Property Price

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```
# Import and cleaning NA rows
property_prices <- fread("./property_prices.csv")
property_prices <- property_prices[complete.cases(property_prices), ]
names(property_prices) <- gsub(" ", "_", tolower(names(property_prices)))

# Fix living area data
property_prices <- property_prices %>%
  mutate(living_area_sq_ft =
    ifelse(living_area_sq_ft > 10, living_area_sq_ft/1000, living_area_sq_ft))
```

Property by room

The table below explains the summary data by selling price, local price, living area, and area in square feet. The majority of the property has six rooms. There are two properties that have nine and ten rooms with a price more than double of other properties.

```
property_by_room <- property_prices %>%
  group_by(rooms)

property_by_room_summary <- property_by_room %>%
  summarise(
    mean_selling_price = mean(selling_price),
    mean_local_price = mean(local_price),
    mean_living_area = mean(living_area_sq_ft),
    mean_area_in_sq_ft = mean(area_in_sq_ft),
    count = n()
  )

kable(property_by_room_summary, caption = "Property by Number of rooms")
```

Table 1: Property by Number of rooms

rooms	mean_selling_price	mean_local_price	mean_living_area	mean_area_in_sq_ft	count
5	30.50000	5.660600	0.997500	5.260000	2
6	33.17857	6.125371	1.327857	5.765200	14
7	34.83333	6.618617	1.371667	5.925833	6
8	41.52500	8.635950	1.773000	7.879050	4
9	82.90000	14.459800	3.000000	12.800000	1
10	84.90000	16.420200	3.420000	9.800000	1

Property Price Trend

Figure 1 illustrates the more expensive the property, the more property, and living area. In addition, the proportion of living area by the total area is getting lower as the property area gets bigger.

```
ggplot(property_prices, aes(x = selling_price)) +
  geom_line(aes(y = living_area_sq_ft, color =" green")) +
  geom_line(aes(y = area_in_sq_ft, color = "darkblue")) +
  labs(x = "Selling price", y = "") +
  scale_color_discrete(name = "Area (square feet)", labels = c("Living", "Property"))
```

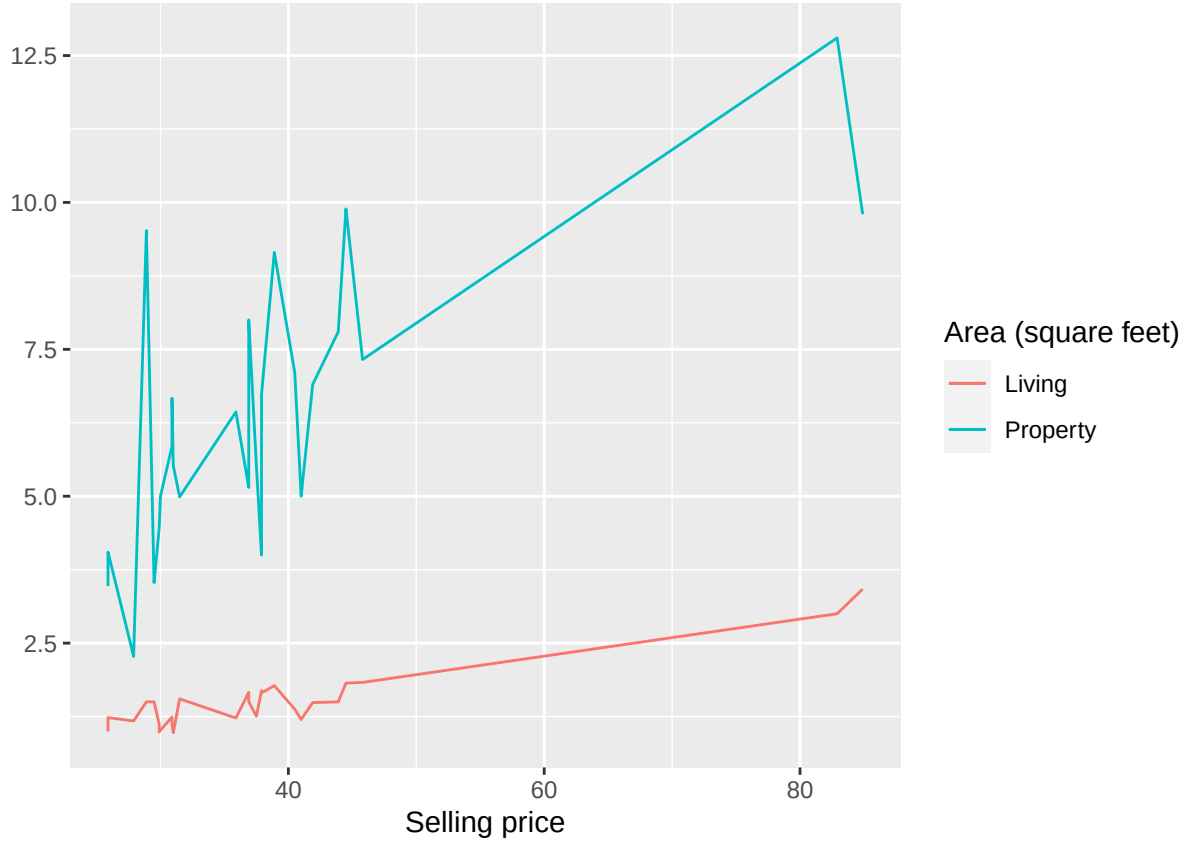

Figure 1: Local price vs selling price

Property Features

Table 2 depicts the property features; bathroom, garage, bedroom, and fireplace. The more rooms the property has the more features that the property has. However, the property that has six and seven rooms does not have a fireplace. Another feature that we can point out also, the highest increment feature is from the property that has seven rooms to eight rooms.

```
property_by_room_facilities <- property_by_room %>%
  summarise(median_bathroom = median(bathrooms),
    median_garage = median(garages),
```

```
    median_bedroom = median(bedrooms),
    median_fireplace = median(fireplace),
    total = sum(median_garage, median_bedroom, median_fireplace))

kable(property_by_room_facilities, caption = "Property features")
```

Table 2: Property features

rooms	median_bathroom	median_garage	median_bedroom	median_fireplace	total
5	1.0	0.5	2	0.5	3.0
6	1.0	1.0	3	0.0	4.0
7	1.0	1.5	3	0.0	4.5
8	1.5	2.0	4	0.5	6.5
9	2.5	2.0	5	1.0	8.0
10	2.5	2.0	5	1.0	8.0

```
pivot_features <- pivot_longer(property_by_room_facilities,
  cols=c('median_bathroom', 'median_garage','median_bedroom', 'median_fireplace'),
  names_to='feat_category', values_to="value")

ggplot(pivot_features, aes(x = rooms, y = value, fill = feat_category)) +
  geom_bar(stat = 'identity', position='stack') +
  labs(x = "Number of rooms", y = "Features")
```