Project 1 – Group 3
Factors Affecting the Student Attendance Rate

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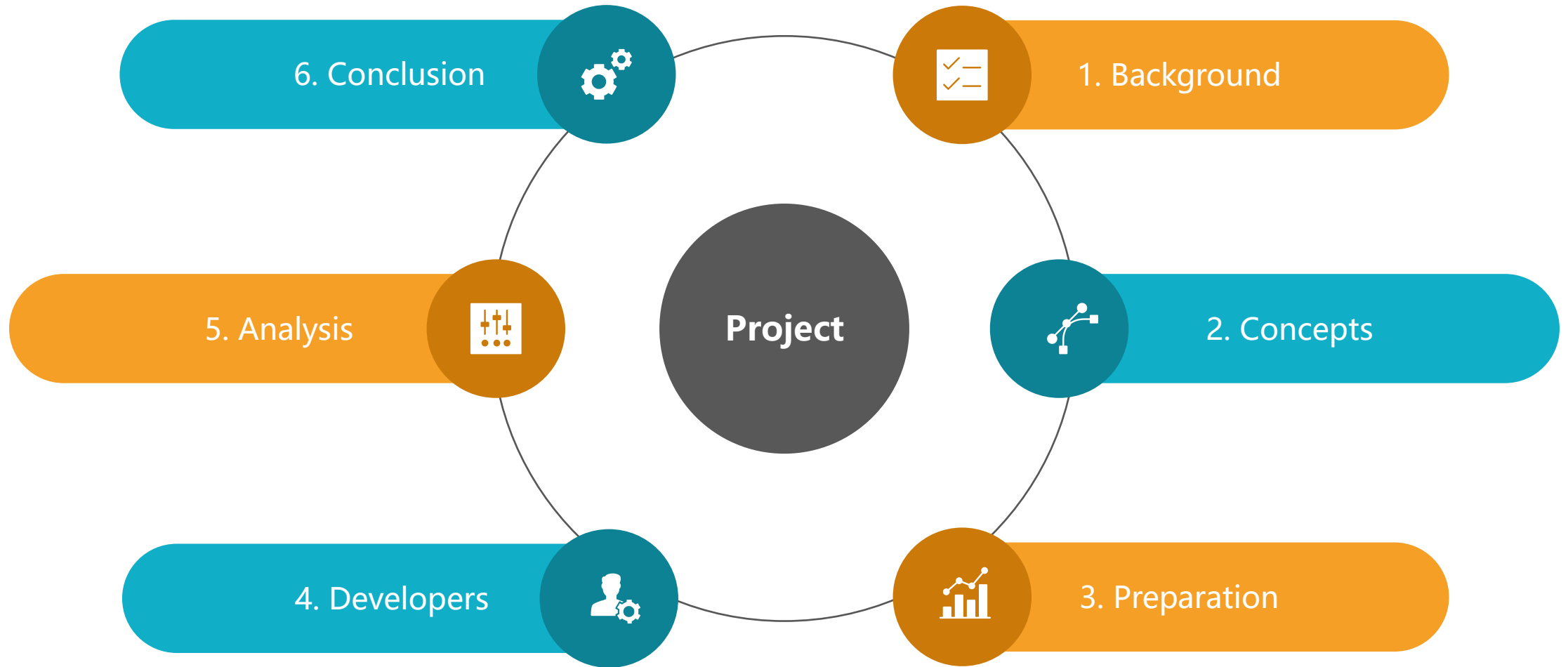
Background

Why:
Student attendance at school is an important part of a child's development into adulthood, and a predictor for achievement and also increased opportunities for economic advancement later in life.

Data Source:
Refer to the end

Purpose:
The relative performance of Schools and the factors that affect school attendance rates has implications for individuals and society, and therefore is a subject of research by professionals in this field.
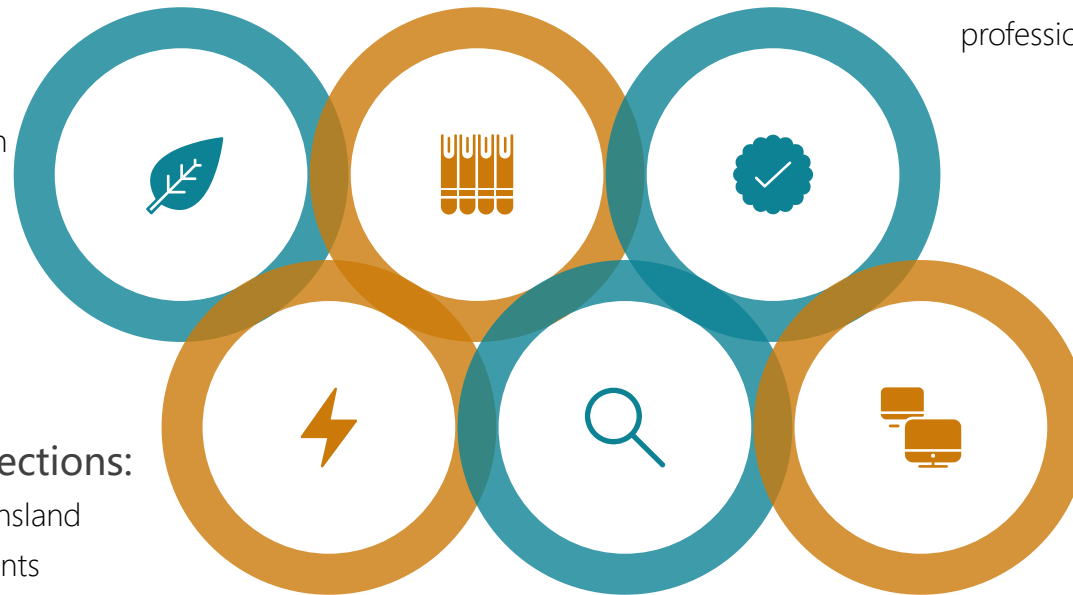
Directions:
This project will use data published by the Queensland State Government on attendance rates for students enrolled in both primary and secondary school for the years 2015 to 2019, and offence rates for Local Government Areas together with Australian Bureau of Statistics data on relative Socio-Economic Index for Areas to explore some aspects of how crime rates and socio-economic factors affect student attendance rates.
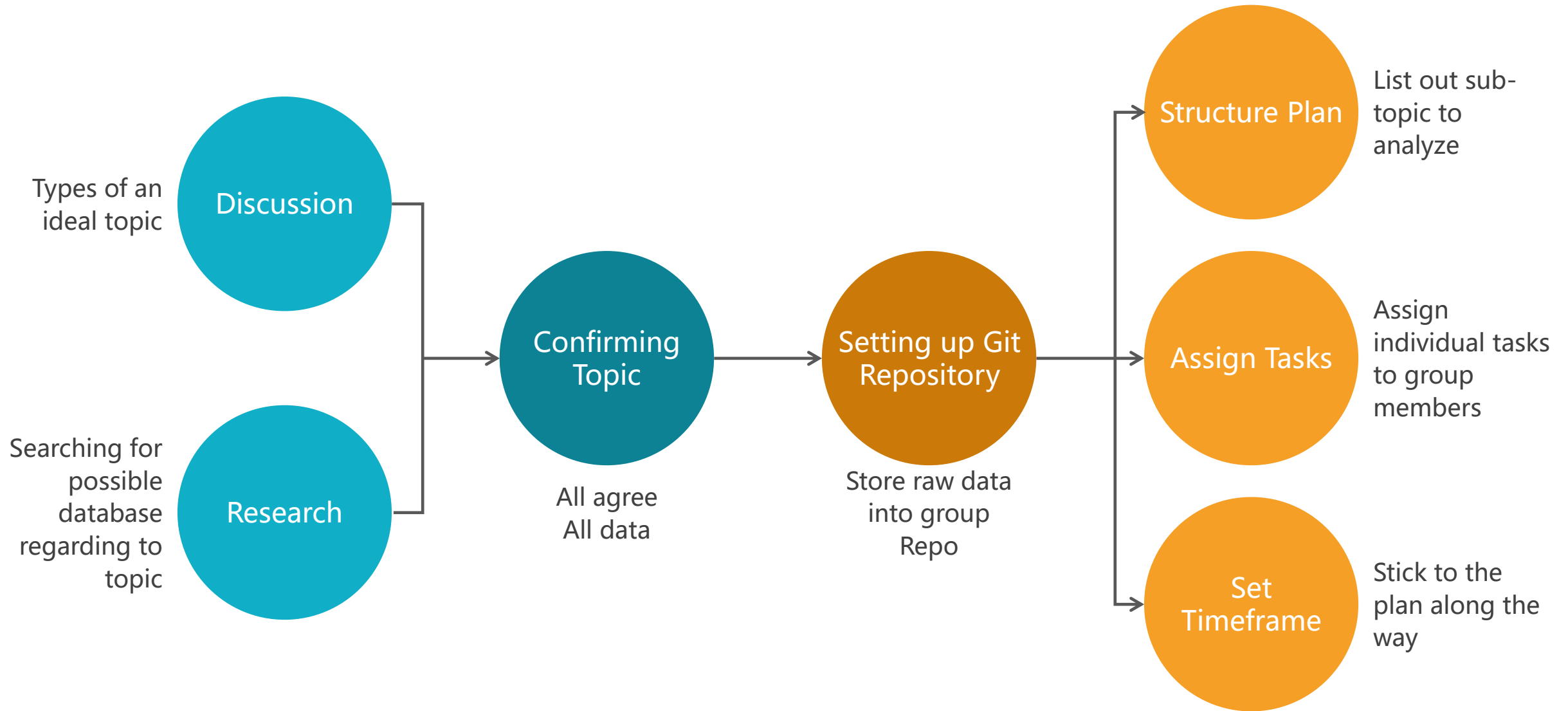
Where:
Queensland state-wide

Limitations:
This project is a very simple analysis that aims to show-case a range of data analysis techniques rather than to provide insights into a significant issue.

Concepts & Preparation

Types of an ideal topic

Discussion

Searching for possible database regarding to topic

Research

Confirming Topic

All agree
All data

Setting up Git Repository

Store raw data into group Repo

Structure Plan

List out sub-topic to analyze

Assign Tasks

Assign individual tasks to group members

Set Timeframe

Stick to the plan along the way

Developers

Alan SEED
- Summary Statistics
- Student attendance VS offences rate

Natalie MANAHAN
- Student attendance VS socio-economic score
- Overview and category views

Mohini YADAV
- Student attendance VS school type
- Student attendance VS Remoteness area

Matt WANG
- Student attendance VS Region
- Student attendance VS LGA
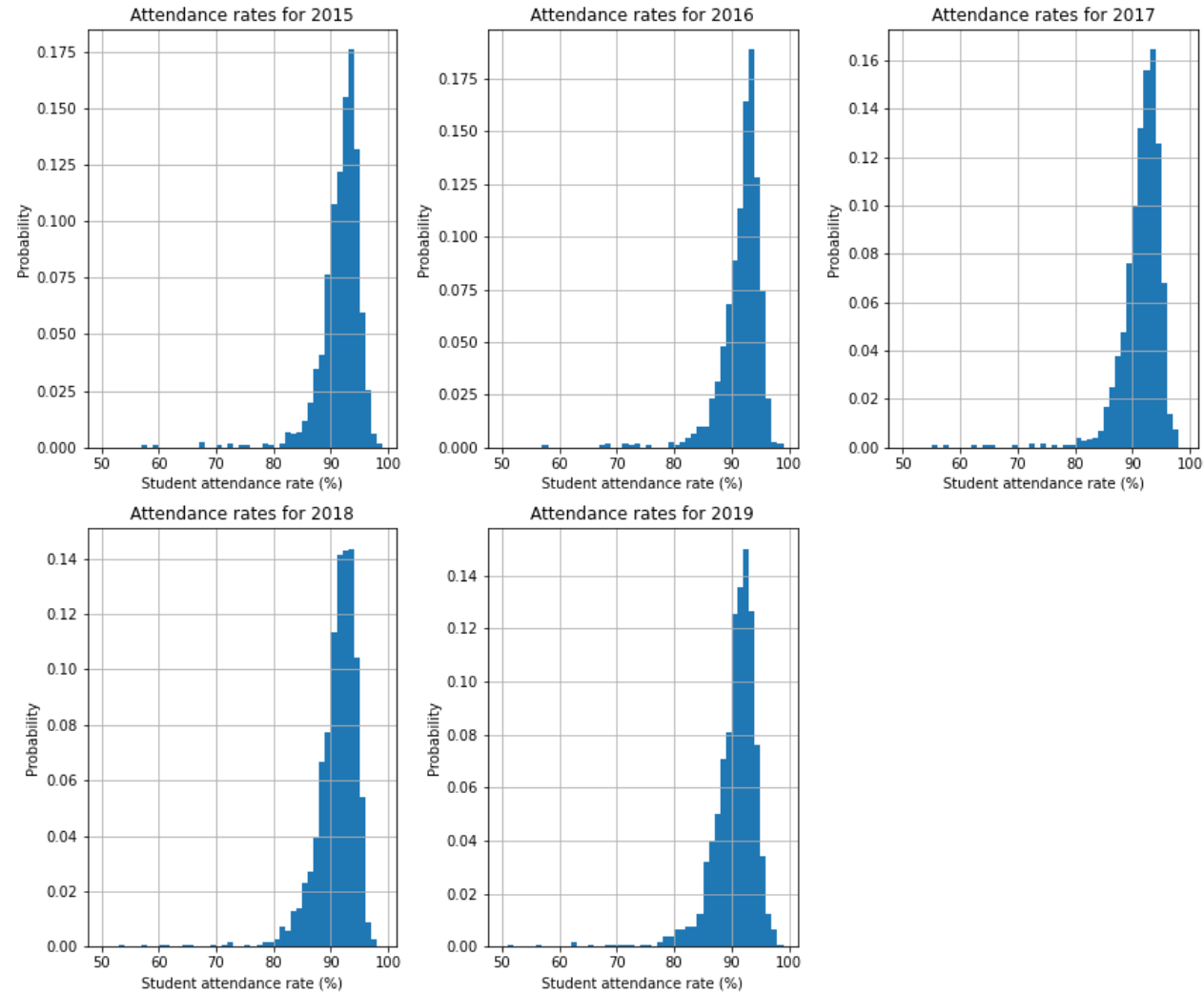
Analysis
Summary Statistics
Alan SEED

Figure 1 Probability distribution of student attendance rates for the years 2015 – 2019

Analysis
Summary Statistics
Alan SEED

	min	25%	median	75%	mean	std	max
2015	57.90	90.35	92.30	93.80	91.67	3.53	100.00
2016	47.80	90.40	92.50	93.80	91.71	3.69	100.00
2017	55.90	90.10	92.30	93.70	91.52	3.69	100.00
2018	53.90	89.50	91.65	93.30	90.94	3.95	99.50
2019	42.50	88.90	91.30	93.00	90.44	4.48	98.00

Table 1 Summary statistics for attendance rates for 2015-2019
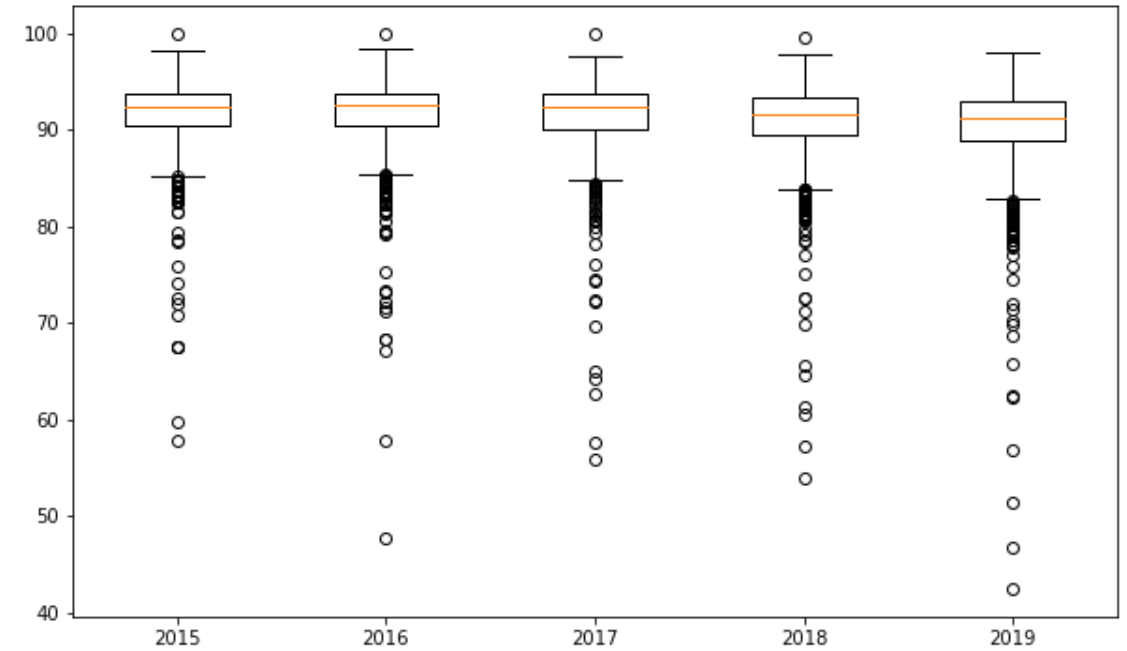
Figure 2 Box plots of student attendance rates for the years 2015 – 2019
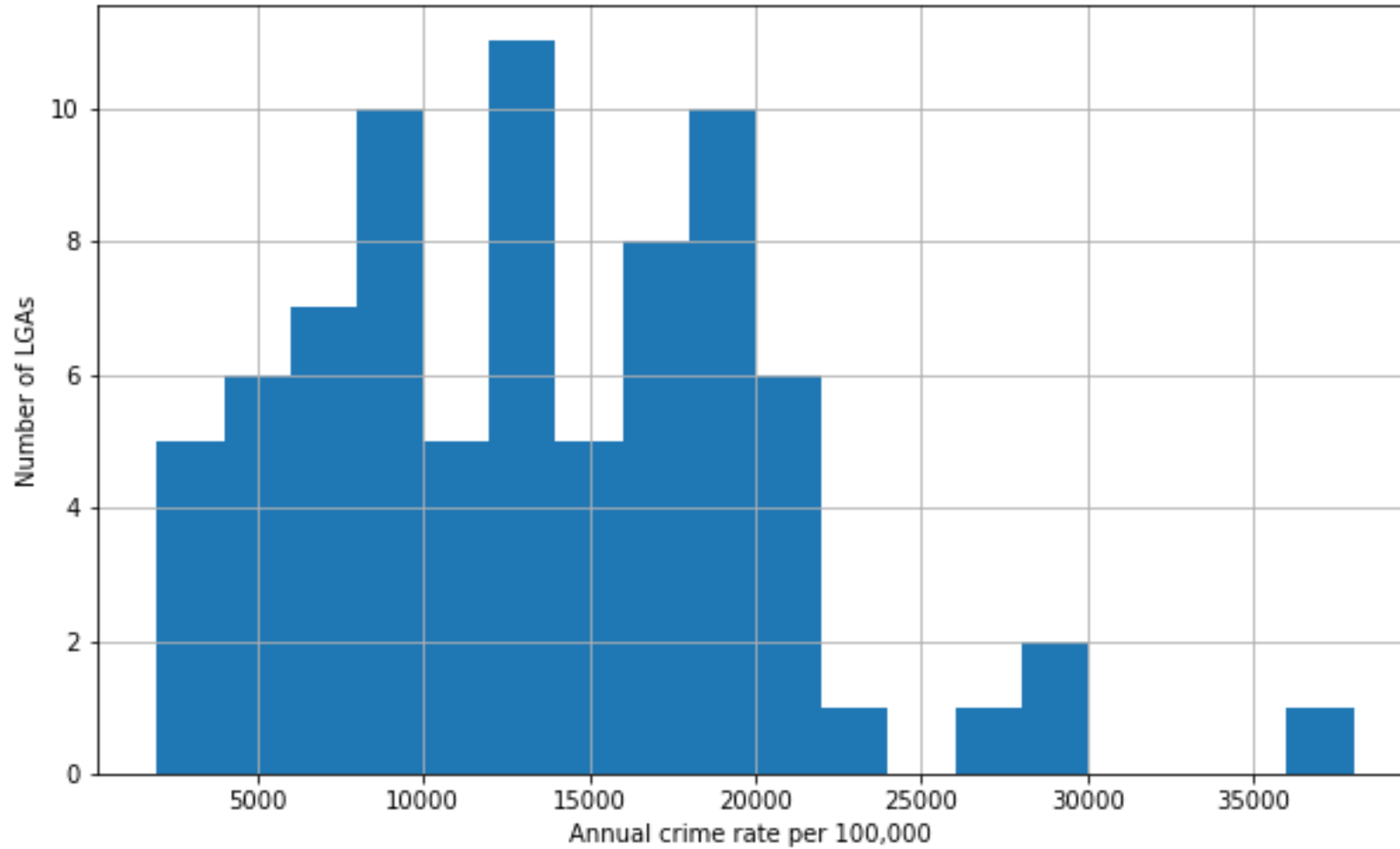
Analysis
Summary Statistics
Alan SEED

Figure 3 Histogram of frequency of total offences rate per Local Government Area for 2019
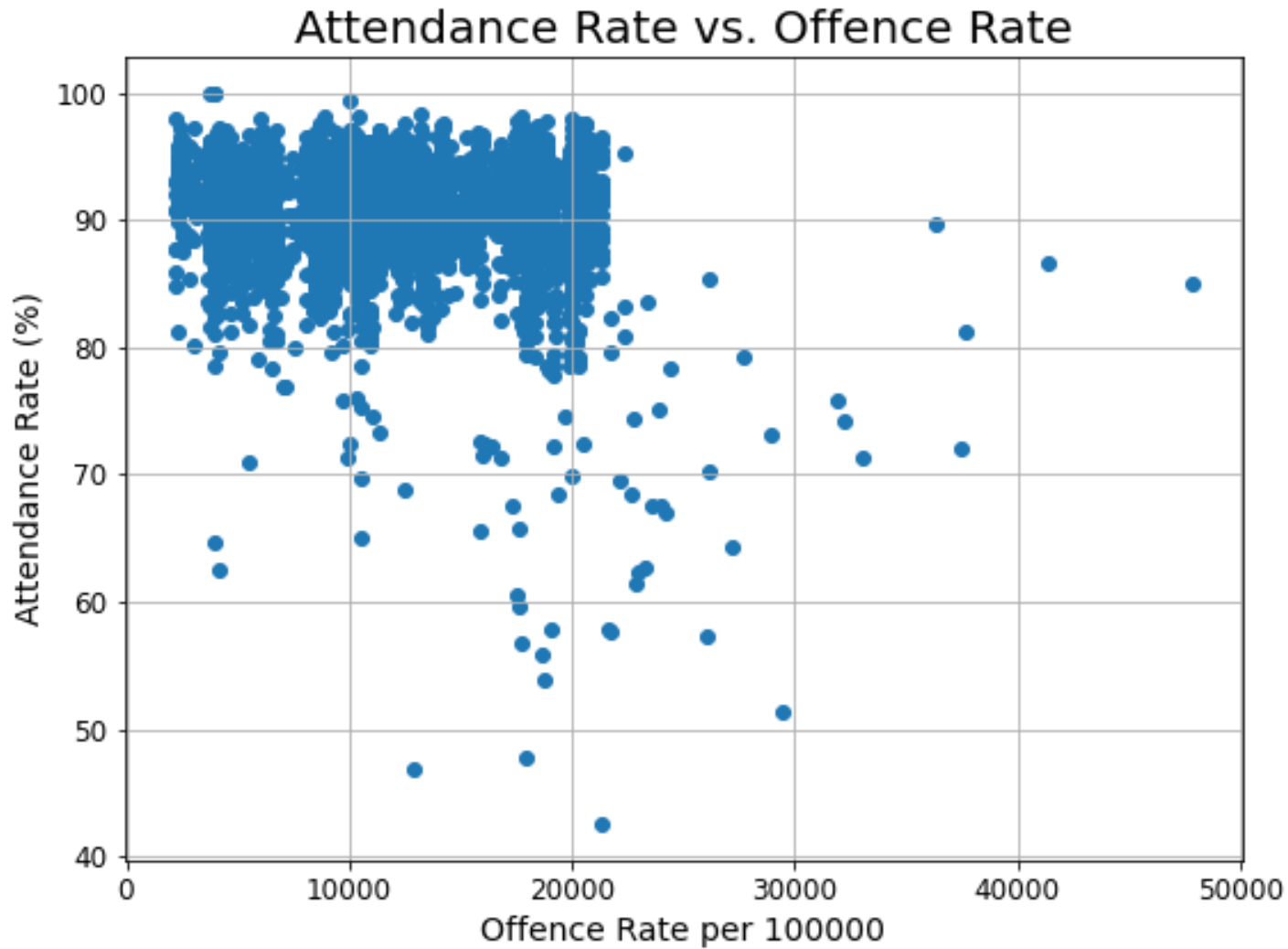
Figure 13 Scatter plot of Offence Rate vs. Attendance rate for Queensland schools between 2015 and 2019

Analysis
Offences Rate
Alan SEED

	Q1	Q2	Q3	Q4
number	1554.00	1501.00	1519.00	1525.00
min	62.60	65.10	46.80	42.50
max	100.00	99.50	98.30	98.10
mean	92.20	91.04	91.22	90.54
variance	9.89	10.85	10.28	28.91
skewness	-2.04	-1.74	-3.47	-3.65
kurtosis	10.59	6.48	32.29	19.53

Table 2 Summary statistics for the probability distribution of attendance rate conditioned on quartiles of the reported offences
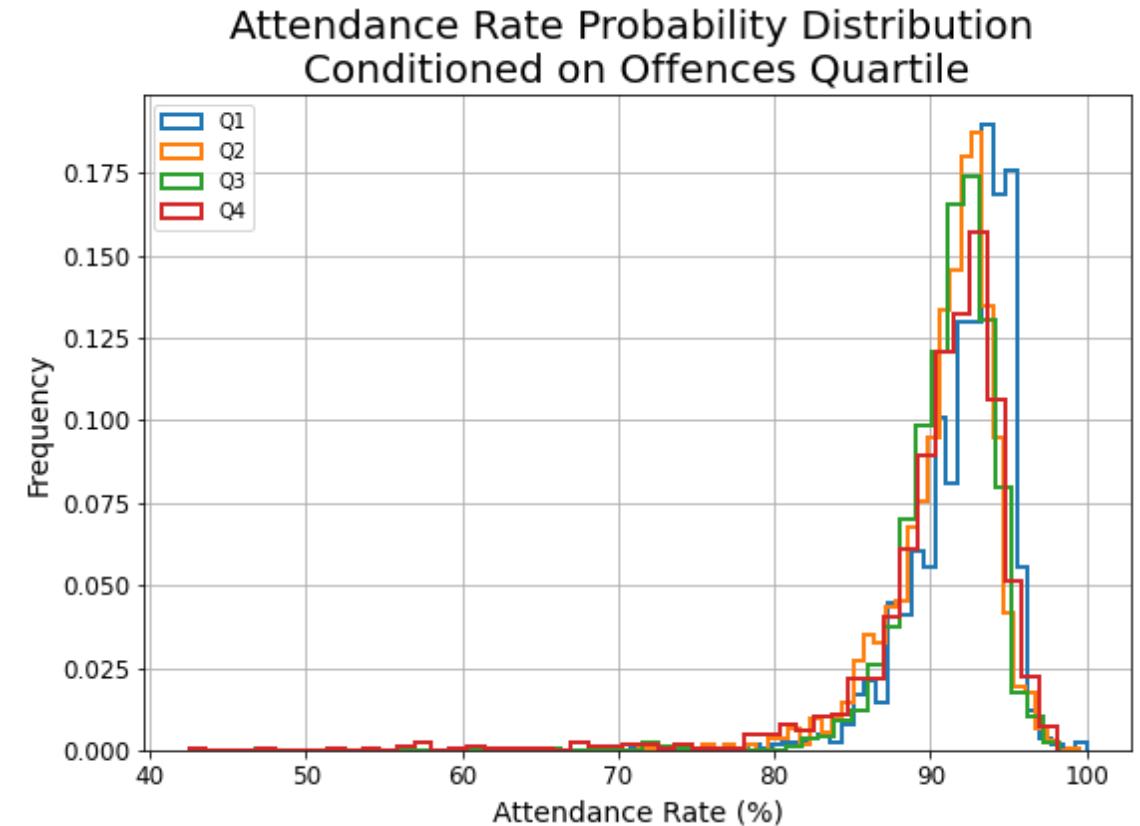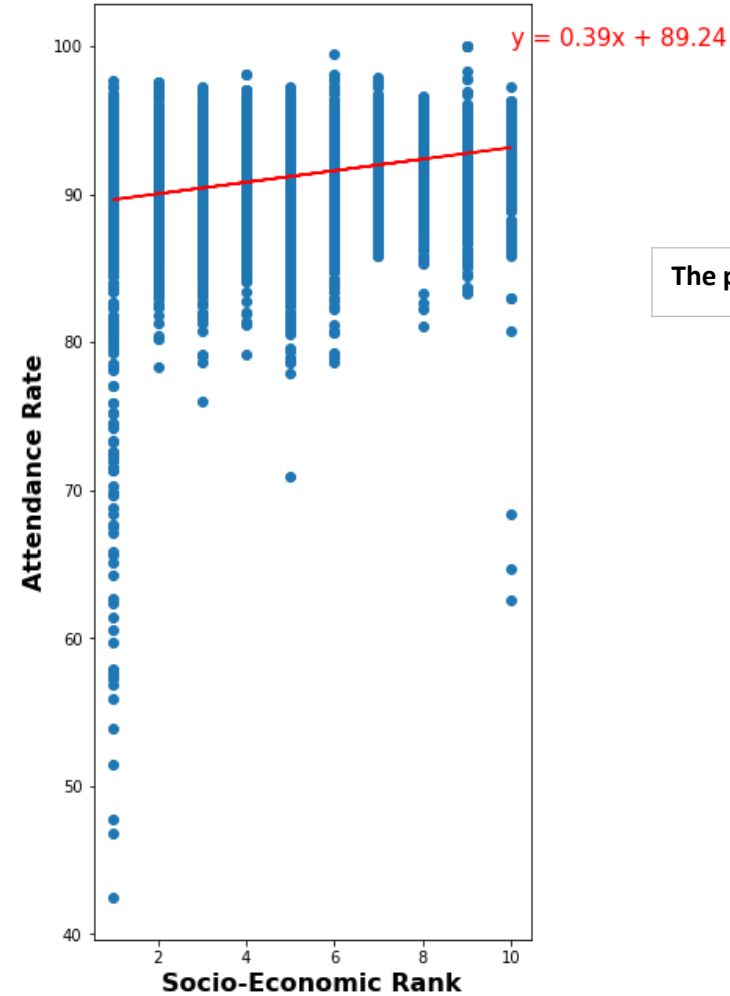

Figure 14 Probability distribution of attendance rates conditioned on the quartiles of the offence rates

Analysis
Socio-economic Score
Natalie MANAHAN

Figure 10 Attendance rate vs. deciles of the socio-economic indicator of advantage and disadvantage index

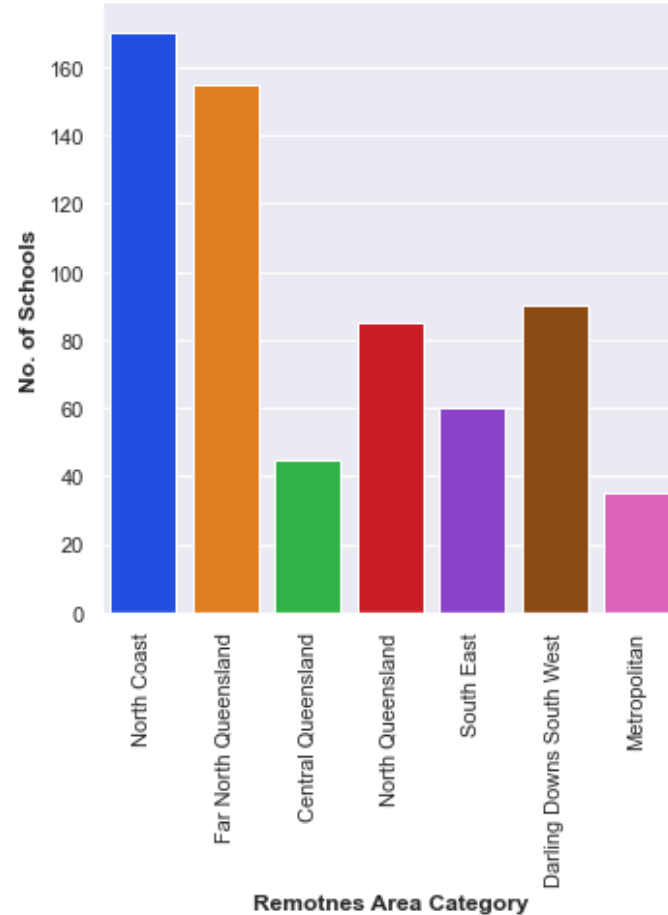# Analysis
Socio-economic Score
Natalie MANAHAN

Figure 11 Number of schools in the first decile of the socio-economic index of advantage and disadvantage per region
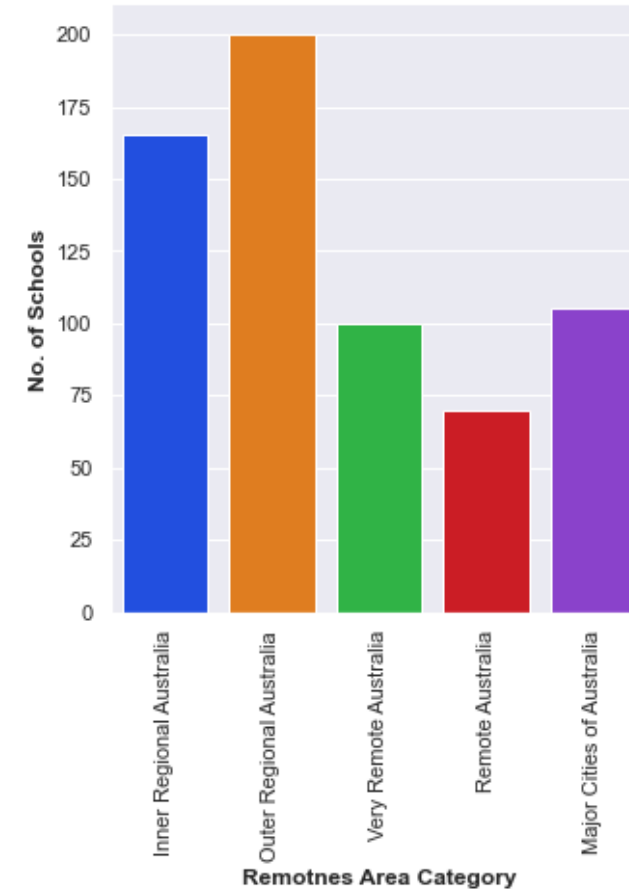

Figure 12 Number of schools in the first decile of the socio-economic index of advantage and disadvantage per remoteness area
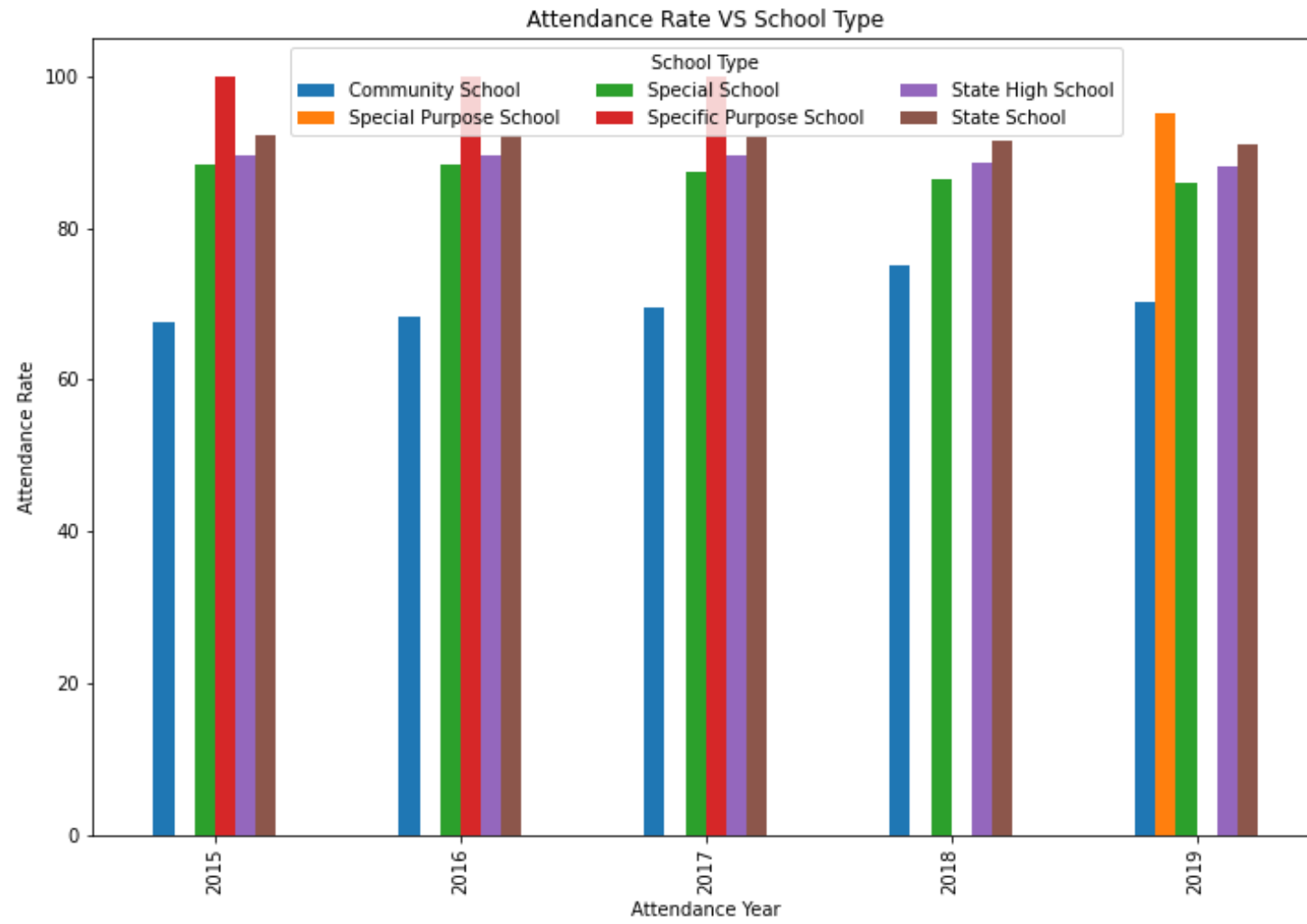
Analysis
School Types
Mohini YADAV

Figure 4 Attendance rates per school type and year
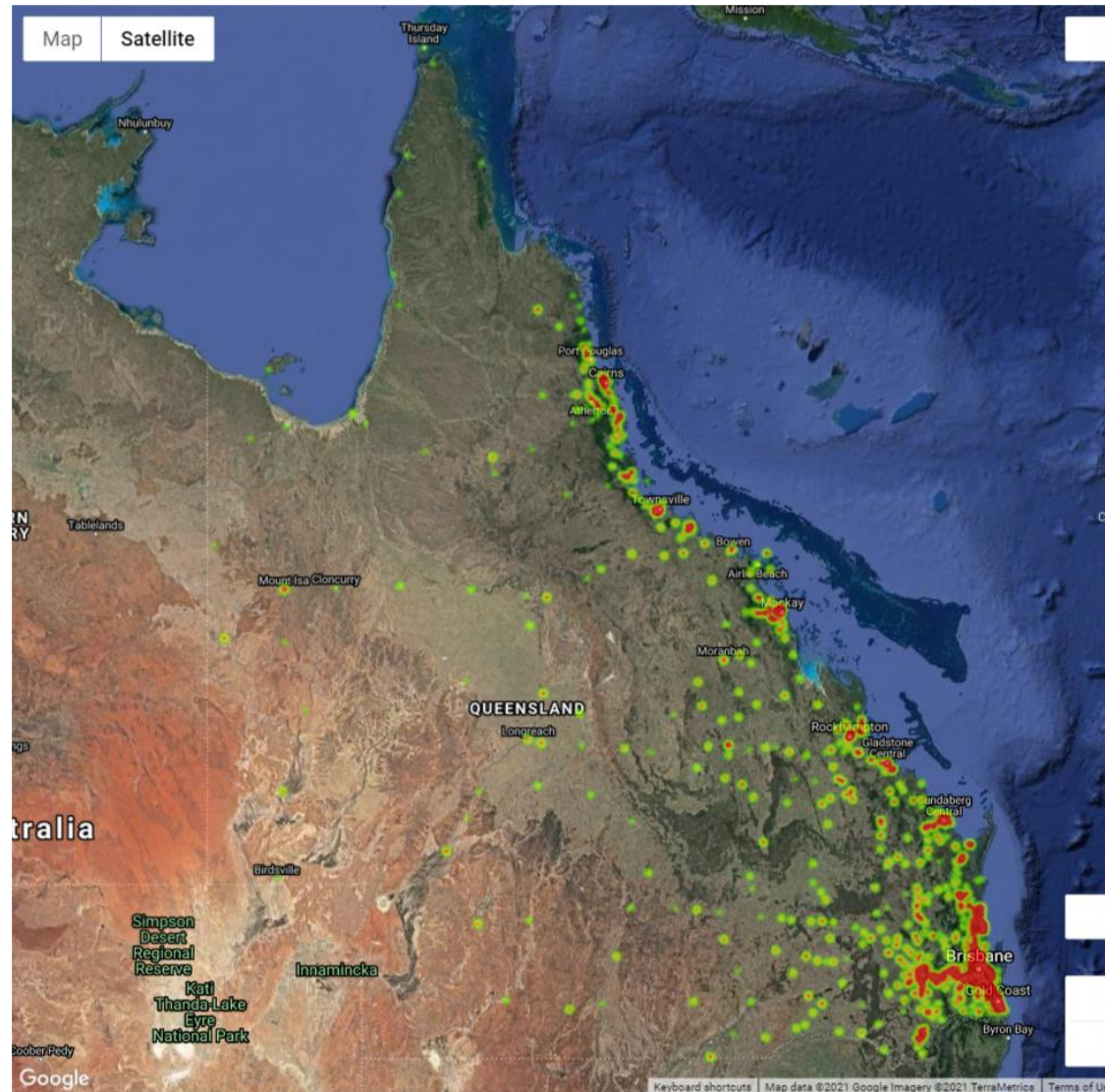
Figure 5 Heat map of student attendance rate for all schools in Queensland

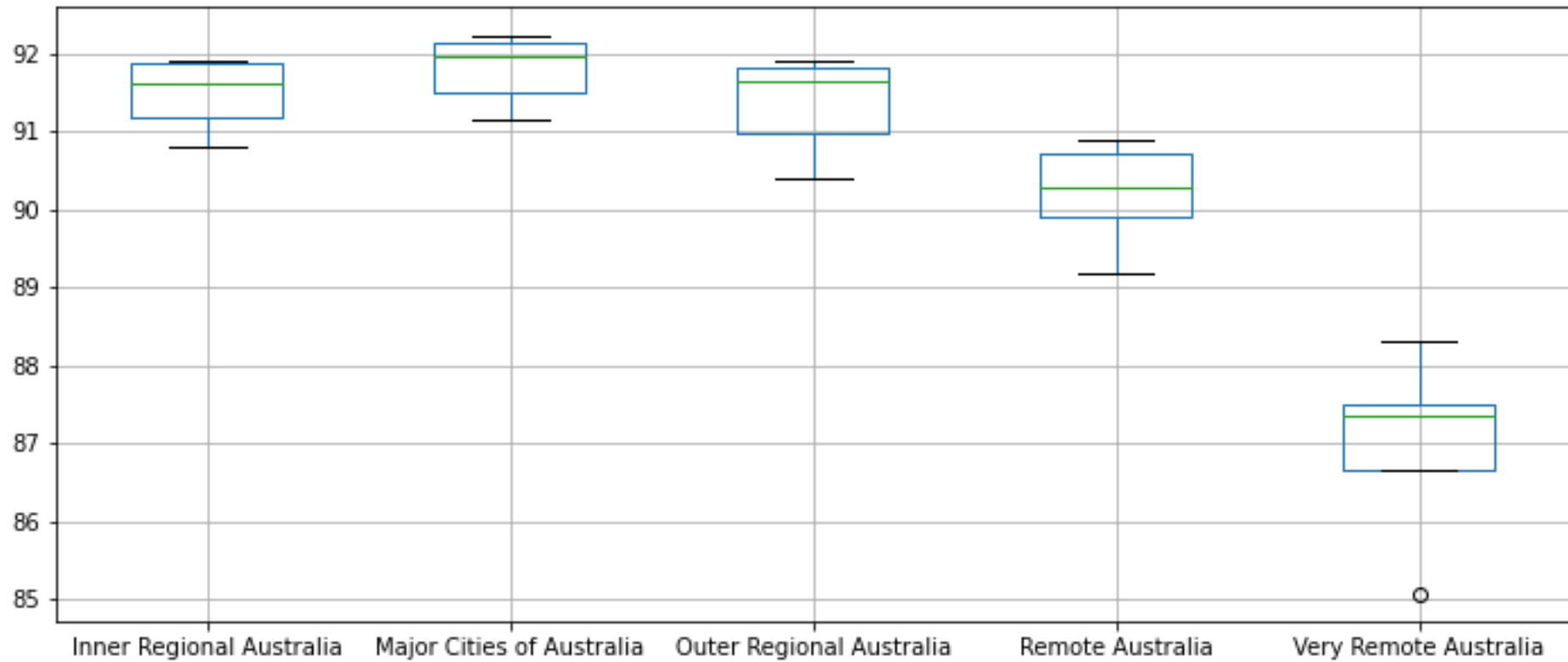*Figure 6 Box plots of the attendance rates conditioned on the Region*
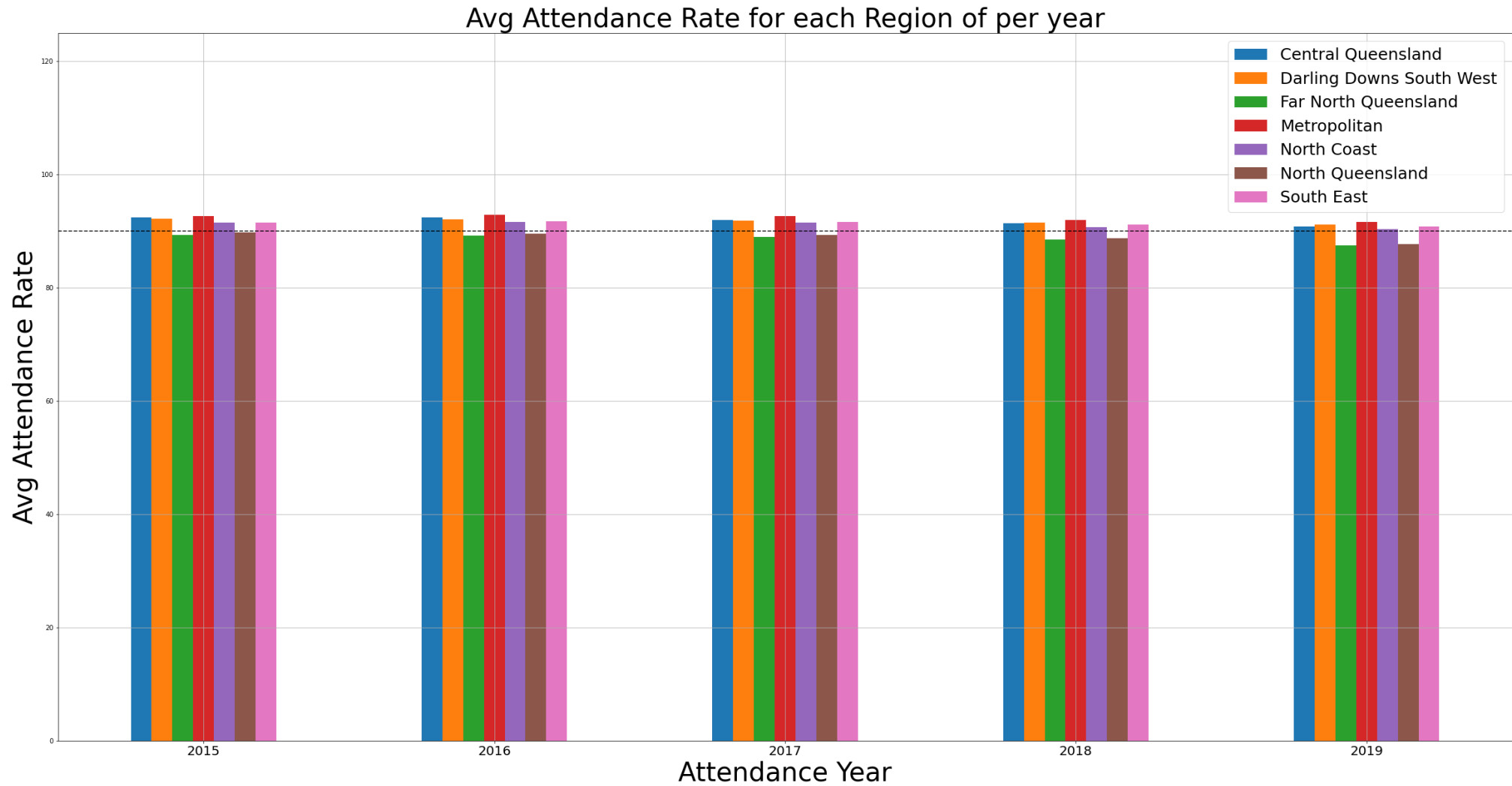
Figure 7 Bar charts of student attendance rate for each region area each year

Analysis

Region

Matt WANG

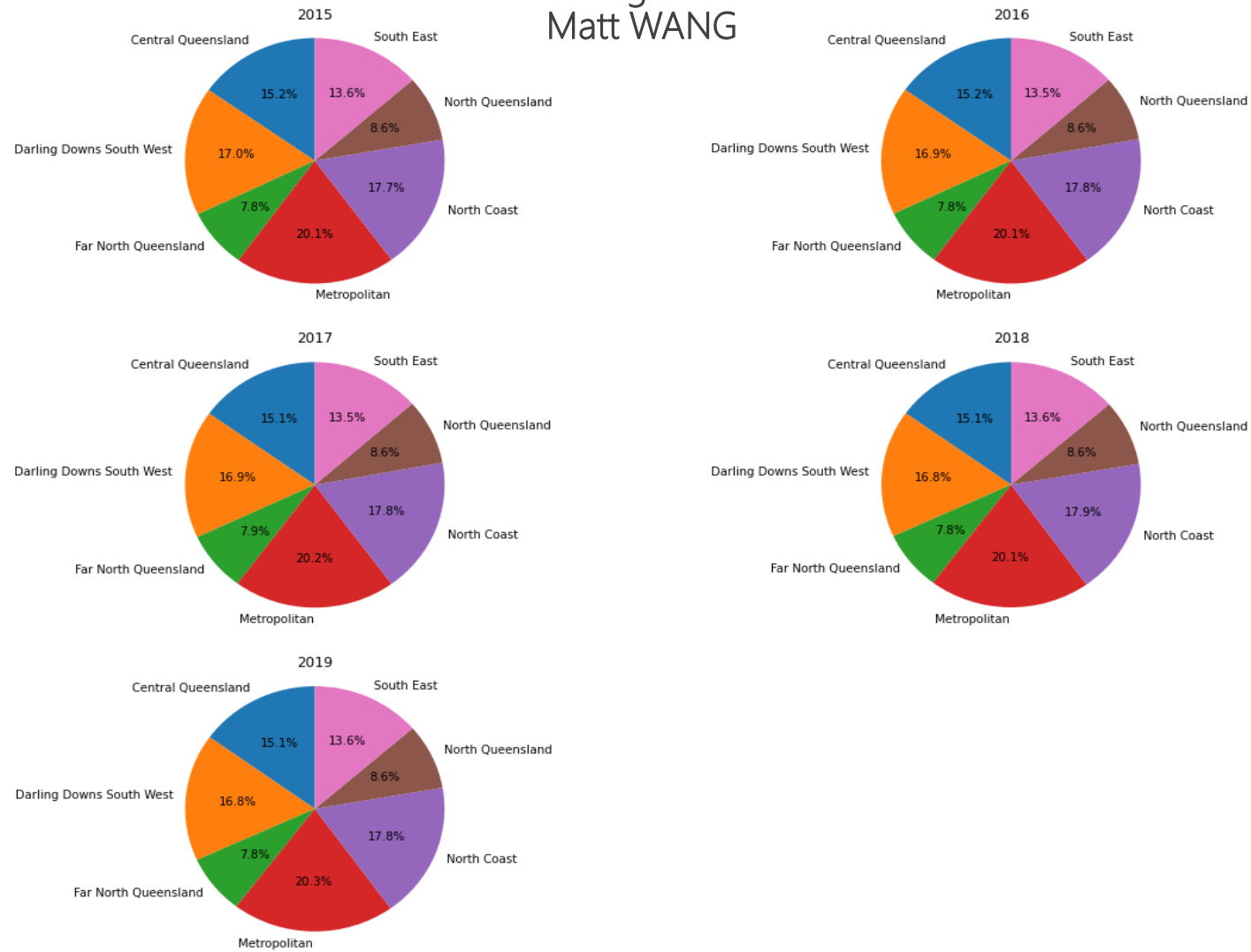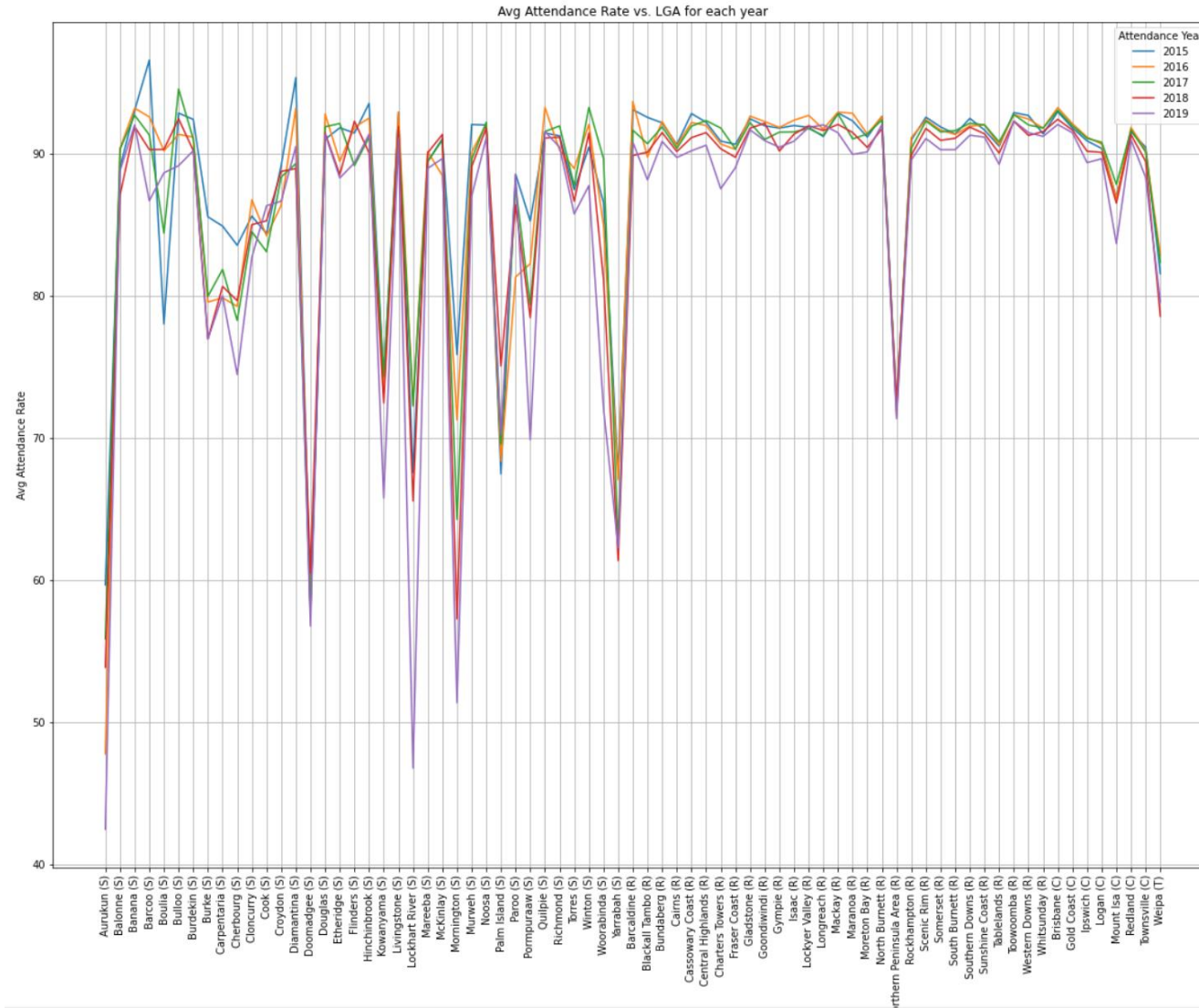*Figure 8 Pie charts of student attendance rate for each region area each year*

Analysis

Local Government Area
Matt WANG

Avg Attendance Rate vs. LGA for each year

Figure 9 Line chart of student attendance rate for each LGA area each year

Conclusion

	Major Findings	Uncertainties
Deliverable	› The student attendance rate for the government owned schools is irrelevant to the geographical locations according to the historical data; › Community schools in remote areas have the lowest attendance rate, most socio-economic disadvantage and highest rates of reported crime	› School attendance data incomplete for years other than 2019; › Longer periods
Undeliverable	› The student attendance rate could be affected by the population within each school-zone;	› Could have school-zone vs population; › Could have weather effects monthly vs school attendance relatively; › Could have other cultural reasons based on the cultural group within a certain type of areas; › Could have driven to typical LGAs where has the large change of attendance rate

Thanks

Data Sources

Data

1.The Queensland Department of Education maintains a record of attendance rates at the 1237 State Schools and publishes the data on the Queensland Government Open Data Portal at
https://www.data.qld.gov.au/dataset/state-school-attendance-rate
The published data are for the period 2015 – 2019 and include the school ID, post code and other meta-data together with the attendance rates for the 5-year period.
2.The location of each school is published in the Queensland School Directory, which is found at
https://www.data.qld.gov.au/dataset/state-and-non-state-school-details
The data for each school includes the latitude and longitude of the School.
3.The Queensland Police Service provide information of the rates of reported offences in Local Government Areas at monthly intervals. The rates are reported as per 100,000 people and (an impressive) range of crimes. The data are updated annually and are available at
https://www.data.qld.gov.au/dataset/lga_reported_offences_rates
4.The Australian Bureau of Statistics published an index of Socio-Economic Indexes for Areas (SEIFA) after each Census, the data for 2016 can be found by Postal Area Code at
https://stat.data.abs.gov.au/Index.aspx?DataSetCode=ABS_SEIFA_LGA
We selected the Index of Relative Socio-economic Advantage and Disadvantage since we wanted to include the areas of relative advantage in the analysis. The data are reported as a relative measure, calculated for the residents in each post code and reported as percentiles of all post code areas in Queensland.

Tools

1. Jupyter Notebook
2. GoogleMap API
3. GitLab
4. OneDrive