

Analysis of Victorian Road Accidents

By: Marcus, Tamer, Sanuli & Ivana

Hypotheses

Data Preparation

Analysis

Conclusions

Project Description

1. Locations

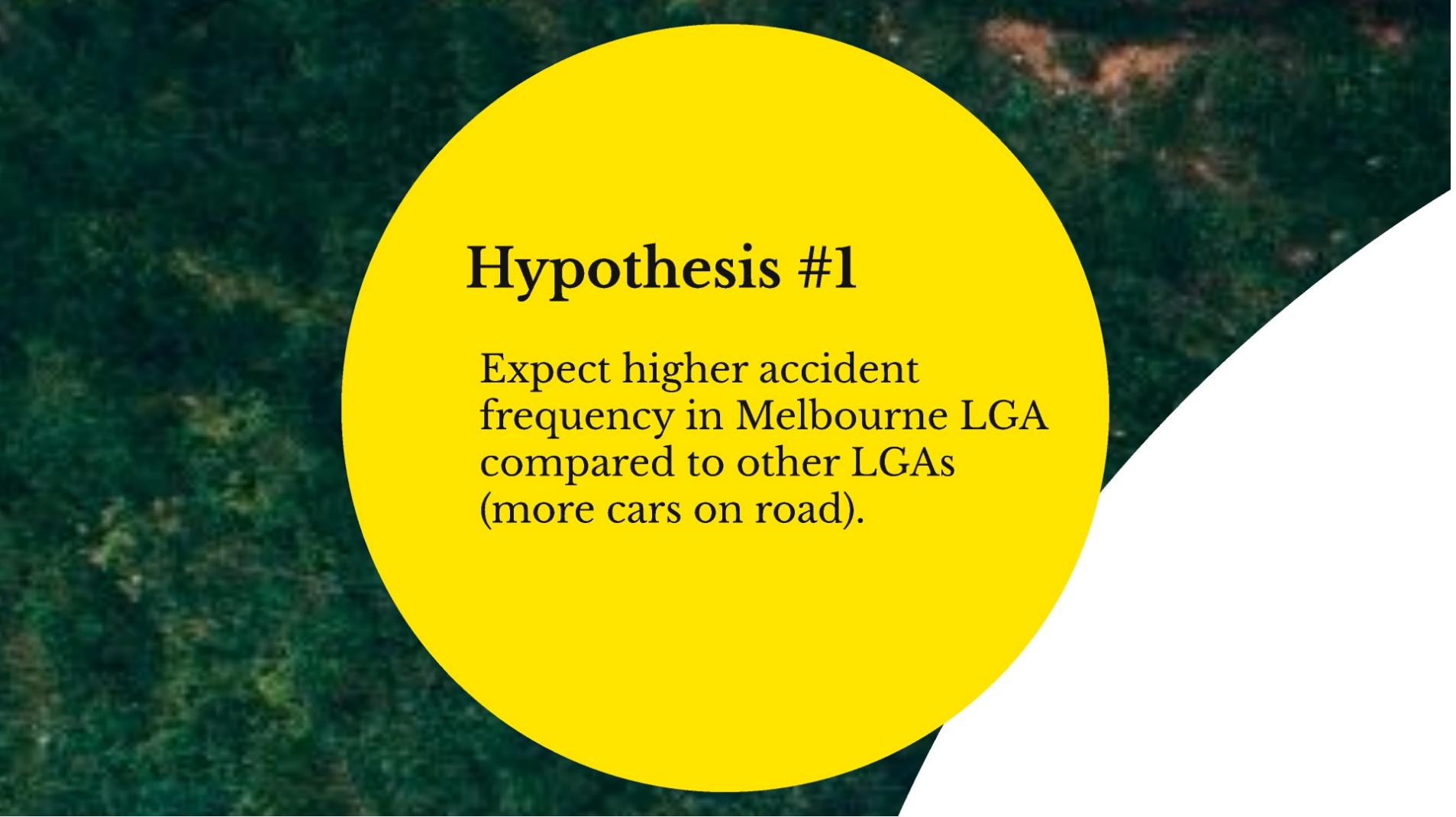
2. Timing

Analyzed locations and timing of road accidents in Victoria between 2014-2019 and if weather conditions had an impact on their frequency.

3. Effect of Rainfall

4. Effect of Temperature





Hypothesis #1

Expect higher accident frequency in Melbourne LGA compared to other LGAs (more cars on road).

Project Description

1. Locations

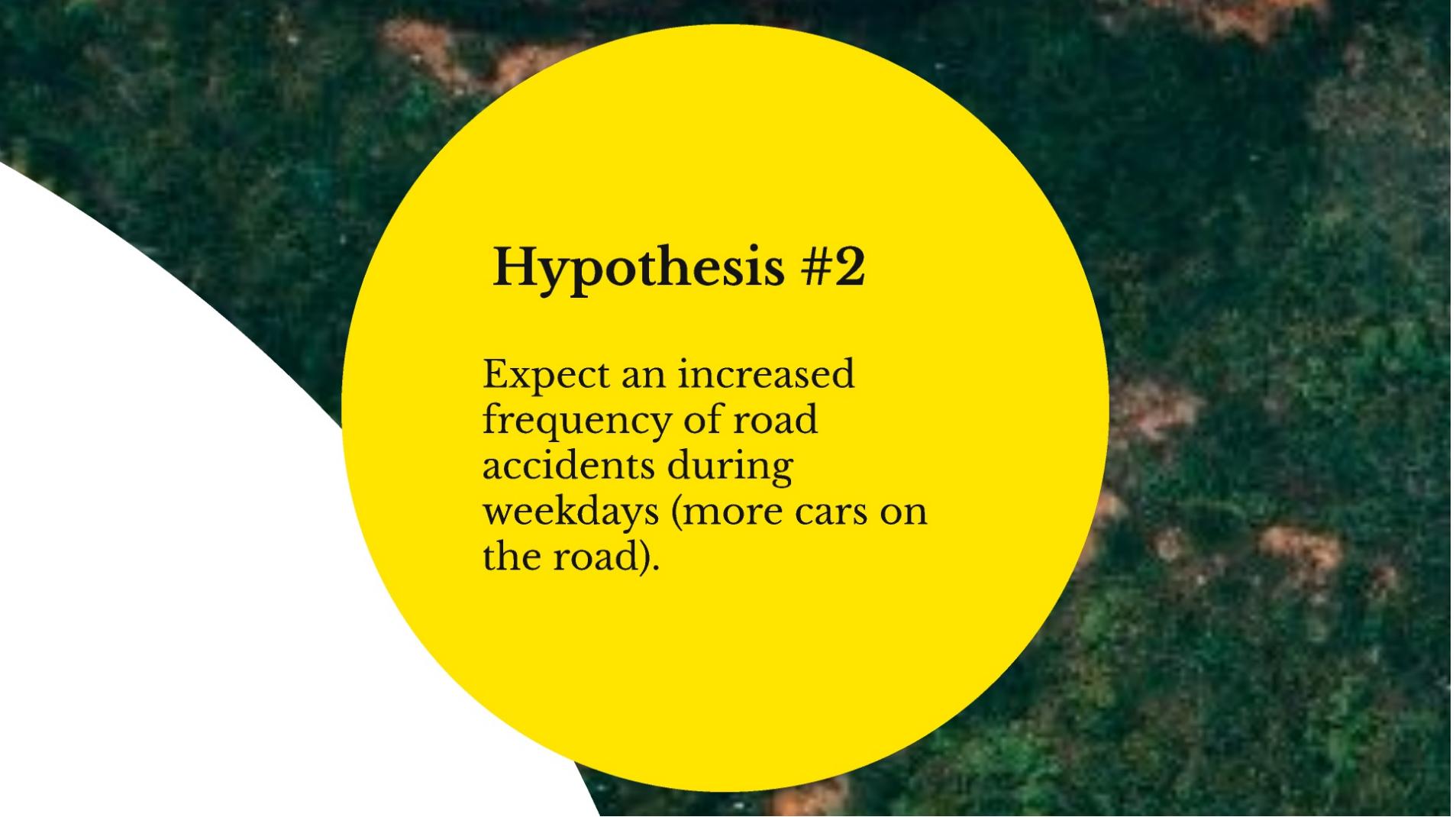
2. Timing

Analyzed locations and timing of road accidents in Victoria between 2014-2019 and if weather conditions had an impact on their frequency.

3. Effect of Rainfall

4. Effect of Temperature





Hypothesis #2

Expect an increased frequency of road accidents during weekdays (more cars on the road).

Project Description

1. Locations

2. Timing

Analyzed locations and timing of road accidents in Victoria between 2014-2019 and if weather conditions had an impact on their frequency.

3. Effect of Rainfall

4. Effect of Temperature



The background image shows an aerial perspective of a paved road curving through a dense, green forest. The road is light-colored and appears slightly wet or reflective in some areas. The surrounding terrain is covered in various shades of green foliage and some brown earth near the roadside.

Hypothesis #3

Increased accidents
frequency during wet
weather.

Project Description

1. Locations

2. Timing

Analyzed locations and timing of road accidents in Victoria between 2014-2019 and if weather conditions had an impact on their frequency.

3. Effect of Rainfall

4. Effect of Temperature



A large yellow circle is overlaid on the upper right portion of the image, containing the text.

Hypothesis #4

Increased accident
frequency during cold
weather.

Project Description

1. Locations

2. Timing

Analyzed locations and timing of road accidents in Victoria between 2014-2019 and if weather conditions had an impact on their frequency.

3. Effect of Rainfall

4. Effect of Temperature





Analysis of Victorian Road Accidents

By: Marcus, Tamer, Sanuli & Ivana

Hypotheses

Data Preparation

Analysis

Conclusions



Data Sources + Cleaning

VicRoads Open Data - Road Crashes (2014-2019)

<https://vicroadsopendata-vicroadsmaps.opendata.arcgis.com/>

- CSV file (77,513 rows, 65 columns)

Bureau of Meteorology

<http://www.bom.gov.au/climate/data/>

- Max. daily temperature - CSV file
- Total daily rainfall - CSV file

Google API

<https://developers.google.com/maps>

- Created heat-map



Analysis of Victorian Road Accidents

By: Marcus, Tamer, Sanuli & Ivana

Hypotheses

Data Preparation

Analysis

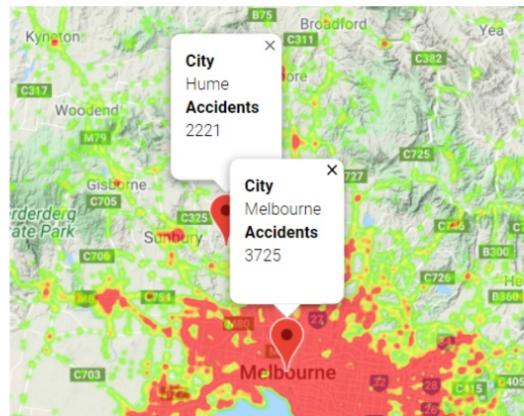
Conclusions

Analysis

1. Locations

2. Timing

Data analysis undertaken using Jupyter Notebook with the input being the cleaned data as CSV file from previous step.

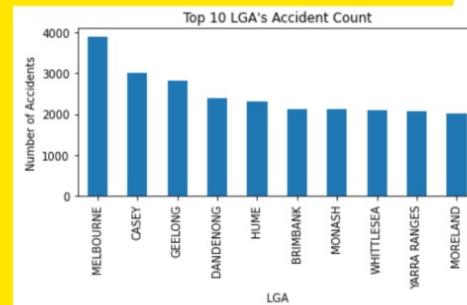
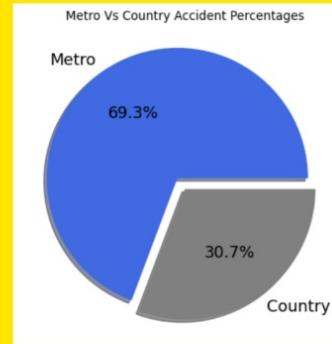


3. Effect of Rainfall

4. Effect of Temperature

Studying Locations

- Created a Jupyter notebook to analyse accidents per LGA
- Created a pie chart to show frequency of accidents in country vs metropolitan areas
- Created a bar chart to show frequency of accidents in LGA's that had more than 2000 accidents

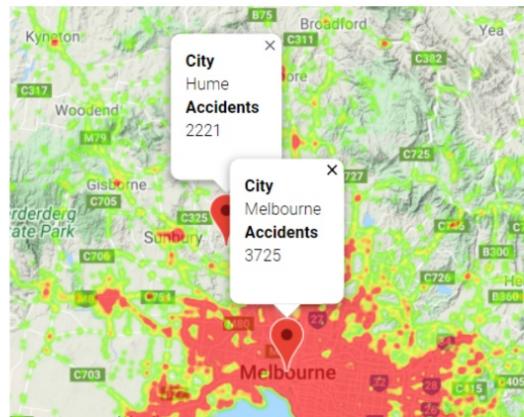


Analysis

1. Locations

2. Timing

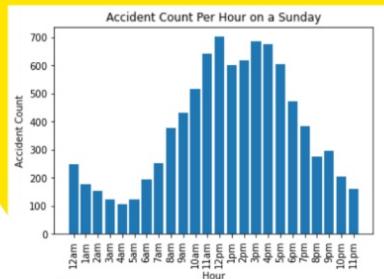
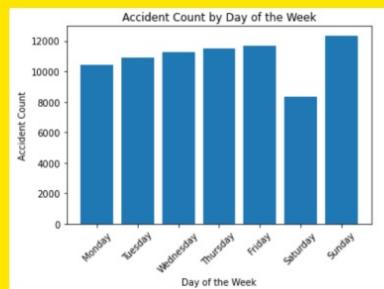
Data analysis undertaken using Jupyter Notebook with the input being the cleaned data as CSV file from previous step.



3. Effect of Rainfall

4. Effect of Temperature

Studying Days & Times



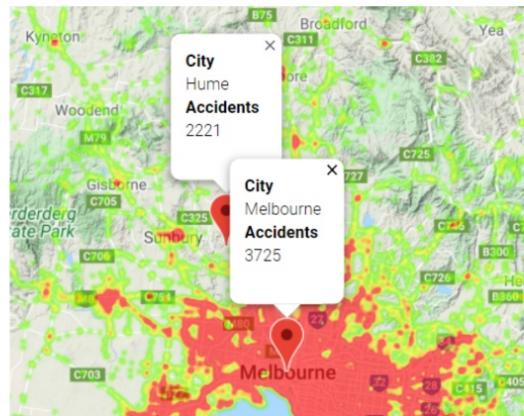
- Created a bar chart to show rate of accidents per day of the week
- Created bar charts to show rate of accidents per hour of selected days
- Looked at the mean value of accident counts at 12am and compared to 12am accident count on Sunday

Analysis

1. Locations

2. Timing

Data analysis undertaken using Jupyter Notebook with the input being the cleaned data as CSV file from previous step.

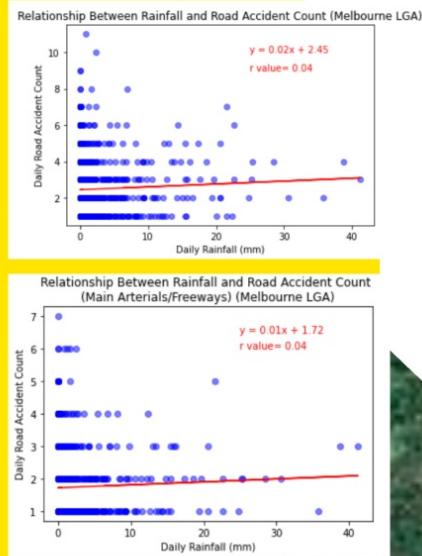


3. Effect of Rainfall

4. Effect of Temperature

Studying Rainfall Effect

- Due to time constraints, we focused on weather data for Melbourne and Hume
- Created scatter plots and regression lines for rainfall vs accidents count in all roads then fast/arterial roads
- Did the same for rainfall vs fatalities sum
- Did hypothesis tests for all cases

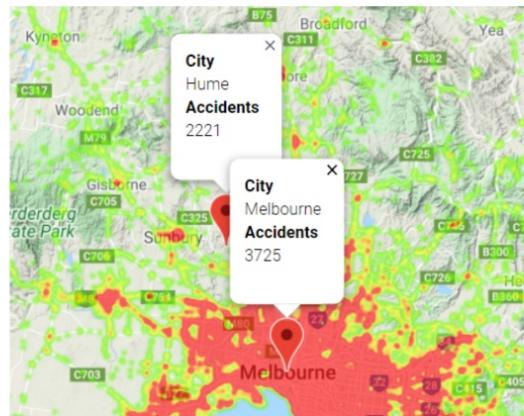


Analysis

1. Locations

2. Timing

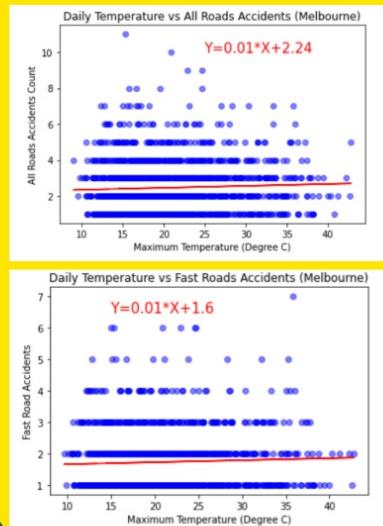
Data analysis undertaken using Jupyter Notebook with the input being the cleaned data as CSV file from previous step.



3. Effect of Rainfall

4. Effect of Temperature

Studying Temperature Effect



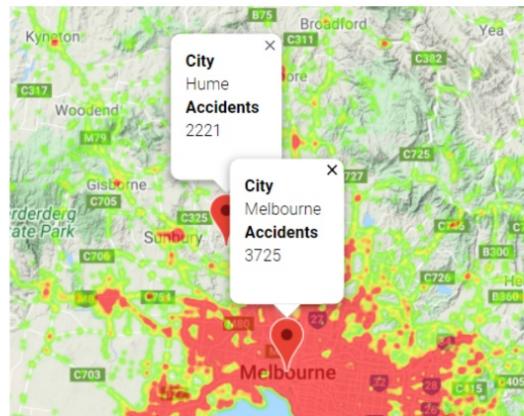
- Created scatter plots and regression lines for daily maximum temperature vs accidents count in both all roads and fast roads
- Did hypothesis tests for both cases

Analysis

1. Locations

2. Timing

Data analysis undertaken using Jupyter Notebook with the input being the cleaned data as CSV file from previous step.



3. Effect of Rainfall

4. Effect of Temperature



Analysis of Victorian Road Accidents

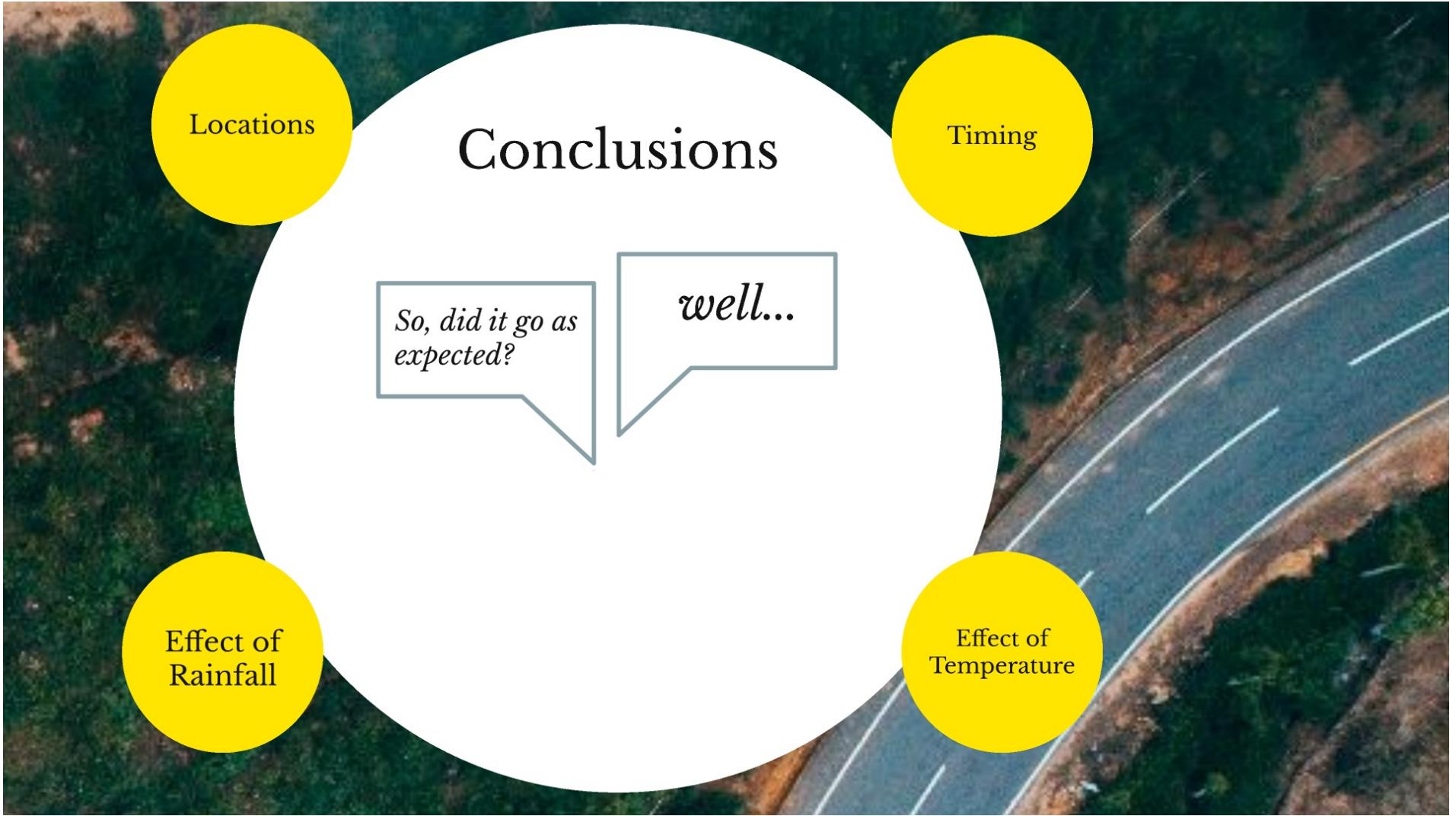
By: Marcus, Tamer, Sanuli & Ivana

Hypotheses

Data Preparation

Analysis

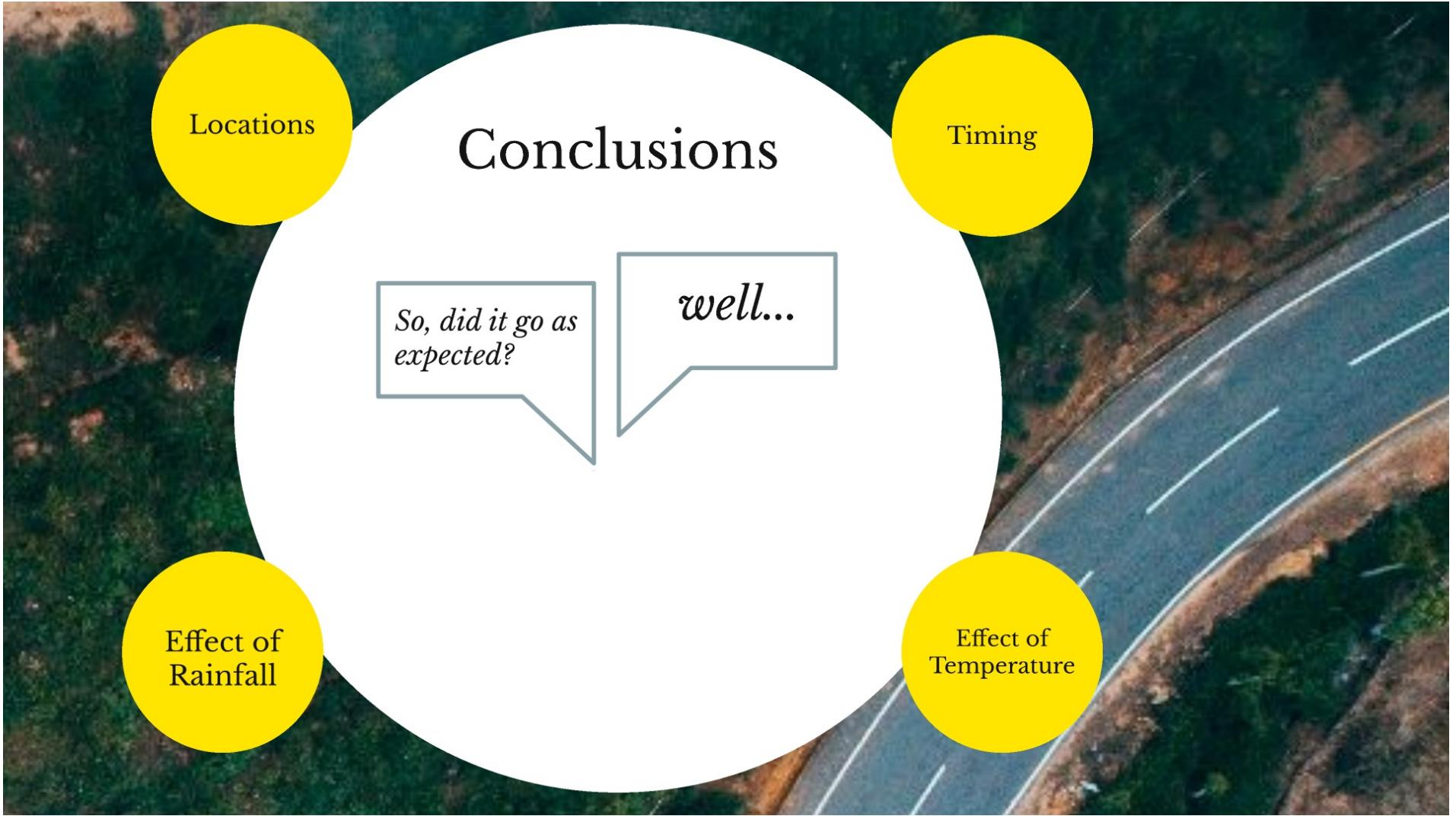
Conclusions





About the places

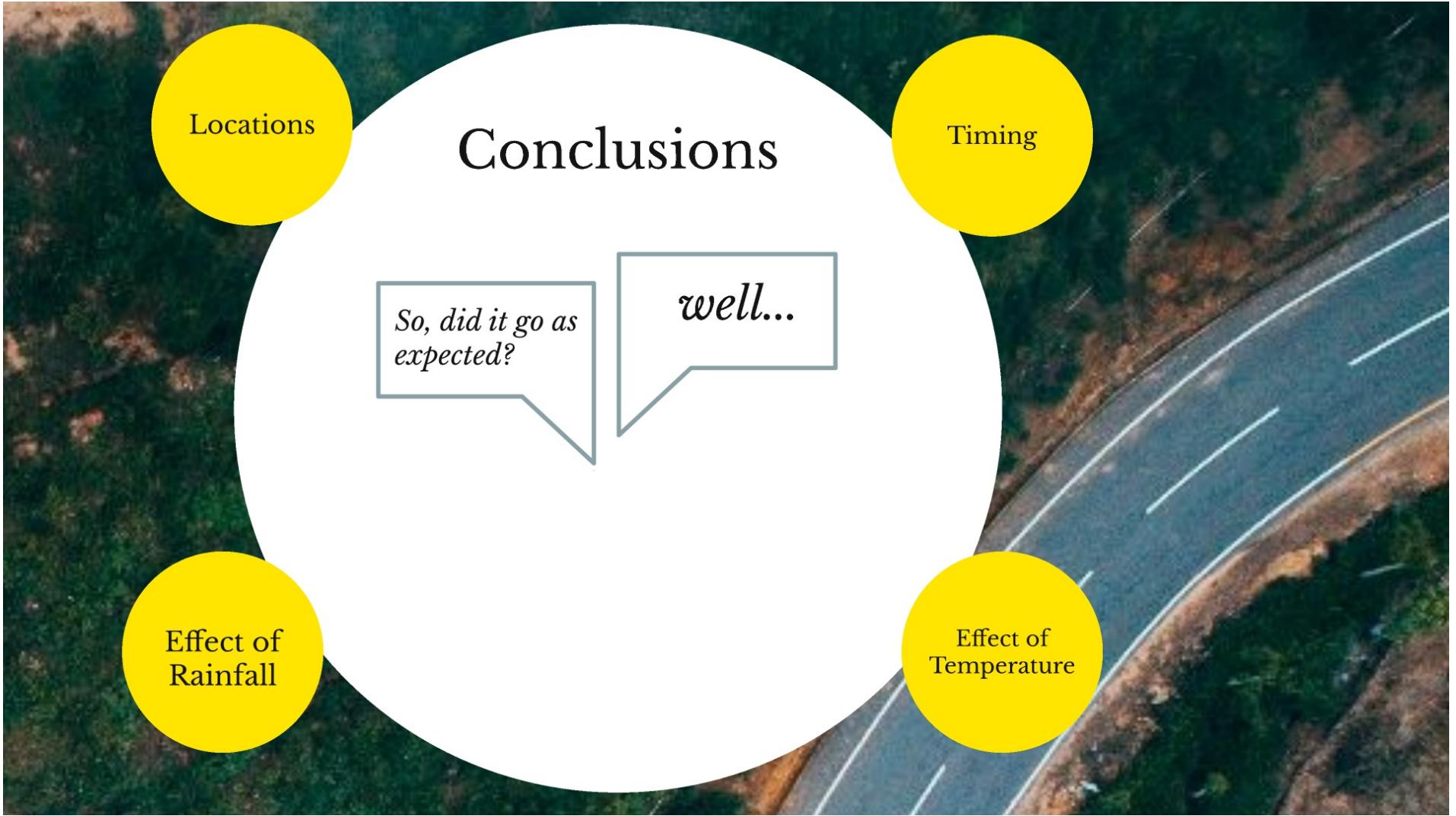
- Did the Melbourne area have a higher accident count?
- Victoria had 71003 total accidents
- Melbourne had 3897 total accidents
- Hume had 2298 accidents
- Metro Victoria had 50308 total accidents (69.3% of all accidents)





About the times

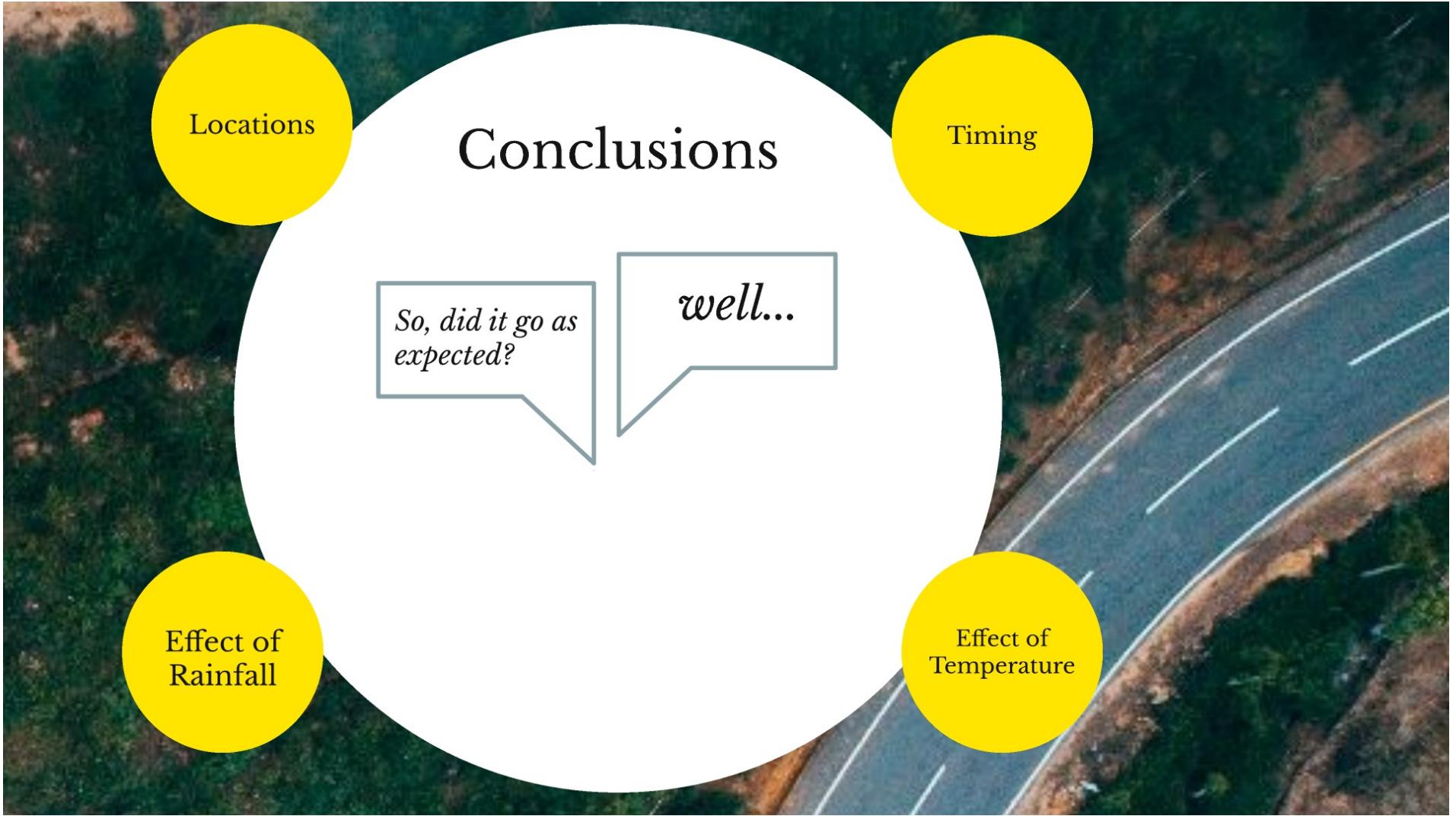
- Were we correct? Not exactly
- Increase in accidents as the week goes on
- Sunday was the day when most accidents happen (highest accident count occurring at 12 pm)
- Curiously Saturday had a significant drop in accidents
- Sunday 12 am accident counts had a 120 increase from the mean 12 am accident count rate (Why?)
- Could people be staying out past 12 am on a Saturday night?

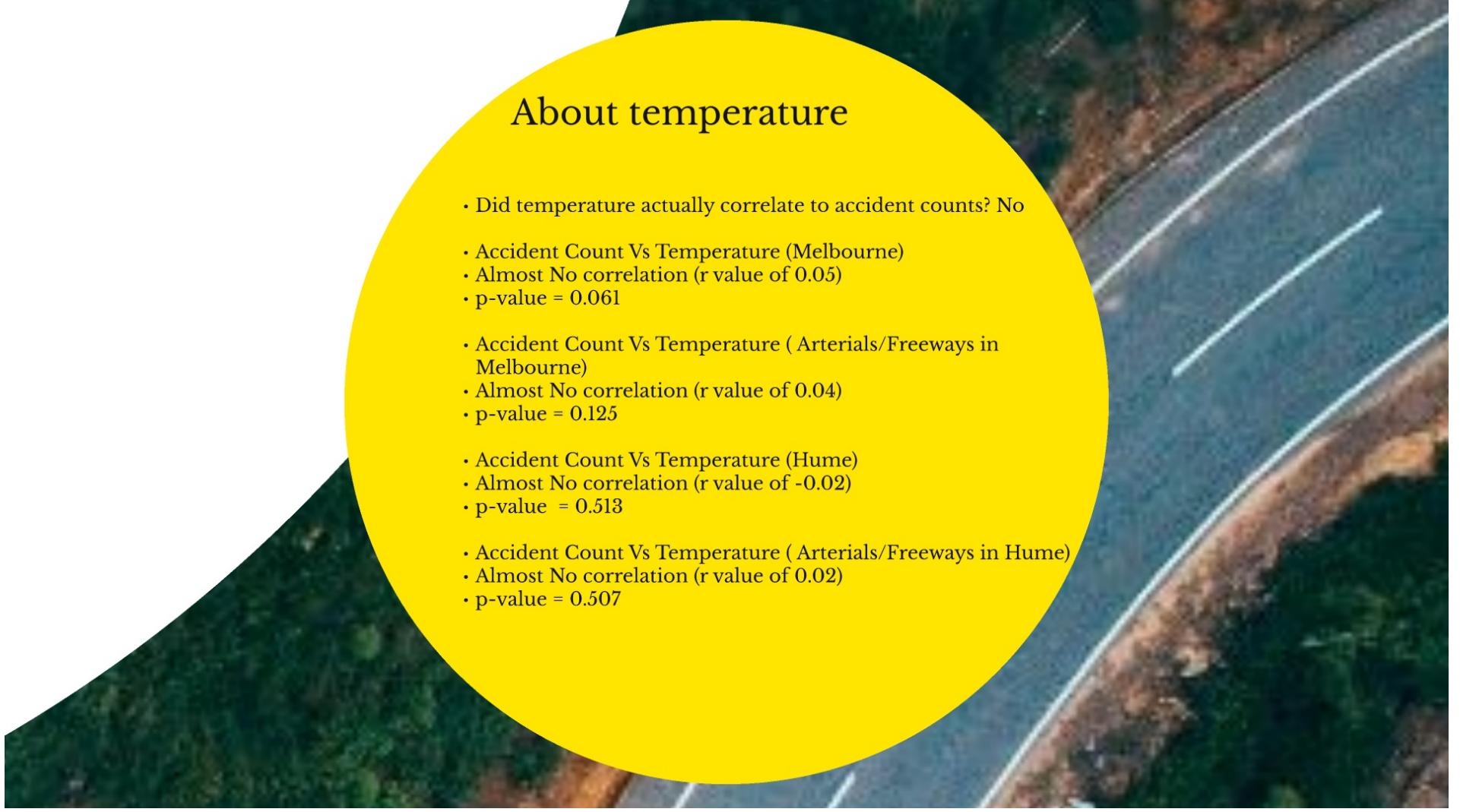




About rainfall

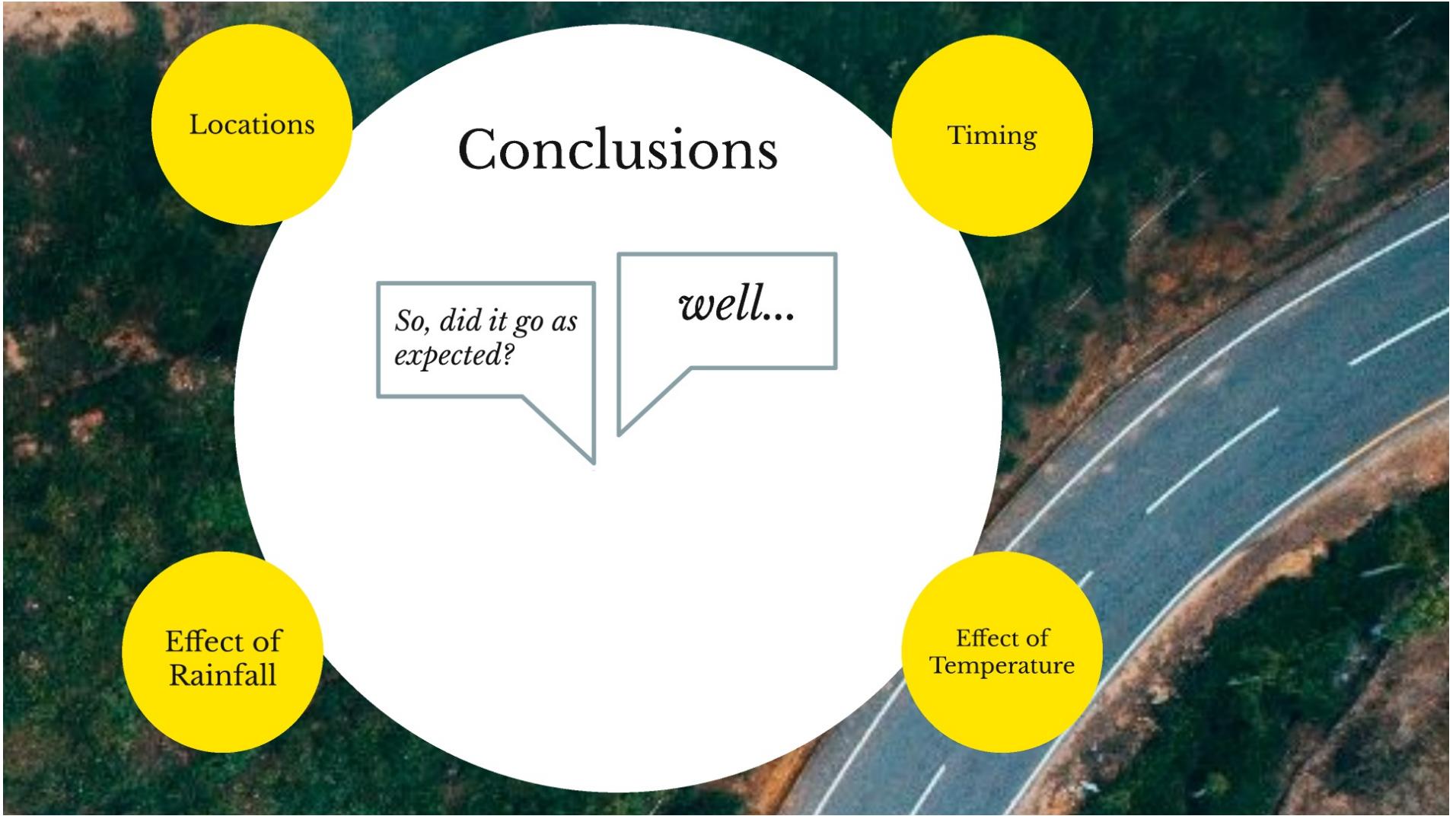
- Did rainfall actually correlate to accident counts? No
- Accident Count Vs Rainfall (Melbourne)
 - Almost No correlation (r value of 0.002)
 - p-value = 0.1
- Accident Count Vs Rainfall (Arterials/Freeways in Melbourne)
 - Almost No correlation (r value of 0.04)
 - p-value = 0.195
- Accident Count Vs Rainfall (Hume)
 - Almost No correlation (r value of 0.03)
 - p-value = 0.263
- Accident Count Vs Rainfall (Arterials/Freeways in Hume)
 - Almost No correlation (r value of 0.05)
 - p-value = 0.157





About temperature

- Did temperature actually correlate to accident counts? No
- Accident Count Vs Temperature (Melbourne)
 - Almost No correlation (r value of 0.05)
 - p -value = 0.061
- Accident Count Vs Temperature (Arterials/Freeways in Melbourne)
 - Almost No correlation (r value of 0.04)
 - p -value = 0.125
- Accident Count Vs Temperature (Hume)
 - Almost No correlation (r value of -0.02)
 - p -value = 0.513
- Accident Count Vs Temperature (Arterials/Freeways in Hume)
 - Almost No correlation (r value of 0.02)
 - p -value = 0.507





Analysis of Victorian Road Accidents

By: Marcus, Tamer, Sanuli & Ivana

Hypotheses

Data Preparation

Analysis

Conclusions