PHILIPPINE ROAD CRASHES: A QUANTITATIVE ANALYSIS

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of the **UP Data Science Society**.

OUR TEAM

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INTRODUCTION

The **DRIVERS (Data for Road Incident Visualization, Evaluation, and Reporting System)** platform is a government initiative that consolidates nationwide road crash data reported by local government units and law enforcement agencies.

In this presentation, **we uncover patterns and insights from 2017–2021 DRIVERS data** to support data-based interventions and promote safer, more sustainable mobility systems.

ROADMAP

01

THE DATA

02

DATA ANALYSIS

03

CONCLUSIONS

01

THE DATA

Let’s discuss the nature of the data used.

DATA USED

1. Crash data is separated into **five Excel files** corresponding to their year: 2017, 2018, 2019, 2020, and 2021.
2. Each Excel file contains six sheets namely: **record, person, vehicle, photos, notes,** and **crashDiagram**.
    a. ***record:*** time, location, and weather
    b. ***person:*** age, gender, injury, and involvement
    c. ***vehicle:*** vehicle classification, vehicle type
    d. ***photos:*** No data here is used for this analysis
    e. ***notes:*** notes
    f. ***crashDiagram:*** No data here is used for this analysis

SIDENOTE

The dataset contained spatial information in the form of latitude and longitude coordinates, this implies that the town, city, region from where the crash occurred can be inferred.

Only **0.26% of the entire crash report dataset was discarded** due to having bad coordinates, which was either located on water terrain or outside the political boundaries of the country.

02

DATA ANALYSIS

Here’s what we got from the dataset.

29,094

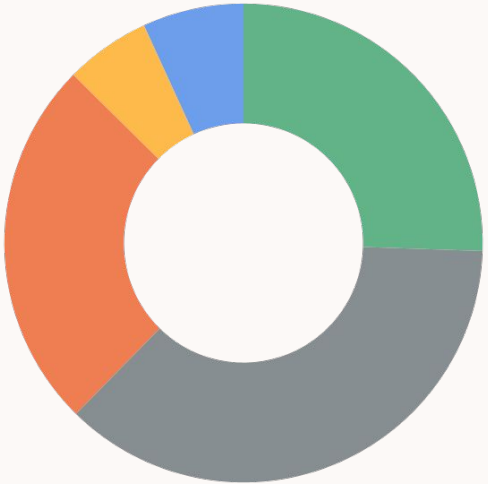
total accidents reported on DRIVERS from 2017-2021

TOTAL ACCIDENTS BY YEAR

2021
1992 accidents

2020
1679 accidents

2019
7295 accidents



2017
7405 accidents

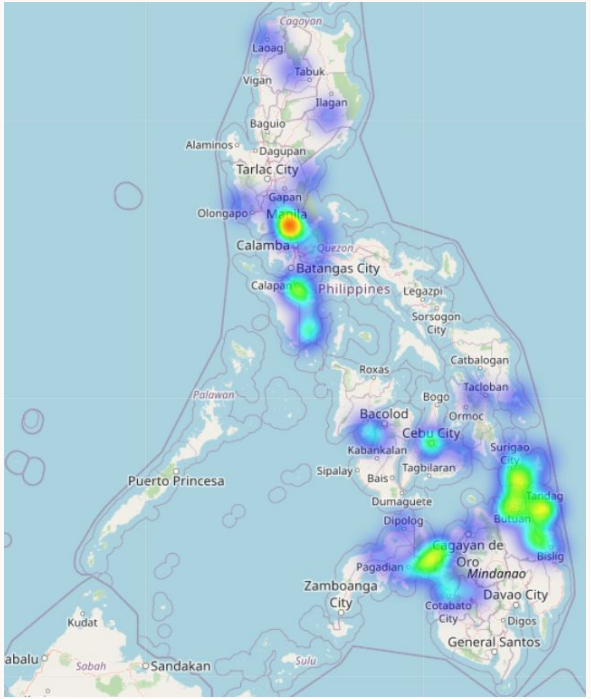
2018
10723 accidents

Accidents dropped sharply in 2020 and 2021 — most likely due to the pandemic restricting vehicular mobility.

A BIRD'S EYE VIEW OF CRASHES IN THE PHILIPPINES

Province	COUNT	%
Metro Manila		
Cebu		
Mindoro Oriental		
Rizal		
Lanao Del Norte		

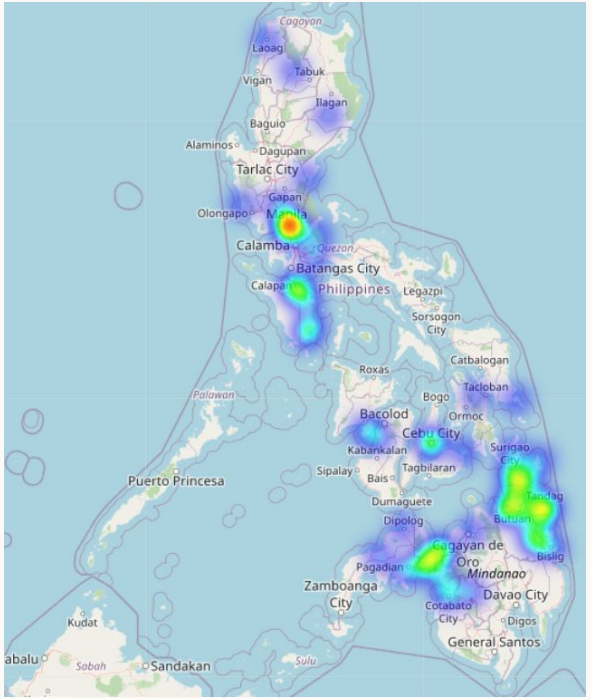
*included Metro Manila for scale



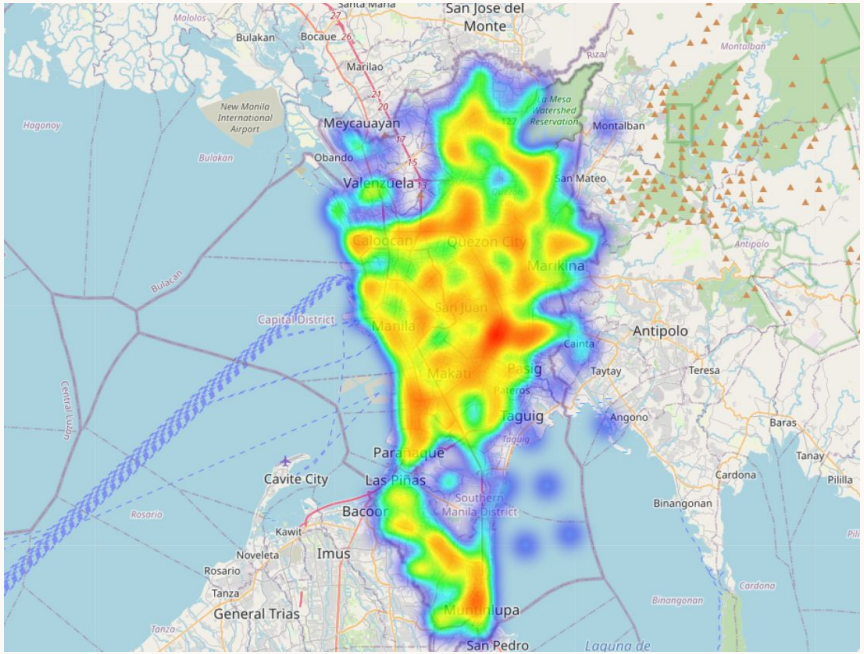
A BIRD'S EYE VIEW OF CRASHES IN THE PHILIPPINES

Province	COUNT	%
Metro Manila	27,626	92.38%
Cebu	919	3.07%
Mindoro Oriental	219	0.73%
Rizal	121	0.004%
Lanao Del Norte	92	0.0007%

*included Metro Manila for scale



A BIRD'S EYE VIEW OF CRASHES IN THE PHILIPPINES



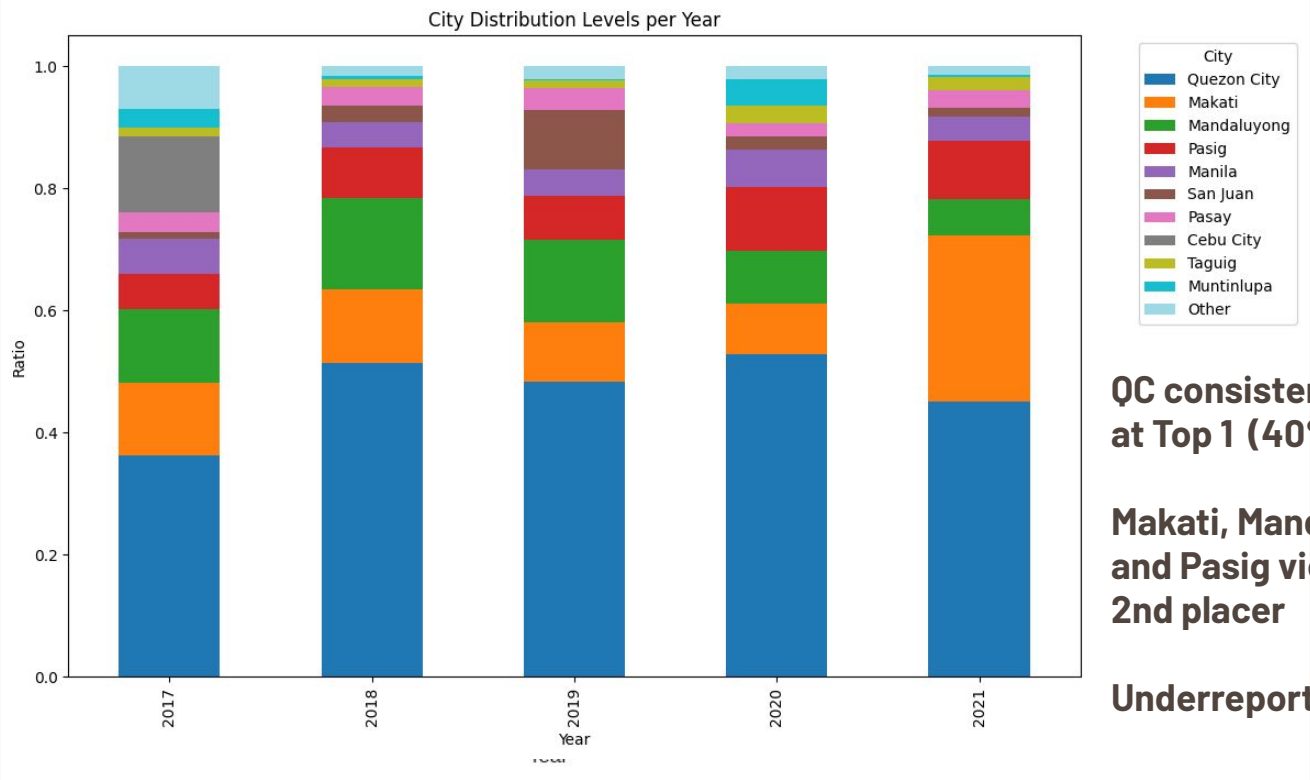
QUEZON CITY

is the city with the most number of accidents

CLOUDY DAY

is the weather with the most frequent accidents

CITY/PROVINCE DISTRIBUTION

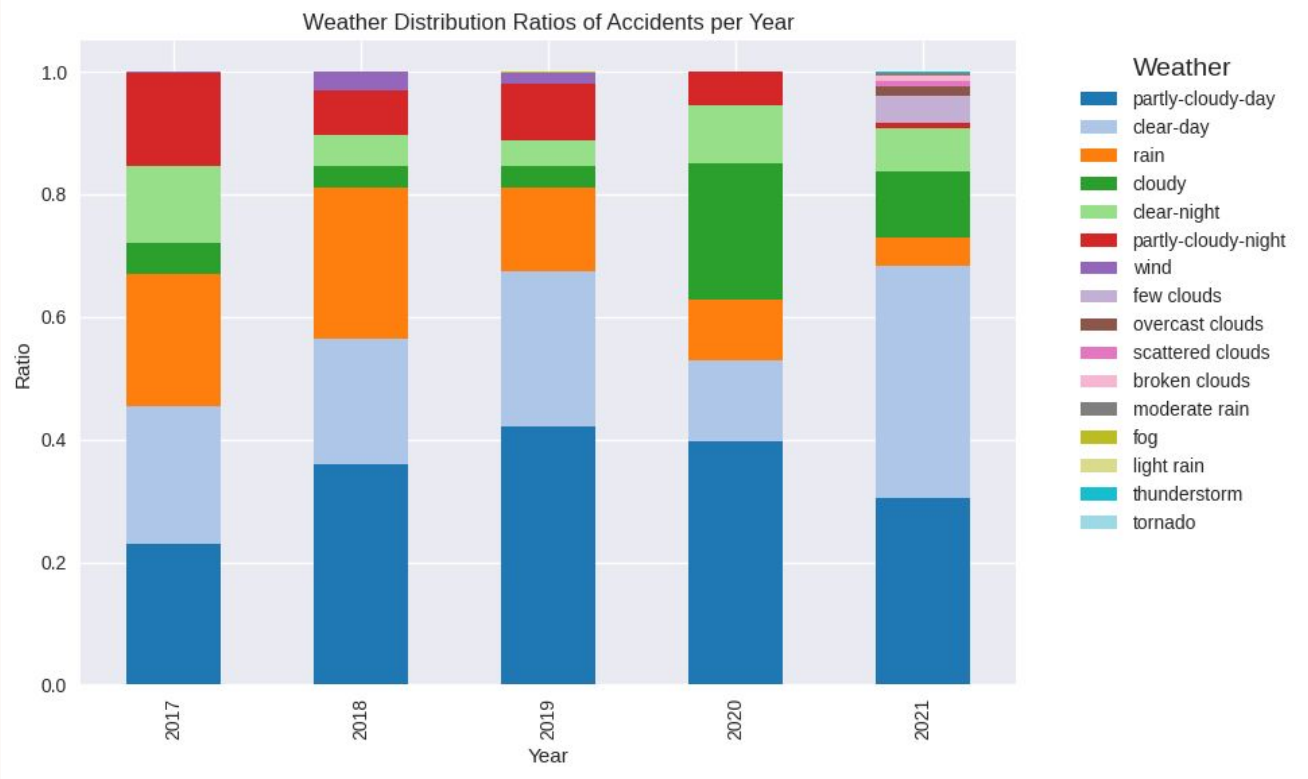


QC consistently remains at Top 1 (40%)

Makati, Mandaluyong, and Pasig vies for the 2nd placer

Underreporting?

WEATHER DISTRIBUTION



DRIVER DEMOGRAPHICS ACROSS ALL YEARS

36-45 Y.O.

MALE

VEHICLE DETAILS ACROSS ALL YEARS

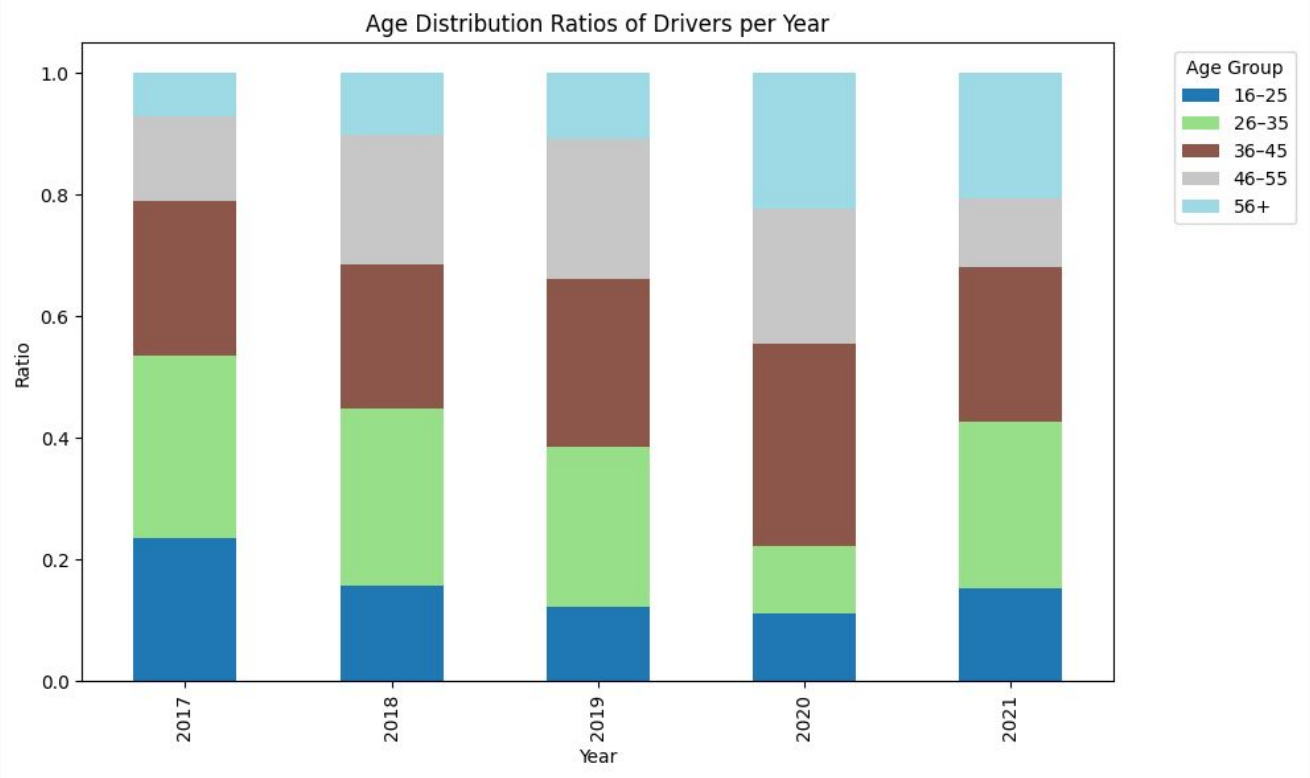
57%

of car crashes involved are **private vehicles**

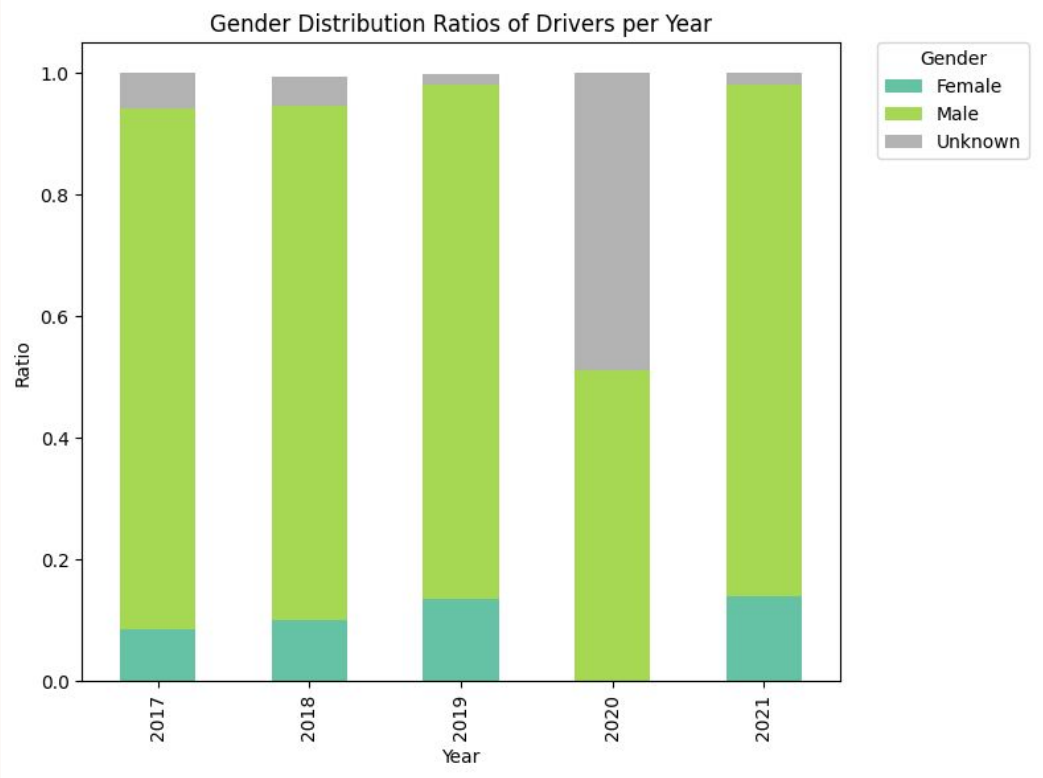
CARS and **MOTORCYCLES**

are the **top two vehicle types involved in vehicle crashes**

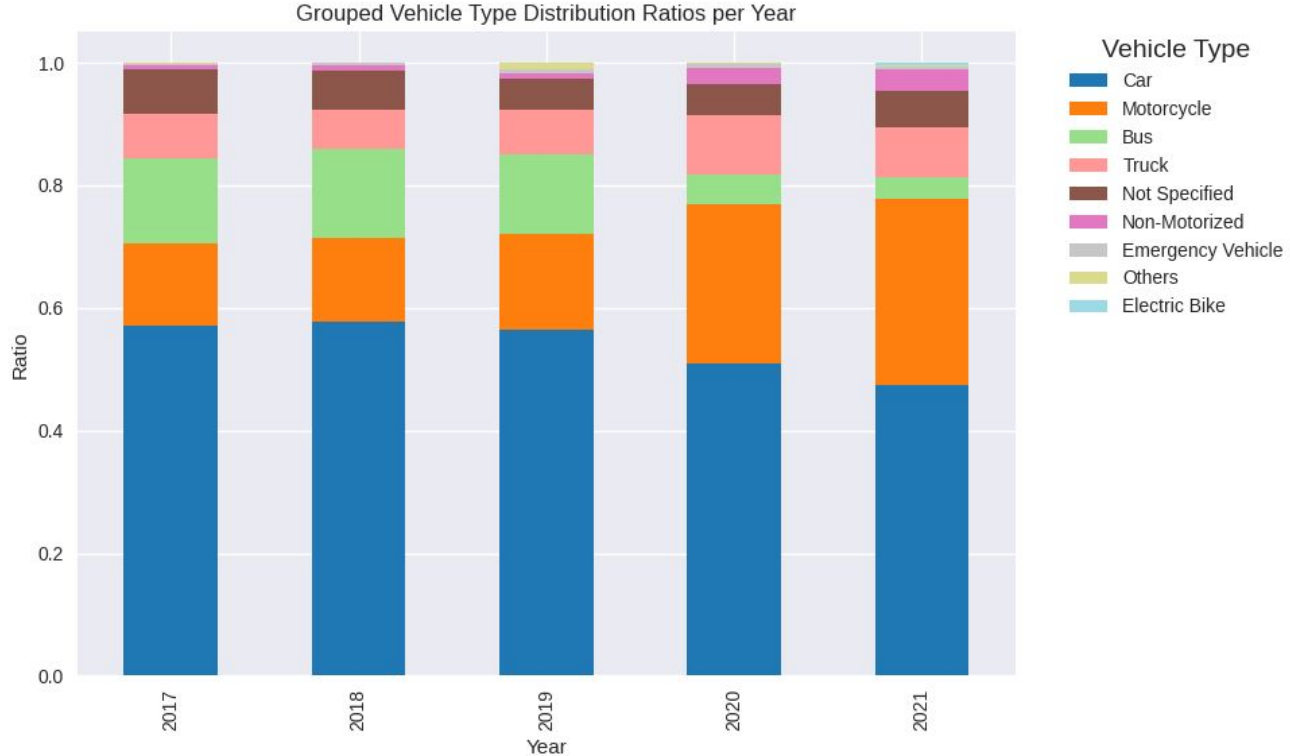
AGE DISTRIBUTION



GENDER DISTRIBUTION



VEHICLE DISTRIBUTION



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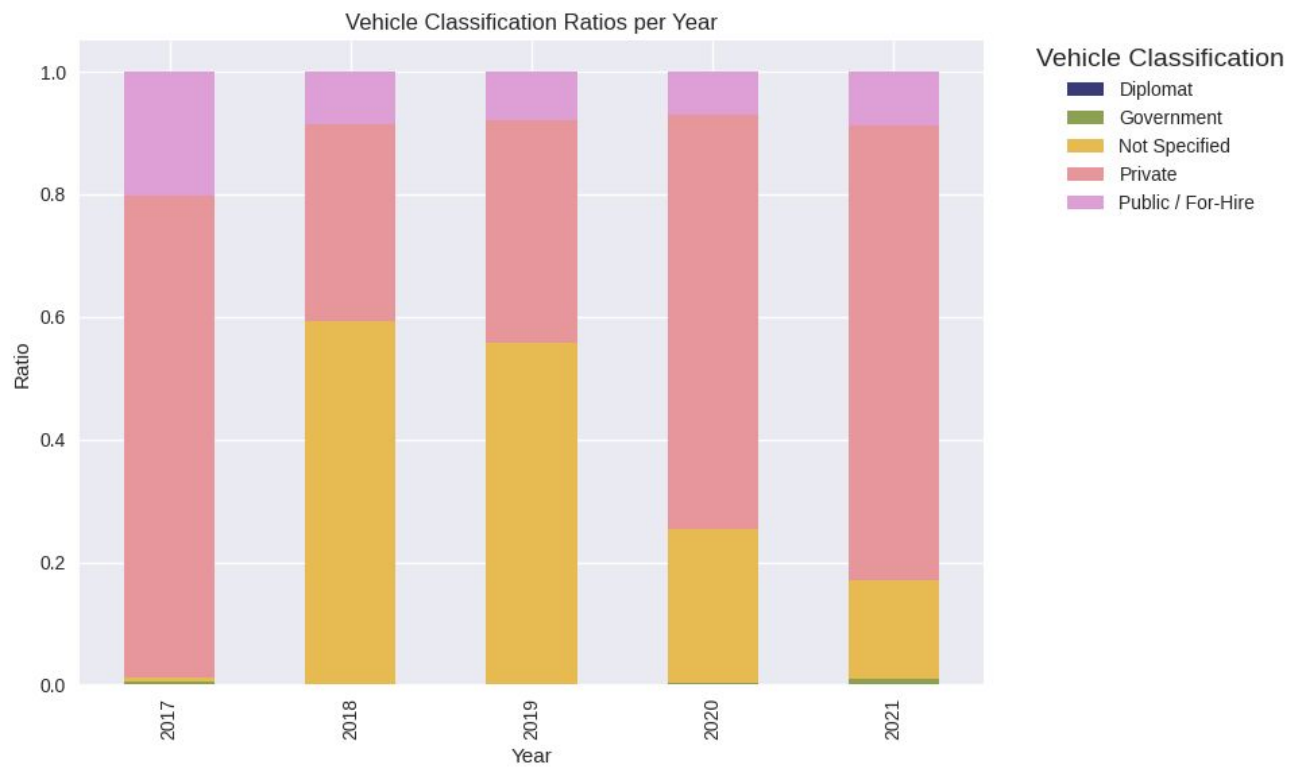

TOP 5 ROADS WITH THE MOST ACCIDENTS

ROAD NAME	COUNT
EDSA (Epifanio De Los Santos Avenue)	10,097
Commonwealth Avenue (PhilCOA)	2,049
Katipunan Avenue	1,401
E. Rodriguez Jr. Avenue (QC C5)	1,339
Ortigas Avenue	1,049

EDSA garners the highest number of accidents from the year 2017-2021 at 10,097 incidences (34.7%)

This also means that you are **5-10x MORE LIKELY** to crash in EDSA than on any of the other four roads shown in the table.

***Based on DRIVER data for every national road in the country, 2017 – 2021**

SOME QUICK NUMBERS

73%

of accidents
happened in
broad daylight

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73%

of accidents happened in **broad daylight**

70%

of crashes were due to **inattentiveness**

SOME QUICK NUMBERS

73%

of accidents happened in **broad daylight**

70%

of crashes were due to **inattentiveness**

54

reports of **DUI** (Driving Under Influence)

BIGGEST CAVEAT

BIGGEST CAVEAT

97%

of vehicle crashes
were reported as
HUMAN ERROR

03 CONCLUSIONS

What can we learn from our data analysis and data visualization?

INSIGHTS FROM THE ANALYSIS

LOCATION

- Reported DRIVERS accidents most commonly occur in **Quezon City** and **Mandaluyong City**.
- In particular, **EDSA** is the most populous road for reported accidents

DRIVER DEMOGRAPHICS

- Reported DRIVERS accidents are most commonly occur to **males around 36-45 years old** for all years
- The next most common age group of drivers is **26-35 years old**

WEATHER AND VISIBILITY

- Rainy or foggy conditions are present for only around 20% of total cases, suggesting that **weather is not a major factor**.
- 73% of accidents happened in daytime, **visibility also is not a major factor in causing accidents around the country**

***Based on DRIVER data for every national road in the country, 2017 – 2021**

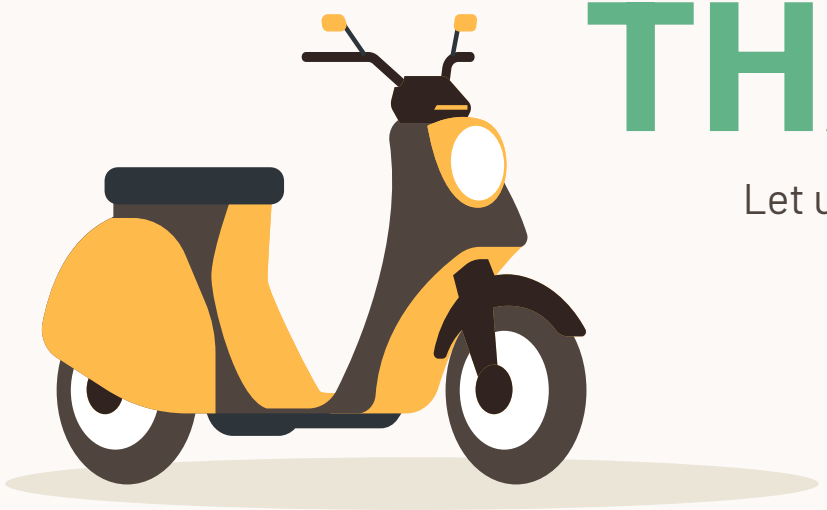
INSIGHTS FROM THE ANALYSIS

- 97% of vehicle crashes were reported to be caused by **HUMAN ERROR**, this implies that most of the scenarios involving road accidents are **PREVENTABLE**

- 73% of these **reported human error cases** are due to **inattentiveness**, this also implies that vehicles are either too close to each other or miscommunication occurred, both of which are also avoidable

ACTION PLANS / RECOMMENDATIONS

- **Deploy tow trucks** to the road area most affected by car crashes to immediately **alleviate traffic** (**EDSA, PhilCOA, Katipunan, C5**, etc.)
- **Conduct an analysis** for 2022-2024 datasets and verify whether it is close to the 97% human error rate
- **Increase** the **granularity** between persons in the sheets and **distinguish** who were the **victim versus the offending parties**
- Conduct road safety and communication **seminars** and require **safety checks** on **essential vehicle parts** such as the **brakes**, **wheels** and **engine**



THANK YOU

Let us know if you have any questions!

Link to PDF: