THE FUTURE OF TRANSPORT

Investigation into the effect on safety of the assistance factor of speed pedelecs in sub-category L1e-B

November 2018

Introduction

- TRL have been asked by the European Commission to investigate whether the assistance factor[1] affects the safety of cycles designed to pedal in the L1e-B sub category.
- Currently, under Commission Delegate Regulation (EU) No3/2014, the ratio is limited to four, i.e. the electric motor can provide no more than four times the power generated by the rider.

1. The ratio of power provided by the electric motor to power provided by the rider

Objectives

1. Determine the nature, cause and severity of typical collisions involving speed pedelecs
2. Determine whether evidence exists to suggest that the level of assistance factor could play a role in these typical collisions
3. Determine whether evidence exists to suggest that other powertrain features, e.g. the choice of driven wheel, could interact with assistance factor, to affect these typical collisions
4. Make recommendations to the Commission regarding priorities for future legislation in this area
5. Make recommendations to the Commission regarding future work required in this area to enhance the evidence base for legislation

Methodology

1. Study of collisions involving speed pedelecs
2. Review of literature relating to assistance factor
3. Stakeholder engagement

1. Study of collisions involving speed pedelecs

- Determination of the nature, cause and severity of **typical** collisions involving speed pedelecs
  - Gather a body of anecdotal evidence to illustrate the phenomenon of speed pedelec collisions.
  - Present a series of collision examples to illustrate the nature, cause and severity of collisions involving speed pedelecs.

1. Study of collisions involving speed pedelecs

- Determination of the frequency of collisions involving speed pedelecs
  - TRL will also use national and international collision databases and previous academic studies to attempt to quantify the number and severity of collisions involving speed pedelecs.
  - It is unlikely that a sufficient body of accident data will be available to permit statistically significant conclusions to be drawn regarding that specific group of cycles
  - Data will be presented to illustrate the frequency with which collisions occur, but not to attempt to draw conclusions regarding their underlying causes.

2. Review of literature relating to assistance factor

- The effect of the use of electrically assisted bicycles on road safety has been a topic of scholarly research for some years.
- The bulk of that research has concentrated on the differences between conventional bicycles and those with electrical assistance.
- Very few studies have examined the effects of differences in particular design features between different makes or models of electrically assisted bicycles.
- We are aware of studies by Eric Groß at TUHH and Bram Rotthier at KU Leuven that specifically address the effect of assistance factor on safety of this sub-category of e-bike.
- We would be very interested to hear from anybody else who has conducted work in this field.

3. Stakeholder engagement

- Stakeholders will be engaged to provide:
  - an overview of current design philosophy of speed pedelecs
    - e.g. the choice of assistance factor, powertrain configuration and control methodology
  - current usage profiles
    - e.g. types of journeys undertaken, rider's age and gender, whether journeys are conducted on cycle paths or highways
  - any issues encountered while riding
    - e.g. collisions or incidents, interactions with other road users;
  - perceptions of the effects of assistance factor on safety
    - e.g. issues with controllability or stability encountered while riding.

3. Stakeholder engagement

- We will conduct a stakeholder mapping exercise to identify key stakeholders
- We would also like interested stakeholders to contact us to express their interest in supporting the project
- We will engage with stakeholders via e-mails and online meetings and workshops in the first half of 2019

Summary

- TRL will conduct an investigation into the effect of assistance factor on the safety of speed pedelecs in sub-category L1e-B
- This project will last 6 months
- We require your input to our stakeholder engagement exercise
- We would also like to hear from anybody who has any research in the area of assistance factor and safety

Questions?

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