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11.482J / 1.825J / ESD.193J Regional Socioeconomic Impact Analyses and Modeling
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**Problem Set #1: Introduction to Simulation in Regional and Urban Economics:
Economic-Base Analysis**

PART I Due: Two days after SES # 3.

Final Essay Due: SES # 6.

Please conduct an economic-base analysis of Boston, its vicinity, and the whole state. The following tasks are needed to accomplish the objectives:

PART I:

1. Collect NAICS (North American Industry Classification System) 3-digit and 5-digit data for:
 - a. Employment in Suffolk County (where Boston is located), the 3 surrounding counties as one region (Essex, Middlesex, and Norfolk), the State of Massachusetts, and the United States for 2006. Include in appendix a state map showing the three regions studied (MA, Suffolk and the surrounding counties). The supplement below shows how the data can be extracted from the Census.
 - b. The 2001 employment data for the above counties, the State of Massachusetts and the United States can be downloaded from the U.S. Census Bureau website:
<http://www.census.gov/epcd/cbp/download/cbpdownload.html>.
2. Choose a criterion to define which sectors are in the economic base and explain. (10 points)
3. Calculate the Economic Base for the three regions for 2001 and 2006 and for two industrial classifications (3-digit and 5-digit). (10 points)
4. Describe how the economic base has changed for the three regions between 2001 and 2006. How can you connect the performance of each region with the economic-base analysis? (20 points)

PART II:

5. Compare the results of using the 3-digit and 5-digit industrial classification. Explain why we may expect differences in the two measures. What can you learn from these differences? (10 points)
6. Use 2001 data to forecast the data for 2006. What can you say about the economic base as a forecasting technique? Explain how you test the accuracy of the forecast. (10 points)
7. Suppose the government decides to invest in the research in constructing green buildings, such an investment will increase the employment in engineering-related firms in Massachusetts by 20% of the current (2006) level. Use the economic-base model to forecast the expected impact for 2010. Explain how you did the forecast including how you divided the increase between the regions. What will be the main socioeconomic impact in each of the regions? (20 points)
8. How would your answers change if you had adopted a different criterion in 3 above? (10 points)

Prepare a four-page, double-spaced typed report (excluding references and appendix) with at least one-inch margins and no smaller font than 12 (put the tables and figures separately in an appendix), applying and discussing Tasks 1 through 9. Write your answer as a complete essay, with an introduction, conclusion, and a list of references, focusing on one or more key issues. We will judge the paper based on good writing and on your ability to argue effectively about the economies of the regions.

Points will be deducted for any papers submitted late.