Shift Pilot - Survey Results

Alexander Kahn

February 1, 2015

Introduction

The Shift program is intended to be granular in improving the lives of the heavily impoverished. The goal is simply to provide capital resources to women and we show that the women involved with the pilot program did have positive results with the program. The 70 women who received distributions in the program report improvements in their lives and work across the board. This report is organized as follows: the next section will discuss the findings of the initial survey, following that will be an exploration into the exit survey, after that we'll compare the responses between the surveys.

NOTE: This report will have code/graphics/tables interspersed with narrative, the code is displayed for transparency purposes.

Entrance Survey

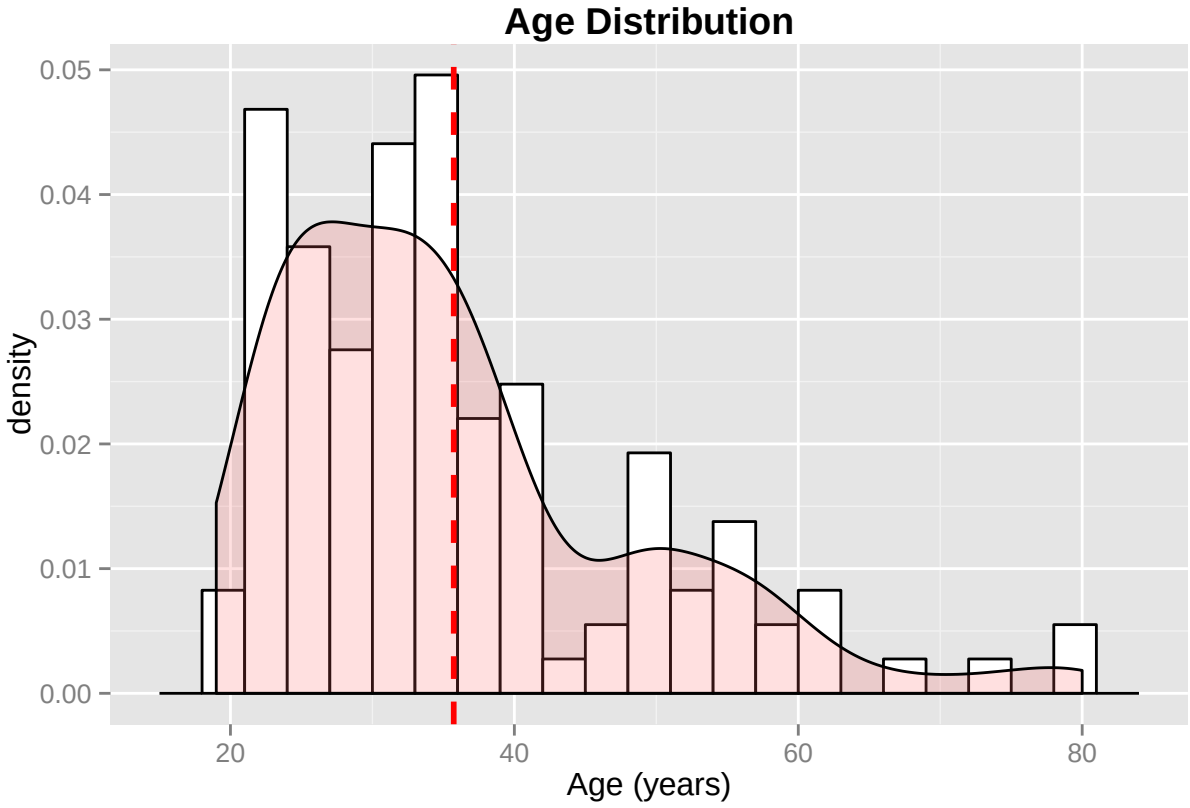
Summary of the Data

This data set includes 104 observations of 47 variables corresponding to the responses of 104 Ugandan women to a survey administered via a mobile device.

```
# load the graphics library used.
library('ggplot2')
# load the data
bts <- dget("data/basic_transfer_data.R")
```

Demographics

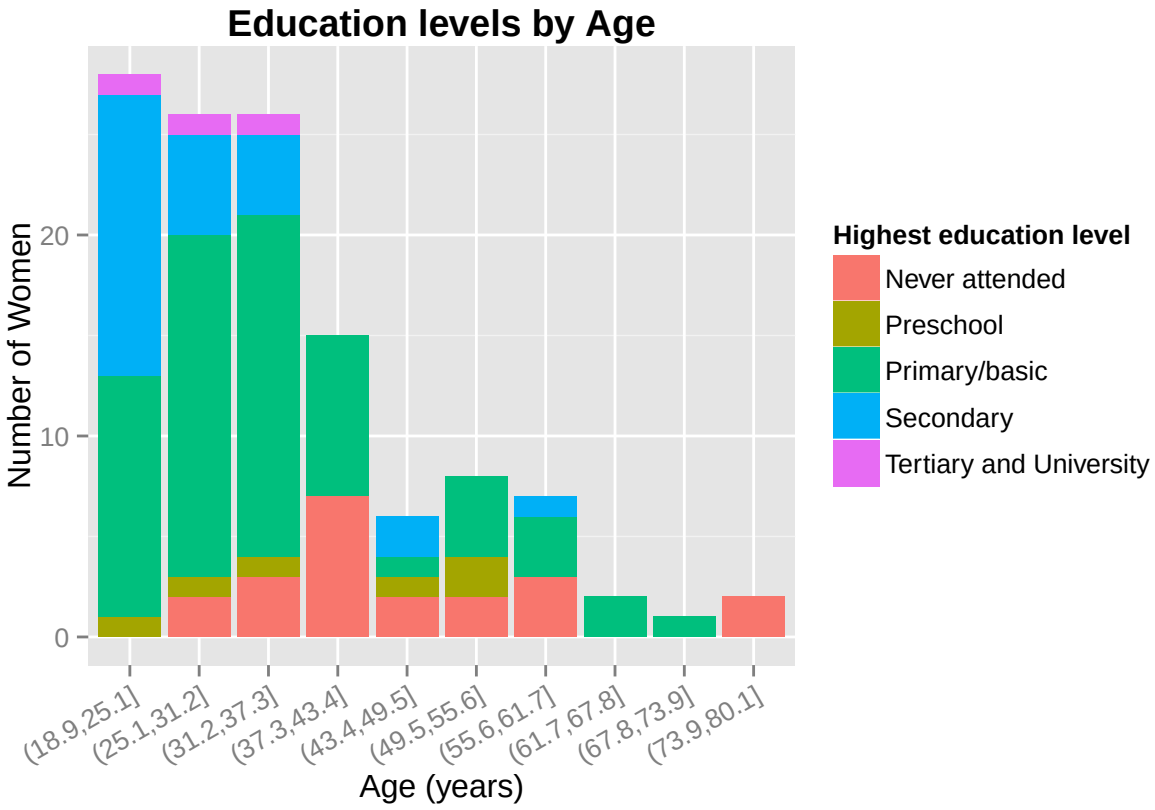
Age The 104 women involved in the program range in age from 19 to 80.



The diagram above shows most women are between 25 and 40 years of age with the mean shown as a dashed red line. If we break up the age range into bins like so:

```
f_age <- cut(bts$age, breaks = 10)
```

We can look at various breakdowns by age, notably education.



Here we can see that the younger women tend to have more education but the predominant education level is "Primary/basic."

Family Life To explore some family dynamics, we can look at the women who are married and those who are the Head of their Household.

```
table(bts$married)
```

```
##
## FALSE  TRUE
##    34    87
```

The table above shows how many of the women are married.

```
table(bts$head_of_household)
```

```
##
## FALSE  TRUE
##    66    54
```

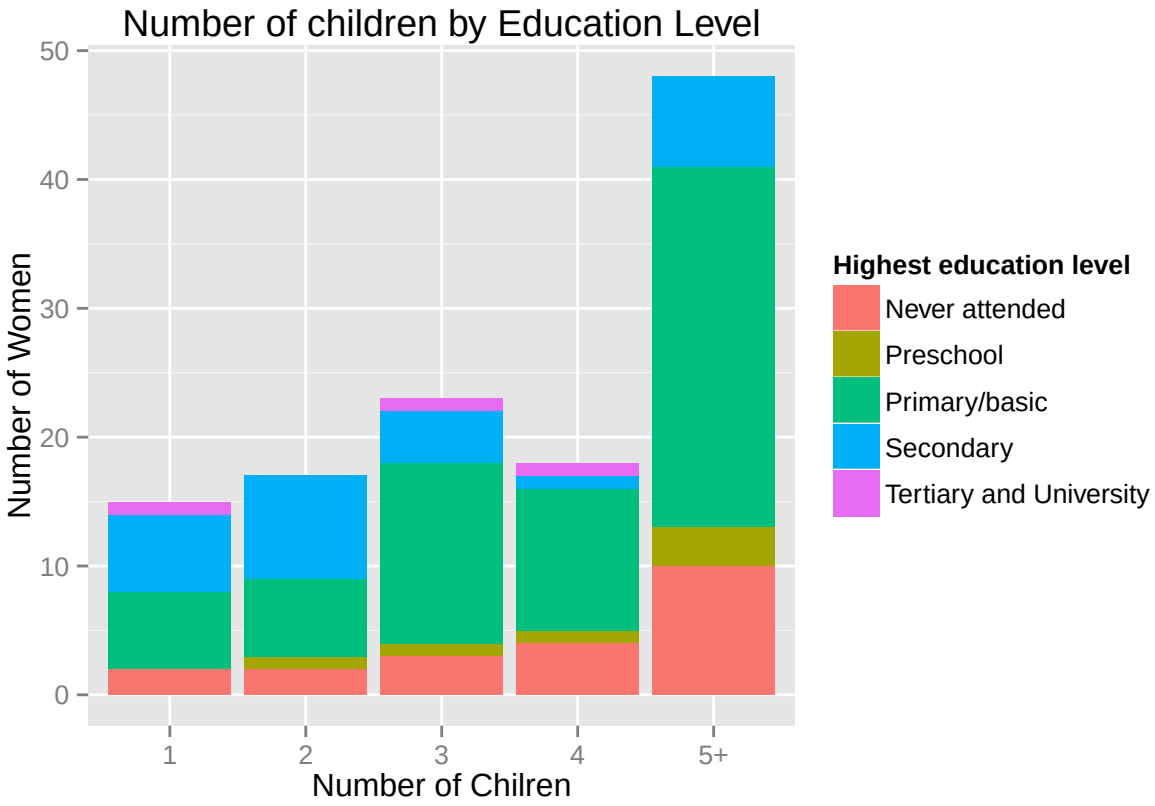
Now we can see most of the women are not the head of their household, but of the women who are married, how many consider themselves the head of the house?

```
Married <- bts$married
HeadOfHousehold <- bts$head_of_household
xtabs(~ Married + HeadOfHousehold)
```

```
##         HeadOfHousehold
## Married FALSE TRUE
##   FALSE     3   31
##   TRUE     63   23
```

The above table shows that most of the women who are married (52.9%) do **not** consider themselves the head of the house compared to 19.2% who are married **and** consider themselves the head of the Household.

Next we might consider the children, first we'll look at the break down of the number of children by education level.



This makes it quite clear that education levels correlate with the number of children a woman has - the reason why this is the case varies but may be an indicator of the presence of family planning tools (birth control, abortion services, educational resources, etc.) or the willingness of the household to allow the prospective mother to make decisions. On the other hand, child and infant mortality may also influence this picture. Let's look at this from a different perspective.

```
Married <- bts$married
NumOfChildren <- bts$num_children
HighestEduLevel <- bts$highest_edu_attained
ftable(prop.table(xtabs( ~ Married + NumOfChildren + HighestEduLevel))*100)
```

```
##                       HighestEduLevel Never attended  Preschool Primary/basic  Secondary Tertiary an
## Married NumOfChildren
## FALSE   1                                  1.6528926  0.0000000     2.4793388  0.8264463
##         2                                  0.8264463  0.0000000     2.4793388  1.6528926
##         3                                  0.0000000  0.0000000     4.1322314  0.8264463
##         4                                  1.6528926  0.0000000     2.4793388  0.0000000
##         5+                                 1.6528926  0.8264463     3.3057851  2.4793388
```

```
## TRUE    1                                0.0000000  0.0000000     2.4793388  4.1322314
##         2                                0.8264463  0.8264463     2.4793388  4.9586777
##         3                                2.4793388  0.8264463     7.4380165  2.4793388
##         4                                1.6528926  0.8264463     6.6115702  0.8264463
##         5+                               6.6115702  1.6528926    19.8347107  3.3057851
```

The table highlights the disparities between the level of education and number of children, further broken down by whether the woman is married or not.

Health

Individual Respondents indicated whether they consider themselves healthy or not and if they take medications or not.

```
prop.table(table(bts$healthy))*100
```

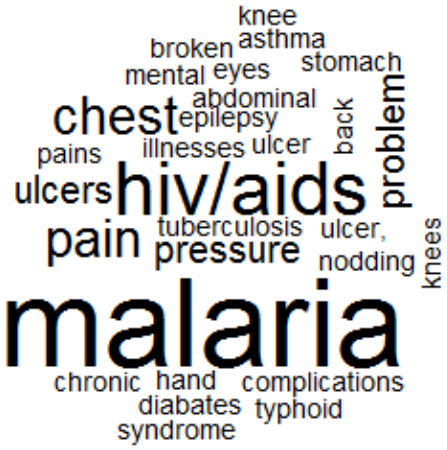
```
##
##     Yes      No
## 76.8595 23.1405
```

Most of the women considered themselves healthy, that's not entirely reliable but luckily we have more information in the form of whether or not they take medications.

```
prop.table(table(bts$medication))*100
```

```
##
##      Yes       No
## 31.40496 68.59504
```

The women that reported using medication were then asked what they used that medication for, the results of which are presented by the word cloud below.



Family Respondents were also asked whether they consider their family healthy.

```
prop.table(table(bts$healthy_family))
```

```
##
##       Yes        No
## 0.6942149 0.3057851
```

The women also indicated whether a family member takes mediation.

```
prop.table(table(bts$family_takes_meds))
```

```
##
##      Yes       No
## 0.322314 0.677686
```

Work

102 of the 104 women self identify as farmers.

NOTE: The right y-axis breakdown is the `enjoy_farming` variable.

Here we can see that most of the women report enjoying life and their work as farmers, with few indicating they are unsure about their enjoyment with respect to farming.

Financial Situation

First, let's explore the percentage of the women who live below certain thresholds.

```
# Convert the reported weekly wages from UGX to USD
# using the current spot rate (no inflation adjustment)
daily_wage_usd <- ((bts$wage_per_week * 0.000372))/7
```

```
(length(which(daily_wage_usd < 1)) / nrow(bts))*100
```

Below $1.00 per day

```
## [1] 65.28926
```

```
(length(which(daily_wage_usd < 1.5)) / nrow(bts))*100
```

Below $1.50 per day

```
## [1] 83.47107
```

```
# $2.00
(length(which(daily_wage_usd < 2)) / nrow(bts))*100
```

Below $2.00 per day

```
## [1] 91.73554
```

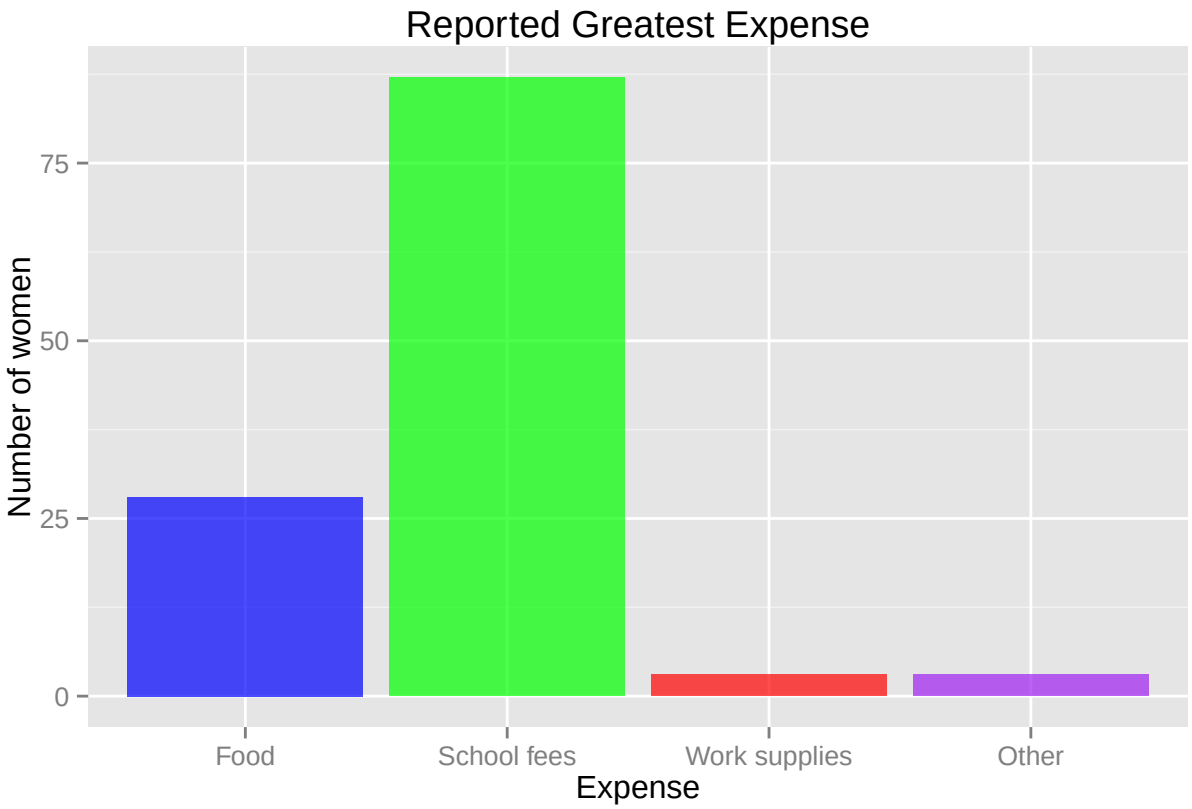
Spending habits Consider the three categories for spending habits: Food, Personal Items and House Repairs. Each variable is broken down by the amount of time since last spending.

```
Food <- prop.table(table(bts$food))*100
Personal_Items <- prop.table(table(bts$personal_items))*100
House_Repairs <- prop.table(table(bts$house_repairs))*100
rbind(Food, Personal_Items, House_Repairs)
```

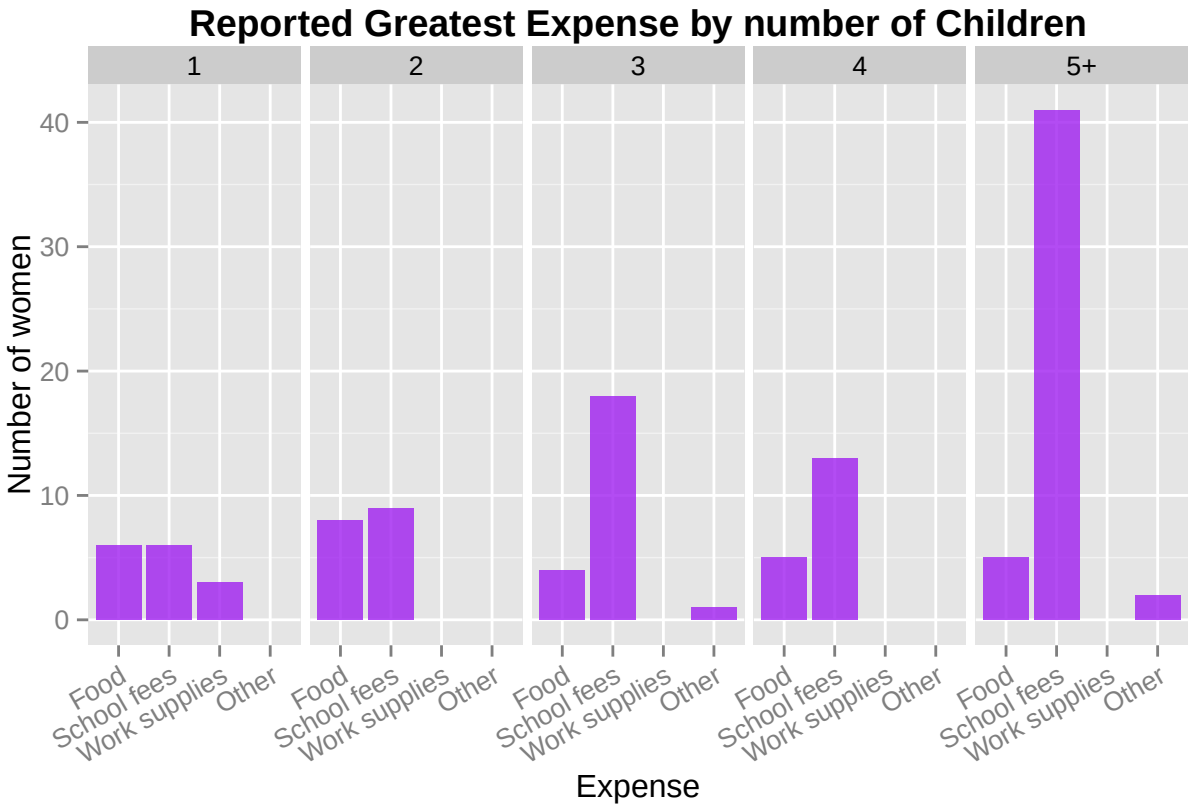
```
##                Everyday Every 7 days Every 14 days > 30 days ago     Never
## Food           45.45455    20.661157     10.743802      13.22314  9.917355
## Personal_Items 10.74380     4.132231      6.611570      69.42149  9.090909
## House_Repairs  11.57025     8.264463      1.652893      49.58678 28.925620
```

Notice that almost two-thirds of the women rarely purchase personal items.

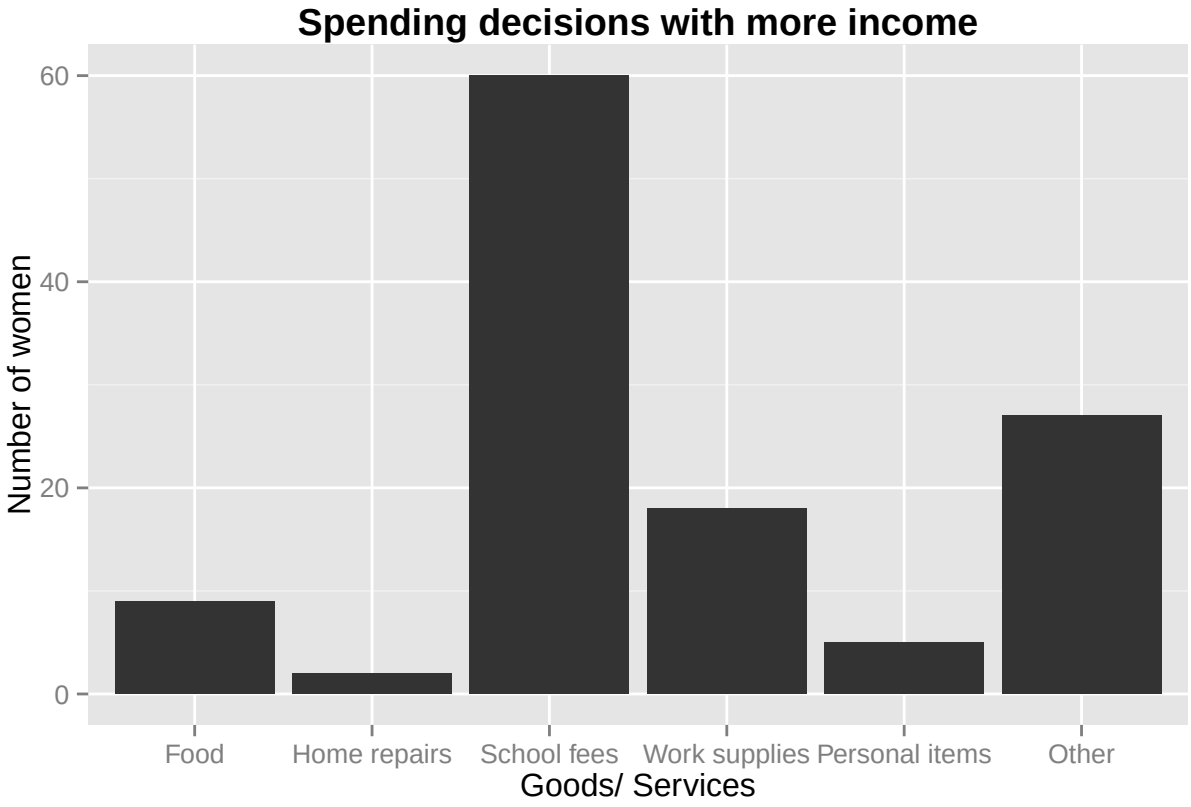
The women reported their greatest expense, let's have a look.



We can see that School fees are indicated as the greatest expense most frequently, even when we control for the number of children. School fees are second-most only to Food in families with one child.



Future spending Habits We asked the women what they would spend money on if they had more of it. This is what they reported.



As we can plainly see, 21 of the 104 women indicated "other." Let's look at what they said. Since it is all text data in need of some form of normalization, let's take a moment and go through that.

```
# make an index of the values that aren't "n/a"
index <- grep("n/a", bts$income_effect_goods_other)
# subset the data
IE.other <- bts$income_effect_goods_other[-index]
# fix some spelling errors
IE.other[21] <- "Start a retail shop"
IE.other[19] <- "Small scale business"
```

Now that we have the data we need, let's aggregate the contents.

```
grep("[bB]usiness", IE.other)
```

```
##  [1]  1  2  3  4  8  9 15 19 20 22 28
```

```
grep("[fF]arm", IE.other)
```

```
## [1]  5  6  9 10 11
```

This isn't really the best way to do this, let's take it a step further and do some natural language processing to get a sense of what these women are saying.

It is also worth noting that one woman mentioned that with additional income she would like to purchase medication and food for "sick child with HIV."

Enterprise Generation

These women were also asked what business they would start if they got the working capital today.

```
BusinessIdea <- bts$business_idea
prop.table(table(BusinessIdea))*100
```

```
## BusinessIdea
##     Agricultural    Trader/Retail Processor (food)   Transportation
##        38.842975        35.537190        13.223140         1.652893
##            Other
##        10.743802
```

With 44.2% reporting agricultural business interests, we again see a commitment to farming by these women. Those that reported "other" indicated interest in food & drink, scaling an existing business or purchasing livestock.

Exit Survey

Summary of the data

The exit survey had 70 participants, 67 of which took the entrance survey. Some observations were removed because of non-response, some responses were altered because of presumed miscoding. See the source files for more details.

Change

Respondents were asked if they perceive a change in their lives and work along with the 'magnitude' of change.

```
# life changed
table(bts2$life_changed)
```

```
##
##    Yes     No Unsure
##     69      0      0
```

```
length(which(bts2$life_changed == 'Yes'))/length(bts2$life_changed)
```

```
## [1] 0.9857143
```

```
# direction of change
table(bts2$life_delta)
```

```
##
##   Better    Worse The Same
##       70        0        0
```

```
length(which(bts2$life_delta == 'Better'))/length(bts2$life_delta)
```

```
## [1] 1
```

As we can see, there is a large perception of improvement among the women in their lives in general but let's see what happened at work:

```
# work changed
table(bts2$work_changed)
```

```
##
##    Yes     No Unsure
##     69      1      0
```

```r
length(which(bts2$work_changed == 'Yes'))/length(bts2$work_changed)
```

```
## [1] 0.9857143
```

```r
# direction of change
table(bts2$work_delta)
```

```
##
##   Better    Worse The Same
##       70        0        0
```

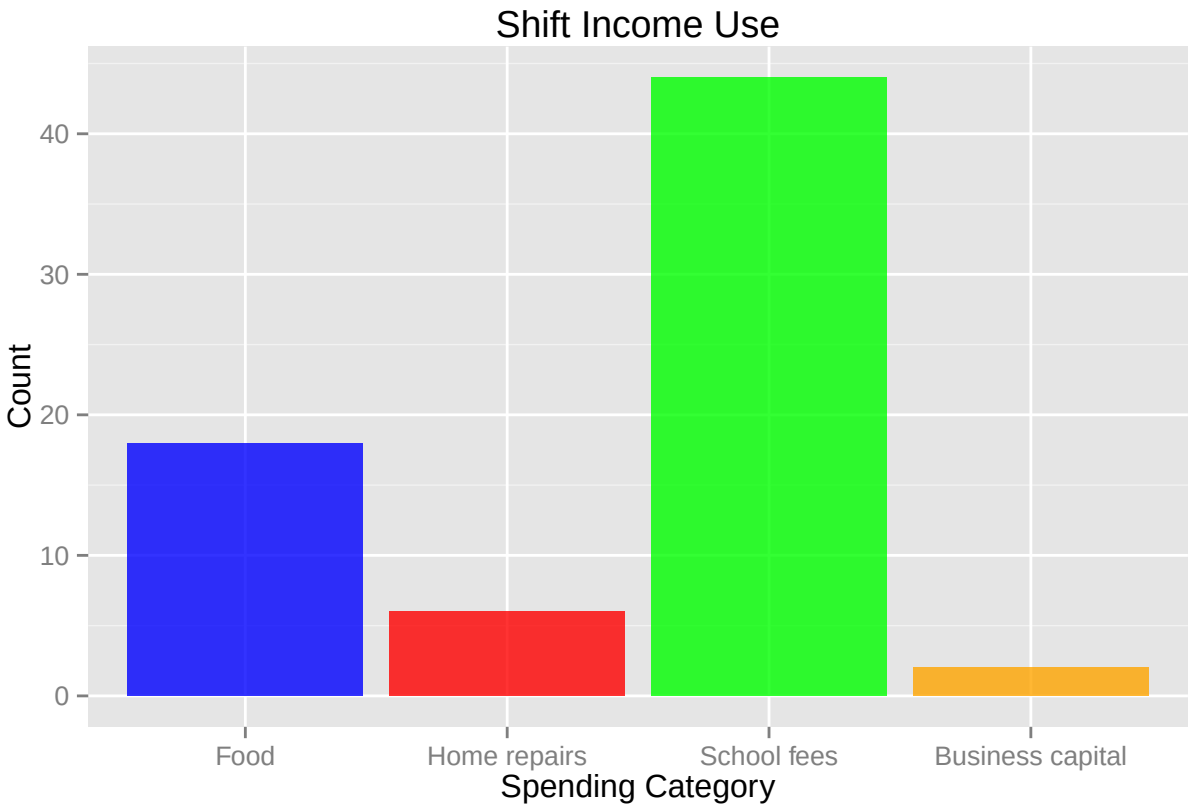
```r
length(which(bts2$work_delta == 'Better'))/length(bts2$work_delta)
```

```
## [1] 1
```

We notice a similar set of responses here. These women feel that participation in the program does have the capacity to shift their lives in a positive direction.

Fund Use

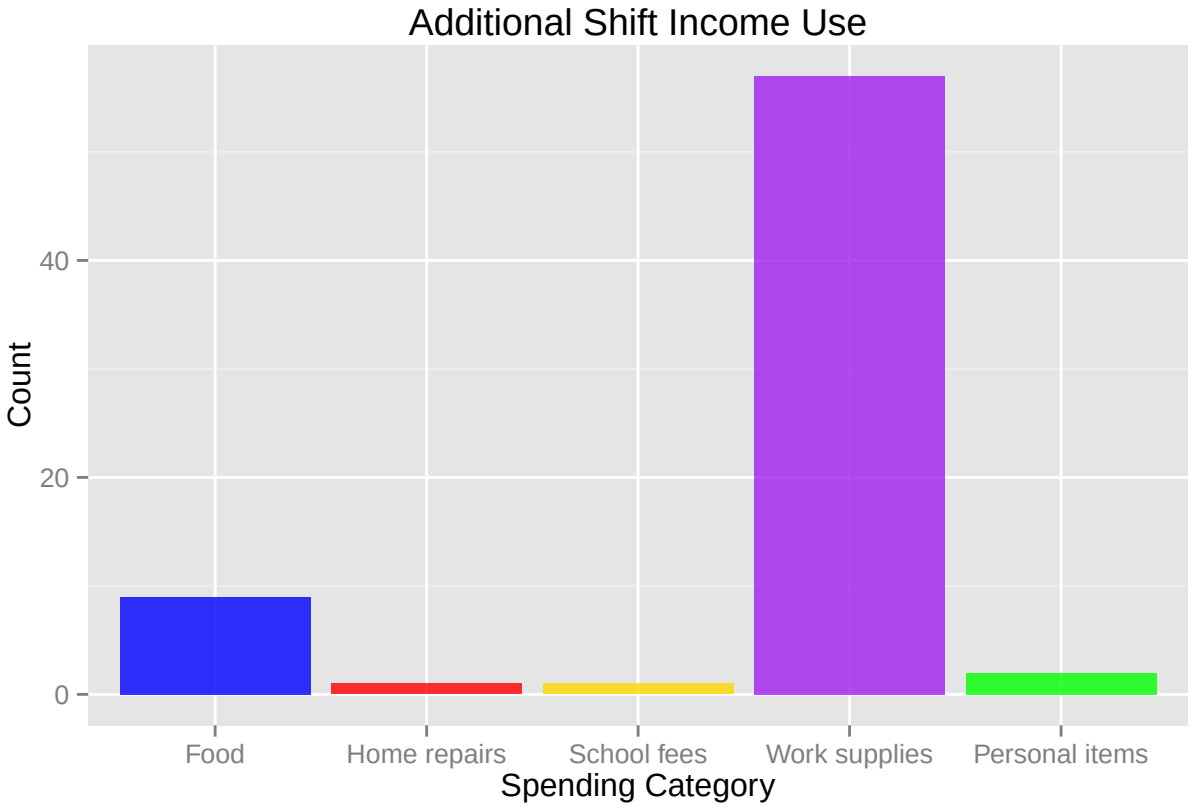
Many of these women participate in a Savings and Credit Cooperative (SACCO), a savings and loan organization similar to a Credit Union that self-enforces so funds cannot be used without group approval, others are more independent. We asked these women how they decided to use the funds available to them.



Just over half (62.9%) of the women used their funds for school fees while just over a quarter (25.7%) indicated using the funds for food. It is important to note that these expenses were 'ear-marked' for the transferred

capital, as they were the most burdensome on household income. Using the money for this purpose freed them to allocate their resources to other expenses and investing in their respective ventures.

The women were asked what they would spend additional Shift funds on, they reported:



The women indicate a desire to continue investing in production materials. The circumstances of extreme poverty (< US$1.25/day) often mean not having a reliable source of capital or income that allows one to make larger, up-front payments (tuition and durable goods for example). Having the ability to make those payments allows people to have some liquidity and allocate assets like human capital more efficiently. To that end,

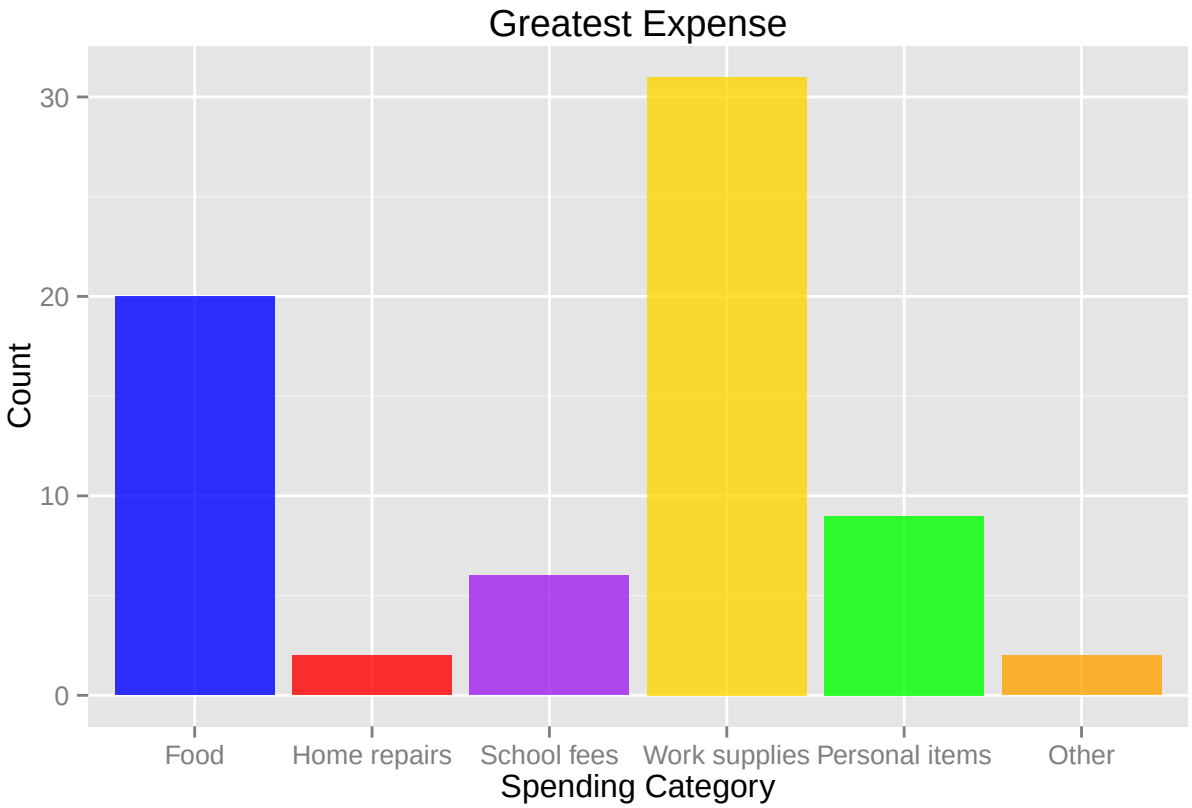
```
# profit
length(which(bts2$profit == "Yes"))/length(bts2$profit)
```

```
## [1] 0.8571429
```

85.7% report turning a profit with their businesses.

Expense Landscape

While profits are a good indicator of individual success, let's look at the expenditure side of the story. The women report their greatest expenses as follows:



In contrast to the first survey, we see the greatest expense is now work supplies. This is logical given the allocation of the Shift capital toward School fees. It is worth noting here that funds are fungible; all monies are interchangeable, but many people perceive money to be pre-allocated in discrete chunks. The significance of this observation is we can see where priorities are located: the respondents chose to indicate to which discrete bin they saw themselves allocating these funds.

Food When it comes to food, the women report having two meals a day on average:

```
prop.table(table(bts2$avg_daily_meals))*100
```

```
##
##         0         1         2        3+
##  4.285714  7.142857 87.142857  1.428571
```

Most also report no additional spending on food as well:

```
prop.table(table(bts2$spend_more_on_food_last_month))*100
```

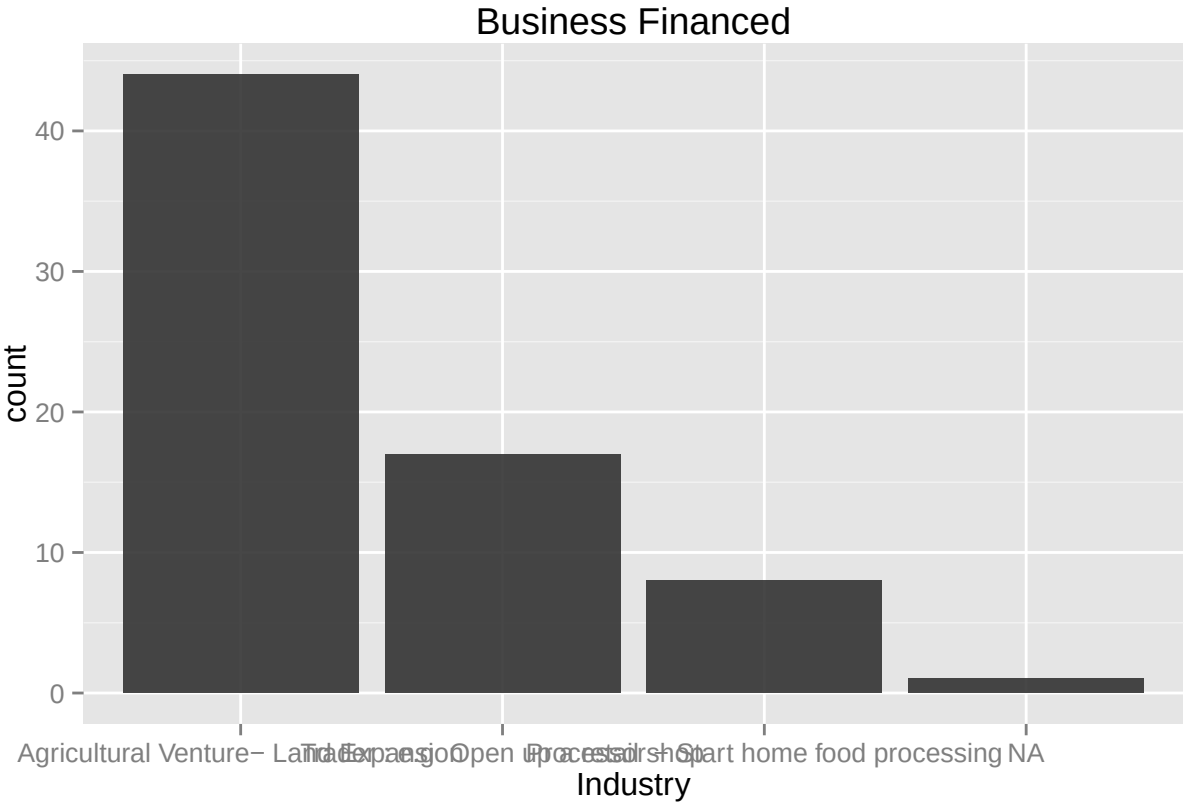
```
##
##       Yes        No    Unsure
## 22.857143 75.714286  1.428571
```

Health Most of the women consider themselves healthy (91.4%) with 42.9% of them going to a health care professional regularly for check-ups while 54.3% of the women only visit health care professionals in emergencies, 2.9% visit regularly for treatment of a chronic illness or condition. With respect to their children, 75.7% of the women reported only taking them to health care professionals in cases of emergency,

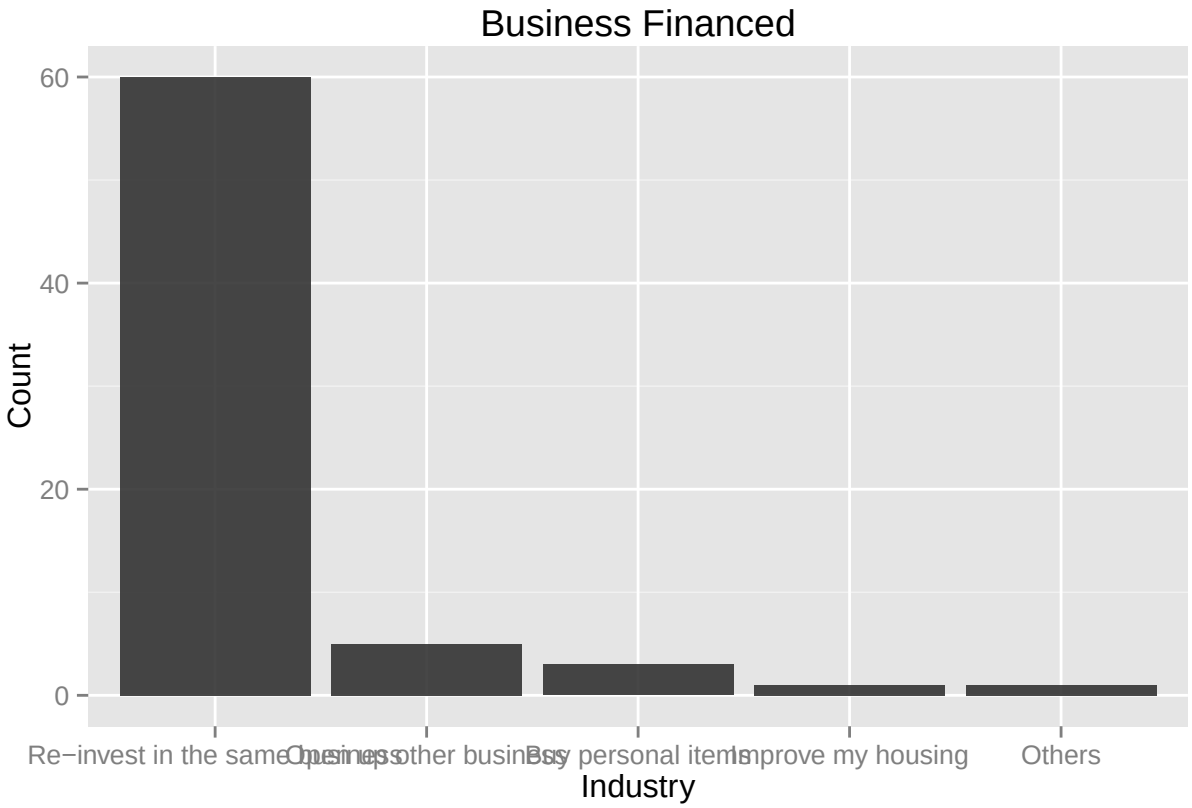
although most (61.4%) had taken a child to a professional within the last month. There could be some cultural explanation (village healers, suspicion of western style medicine, etc.) for the utilization of health care resources but another plausible explanation is the increased level of capital between these women has not influenced these decisions at this time, it may highlight access problems, or the amount of time it takes to physically reach a health care practitioner since the opportunity cost with respect to labor hours may outweigh the perceived benefit of preventative or regular care.

Investments

The women were asked if they had financed a business:



We can see that agriculture is the dominant industry for these women (98.6% self-identify as farmers). So when we ask what they would like to do with additional capital:



They believe that there are more marginal gains in profit available in the agriculture market and would invest to capture them.

Investment Climate

It was briefly mentioned earlier that many of these women participate in SACCOs.

```
prop.table(table(bts2$savings_group))
```

```
##
##       Yes        No    Unsure
## 0.7571429 0.2428571 0.0000000
```

In fact, 75.7% are a part of a savings group in their communities. These groups facilitate accountability but also information about business activity around the community. Most importantly, these women trust these groups with their money.

```
prop.table(table(bts2$trust_savings_group))
```

```
##
##        Yes         No     Unsure
## 0.91428571 0.05714286 0.02857143
```

The most important observation about trusting the savings group means not only trusting in the mechanism but the people. They ultimately trust each other. Ideally, according to 85.3% of the respondents, they would be a part of a SACCO or savings group.