

## CE 3201

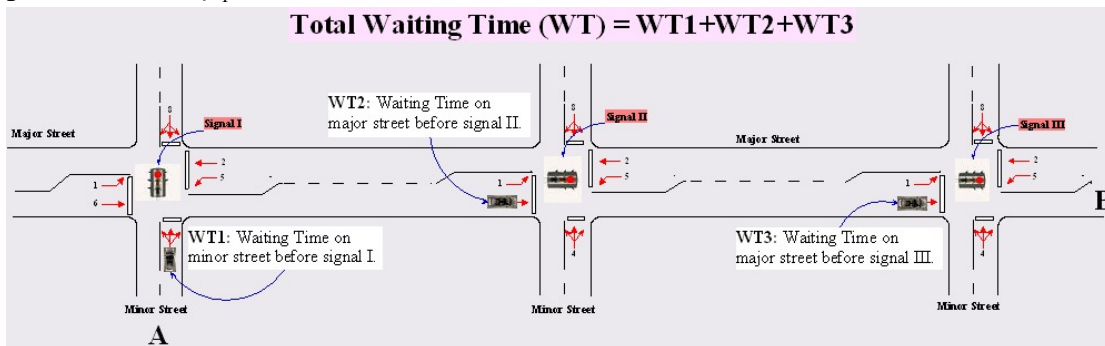
## Homework #10 (Due May 7, 2008)

1. Problem 8.8 pp. 308, MKW.
2. Problem 8.22 pp. 308, MKW.
3. Problem 8.23 pp. 308, MKW.
4. Apply data analysis software and logit model to analyze the survey data (from the survey you did last week). The following is problem description. The data is provided in separate files.

To evaluate the satisfaction of a signal timing plan, one traffic engineer wants to use driver's perceived waiting time at intersections instead of real waiting time. It is known that perceived waiting time is a function of real waiting time. For following a simple corridor (Figure1), the perceived waiting time of three intersections can be formulated as:

$$PWT = \beta_0 + \beta_1 * WT \quad (1)$$

Where:  $PWT$  is the perceived waiting time;  $WT$  is the real waiting time;  $\beta_0$  is a constant parameter; and  $\beta_1$  is a coefficient.



The survey data (<http://www.signal-sim.umn.edu>) you finished in last homework is utilized to estimate the coefficients  $\beta_0$  and  $\beta_1$ . You are asked to finish the following two questions.

1. A data set including real and perceived waiting time is provided (Please download the excel file "data.xls" on the class website). You are asking to estimate the coefficients ( $\beta_0, \beta_1$ ) using *Data-analysis* software provided by Excel (Hint: follow the procedure in Appendix).
2. We assume that the utility function of a driver for a signal timing plan is Equation (2):

$$U = -(\beta_0 + \beta_1 * WT) + \varepsilon \quad (2)$$

Based on the coefficients you estimated in Question (1), You are asked to apply Logit Model to estimate how many drivers will choose plan #1 given the following two signal timing plans. (Assume totally 70 drivers). (Hint: Follow Example 8.6 in textbook).

	WT
Plan #1	3min
Plan #2	2.5min