11.953: Comparative Land Use and Transportation Planning
Assignment V: *Highways and Metropolitan Growth-São Paulo Case*
Due Session 21

You are encouraged to discuss any and all aspects of this assignment with your classmates. You are responsible, however, for turning in your own original work. Please be careful in responding to each of the questions below.

You have been asked by a local environmental organization concerned with urban sprawl, transportation air pollution, and increased automobile use to evaluate a recent model developed to estimate the urban development impacts of a limited access beltway proposed for the Southern part of the Metropolitan Region of São Paulo (MRSP), Brazil. Biderman (2006) provides a summary of the model. You have read Prof. Biderman's paper and seen his presentation of the model and results. Your job is to provide a brief (*no more than 4 pages*, double-spaced), well-reasoned, and balanced evaluation of the model as presented. Your evaluation should focus on the following tasks and answering the following questions.

(1) **Basic Model Purpose.** [25 points] Provide a layperson's description of the model's functioning, which should include – at a minimum – answers to the following:
   - What does the model attempt to do?
   - How does the model do this?
   - At what spatial scale does it operate?

(2) **Data.** [10 points]
   - What land use and demographic/economic data are used in the model?
   - If you had the possibility to improve these data in one way (e.g., refine the characteristics of the data or include additional data), what would you ask for? Why?
   - Do land prices figure into the model? If so, how?

(3) **Role of Transportation.** [25 points]
   - How does transportation enter into the model?
   - Is this an *integrated* land use-transportation model? Why or why not?
   - Does the modeling approach seem to account for different transportation modes? Can you tell which modes? How might this affect the model results?
   - Does the model account for different periods of travel (e.g., AM peak)? How might this affect the model results?
   - Does the model account for different trip types? How might this affect the model results?

(4) **Model Assumptions.** [20 points] As in any model, assumptions must be made in specification and estimation.
   - Identify <u>at least</u> three model assumptions that you think are most crucial to the model results. Why did you choose these assumptions and how might they affect the model results? You might benefit by referring to Boarnet & Haughwout (2000) in answering this question.

(5) **Prior Evidence.** [20 points] Evaluate the model results in light of previous research (as summarized by Boarnet & Haughwout, 2000).
- Do the results seem consistent with previous empirical evidence? Why or why not?

Extra Credit: Recommendations. [Up to 10 additional bonus points, an additional ½ page is also allowed, *but not required*, to answer this question] If the relevant authorities proceed with implementing the proposed highway, what suggestions would you make to the environmental group in terms of:
- Financing the proposed infrastructure; and,
- Mitigating any potential adverse effects of the highway?

References
Biderman, C. 2006. Transport and Location decision: The São Paulo External Ring Case. Working Paper.

Boarnet, M. & A. Haughwout. 2000. Do Highways Matter? Evidence and Policy Implications of Highways' Influence on Metropolitan Development. Brookings Discussion Paper. Brookings Institution Center on Urban and Metropolitan Policy, Washington, DC, August.

Additional Information
You can find background information on São Paulo here (this is for your information only; you do not need to reference this information if you do not want to):

Santos, M. "São Paulo: A growth process full of contradictions." In *The mega-city in Latin America* (Alan Gilbert, ed.), United Nations University Press, 1996:
http://www.unu.edu/unupress/unupbooks/uu23me/uu23me0r.htm

Additional Information on São Paulo Metropolitan Transportation:
http://www.stm.sp.gov.br/ingesp/english.html