Post-midterm review

1. (4.5 points) Suppose you are running the transportation planning department for a metropolitan region (for example, think about the central Puget Sound Region). Your primary task is to develop the long-range transportation plan for the region (20-year plan). List three goals for the region. For each goal, list two objectives. For each objective, list two performance measures.

Question 1

- Goal: land use
  - Objective: improve jobs
  - Performance measure: land use indicator

2. (5 points) To achieve the above described goals, propose five strategies. These strategies can be capital (e.g., build a new light rail connecting from where to where), operational (e.g., optimizing traffic signals), or policy-related (e.g., increasing gas tax or promoting carpooling), or a combination of them (e.g., tolling, which is both operational and policy related). In proposing these strategies, think of three groups of stakeholders or interest groups and list them. Also consider the word “comprehensive”. Make sure that your proposed strategies satisfy the “comprehensive” requirement (you must explain how your proposed strategies satisfy this requirement) and consider the perspectives of the three stakeholders/interest groups you have just identified.

Question 2

- Build the light rail (Sound Transit/King County metro)
- Tolling (to improve the efficiency of the existing system and generate revenue) (state DOT)
- Aggressively implement the bicycle master plan; complete the missing link in Ballard, and address pavement issues on the Burke-Gilman trail
- Re-develop land use to create more transit-oriented communities with density and diversity (environmental groups/transit agencies)
- Rebuild Alaskan Viaduct (state DOT)

5. The built environment is said to have an impact on people’s travel behavior. Characteristics of the built environment can be described in three dimensions: density, diversity, and design.

a) (3 points) Explain the meaning of each term as well as how each dimension affects travel behavior.

b) (3 points) For each dimension, come up with two measures/variables that can be used to quantify it.
Question 5

Definition of Diversity: How balanced the land use is in an area, the variety of housing, delination of design, the architectural style of the houses, the layout of the streets and the traffic etc.

Why diversity matters: Diversity implies compactness, by creating compactness, we are making the use of automobiles less attractive and the use of other modes more attractive.

Why diversity matters? It potentially shortens people’s travel times.

Why diversity matters? Converts a sense of community, the sense of community is part of alternative modes, especially walking and biking but also others, such as the amenities in the community. The other is not just reduced traffic, but also reduces the number of people and the street potential for shorter trips.

Measures of diversity: the number of people per acre, number of households per area, number of acres of commercial, residential and open space, average distance to work, average distance to nearest commercial center, number of residents between 18 and 64 years old, etc.

Question 7

7. (5 points) Around this time last year, New Jersey Governor Chris Christie canceled the ARC tunnel project between New Jersey and New York City (the Manhattan Borough), arguing that the projected cost overruns of the project would jeopardize the financial situation of NJ. The ARC project was supposed to double the commuter capacity between New Jersey and New York City, increasing NJ’s access to the wealthy jobs in America’s largest city. By the time it was cancelled, the Federal government had already allocated $1 billion for the project and the Port Authority of New York and New Jersey had already allocated $5 billion toward the project. New Jersey had committed $2.7 billion. Also by the time it was cancelled, close to $400 million had been spent on the design and the planning of the project. Governor Christie’s decision caused sharp criticism from the ARC project supporters, including the federal government (Federal Department of Transportation). Why did Governor Christie cancel the ARC project? Is it cost related? Is it transportation related? What is the real motive? How would you label or summarize this phenomenon?

Question 10

Induced demand is defined as the new travel demand due to an improvement in a transportation system. The word “new” is emphasized because it should not include the additional trips that are the result of people’s change in time of day, or route etc.

10. (2 points) Define induced demand. Provide one example (using one sentence) to explain induced demand.

15. Using the information in Table 1 below, develop weights, scale functions, and then determine the project alternative that should be selected.

a) (3 points) weights: you should first assign a weight between 0 and 109 (where 0 means the least important and 100 means the most important) for each of the three performance criteria. You should also calculate the relative weights. You need to fill out Table 2.

b) (3 points) scaling: develop a scale function for each of the three performance criteria. (Step: each developed scale function with the x- and y-axis clearly labeled and marked with a minimum and a maximum value)

c) (2 points) combination: Based on the information obtained in a) and b) above, find the weighted value for each performance criteria for each alternative and calculate the weighted value. Sum the weighted value for each alternative and determine which alternative should be selected. When selecting an alternative, you must also consider the default “do nothing” alternative. Explain your decision. You need to fill out Table 3.