

Demographics Analysis (Taj)

Taj Cole

2022-06-22

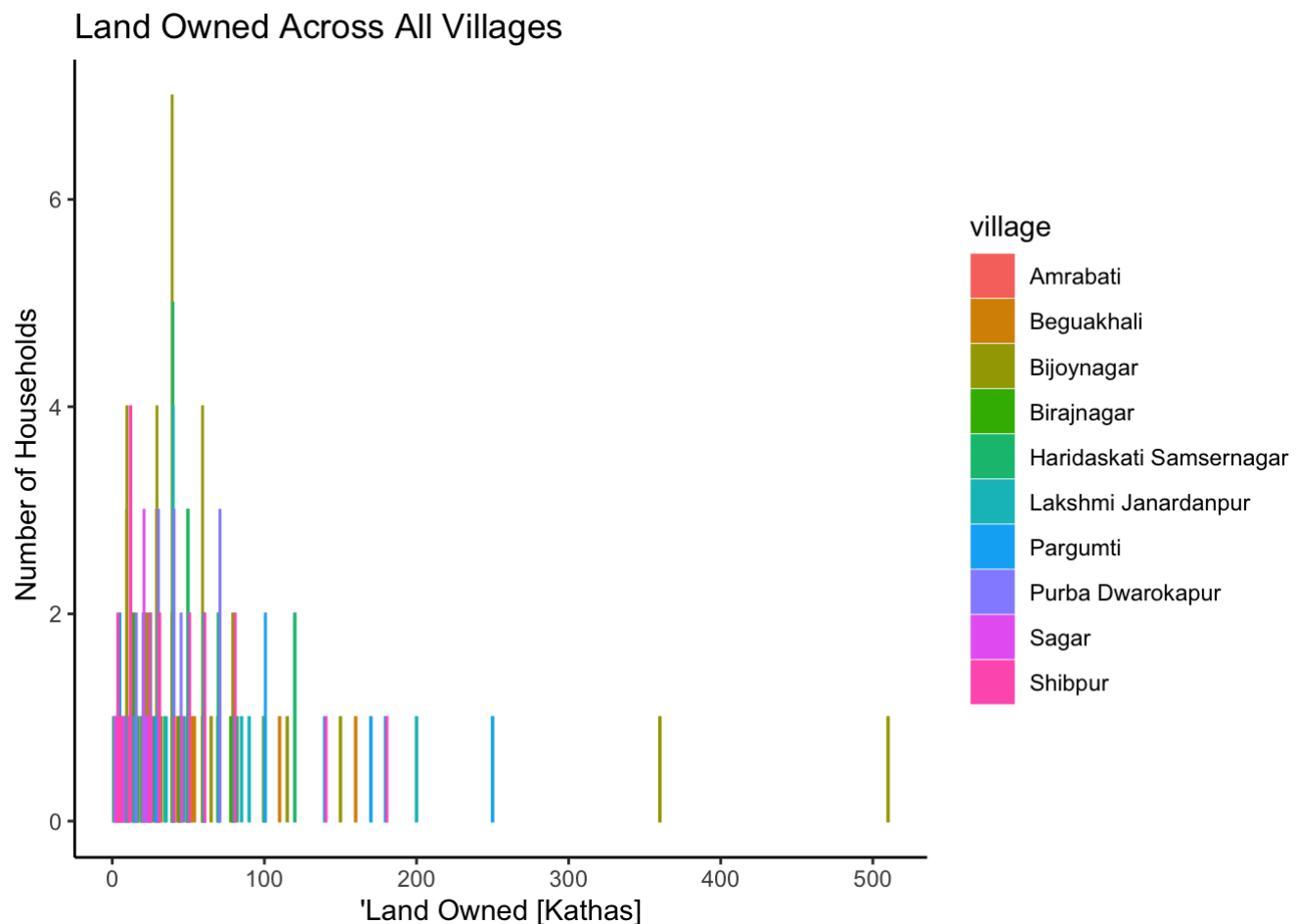
Variables: Land owned, land fallowed, households with a business, type of business, business income, job duration, households below the poverty line, household size

Land Owned

a bar plot that shows the different amount of 'kathas' of land owned and how many households owned that amount, aggregated from every village

```
# Bar plot of Kathas owned across all 10 villages
own_land <- ggplot(selected_bl, aes(x = land_own, fill = village, color = village)) +
  geom_bar(position = position_dodge(2)) +
  labs(x = "'Land Owned [Kathas]", y = " Number of Households") +
  theme_classic() +
  ggtitle("Land Owned Across All Villages")
own_land
```

```
## Warning: Removed 106 rows containing non-finite values (stat_count).
```

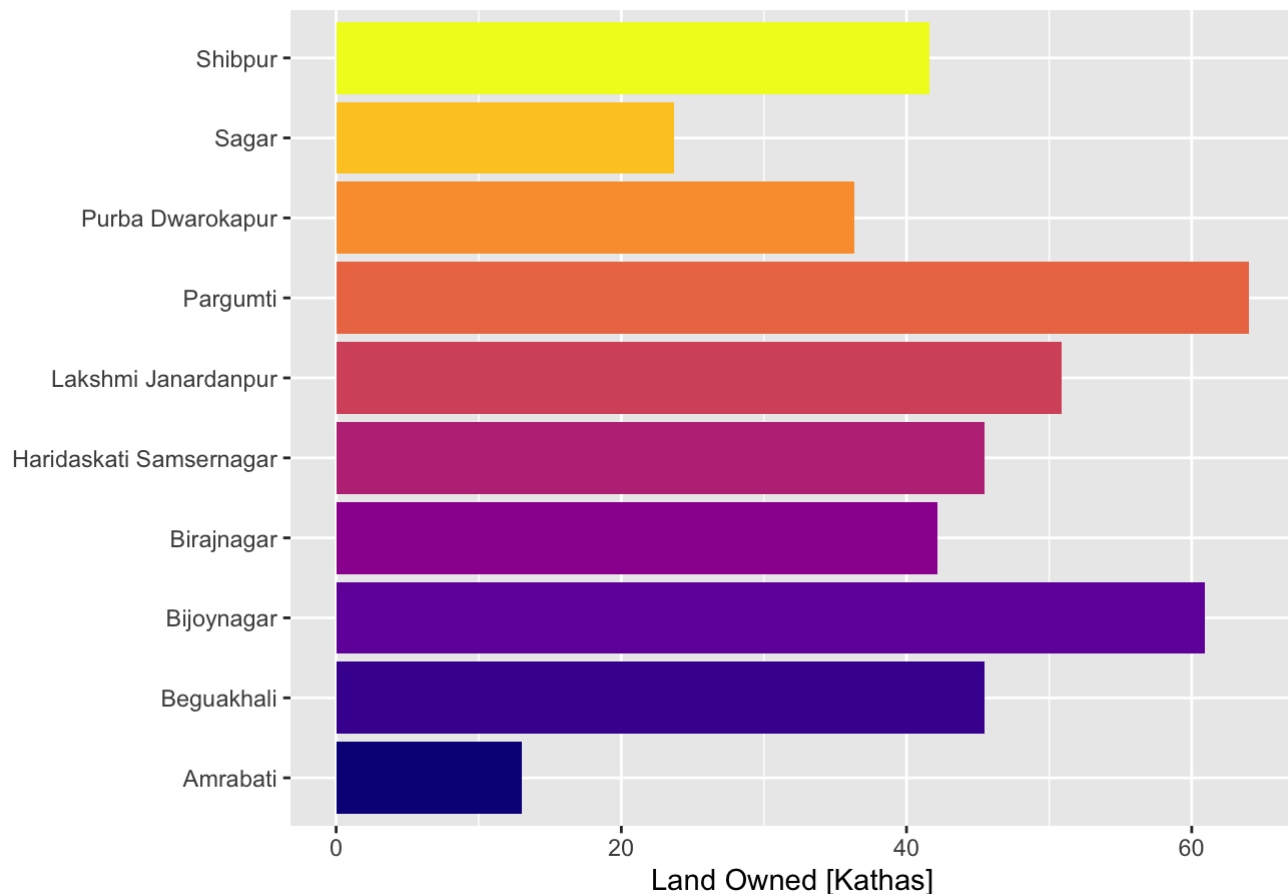


- A katha is about 1,361 sq ft. For reference, 1 acre is about 32 kathas
- Households in the baseline own an average of 48.36 kathas of land
- The max owned is 510 kathas (1 person in Bijohnagar)
- The min owned is 1 kathas
- 106 NAs were reported and removed from histogram
- (Only asked households that reported to own a farm)
- Most households that own farm land own less than 100 kathas which is about 3 acres
- A majority of households that own less than 100 kathas are cattle farms and less agriculture
- Most households provide labor to farm land, rather than owning their own farm land

Average Kathas Owned Plot

```
# Mean land owned
mean_land_plot <- ggplot(land_stats, aes(x = villages, y = mean_land_value, fill = villages)) +
  geom_col(fill = plasma(10, alpha = 1, begin = 0, end = 1, direction = 1)) +
  coord_flip() +
  ggtitle("Average Amount of Land Owned in Each Village") +
  labs(x = "", y = "Land Owned [Kathas]")
mean_land_plot
```

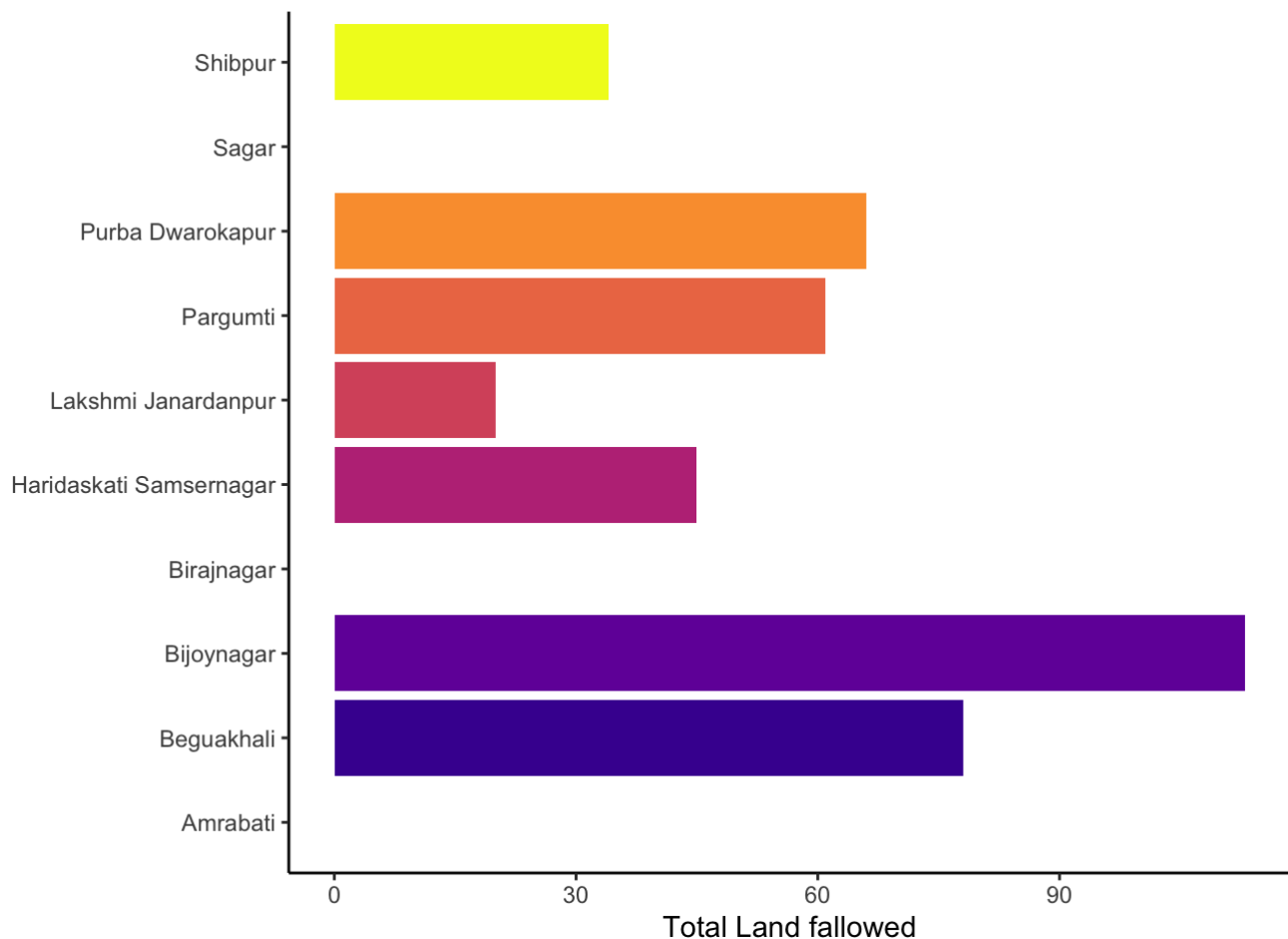
Average Amount of Land Owned in Each Village



- This graph shows the average amount of land that households own in each village
- Most villages had households that owned an average of 40 kathas of land, which is a little more than 1 acre

Land Fallowed

```
land_fallow_plot <- ggplot(land_fallow, aes(x = village, y = sum, fill = village)) +
  geom_col(fill = plasma(10, alpha = 1, begin = 0, end = 1, direction = 1))+
  theme_classic() +
  labs(x = "", y = "Total Land fallowed")+
  coord_flip()
land_fallow_plot
```



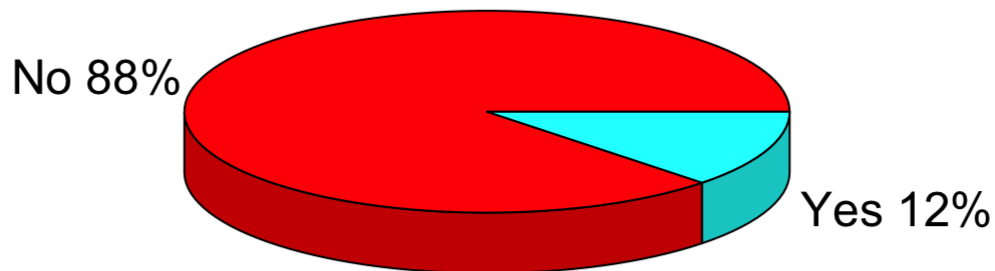
- fallow: (of farmland) plowed and harrowed but left unsown for a period in order to restore its fertility as part of a crop rotation or to avoid surplus production
- this graph shows the total amount of land fallowed in each village (within the sample)
- 3 villages had no land fallowed
- Villages that have a larger average of kathas of land owned had more land fallowed

Business Demographics

Households that own a business across all villages

```
# Pie chart have Households that own a business (aggregate)
slices <- c(268, 38)
lbls <- c("No", "Yes")
pct <- round(slices/sum(slices)*100)
lbls <- paste(lbls, pct) # add percents to labels
lbls <- paste(lbls,"%",sep="") # ad % to labels
business_pie <- pie3D(slices,labels = lbls, col=rainbow(length(lbls)),
  main="Pie Chart of Households that own a Business (All Villages)")
```

Pie Chart of Households that own a Business (All Villages)



- This pie chart shows the distribution of households that own a business across all 10 villages
- 88% of households across the 10 villages reported that they do not own a business
- 12% do own a business

Households that own a business by village

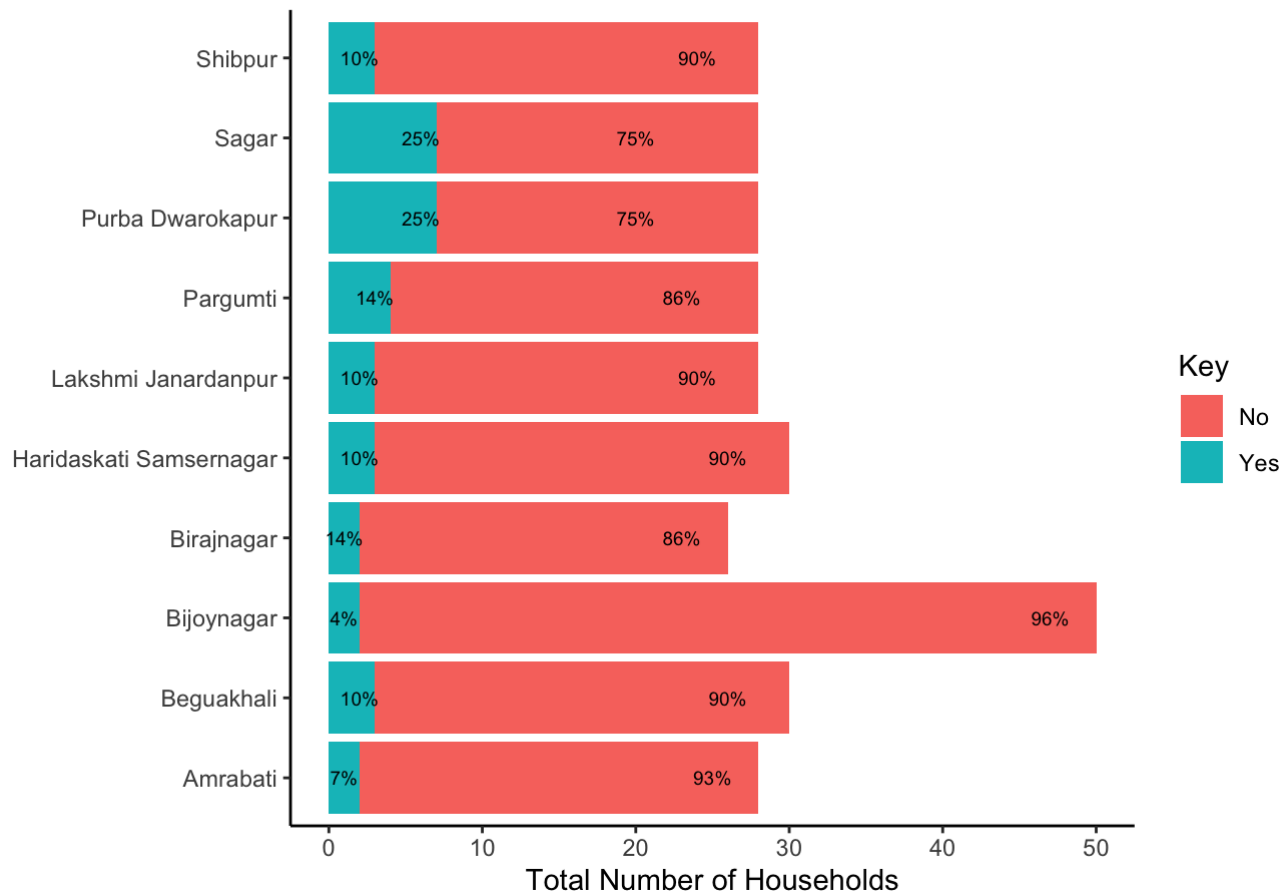
Data Set

Business stacked plot

```
# Business stacked plot

village_bus_count_plot <- ggplot(dat_bus, aes(x= villages_2, y = values_bus, fill = Key)) +
  geom_col(position = 'stack') +
  labs( x= "", y = "Total Number of Households") +
  theme_classic() +
  ggtitle("Households That Own a Business") +
  coord_flip()+
  geom_text(aes(label = prop_bus_values), size = 2.5, nudge_y = -1)
village_bus_count_plot
```

Households That Own a Business

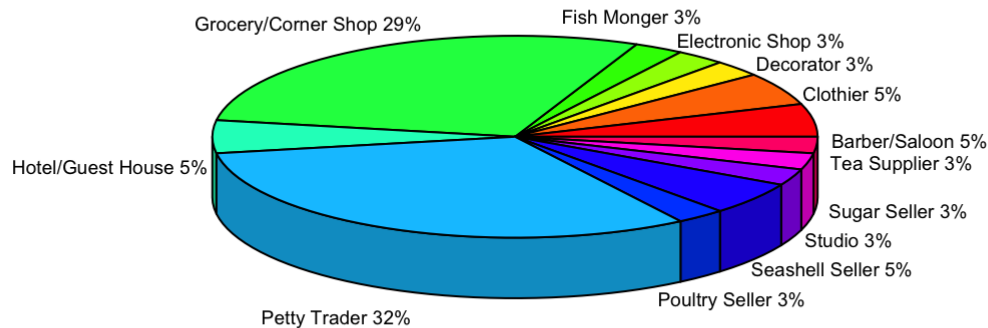


- Across all 10 villages, very few households own a business. Purba Dwarokapur and Sagar had the most, with 7 households within the sample reporting to own a business.
- Its not surprising to see that most households do not own a business. Since the region is largely in poverty, it would not be feasible for most households, as operating a business requires consistent injections of money and managing financial risk (debt, shocks)
- Rather than owning a business, most members of the household may provide labor for farms and the few businesses in the villages.

Type of Business Across All Villages

```
slices_bt <- c(2,2,1,1,1,11,2,12,1,2,1,1,1)
lbls_bt <- c("Barber/Saloon", "Clothier", "Deco
rator", "Electronic Shop", "Fish Monger",
"Grocery/Corner Shop", "Hotel/Guest House", "Petty Trader", "Poultry
Seller",
"Seashell Seller", "Studio", "Su
gar Seller", "Tea Supplier")
pct_bt <- round(slices_bt/sum(slices_bt)*100)
lbls_bt <- paste(lbls_bt, pct_bt) # add percents to labels
lbls_bt <- paste(lbls_bt,"%",sep="") # add % to labels
business_type_pie <- pie3D(slices_bt,labels = lbls_bt, col=rainbow(length(lbls_bt)),
main="Pie Chart of Type of Business (All Villages)",
labelcex = 0.6)
```

Pie Chart of Type of Business (All Villages)



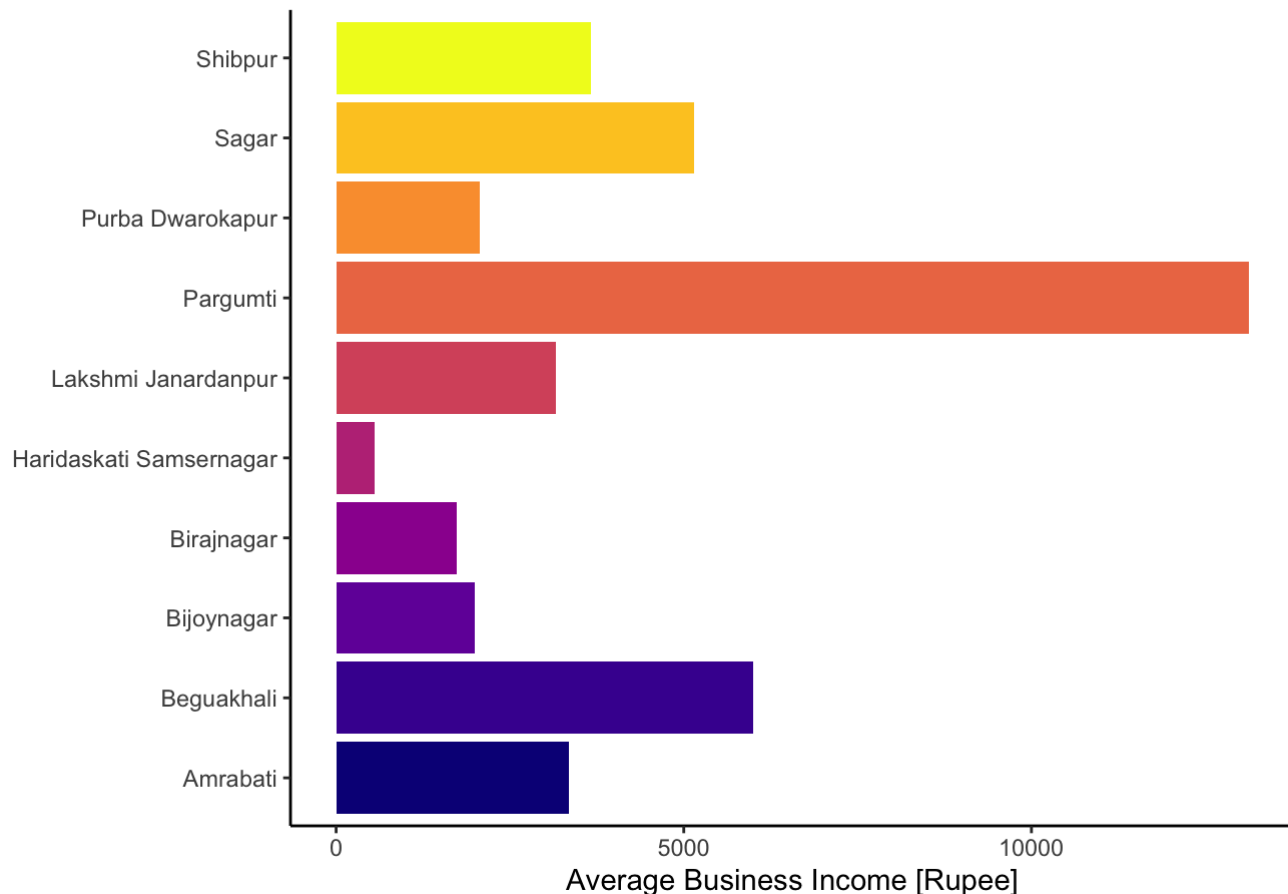
- This pie chart shows the distribution of the types of businesses owned across all 10 villages
- Most households that own a business are petty traders or own a grocery/corner shop
- The qualifications for owning a business are quite wide, ex. someone that catches and sells fish is considered to be a business owner

Average Business Income in a typical month by village

```
bus_inc <- business_bl %>%
  select(village, business_inc) %>%
  group_by(village) %>%
  summarise("avg" = mean(na.omit(business_inc)))

avg_bus_inc <- ggplot(bus_inc, aes(x = village, y = avg, fill = village)) +
  geom_col(fill = plasma(10, alpha = 1, begin = 0, end = 1, direction = 1)) +
  theme_classic() +
  coord_flip() +
  labs(x = "", y = "Average Business Income [Rupee]") +
  ggtitle('Average Business Income in a Typical Month') +
  scale_color_brewer(palette = "Spectral")
avg_bus_inc
```

Average Business Income in a Typical Month



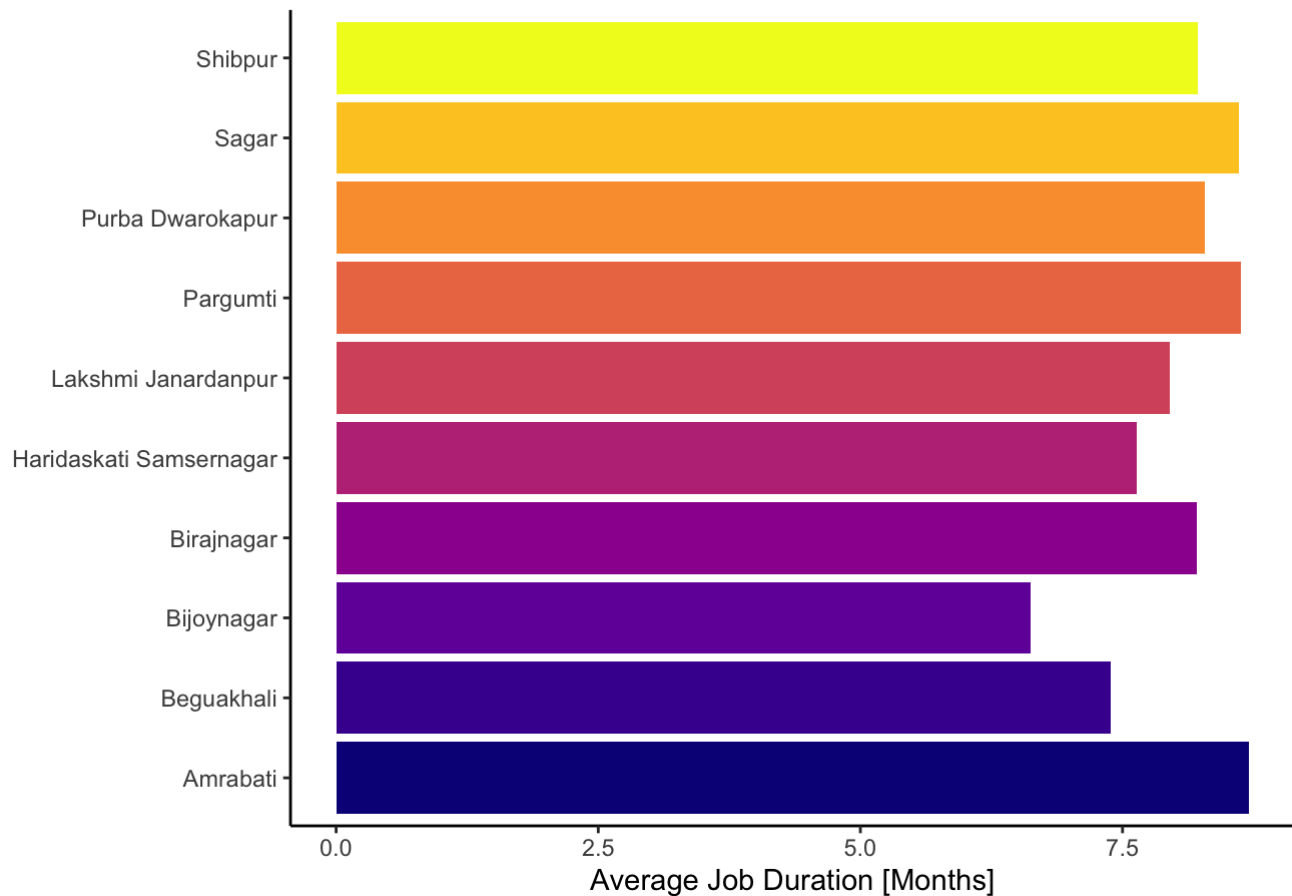
- This graph shows the average amount of profit a business earned in a typical month
- A “typical month” was included in the financial diary, i’m assuming this means without any sort of shock

Job Duration

Plot of Average Job duration for the primary occupation of the head of household by village

```
job_duration_plot <- ggplot(job_duration_summary, aes(x = villages, y = job_duration_avg, fill = villages)) +
  geom_col( fill = plasma(10, alpha = 1, begin = 0, end = 1, direction = 1)) +
  coord_flip()+
  labs(x= "", y = "Average Job Duration [Months]")+
  ggtitle("Average Job Duration for the Head of the Household") +
  theme_classic()
job_duration_plot
```


Average Job Duration for the Head of the Household



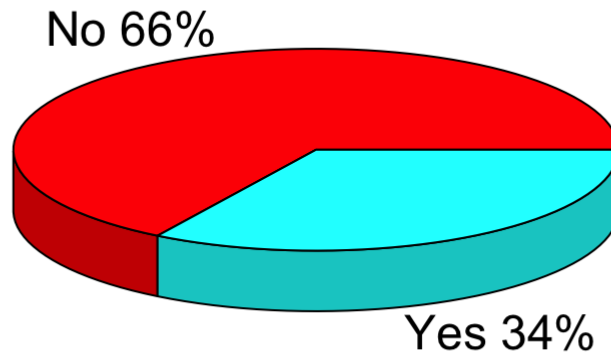
- This graph shows the average amount of months the head of household worked at their primary occupation in the last 12 months
- Almost all villages showed the head of household working at their primary occupation for an average of at least 7 months

Households Below the Poverty Line

Across all villages

```
slices_pl <- c(202, 103)
lbls_pl <- c("No", "Yes")
pct_pl <- round(slices_pl/sum(slices_pl)*100)
lbls_pl <- paste(lbls_pl, pct_pl) # add percents to labels
lbls_pl <- paste(lbls_pl,"%",sep="") # ad % to labels
pie3D(slices_pl,labels = lbls_pl, col=rainbow(length(lbls_pl)),
      main="Households That Live Below the Poverty Line (All Villages)")
```

Households That Live Below the Poverty Line (All Villages)

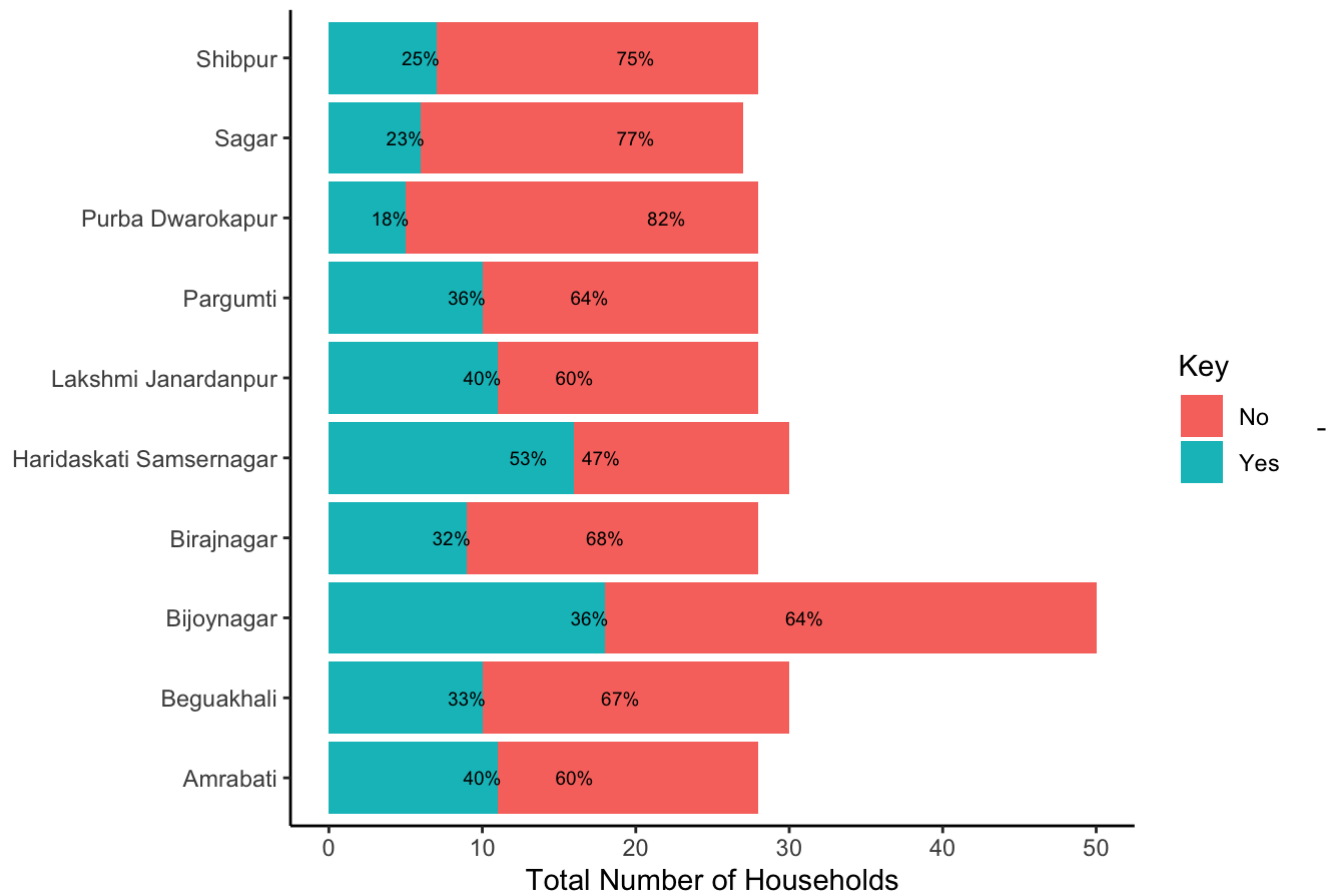


- This pie chart shows the proportion of households that live below the poverty line across all 10 villages
- 34% of households, across all 10 villages, live below the poverty line
- (66% dont)
- Living below the poverty line means that you make below 204 rupee per week per person
- A significant amount of the Sundarbans region lives in financial poverty (more than a third)

Households Below the Poverty Line By Village

```
# Poverty stacked plot
village_pl_count_plot <- ggplot(dat_pl, aes(x= villages_2, y = values_pl, fill = Key)) +
  geom_col(position = 'stack') +
  labs( x= "", y = "Total Number of Households") +
  theme_classic() +
  ggtitle("Households That Live Below the Poverty Line") +
  coord_flip()+
  geom_text(aes(label = prop_pl_values), size = 2.5, nudge_y = -1)
village_pl_count_plot
```

Households That Live Below the Poverty Line

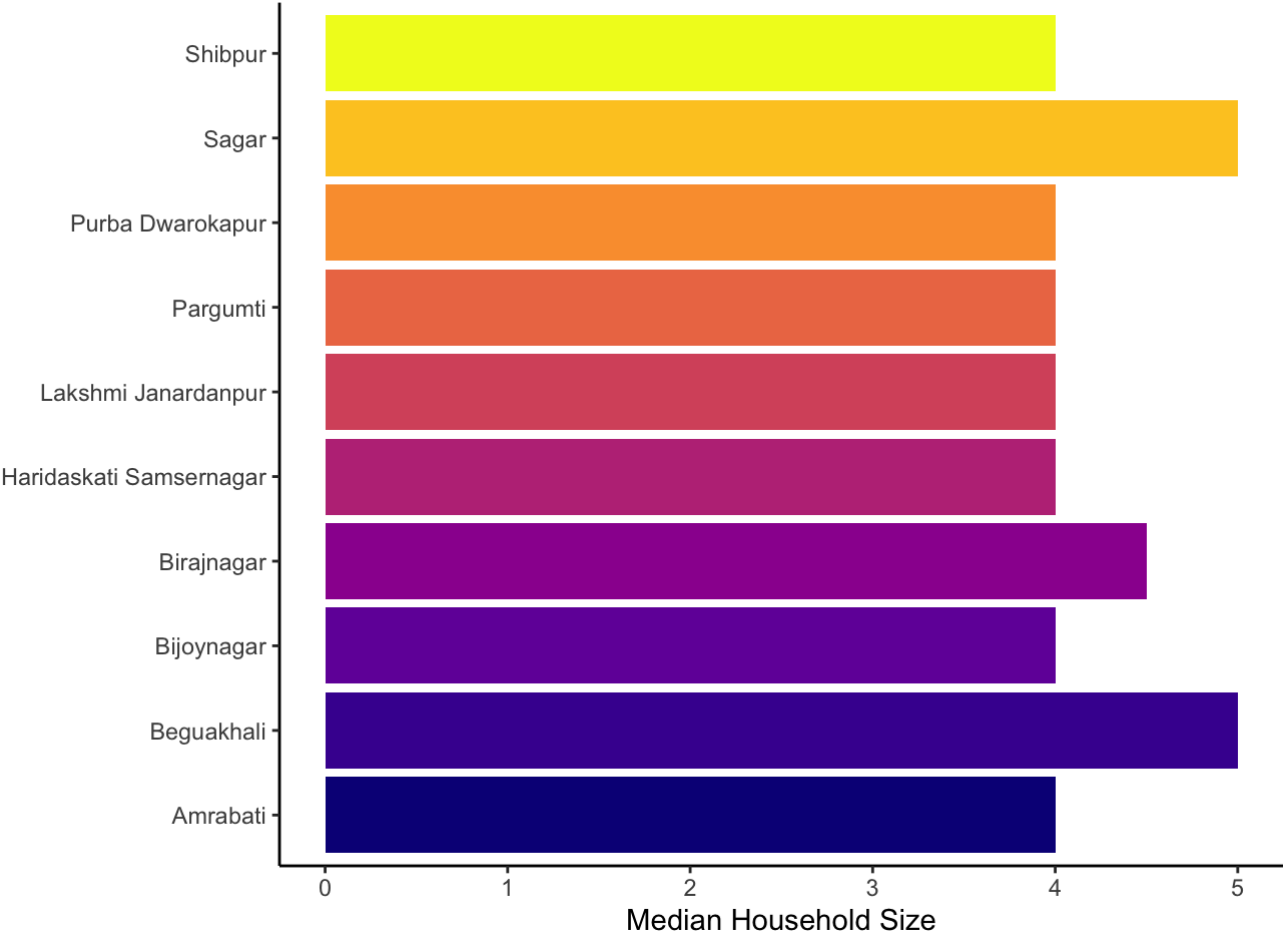


Most villages showed around 20-30% of households below the poverty line - Purba had the lowest, only 18% below the poverty line - Haridaskati Samserngar had more than 50% of households report to live below the poverty line

Household size

Median Household Size By Village

```
hhsiz<- baseline %>%
  select(village, hhid, nb_hhmem)
median_hhsiz<- hhsiz %>%
  group_by(village) %>%
  summarise("median" = median(nb_hhmem))
hh_size_plot<- ggplot(median_hhsiz, aes(x = village, y = median, fill = village)) +
  geom_col(fill = plasma(10, alpha = 1, begin = 0, end = 1, direction = 1)) +
  labs( x = "", y = "Median Household Size")+
  coord_flip()+
  theme_classic()
hh_size_plot
```



- This graph shows the median household size by village
- Most villages have a median household size of 4 people (including the head of household)