Assignment 3
Report on
Global Financial Inclusion-2014

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Introduction

Financial inclusion is significant in mitigating poverty and realizing economic growth. Earlier little knowledge was available regarding extent of financial inclusion and the level to which various population strata as in women, impoverished, and rural inhabitants were excluded from formal financial arrangement.

But with the advent of Global Findex, a collection of comprehensive indicators in regards with how adults around the globe manage their daily finances, has made it easy for the policy makers to analyse that development in the field of financial services with time.

Out of the many inferences which could be drawn on the basis of given dataset the objective set for our report is to try answering the question that "Is there a difference in the borrowing and saving habits of Australians based on education level?"

Methods

The data we are analysing is Global Financial Inclusion Database (taken from www.worldbank.org) constituting 6 tables. It is the world's most elaborated indicator of how adults around the world save, borrow or make payments. The sample size comprises of 1,002 Australian individuals of age 15 years and above.

It's a sample survey data in which people are asked to answer the questions which will help analyzing the current financial system of different groups of people as in females, rural, development from the past and the changes required.

The variables for analysis are: Unique Id, Highest Education, Monthly Income, variables related to borrowing reasons from a financial institution (education/medical/ business purposes), variables related to government assistance (received in cash or in account or through mobile) and variables related to savings (saved for business purpose/ old age/ education).

The method that has been used for analysing the data is SAS. Formulas such as PROC FREQ, PROC SQL, proc ANNOVA have been used. The use of INFORMAT, FORMAT, TABLES and JOINS has also been made.

Results

- **Creating a new variable education**

	Education	Identifier	weight	female	age	educ	month_inc
1	tertiary	171518995	.253324151	1	75	3	$5,380
2	secondary	141930705	2.13174235	1	25	2	$943
3	secondary	183978006	.993284960	1	62	2	$2,074
4	primary	180671328	2.27796387	0	55	1	$4,395
5	tertiary	119892595	.522513604	1	56	3	$3,995
6	secondary	201292532	.253324151	0	72	2	$30,345
7		193953289	1.05524059	0	42	.	$13,537
8	primary	186339905	.781362033	0	55	1	$9,372
9	secondary	180397783	.414111966	1	54	2	$2,451
10	secondary	128612453	.430007259	0	85	2	$1,131

Figure 1 – New Variable "Education" added to the Demographics dataset to represent education level of participants, where 1=primary or less, 2=secondary, 3= tertiary or above

- **Annova test to enquire regarding the variation in monthly income with education level (alpha=0.02)**

The ANOVA Procedure

Class Level Information

Class	Levels	Values
Education	3	primary or less secondary tertiary or above

Number of Observations Read	1002
Number of Observations Used	985

The ANOVA Procedure
Dependent Variable: month_inc

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	3221431512	1610715756	23.95	<.0001
Error	982	66034974151	67245391		
Corrected Total	984	69256405663			

R-Square	Coeff Var	Root MSE	month_inc Mean
0.046515	80.65363	8200.329	10167.34

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Education	2	3221431512	1610715756	23.95	<.0001

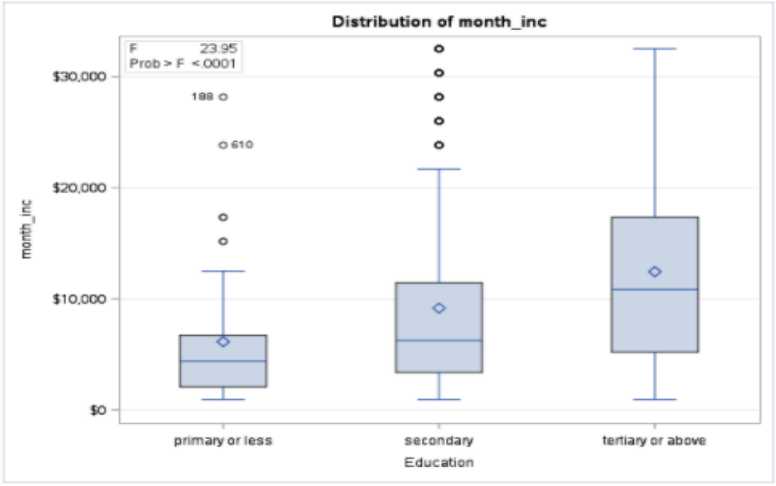

Figure 2– Annova test for testing the difference in monthly income for the variable "Education"

Observations and Inferences:

The overall F test is significant (F=23.95, P<0.0001), implying that there is a significant variability in the monthly income with the Education level.

Also the boxplots created show that the mean and IQR for the monthly income increases with the level of education. Thereby the highest mean monthly income exists for tertiary and higher education.

- **Comparing the frequency for various borrowing reasons from the financial institutions by education level**

The FREQ Procedure

Frequency | Table of Education by Borrowed_for_Education

Education	Borrowed_for_Education (dk)	no	yes	Total
primary or less	0	51	0	51
secondary	1	559	26	586
tertiary or above	0	335	13	348
Total	1	945	39	985

Frequency Missing = 17

Frequency | Table of Education by Borrowed_for_Medical_Purposes

Education	Borrowed_for_Medical_Purposes no	yes	Total
primary or less	49	2	51
secondary	547	39	586
tertiary or above	334	14	348
Total	930	55	985

Frequency Missing = 17

Frequency | Table of Education by Borrowed_for_business

Education	Borrowed_for_business no	yes	Total
primary or less	51	0	51
secondary	575	11	586
tertiary or above	328	20	348
Total	954	31	985

Frequency Missing = 17

Figure 3– Frequency table for each of the borrowing reasons for a person's education level

Observations and Inferences

- *Most of the people out of those who responded (985) had secondary education (586), 348 had tertiary or higher education and only 51 had primary education.*
- *Considering these groups, the people with primary or lower education, do not really seem to have borrowed money for education or business but only for medical purposes.*
- *The people with secondary education borrow majorly for the medical purpose, and second common reason being borrowing for education and a few of them borrow for business.*
- *Talking of adults with tertiary or higher education, the main reason for borrowing is for business while borrowing for education and medical purposes is equally common in this category.*

The most common reason for borrowing money from financial institution is for medical purpose. Borrowing for education and business follow the lead. As seen the given three options do not seem to be the only reasons for borrowing money as out of 985 responses in total only 125 people have responded with a "Yes" to the above three reasons for borrowing money. So there seem to be other reasons for which the people borrow money from financial

institutions which need to be known and added to the survey for future analysis of financial inclusion.

- **To compare the frequency of Government assistance by education level**

The FREQ Procedure

Percent

Table of Education by Received_govt_transfers_or_not

Education	Received_govt_transfers_or_not yes	Total
primary or less	6.22	6.22
secondary	65.67	65.67
tertiary or above	28.11	28.11
Total	434 100.00	434 100.00

Frequency Missing = 568

Percent

Table of Education by Transfers_In_Cash

Education	Transfers_In_Cash (dk)	no	yes	Total
primary or less	0.00	5.99	0.23	6.22
secondary	0.46	62.44	2.76	65.67
tertiary or above	0.00	26.73	1.38	28.11
Total	2 0.46	413 95.16	19 4.38	434 100.00

Frequency Missing = 568

Percent

Table of Education by To_an_account_or_card

Education	To_an_account_or_card no	yes	Total
primary or less	0.23	5.99	6.22
secondary	3.46	62.21	65.67
tertiary or above	3.00	25.12	28.11
Total	29 6.68	405 93.32	434 100.00

Frequency Missing = 568

Percent

Table of Education by Through_a_mobile_phone

Education	Through_a_mobile_phone no	yes	Total
primary or less	6.22	0.00	6.22
secondary	65.67	0.00	65.67
tertiary or above	27.88	0.23	28.11
Total	433 99.77	1 0.23	434 100.00

Frequency Missing = 568

Figure 4– Frequency table for the government assistance by education level

434 people out of 1002 responded to the questions related to the reception of government assistance and all of them responded with a "yes". Out of those who responded 6.22% had primary or lower education, 65.67% had Secondary education and 28.11% had tertiary or higher education.

1) *Considering the people with primary or lower education almost all of them received funds in their account or in card, very few received assistance in cash and none of them on mobile.*
2) *Out of 65.67% of the people who had secondary education only 3.46% received assistance through cash, 62.21% received it in account or in card and again none of them through mobile.*
3) *Out of 28.11% of the population with higher education 25.12 received payments in account, 0.23% on mobile and 1.36% in cash.*

Inferences: Most of the people got government assistance in account irrespective of the level of education. Only the people with tertiary education availed the mobile phone facility for receiving government assistance.

❖ **To compare the frequency of various reasons for saving by education level**

The FREQ Procedure

Frequency
Percent

Table of Education by Saved_for_business

Education	Saved_for_business (ref)	no	yes	Total
primary or less	0 0.00	48 4.87	3 0.30	51 5.18
secondary	2 0.20	537 54.52	47 4.77	586 59.49
tertiary or above	0 0.00	307 31.17	41 4.16	348 35.33
Total	2 0.20	892 90.56	91 9.24	985 100.00

Frequency Missing = 17

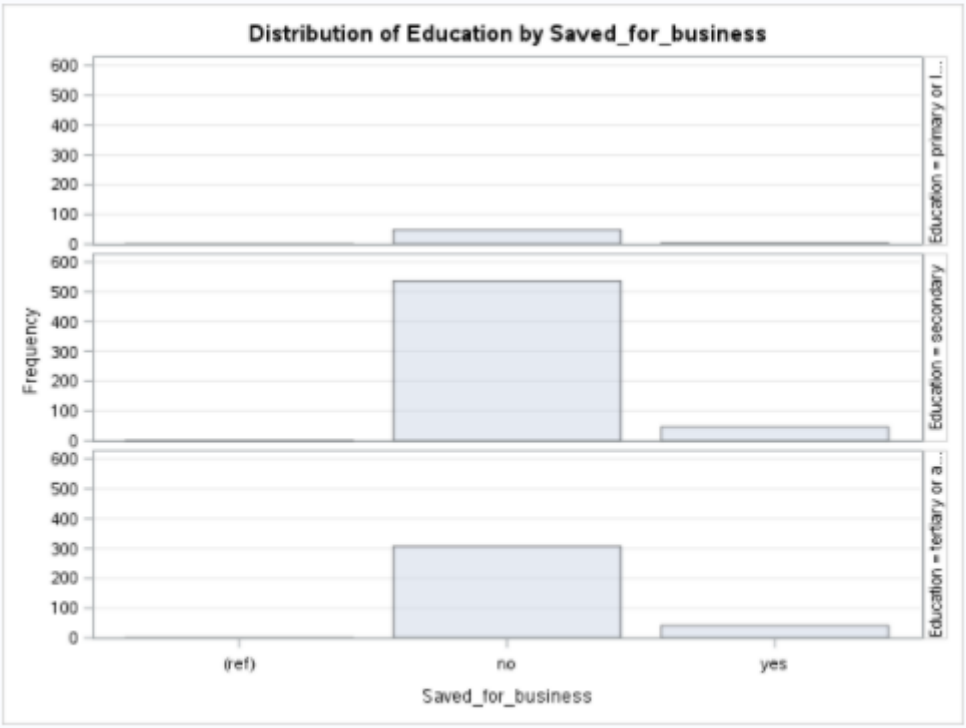

Figure 5– Frequency table for saving for business by educational level

Frequency Percent	Table of Education by $aved_for_old_age				
	$aved_for_old_age				
Education	(dk)	(ref)	no	yes	Total
primary or less	1 0.10	0 0.00	29 2.94	21 2.13	51 5.18
secondary	3 0.30	1 0.10	334 33.91	248 25.18	586 59.49
tertiary or above	1 0.10	0 0.00	152 15.43	195 19.80	348 35.33
Total	5 0.51	1 0.10	515 52.28	484 47.11	985 100.00
Frequency Missing = 17					

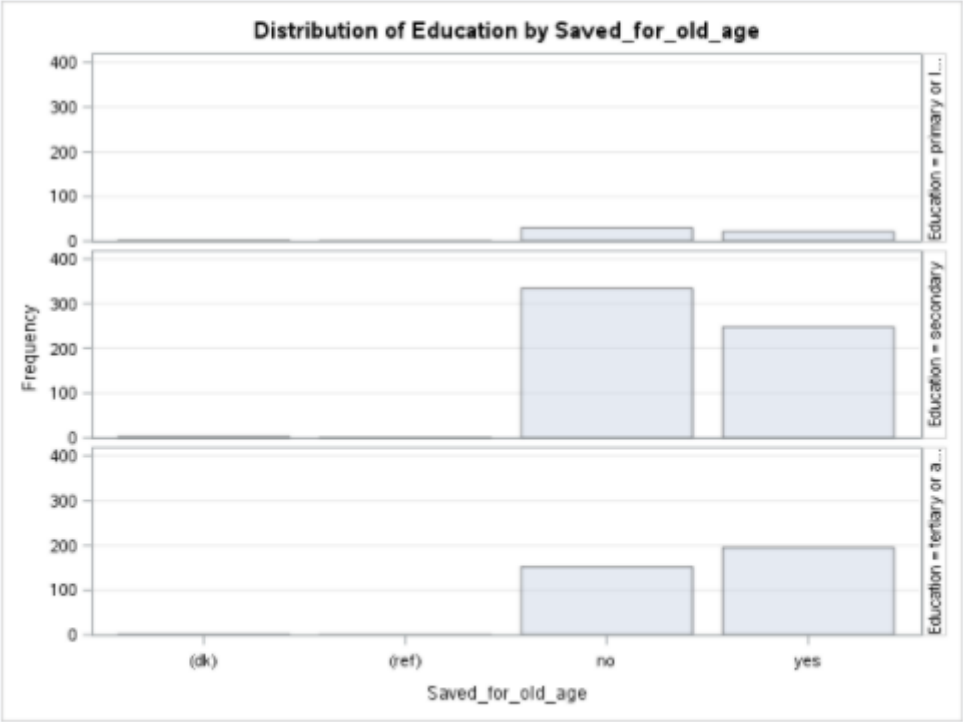

Figure 6– Frequency table for saving for old age by educational level

Frequency
Percent

Table of Education by Saved_for_Education				
	Saved_for_Education			
Education	(ref)	no	yes	Total
primary or less	0 0.00	47 4.77	4 0.41	51 5.18
secondary	1 0.10	481 48.83	104 10.56	586 59.49
tertiary or above	0 0.00	247 25.08	101 10.25	348 35.33
Total	1 0.10	775 78.68	209 21.22	985 100.00
Frequency Missing = 17				

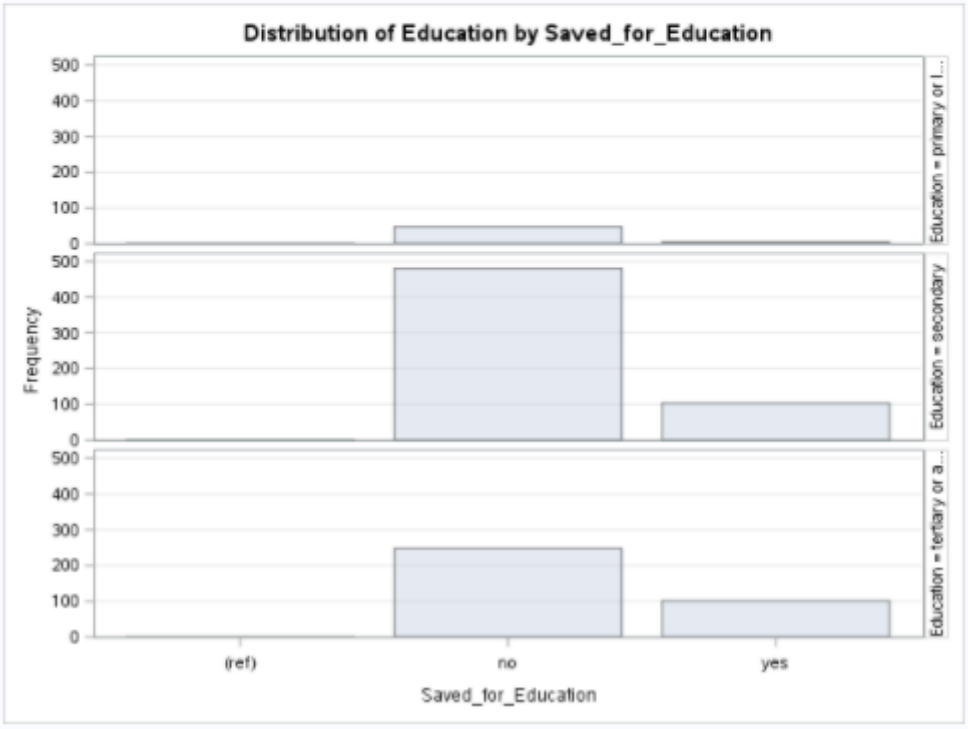

Figure 7– Frequency table for saving for education by educational level

Observations and Inferences (from figures 5, 6 and 7):

Out of the people who got government assistance, the people who 5.18% had primary education save out of which 2.13% saved for old age, 0.41% save for education and 0.30% saves for business.

Around 60% of the surveyed population had secondary degree and majority of them save for old age, one fifth of them (10.56%) save for education and around 5% save for business.

For the people having tertiary education (35.33%) more than 50% saved for old age, around 30% save for education and around 10% saved for business.

Therefore, most of the people irrespective of their education level save for old age and saving for business is least common.

Conclusion

On the basis of the analysis we can say that there is a similarity in the borrowing and saving habits of Australians based on education level.

People mainly borrow the money from the financial institution for the medical purpose; borrowing for education is the other common reason while borrowing for business is least popular in Australia. It is seen that people with tertiary education are the ones who mainly borrow for business and the people with secondary education generally borrow for medical purpose. The people with primary education do not generally borrow for any reason but a few of them who borrow do it for medical purpose.

Regarding the saving habits of the Australians we can say that most of the people generally save for their old age, some of them even do it for education but only a few do it for the business. The people with different levels of education, be it primary, secondary or tertiary majorly save for old age. The majority of people who save for education and business have tertiary or higher education.

So the major borrowing is done for medical purpose and saving for old age (the sensitive stages). Primary educated people do not generally borrow or save for education or business while the people with tertiary education borrow and save for education and business the most amongst the three categories. Secondary educated people borrow and save for education besides for medical reasons/ old age but even they do not seem to do it much for business.

Besides, we see that monthly income varies directly with level of education. Other than that government assistance is mainly obtained in a bank account or through card irrespective of the education level (93.32%) but a small proportion of people do get assistance through cash as well. And only a very few people (0.23%) use mobiles for obtaining assistance.

References

www.worldbank.org

http://microdata.worldbank.org/index.php/catalog/2380/datafile/F1

Appendix

```
/* Question 1 */

/* Importing  Borrowed.csv */

DATA borrowed;

INFILE "/home/s36314420/Assignment 3/Borrowed.csv" delimiter="," firstobs=2;

INPUT Identifier q21a$ q21b$ q21c$ q21d$ q22a$ q22b$ q22c$;

run;


/* Importing Demographics.csv */

DATA demographics;

INFORMAT Identifier 9. weight 10.9 female 1.0 age 2.0 educ 1.0 month_inc dollar8.;

INFILE "/home/s36314420/Assignment 3/Demographics.csv" delimiter="," firstobs=2 dsd missover;

INPUT Identifier weight female age educ month_inc;

FORMAT Identifier 9. weight 10.9 female 1. age 2. educ 1. month_inc dollar8.;

run;


/* Importing Q17.csv */

DATA Q17;

INFILE "/home/s36314420/Assignment 3/Q17.csv" delimiter="," firstobs=2;

INPUT Identifier q17a$ q17b$ q17c$ q18a$;

run;


/* Question Q8.csv */

DATA Q8;

INFILE "/home/s36314420/Assignment 3/Q8.csv" delimiter="," firstobs=2;

INPUT Identifier q8a$ q8b$ q8c$ q8d$ q8e$ q8f$ q8g$ q8h$ q8i$;

run;


/* Creating libref for government.sas7bdat */
```

```
libname ass3 "/home/s36314420/Assignment 3";

/* Question 2 */
/* Create  a new variable "Education" */

PROC SQL;
create table demographics1 as
select
(case when educ=1 then "primary or less"
when educ=2 then "secondary"
when educ=3 then "tertiary or above" else ""
END)
as Education,*
from demographics
;
QUIT;

/* Question 3 */
/* Run Annova to determine whether there is difference in monthly income for the new variable
"Education"
use alpha=0.02*/

proc anova data=demographics1 ;
class Education ;
model month_inc=Education;
means Education / alpha=0.02;
run;

/* Question 4 */
/* Compare the frequency of each of the borrowing reasons for a person's education level */
proc sql;
```

```
create table dem_borr as

select t1.*, t2.q22a as Borrowed_for_Education, t2.q22b as Borrowed_for_Medical_Purposes,
t2.q22c as Borrowed_for_business

from  demographics1 t1

left join borrowed t2 on t1.Identifier=t2.Identifier;

quit;


proc freq data=dem_borr;

        tables Education*(Borrowed_for_Education Borrowed_for_Medical_Purposes
Borrowed_for_business)/ nocol norow nocum nopercent;

run;


/* Question 5 */

/* Compare the frequency of Government assistance by Education level. Show the percentage of
recipients

of assistance for each education level */


proc sql;

create table dem_gov as

select t1.*, t3.q39 as Received_govt_transfers_or_not, t3.q40a as Transfers_in_Cash, t3.q40bc as
To_an_account_or_card,

t3.q40d as Through_a_mobile_phone

from  demographics1 t1

left join ass3.government t3 on t1.Identifier=t3.wpid_random;

quit;


proc freq data=dem_gov;

        tables Education*(Received_govt_transfers_or_not Transfers_in_Cash
To_an_account_or_card Through_a_mobile_phone)/ nocol norow nocum nofreq;

run;
```

```
/* Question 6 */

/* Creating the frequency table for various reasons for saving by education level.*/


proc sql;

create table dem_17 as

select t1.*, t4.q17a as Saved_for_business, t4.q17b as Saved_for_old_age, t4.q17c as
Saved_for_Education

from  demographics1 t1

left join Q17 t4 on t1.Identifier=t4.Identifier;

quit;


proc freq data=dem_17;

        tables Education*(Saved_for_business Saved_for_old_age Saved_for_Education)/ nocol
norow nocum plots= freqplot;

run;
```