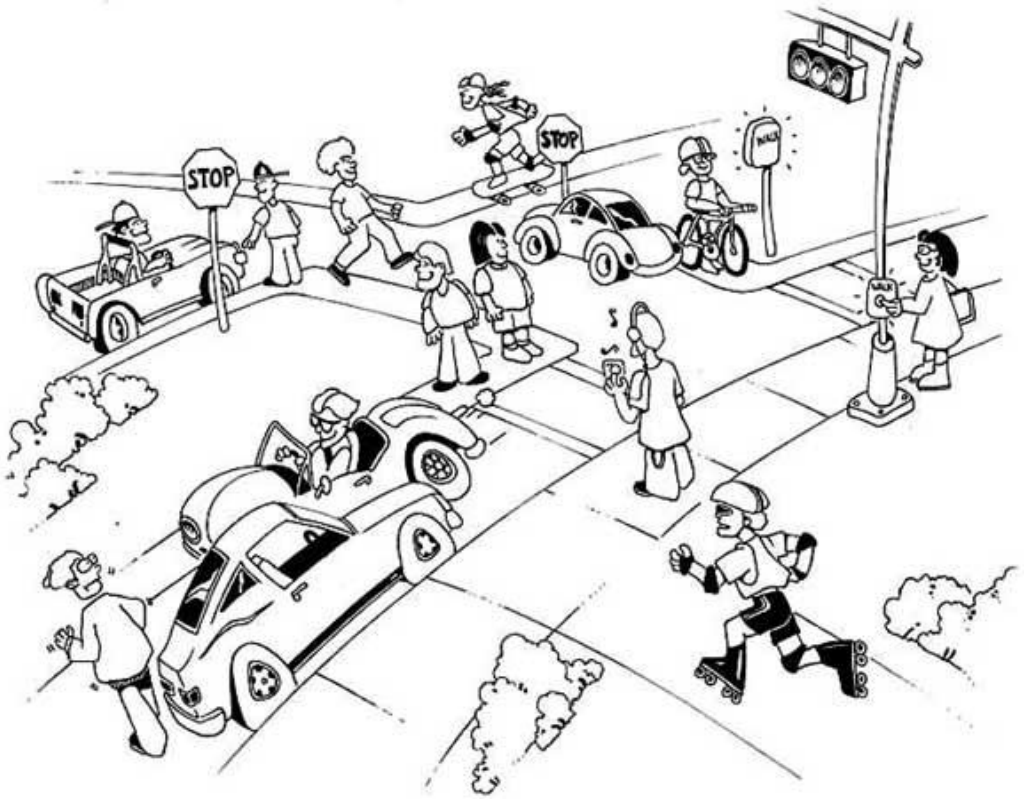
Perceptual Load in Different Regions of the Visual Field and its Effect on Driving Performance



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Aim

- To test the influence of three variables on drivers' performance in driving simulator setting:
  - Perceptual load at different regions of the visual field – on the road and on its sides.
  - Critical events' locations: on the road or at its sides.
  - The presence of a Collision Avoidance Warning System: driving with the system vs. driving without system.

Method

- Four different scenarios of driving on suburban roads were created.
- Four different load conditions were simulated in these scenarios:
  1. Low load on the road and its sides.
  2. Low load on the road, high load on its sides.
  3. High load on the road, low load on its sides.
  4. High load on the road and its sides.

Road Load

Low

High

Sides Load

Low

High

Method

- In each scenario 16 critical events occurred, equally balanced between the loads conditions:
  - 8 initiated from the sides (e.g., pedestrian suddenly enter the road).
  - 8 occurred on the road (e.g., a leading car suddenly slowed down).


100
4
5

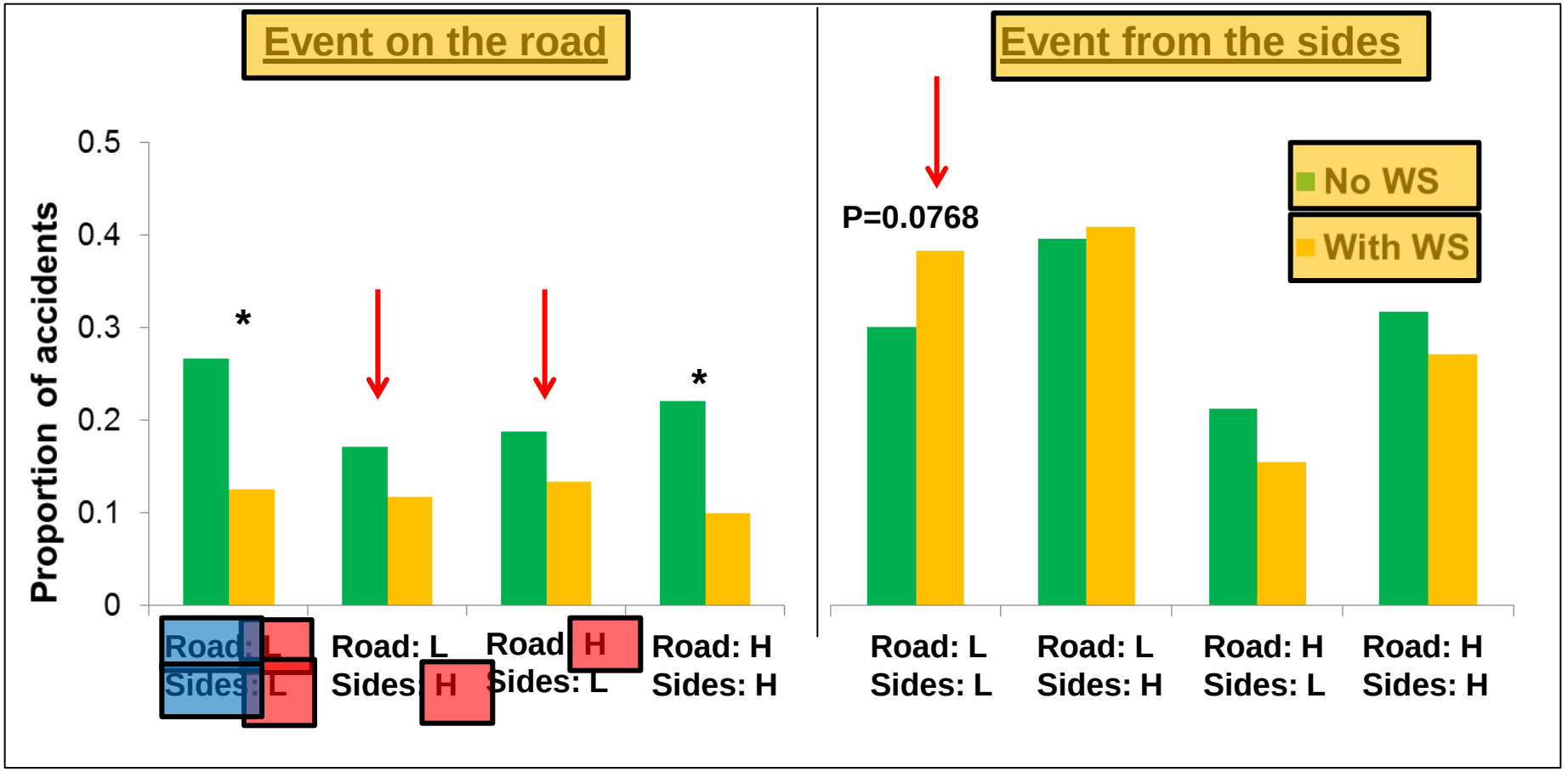

100
120
4
5

The Collision Avoidance Warning System

- The Collision Avoidance Warning System:
  - The criterion for the alarm activation was 2.5 seconds "time to collision" with a leading vehicle.

Results:
Analysis of reactions to critical events

Proportion of accidents



Please try the simulator!