Joint project of the National Bank of the Republic of Belarus and Alliance for Financial Inclusion (AFI) «Measuring Access to Finance: Developing Evidence-based Access Policies in Belarus»

Estimation and analysis of financial inclusion among households and individuals in the Republic of Belarus

National Survey Results

Minsk, National Bank of the Republic of Belarus

2012

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Introduction

From 13 January to 13 February 2012, the Institute of Sociology under the National Academy of Sciences of Belarus conducted a nationally representative sample survey to measure aspects of financial inclusion among households and individuals, including demand, frequency and intensity of utilisation of financial services. The survey sample included 2500 respondents. The Institute of Economic Research under the Ministry of Economy (State Research Institution, SRI), performed the analysis of the survey data and constructed an econometric model of the Total Financial Inclusion Index (TFI) for households and individuals. This Report presents the findings of this analysis.

1. Sample overview

The final survey sample numbered 1156 men (46.2%), and 1344 women (53.8%) of all age groups. The majority of the survey respondents (55.2%) were married and living together, 37.4% had children below 18 years of age; 66% resided in cities, 28.8% in rural areas, and 5.2% in urban-type settlements. 60.2% were working full-time, 5.1% part time, and 32.8% were not employed. The dominant groups in the sample structure were blue-collar workers (26.2%), office workers (21.7%), and pensioners (21.1%). 14.9% had complete higher, 26.1% uppersecondary vocational (technical college diploma), 27.0% general secondary (11-year schooling certificate), and 23.6% primary or basic education.

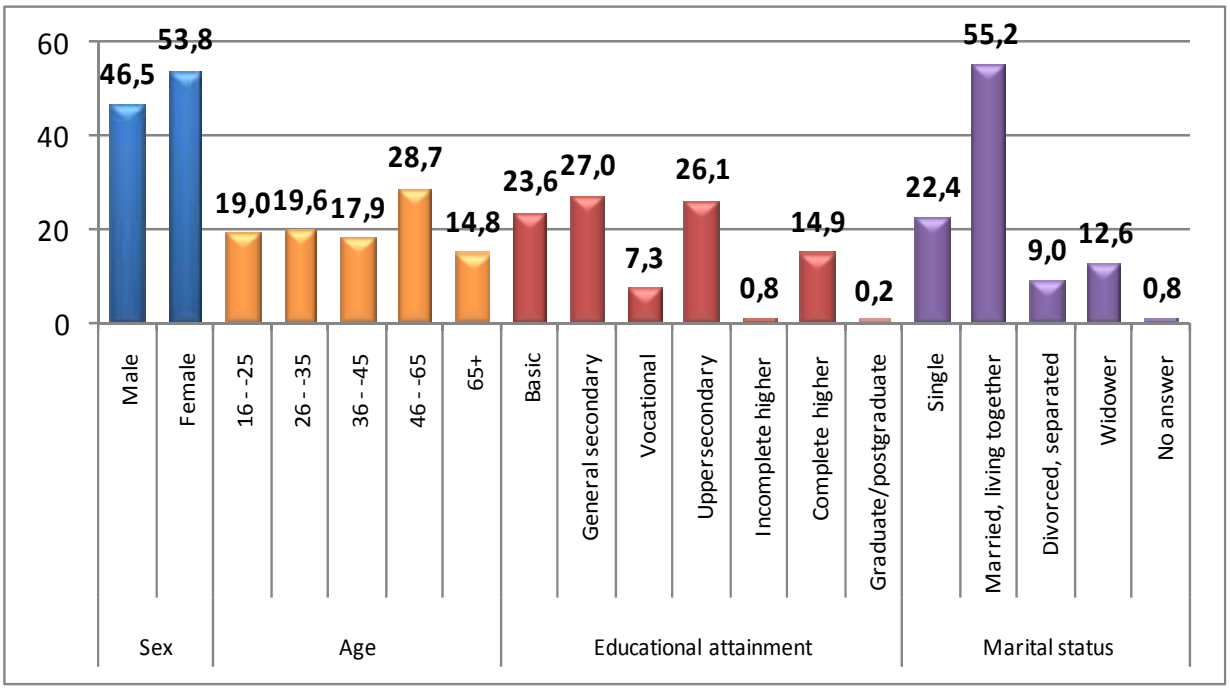


Figure 1 Selected socio-economic characteristics of individuals (% of total)

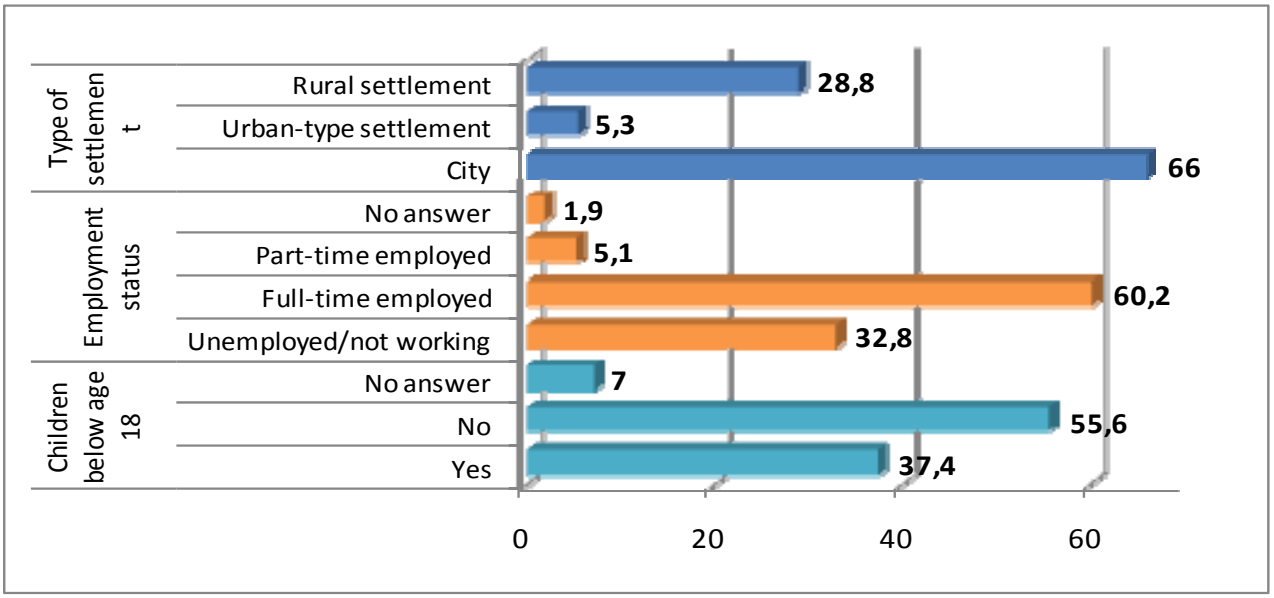
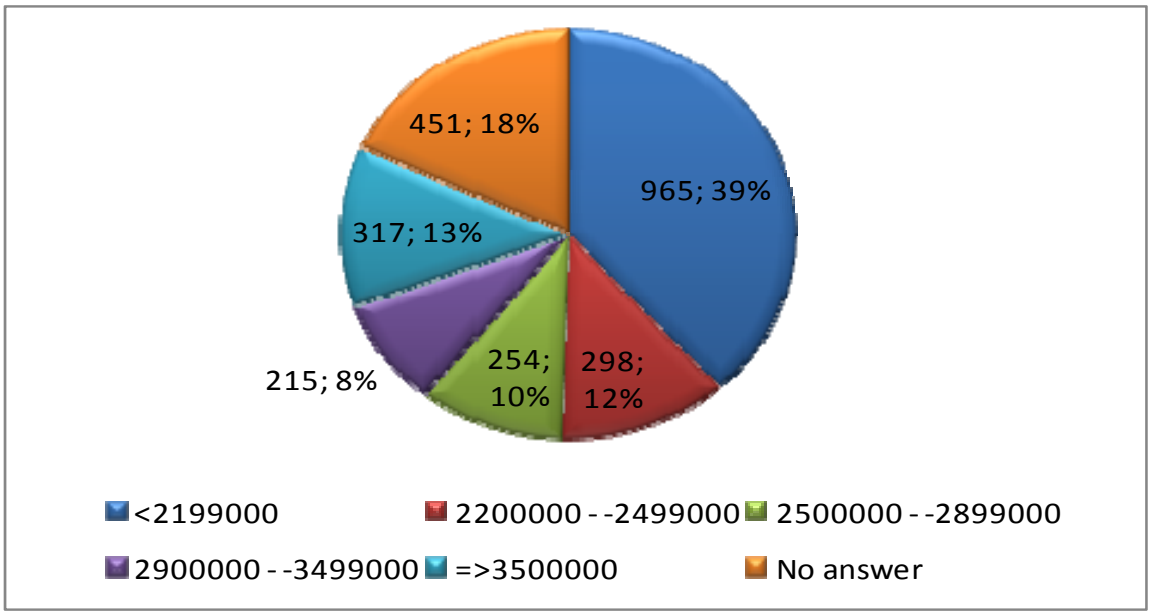
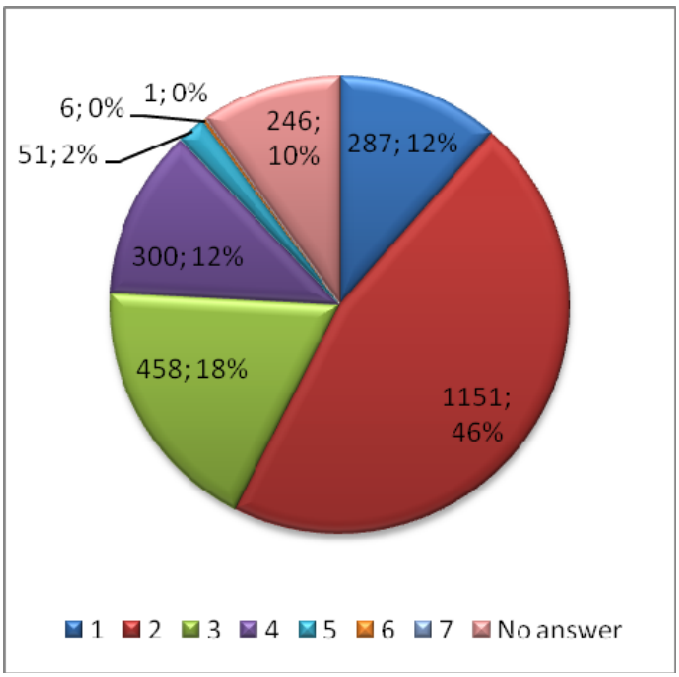


Figure 2 Distribution of individuals by employment status, residence, number of dependent children (%)

Two-adult households represent 46.0% of the sample, while 18.3% households had three adult members, and another 12% four adult members. Households with a cumulative income of up to 2200 thousand Belarusian Roubles (BYR) represent the largest single group of households by income (38.6%), while households with incomes over 3500 thousand BYR contributed 12.7%, 2200 - 2499 thousand BYR 11,9%, and 2500 - 2899 thousand BYR 10.2% of the sample (figure 3)



Average household income per month, roubles.



Number of adults in the household

Figure 3 Household socio-economic characteristics

2. Descriptive statistics of the datasets

As indicated by the frequency of use data from the survey of households and individuals, the top three types of services utilised by individual respondents were banking, insurance and credit. The proportion of yes-responses to questions regarding the most commonly used banking services were as follows: current account, 40.1%; debit card, 27.6%, domestic money transfers, 16.6%; Internet banking, 12.8%; mobile banking, 12.4%; credit card, 11.4% (figure 4).

Individual participant responses with regard to utilisation of specific insurance services were distributed as follows: property insurance, 28.4%; car insurance, 24.4%; life insurance, 13.3%, and medical insurance 13.0%. Use of consumer credit was reported by 26.1% of individual respondents. Use of the remaining financial services was reported by fewer than 10% of the respondents, with the exception 'savings accounts' (14.1%).

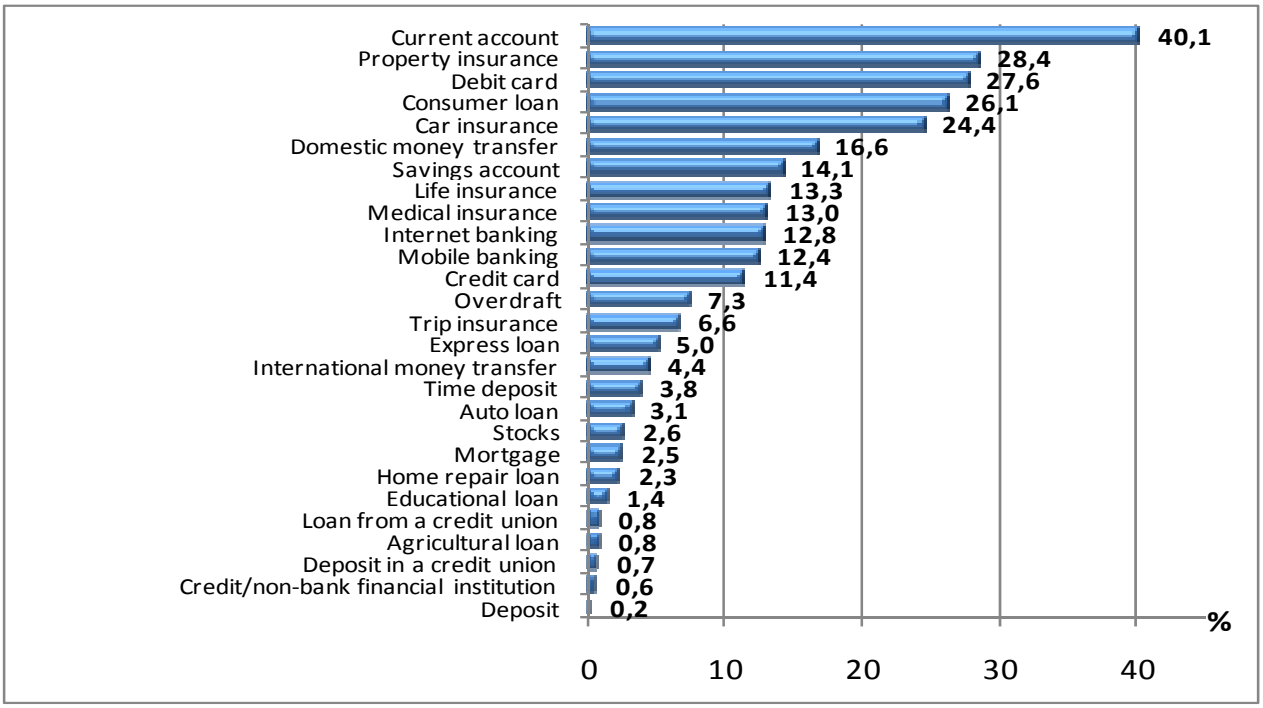


Figure 4 Use of financial services by individuals

Use of financial services by households show a similar pattern. Current account was used by 38.5%, debit card by 25.6%, domestic money transfers by 13.5%, Internet banking by 11.0%, mobile banking by 10.8%, and credit card by 10.0% of the respondents (Figure 5).

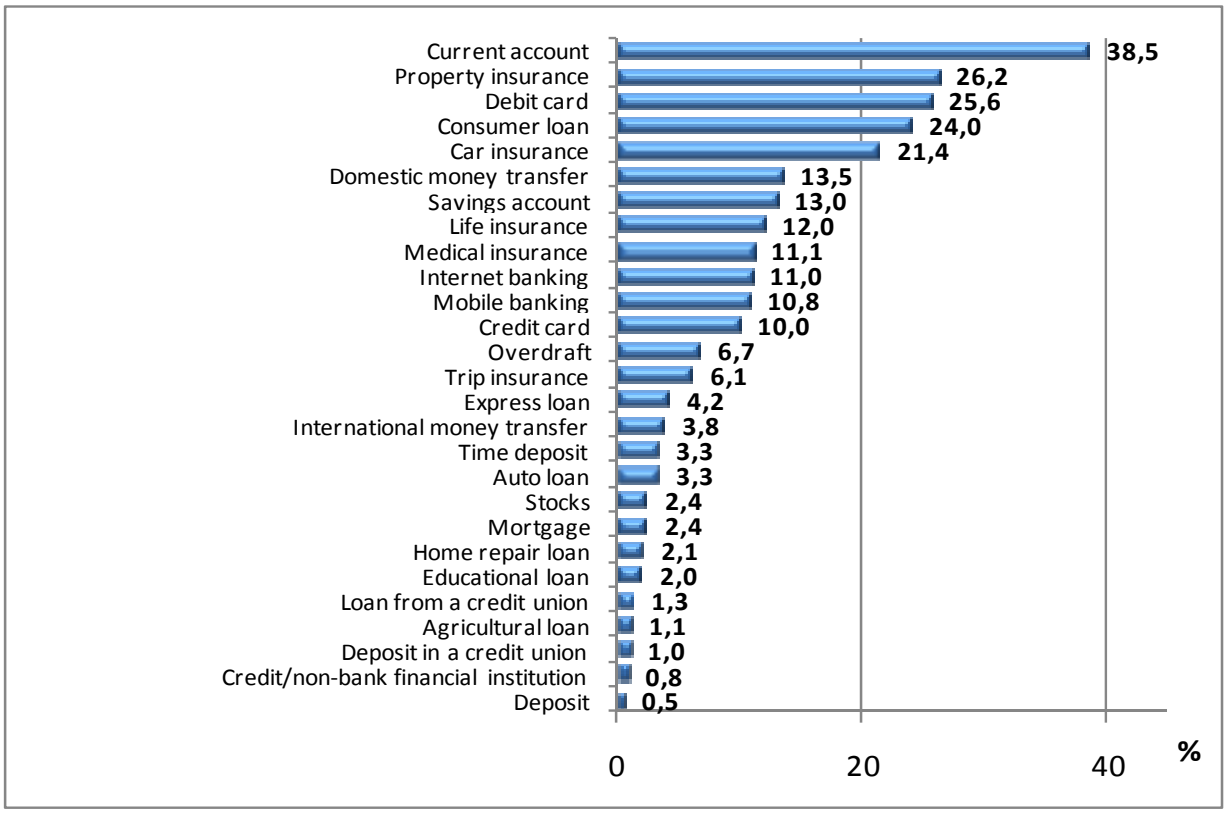


Figure 5. Use of financial services among households

Household responses with regard to specific insurance services were distributed as follows: car insurance, 26.2%; property insurance, 28.4%; life insurance, 13.0%, and medical insurance 11.1%. Use of consumer credit was reported by 21.4% of the households participating in the survey. Use of the remaining financial services was reported by fewer than 10% of the respondents, with the exception 'savings accounts' (12.0%).

The survey revealed the following regional trends in the use of financial services:

In five administrative regions out of seven (including Minsk City), the largest proportion of respondents reported the use of 'current/checking account'. In the remaining two regions - Vitebsk Oblast and Minsk City - debit card use was most frequently reported. 58.2% of respondents were using a debit card in Minsk City, and 42.8% in Vitebsk Oblast.

Consumer credit and property insurance were in second place by the frequency of use. In Minsk City, the second most common financial service was car insurance.

The maximum reported number of services used by a single respondent (i.e. the sum of yes-responses to Questions 1.1. - 1.27) was 27 for individuals and 17 for households. Maximum number of reported types of services (banking, credit, savings, insurance) used by one respondent was 4 for individuals and households (Table 1)

Average reported number of services used by a single respondent was 2.824 among individuals and 2.592 among households, and the average reported number of services types (e.g. banking, insurance, etc.,) was 1.7812 among individuals and 2.028 among households.

Table 1 – Summary statistics for financial inclusion

	Minimum	maximum	average	median	standard deviation
N_services_ind	0.00	13.00	2.8240	2.0000	2.35933
N_services_hh	0.00	17.00	2.5920	2.0000	2.69779
N_types_ind	0.00	4.00	1.7812	2.0000	1.10064
N_types_hh	0.00	4.00	2.0280	2.0000	1.19255

The maximum number of adult members per household (including adult children) was 7, and the average was 2.4228. Maximum number of children per household was nine, and the mean was around 1.3608 (Table 2)

Table 2 – Summary statistics for the socio-demographic characteristics of the survey respondents

	minimum	Maximum	average	median	standard deviation
N_adults	1.00	7.00	2.4228	2.0000	0.97051
N_children	1.00	9.00	1.3608	1.0000	0.68313
HH_size	1.00	11.00	2.9534	3.0000	1.26794

3. Total Financial Inclusion Index (households and individuals)

The Total Financial Inclusion Index for households and individuals (TFI-I) measures the degree of financial inclusion among individuals and households**.** The following financial inclusion criteria were applied:

0. 0 services – no usage, fully excluded;
1. 1-2 services – basic use;
2. 3-5 services – active use;
3. 6-8 services – advanced use;
4. 9+ services – intensive use;

As indicated by the survey data, a large proportion of the population fall into the 'financially excluded' category. *Among individuals,* 14.1% were not using services, and another 38,6% were basic users (Figure 6).

The share of *financially excluded households* was more difficult to estimate due to the large number of 'no answer/unsure' responses regarding specific services and types of services. The proportion of household respondents who did not answer yes to any of the questions 2.1 - 2.27 was 25.5%. These 25.5% included 15.5% of respondents who had checked the 'no' and 'no answer/unsure' boxes in the questionnaire. Only 10.1% gave definitive negative responses to all of the questions regarding the use of services.

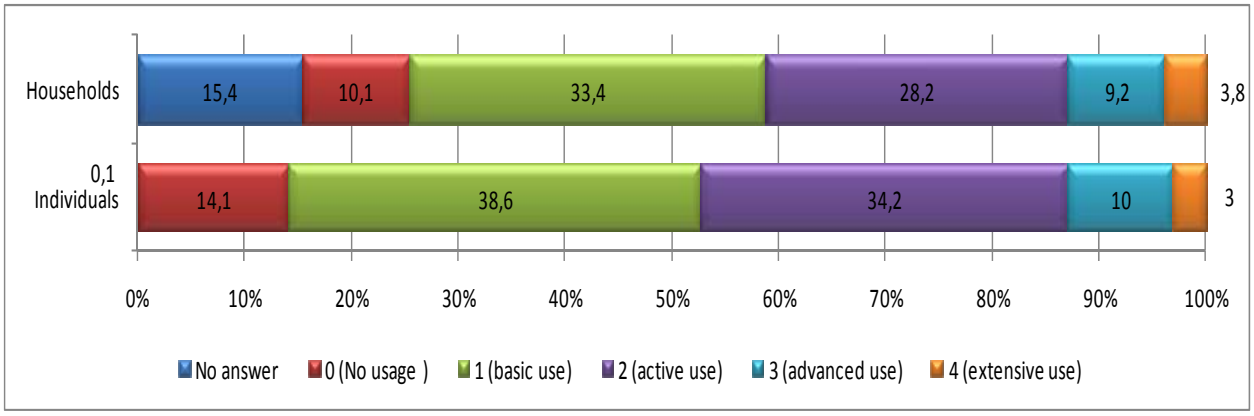


Figure 6 Components of the Total financial inclusion index TFI-I (individuals and households)

Less than one-half of the population were advanced or extensive users. Only 10% of individual respondents (and 9.2% of households) were 'advanced users', and 3.0% of individuals (3.8% of households) were 'extensive users'.

Total financial inclusion index (TFI-I) is 85.8% for individuals and 74.6% for households.

Total Financial Inclusion Index - II (TFI-II) was developed to measure utilisation of four major types of services - payment, credit, savings, insurance. TFI-II represents the proportion of the population using each type of service.

Among individuals, financial inclusion was highest for payments (69.5%) and lowest for savings and deposits (19.0%). Credit services were used by 33.7% of individuals, and insurance by 52.5% (Table 7).

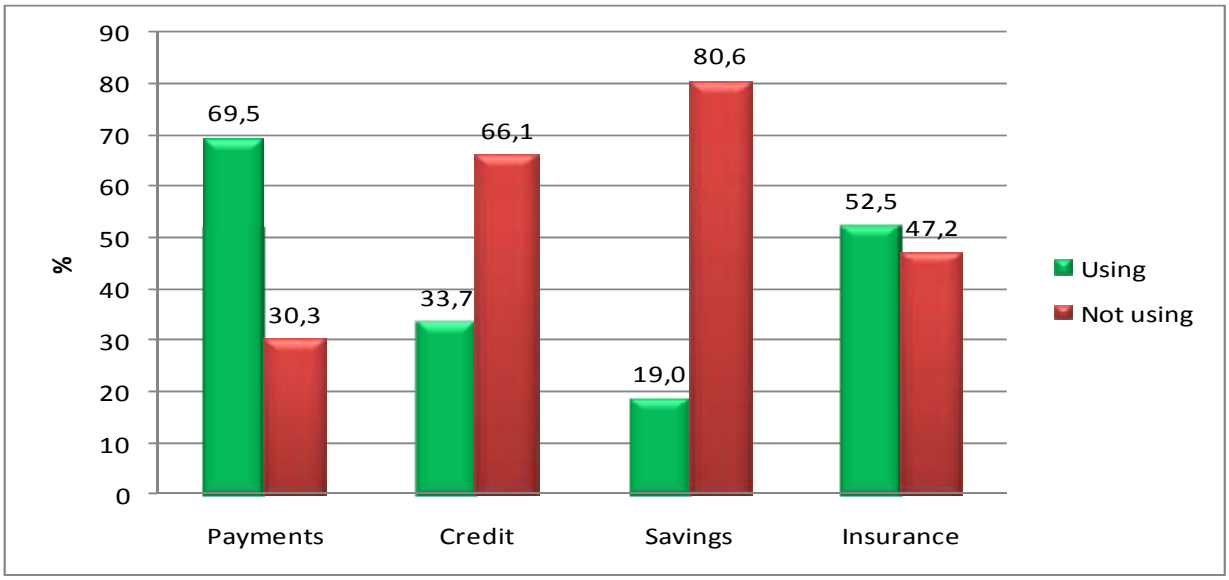


Figure 7 Financial inclusion of individuals, by type of service

Among households, payments were also the most commonly utilised type of service (63.4%), followed by 45.8% for insurance services, and 29.8% for credit services. Savings and deposits were the least utilised type of financial service. Only 15.7% of households reported the use of these services (Figure 8).

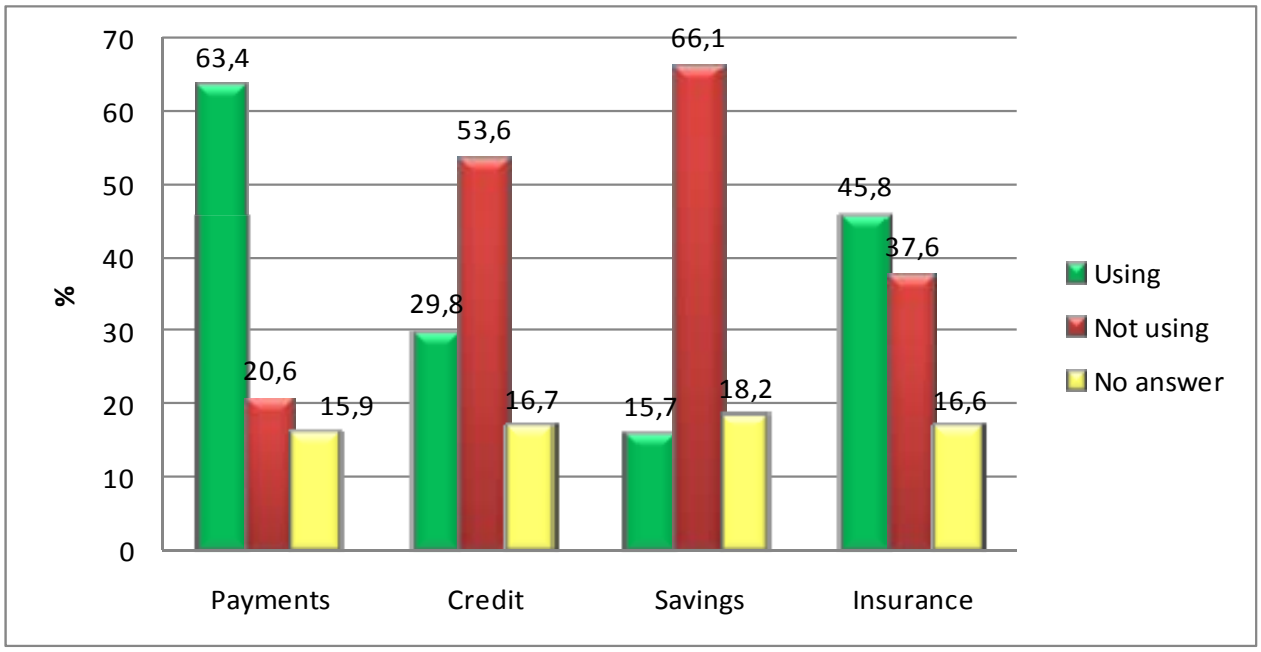


Figure 8 Financial inclusion of households, by type of service

TFI-II values for individuals and households are as follows:

Individuals:

$TFI\text{-}II_{payments}$= 69.5%;

$TFI\text{-}II_{credit}$ = 33.7%;

$TFI\text{-}II_{savings}$= 19.0%;

$TFI\text{-}II_{insurance}$ = 52.5%;

Households:

$TFI\text{-}II_{payments}$= 63.4%;

$TFI\text{-}II_{credit}$ = 29.8%;

$TFI\text{-}II_{savings}$= 15.7%;

$TFI\text{-}II_{insurance}$ = 45.8%;

Use of multiple services was reported by 57.8% of individuals and 49.8% of households.

Individuals: $TFI\text{-}II_{multiple\ services}$ = 57.8%;

Households: $TFI\text{-}II_{multiple\ services}$ = 49.9%.

The combinations of services were identified by cross-tabulation.

Payments and credit: 87.2% of individuals using credit services were also using payments. Of individuals who reported the use of payments, 42.2% were also using credit services. Among individuals who denied the use credit services, 60.6% also denied the use of payment services (Figure 9)

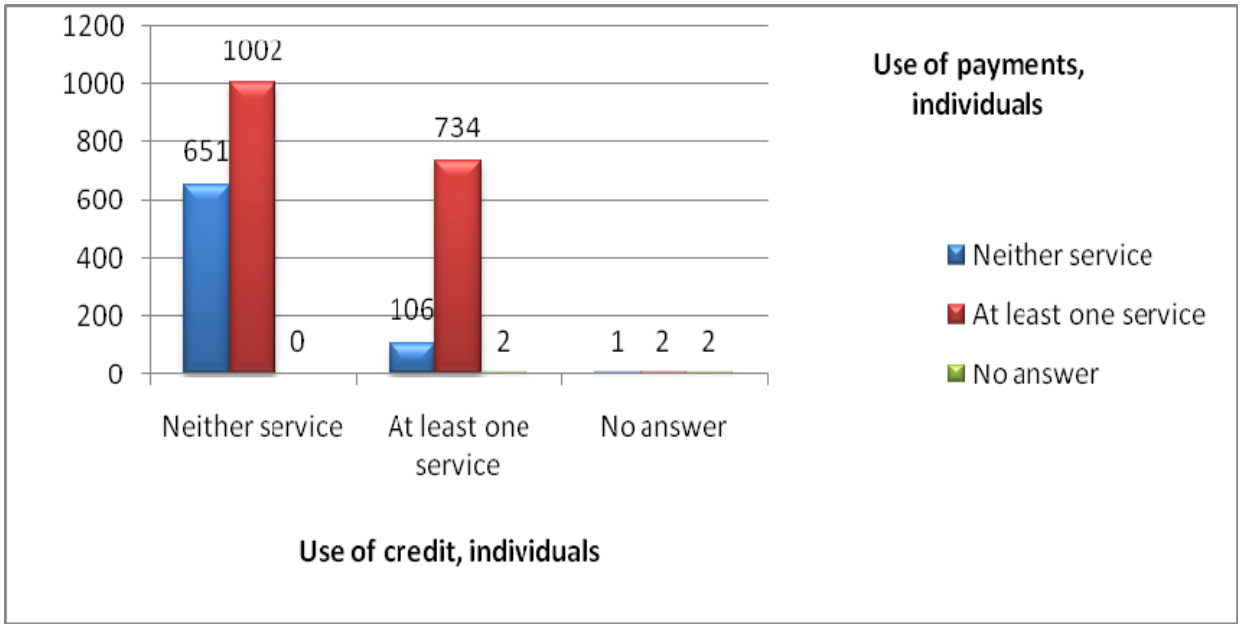


Figure 9. Use of multiple services among individuals - payments and credit

Of households who reported the use of payment services, 41.0% also reported the use of credit. The proportion of users of credit services among households that were not using payment services was 16.9%, and 82.4% among non-users. 87.5% of households who were using credit were also users of payment services. Of households that were not using credit services, 31.7% also were not using payment services, while 67.5% reported the use of such services.

Banking and savings: 22.5% of individuals who were using payment services also reported the use of savings. Of individuals who reported not using payment services, 88.9% also denied the use of savings, and only 10.9% reported the use of this service. Of individuals who reported the use of savings, 82.3% also reported the use of payment services. Among respondents who denied the use of savings, 66.6% were using payments, and 33.4% were not using this service (Figure 10).

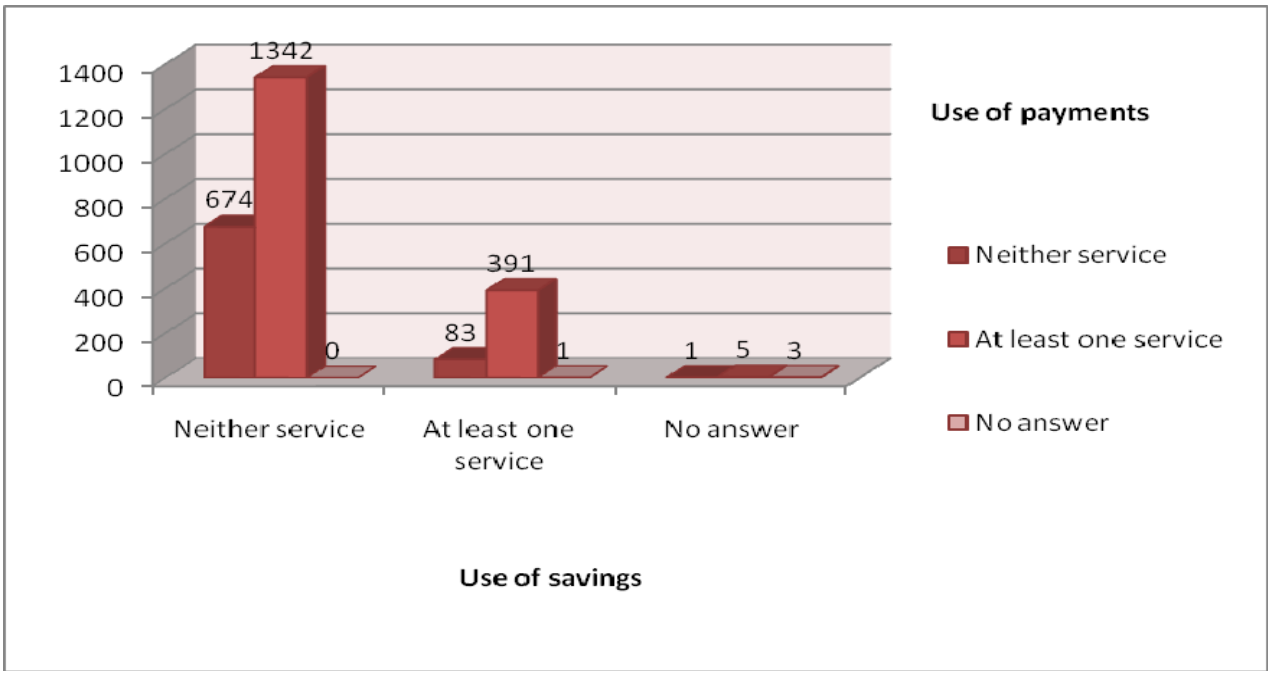


Figure 10 Use of multiple services among individuals - payment and savings

Of households who reported the use of payment services, 21.8% were also using savings. Of households who denied the use of banking services, the use of savings was reported by 52.4% and non-use by 8.5%. Of households who denied the use of savings, 87.8% were using payment services. Users of payment services among households that denied the use of savings numbered 71.4% and non-users 28%.

Payments and insurance: Of individuals who reported the use of banking services, 55.9% also reported the use of insurance services. Of individuals denying the use of banking services, use of insurance services was reported by 44.7% and non-use by 55.1%. 74.0% of users of insurance services were also using payment services. 35.5% of individual respondents who denied the use of insurance services

were also avoding banking services.

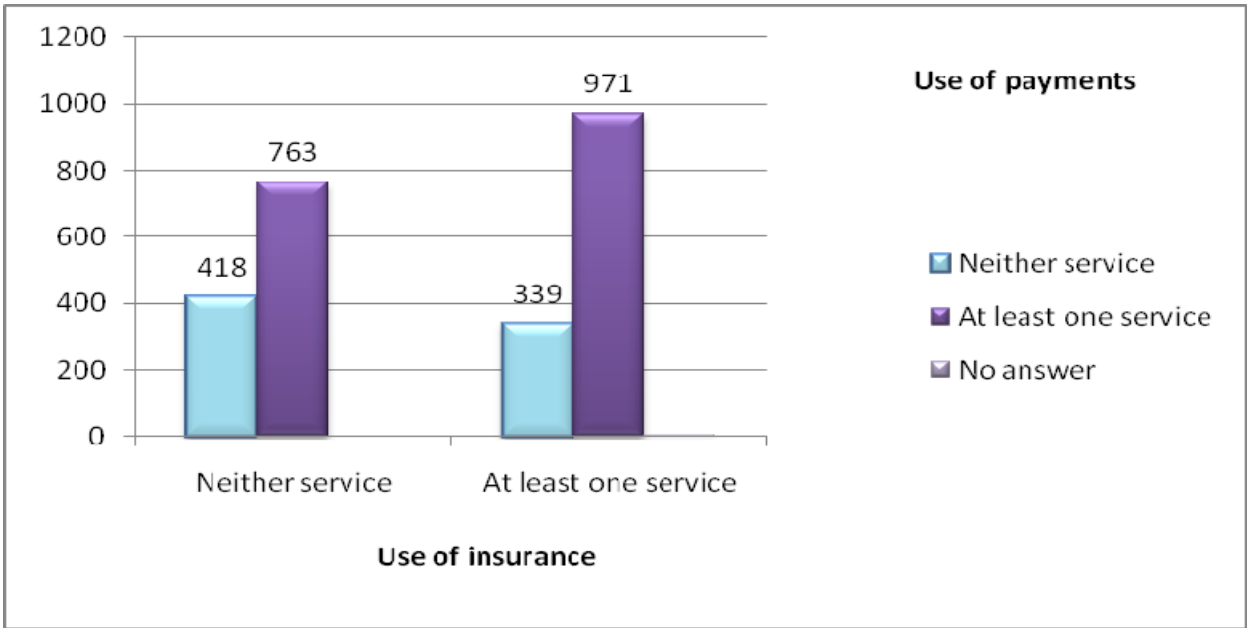


Figure 11 Use of multiple services among individuals- payment and insurance

Of individuals reporting the use of payment services, 57.2% also reported the use of insurance services. Among households, 42.8% were using insurance, but not payment services. Use of insurance and payment services was reported by 79.3% of households.

Credit and savings Of individual respondents who reported the use of credit services, 20.9% were also using savings. Of those denying the use of credit services, use of savings was reported by 18.1% and non-use by 81.9%. 37.1% reported using savings and credit services. Among respondents who were not using savings, 32.8% were using services, and 67.2% were not using either service (Figure 12).

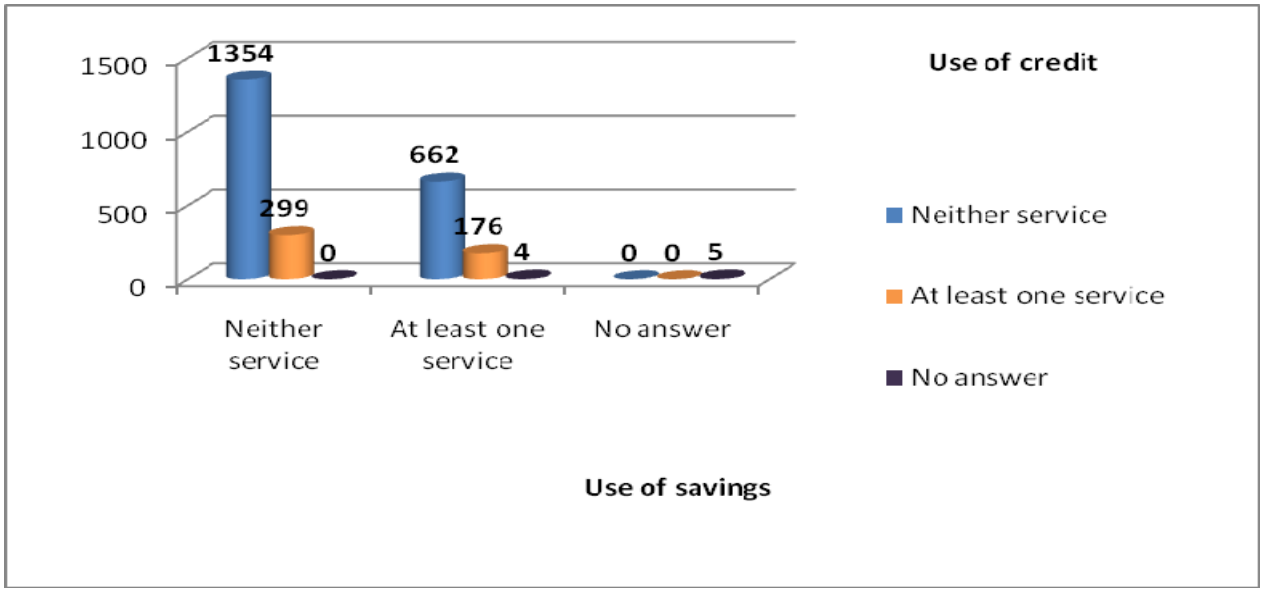


Figure 12 Use of multiple services - credit among individuals - credit and savings

The use of credit and savings was reported by 24.6% of the households surveyed. The proportion not using either service was 83.9%, households using savings but not insurance numbered 14.7%. The proportion households using savings who also use credit is 46.6%. Non-users of savings who were also not using credit represented 68.0% of the sample, as compared to 31.8% of non-users of savings who were still using credit.

Credit and insurance: 63.5% of individuals using credit services were also using insurance. Among non-users of credit services, 47% reported the use of insurance services, and 53% denied the use of such services. Of individuals who reported the use of insurance, 40.8% were also using credit. Individuals who were not using insurance or credit numbered 74.2%, and those using credit but not insurance represented 25.8% (Figure 13).

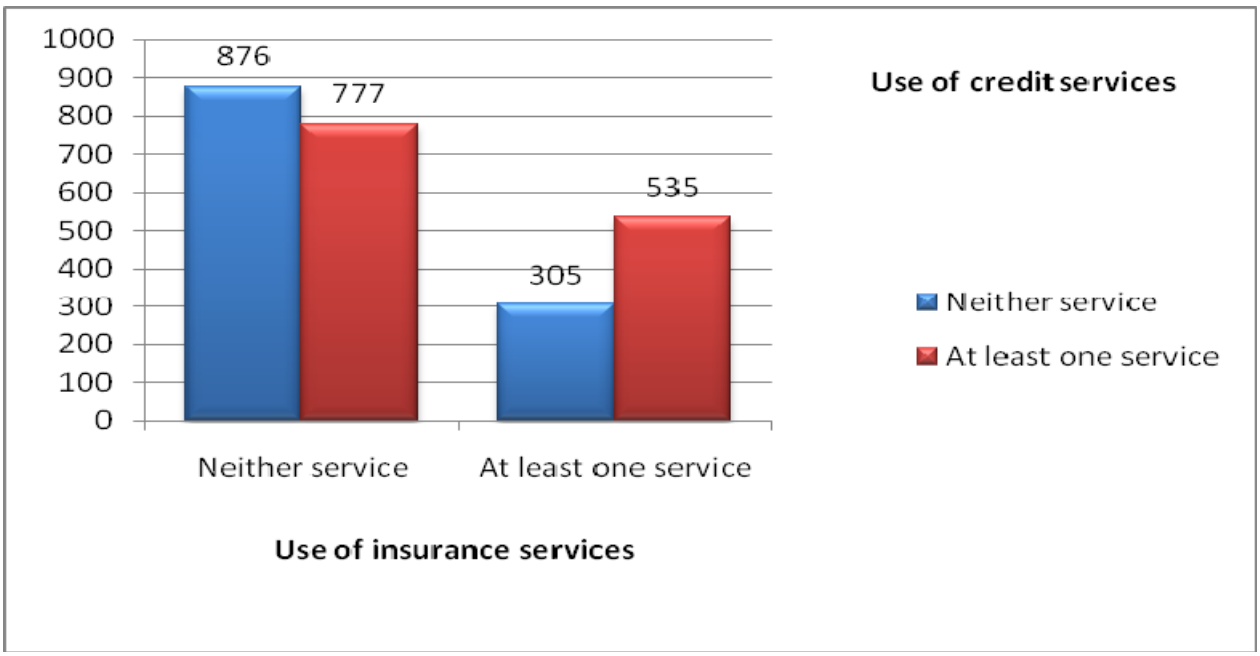


Figure 13 Use of multiple services among individuals - credit and insurance

The proportion of households using both credit and insurance was 71.4%. 44.1% were using insurance but not credit, and 55.3% were not using credit or insurance. 46.4% of users of insurance services were also using banking services.

Savings and insurance The share of individuals who reported the use of insurance and savings was 68.8%, 48.8% were using insurance but not savings, and 51.2% were not using either service. 24.9% of users of insurance were also using savings. 12.5% were using savings but not insurance, and 87.5% neither savings nor insurance (Figure 14)

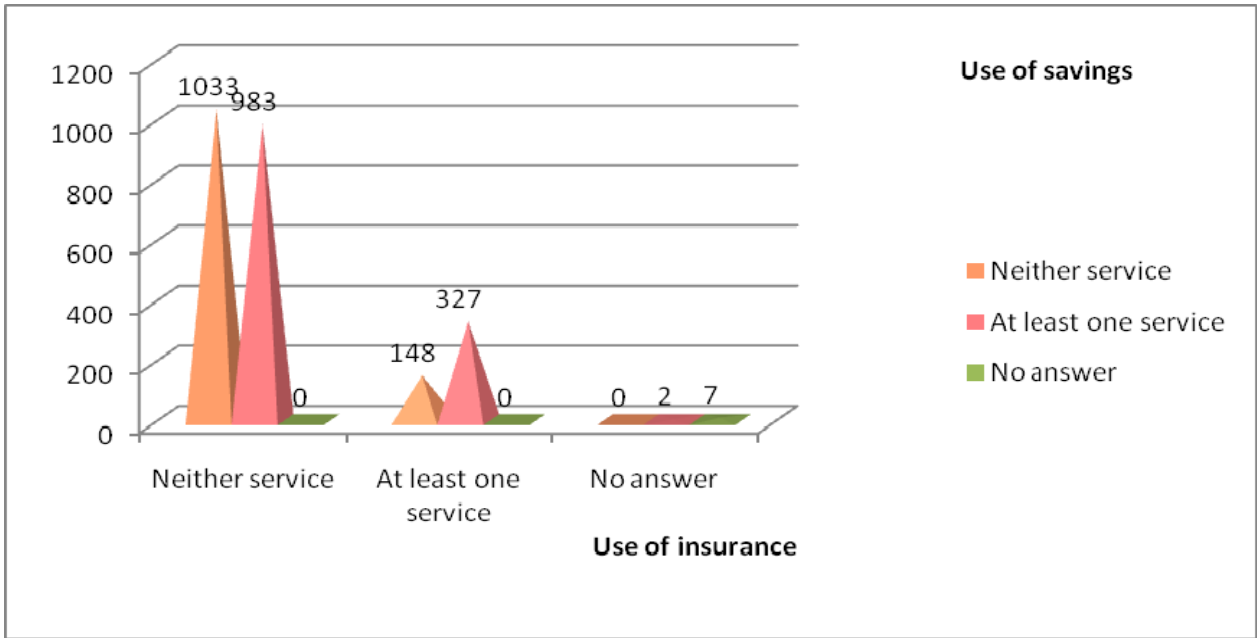


Figure 14 Use of multiple services among individuals - savings and insurance

71.0% of individuals who were using savings were also using insurance. 44.8% were using insurance but not savings. The proportion of households using insurance who also used savings is 11.3%.

4. Analysis of relationships between TFI and covariates

Covariation analyses were performed to establish relationships between TFI and various characteristics of individuals and households.

Cross-tabulation. Cross-tabulations of the inclusion variables were constructed using the descriptive variables derived from the respondent characteristics.

The results of cross-tabulation of the variable "Financial inclusion among individuals" with descriptive variables are presented below.

Sex: The highest percentages of men were recorded among basic and active users (35.2% in each category), and only 3.8% ranked among 'extensive users'. Women were the most prevalent among basic users (41.4%).

Among advanced users, men numbered 54.8% and women 45.2%. Men represented 58.7% of extensive users, and women 41.3% (Figure 15).

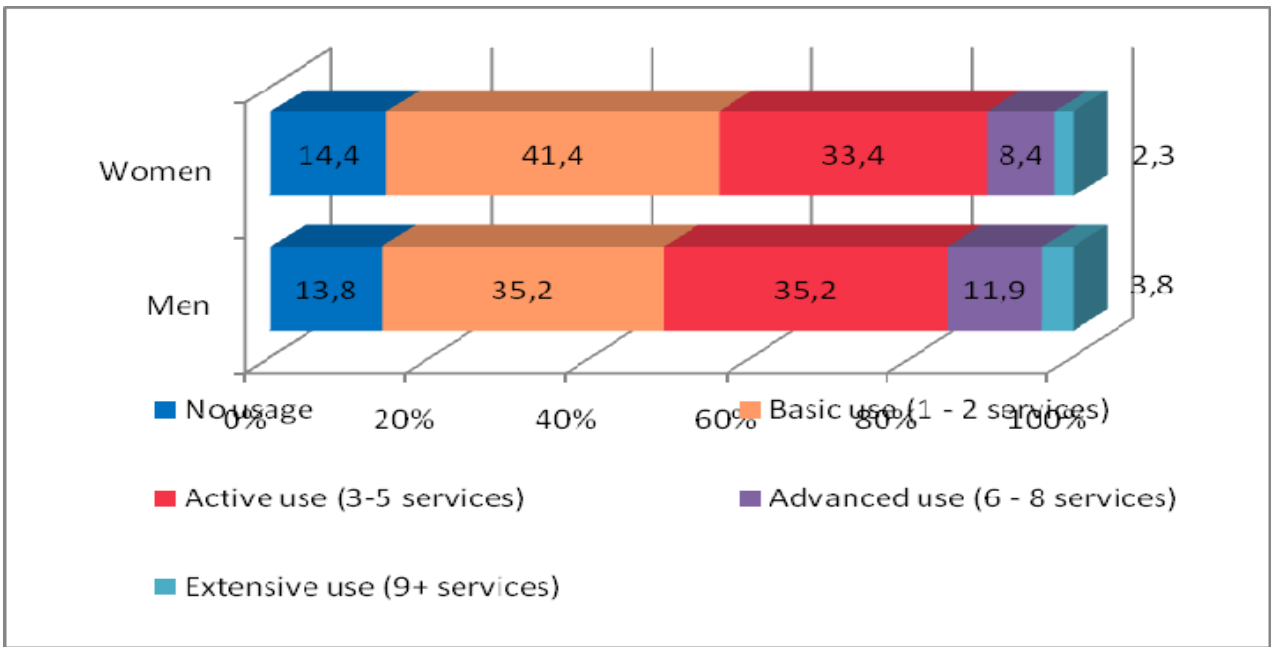


Figure 15 Use of financial services among individuals by sex

Age 37.4% of respondents at age 16 - 25 were using 1 - 2 services, 33.2% 3 - 5 services, and 19.3% were financially excluded (Figure 16).

Among respondents aged 26 - 35, active users represented 41.7%, followed by 'basic users' (30.9%). Only 5.9% of individual respondents were financially excluded.

40.3% of respondents at age 16 - 25 were using 1 - 2 services, and 37.8% 3 - 5 services. Respondents aged over 65 either do not use services (32.6%), or use 1 - 2 services (51.8).

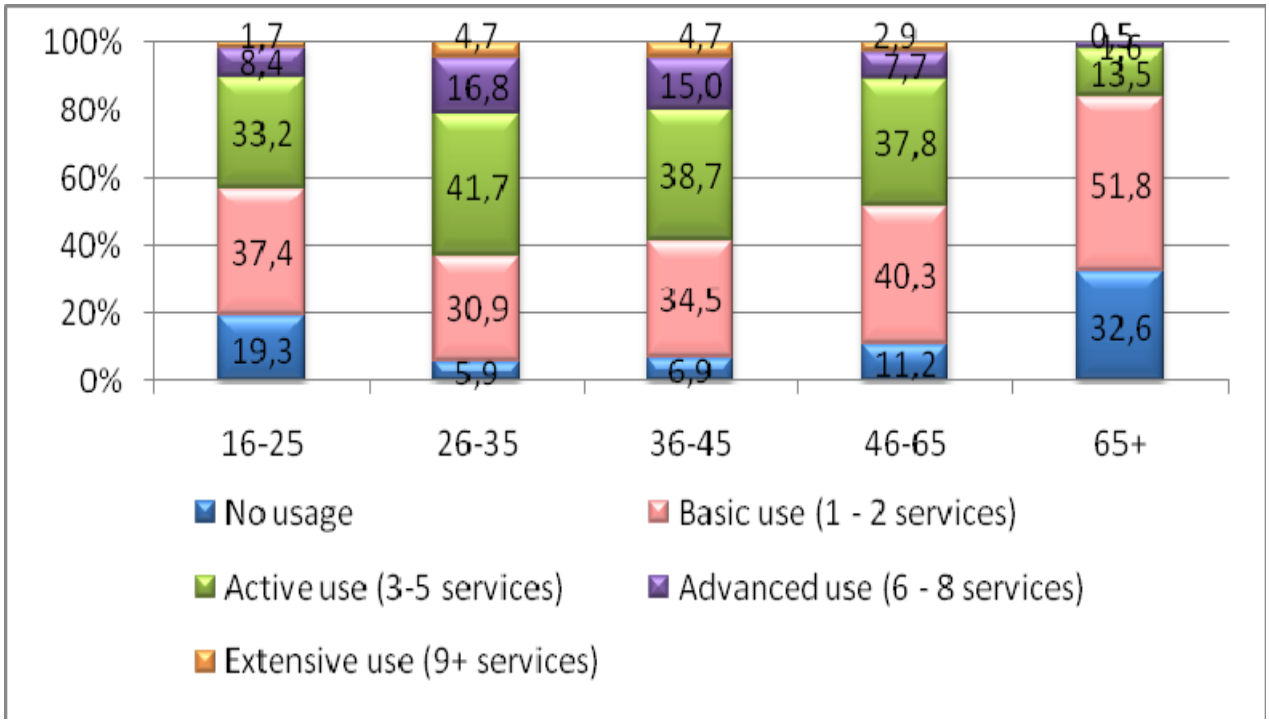


Figure 16 Use of financial services among individuals by age

The two most numerous age groups among financially excluded are persons aged over 65 (34.1%) and young people aged 16 - 25 (25.9%). Respondents aged 46 - 65 years were the most prevalent group among basic users (30%), active users were represented by respondents aged 26 - 35 (23.8%), and 36 - 45 (20.2%), while respondents aged 26 - 35 years were the most represented among advanced users (32.4%). 30.7% of extensive users were aged 26 - 35 years, 28% 36 - 45 years, 28% 46 - 65 years, 10.7% 16 - 25 years, and only 2.7% over 65 years of age.

Educational attainment. Basic use of services is the most prevalent among respondents with incomplete secondary and general secondary education (47.6% and 39.4%, respectively). Active use of financial services is the most common among respondents with vocational and secondary special education (40.4% and 39.7%, respectively). Respondents with incomplete higher (35%), higher (42.9%) and graduate/postgraduate education (50%) are the most heavily represented among advanced users (Figure 17)

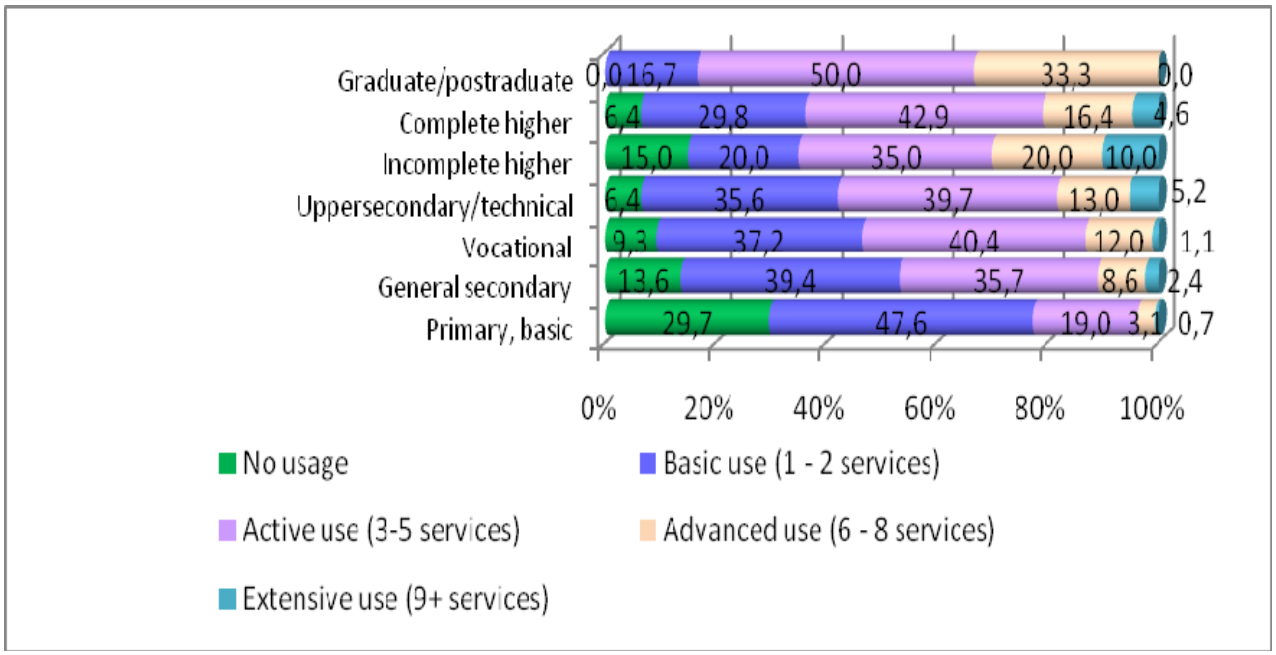


Figure 17 Use of financial services among individuals by educational attainment

Respondents with basic education represent 49.3% of financially excluded individuals. Basic users are mostly graduates from basic (29.1%) or general secondary education (27.6%). Active and advanced users users are commonly represented by holders of vocational (30.3% and 34%, respectively) or secondary special qualifications (28.2% and 23.2%). Extensive use of financial services is most common among graduates from secondary special education.

Marital status. Users of 1 - 2 or 3 - 5 financial services are the most prevalent among unmarried respondents (36.5% and 32.8%, respectively). The proportions of active users (38.4%) and basic users (36.1%) are highest among married respondents. Respondents who are divorced tend to use financial services at the basic level

(41.5%). Basic use of financial services also prevails among widowers (50.9%) (Figure 18).

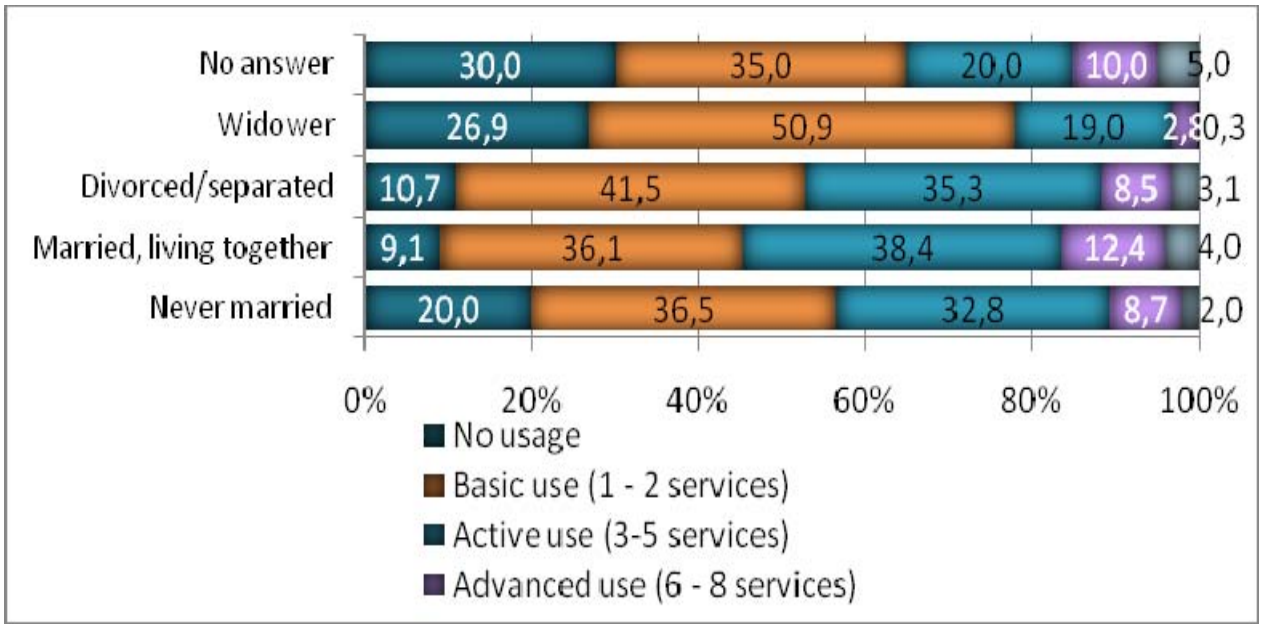


Figure 18 Use of financial services among individuals by marital status

The proportion of financially excluded is highest among married respondents (35.5%). Married respondents also form the majority of basic (51.7%) and active users (61.8%), and also of advanced and extensive users (68.4% and73.3%, respectively). The high proportion of married respondents among users of services can be attributed to their heavy representation in the sample (55.2%). The proportion of married respondents increases with the intensity of service use.

Social standing Use of 3- 5 services is typical among junior, middle and senior managers (38.1%, 46.8% и 49.1%, respectively). Entrepreneurs, farmers and the self employed typically use of 3 - 2 services (47.9%). Active use of financial services is also quite common among white-collar workers and professionals (47.1% and 41.1%, respectively). Active use is also widespread among white collar workers with no specialist training (52.2%), blue-collar workers (40.2%) and national security/law enforcement forces (42.1%). Basic use of services is typical among agricultural workers (43.2%), unemployed (41.2%) and homekeepers (35.6%). Students tend to use 1 - 2 services (36.9%), or no services at all (34.8%). The majority of pensioners (50.3%) are basic users (Figure 19).

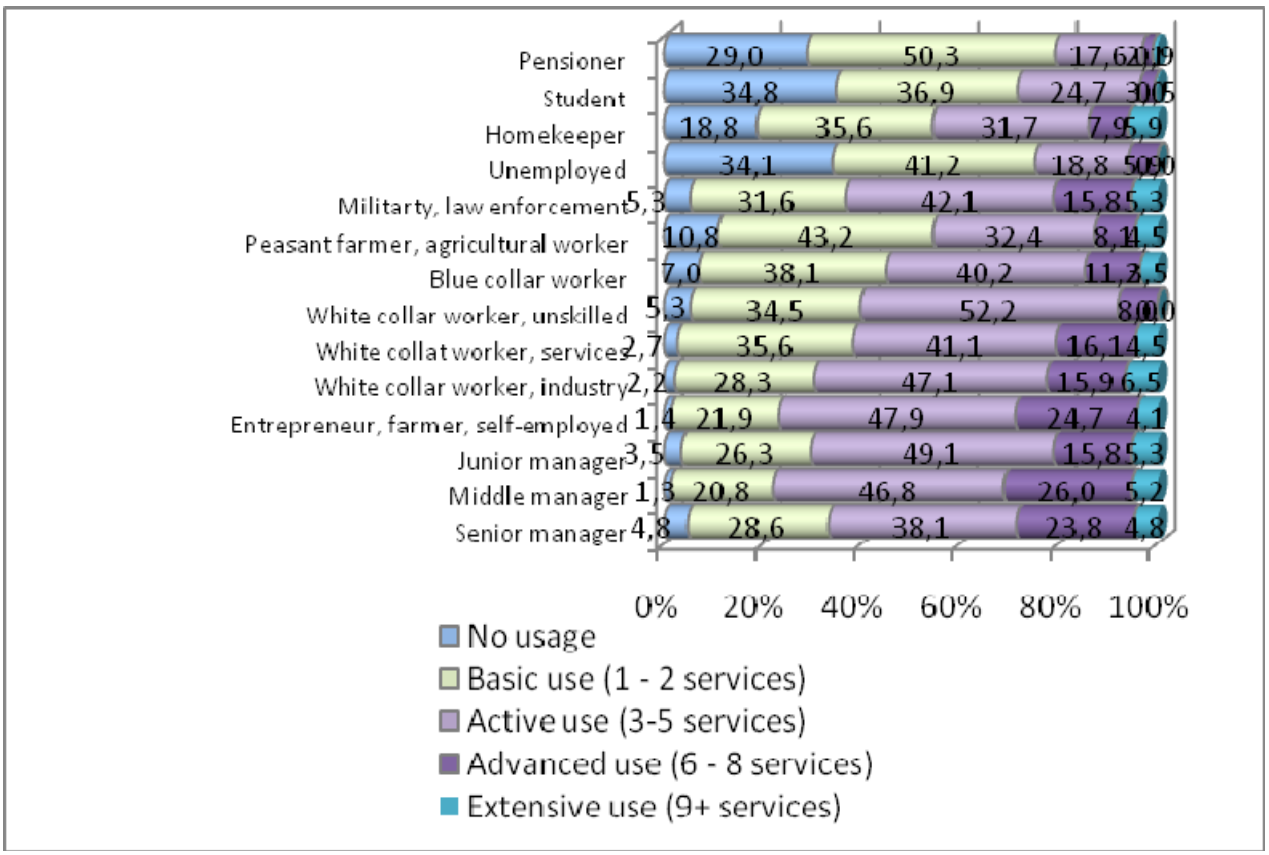


Figure 19 Use of financial services among individuals by respondent's social standing

The rate financial exclusion is particularly high among pensioners (43.1%). Along with blue-collar workers, pensioners are mostly basic users (27.5% and 25.8%, respectively). Blue collar workers represent 30.7% among active users, 29.2% among advanced users and 30.7% of extensive users. This exceeds the percentage of blue collar workers in the sample.

Location/region. Residents of Brest (40.1%), Gomel (42.7%) and Grodno Oblasts (47.1%) and of Minsk City (47.8%) mostly utilise 1 - 2 financial services. Use of 3 - 5 services is the most common among residents of Vitebsk and Mogilev Oblasts (43.4% and 39.4%, respectively). Respondents in Minsk Oblast mostly use 3 - 5 services (36.9%) or 1-2 services (30.9%) (Figure 20).

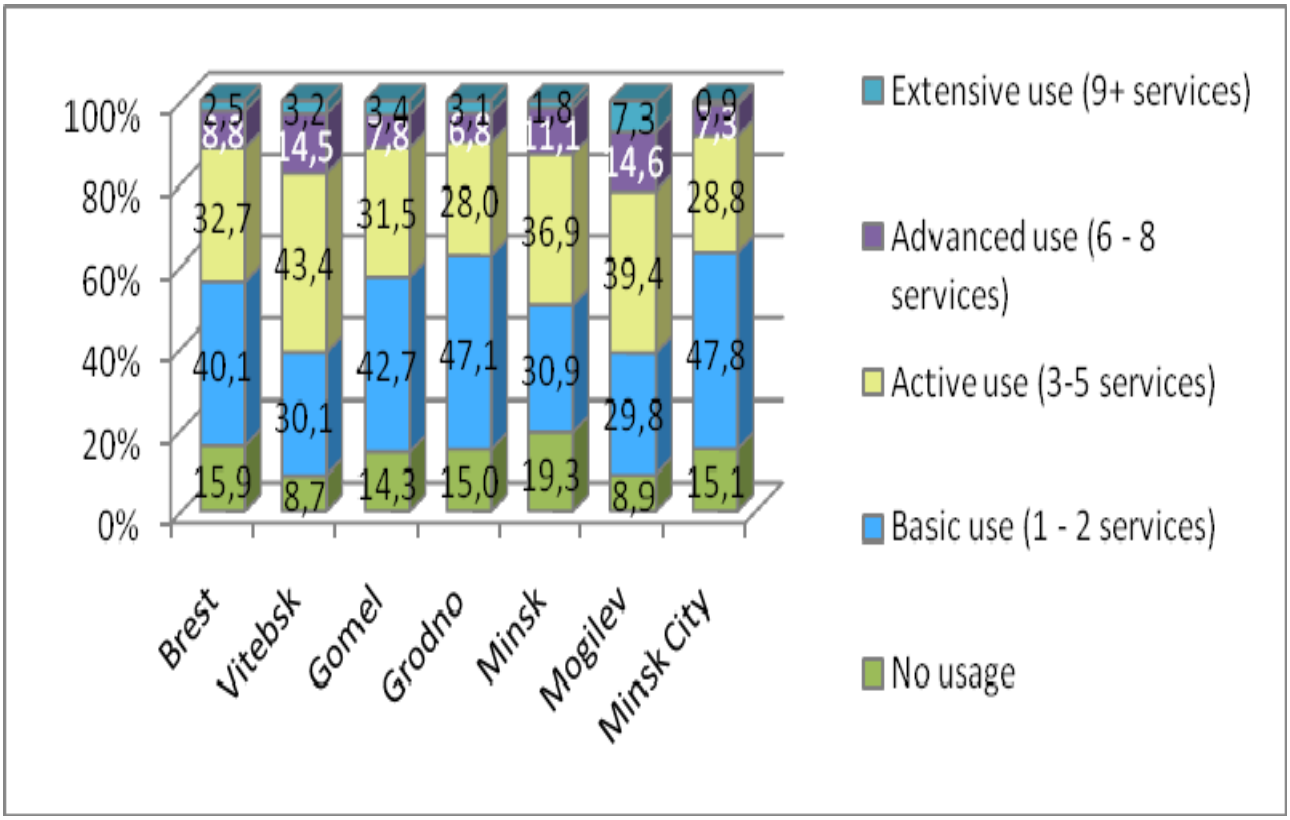


Figure 20 Use of financial services among individuals by location/region

The rate financial exclusion is highest among residents of Minsk Oblast (21.1%), and residents of Minsk City prevail among basic users of financial services. Residents of Vitebsk and Mogilev Oblasts contribute a substantial proportion of active users (17.5% and 16.7%, respectively). The residents of Vitebsk Oblast are also widely represented among advanced users (20%), while the largest share of extensive users live in Mogilev Oblast (29.3%).

Location - urban/rural. Most urban residents use 3 - 5 services (36.7%) or 1-2 services (36.5%). Residents of urban-type settlements typically use 1 - 2 services (34.8%), or 3 - 5 services (31.8%). Use of 1 - 2 services is the most common in rural areas (43.9%) (Figure 21).

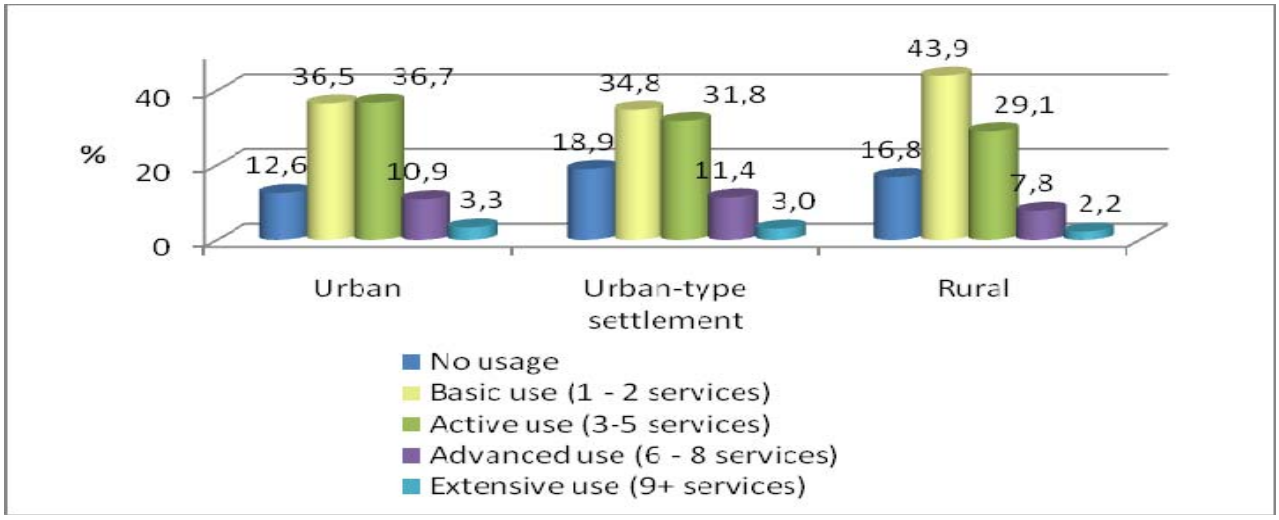


Figure 21 Use of financial services among individuals by location (urban/rural)

Urban dwellers constituted the majority (58.6%) of respondents who reported using no services, and more than one-half (62.4%) of basic users. Urban residents are also highly represented among active (70.7%), advanced (71.6%), and extensive users (73.3%). The share of urban dwellers in the total sample was 66%.

Employment status Respondents who are not working mostly use 1 - 2 services (46.2%). Full-time workers typically use 3 - 5 services (42.6%), and part-time workers 3 - 5 services (37%) or 1 - 2 services (36.2%) (Figure 11)

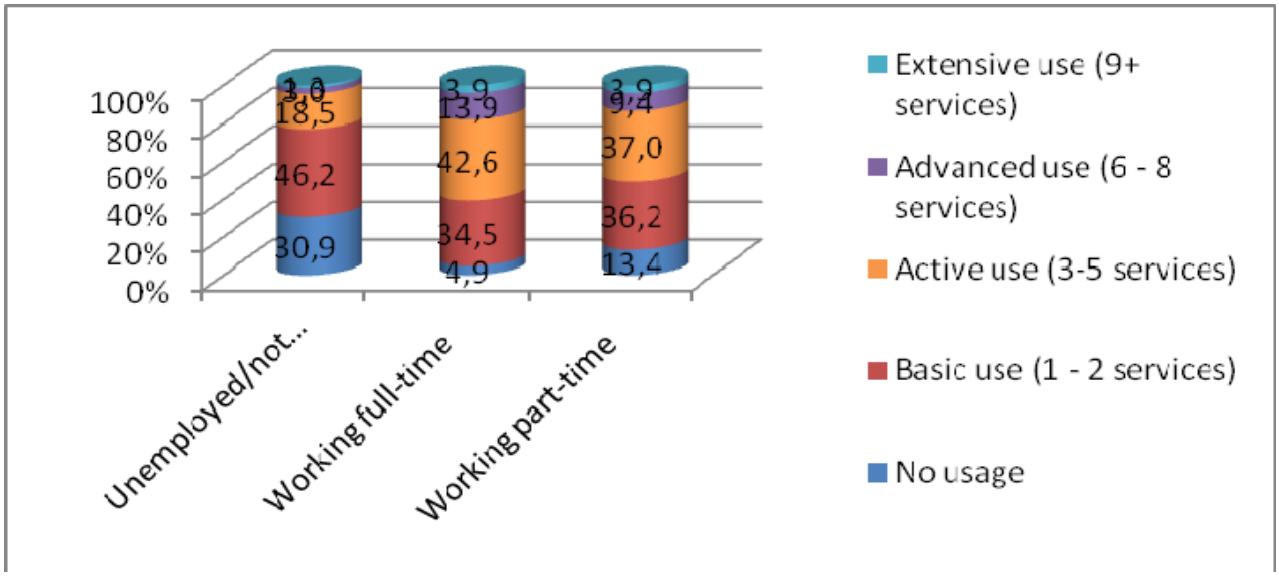


Figure 22. Use of financial services among individuals by age of enterprise

Respondents who are not working form the majority of the financially excluded (71.3%). Full-time employees prevail at all other levels of use, including 53.9% among basic users, 75% among active users, 83.6% among advanced users, and 78.7% among extensive users.

Average per capita household income per month Respondents with income below 2199 thousand roubles mostly use 1 - 2 services (43.1%). Among respondents with income between 2200 and 2499 thousand roubles basic and active use are the most prevalent (37.6% and 37.2%, respectively). Individuals with household income between 2500 and 2899 thousand roubles typically use 3 - 5 services (40.2%). This is also true for individuals with household incomes 2900 and 2499 thousand roubles (45.1%). Respondents with per capita household income above 3500 tend to be basic users (44.2%) (Figure 23).

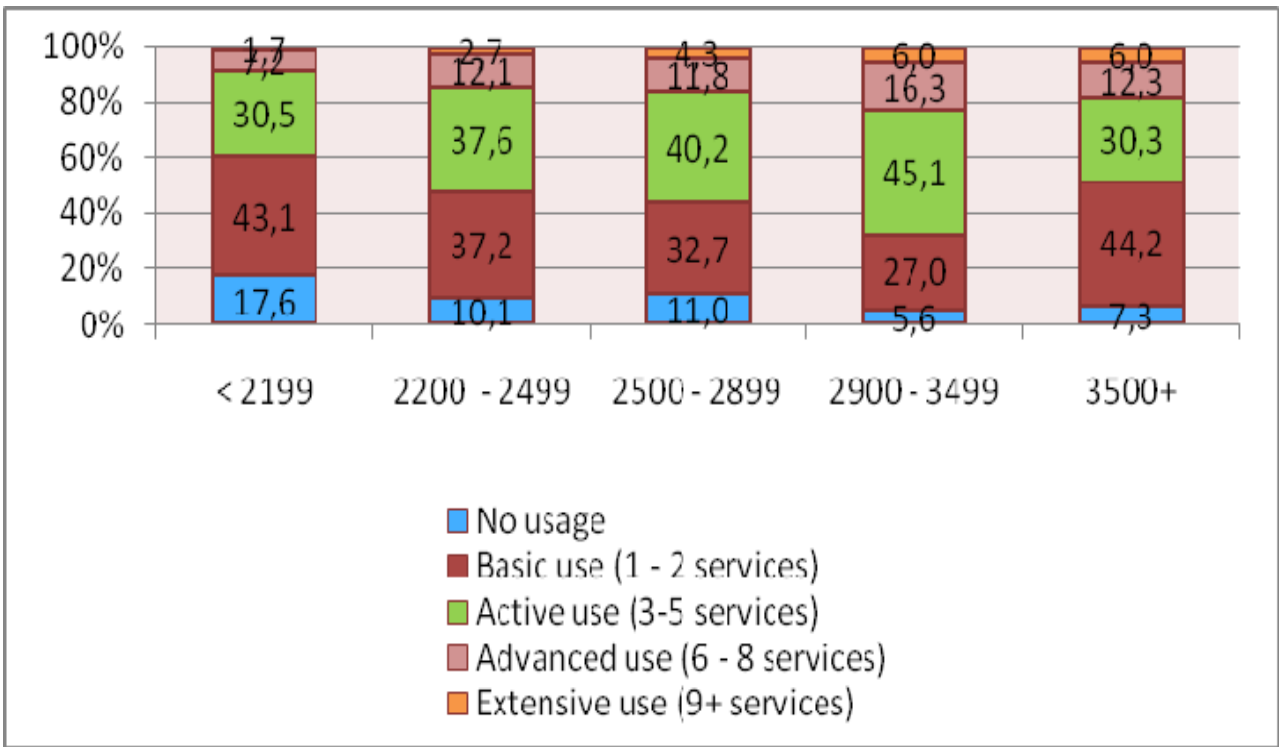


Figure 23 Use of financial services among individuals by average monthly household income (expressed in thousands of BYR)

Households with per capita monthly income below 2199 roubles for the largest share of financially excluded (47.9%). They are also highly represented among basic users (43.2%) and active users (34.3%), and also among advanced users (27.6%). Active use, by contrast, was most widespread among households with per capita monthly income above 3500 thousand BYR.

Below is a summary of the Cross-tabulation of the variable "Use of financial services among households" with descriptive variables.

Location/region The highest rates of utilisation and financial exclusion were recorded among households in Brest Oblast (14.8% financially excluded, 28.6% basic users, 29.9% active users). Households from Vitebsk Oblast mostly use 1 - 2 services (24.6%), or 3 - 5 services (30.9%). Similarly, in Gomel Oblast, 32.0% of households were active users and 28.9% basic users. In Grodno Oblast and Minsk City, the largest proportion of households was ranked among basic users (39.2% and 54.6%, respectively). In Minsk Oblast, 28.6% of households were basic users, and 15% were active users. Households in Mogilev Oblast are mostly active users (29.5%) or basic users (25.8%) (Figure 24).

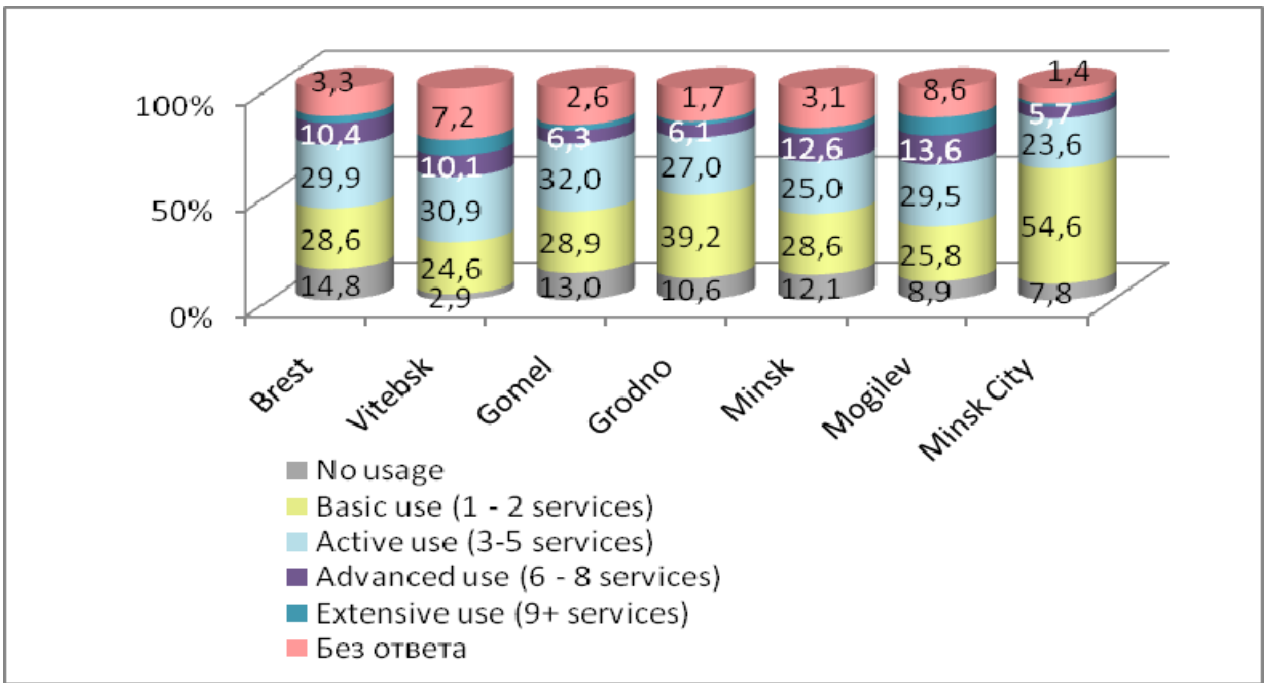


Figure 24 Use of financial services among households by location/region

The largest share of financially excluded households came from Brest Oblast (21.4%) and Gomel Oblast (19.8%). Minsk City contributed the highest proportion of basic users (27.7%), and households from Gomel Oblast (17.5%) were the best represented among active users. Households from Minsk Oblast contribute the largest share of active users (21.4%), and households from Mogilev and Vitebsk Oblasts the largest group of extensive users (21.7% and 26.0%, respectively).

Location - urban/rural Urban households represent 35.4% of basic users, Households residing in urban-type settlements contribute 32.6% of active users and 22.7% of non-users. Financial exclusion is highest among rural households (15.0%). Households resident in urban-type settlements and rural areas also contributed the largest share of respondents who failed to answer the question regarding utilisation of financial services by members of their families (Figure 25).

Urban households form the majority of users at all levels of use, including 69.8% among basic users, 70.2% among active users, 67.2% among advanced users, and 77.1% among extensive users.

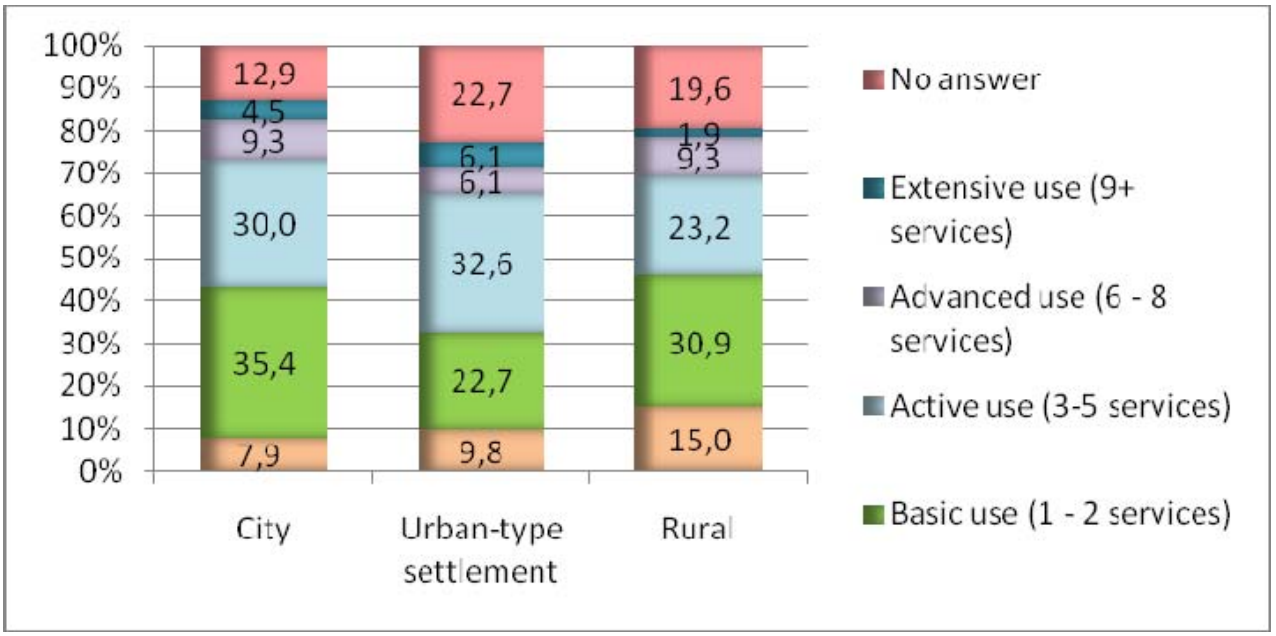


Figure 25 Use of financial services among households by location/type of settlement

Average per capita household income per month Households with per capita monthly income below 2199 thousand roubles contribute the largest share of non-users of services (14.8%), and many (25.8%) were unable to answer the questions regarding the use of services. Only 26.7% of households in this income bracket are basic users, and 22.3% are active users. Households with income between 2200 and 2499 thousand BYR are most represented among active (36.2%) and basic (35.9%) users, and households with per capita income between 2500 and 2899 are the most numerous among basic users, and households with income between 2900 and 3499 among active users 34.9%. More than one-half of households with income above 3500 thousand BYR (52.7%) are basic users of services.

The majority of financially excluded respondents is formed by households with per capita monthly income below 2199 thousand BYR. Households in this income bracket also prevail among users at all other levels, representing 30.9% among basic users, 30.5% among active users, 28.8% among advanced users 35.4% among extensive users (Figure 26)

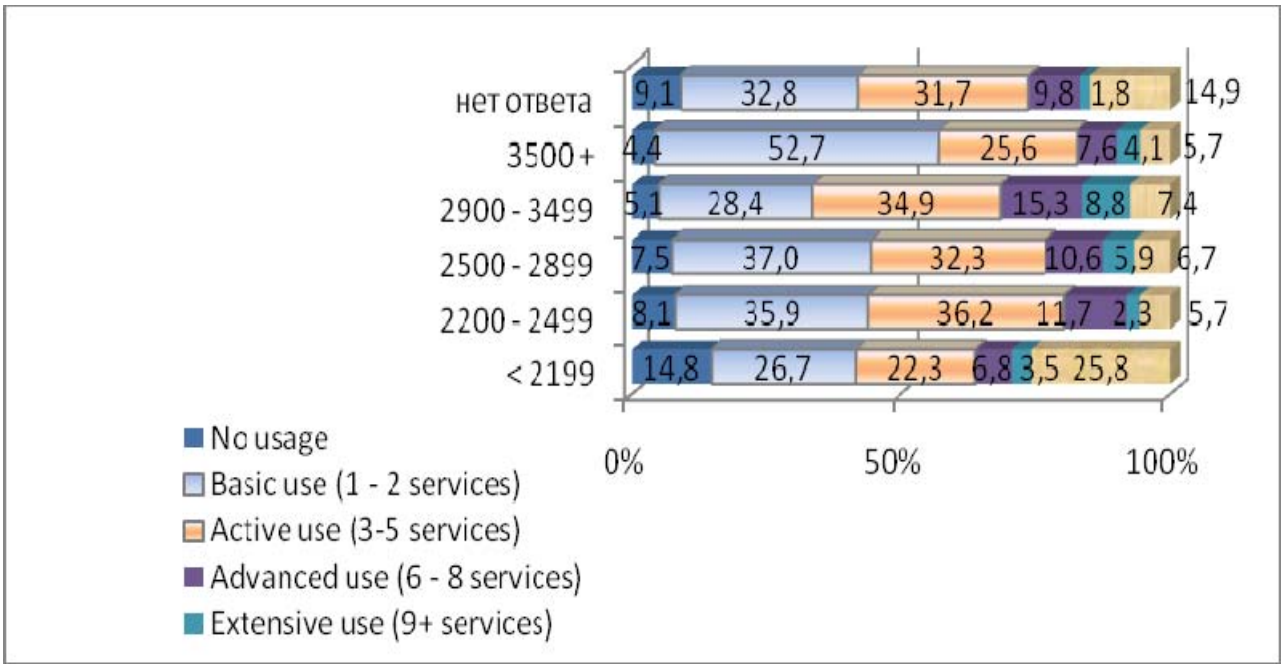


Figure 26 Use of financial services among households by household monthly income per capita (expressed in thousands of BYR)

Cross-tabulation of the variable "Use of financial services among households" (Use_hh) with descriptive variables as described in the project methodology is presented in Annex B.

The results of cross-tabulation of the variable "Financial inclusion of individuals" with descriptive variables are presented below (see also Annex D).

Sex. The share of financially included is 86.1% among men and 85.6% among women.

Age. As shown by the survey data, the majority of respondents are financially included, regardless of age. The rates of financial inclusion are 80.7% in the age group 16 - 25 years, 94.1% in the age group 26 - 45 years, 88.7% in the age group 46 - 65 years, and 57.5% in the age group 66 years and above.

Educational attainment. The majority of respondents are financially included, across all educational attainment groups, including 70.3% among respondents with basic education, and 100% among respondents with graduate/postgraduate education.

Marital status. The majority of respondents are financially included, regardless of marital status, including 90.9% among married respondents, and 73.1% among widowers.

Social status. The proportion of financially included is above 90% for respondents from most social status groups. It is somewhat below this level among peasant farmers (88.3%), homekeepers (81.2%), pensioners (71.0%), unemployed (65.9%), and students (65.2%).

Location/region. Financial inclusion was above 50% across all administrative regions, including Minsk City. It exceeded 90% in Vitebsk and Mogilev Oblasts, and 80% in Minsk City.

Location - urban/rural. More than 50% of respondents were financially included across all settlement types, including 87.4% in cities, 81.1% in urban-type settlements and 83% in rural areas.

Employment status. Inclusion rates were high among respondents regardless of employment status, including 69.1% among respondents who were not working, 95% among respondents working full time, and 86.6% among part-time employees.

Average household monthly income. The proportion of financially included was high among respondents with all income levels, including over 90% among respondents with income above 2900 thousand BYR, and over 80% across all other income groups.

Cross-tabulation results of the variable **Included_hh (Financial inclusion of households)** with descriptive variables are presented below.

Location/region. Financially included households prevail across all administrative regions and Minsk City, representing 85.3% of all households in Minsk City, over 70% in Brest, Vitebsk, Grodno and Mogilev Oblast, and over 60 in Gomel and Minsk Oblasts.

Location - urban/rural. More than 50% of households were financially included across all settlement types, including 79.1% in cities, 67.4% in urban-type settlements, and 65.4% in rural areas.

Average household monthly income. The proportion of financially included was high among households with all income levels, including 59.4% among households with incomes below 2199 thousand BYR, and over 80% all other income groups.

Below are some conclusions from the cross-tabulation of the financial inclusion variables **"Payment_ind, Credit_ind, Savings_ind, Insurance_ind"**.

Sex. Among men, payment services are utilised most frequently (70.6%), followed by insurance (59.6%), credit (33.5%), and savings (18.6%). Among women, the largest proportion use payment services (68.8%), followed by insurance (46.4%), credit (33.9%) and savings (19.3%).

Age. Payment services are used by the majority of respondents (over 70%) across all ages. Respondents aged over 65 are the only exception, with 30.5% of users of such services. Use of insurance services is widespread among respondents between 25 and 65 years of age (over 60%). This proportion is much lower among individuals aged 16 - 25 (37.6%) and over 65 years of age (45.8%).

Large proportions of respondents aged between 26 and 65 years report the use of credit services, including 28.5% among respondents aged 26 - 39, 24.2% at age 40 - 55 and 45.6% at age 56 - 65. By contrast, only 2.5% of respondents aged over 65 reported the use of credit services. Savings were used by around 20% of each age group except 16 - 25 years (9.9%). The use of insurance was reported by 20 - 30% of respondents between 26 and 65 years of age, as compared to only 13.6% among respondents aged 16 - 25 and 13,0% among those aged over 65.

Educational attainment. Use of payment services was reported by the majority of respondents with all levels of educational attainment, including 40.3% among respondents with basic education, and over 70% among all other respondents, including over 80%among respondents with uppersecondary, higher and graduate/postgraduate education. Use of credit is at 30 - 40% across all levels of education, except among graduates from basic education (14.6%). Savings are used by 14 - 20%, except among graduates from higher education (29.8%) and holders of graduate/postgraduate degrees (50.0%). Insurance is used by 30 - 40% of respondents across all education groups, except among graduate/postgraduate degree holders (66.7%).

Marital status. The use of payment services is reported by over 70% of respondents grouped by marital status, except among widowers (39.9%). Credit is used by over 40% of respondents who are married or divorced. Use of credit is lowest among male widowers 14.2%. Use of savings is at 16 - 24 among all marital status groups, except 'never married' (11.6%). Insurance is used by 59.8% of married respondents, and by a slightly lower percentage in the other marital status groups.

Social status. Use of payment services across marital status groups varied from 37.4% to 96.4%. The highest utilisation rates were reported among senior and middle managers, and the lowest among pensioners and the unemployed. Credit is used by 7.6% to 54.4% of respondents from each group. This proportion is highest among lower-level managers (54.4%), white-collar workers with no specialist training (53.1%), and service sector workers, and lowest among students (7.6%) and pensioners (9.3%). Use of savings services varies from 3.5% to 44.2%. It is highest among middle managers, and lowest among students and the unemployed. The proportion using insurance varies from 31% to 95%, highest among senior managers, and lowest among students.

Location/region. The use of payment services was reported by over 60% of respondents grouped by administrative region (Oblasts and Minsk City), except the residents of Minsk City and Brest Oblast (56.6% each). Payment services are used by nearly 80% of respondents from Vitebsk Oblast, Mogilev Oblast, and Minsk City.

Use of credit services is reported by 21.8% to 46.2%, highest among respondents from Vitebsk Oblast, and lowest in Grodno Oblast. Only 15 - 20% of respondents across the regions use savings. Use of insurance services varies from 35% to 65% depending on the region. It is highest in Mogilev Oblast, and lowest in Minsk City.

Location - urban/rural. Payment services are used by 75.4% of urban dwellers, 62.1% of residents of urban-type settlements, and 57.3% of rural dwellers. Credit services are utilised by around 30%, savings by 15 - 20%, and insurance by 50% of respondents across settlement types. Rural residents tend to be more frequent users of insurance (58.3%).

Employment status. Payment services are most frequently used by individuals employed full-time (84.9%) and part-time (70.1%), as compared to only 41.5% among respondents who are not working. Responses on the use of other services reveal a similar trend. Credit services are used by 46.7% full-time, 28.3% part-time, and 10.9% of respondents who are not working, savings by 20.0%, 22.8% and 16.7%, respectively, and insurance 57.8%, 54.3% and 43.4%.

Average monthly income. Payment services are utilised by 60% of respondents across all income groups, including over 70% among respondents with income between 2200 - 2899 thousand BYR, and over 80% among respondents with income between 2900 and 3499 thousand BYR. Use of credit services is reported mostly by individuals living on 2500 - 3499 thousand BYR per month. The proportion using savings is highest among respondents with incomes between 2200 and 2899 thousand BYR. Coverage of insurance services is over 50% across all income groups, and highest among respondents with incomes between 2900 and 3499 thousand roubles (65.6%)

Conclusion

Total financial inclusion index (TFI-I) is 85.8% for individuals and 74.6% for households. The least financially included individuals are aged 65 and above, have basic or incomplete secondary education, unmarried or widowed, and unemployed, students, pensioners or homekeepers.

The most common attributes of an 'extensive user' (6-8, or 9+ financial services) include: age 25 - 45; postgraduate, higher or incomplete higher education; married; manager, entrepreneur or self-employed; income above 2900 thousand roubles.

Based on the survey outcomes, the following recommendations can be made:

increase coverage of individuals who use services at a low level or do not use services at all;

improve the level of financial literacy in Belarus;

explore more deeply the potential reasons for not using specific types of services by respondents;

improve conditions for microfinance to promote financial inclusion;

improve the measurement of TFI, including by accounting for missing responses in such measurements (no answer/unsure);

modify the questionnaire, by enlarging the income brackets for the quintile groups.

Annex A
Econometric modelling

1. Econometric modelling of total financial inclusion among individuals

Econometric modelling tools were utilised to measure the dependence of the variables "Financial inclusion of individuals" and "Financial inclusion of households" on the following covariates: sex, age, educational attainment, marital status, social status, region, type of settlement, employment status, income quintile group, and household size. The variables "Marital Status" and "Location/Region" were treated as categorial. The variables "Employment Status" and "Social Status" were ranked by settlement size and social location, respectively.

The number of the cases analysed, and the missing response data are shorn in Table 1.

Table 1 – Case processing summary

Unweighed cases		N	%
Selected Cases	Included in Analysis	2051	82.0
	Missing Cases	449	18.0
	Total	2500	100.0
Unselected Cases		0	0
Total		2500	2500

As seen from Table 1, the model included data from 82% of respondents. Response forms where the option "No Answer/Unsure" was chosen in questions on the monthly income were excluded from the analysis.

The values of the coefficients in the initial model and their statistical significance are presented in Table 1.2 below.

Table 2 – Values in the initial model

	B	Standard Error	Wald	df	Significance	Exp(B)
Sex	0.024	0.150	0.027	1	0.871	1.025
Age	-0.349	0.077	20.396	1	0.000	0.706
Educational attainment	0.374	0.057	43.251	1	0.000	1.453
Marital status			32.008	4	0.000	
Married, living together	1.017	0.236	18.541	1	0.000	2.766
Divorced/separated	1.181	0.342	11.944	1	0.001	3.258
Widowed	0.702	0.310	5.135	1	0.023	2.018
Social status	-0.006	0.007	0.623	1	0.430	0.994
Location/region			56.731	6	0.000	
Brest Oblast	0.518	0.268	3.747	1	0.053	1.678
Vitebsk Oblast	2.055	0.333	37.970	1	0.000	7.806
Gomel Oblast	0.800	0.262	9.319	1	0.002	2.226
Grodno Oblast	0.865	0.286	9.187	1	0.002	2.376
Minsk Oblast	0.311	0.243	1.637	1	0.201	1.365
Mogilev Oblast	1.495	0.306	23.937	1	0.000	4.459
Type of settlement	0.083	0.086	0.918	1	0.338	1.086

	B	Standard Error	Wald	df	Significance	Exp(B)
Employment status	-0.003	0.006	0.217	1	0.642	0.997
Household size	-0.002	0.003	0.610	1	0.435	0.998
Average monthly income	0.237	0.061	15.249	1	0.000	1.268
Constant	0.062	0.443	0.020	1	0.889	1.064

As seen from table 2, the variables "sex", "social status", "settlement type", employment status", and "household size are statistically insignificant. The updated model constructed with these variables excluded, is presented in Table 1.3.

Table 1.3 – Values in the final model

	B	Standard Error	Wald	df	Significance	Exp(B)
Age	-0.341	0.076	20.061	1	0.000	0.711
Educational attainment	0.368	0.055	45.011	1	0.000	1.444
Marital status			34.813	4	0.000	
Married, living with spouse	1.056	0.233	20.552	1	0.000	2.874
Divorced/separated	1.191	0.339	12.336	1	0.000	3.290
Widowed	0.730	0.303	5.811	1	0.016	2.076
Location/region			58.116	6	0.000	
Brest Oblast	0.542	0.257	4.441	1	0.035	1.719
Vitebsk Oblast	2.089	0.329	40.364	1	0.000	8.081
Gomel Oblast	0.842	0.257	10.720	1	0.001	2.322
Grodno Oblast	0.937	0.277	11.402	1	0.001	2.551
Minsk Oblast	0.375	0.230	2.651	1	0.103	1.454
Mogilev Oblast	1.511	0.296	26.041	1	0.000	4.530
Average monthly income	0.242	0.060	16.117	1	0.000	1.274
Constant	0.064	0.352	0.033	1	0.856	1.066

As seen from the data above, utilisation of financial services is not significantly related to respondent sex. This is consistent with the analysis above, showing no difference between men and women in utilisation of financial services. Financial inclusion, on the other hand, is positively related to educational attainment. As shown by the *Exp(B)* statistic, the probability of using services increased by 1.44 times with every one rank increase. By contrast, transition to a higher age group decreases the probability of using financial services by 1.4 times. Each transition to a higher income bracket increases the probability of using financial services by 1.27 times. The relationship between the use of financial services and marital status was also statistically significant, Relative to unmarried respondents, respondents who are married and live together with their spouse are 2.87 more likely to use financial services. Location/region is also a significant variable. The value "Minsk City" was used as the basis for comparison in this model. The coefficients computed by the model, and the direction of the relationship that they suggest are counter-intuitive: as follows from the data, residing outside of Minsk increases the probability of using services by comparison to living in Minsk.

The main indicators of the model fit are shown in Tables 1.4 and 1.5.

Table 4 – Omnibus test of the model coefficients

		Chi-square	df	Significance
Step 6.	Step	-0.820	1	0.365
	Block	232.145	13	0.000
	Model	232.145	13	0.000

Table 1.5 – Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
6	1342.785	0.107	0.200

The regression model's quality of approximation is measured by the goodness of fit. When variables were added to the model, -2LL assumed the value 2031.597, a difference of -232.145 from the initial value for the regression model consisting only of constants. This decrease in the -2LL is an improvement of the model; the difference is defined as Chi-square, and is statistically significant. Thus, the quality of the model improved when more variables were added. As seen from the value of Nagelkerke R Square, the percentage of dispersion explained by the logit regression model is 20% in this model.

To describe the predictive power of the model, a classification model was constructed, showing the number of true and false predictions in each line (Table 1.6)

Table 6 – Classification table

Observed			Predicted		
			Financial inclusion among individuals		Percentage correct
			Not included	Included	
Step 1.	Financial inclusion among individuals	Not included	9	255	3.4
		Included	6	1781	99.7
	Cumulative Percentage				87.3

Minimum expected count – 500

As seen from Table 1.6, the test correctly predicted only 9 cases of financial exclusion out of 264. The remaining 255 were falsely predicted by the test as excluded. Of the actual number of financially included (1787), 1781 cases were correctly predicted by the test. The number of correct predictions was 1790 out of 2051, or 87.3%.

Discarding certain questionnaire forms can improve model quality in some of the following ways: increasing Nagelkerke R Square from 0.118 to 0.2; increasing the share of correct predictions from 85.8 to 87.3% for "included" and from 0.3 to 3.4% for "excluded"; making the relationship between income and financial inclusion statistically

significant and the direction of this relationship consistent with the intuitive expectation. Merging income groups results in somewhat increased probability of financial inclusion, but because the degree of this change is insufficient, the income data used in the model were based on income distribution by quantiles.

Although the final model includes statistically significant variables, its predictive power is generally low, owing to a large number of trivial predictions (of which the majority apply to 'financially included' respondents). Some possible explanations are as follows. The covariates used in the model refer to the socio-demographic characteristics of respondents, and do not cover a range of other potentially important factors, such as psychological attitudes.

2. Econometric modelling of total financial inclusion among households

Econometric modelling tools were utilised to measure the dependence of the variables "Financial inclusion of households" on the following covariates: sex, age, educational attainment, marital status, social status, region, type of settlement, employment status, income quintile group, and household size. Similar to the model for individuals, the variables "Marital Status" and "Location/Region" were treated as categorial. The variables "Employment Status" and "Social Status" were ranked by settlement size and social location, respectively.

The number of the cases analysed, and the missing response data are shorn in Table 2.1.

Table 2 – Case processing summary

Unweighed cases		N	%
Selected Cases	Included in Analysis	2051	82.0
	Missing Cases	449	18.0
	Total	2500	100.0
Unselected Cases		0	0
Total		2500	2500

As seen from Table 2, the model included data from 82% of respondents. Response forms where the option "No Answer/Unsure" was chosen in questions on the monthly income were excluded from the analysis.

The values of the coefficients in the initial model and their statistical significance are presented in Table 2.2 below.

Table 2.2 – Values in the initial model

	B	Standard Error	Wald	df	Significance	Exp(B)
Sex	0.206	0.123	2.825	1	0.093	1.229
Age	-0.335	0.063	28.659	1	0.000	0.716
Educational attainment	0.025	0.039	0.430	1	0.512	1.026
Marital status			176.861	4	0.000	
Married, living with spouse	1.405	0.189	55.081	1	0.000	4.075
Divorced/separated	-0.262	0.223	1.384	1	0.239	0.769
Widowed	-0.498	0.254	3.834	1	0.050	0.608
Social status	0.018	0.009	3.828	1	0.050	1.018

Location/region			33.329	6	0.000	
Brest Oblast	-0.584	0.241	5.887	1	0.015	0.558
Vitebsk Oblast	0.329	0.237	1.928	1	0.165	1.390
Gomel Oblast	-0.455	0.229	3.971	1	0.046	0.634
Grodno Oblast	-0.095	0.250	0.144	1	0.704	0.909
Minsk Oblast	-0.396	0.229	2.987	1	0.084	0.673
Mogilev Oblast	0.355	0.248	2.047	1	0.152	1.426
Type of settlement	-0.164	0.069	5.664	1	0.017	0.849
Employment status	0.006	0.006	1.006	1	0.316	1.006
Household size	-0.005	0.002	5.726	1	0.017	0.995
Average monthly income	0.365	0.050	53.153	1	0.000	1.441
Constant	0.704	0.372	3.580	1	0.058	2.023

As seen from table 2, the variables "educational attainment", "employment status" are statistically insignificant. The following model was constructed after these variables had been excluded (Table 2.3).

Table 2.3 – Values in the final model

	B	Standard Error	Wald	df	Significance	Exp(B)
Sex	0.213	0.122	3.039	1	0.081	1.237
Age	-0.342	0.062	30.320	1	0.000	0.710
Marital status			182.040	4	0.000	
Married, living with spouse	1.425	0.188	57.271	1	0.000	4.158
Divorced/separated	-0.234	0.221	1.121	1	0.290	0.791
Widowed	-0.500	0.254	3.882	1	0.049	0.607
Social status	0.018	0.009	4.540	1	0.033	1.019
Location/region			33.241	6	0.000	
Brest Oblast	-0.576	0.239	5.792	1	0.016	0.562
Vitebsk Oblast	0.332	0.237	1.971	1	0.160	1.394
Gomel Oblast	-0.467	0.228	4.196	1	0.041	0.627
Grodno Oblast	-0.102	0.250	0.168	1	0.682	0.903
Minsk Oblast	-0.396	0.228	3.004	1	0.083	0.673
Mogilev Oblast	0.341	0.247	1.901	1	0.168	1.407
Type of settlement	-0.176	0.067	6.934	1	0.008	0.839
Household size	-0.005	0.002	5.433	1	0.020	0.995
Average monthly income	0.370	0.050	55.270	1	0.000	1.447
Constant	0.799	0.340	5.532	1	0.019	2.223

As seen from the data above, the use of financial services among households is related to respondent sex (the variable is significant at the 10% confidence level). Probability of using services is 1.24 times higher for male respondents relative to females. By contrast, transition to a higher age group decreases the probability of using financial services by 1.4 times. Each transition to a higher income bracket increases the probability of using financial services by 1.45 times. The relationship between the use of financial services and marital status was also statistically significant, Relative to unmarried respondents, respondents who are married and live together with their spouse are 4.16 more likely to use financial services. Being divorced decreases the probability of using services by 1.27 times in relation to a married respondent. Location/region is also a significant variable. The value "Minsk City" was used as the basis for comparison for the categorial variable

"Location/Region". As seen from Table 3, residence in any region except Vitebsk Oblast decreases the probability of using services. Each one-step decrease in rank for the variable "location/settlement type" decreases the probability of using services by 16.1%. The negative relationship between household size and use of financial services is counter-intuitive.

The main indicators of the model fit are shown in Tables 2.4 and 2.5.

Table 2.4 – Omnibus test of the model coefficients

		Chi-square	df	Significance
Step 3.	Step	-1.105	1	0.293
	Block	480.307	16	0.000
	Model	480.307	16	0.000

Table 2.5 – Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
3	1859.299	0.209	0.307

The regression model's quality of approximation is measured by the goodness of fit. When variables were added to the model, -2LL assumed the value 2031.597, a difference of -480.307 from the initial value for the regression model consisting only of constants. This decrease in the -2LL is an improvement of the model; the difference is defined as Chi-square, and is statistically significant. Thus, the quality of the model improved when more variables were added. As seen from the value of Nagelkerke R Square, the percentage of dispersion explained by the logit regression model is 30.7% in this model.

To describe the predictive power of the model, a classification model was constructed, showing the number of true and false predictions in each line (Table 2.6)

Table 2.6 – Classification table

Observed			Predicted		
			Financial inclusion among households		Percentage correct
			Not included	Included	
Step 3.	Financial inclusion among households	Not included	222	306	42.0
		Included	123	1400	91.9
	Cumulative Percentage				79.1

Minimum expected count – 500

As seen from Table 6, the test correctly predicted only 222 instances of financial exclusion out of 528. The remaining 306 were falsely predicted by the test

as excluded. The accuracy of prediction was 42%. Of the actual number of financially included (1523), 1400 cases were correctly predicted by the test. The number of correct predictions was 1622 out of 2051, or 79.1%.

Discarding certain questionnaire forms can improve model quality in some of the following ways: increasing Nagelkerke R Square from 0.155 to 0.307; increasing the share of correct predictions from 77.2 to 79.1% for "included" and from 25 to 42% for "excluded"; making the relationship between income and financial inclusion statistically significant and the direction of this relationship consistent with the intuitive expectation.

As suggested by these numbers, the model includes variables that have a statistically significant effect on the endogenous variable. The model's predictive power can be improved by adding more variables, such as those related to socio-psychological factors. The survey results may have been affected by the fact that questions about the households were addressed to individuals, which may have limited the reliability of the data.