WA CRASH DASHBOARD

VISUALISING WEST AUSTRALIAN ROAD CRASH DATA

PROJECT TEAM

CRASH TEST DUO

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How many road crashes occurred in WA last year?

- ~ 10,000
- ~ 20,000
- ~ 30,000
- 40,000 +

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Road crashes are a leading cause of death and serious injury in WA, impacting thousands of people every year

WA State Government's
Towards Zero Strategy, 2008 - 2020

Road crash fatality rates per 100,000 population

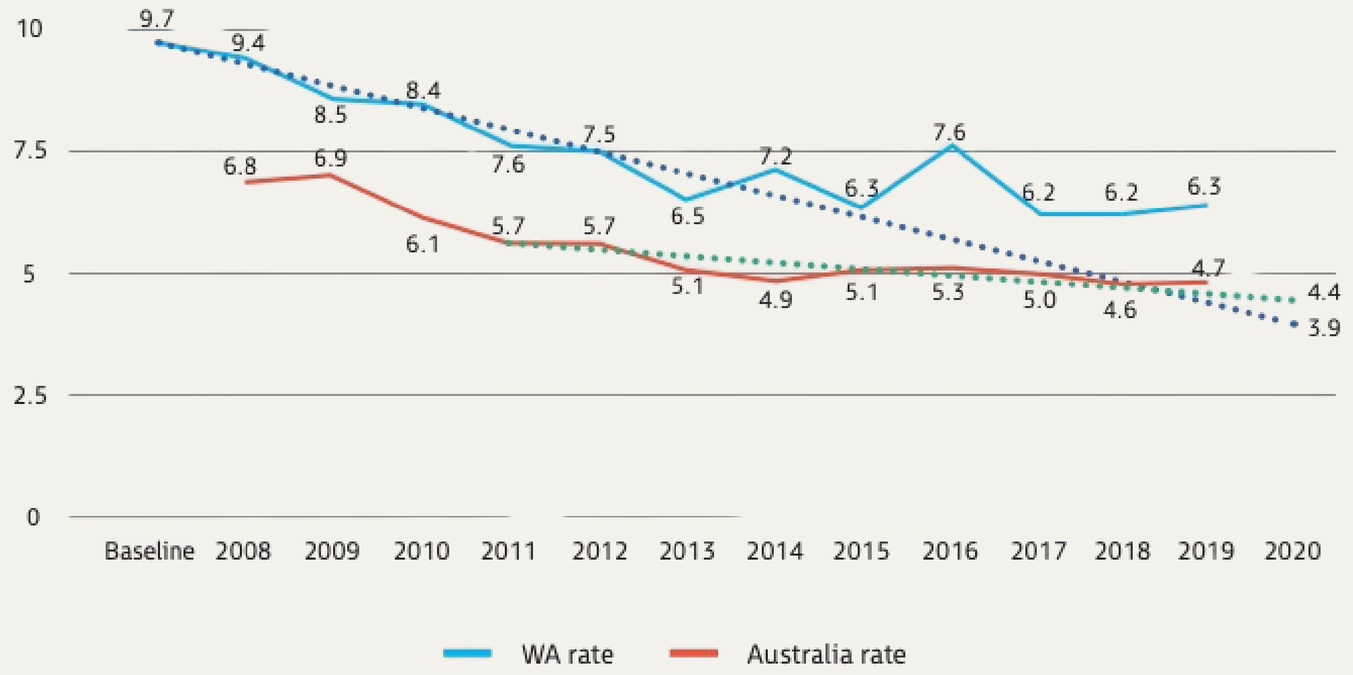


Figure from Road Safety Commission (2019). Preliminary summary of fatalities on Western Australian roads. Available from: https://www.rsc.wa.gov.au/Statistics/Annual-Statistics

UNDERSTANDING ACCIDENTS

Why do levels of road trauma remain high in Western Australia?

What opportunities are present for improving road safety strategies?

RESEARCH QUESTIONS

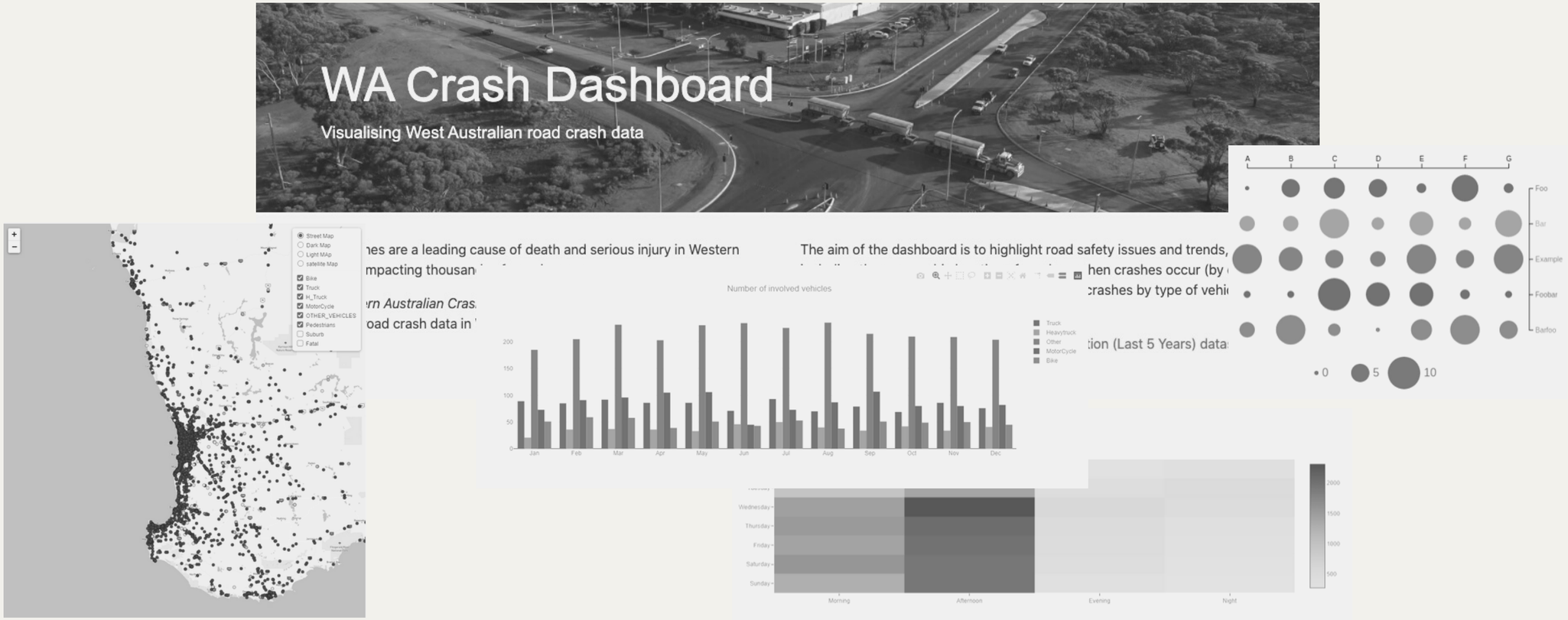
Where do road crashes occur?

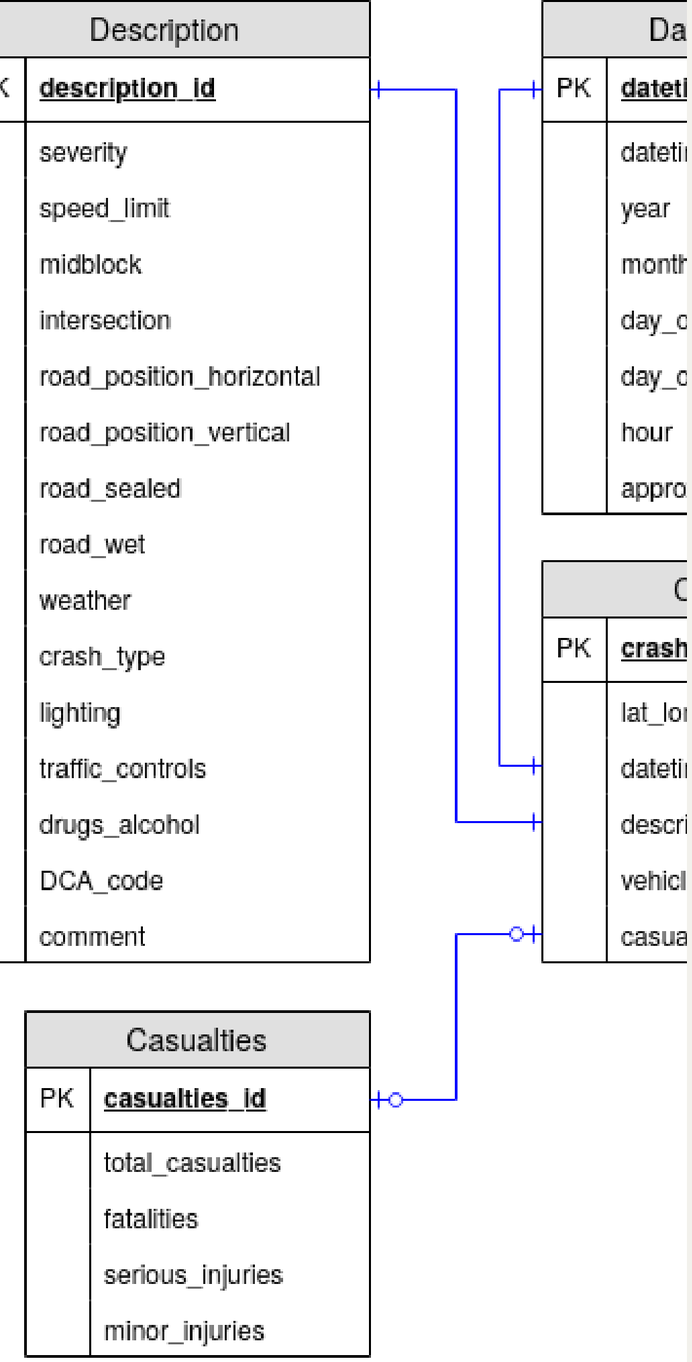
When do road crashes occur?

How do road crashes occur?

DESIGNING THE DASHBOARD

- Visually emphasise trends and patterns in one glance
- Single page design for easy viewing





ETL & DATA EXPLORATION: STAGE 1

Sourcing data

- Original dataset with comprehensive documentation but missing data (for WA only!)
- Main Roads WA dataset was locally relevent but missing adequate documentation and detail
  - Lat & long
  - Time and date
  - Severity and nature
  - Vehicles involved
  - Fatalities

```
# Add day of the week column
def findDay(date):
    day, month, year = (int(i) for
    dayWeek = datetime.date(year,
    return dayWeek.strftime("%A")

# date = '07/10/2020'
# print(findDay(date))

cleaned_crash_df1['CRASH_DAYWEEK']
```

```
# Add time of day column
def findTimeDay(hour):
    if hour >= 0 and hour <= 5:
        return("Night")
    elif hour >= 6 and hour < 12:
        return("Morning")
    elif hour >= 12 and hour < 18:
        return("Afternoon")
    elif hour >= 18 and hour < 21:
        return("Evening")
    else:
        return("Night")

# hour = 11
# print(findTimeDay(hour))

cleaned_crash_df1['CRASH_TIMEDAY']
```

ETL & DATA EXPLORATION: STAGE 1

Cleaning data

- Dealing with time in Python (no datetime formatted data)
- Calculating day of week and time of day

Table name: CrashData

	Name	Data typ
1	ID	INTEGEI
2	ACC_ID	VARCHA
3	ROAD_NO	VARCHA
4	COMMON_ROAD_NAME	VARCHA
5	CWAY	VARCHA
6	LONGITUDE	VARCHA
7	LATITUDE	VARCHA
8	CRASH_DATE	DATE
9	CRASH_TIME	VARCHA
10	ACCIDENT_TYPE	VARCHA
11	SEVERITY	VARCHA
12	EVENT_NATURE	VARCHA
13	EVENT_TYPE	VARCHA
14	TOTAL_BIKE_INVOLVED	INTEGEI
15	TOTAL_TRUCK_INVOLVED	INTEGEI
16	TOTAL_HEAVY_TRUCK_INVOLVED	INTEGEI
17	TOTAL_MOTOR_CYCLE_INVOLVED	INTEGEI
18	TOTAL_OTHER_VEHICLES_INVOLVED	INTEGEI
19	TOTAL_PEDESTRIANS_INVOLVED	INTEGEI
20	CRASH_TIME_HRS	INTEGEI
21	CRASH_TIME_MIN	INTEGEI
22	YEAR	INTEGEI

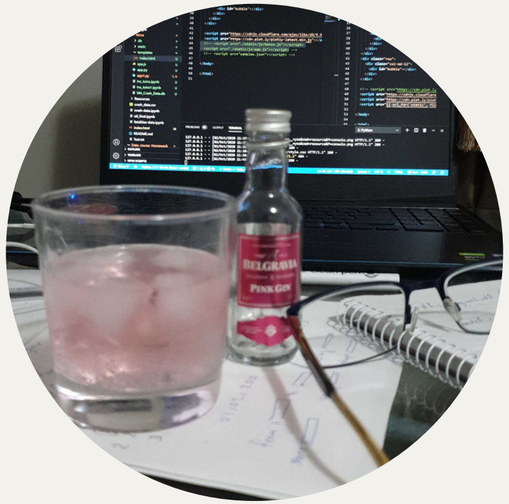
ETL & DATA EXPLORATION: STAGE 2

Database creation

- Using SQLite Studio (faster than PostgreSQL!)

Serving up a FLASK API

- Filtering large dataset by year (~150k rows)
- Challenging task to render index.html



Dashboard demo

LESSONS LEARNT

- Incorporating technologies from Week 1 to Week 18, from Excel to Leaflet and everything between
- Learning more advanced Flask skills
- Challenges manipulating large datasets with JavaScript (not Pandas!)

WHAT DO WE KNOW NOW?

Where

Concentration of road crashes in the city centre

When

Greater number of mid-week crashes; less during public holidays

How

High fatalities through object collisions

IF WE HAD TWO MORE WEEKS...

- Responsive map (instead of iframe)
- Add local government area boundaries (GeoJSON file)
- Greater level of interactivity
- More cohesive visual design
- Provide context through traffic data i.e. number of cars on the road

Questions?