HIGH-SPEED RAIL IN THE U.S.:
THE CASE OF CALIFORNIA AND THE
NORTHEAST CORRIDORS

Recitation 2

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Regina Clewlow
HIGH-SPEED RAIL IN THE UNITED STATES

Source: Federal Railroad Administration, United States Federal Government
OVERVIEW OF CALIFORNIA HSR

- 800 miles of track.
- San Francisco to L.A. in 2hr 40 min.
- Speeds up to 220 mph.
- Reduced greenhouse gas emissions (GHG): 12 billion lbs/year.

Cost
- Construction: - $45 billion.
- Operating: + $1 billion/year.

Financing:
- State & local: $9.95 billion.
- Federal
- Public-private partnerships.

Source: California High-Speed Rail Authority

Map of California HSR plan, April 2010, removed due to copyright restrictions.
Estimated “Door-to-Door” Travel Times in 2020

- By 2020:
  - 11 million more people.
  - 68 additional million trips annually.

- Alternatives to HSR:
  - Auto: 2,970 additional lane-miles on intercity highways.
  - Airports: over 90 new gates and five new runways.

Source: Highlights of the Final Program Environmental Report/Environmental Impact Statement (EIR/EIS) for the proposed California High-Speed Train System, A Study by the California High-Speed Rail Authority and the Federal Railroad Administration
## California: Interregional Trips by Mode

<table>
<thead>
<tr>
<th>Market</th>
<th>Auto</th>
<th>Air</th>
<th>Rail</th>
<th>Total</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA to Sacramento</td>
<td>7,479</td>
<td>4,935</td>
<td>–</td>
<td>12,414</td>
<td>1%</td>
</tr>
<tr>
<td>LA to San Diego</td>
<td>257,441</td>
<td>100</td>
<td>5,395</td>
<td>262,936</td>
<td>17%</td>
</tr>
<tr>
<td>LA to SF</td>
<td>28,031</td>
<td>26,867</td>
<td>–</td>
<td>54,898</td>
<td>4%</td>
</tr>
<tr>
<td>Sacramento to SF</td>
<td>137,739</td>
<td>25</td>
<td>1,816</td>
<td>139,580</td>
<td>9%</td>
</tr>
<tr>
<td>Sacramento to San Diego</td>
<td>175</td>
<td>2,858</td>
<td>–</td>
<td>3,033</td>
<td>0%</td>
</tr>
<tr>
<td>San Diego to SF</td>
<td>4,630</td>
<td>10,309</td>
<td>–</td>
<td>14,939</td>
<td>1%</td>
</tr>
<tr>
<td>LA/SF to SJV</td>
<td>205,205</td>
<td>3,393</td>
<td>926</td>
<td>209,524</td>
<td>14%</td>
</tr>
<tr>
<td>Other to SJV</td>
<td>281,750</td>
<td>243</td>
<td>344</td>
<td>282,337</td>
<td>19%</td>
</tr>
<tr>
<td>To/From Monterey/Central Coast</td>
<td>275,794</td>
<td>3,532</td>
<td>1,105</td>
<td>280,431</td>
<td>19%</td>
</tr>
<tr>
<td>To/From Far North</td>
<td>184,506</td>
<td>3,005</td>
<td>16</td>
<td>187,527</td>
<td>12%</td>
</tr>
<tr>
<td>To/From W. Sierra Nevada</td>
<td>59,192</td>
<td>668</td>
<td>11</td>
<td>59,871</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,441,942</strong></td>
<td><strong>55,935</strong></td>
<td><strong>9,613</strong></td>
<td><strong>1,507,490</strong></td>
<td><strong>100%</strong></td>
</tr>
<tr>
<td><strong>Percent of Total</strong></td>
<td><strong>95.7%</strong></td>
<td><strong>3.7%</strong></td>
<td><strong>0.6%</strong></td>
<td><strong>100%</strong></td>
<td></td>
</tr>
</tbody>
</table>
## CALIFORNIA: MODE SPLIT IN 2030

<table>
<thead>
<tr>
<th></th>
<th>2000 Base Year</th>
<th>2030 without HSR</th>
<th>2030 with HSR</th>
<th>2030 Difference</th>
<th>2030 Difference Pct of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trips</td>
<td>Mode Share</td>
<td>Trips</td>
<td>Mode Share</td>
<td>Trips</td>
</tr>
<tr>
<td>Auto</td>
<td>1,441,942</td>
<td>95.7%</td>
<td>2,320,567</td>
<td>94.5%</td>
<td>2,193,248</td>
</tr>
<tr>
<td>Air</td>
<td>55,935</td>
<td>3.7%</td>
<td>81,668</td>
<td>3.3%</td>
<td>53,823</td>
</tr>
<tr>
<td>Rail</td>
<td>9,613</td>
<td>0.6%</td>
<td>52,099</td>
<td>2.1%</td>
<td>31,790</td>
</tr>
<tr>
<td>HSR</td>
<td></td>
<td></td>
<td>179,482</td>
<td></td>
<td>179,482</td>
</tr>
<tr>
<td>Total</td>
<td>1,507,490</td>
<td>100.0%</td>
<td>2,454,334</td>
<td>100.0%</td>
<td>2,458,343</td>
</tr>
</tbody>
</table>


### Key terms and issues:
- **Mode share**
- **Total traffic**
- **Induced demand**
CALIFORNIA HSR: CURRENT CONTROVERSIES

Revenue forecasts:
- Suggested that ridership forecasts are flawed, for various reasons.

Alignment issues:
- Environmental reviewed delayed for SF-San Jose and L.A.-Anaheim.
The Northeast Corridor (NEC) is the only “high-speed” rail in the U.S.

Provides service for:
- Boston-New York in 4hr 10min
- New York-DC in 2hr 50min

Proposed HSR improvements are costly, but they might reduce emissions from automobiles and aviation on this corridor.

Source: Amtrak, The Northeast Corridor Infrastructure Master Plan
PROPOSED IMPROVEMENTS TO THE NEC

- **Service goals:**
  - Boston-New York in 3hr 24min
  - New York-DC in 2hr 45min

- **$52 billion capital investment over 20 years.**

- **Forecasts:**
  - 59% increase in ridership.
  - 40% increase in train movements.

**Proposed Expansion or Reconfiguration of NEC Intercity Services.**

Source: Amtrak, The Northeast Corridor Infrastructure Master Plan

Figure 3 from the Amtrak NEC Master Plan, 2010 removed due to copyright restrictions.
AIR TRANSPORTATION IN THE NORTHEAST

- Four Northeast airports in the top 10 airports in the U.S. with worst delays:
  - JFK
  - Dulles
  - LaGuardia
  - Newark

Photo: Scott Olson/Getty
Image courtesy of orijinal on Flickr.
NONLINEAR BEHAVIOR OF THESE SYSTEMS

Discussion Questions:
- What are some of the feedback loops in the intercity regional transportation system?
- Where might we see delays?
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Spring 2011

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