



NORTHWESTERN UNIVERSITY
TRANSPORTATION CENTER

Undergraduate Minor in Transportation and Logistics

TRANSPORTATION 310: PREVIOUS PAPER TOPICS

June 2024

First Paper: Case Study

A descriptive case study of a particular transportation or logistics firm or industry, or of a public policy debate.

Aviation

- O'Hare expansion plan
- Airline response to fuel price increases
- Capacity expansion at San Diego airport
- Foreign investment restriction in U.S. aviation
- US Airways / America West merger Airport privatization
- Low-cost air carriers in Asia
- Effect of videoconference on business air travel
- Anti-trust immunity and airline fares
- Evolution of air cargo hubs
- Economic development effects of high-speed passenger rail
- Growth of Emirates, Eithad and Qatar airlines
- Queuing models of airport security screening
- Aviation cabotage
- Transatlantic low-cost airlines
- Essential Air Service program
- Joint venture between American Airlines and Qantas
- Pilot shortage in commercial aviation
- Point-to-point versus hub and spoke service
- Pandemic-era start-up airlines
- American Airlines / US Airways Merger
- Urban air mobility
- Southwest Airlines December 2022 operational meltdown

Environment

- Transportation and the environment

Highways

- Highway privatization
- Effect of highway congestion pricing on retail stores
- Exclusive highway lanes for BRT and taxis
- New York East River crossing tolls
- Intersection design for bicycles
- Urban highway safety: Vision Zero

Logistics / Supply Chain

- Facility location for emergency services
- Dynamic routing for commercial trucks
- Fourth party logistics
- Reverse logistics in retailing
- Mapping for disaster preparedness
- IKEA's supply chain
- Blockchain in logistics industry
- Logistics of blood supply
- Shein's cross-border E-commerce supply chain

Maritime

- Developments in ocean shipping companies
- Container shipping possibilities on the Great Lakes
- Empty container repositioning models amid COVID-19 disruption

Parking

- Design of parking lots
- "Cashing out" of parking by employers
- Cruising for parking

Rail: Freight

- Capacity problems for Union Pacific Railroad
- Railroad track maintenance
- Railroad regulation in the United States
- Defining captive shippers of railroads

Rail: Passenger

- Passenger rail in the United States
- Electronic ticketing for commuter rail
- Effect of California high-speed passenger rail on land use
- Economic impact of Japanese high-speed trains
- The Hyperloop
- German High Speed Rail

Taxis / Ride-hailing

- Long-distance ride sharing

Travel Demand

- Activity-based travel demand models
- Staggered work time schedules and congestion

Trucking

- Regulation of motor carriers
- Autonomous trucks

Urban Mass Transit

- The Chicago area transit financial crisis of 2007
- Transit in Colorado Springs
- Rail transit in Los Angeles
- Barriers to domestic Bus Rapid Transit development
- Express rail service to O'Hare
- ADA Paratransit finances
- Transit expansion in suburban Atlanta
- Honolulu light rail project
- Light rail in Minneapolis-St Paul
- COVID-19 and transit
- Suburban transit hub design principles
- Impact of headways on transit ridership
- Impacts of unreliability on transit demand

Urban Planning

- The *Chicago Metropolis 2020* plan
- Urban growth boundaries
- Effect of urban growth boundary in Portland, Oregon
- Equity in transportation planning

Second Paper: Research Paper

An extended, analytical, paper that evaluates a specific public policy initiative or a business issue.

Aviation

- Effect of competition on air fares
- Essential Air Services program evaluation
- Effect of flight restrictions on Dallas Love Field on fares at Dallas-Fort Worth airport
- Effects when an airport ceases to be a hub (two separate student papers)
- Cabotage in aviation
- Effect of travel across time zones on performance of professional baseball players
- Effect of fuel prices on airline financial performance
- Air cargo to Hawaii

- Effect of airline capacity reductions in 2008
- Worldwide airline stock prices
- Stability of duopoly in airline markets
- Competition and fares on air routes from Las Vegas
- Effect of airline baggage fees
- Growth of transcontinental air service
- Airline market power and flight delays
- Airport security screening
- Effect of “bad news” on airline stock prices
- Optimal locations for hub airports in the United States
- Airfare premium for non-stop flights
- Introduction of “basic economy” air fares
- Pilot shortage in commercial aviation
- Strategies of Ultra-Low-Cost Carriers in the US
- Effect of entry of Allegiant Air on airport demand
- Market share changes after American Airlines / US Airways merger
- The S curve for air market share
- Modeling severe weather in hub-and-spoke and point-to-point air markets
- Ultra-low-cost carrier entry at Albany, NY
- AirTran – Southwest merger
- Network response to the grounding of the Boeing 737Max9

Environment

- Carbon emissions in supply chains

Highways

- Design of Lincoln Street / Sheridan Road intersection
- Cost-benefit analysis of exclusive highway lanes for BRT and taxis
- Effect of texting bans on highway fatalities
- Conditions for implementing “road diets”
- Chicago’s “Loop Link” bus lanes
- Analysis of traffic crash severity in Chicago

Logistics / Supply Chain

- Oil and gas exports from Russia to Europe
- The effect of ethanol as a fuel on food production
- Effect of self-distribution laws on development of craft breweries

Maritime

- Competition between container shipping companies
- Modeling container traffic at Ports of Los Angeles and Long Beach

Parking

- Parking policies on Northwestern’s Evanston campus

Rail: Freight

- Financial feasibility of Positive Train Control
- Pedestrian deaths on the railroad
- Market power in coal transportation from the Powder River Basin
- Development in railways in the Soviet Union 1917-1932
- Equity in highway-grade crossing improvement programs

Rail: Passenger

- High speed passenger rail feasibility in the United States
- Effect of population growth on commuter rail ridership
- Financial performance of high-speed passenger rail
- Ranking U.S. corridors for high-speed passenger rail development
- Effect of new high-speed rail service on land use in Takaoka, Japan

Taxis / Ride-hailing

- Changes in taxi demand by neighborhood in Chicago after the entry of Uber/Lyft etc.
- Modeling demand for long-distance car sharing in France
- Outsourcing of Northwestern University's Saferide system to Via
- Taxi demand following a tax on ride-hailing trips in downtown Chicago
- Redesigning NU shuttles to serve some SafeRide users

Travel Demand

- Effect of e-shopping on shopping trips
- How the valuation of time may vary by mode

Trucking

- Effect of truck driver safety violation notification system

Urban Mass Transit

- Population density and transit performance
- ADA paratransit provision
- Transit investments association with the Olympic Games
- Comparison of transit provision in five cities
- Effect of network expansion on ridership of Los Angeles rail transit
- Comparison of BRT versus LRT ridership in Los Angeles
- Fare elasticities for subway and commuter rail services
- Origin-Destination matrix for the Chicago Transit Authority rail system
- Ridership changes at stations on Dubai's mass transit rail system
- Ridership changes at stations on the Chicago Transit Authority rail system
- Light rail expansion in Minneapolis-St Paul
- Delay propagation on CTA Purple Line express
- Transportation equity in Chicago neighborhoods
- Transit in Jackson, Wyoming
- Equity in bus cancellations