



Under the Influence: The Bermudian perspective

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Approximately 1.3 million people die each year as a result of RTCs

Between 20 and 50 million more people suffer non-fatal injuries

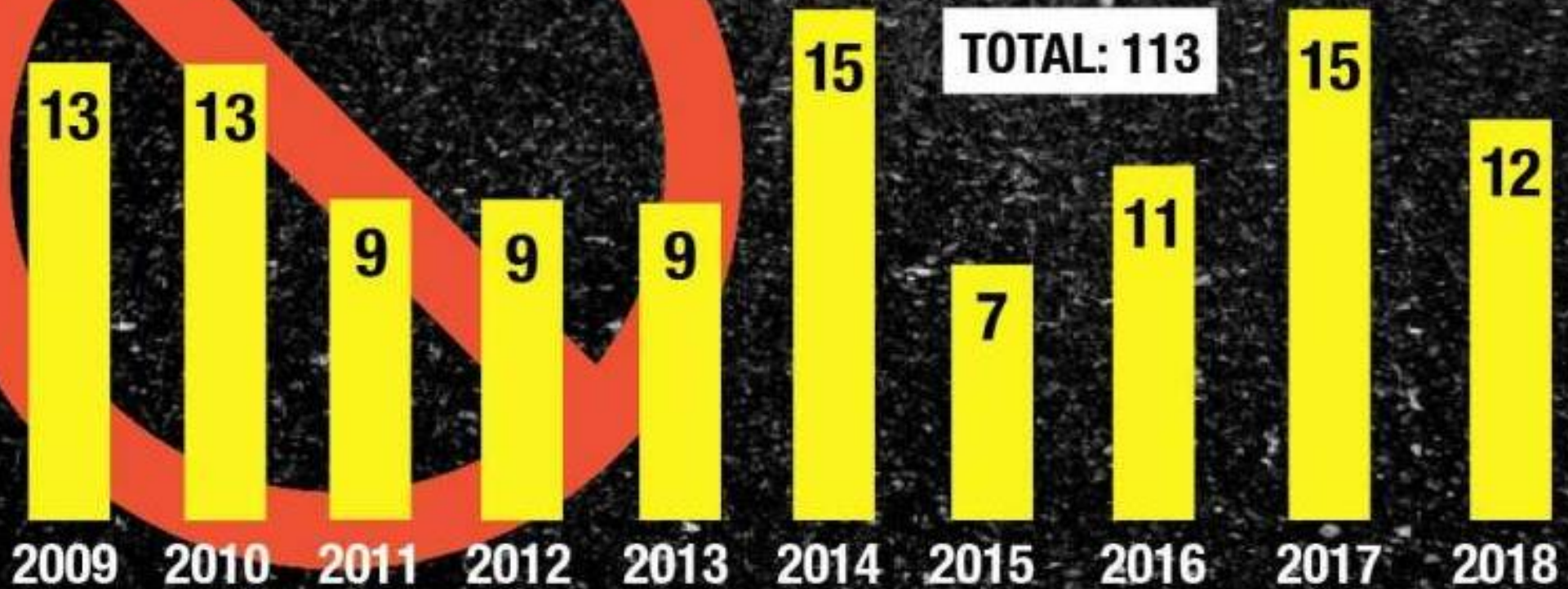
- with many incurring a disability

RTCs are the leading cause of death between the ages of 5 and 29 yrs



**World Health
Organization**

NUMBER OF ROAD DEATHS PER YEAR

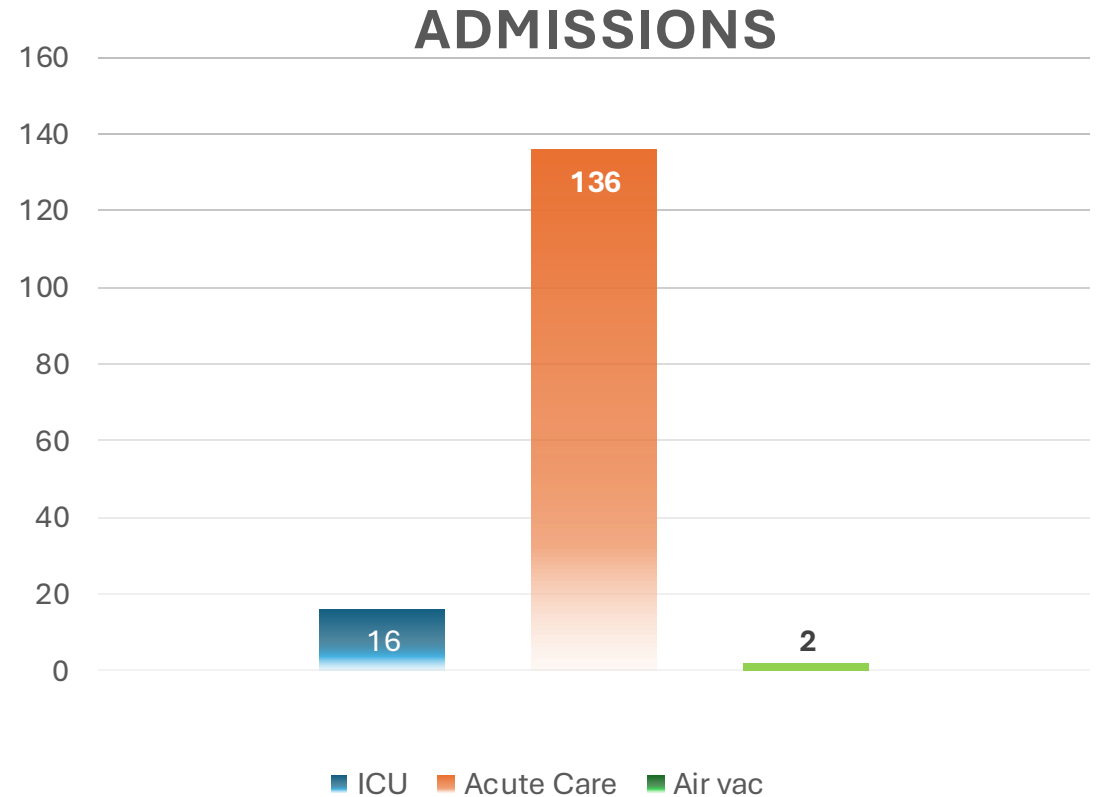


Bermuda

Bermuda Police Service

Bermuda

- In 2020:
 - Total of 1173 RTCs seen in the ER at KEMH & UCC
 - Accounted for 4.5% of the cases seen





Risk factors



NO HELMET

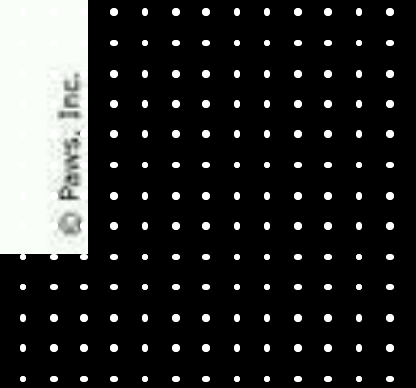
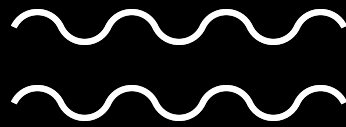


- Drink-driving
 - Risk factor for 27% of all RTC



**World Health
Organization**

How many
persons drive
/ ride while
impaired in
Bermuda?

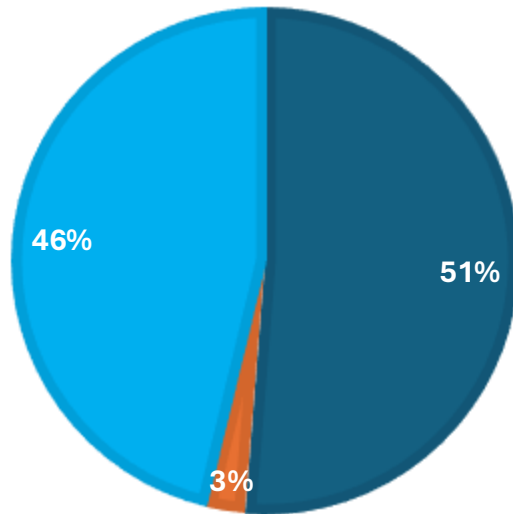


How many persons drive / ride while drunk in bermuda?

2021

80 BREATHALYZERS

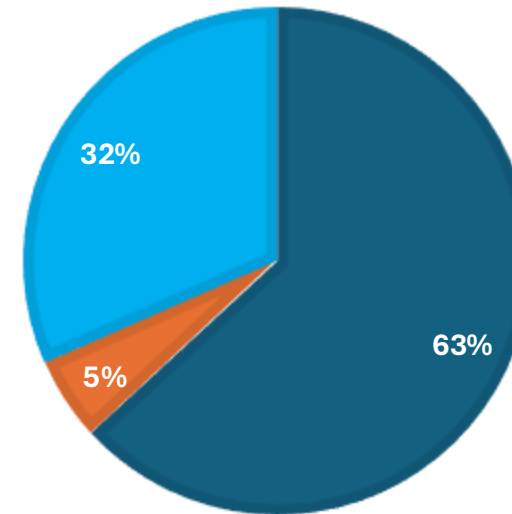
■ Failed ■ Passed ■ Refused



2022

114 BREATHALYZERS

■ Failed ■ Passed ■ Refused



What about under the influence of psychoactive drugs?



February 1, 2022

GOVERNMENT OF BERMUDA



DEPARTMENT FOR NATIONAL
DRUG CONTROL

- **Mandate:**

- Collect data to monitor and evaluate the drug situation in Bermuda
- Draft recommendations for legislative reform pertaining to alcohol, tobacco and drug control

February 1, 2022

GOVERNMENT OF BERMUDA



DEPARTMENT FOR NATIONAL
DRUG CONTROL



**Past chairman of the
board at BHB**



Head of ED, KEMH





Under the Influence: The Bermudian
perspective



Study

- **Objectives:**
 - **Demographics**
 - **Utilization of alcohol and/or psychoactive drugs**
 - **Outcome**

Study

Ethics approval

Anonymized,
prospective,
descriptive

May 1, 2023 –
April 30, 2024

Study

Inclusion

- Drivers / riders / pedestrians
- Age \geq 15 yrs
- ESI 1 , 2 and 3
- Incident occurred < 12 hours prior

Exclusion

- Deceased



Methods

- Eligible candidates were identified and enrolled by ED clinicians
- Demographic info collected on a data collection sheet
- Blood alcohol level was ordered
 - On site laboratory
- Urine drug screen
 - Bedside qualitative test

Urine Drug Screen

- THC
- Cocaine
- Methamphetamines
- Benzodiazepines
- Opiates



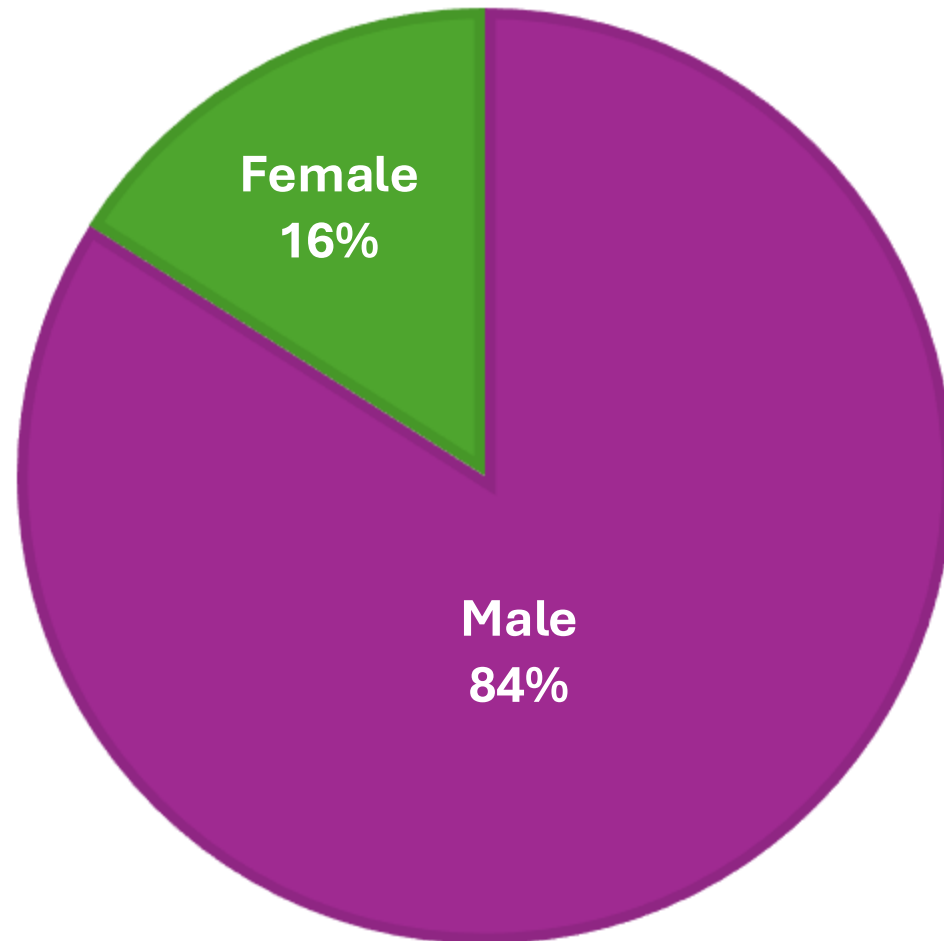


Results

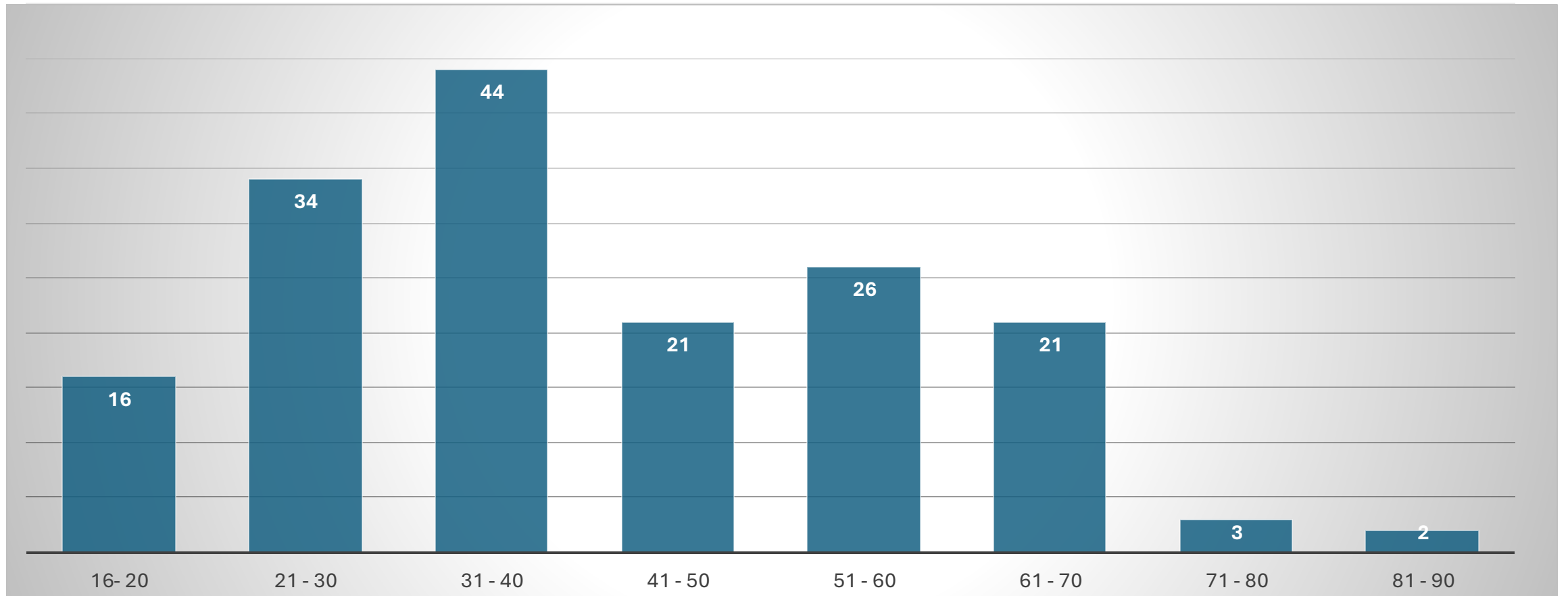


167 patients were enrolled

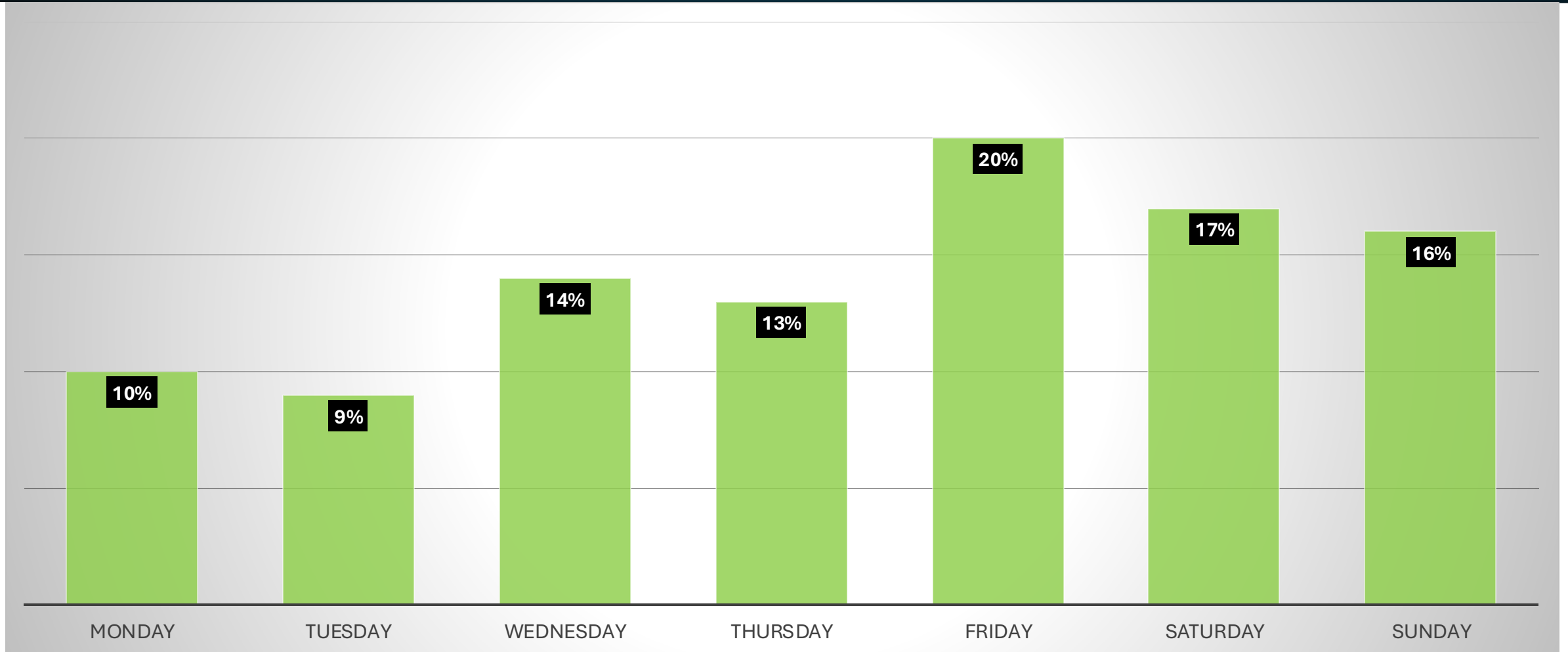
Gender



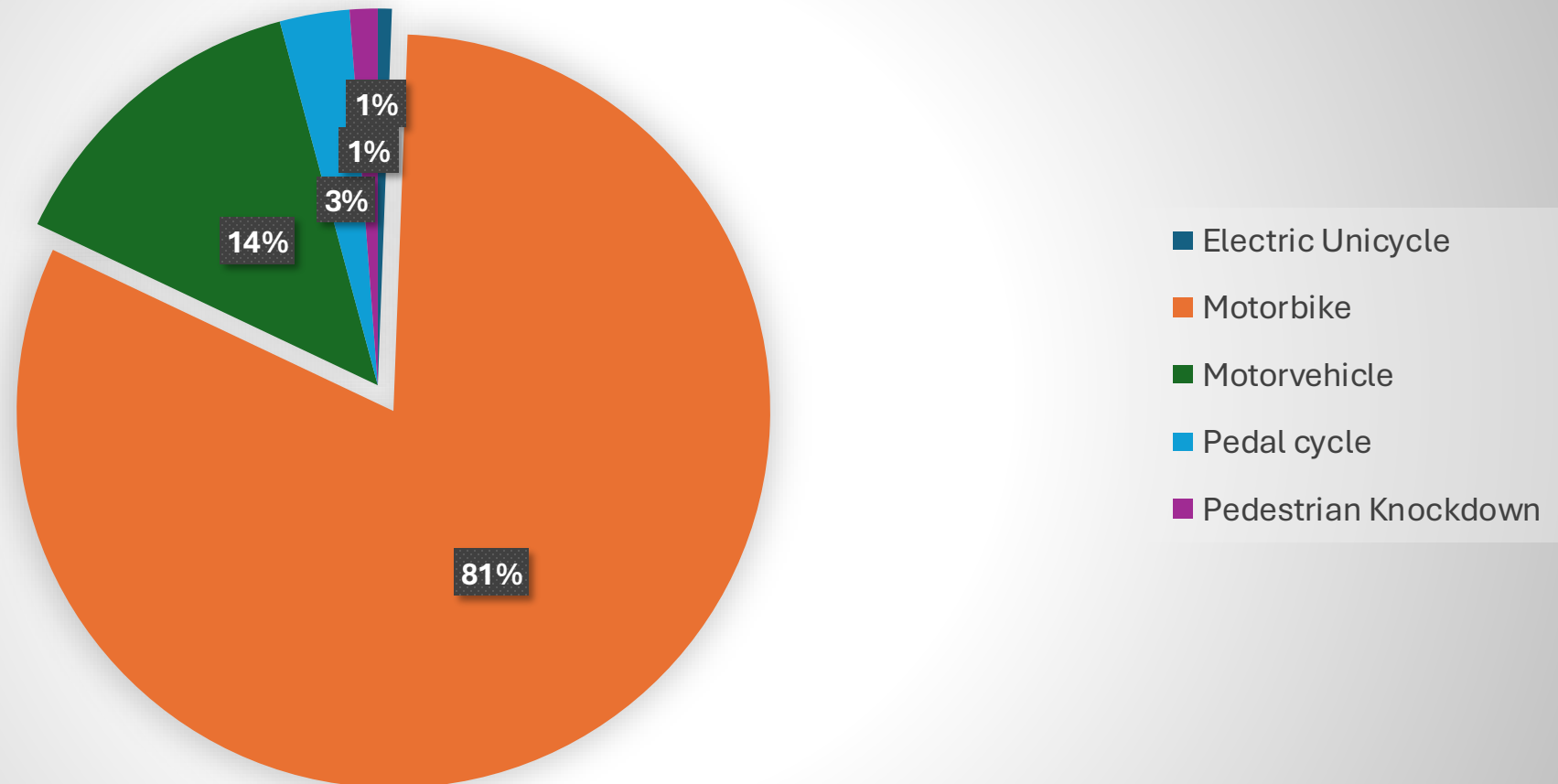
Age



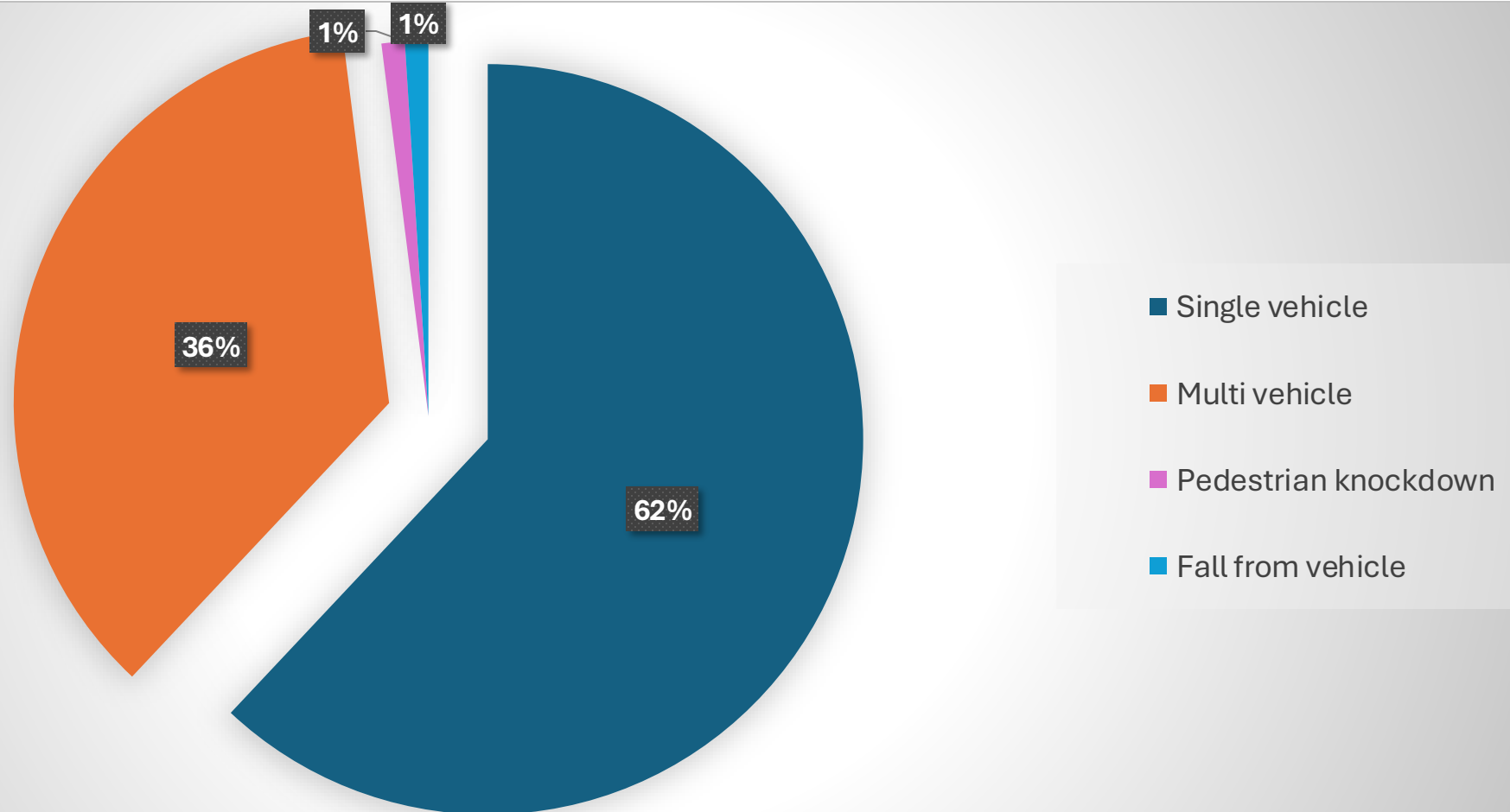
Days of the Week



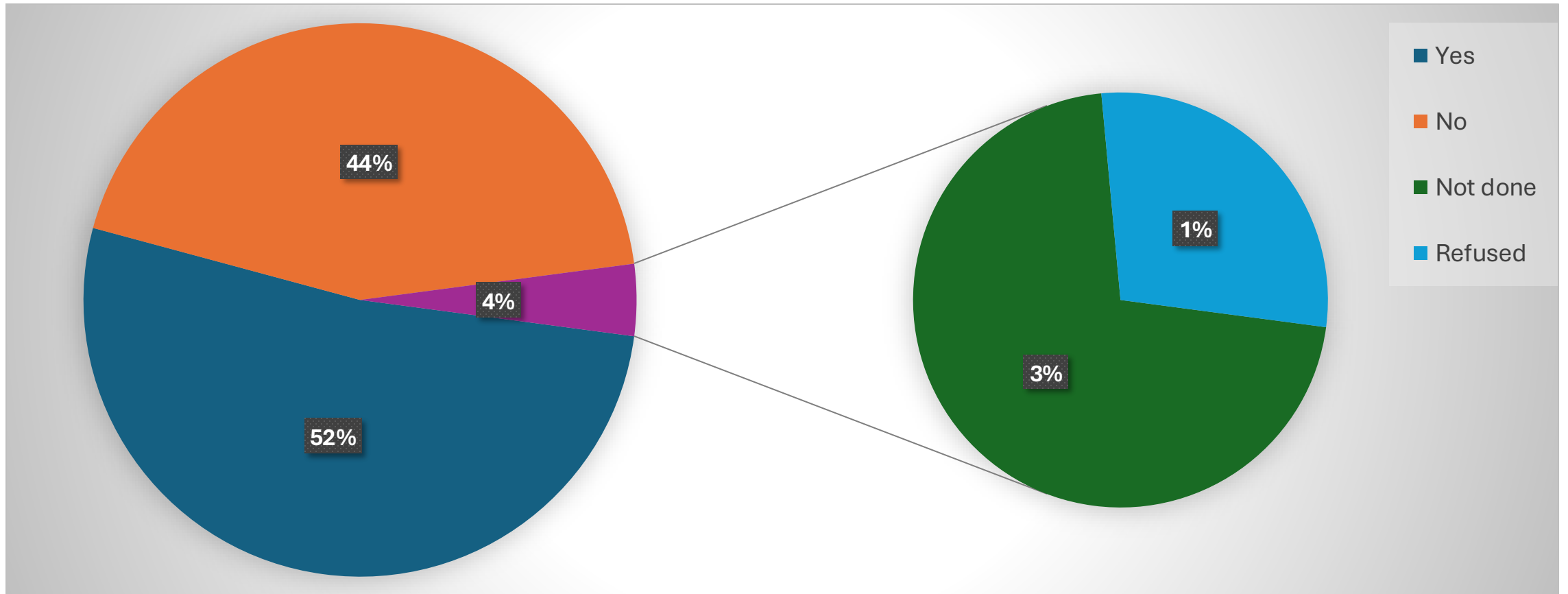
Type of RTC



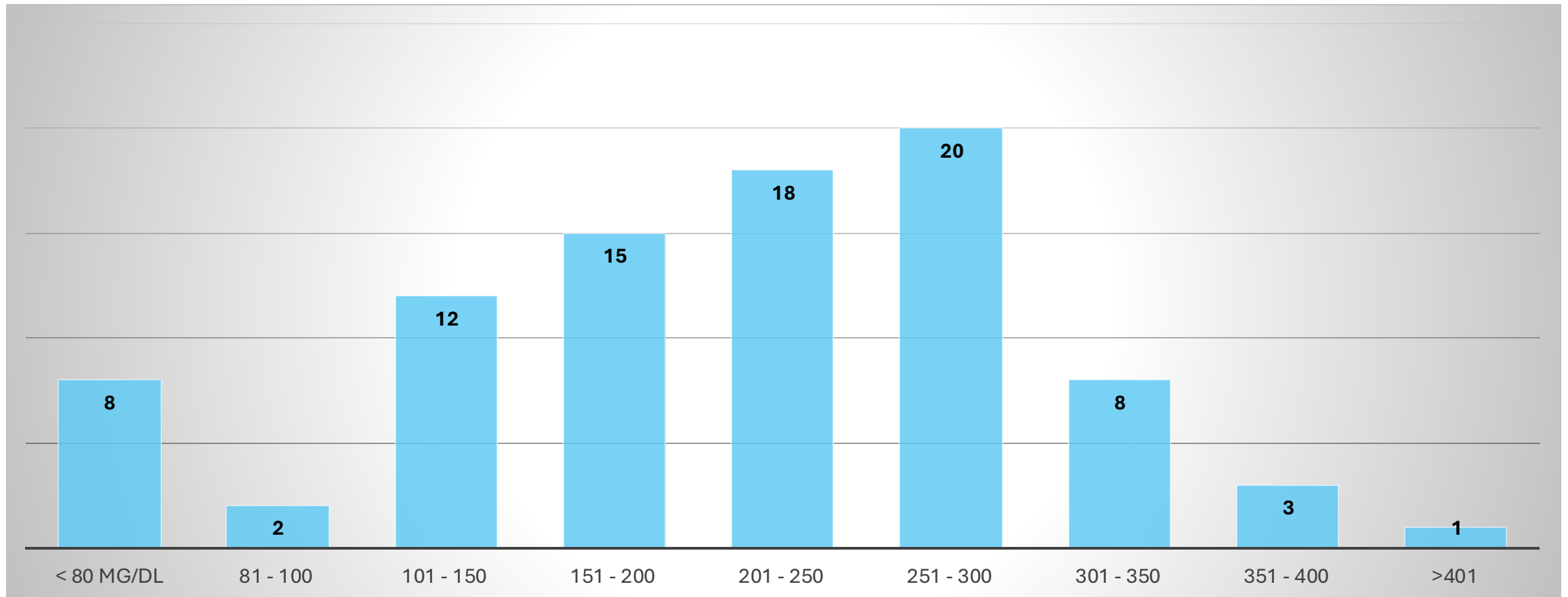
Classification



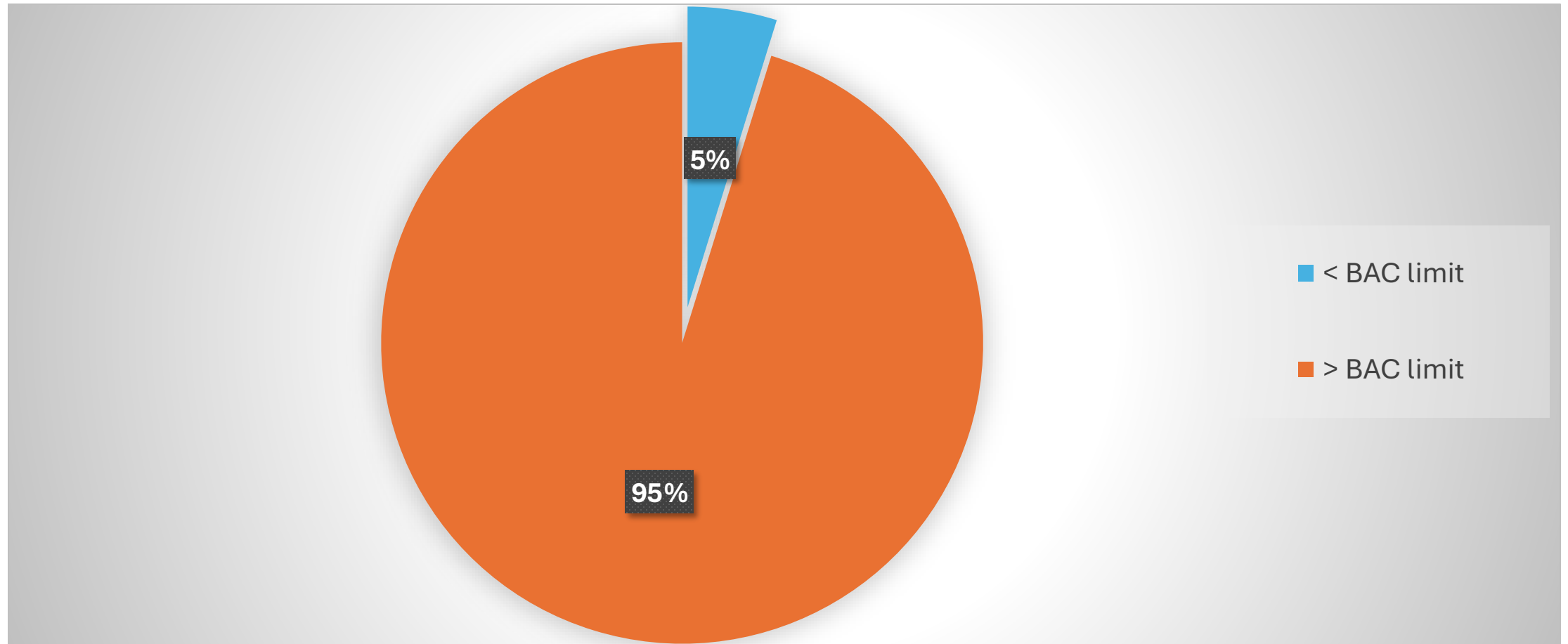
Presence of Alcohol



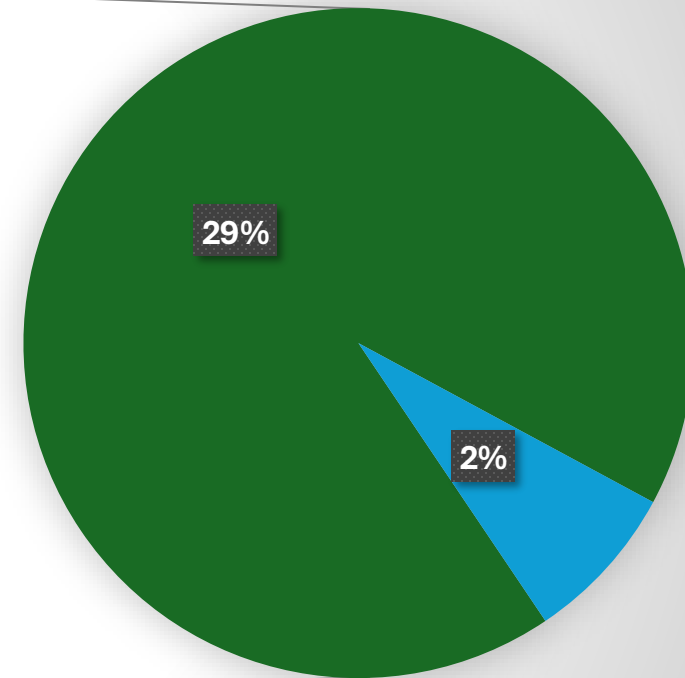
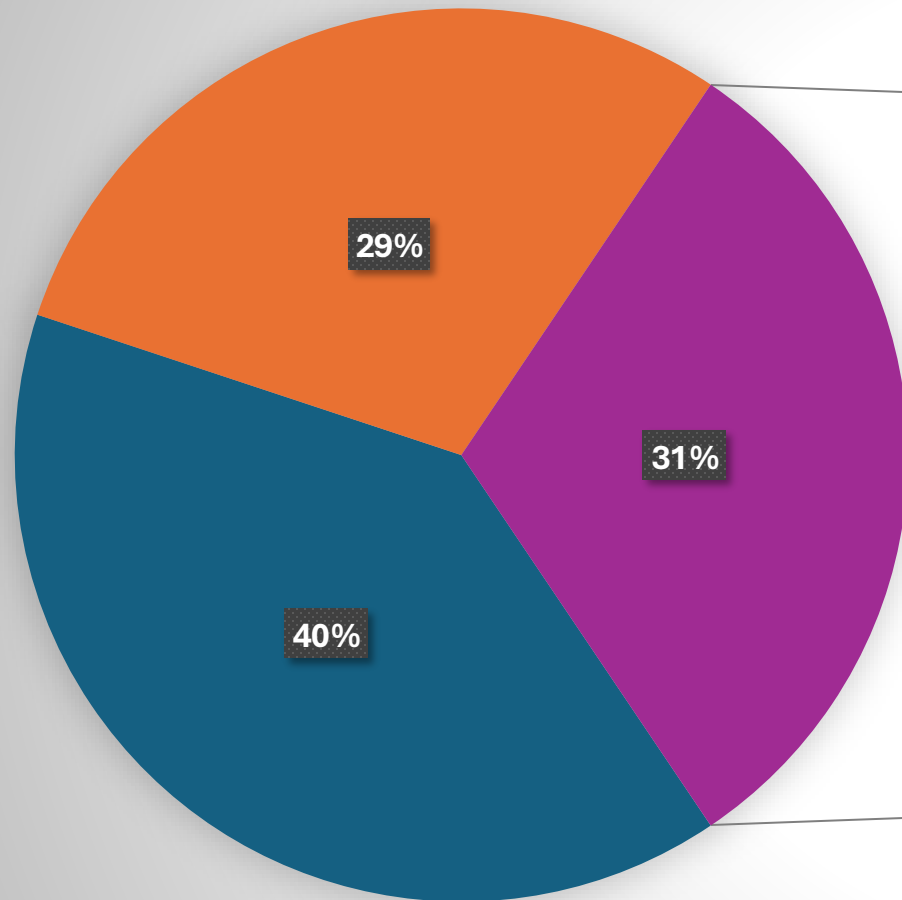
Quantity of Alcohol (mg/dl)



Blood Alcohol Conc in the 87 pts who tested positive for alcohol

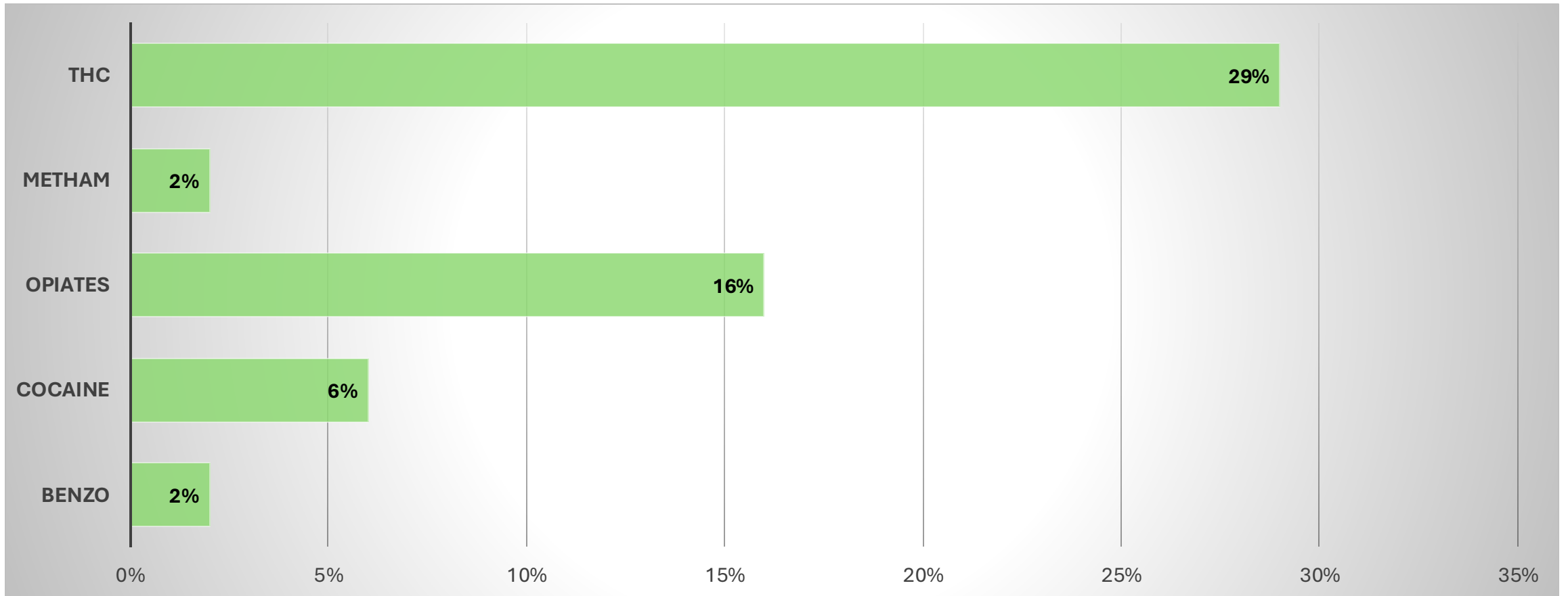


Presence of drugs in the urine



- Yes
- No
- Not done
- Refused

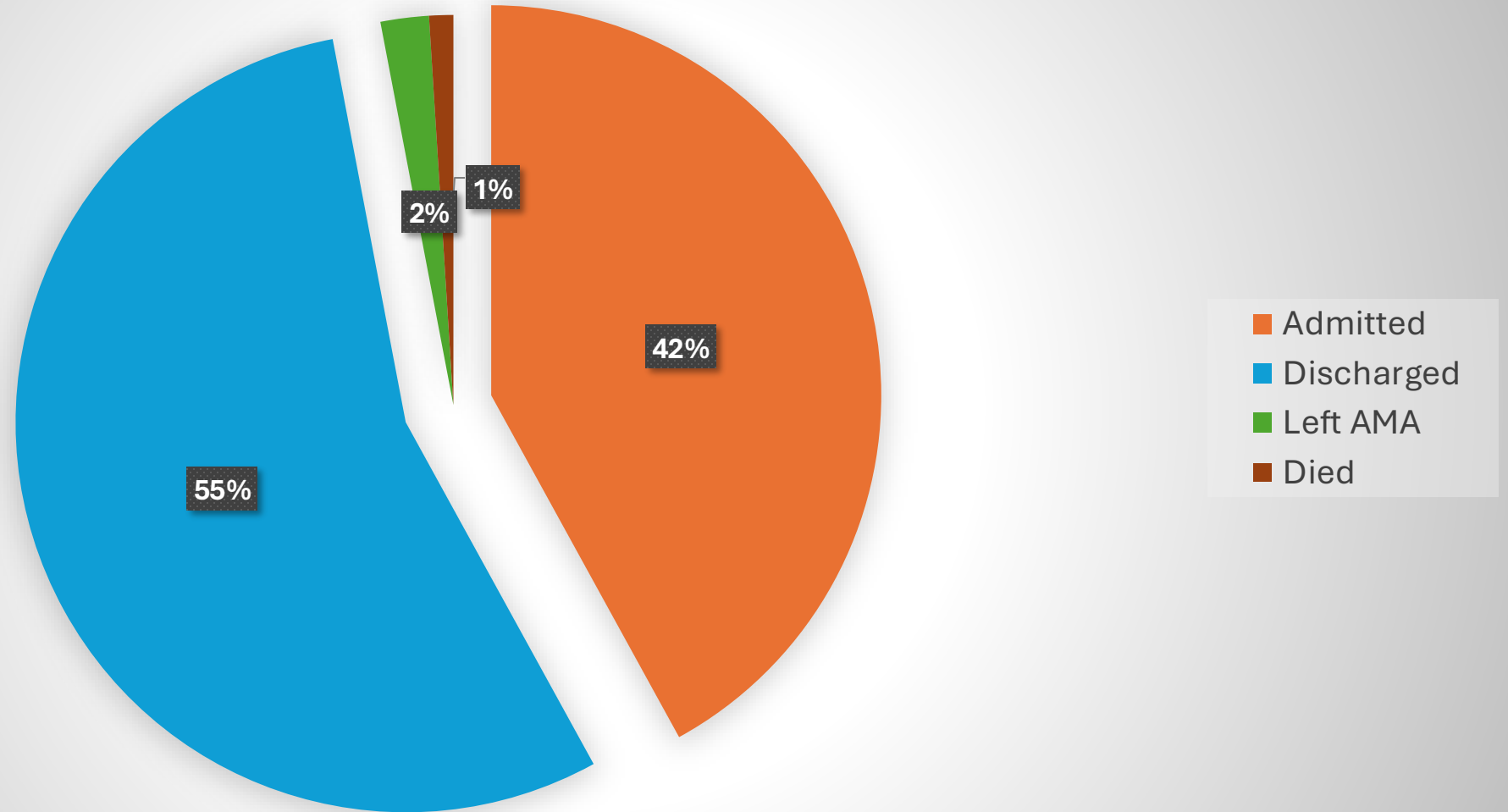
Drugs



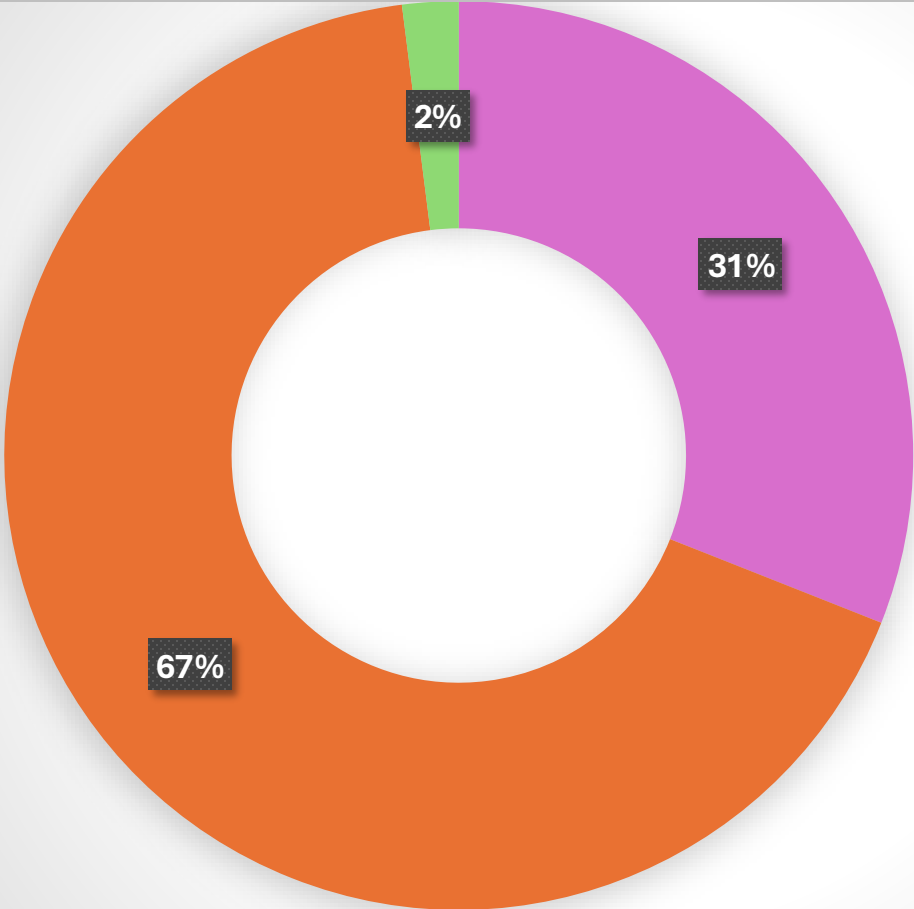
Bottom line

-
- 167 patients
 - 119 (71%) had a substance on board
 - 53 (32%) alcohol alone, 34 (20%) both, 32 (19%) drugs alone
 - 28 (17%) sober
 - 16 (10%) indeterminate
 - Neg for alcohol but urine test not done
 - 4 (2%) not tested

Disposition

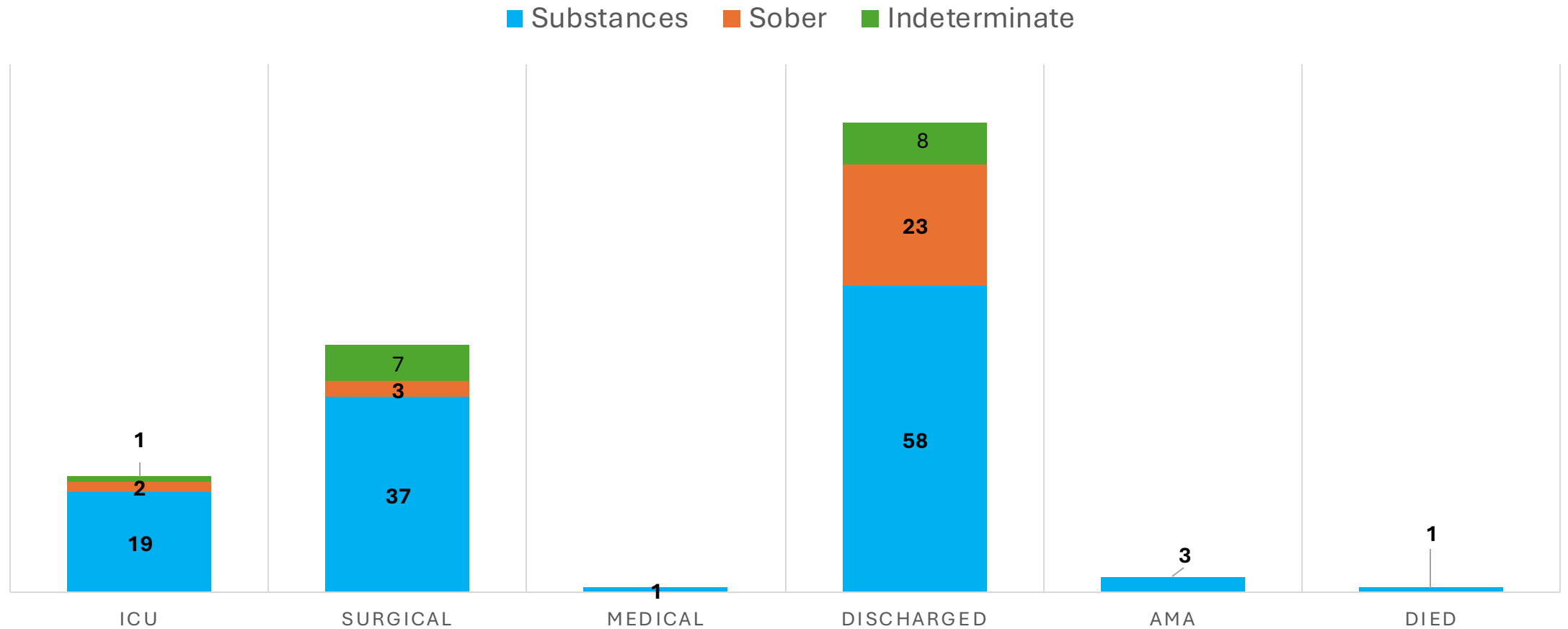


Admitted patients : 70 pts

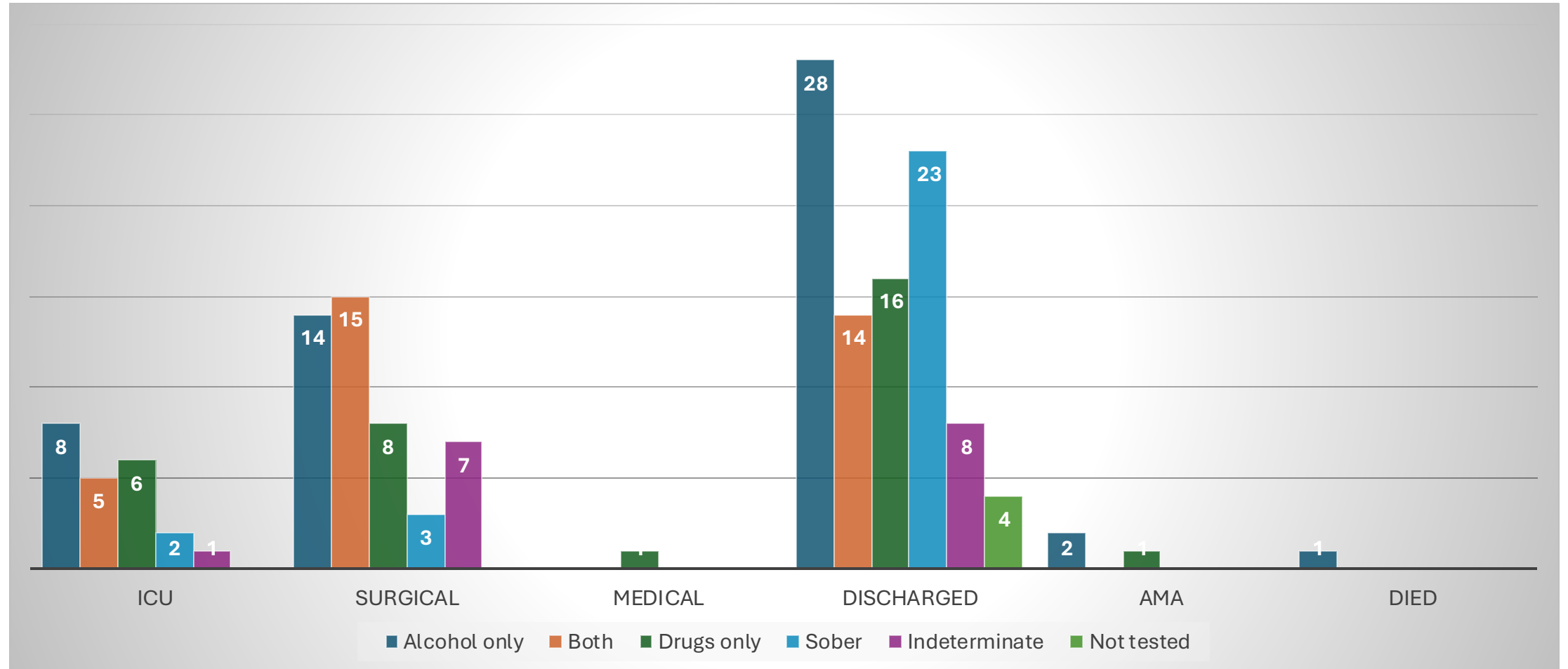


- ICU
- Surgical Ward
- Medical Ward

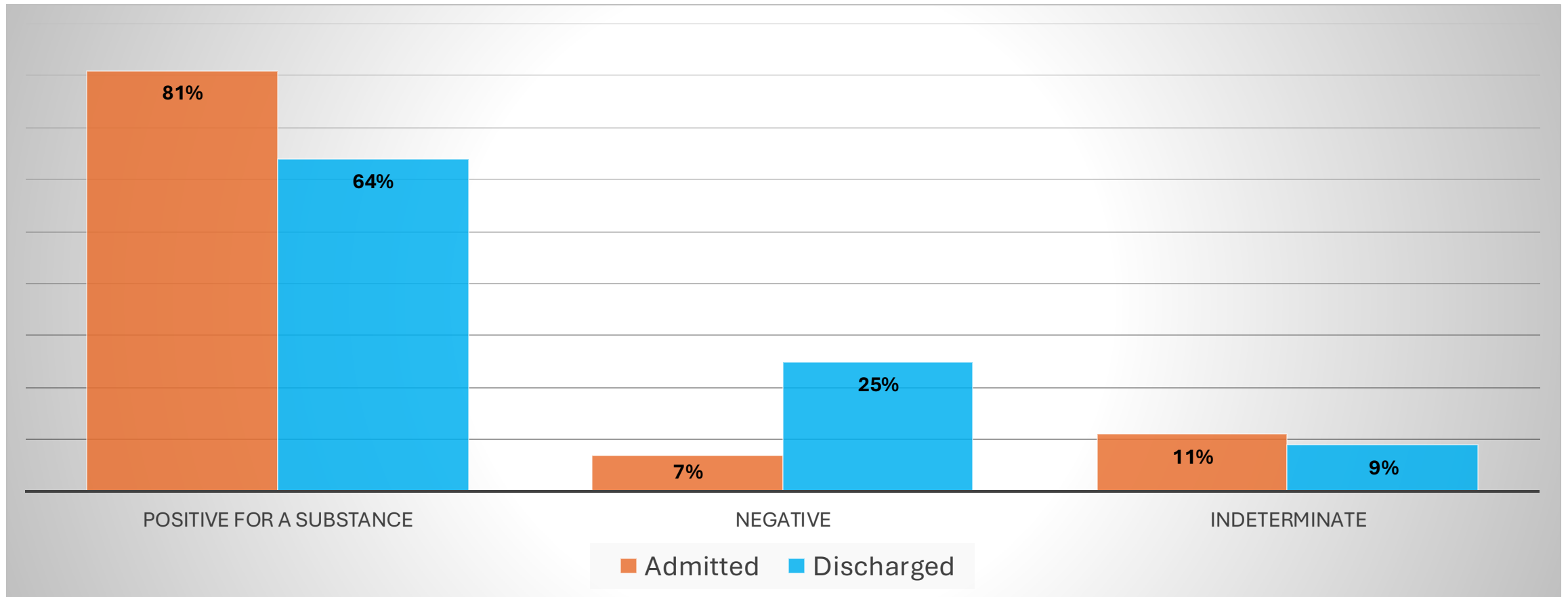
Disposition and test result



Disposition and test results



Disposition vs test results



Limitations

Small study

Limited to ESI level 1 – 3 (selection bias)

Urine test was qualitative not quantitative

- Neg doesn't necessarily mean absence of drug
- Pos doesn't mean recent use (depends on drug lipophilicity)
- Minimum detection time of 2 – 7 hours

Did not account for other common psychoactive substances:

- Prescription meds e.g. antihistamines and antidepressants
- Newer synthetic drugs e.g. fentanyl and nitazenes

Limitations

In some cases, morphine (opiate) was given by the ED physician before a urine drug screen

- If drug screen was performed before the the minimum detection window, the positive result could have reflected prior drug use
- 49 pts received morphine before the urine test; of these, 22 (45%) had a positive opiate result, 3 (6%) tested negative, and 24 (49%) did not undergo testing

Missing Data

- Data collection required co-operation of physicians / nurses
 - Busy department
 - Unstable patients
 - Patients not urinating in the department

Comparison



Renzi et al

22.7% of 1067 patients admitted to an Italian Level 1 trauma center following MVCs had positive toxicology screens



Joshi et al(5 year study)

12.2% prevalence of alcohol use in road accidents over a five-year period in Nepal



Papalimperi (2011–2017)

40.7% of road fatalities were associated with alcohol use, 18.9% with psychoactive substances, and 4.5% with a combination of both

Take home points

Male preponderance

Median age: 38 yrs

Weekend: Friday,
Saturday, Sunday

Motorbike >
Motorvehicle

Single vehicle >
Multivehicle

95 % persons who
tested positive for
alcohol was above
BAC limit of 80 mg/dl

Most common drug –
cannabis

Majority of admitted
patients had
substances on board



RCEM Annual Scientific Conference 2024



Snort it, Booze it, Lose it



Bermuda Hospitals Board

Snort it, Booze it, Lose it:

The Effect of Illicit Substances on Victims of Motor Vehicle Collisions in Bermuda

Celeste Maycock¹, Chikezie Okereke¹, Matthew Davies¹, Nicole Hart¹, Murphey Osbourne¹

¹ Department of Emergency Medicine, King Edward VII Memorial Hospital, Bermuda Hospitals Board, Bermuda

1 Introduction

Bermuda is a remote archipelago in the North Atlantic Ocean. A British overseas territory, it has a resident population of 63,542 and is served by a single hospital, the King Edward VII Memorial Hospital (KEMH).

- Despite strict speed limits, and vehicle ownership laws, Bermuda is estimated to have one of the highest road fatality rates in the world [1].
- Motor vehicle collisions (MVCs) account for 4% of Emergency Department (ED) visits per year [2].
- Drug and alcohol use is postulated to be a causative factor. However, there is a paucity of supporting evidence.

Demographic and outcome data of individuals presenting to the ED following an MVC were examined, focusing on the use of alcohol and psychoactive drugs.

2 Methods

A descriptive, cross-sectional study was conducted at KEMH between 1 May 2023 and 30 April 2024 on individuals who had been involved in a MVC.

INCLUSION CRITERIA

- Driver/ Rider
- Age 15 years and older
- ESI triage score 1 – 3
- MVC occurred <12 hours prior

EXCLUSION CRITERIA

- Dead on arrival

DATA COLLECTION

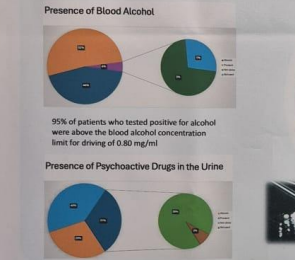
- Eligible patients were identified
- Demographic, vehicle and outcome data were recorded by ED clinicians on a data collection form
- Blood alcohol level and a urine drug screen were procured

DATA COLLECTION

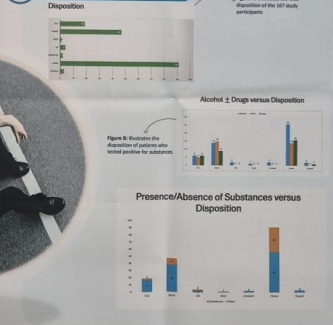
- The data was stored at an off-site secure, password-protected location

3 Results

- Participants: 167 patients were enrolled
- Median age: 38 years (IQR 29 – 53)
- Male preponderance: 84%
- 81% of MVCs involved mopeds & 14% involved motor vehicles
- 61% of MVCs were single vehicle crashes & 36% multi vehicle crashes



4 Results



5 Discussion

The WHO estimates that across the globe, 20 – 50 million people sustain non-fatal injuries due to MVCs each year, many of which result in disabilities [3].

This study revealed that 71% of the more seriously injured victims (ESI 1 - 3) had either alcohol or psychoactive drugs in their system. Among the patients that required admission for their injuries, 81% tested positive. Our analysis yielded similar findings to prior research conducted at institutions in Nepal, and the USA, indicating that drugs and alcohol significantly increase the possibility of an MVC [4,5]. Although these studies vary in population size and focus on both fatal and non-fatal accidents, the correlation between substance use and collision risk remains consistent.

RISK FACTORS [3]

LIMITATIONS

- Small study
- Missing data
- Unstable patients
- Urine drug screen is qualitative (not quantitative)
- Urine drug screen has a minimum detection time of 2 – 7 hours

The statistics will be utilized by the Department for National Drug Control to furnish policy makers in the community with local data which would enable them to create sanctions for legislative reformations concerning alcohol and drug regulations. More extensive research examining all MVC victims, analyzing injury severity scores in conjunction with alcohol and drug use, is necessary to better the understanding of the extent of this dilemma in Bermuda.

6 Conclusion

In conclusion, this study emphasizes that psychoactive drug and alcohol use is frequently observed among individuals arriving at King Edward VII Memorial Hospital after an MVC, especially those involving mopeds. Given that mopeds are the primary mode of transportation for both residents and tourists alike, there is a clear need for targeted injury prevention strategies.

Despite its limitations, the implications of the findings are significant for clinical practice and public health policies. Overall, it adds valuable insights in the emergency care of these patients and improvements in road safety regulations.

References

- Burgess, D. 2024. 'Bermuda Ranked High Per Capita in Collisions'. Retrieved, 4 July, accessed July 25, 2024. <https://www.bermudapost.com/2024/07/25/bermuda-ranked-high-per-capita-in-collisions/>
- Bermuda Hospital Board, Road Traffic Accident Statistics 2018 – 2020, accessed July 25, 2024. [https://www.bermudapost.com/2024/07/25/bermuda-hospital-board-road-traffic-accident-statistics-2020/](https://www.bermudapost.com/2024/07/25/bermuda-hospital-board-road-traffic-accident-statistics-2018-2020/)
- World Health Organization, Road Traffic Accidents, accessed July 25, 2024. <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>
- Chatterjee, A. et al. (2022). An assessment of the non- Road crash risks associated with substance use during rush and non-rush hour periods in the United States. Drug and Alcohol Dependence, 234, 109386.
- Joshi P, et al. (2023) Driving Under the Influence of Alcohol among Road Traffic Accident Patients Presenting to a Tertiary Care Centre. JNMA: J. Nepal Med Assoc. 61(1243):706-709.



SCAN ME



Snort it, Booze it, Lose it:

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Demographic and outcome data of individuals presenting to the ED following an MVC were assessed, focusing on the use of alcohol and psychoactive drugs.

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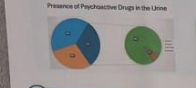
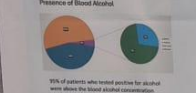
A descriptive, cross-sectional study was conducted at KEMH between 1 May 2021 and 30 April 2024 on individuals who had been involved in a MVC.



- INCLUSION CRITERIA**
- Driver's License
 - Age 15 years and older
 - ED triage notes > 3
 - MVC occurred < 12 hours prior
- EXCLUSION CRITERIA**
- Dead on arrival
- DATA COLLECTION**
- Eligible patients were identified
 - Demographic, vehicle and insurance data were recorded by ED clinicians on a data collection form
 - Blood alcohol level and a urine drug screen were procured
- DATA COLLECTION**
- The data was stored in an off-site server, password-protected location

3 Results

- Participants: 147 patients were enrolled
- Median age: 38 years (IQR 29-50)
- Male predominance: 84%
- 81% of MVCs involved transport & 14% involved motor vehicles
- 51% of MVCs were single-vehicle crashes & 49% multi-vehicle crashes



4 Results



5 Discussion

The next research to be done is to identify the risk factors for MVCs and to assess the impact of these factors on the outcome of these patients.



- RISK FACTORS (1)**
- Blood alcohol level
 - Blood alcohol level > 0.02 mg/ml
 - Blood alcohol level > 0.02 mg/ml
- RISK FACTORS (2)**
- Blood alcohol level > 0.02 mg/ml
 - Blood alcohol level > 0.02 mg/ml
- RISK FACTORS (3)**
- Blood alcohol level > 0.02 mg/ml
 - Blood alcohol level > 0.02 mg/ml

6 Conclusion

In conclusion, this study emphasizes that psychoactive drug and alcohol use is frequently observed among individuals arriving at King Edward VI Memorial Hospital after an MVC, especially those involving transport. There are implications for the primary role of transportation in both residential and tourist areas, there is a clear need for targeted injury prevention strategies.

Despite its limitations, the implications of the findings are significant for clinical practice and public health policies. There is a clear need for targeted injury prevention strategies.

66 References

1. Bermuda Hospitals Board. Annual Report 2023. Bermuda: Bermuda Hospitals Board; 2024.
2. Bermuda Hospitals Board. Annual Report 2022. Bermuda: Bermuda Hospitals Board; 2023.
3. Bermuda Hospitals Board. Annual Report 2021. Bermuda: Bermuda Hospitals Board; 2022.
4. Bermuda Hospitals Board. Annual Report 2020. Bermuda: Bermuda Hospitals Board; 2021.
5. Bermuda Hospitals Board. Annual Report 2019. Bermuda: Bermuda Hospitals Board; 2020.
6. Bermuda Hospitals Board. Annual Report 2018. Bermuda: Bermuda Hospitals Board; 2019.
7. Bermuda Hospitals Board. Annual Report 2017. Bermuda: Bermuda Hospitals Board; 2018.
8. Bermuda Hospitals Board. Annual Report 2016. Bermuda: Bermuda Hospitals Board; 2017.
9. Bermuda Hospitals Board. Annual Report 2015. Bermuda: Bermuda Hospitals Board; 2016.
10. Bermuda Hospitals Board. Annual Report 2014. Bermuda: Bermuda Hospitals Board; 2015.



Proud mommy





Generating interest



Questions?