Moody's Mega Math Challenge® 2012

A contest for high school students

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M3 CHALLENGE®

All Aboard: Can High Speed Rail Get Back on Track?

Amtrak's Acela Express, North America's only high speed rail line, provides rail service from Washington D.C. to New York City and Boston. The success of this project was one of the factors in the creation of the High-Speed Intercity Passenger Rail Program (HSIPR), a $53 billion plan to develop a nationwide high speed rail network. The HSIPR identifies ten geographic regions as potential sites for the development of high speed U.S. rail corridors.

Last November, Congress eliminated continued HSIPR funding, with a majority of the members citing the project as too ambitious for the current economic climate. Subsequently, however, legislators from both parties suggested that a refocused version of HSIPR could pass in the future. Congressional leaders have asked your consulting firm to provide mathematically-founded recommendations to use for making decisions on future high speed rail legislation.

Create a model to identify which metropolitan regions are best able to support a high speed rail line. Specifically, your report should address the following issues:

- If we build it, will they ride? Forecast ridership numbers in each region over the next 20 years. How will changes in rail travel times affect potential riders' choice of transportation mode?

- How much will it cost to build and maintain each high speed rail line? Will high speed rail lessen dependence on foreign energy? If so, by how much?

- Using your model, rank each of the ten HSIPR-identified regions in order from most to least deserving of high speed rail funding. Identify both the criteria that you use to produce this ranking, and the ones that are most critical to this evaluation.

You may find the following references of interest:

http://www.bts.gov/

http://www.fra.dot.gov/index.shtml

http://ec.europa.eu/transport/index_en.htm

http://www.amtrak.com