**Individual Project**

**Released: 2/3/2020**

# Project Description

The goal of this project is to further examine the theories and the calculation of yellow interval, to develop a deeper understanding of the assumptions employed, and to explore possible modifications.

Based on relevant class materials and reading assignments, prepare a short paragraph to answer each of the following questions. Your target audience is a bright high school senior. Use concise and professional language to synthesize the information from class and reading materials and to make your own arguments. Show equations and illustrations, and cite references wherever appropriate.

Recall our class discussion about dilemma zone and the yellow interval formula given in the 1999 Traffic Engineering Handbook by the Institute of Transportation Engineers (also see textbook Chapter 7.4.7; we will refer to this formula as the ITE formula hereafter).

1. What is the purpose of a yellow interval?
2. Explain the variables in the ITE formula, and the intent of the formula.
3. What assumptions are employed in the ITE formula? Which one(s) is (are) the key assumption(s)?

Read the following two papers:

* Ceccarelli, B. and Shovlin, J. (2015) Misapplied Physics in the International Standards that Set Yellow Light Durations Forces Drivers to Run Red Lights, <http://redlightrobber.com/red/links_pdf/Misapplied-Physics-Red-Light-Cameras.pdf>.
* Jarlstrom, M. (2014) An Investigation of the ITE Formula and Its Use, <http://www.jarlstrom.com/PDF/Exhibit_1_FINAL_An_investigation_of_the_ITE_formula_and_its_use_R14.pdf>

Both papers are also available in Canvas under module “Individual Project”. Note that neither paper is published in a peer-reviewed scientific journal.

1. What element(s) of the current ITE formula does each paper question?
2. What modifications of the ITE formula does each paper suggest?
3. Do you agree with the papers regarding #4 and #5 above? Analyze the evidence, findings, and arguments from the papers. Make your own arguments based on the analysis.
4. What other possible modifications can you think of? Provide at least two and discuss their pros and cons.

# Project Deliverables

Deliverable 1 (D1), 10%: due by 11:59pm on Sunday 2/9

* Provide an outline of your answers to Questions 1 – 5.
* The outline can be in bullet format.
* The outline is meant to be a list of your talking points that you will expand on later.

Deliverable 2 (D2), 30%: due by 11:59pm on Sunday 3/1

* This deliverable should include two separate parts in the same file:
  + A response letter to comments;
  + Your draft report.
* The response letter should include a list of all the comments from D1, and a short paragraph under each comment explaining how you have addressed it.
* Your draft report should include elaborated answers to all questions. Your answers to Questions 1 – 5 should be revised based on feedback provided to you from D1, wherever appropriate.

Deliverable 3 (D3), 10%: due by 11:59pm on Sunday 3/8

* Peer review report.

Deliverable 4 (D4), 50%: due by 11:59pm on Sunday 3/15

* This deliverable should include two separate parts in the same file:
  + A response letter to comments;
  + Your final report.
* The response letter should include a list of all the comments from D2 and D3, and a short paragraph under each comment explaining how you have addressed it.
* Your final report should be revised based on feedback provided to you from D2 and D3, wherever appropriate.