“High-speed Railroad Passenger Services: Ridership Projections for the USA’s Northeast Corridor”

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Refreshments available at 3:30 pm

Abstract: High-speed railroad passenger services were introduced in Japan in the 1960s, in France in the 1980s, and more recently in South Korea, Taiwan and China. These services operate on specially constructed, grade-separated lines at speeds of 270 to 320 km/hour (170 to 200 mph) at headways between principal city pairs of 15 to 30 minutes. The objective of the research presented in this seminar is to ‘project’ the effects on Amtrak’s Northeast corridor ridership of reducing travel times to the level of high-speed railroad services, based in part on the experience of Japan. We use the term ‘project’ to connote that this analysis is NOT based on a demand model, but rather is a ‘projection’ based on the observed empirical relationships.

Amtrak’s services in the Northeast Corridor, serving Washington-New York-Boston, does not yet operate at the speed and frequency of Asian high-speed railroad passenger services. Using passenger counts for 2010 for these services, gravity models were calibrated for Amtrak’s Acela and NE Regional services. These models project annual station-to-station passenger counts using three variables: metropolitan area populations of the stations served; station-to-station travel times; and dummy variables for selected stations. Using these empirical relationships, travel times corresponding to two types of modern high-speed rail services were assumed, and the implied passenger flows projected for each service. Then, the travel time parameters were changed to values estimated for Japan’s Shinkansen services on the Tokyo-Shin Osaka-Hakata line, and the corresponding flows projected. These findings will be presented and discussed.

BIO: Dr. David Boyce, P.E., is Adjunct Professor of Civil and Environmental Engineering at Northwestern University, and Professor Emeritus at the University of Illinois at Chicago. During over 40 years of academic research and teaching, Professor Boyce has studied important methodological issues related to metropolitan transportation and land use planning. He has formulated and solved urban travel and location forecasting models as constrained optimization problems and related constructs, thereby synthesizing elements of network modeling, discrete choice theory and entropy-based methods.

He served as a faculty member at the University of Pennsylvania (1966-77), the University of Illinois at Urbana-Champaign (1977-88), and the University of Illinois at Chicago (1988-2003). He received his B.S. in civil engineering from Northwestern University in 1961, and his Ph.D. in regional science from the University of Pennsylvania in 1965. He also received his M.C.P. from Penn.