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Analysis of 2nd hand smartphone market

in India between 2013 and 2020

Based on data by Ahsan Raza (https://www.kaggle.com/ahsan81)

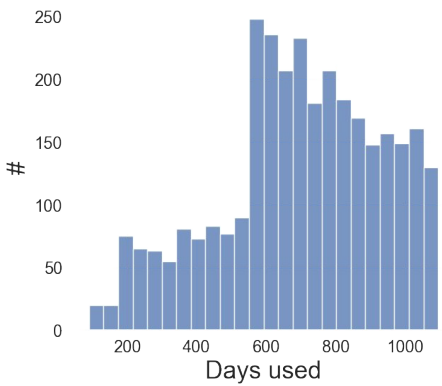
Image source: https://www.nytimes.com/wirecutter/reviews/best-smartphones/

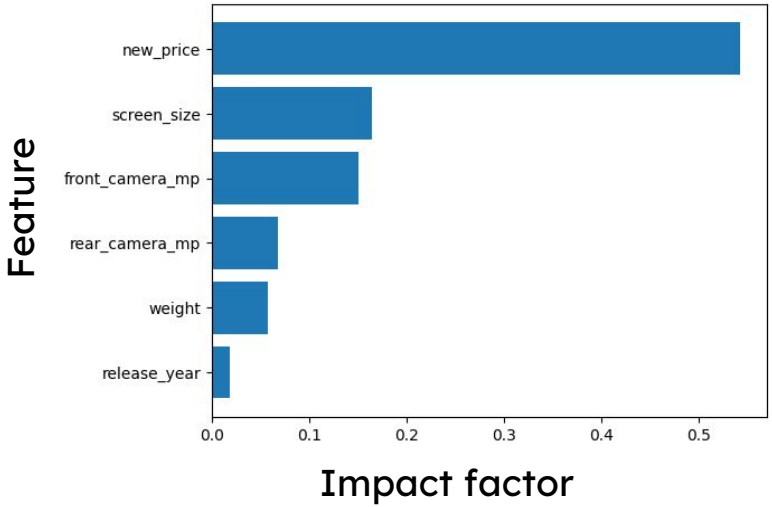
Overlook

- Data for 2nd hand smartphone market in India
- Scraped and uploaded in kaggle by Ahsan Raza
- Datasize - 3200 smartphones

- Analysis was performed
- Insights postulated
- Machine Learning algorithm trained to predict the likely price of a smartphone for sale

General points

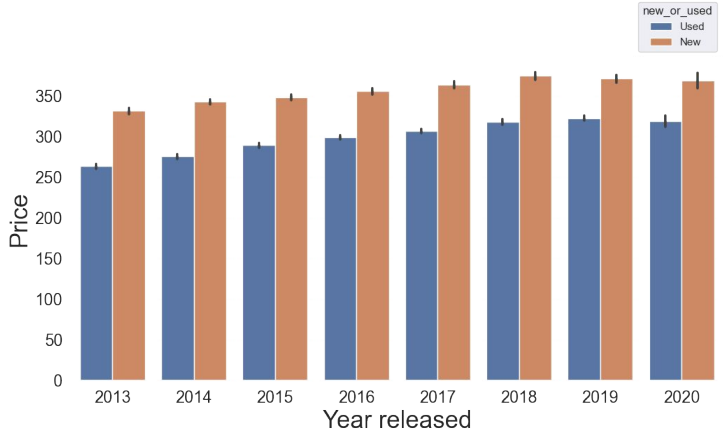


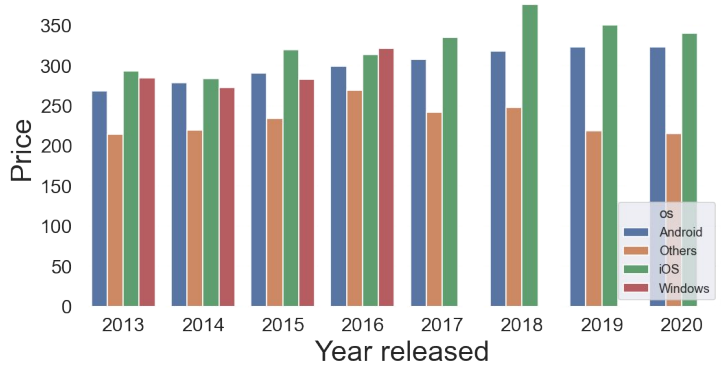


- Thanks to extensive analysis and ML modelling it was found that:
  - Most of the phones are Android ones
  - The most common age of the used phones is :
    - ~ 1.5 to 2 years
  - Most important determinants of the price of the phone are:
    - The original price
    - The screen size
    - The camera's megapixels

Trends and insights: Age vs Price

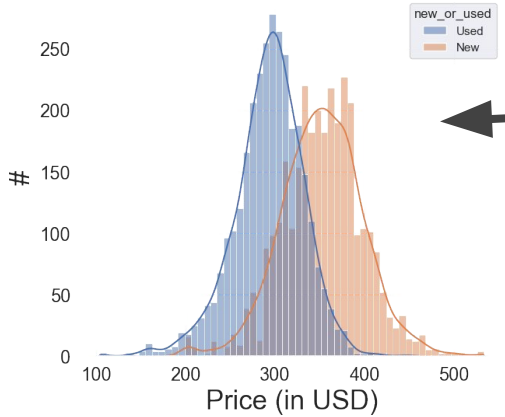
- The average price of the new phones increases slower compared to the used ones
- iPhones seem to be more expensive on average then Android or other OS phones
- The price of Android phones has platood b/w 2018-2020





Trends and insights: Age vs Price

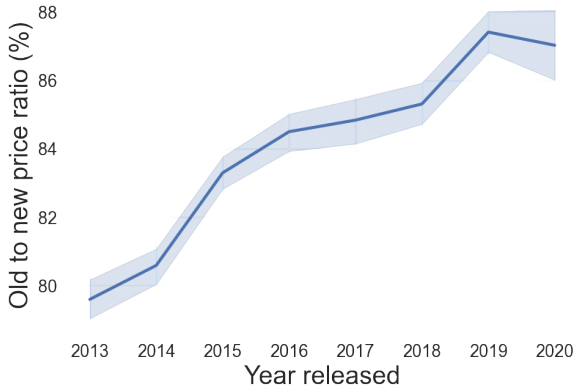
- The older the phones are worth less on average
- Phones lose on average ~ 5% of their original value each year

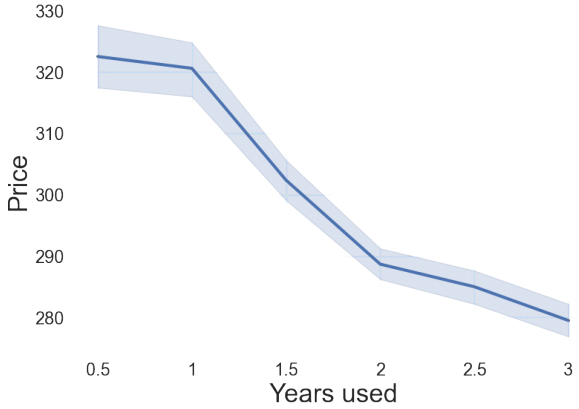


Average price

Used phone ~ 296 USD

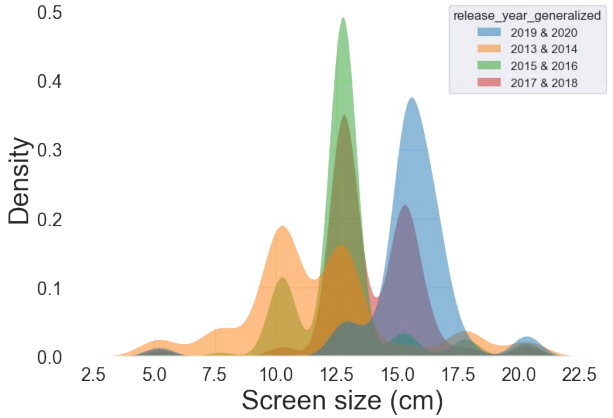
New phone ~ 355 USD

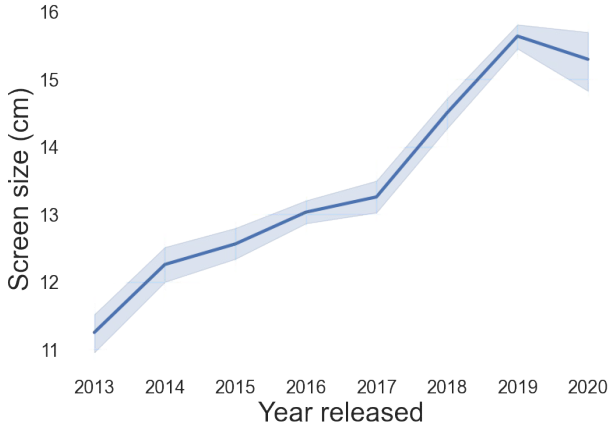




Screen size rends with time

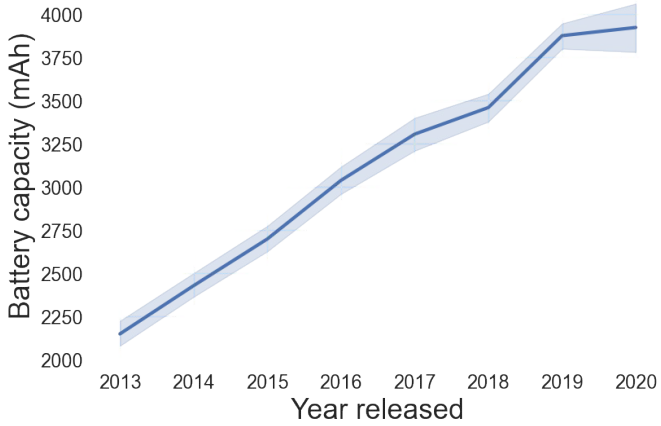
- Screen sizes in 2013 & 2014 seem to have spread-out distribution
- In 2015 & 2016 seem to contain a lot of ~13 cm displays
- By 2019 & 2020 the trend seems to have shifted to ~16 cm displays
- Screen sizes seem to only grow bigger with time, having increased by ~68% within 7 years

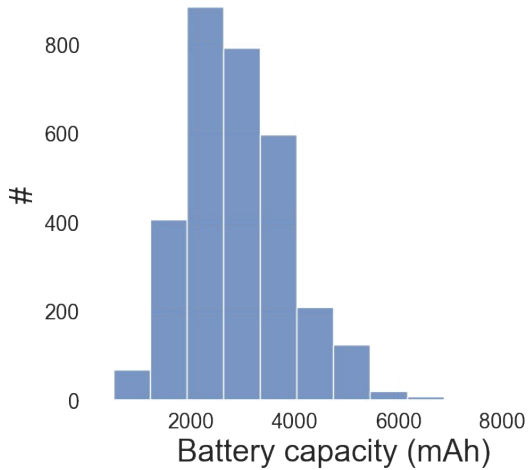




Battery

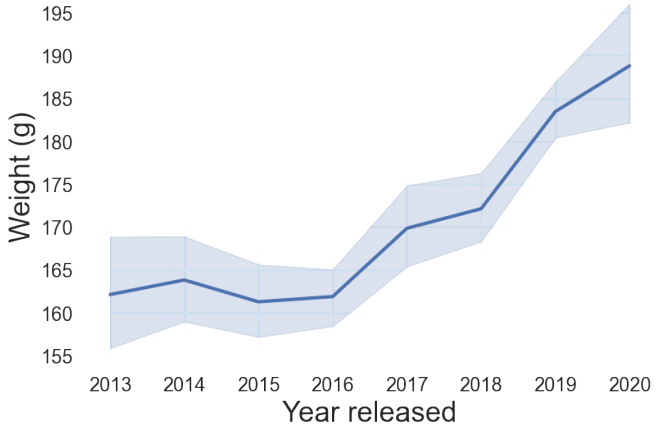
- 80% of all batteries have capacity b/w 1700 and 4100 mAh
- The battery capacity of the smartphones increases with about 250 mAh per year

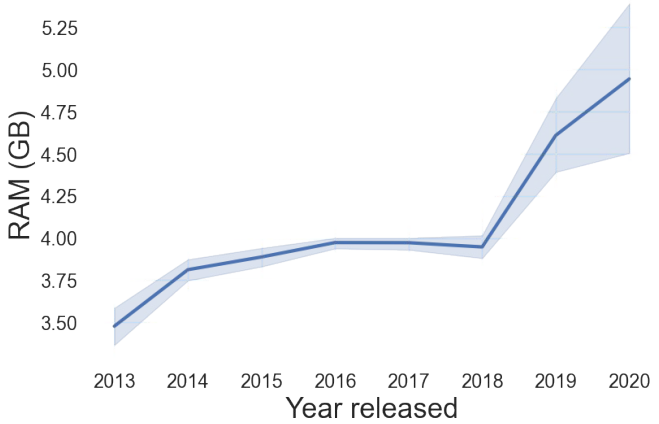




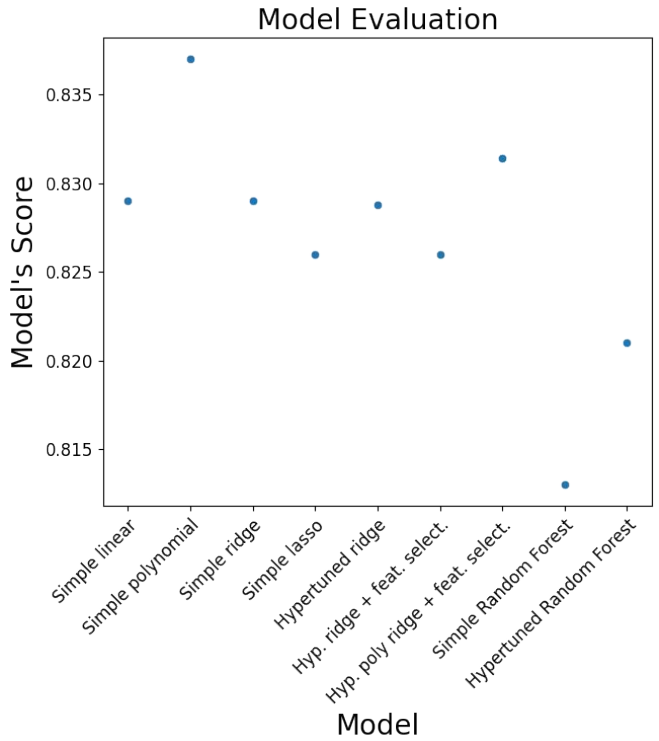
RAM and weight

- Weight of the phones steadily increasing since 2016
- The RAM of the phones appears to be fairly constant until 2018
- Then increases by 25% from 2018 to 2020





Machine Learning



9 different models evaluated

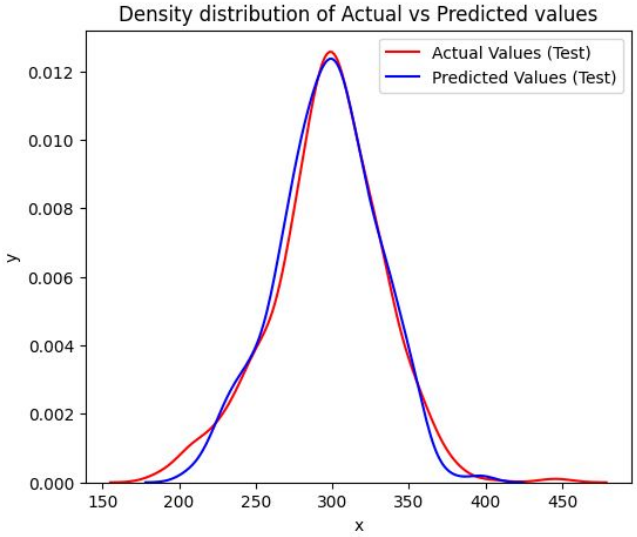
All with similar scores

Hypertuned Linear Ridge regression is chosen here

Due to:

- Its easy interpretability
- Its correct predictions

Model: Hypertuned Linear Ridge regression

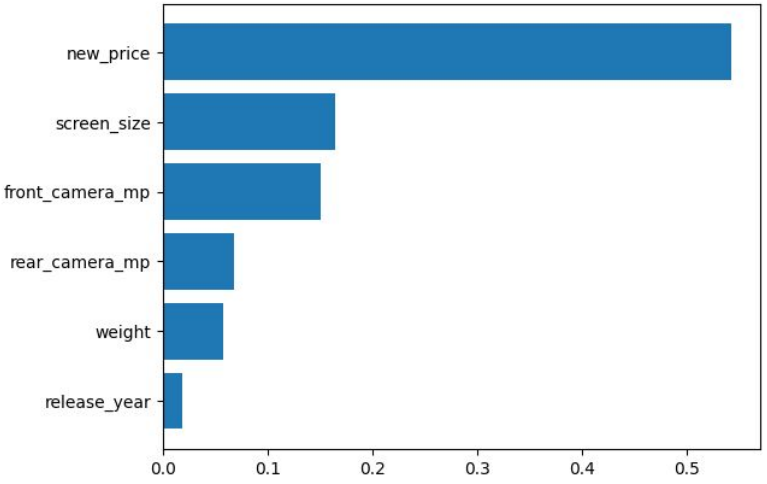


Ridge regression with Alpha = 10

R^2 score: 0.832

(on test set)

Model is ~ 83% accurate



- Most important feature is:
  - the original price
- Secondary important features are:
  - Screen size
  - Rear camera megapixles
  - Front camera megapixels