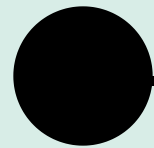


PREDICTING PROPORTION OF RENOVATION COSTS OF HDB FLAT PRICES



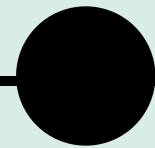
CONTENT

BUSINESS PROBLEM



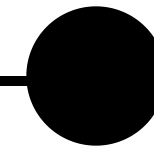
- WHAT IS THE PROBLEM?
- WHY THIS PROBLEM?
- WHO ARE THE STAKEHOLDERS?

EDA

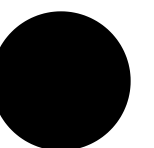


- PROCESS
- ASSUMPTIONS
- DATASET
- CLEANING

KEY FINDINGS



Q&A





BUSINESS PROBLEM



**FIND OUT WHETHER THE PROPORTION OF RENOVATION COSTS OF PURCHASING A HDB
FLAT HAS INCREASED OVER A 5 YEAR PERIOD TO DETERMINE HOW MUCH A BUYER
SHOULD SPEND ON RENOVATION COSTS FOR 3,4 OR 5 ROOM HDB FLATS**

WHY THIS PROBLEM?

- MOST DISCUSSIONS ABOUT PRICES OF HDB FLATS
- LITTLE EXPLORATION ON HOW MUCH RENOVATION COSTS MAKE UP RESALE PRICES OF HDB FLATS
- ACCORDING TO THE CONSUMER ASSOCIATION OF SINGAPORE (CASE), RENOVATION COSTS HAVE INCREASED FROM \$7 MILLION TO \$14 MILLION FROM 2008 TO 2016 (*Source: Channel News Asia*)
- BREAKDOWN OF RENOVATION COSTS BY HDB ROOM TYPES ARE SCARCE



WHO SHOULD BE INTERESTED IN THIS?

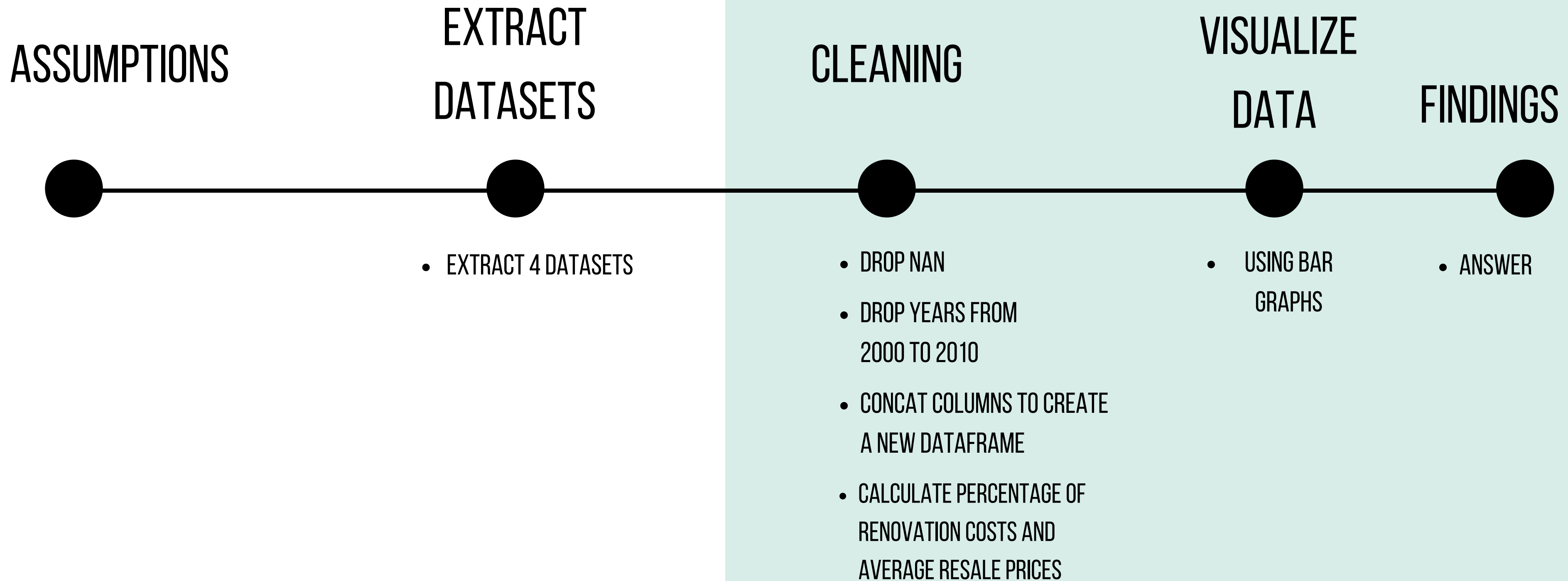
- POTENTIAL NEW/SEASONED HDB BUYERS
- HOME BUYERS WHO INTEND TO OWN A HDB FLAT FOR THE LONG TERM
- YOUNG COUPLES WHO INTEND TO PURCHASE A BTO
- PERMANENT RESIDENTS WHO INTEND TO PURCHASE A HDB FLAT AND MAKE SINGAPORE THEIR HOME IN THE LONG TERM
- PROPERTY AGENTS
- INTERIOR DESIGNERS



EXPLORATION DATA ANALYSIS



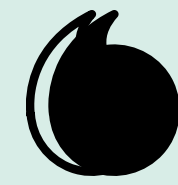
EDA Process



Assumptions:

- Data extracted from 2011 to 2015
- Only HDB resale flats are considered
- Figures of average renovation costs from 2011–2014 were estimated based on 2015 data

Source: [vulcan post](#)



YOU THINK
I THOUGHT

*who
confirm?*



Datasets



**Costs of renovation
of 3,4 and 5 room
HDB flats from 2011
to 2015**

Source: Qanvast



**Resale Prices of
3,4 and 5 Room
HDB flats from
2011 to 2015**

Source: HDB

Cleaning

The cleaning of the data was done individually for each HDB type

(1) Sum prices of HDB resale prices per year

(2) Sum number of HDB flats per year

(3) Concat the column with the total number of HDB flats to the columns with the resale prices and year

	prices_sum	flat_type
year		
2000	1.958481e+09	12423
2001	1.691396e+09	11633
2002	1.547289e+09	10731
2003	1.586136e+09	9935
2004	1.808619e+09	10366
2005	1.888851e+09	9883



Cleaning

(4) Drop rows 2000 to 2010

(5) Extract average renovation costs column

(6) Insert column with average renovation costs with total resale prices and total number of HDB flats columns

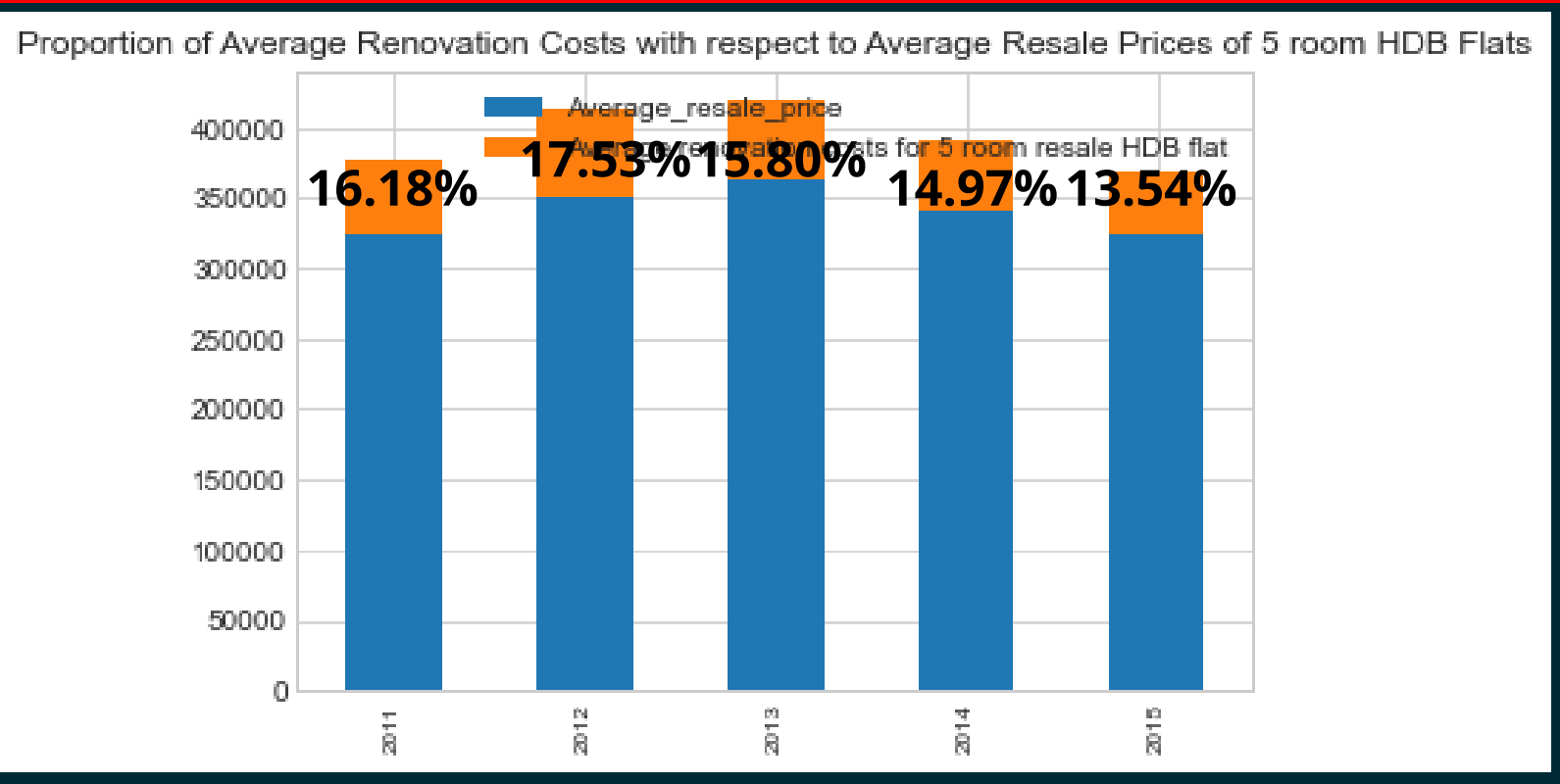
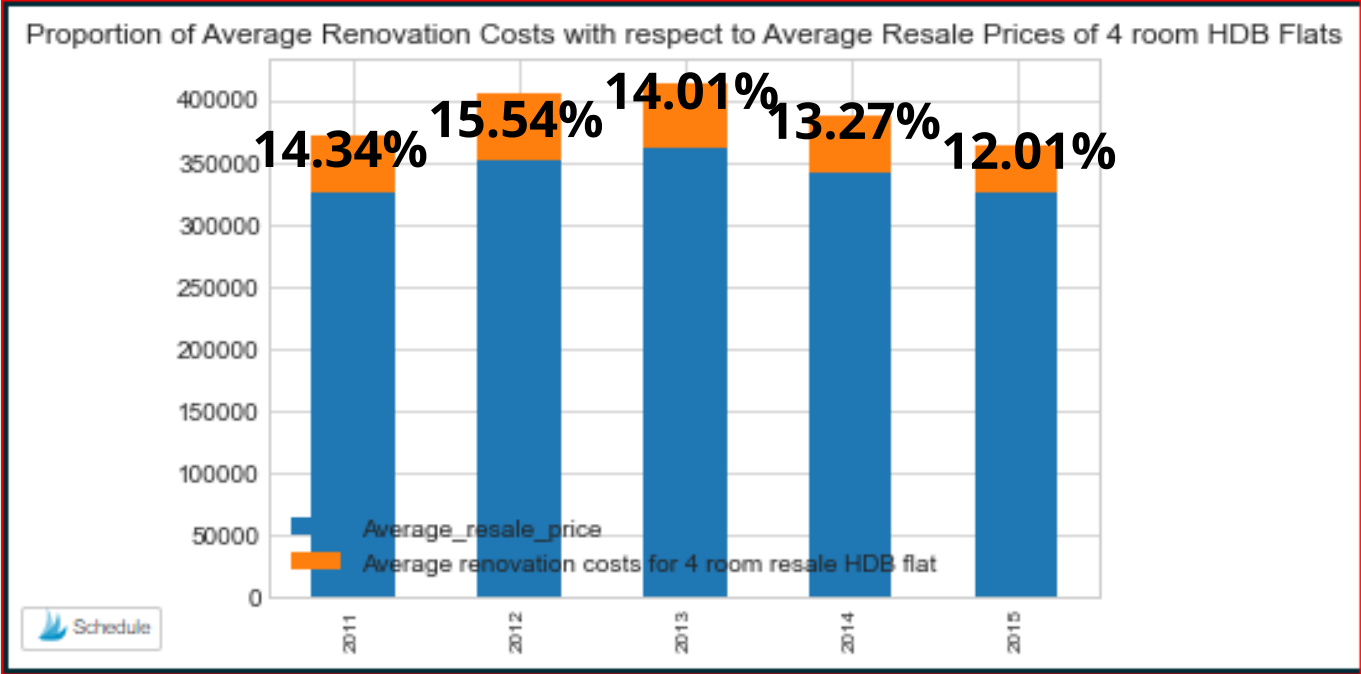
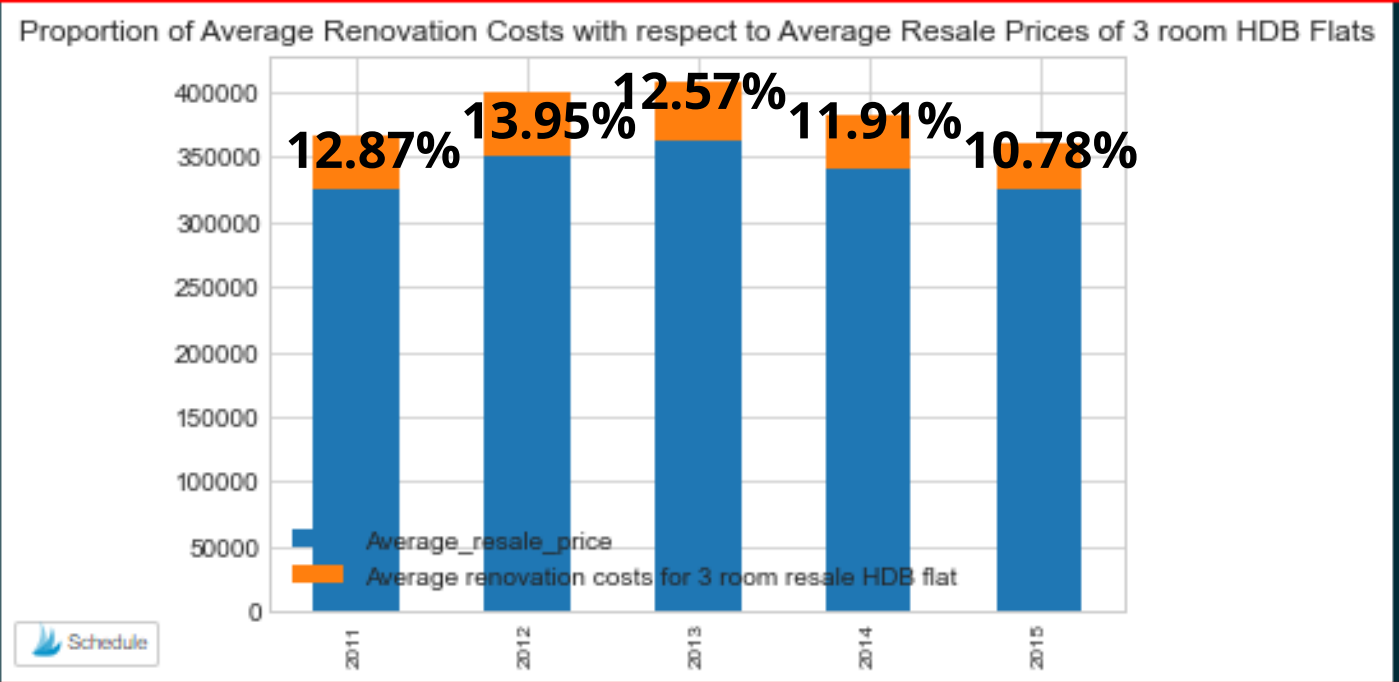
	Year	Average renovation costs for 3 room resale HDB flat	prices_sum	flat_type
0	2011	41877.91	2.073720e+09	6374
1	2012	48997.15	2.260556e+09	6434
2	2013	45498.75	1.741998e+09	4813
3	2014	40598.54	1.718337e+09	5039
4	2015	35000.00	1.618286e+09	4983



KEY FINDINGS



FINDING 1:



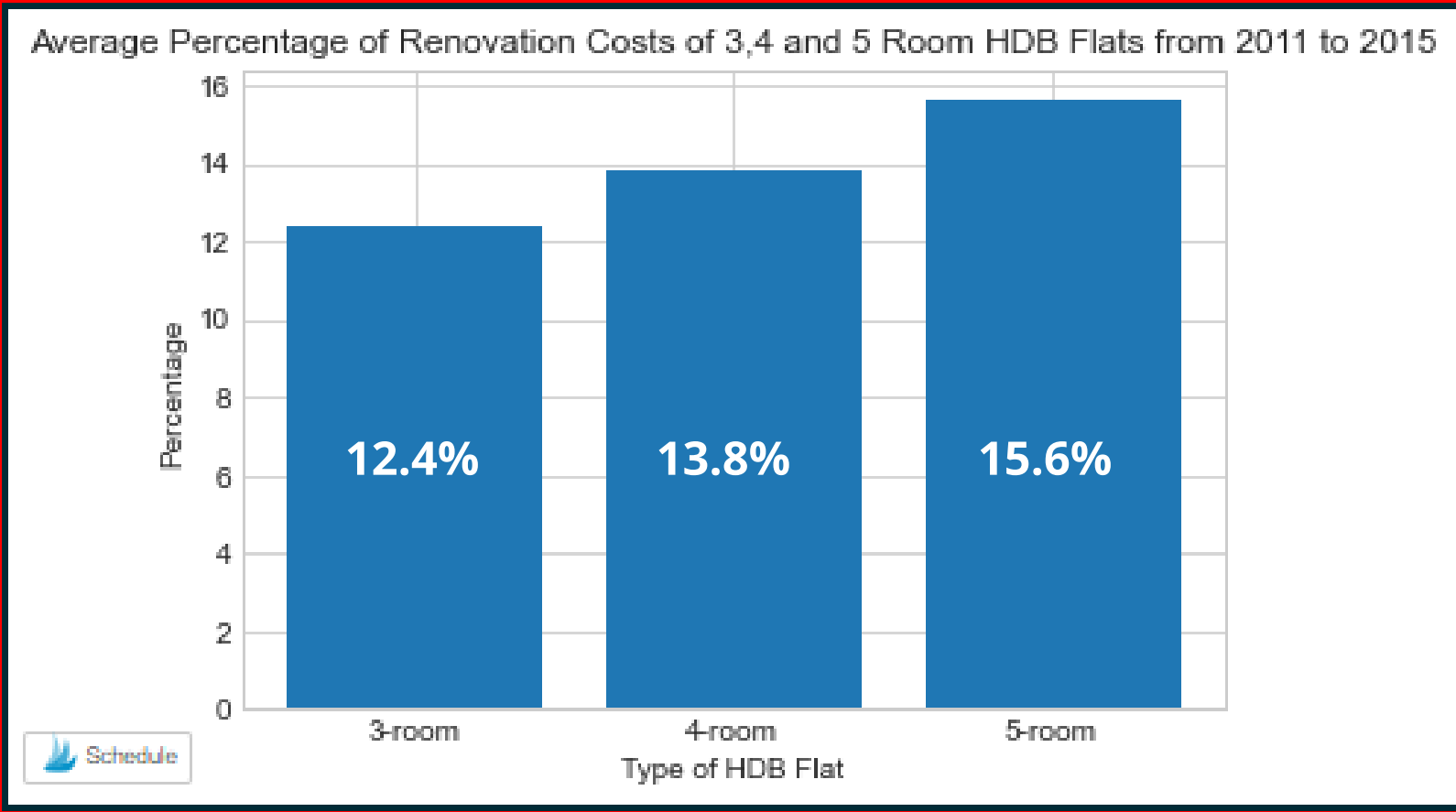
The proportion of Average Renovation Costs of Average Resale Prices have been decreasing across all 3,4 and 5 Room HDB Flats

Explanation *-why was there a fall in renovation expenditure from 2013 to 2014?*

Temporary property cooling measures

- Size restrictions on executive condominiums
- Tighter loan-to-valuations
- Higher buyer stamp duty
- Seller's stamp duty on industrial property for the first time to discourage speculative activity in the sector

FINDING 2:



3 ROOM HDB FLATS : SPEND APPROXIMATELY 12.4% OF YOUR RESALE PRICE ON RENOVATIONS

4 ROOM HDB FLATS : SPEND APPROXIMATELY 13.8% OF YOUR RESALE PRICE ON RENOVATIONS

5 ROOM HDB FLATS : SPEND APPROXIMATELY 15.6% OF YOUR RESALE PRICE ON RENOVATIONS

NEXT STEPS



NEXT STEPS TO BE DONE...

- FUNCTIONS TO BE USED
- DATA OF RENOVATION COSTS ARE UNAVAILABLE OR DIFFICULT TO OBTAIN
- DATA FROM 2011 TO 2014 HAD TO BE CALCULATED
- COMPARE TOWN INSTEAD OF ONLY BY YEAR
- OBTAIN DATA FROM OTHER SOURCES
- RENOVATION COSTS OF PRIVATE RESIDENCES COULD HAVE BEEN COMPARED
- COMPARE RENOVATION COSTS BETWEEN FLOOR LEVELS
- RENOVATION COSTS BY DEMOGRAPHIC NUMBERS COULD HAVE BEEN DONE



THANK YOU





Q&A