

# E-bike vs non-ebike attendances at a London University Hospital Emergency Department: a retrospective study of three years' attendance records

## Background

Trauma relating to the use of electric bicycles (e-bikes) can range from minor cuts and scrapes to major poly-trauma and result in large costs to the health service and serious long-term sequelae for the patient.

The purpose of this study was to assess the changing pattern of e-bike related attendances at a London University Hospital Emergency Department compared to conventional/'push' bike attendances and overall presentations in a three-year period from September 2022 to August 2025. We wanted to establish how the nature of cycling incidents had changed over the review period given the increasing popularity of e-bikes. The secondary aims were to assess the severity of those incidents; identify other data differences, e.g. for age, gender, helmet use or alcohol involvement; and whether they required surgery or admission to hospital.

## Methods

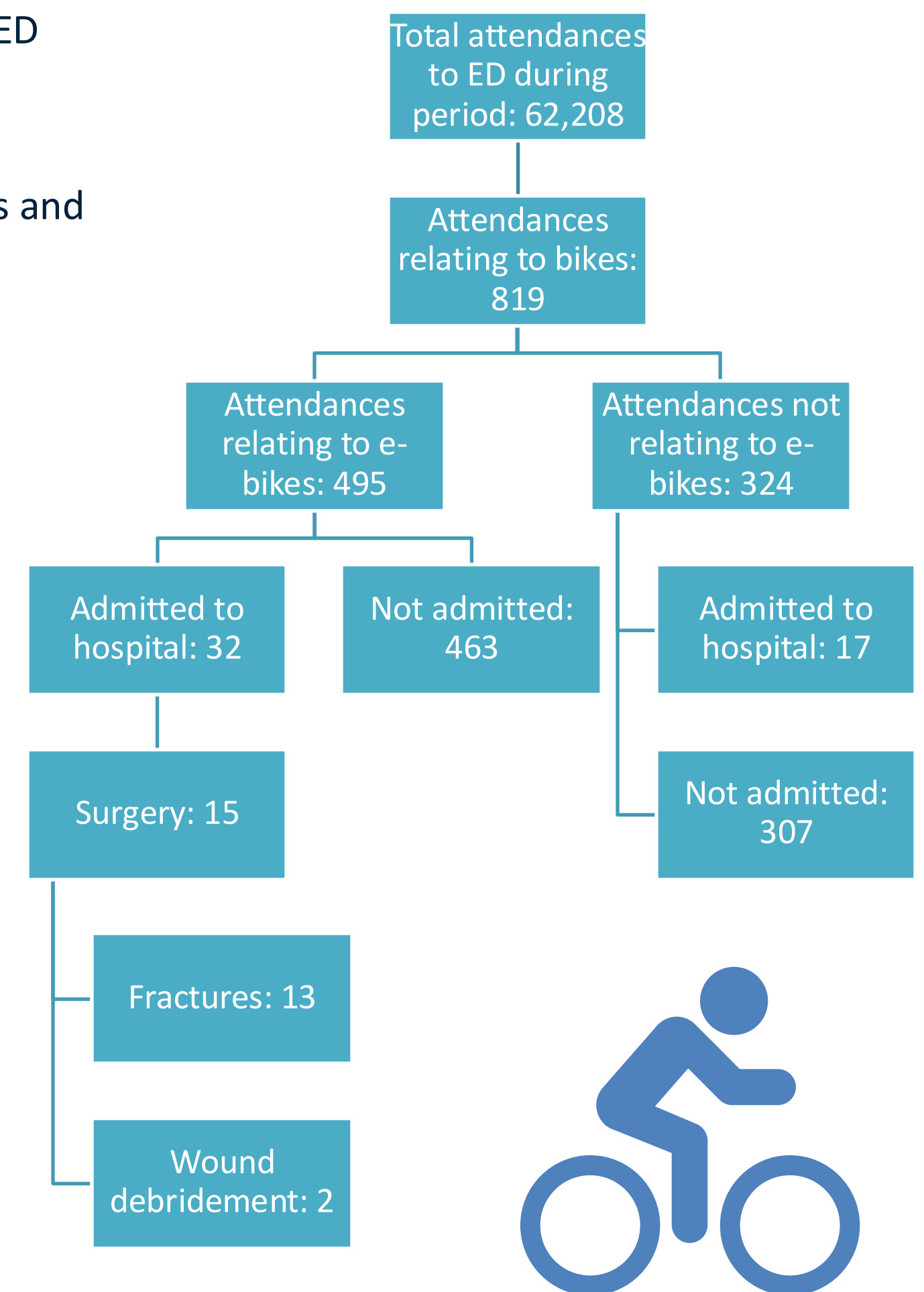
Three years of attendance records data were extracted from the ED electronic record system and analysed in Excel.

Cycling related records were identified using a list of search terms and then those records were allocated to 'e-bike' or 'non-ebike' populations based on a second set of search terms.

Statistical analysis was performed using 'R'.

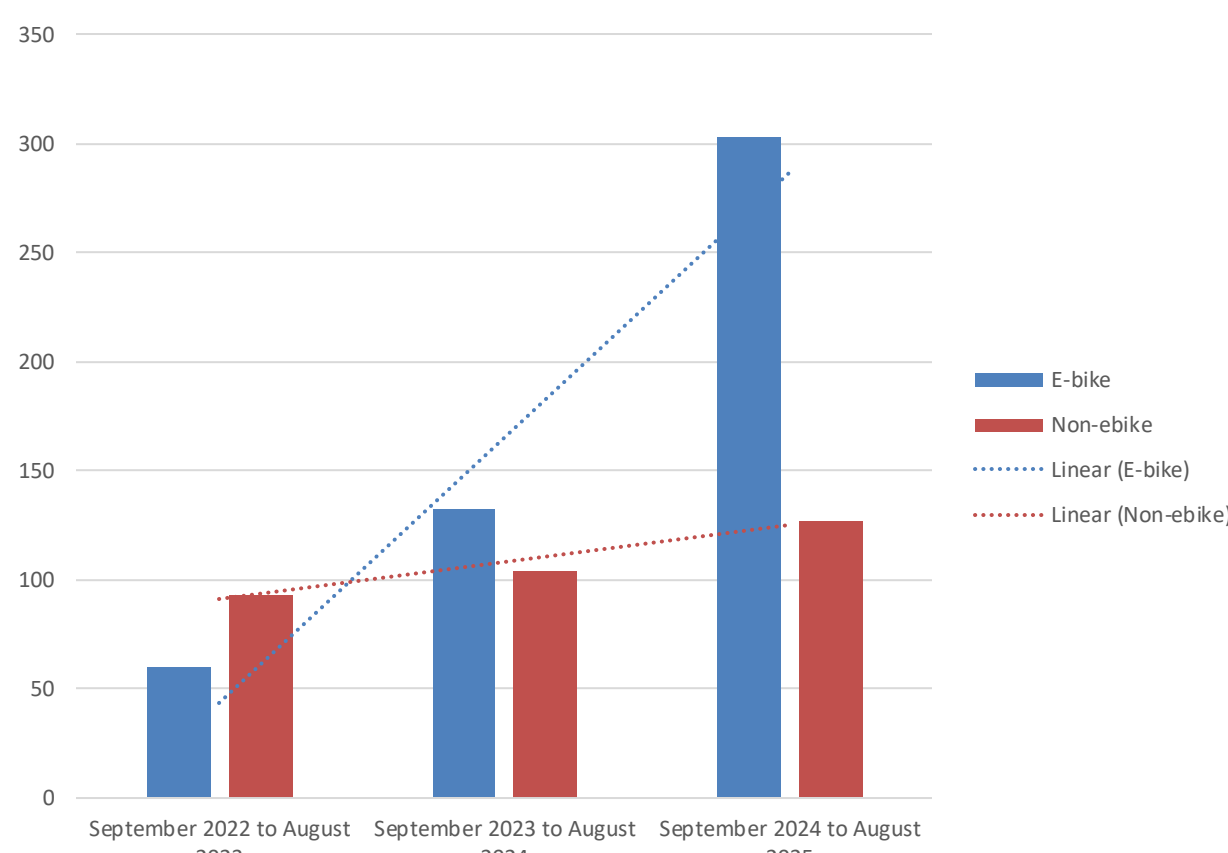
Manual review of EPR data was used to determine the nature of admission and treatment for relevant e-bike patients and to assess factors such as helmet use.

| Primary objective                                                                                                                                                          | Secondary objectives                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>Assess the changing nature of cycling incidents coming into Homerton ED given the rise in usage of e-bikes in recent years</li></ul> | <ul style="list-style-type: none"><li>Assess type/severity of injuries sustained</li><li>Identify gender/age differences</li><li>Identify trends and patterns from other available data, e.g. alcohol use, helmet use</li><li>Compare ED data against admission and surgical data</li></ul> |



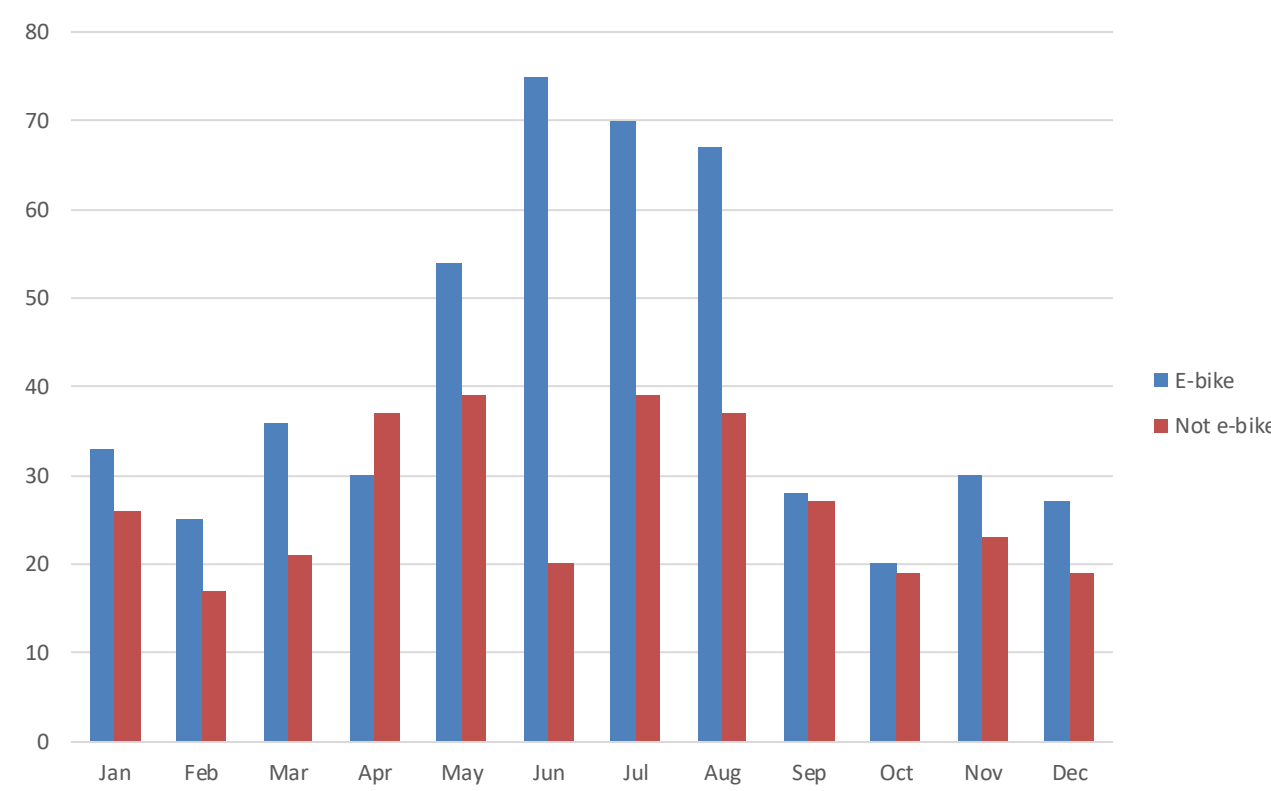
## Results

1) E-bike and non-ebike attendances by year



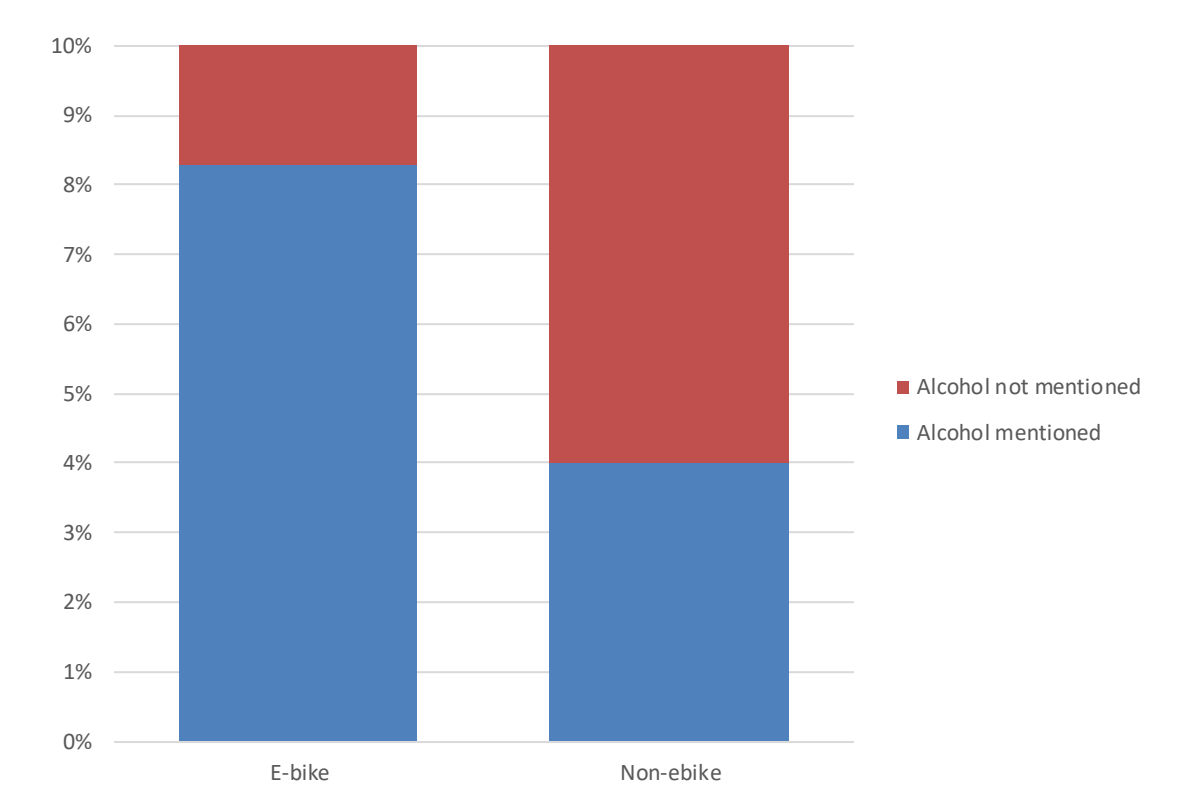
125% annual growth rate – e-bikes  
17% annual growth rate – non-ebikes

2) E-bike and non-ebike attendances by month (for all years)



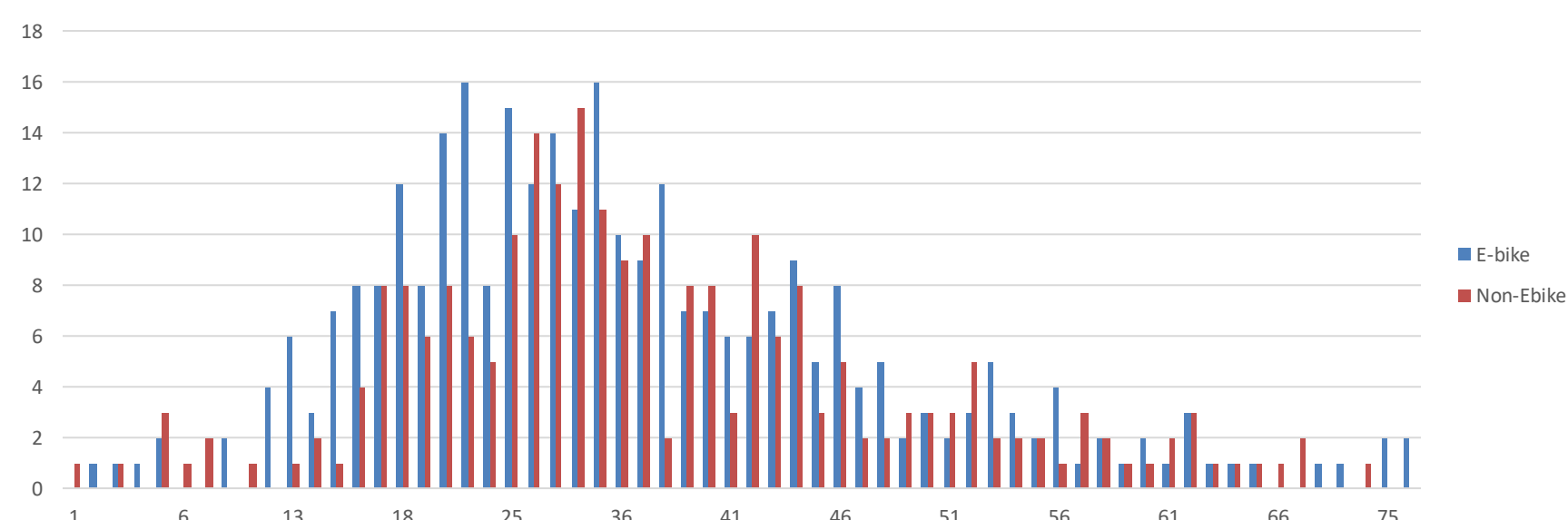
Almost twice as many e-bike as non-ebike incidents in summer months

3) Percentage of records mentioning alcohol



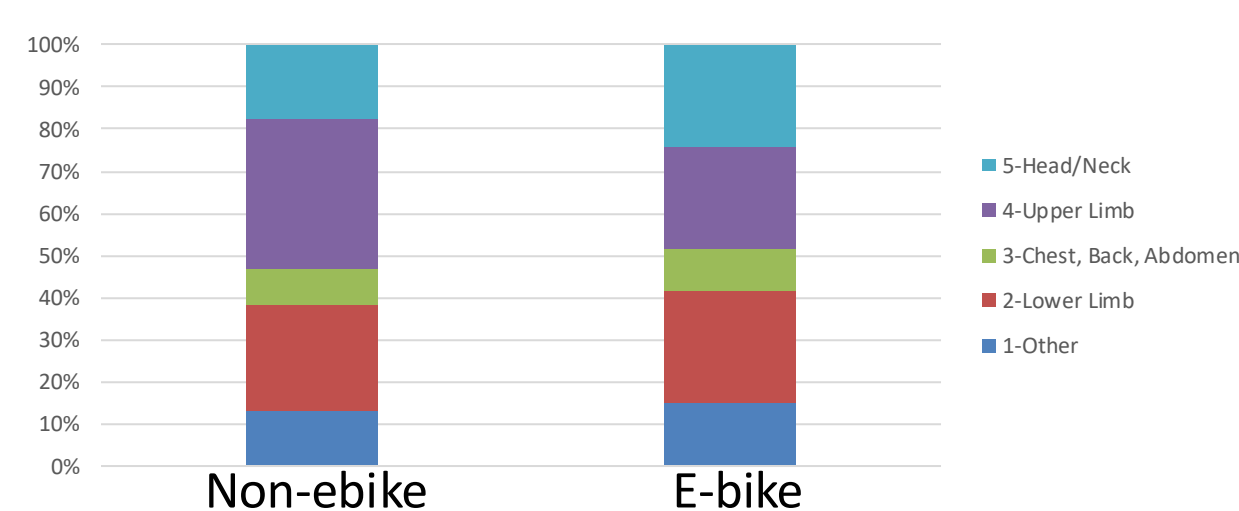
Alcohol over 2x as likely to be mentioned on e-bike records

4) E-bike and non-ebike incidents by age



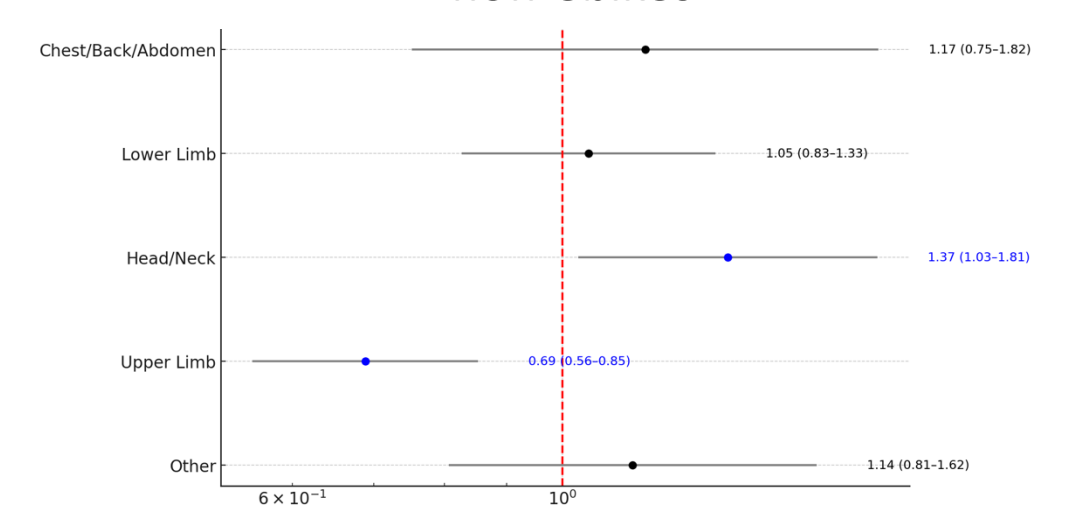
Average age: 31.7 for e-bikes, 33.8 for non-ebikes

5) Presenting complaint body part for non-ebike and e-bike attendances



37% higher risk of head & neck injuries and 31% lower risk of upper limb injuries for e-bike incidents

6) Relative risk of injuries e-bikes vs non-ebikes



8) Findings from manual review

86% of e-bike attendances not wearing helmets

15 surgeries required:  
• 13 fractures  
• 2 wound debridements

9) No statistically significant differences

Admitted to hospital

Gender

Age in paediatric patients

Lower limb & chest, back and abdo injuries

Day of admission

Time of admission

## Conclusions

Significant year-on-year increase in e-bike related attendances

E-bikes account for just under 1% of ED attendances; around 3% required surgery

Higher risk of head and neck injuries and lower risk of upper limb injuries

Alcohol is over twice as likely to be involved compared to push bikes

Attendances are highly seasonal - more in the summer months

Many benefits to cycling and e-bikes but cyclists and society should be aware of the dangers