminary count of households in all provinces excluding NCD, which is denoted M ($=1,367,029$), and the preliminary count of households in the i^{th} province, denoted m_i . The remaining two values become available once the final Census counts are released, and are the ratios of the final count of households, M' to the preliminary count of households, M in all provinces outside the NCD ($R = M'/M$) and this same ratio of the final count to the preliminary count of households in the i^{th} province ($r_i = m_i'/m_i$).

$$PW_i = \frac{1}{7} \frac{M}{m_i} \frac{R}{r_i} = \frac{1}{7} \frac{M}{m_i} \frac{M'}{m_i'} = \frac{1}{7} \frac{M M'}{m_i m_i'} = \frac{1}{7} \frac{M'}{m_i'}$$

The weight calculation above shows how various terms cancel once the ratios of final counts to preliminary counts are introduced. The cancelation of terms highlights the fact that there is no presumption that the measures of size used in the initial selection, M and m_i , are fully accurate. Hence, ongoing debates in PNG about the reliability or timeliness of the 2010 Census are not germane to the sample integrity for the Financial Capability Survey. If the initial counts are accurate, the sampling (random) error is likely to be smaller, which is an advantage, but irrespective of whether they are accurate or not, there will be no bias, provided the above weights are used. Specifically, in the set of fractions after the second equals sign, the value m_i in the numerator of the final term and the value M in the denominator of the second term are introduced in order to cancel the varying probabilities which were initially used in selecting the provinces. This cancelling will only occur if we use identically the same values for M and m_i in the weighting formula as those used in selecting the sample. That the preliminary counts used at that stage may have been inaccurate does not matter because they are going to be updated by introducing the values M' and m_i' , coming from the finally released counts.

- Second stage weight, representing the inverse of the second-stage selection probability assigned to each district. This District Weight (DW) depends on five values that are comparable to those used for calculating the Province Weight. The number of districts to be selected (19), the preliminary count of households in the seven selected provinces, which is denoted N (=613,652), and the preliminary count of households in the i^{th} district, denoted n_i . The remaining two values become available once the final Census counts are released, and are the ratios of the final count of households, N' to the preliminary count of households, N in the seven selected provinces ($K = N'/N$) and this same ratio of the final count to the preliminary count of households in the i^{th} district ($k_i = n_i'/n_i$).

$$DW_i = \frac{1}{19} \frac{N}{n_i} \frac{K}{k_i}$$

- Third stage weight, representing the product of the inverse of the third-stage selection probability assigned to each Census Unit and the inverse of the selection probabilities for each household within Census Unit j . Within each of the i selected districts, the selection probability for the j^{th} Census Unit (CW_{ij}) depends on five values that are comparable to those used for calculating the District Weight and the Province Weight (except they now vary district-by-district). The first three of these values are known in advance of the survey: the number of Census Units to be selected in each district (5), the preliminary count of households in the selected district, which is denoted D_i , and the preliminary count of households in the j^{th} Census Unit, denoted c_j . The

remaining two values needed for calculating the selection probability for each Census Unit in each district become available once the final Census counts are released and once the survey fieldwork is complete. These are the ratios of the final count of households, D_i' to the preliminary count of households, D_i in each selected district ($Q_i = D_i'/D_i$) and this same ratio of the final estimate of the number of households in the Census Unit (from the listing done for the survey) to the preliminary Census count of households in the j^{th} Census Unit that the selection was based on ($q_j = c_j'/c_j$). The remaining component of this third stage weight is the inverse of the selection probabilities for each household within Census Unit j , given by the ratio of the final estimate of the number of households in the Census Unit (from the listing done for the survey), which is denoted by c_j' to the actual number of households with completed surveys, h (which is targeted to be 10).

$$CW_{ij} = \frac{1}{5} \frac{D_i}{c_j} \frac{Q_i}{q_j} \times \frac{c_j'}{h}$$

The final weight will be the product of the CW_{ij} , the $DW_{i'}$, and the $PW_{i'}$, and is interpreted as the number of households nationally that are represented by each household that is surveyed.

The use of the correct weights will ensure that estimates of sample means, proportions and totals are nationally representative. However, there also is interest in measures of uncertainty (standard errors and variances) due to the point estimates coming from a sample rather than from a complete enumeration of all households in PNG. These measures of sampling error have to allow for the complex nature of the sample, in terms of the weights, the stratification, and most especially the clustering resulting from the multi-stage selection process. In general, clustered samples have less variability in them than simple random samples (SRS) of the same size, since observations from the same cluster are more alike than observations drawn at random. With less variability, the sampling errors are wider than they would be for a simple random sample of the same size and this is typically shown in terms of a "design effect" (the ratio of the actual variance to what the variance would be with a sample of the same size but drawn using SRS).

The design effect for multi-stage clustered samples, like the one drawn here, is typically larger than if the sample of selected Census Units had been drawn in a single stage. Of course, offsetting the higher sampling errors for a multi-stage clustered design compared with, say, a two-stage design are the potentially smaller non-sampling errors that result from being able to better control survey fieldwork that is operating only in a limited number of provinces and districts rather than being thinly spread over the whole country. Moreover, the sampling design effects can be calculated but the effects of non-sampling errors remain unknown and introduce inaccuracies and non-comparable survey conduct in ways that are impossible to know.

What is important at the analysis stage when calculating the sampling errors is to use software that can correctly account for the particular sampling design used. One option, which may be familiar to some users of the final survey data, would be SPSS. However, within the Complex Samples module of SPSS 17, the Sampling and Analysis Preparation wizards allows a maximum of only three stages in a sample design whereas four stages are used here. A better option is probably *Strata*, which is more flexible and allows more stages. The specific information that is needed for the command that would be used to declare the nature of the survey data is as follows:

- The final sampling weight (the product of the CW_{ij} , the DW_{ij} , and the PW_{ij}), *hhwght*
- A categorical variable to indicate each province (the primary sampling unit), *prov*
- A categorical variable to indicate each district (the secondary sampling unit), *district*
- A categorical variable to indicate each Census Unit (tertiary sampling unit), *CU*
- A categorical variable to show the first level stratification between NCD and the rest of PNG, and the female literacy-based stratification, *strata1*
- A categorical variable to show which category of female literacy and disadvantage each of the selected districts came from, *strata2*
- Finite population corrections, which indicate that the sampling was without replacement and that the population sampled from was small enough for that to matter. These would be the total number of provinces, *nprov*; the number of districts available to be selected, *ndist*; and the number of Census Units in each selected district that were available to be selected, *ncu*

The appropriate command to issue in *Strata* to declare the nature of the sample design then would be:

```
svyset prov [pw=hhwght], strata(strata1) fpc(nprov) singleunit(scaled)
|| district, strata(strata2) fpc(ndist)
|| cu, fpc(ncu)
```

The || indicate each subsequent stage of the sampling, and the “single unit (scaled)” command tells *Strata* how to handle stratum with only one sampling unit when calculating variances for the survey data. Once *Strata* is informed of the sampling design, this information is preserved in the dataset, and users of the data have a choice over several different approaches to calculating the variance of any statistics of interest, including Taylor series linearization, jackknife, balanced and repeated replication, or bootstrapping.

Appendix 3b: Sampling Weights for the PNG Financial Capability Survey

John Gibson. 21 April 2015

Background

The original sample selection was based on a stratified four-stage random sample design, with preliminary counts from the 2011 Census of Population providing the sampling frame. Due to the limited survey budget and the logistical difficulties of surveying in PNG, the first stage selection drew a stratified sample of just seven provinces to ensure that fieldwork was not spread too thinly over the whole country. These provinces included three from the Highlands (Western Highlands, Jiwaka, Eastern Highlands), two from Momase (Madang and Morobe), and one each from the New Guinea Islands (East New Britain) and Papuan (Central) regions. These seven provinces had been selected using female literacy and predicted poverty as the stratifying variables, since it was expected that these variables are likely to be closely related to financial access and financial capability (especially given the focus of the survey on gender differences) so stratifying by these variables would ensure that the sample covered the range of conditions found in PNG. In addition, the original sample had the National Capital District (NCD) included as a separate survey strata.

At the second stage, a stratified sample of 19 districts was chosen from the seven provinces, with selection probabilities proportional to estimated size (PPeS, where 'size' is the number of households in each district). Six of those 19 districts were from Morobe province, where this high number from one province occurred by chance but also reflects two features of Morobe: it has a wide range of conditions, which means that it is represented in most of the cells of the stratification table, since it has some districts that are amongst the most disadvantaged in PNG while other districts are some of the most well off, in terms of having high rates of literacy and low rates of poverty. Secondly, it has the largest population of any province and so probability proportional to size selection will tend to select areas from this province. The neighbouring province of Madang also had two districts selected.

As it turned out, the survey was only able to be fielded in Morobe and Madang. The calculated sample weights therefore need to be revised to reflect this changed scope so that the estimates from the survey may be in some sense representative of conditions in Morobe and Madang. The purpose of this note is to explain the approach taken to re-weighting. It should be read in conjunction with the original sampling report, which also provided details on the appropriate variance estimators to use with this complex sample design.

It should be noted that the change in the scope and sample size of the survey should not affect the recommendations made in the original report for the most appropriate

variance estimator to use when calculating standard errors or testing hypotheses. Nor does the change in focus reduce the representativeness of the results for each of the selected districts. However, it is the case that some reweighting at Census Unit level is also needed (and is discussed below) because the achieved sample sizes within the selected districts were not always the same as the target sample size.⁴⁴ In some cases an entire Census Unit was inaccessible and a replacement CU was surveyed, based on a pre-set list of one CU per selected district which had been selected using a PPeS draw.

Reweighting of Districts

The eight districts from the original selection that were surveyed represent themselves and a certain number of other districts, to add up to the total number of districts in the sample frame. If these districts had been chosen using a random selection (with probability proportional to size), where the sample frame was just the 15 districts in Morobe and Madang (rather than a sample frame of all districts in the originally selected seven provinces) then the district-level weight (DW_i) would be straightforward to calculate from three values:

- a) The total number of households in Morobe and Madang from the 2011 Census counts, which is denoted M (this number equals 227,409)
- b) The number of households in the i^{th} selected district, denoted m_i (this count ranges from 11,120 households to 23,661 households)
- c) The target number of districts ($n=8$)

$$DW_i = \frac{1}{8} \frac{M}{m_i} \quad (1)$$

This weight ranges from a low of 1.20 for a large district like Lae to 2.56 for a small district like Finschafen. The intuition for this variation is that Lae has a high probability of being selected, given its large size, while Finschafen has a much lower probability. Thus, Finschafen represents more districts, since it is an example of the small, unlikely-to-be-selected types of districts while Lae does not represent as many other districts since large districts are already more likely to be selected. If the resulting weights are applied, then in the hypothetical situation where all households in each

⁴⁴ The third and fourth stage selection were that within each district, five Census Units (CUs) were selected with probability proportional to estimated size (PPeS) and within each CU a total of ten households were to be selected, using circular systematic sampling. In addition, a 'replacement' CU per district was selected, again using PPeS, in cases where one of the originally selected CUs was inaccessible.

selected district were surveyed, the weighted number of households would equal the total of 227,409 in the 15 districts in Morobe and Madang.⁴⁵

The problem with this calculation is that these eight districts were not selected from a sample frame made up of just Morobe and Madang Districts and instead were selected from a much larger frame that was subject to implicit stratification. Therefore the districts that were selected from Morobe and Madang were designed to represent conditions in all of PNG (when combined with the districts in the provinces that were not surveyed) and are not necessarily equally as representative of conditions in Morobe and Madang.

One approach would be to treat the implicit stratification (which affected the order in which districts were ranked prior to their initial selection) as if it had been *explicit* stratification. The weighting calculation above would then be carried out separately within each strata so that selected districts were weighted-up so that the sample would represent all households within that strata. Thus if the selection based on national-level considerations caused 'too few' or 'too many' districts to be selected from with a particular strata, from the point of view of best representing Morobe and Madang, this reweighting could take care of any shortage or surplus of districts in the sample. The problem however is that not all cells in the stratification table are represented amongst the sample of selected districts, as shown in Table 38 below.

The cross-tabulation of the two stratifying variables shows two empty cells, in the sense that Morobe and Madang have no districts with the combination of being

TABLE 38 DISTRICTS IN MOROBE AND MADANG, BY STRATIFICATION GROUPS (SELECTED DISTRICTS SHOWN IN *ITALICS*)

		PREDICTED POVERTY GROUP		
		1 = HIGHEST	2 = MIDDLE	3 = LOWEST
Female literacy group	1 (low)	Middle Ramu	<i>Menyamy</i> <i>Usino/Bundi</i>	NO DISTRICTS
	2 (med)	<i>Bogia</i> <i>Rai Coast</i>	Kabwum	<i>Tewae/Siasi</i> <i>Bulolo</i> <i>Markham</i>
	3 (high)	NO DISTRICTS	Finschafen	<i>Huon</i> <i>Lae</i> <i>Nawae</i> <i>Sumkar</i> <i>Madang</i>

⁴⁵ The weights at Census Unit level achieve the same effect, with the weighted sum of the number of surveyed households in each district adding up to the total number of households in that district.

in the highest poverty group and the highest female literacy group, or being in the lowest poverty group and the lowest female literacy group. Of the other seven cells in the table, only five have districts that were part of the sample, with the cells for the highest poverty group and lowest female literacy group and for the middle poverty and middle literacy group not being represented in the sample. In other words, the approach of up-weighting the selected districts to represent strata totals would not provide any way for the survey results to represent the conditions that are likely to exist in Middle Ramu (a very disadvantaged district) and Kabwum (which is middling, in terms of literacy and poverty). In contrast, the selected districts are drawn heavily from the most advantaged cell in the table, with high female literacy and low poverty, and so are likely to represent better financial capability and access than occurs for Morobe and Madang as a whole.⁴⁶ Thus the approach of treating the implicit strata as explicit strata and up-weighting the selected districts to get to strata-level total numbers of households will not work.

Instead, an adaptation of a non-parametric approach for reweighting an entire distribution, which was developed by DiNardo, Fortin and Lemieux (1996) and is based on creating a counterfactual density, is used. This approach has been previously used in the survey context by Cameron et al. (2010) to re-weight the sample of a survey that was fielded in just two provinces in Cambodia so that it matched the distribution of a larger, nationwide, survey. The method relies on a probability model (logit or probit) being applied to a dataset where the small sample and the large sample are pooled, and the dependent variable is an indicator for whether each observation comes from the larger sample or the smaller sample. Intuitively, the observations from the smaller sample whose characteristics make them more likely to have come from the larger sample are given a higher weight, while those from the smaller sample that have characteristics that make them less like the observations in the larger sample are given a lower weight. When applied in the current context, this method provides a way to adjust the weights for the selected districts so that they represent all parts of Morobe and Madang, including the two cells in Table 38 that have districts but were not covered by the survey.

A probit model was used, with the predictor variables being the female literacy rate and dummy variables for whether each district was in the high poverty or medium poverty categories. The observations are districts, which are weighted by their number of households so as to match the PPeS approach to selection that was used in the original sample design. For most of the selected districts, their conditional (on literacy and poverty) probability of coming from a larger sample (in fact, coming from the full

⁴⁶ The over-representation of more advantaged districts is increased if additional, unplanned, surveys that were carried out in Madang District are used, since that would mean that 4/9 surveyed districts came from the high literacy–low poverty cell, which contains only one-third (5/15) districts in all of Morobe and Madang.

TABLE 39 INPUTS INTO THE CALCULATION OF DISTRICT-LEVEL WEIGHTS FOR THE SELECTED DISTRICTS

DISTRICT	PREDICTED PROBABILITY	RESCALED PROBABILITY	PPeS WEIGHT	RESCALED PPeS WEIGHT
Rai Coast	0.763	1.233	2.091	2.553
Menyamya	0.624	1.008	1.685	1.682
Finschafen	0.654	1.056	2.556	2.674
Markham	0.582	0.941	2.055	1.915
Bulolo	0.582	0.941	1.377	1.283
Lae	0.603	0.975	1.201	1.160
Huon	0.596	0.963	1.623	1.547
Sumkar	0.595	0.962	1.674	1.595

Notes: Predicted probability is from a probit model for the selected districts to be part of a larger sample that includes all districts in Morobe and Madang, and is rescaled to have a size-weighted average of 1. The PPeS weight is if selection was from an un-stratified probability proportional to estimated size selection using a frame made up of all districts in Morobe and Madang, and is rescaled using the values the rescaled probabilities.

population) that included all 15 districts in Morobe and Madang is around 0.6 (noting that the eight selected districts contain 134,211 households while all 15 districts contain 227,405 households, so the mean probability is just under 0.6). However, for Menyamya, Finschafen, and especially Rai Coast, the predicted probabilities are higher and reflect the fact that the literacy and poverty conditions found in those districts are under-represented in the sample compared with their prevalence amongst all Morobe and Madang Districts. In other words, Menyamya, Finschafen, and Rai Coast are more like the two districts (Middle Ramu and Kabwum) in the two cells of the stratification table that were not covered by the selected sample, so that more weight needs to be put on them so that they also represent those omitted cells.

The predicted probabilities are rescaled, by normalizing by the (number of household) weighted mean predicted probability (0.619) and this rescaling factor is then applied to the PPeS weight that is generated from using equation (1). The resulting weights in the last column of Table 39 are the appropriate ones to apply to each selected district to represent the range of conditions and the total number of households in all districts of Morobe and Madang.

Reweighting of Census Units

The originally calculated weights for each Census Unit (CU) were based on a selection of five Census Units per district to be surveyed, with ten households selected from each CU. The CUs were selected using PPeS, based on the counts of households in the 2011 Census (and the 'reserve' CU for each district was also selected using PPeS). In

principle, these weights could be updated with more recent estimates of the size of each CU (e.g. from the listing operation prior to the selection of the ten households) but these details were not provided in the survey dataset. Therefore, the only variation in the weights from what was originally calculated is for instances where more or fewer CUs than targeted were surveyed, and instances where more or less than the target of ten households per CU were surveyed.

The assumption made by the reweighting is that variation from the target number of households is at random, so that the actually surveyed households from the same CU are up-weighted or down-weighted to compensate for the over- or under-target number of interviews achieved.⁴⁷ The same assumption is also made between CUs within the same district—if fewer than five Census Units were surveyed they are up-weighted to compensate for the ones that were meant to be surveyed but were not. The assumption of missing at random is less defensible for CUs than for households within Census Units, since factors such as geographic inaccessibility and religious belief are sometimes the reason for why a CU is not surveyed. But it is difficult to model these factors so as to find surveyed CUs that are more like the unsurveyed ones, so that these more alike ones can be up-weighted. So the less information-demanding approach of missing at random is used here.

Final Weights

The overall sampling weight attached to each household is the product of two intermediate weights: the first stage (district) weight, which is provided in Table 39 above, and the second stage (CU) weight that has been adjusted for the number of surveyed households within the selected Census Unit and of CUs within the district. The CU weight and the household weight are listed in Table 40 below. The household weights range from 499 to 991 and it should be noted that applying these weights to the final sample gives a weighted total of households that matches the Census count of households for Morobe and Madang. If the CU weight is used for the sample of households within a district, it yields weighted estimates representative for that district (albeit with a small sample size of typically 50 households), given the nature of the random PPeS selection of CUs within districts and circular systematic sampling of households within CUs.

For households that provided two sample members, the same household weight should be used for each member. Thus, the data for households with a male respondent and female respondent have more impact on calculated summary

⁴⁷ Note however that the same principle is not applied to weighting individual interviews because there is no expectation that all households have one adult male and one adult female who would each be eligible to complete the survey. Thus any imbalance in the number of male and female interviews is assumed to reflect a gender imbalance present in the population of these two provinces.

TABLE 40 CENSUS UNIT AND HOUSEHOLD WEIGHTS

DIST #	DISTRICT	WARD	CU	CU NAME	DIST WEIGHT	CU WEIGHT	HH WEIGHT
1201	Bulolo	17	7	007.Mumengtain	1.283	413	530
1201	Bulolo	2	7	007.Hikiawa	1.283	413	530
1201	Bulolo	80	8	008.Forestry Compound	1.283	413	530
1201	Bulolo	4	411	411.Wara Kalap	1.283	413	530
1201	Bulolo	4	1	001.Moniau	1.283	413	530
1202	Finschafen	30	12	012.Genna	2.674	371	991
1202	Finschafen	9	24	024.Lecko	2.674	371	991
1202	Finschafen	1	507	507.Brown Hospital	2.674	371	991
1203	Huon	19	4	004.Chivasing	1.547	350	542
1203	Huon	8	19	019.Salus	1.547	350	542
1203	Huon	8	9	009.Labubutu	1.547	350	542
1203	Huon	13	416	416.Sepik Settlement	1.547	438	678
1203	Huon	18	436	436.Erap C/School	1.547	389	602
1205	Lae	82	640	640.Kamkumung Market	1.160	473	549
1205	Lae	82	674	674.Busurum Settlement	1.160	473	549
1205	Lae	82	10	010.Quail Crest	1.160	526	610
1205	Lae	82	110	110.Bumbu Polic Barracks	1.160	526	610
1205	Lae	82	178	178.Tent City	1.160	430	499
1206	Markham	1	501	501.Umi/Atzera LG Station	1.915	307	589
1206	Markham	9	8	008.Yanuf	1.915	277	530
1206	Markham	21	18	018.Sauruan	1.915	277	530
1206	Markham	4	1	001.Arawek	1.915	277	530
1206	Markham	20	5	005.Wangat Sayang	1.915	277	530
1207	Menyamyam	12	11	011.Epike	1.682	562	946
1207	Menyamyam	9	14	014.Hazoi	1.682	562	946
1207	Menyamyam	7	4	004.Okanaiwa (4)	1.682	562	946
1304	Rai coast	3	5	005.Gur	2.553	378	964
1304	Rai coast	14	19	019.Ato Settlement	2.553	252	643
1304	Rai coast	4	28	028.Pisangana	2.553	227	578
1304	Rai coast	17	29	029.Singor	2.553	227	578
1304	Rai coast	35	1	001.Bok	2.553	252	643
1304	Rai coast	9	40	040.Kalaleng	2.553	227	578
1305	Sumkar	4	14	014.Kinim	1.595	340	542
1305	Sumkar	15	31	031.Kurubek	1.595	340	542
1305	Sumkar	26	20	020.Marup 1	1.595	340	542
1305	Sumkar	3	9	009.Murukanam	1.595	340	542
1305	Sumkar	17	15	015.Matukar	1.595	340	542

statistics for the full (gender pooled) sample than do the data from a household with just a single respondent. This allows for the fact that the overall population is made up of households of different size and gender structure. Similarly, in any gender-disaggregated statistics, the household sampling weight is applied to each respondent from the same household.

APPENDIX 4: FIELD WORK

Instrument development, translation and piloting were undertaken as part of the development of the World Bank global Financial Capability survey instruments during 2011–2012.

Preparations for the field work commencement third quarter 2013. Initially it was intended data collection for the national study would be undertaken in several regional waves, with teams of enumerators recruited for the Momase, Highlands, and Central waves of data collection. The National Statistics Office agreed to assist with enrolment and (initial) local logistics. A MOA was signed between BPNG and NSO. During the period September–December 2013 the governance committees were established and the implementing agency (INA) was selected and the survey instrument and translation was reviewed. The project was launched formally.

During the period November 2013–February 2014 logistics were finalised and communication commenced with provincial and district authorities, and provincial NSO offices. Community briefings were held for the initial provinces. Madang and Morobe, were selected to be the first two provinces to be surveyed, with the training for enumerators to be undertaken in Lae, the provincial capital of Morobe. Lae is Papua New Guinea's second city, and both its industrial capital and the country's largest port (and the largest port in the South Pacific region, outside Australia and New Zealand).

Lae was selected for the training because it is the most central and accessible city for much of the country, with extensive road access to Madang and the Highlands provinces, as well as across much of the large province of Morobe. The initial pilot survey work was undertaken during the training period in Morobe province, and, with the selected enumerators largely from those two provinces, it was logical to proceed with surveying these two provinces first. Moreover, the two provinces are in some ways a microcosm of many of the diverse geographical and social characteristics of the whole of Papua New Guinea. PNG is geographically, economically and ethnically extremely diverse, from its communities in remote valleys in the Highlands provinces, to coastal and lowland communities on some of the country's islands, coasts and accessible and inaccessible major valleys. It is impossible for any province, or small selection of provinces and districts to represent the entire country's range of physical and human characteristics, nevertheless, Morobe and Madang do reflect many aspects of that diversity.

Data collection was undertaken during the period February–November 2014. An initial round of data collection was undertaken February–May 2014. This was followed by a review by the Steering Committee. The decision was taken to contract the scope of the initial round of data collection to Morobe and Madang. Data collection resumed July 2014. Two teams of enumerators undertook interviews, initially in Madang and subsequently in Morobe.

Tablet based data collection was used for the financial capability survey. Data was held on the tablet and uploaded periodically. This modality proved successful and enabled data to be collected in remote locations, with data upload when proximate to a cell-tower.

Enrolment was paper based, as was the location survey. Following the completion of field work data entry was undertaken in Port Moresby by INA. Data entry was completed and checked January 2015. Data entry was not required for the financial capability survey.

APPENDIX 5: GLOSSARY OF FINANCIAL TERMS IN TOK PISIN

The glossary of financial terms was developed by the PNG Institute for National Affairs to facilitate translation of the Financial Capability survey document from English to Tok Pisin. The translation was reviewed by the expert reference group who also reviewed the survey translation.

	ENGLISH	TOK PISIN TRANSLATION
1.	Question	Askim/kwesten
2.	Income	Moni yu kisim long wok bisnis, salim gaden kaikai, o wok moni
3.	Self-employment	Oi wok yu yet i kirapim long en long kisim moni
4.	Business finance	Moni bilong bisnis
5.	Personal finance	Moni bilong yu yet
6.	Household finance	Moni bilong hauslain
7.	Household	Hauslain
8.	Responsible wholly or partially	Em wok we yu yet i save go pas na wokim long en o yu wantaim ol narapela lain long haus
9.	Planning	Mekim plen
10.	Financial decisions	Disisen long sait bilong moni
11.	Personal spending	Moni we yu spendim/usim long yu yet
12.	Yes	Yes
13.	No	Nogat

	ENGLISH	TOK PISIN TRANSLATION
14.	Managing	Lukautim
15.	Money	Moni
16.	Regularly	Planti taim
17.	Sometimes	Sampela taim
18.	Rarely	Wan wan taim tasol
19.	Never	Nogat wanpela taim
20.	Always	Olgeta taim
21.	Know exactly	Save stret
22.	Only a rough idea	Save liklik tasol
23.	Money left over money	Leptova moni/moni I stap bihain
24.	Necessary items	Ol samting yu/hauslain nidim long en
25.	Fluctuations in income	Moni namba/mak i save go antap na kam daun
26.	Major expenditure	Bikpela moni bai yu spendim/yusim long baim wanpela bikpela samting
27.	Planned future purchase	Samting we yu plen pinis long baim long bihain taim
28.	Business	Bisnis
29.	Assets	Aset
30.	Essential items	Ol samting yu nidim long en
31.	Non-essential items	Ol samting yu no nidim long en
32.	Lend	Givim dinau moni
33.	Repay debts	Bekim dinau moni
34.	Borrow money	Dinau long moni
35.	Run short	Ron sot
36.	Insufficient/low income	Ino inap moni
37.	Business losses	Bisnis i lusim moni
38.	Unexpected expenses	Ekspens we yu no save bai kamap na ol i kamap
39.	Financial help	Halivim long sait bilong moni
40.	Overspending	Spendim/yusim moa moni long moni yu gat long en
41.	Failure to plan ahead	Fail long wokim plen bilong bihain taim
42.	Day-to-day spending	Moni yu spendim/yusim long wanwan dei
43.	Afford to borrow	Yu inap long kisim na bekim dinau moni
44.	Agree	Wanbel
45.	Disagree	No wanbel
46.	Agree Strongly	Wanbel stret
47.	Agree to some extent	Wanbel liklik tasol

	ENGLISH	TOK PISIN TRANSLATION
48.	Disagree strongly	No wanbel stret
49.	Disagree to some extent	No wanbel liklik tasol
50.	Jointly	Yu wantaim narapela
51.	Households necessary items	Ol samting hauslain nidim long en
52.	Describes you	Makim/diskraibim yu
53.	Affording a loan	Kamap long mak bilong kisim dinau
54.	Households future expenses	Ol samting we hauslain bai baim long bihain taim.
55.	Households average monthly income	Moni namba we hauslain bilong yu i save kisim planti taim insait long wan wan mun. No ken kauntim ol mun we hauslain i save kisim liklik moni stret na ol mun we hauslain i save kisim bikpela moni stret.
56.	Unexpected major expense	Bikpela ekspens we yu no save bai kamap long en
57.	Expenses	Ekspens/ol samting bai yu baim long en
58.	Expected expenses	Ol samting we yu save bai yu <i>baim</i> long en
59.	Emergencies or unexpected expenses	Ol samting we yu <i>no save</i> bai kamap we bai yu <i>mas baim</i> long en
60.	Household expenses	Ekspens bilong hauslain
61.	Remittances	Moni ol famili salim kam long yu long lukautim yu
62.	In full	Olgeta
63.	Not worried at all	No wari
64.	A bit worried	Wari liklik tasol
65.	Very worried	Wari stret/tru
66.	Old age	Taim yu lapun pinis
67.	Strategies	Ol rot bilong mekim ol wok i kamap na karim kaikai
68.	Savings	Seivins/moni yu seivim long benk
69.	Pension	Pensin/
70.	Financial Assets	Fainensel Aset/ol samting olsem moni yu gat long ol bank akaunt.
71.	Non-financial assets	Ol samting olsem haus, kar, na ol narapela samting yu gat long em
72.	Insurance	Insurens
73.	Future	Bihain taim
74.	Children	Pikinini
75.	Month	Mun
76.	Day	Dei
77.	Year	Yia/kristmas
78.	Financial products and services	fainensel prodak na sevis (ol samting na sevis long sait bilong mekim, lukautim, dinau, na seivim moni)

	ENGLISH	TOK PISIN TRANSLATION
79.	Terms and conditions	Ol samting/lo bai yu mas bihainim na hevi bilong brukim ol lo makim dispela finensel prodak o sevis.
80.	Past 5 years	Faiv pela yia/kristmas igo pinis
81.	Choose	makim
82.	Information	Infomesin/tok save
83.	In-kind payments	Baim ol samting wantim ol narapela samting na ino long moni
84.	Advantages	Gutpela bilong en
85.	Disadvantages	Nogut bilong en
86.	Personally	Mi yet
87.	Short term	Taim i makim nau igo inap long wanpela kristmas tasol
88.	Thought	Tingting
89.	Impulsive	kirap nogut na mekim ol samting
90.	Aspirations	samting insait long tingting bilong mi, mi laik mekim long en istap
91.	Status	sindaun bilong mi
92.	Opportunities	Ol wei bilong mekim sindaun bilong mi i kamap gutpela moa
93.	Undesirable habits	Ol pasin nogut bai bagarapin yu
94.	Less fortunate	Ol turangu lain
95.	Returns on investment	Interest moni long invesmen
96.	Income from interest on savings	Interest moni long seivins
97.	Income vary from season to season	Moni yu save kisim i save senis long taim bilong rain na taim bilong san
98.	Private sector	Praivet secta/ol bisnis lain
99.	Subletting land or housing	Putim graun na manmeri peim moni long yusim/putim haus long rent
100.	Income steady	Moni namba yu kisim long wok bisnis, o salim gaden kaikai o wok moni i save stap wan kain tasol
101.	Income varies	Moni namba yu kisim long wok bisnis, o salim gaden kaikai o wok moni i save senis senis
102.	Help	Halivim
103.	Day-to-day	Wanwan dei
104.	Week-to-week	Wanwan wik
105.	Month-to-moth	Wanwan mun
106.	Better off now	Gutpela moa nau
107.	Worse off now	Igo nogut moa nau
108.	Will be better off	Bai kamap gutpela moa
109.	Will be worse off	Bai igo no gut moa
110.	Just about the same	Stap wankain tasol

	ENGLISH	TOK PISIN TRANSLATION
111.	Do not know	No save
112.	Important	Impotent/namba wan samting
113.	Financial decision	Desisin long sait bilong moni
114.	Budget	Moni plen
115.	Save	Sevim
116.	Invest	Inves
117.	Loan	Dinau moni
118.	Borrow money	Dinau long moni
119.B	Financial advice	Fainensel advais/advais long sait bilong moni
120.	Spouse	Man o meri bilong yu
121.	Family	Femili
122.	Use Credit	Usim Dinau Moni
123.	Personal Spending	Moni we yu yet bai yusim/spendim
124.	Borrow money	Dinau long moni

APPENDIX 6: LITERATURE REVIEW OF FINANCIAL CAPABILITY MEASUREMENT

A number of studies have investigated the relationship between financial knowledge and financial behaviour. Using data from the United States, Lusardi and Tufano (2009) find that individuals who have low measured levels of financial knowledge tend to pay minimum balances on credit cards, incur late fees on cards, and use informal sources of credit. Stango and Zinman (2009) show that people who make mistakes in interest and future value calculations tend to borrow more and save less. Lusardi and Mitchell (2009) illustrate that people with low levels of financial knowledge think less about retirement and that most of them have not planned for retirement at all. A survey of Russian households shows that financial knowledge is significantly and positively related to retirement planning involving private pension funds and schemes (Klapper & Panos, 2011). And in Mexico, Hastings and Tejeda-Ashton (2008) conducted a survey that reveals that less knowledgeable individuals tend to choose mutual pension funds with higher fees.

These studies tend to measure financial literacy based on questions that test knowledge of the time value of money (inflation), interest rates, compounding, and risk diversification, although the specific measures used vary from study to study (see also Xu and Zia (2012) for a discussion of different measures of financial knowledge). Most studies do not aim to measure financial capability in addition to financial knowledge,

and thus there is little existing evidence about the relationship between financial capability and financial behaviour.

One caveat with the studies mentioned above is that these results are not necessarily causal. They show a correlation between proxies for financial knowledge and outcomes of interest, but these correlations may simply reflect unobserved characteristics of individuals such as their numeracy, ability, parental background, or other such features. Although some studies try to measure these characteristics and try to account for them in the analysis, some of these features may not be measurable and can thus potentially bias the results.

A growing literature tries to address this issue by relying on quasi-experimental or experimental variation in the provision of financial education programs to measure the impact of financial knowledge on financial behaviour. The context of these studies varies widely—for example, in terms of the economic environment and the type of individuals targeted through the financial education programs.

Compulsory financial education classes taught in high schools have been the subject of a number of studies. Bernheim, Garrett, and Maki (2001) use exogenous variation in high school financial education mandates across U.S. states to show that students exposed to financial education classes save more as adults. However, Cole and Shastry (2008) cast doubt on these findings, showing that they are not robust to controlling for state-fixed effects and examining effects over time. Shorter-term evidence comes from Bruhn et al. (2013) who conducted a randomized experiment providing financial education in Brazilian public high schools. They find positive effects on financial knowledge, attitudes, and behaviours, and an increase in savings rates. These impacts are small in absolute magnitude: a 3 percentage point increase in knowledge, and a 1 percentage point increase in savings. In Germany, Lührmann, Serra-Garcia, and Winter (2012) find teenagers given financial literacy training show increased interest in and knowledge of financial matters, and save more in a hypothetical task, but they do not measure actual savings.

Other studies have focused on providing financial education to working adults, recognizing the differences in households' financial needs and exposure across developed and developing countries. The literature in developed countries tends to study the impact of financial education on planning for retirement or investment portfolio choices. Duflo and Saez (2011) show that participation in seminars discussing retirement savings leads to an increase in retirement plan participation.

In the developing country context, impact evaluations of financial literacy training have studied the unbanked, insurance take-up, and migrants. One of the first papers to examine the impact of financial education in a developing country was by Cole, Sampson, and Zia (2011). The authors implemented a field experiment in Indonesia where they offered randomly selected unbanked households a financial education

course geared toward opening a bank savings account. They find that the financial education course had no effect on the likelihood of opening a bank savings account in the full sample, but it had modest effects for uneducated and financially illiterate households. Cai (2011) used a randomized experiment to show that farmers in rural China are more likely to take up crop insurance and become less price sensitive after attending financial education sessions.

Gibson, McKenzie, and Zia (2012); Doi, McKenzie, and Zia (2012); and Seshan and Yang (2012) analyse how providing information and financial education affects the behaviour of migrants and their households. Gibson, McKenzie, and Zia (2012) work with migrants in New Zealand and Australia, and find that financial education increases knowledge about remittance transaction costs but does not lead to changes in the amount of remittances sent or use of the cheapest remittance method. Using a sample of Indonesian migrants, Doi, McKenzie, and Zia (2012) find that impacts on financial knowledge, behaviour, and savings are largest when both the migrants and their families receive financial education. The results show that financial education can have large effects when provided at a teachable moment, but that this impact varies according to who is receiving the training. Seshan and Yang (2012) find that Indian migrants in Qatar increase savings after financial education training, but only if they had low financial knowledge to begin with.

Overall, the literature thus finds a positive relationship between financial knowledge and use of formal financial products. Impact evaluations of financial education courses suggest that this relationship is, at least in part, causal. However, these evaluations also highlight that financial education courses often only lead to behaviour change for certain groups of individuals—such as those who had low knowledge to begin with—but not for others. In addition, the measured impacts are often small, and participation rates in financial education courses tend to be low. The small effects and low participation rates suggest that classroom-style workshops may not be the best way of conveying financial education to adults, who may not have the time or motivation to attend such workshops. The literature is now moving toward exploring whether innovative channels for providing financial education can affect behaviour. Ongoing studies in India, Peru, South Africa, and the United States (among others) are testing whether the provision of information via videos, radio, mass media, or video games is effective in improving individuals' financial decisions (see e.g., Berg and Zia (2013)).

While literature has mostly focused on financial knowledge so far, it has also touched on concepts related to specific financial capability. Some of the financial education courses studied through impact evaluations try to teach techniques to improve budgeting and monitoring of expenses. For example, Bruhn et al. (2013) find that a comprehensive financial education program in Brazilian high schools leads to an increase in the percentage of students and parents who make a list of expenses. The program also increased saving rates. Other studies have examined the relationship

between time preferences and saving behaviour. Brown, Chua, and Camerer (2009) conducted a behavioural laboratory experiment and find that individuals with present-biased preferences have a tendency to overspend. Ashraf, Karlan, and Yin (2006) show that commitment savings accounts can help increase savings for individuals with present-biased preferences. However, more research is needed to investigate the relationship between different components of financial capability and the use of different financial products.

The financial capability construct used for this study was developed by Kempson and colleagues at the Personal Finance Research Centre at the University of Bristol. Financial capability has become the dominant construct used to examine financial inclusion, financial knowledge and skill, behaviours and attitudes globally. The construct was initially developed within the context of the UK and was published in the landmark FSA UK Financial Capability Study (Atkinson, McKay, Collard, & Kempson, 2007; Atkinson, McKay, Kempson, & Collard, 2006). The FSA study builds on earlier studies by the Personal Finance Research Centre examining financial exclusion. (Refer for example: Kempson & Whyley (1999); Kempson, Whyley, Caskey & Collard (2000); Kempson, Atkinson & Pilley (2004); and Collard & Kempson (2005).)

The instrument was modified and tested at twelve low and middle-income countries in 2010–2013 to incorporate unique characteristics and challenges in these countries. The evaluation of these pilots (World Bank, 2013b, 2013d) shows some common features among the low-income countries in measuring the financial capability and designing financial capability policies and interventions, namely access, poverty, location, informality, education and risks. The evaluation finds that these characteristics are bound to influence the priorities of policy makers with objectives of financial literacy programs and their target groups; the way individuals behave “financially” and how they react to interventions to change their behaviour and how financial capability can be measured.

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Financial Inclusion and Financial Capability in Morobe and Madang Provinces, Papua New Guinea

— An initial report of the Papua New Guinea National Financial Capability Survey

“For many Papua New Guineans, the use of financial services is rather new. This report will provide a detailed picture of how our population manages their funds and accesses the financial services so we can develop policies, financial products and services to enhance financial inclusion and improve financial capability in PNG.” **Mr. Loi M. Bakani, CMG, Governor at the Bank of Papua New Guinea**

“Understanding the way banks and financial products work is important for managing money well and saving for the future. The fact that most bank forms in PNG are only written in English, is an unnecessary barrier to saving and managing money. With this in mind, I’m particularly glad to see an English-Tok Pisin glossary of financial terms come out of this project. I have no doubt this will play an important role in improving financial literacy in PNG.” **Mr. Paul Barker, Managing Director, Institute of National Affairs**



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