



Case Studies on the Economic Impacts of High Speed Rail on US Cities

The New Haven-Hartford-Springfield Rail
Project:

Opportunities for Economic Growth

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US Conference of Mayors Study: A Tale of Four Cities

Q: Can high-speed rail help drive local economies?

A: Yes

Q: How?

A: Higher-density, mixed use development at train stations that support sustainable development

Travel efficiency gains that increase business productivity and labor market access

Expanded visitor markets that generate additional spending

Linking centers of knowledge, finance and technology that support strategic industry clusters

Conference of Mayors Study Approach



Assess the economic impacts of high-speed rail on four US cities of different sizes, economic structure and geographic location.



Evaluate the effects of a range of design and operating speeds on economic development potential and market access.



Identify the concurrent land use, surface transportation infrastructure and economic development strategies needed to support alternative high-speed rail scenarios.

Conference of Mayors Study Findings



Increased market access with higher speed operations provides more “generative” impacts – especially for cities that depend heavily on auto-based intercity connections.



A combination of “allocative” and “generative” impacts occur as travel is directed to downtown and intra-metropolitan stations.



The ability to transform high-speed rail generated traffic volumes into economic growth is highly dependent on interactions between land use, surface connections and economic development strategies.

Conference of Mayors Study: Ridership and Performance Estimates

Orlando

	168 MPH	220 MPH	168 MPH	220 MPH
	Ridership (Millions)		Travel Time	
Orlando-St. Petersburg	2.9	3.7	0:59	0:46
Orlando-Miami	7.5	8.7	1:45	1:31

Los Angeles

	220 MPH	220 MPH
	Ridership (Millions)	Travel Time
Los Angeles-San Francisco	11.1	2:38
Los Angeles-Sacramento	4.5	2:17
Los Angeles-San Diego	3.5	1:18

Conference of Mayors Study: Ridership and Performance Estimates

Albany

	79 MPH	110 MPH	220 MPH	79 MPH	110 MPH	220 MPH
	Ridership (Millions)			Travel Time		
Albany-Buffalo	0.3	0.4	0.8	4:04	3:26	1:46
Albany-Montreal	0.2	0.2	0.4	2:53	2:43	2:25
Albany-NYC	1.4	1.6	2.8	2:12	2:11	1:15
Albany-Boston	0.3	0.4	0.7	2:14	2:09	1:09

Chicago

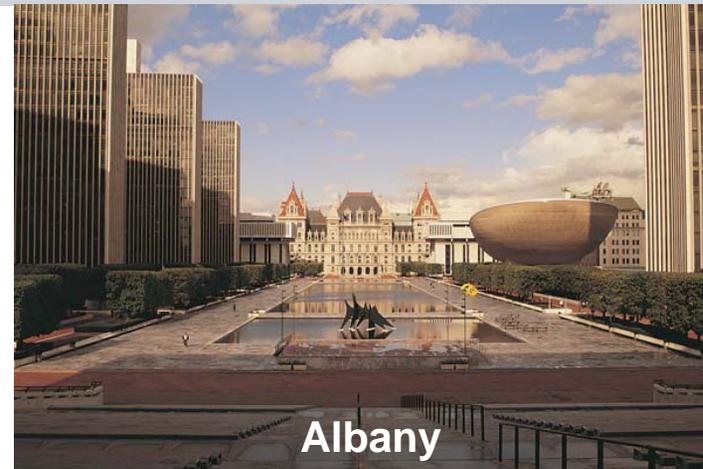
	110 MPH	220 MPH	110 MPH	220 MPH
	Ridership (Millions)		Travel Time	
Chicago - Minneapolis	2.8	5.4	4:46	2:26
Chicago - St. Louis	1.6	3.0	1:55*	1:55
Chicago - Detroit	2.7	5.3	3:18	1:41

Effects of HSR Performance on Economic Impacts

- **Albany – 79 mph:**
 - New Jobs: 3,200
 - New Output: \$0.4 billion
 - New Wages: \$0.2 billion
- **Chicago – 110 mph:**
 - New Jobs: 18,000
 - New Output: \$2.6 billion
 - New Wages: \$1.0 billion
- **Orlando – 168/186mph:**
 - New Jobs: 21,000
 - New Output: \$2.2 billion
 - New Wages: \$0.9 billion
- **Albany – 110 mph:**
 - New Jobs: 4,700
 - New Output: \$0.6 billion
 - New Wages: \$0.3 billion
- **Los Angeles – 220 mph:**
 - New Jobs: 55,000
 - New Output: \$7.6 billion
 - New Wages: \$3 billion
- **Chicago – 220 mph:**
 - New Jobs: 42,200
 - New Output: \$6.1 billion
 - New Wages: \$2.5 billion
- **Orlando – 220 mph:**
 - New Jobs: 27,500
 - New Output: \$2.9 billion
 - New Wages: \$1.2 billion
- **Albany – 220 mph:**
 - New Jobs: 21,000
 - New Output: \$2.5 billion
 - New Wages: \$1.1 billion

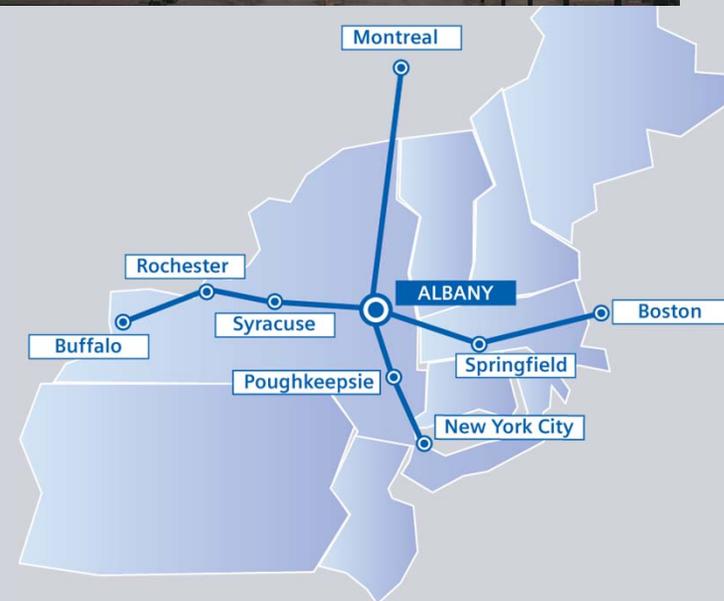
Albany – Population 757,000

- Create faster access between Albany and New York markets
- Additional potential jobs could grow to 2,500 for tourism and convention related jobs, as well as 6,000 for technology and related industries
- Anchor new station development in the Capital District and support cultural and professional centers



Why does HSR make sense for Albany?

Albany is home to several colleges and universities. A new \$185 million convention center & hotel complex can increase convention delegates from 120,000 each year to 250,000. Rapid access to business and financial centers in New York will strengthen emerging technology and research cluster development.



Orlando – Population 2,082,000



- HSR may bring \$255 million annually in new visitor and business spending into the area
- Provide better access for workers traveling to Orlando's tech and medical centers
- Additional development around OIA high-speed rail station and Orlando Convention Center can help generate more than 50,000 jobs



Why does HSR make sense for Orlando?

Orlando is a top tourist destination, most well known for its entertainment and theme parks. HSR will help visitors connect with cities faster including the Space Coast. It will also improve labor market access for the medical research, pharmaceutical and healthcare sectors.

Los Angeles – Population 12,875,000



- New visitors will help bring at least \$360 million per year of new spending in the downtown area
- 6,400 workers and visitors who drive to downtown LA will go from road to HSR
- Every day 6,500 California residents will come to downtown LA for business and entertainment instead of going elsewhere in the metropolitan area.



Why does HSR make sense for LA?

Los Angeles is a center for film, entertainment and tourism. It is also the site of the most active seaport in the Western Hemisphere. Much of its economic base depends on connectivity to other parts of California, the United States and overseas. HSR will bring people directly to downtown Los Angeles.

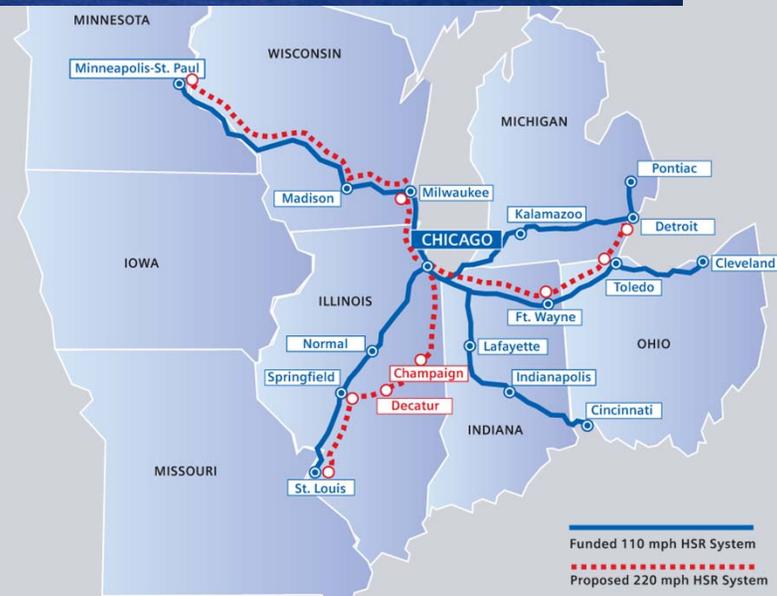
Chicago – Population 7,998,000

- Expand labor markets and increase connectivity to major cities across the Midwest
- Bring intercity travelers directly to downtown
- Strengthen new development in the Union Station area
- New visitors will spend \$50 million dollars each year in Chicago generating 2,000 new jobs



Why does HSR make sense for Chicago?

Chicago is an economic center for the Great Lakes-Midwest economic region with nearly one million people living within a 550-mile distance reaching eight states. The city is a major transportation gateway of the Midwest, the U.S. and the world.



Study Conclusions



High-speed intercity rail service can create significant economic development opportunities for all types of cities based on their unique characteristics.



High-speed intercity rail service can facilitate and optimize local and regional connections that support sustainable cities.



High-speed intercity rail service can help cities maintain and develop regional business, cultural and technology centers and support broad-based, long-term economic growth.

Key Issues Identified in Case Studies

▪ Albany

- Positive Factors: Drawn more closely to New York Metropolitan economy
- Problems to be Resolved: Connectivity to Capital area from Rensselaer station stop

▪ Orlando

- Positive Factors: Connections to “Space Coast” industries broadens economic base
- Problems to be Resolved: Location of HSR stops within metro area

▪ Los Angeles

- Positive Factors: Creates “Center” for LA that delivers “captive” demand
- Problems to be Resolved: Creating downtown development strategy of appropriate scale and density

▪ Chicago

- Positive Factors: Creating a “Hub” for Midwestern HSR network
- Problems to be Resolved: Balancing connection to O’Hare and Midwest markets

Chicago Supplemental Infrastructure Study



Develop a “vision plan” for true HSR service connecting major metropolitan areas within 300 - 450 miles of Chicago.



Identify potential investments that may be required in Chicago and the Midwest to support a truly “high-speed” intercity passenger-train network.



Build on the foundation of multi-state cooperative rail planning that has been ongoing in the region for approximately 15 years.

Chicago Supplemental Infrastructure Study

■ **Addressed System Design Considerations:**

- Integration of O'Hare with HSR serving 17 major Midwest metro areas
- Location of metro stations to integrate with commuter rail and transit system
- Expansion of lines to include new routing (for Minneapolis HSR) and new route (Cincinnati)
- Improved intercity times by improving alignments and using under-utilized existing rights-of-way
- Expanded frequency of HSR services for both peak and off-peak hours

Chicago Study Shows Importance of Operating Assumptions

Midwest High Speed Rail

	150 MPH	220 MPH	150 MPH	220 MPH
	Ridership (Millions)		Travel Time	
Chicago - Minneapolis	12.5	15.9	3:45	2:45
Chicago - St. Louis	6.0	7.9	2:43	1:55
Chicago - Cincinnati	5.9	7.2	2:29	1:55
Chicago - Detroit/Cleveland	10.6	12.7	2:26 / 2:49	1:55 / 2:15

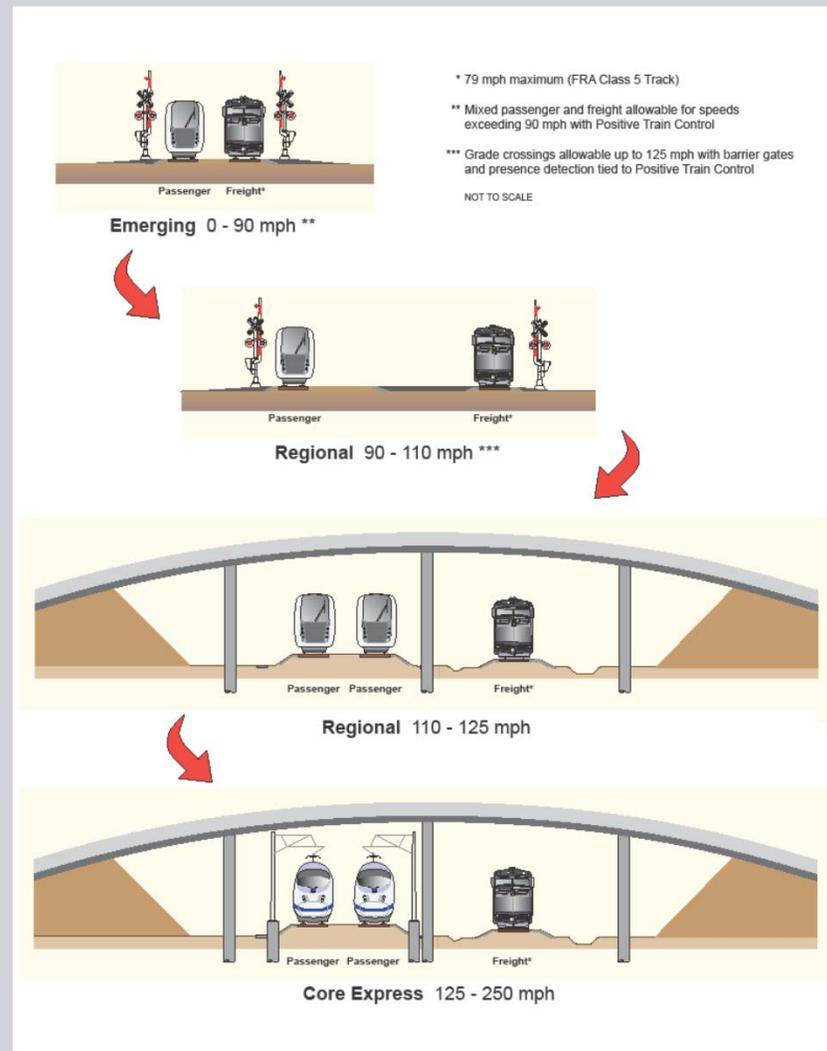
US Conference of Mayors

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HSR Can be Introduced Incrementally Through Infrastructure Upgrades in Specific Segments

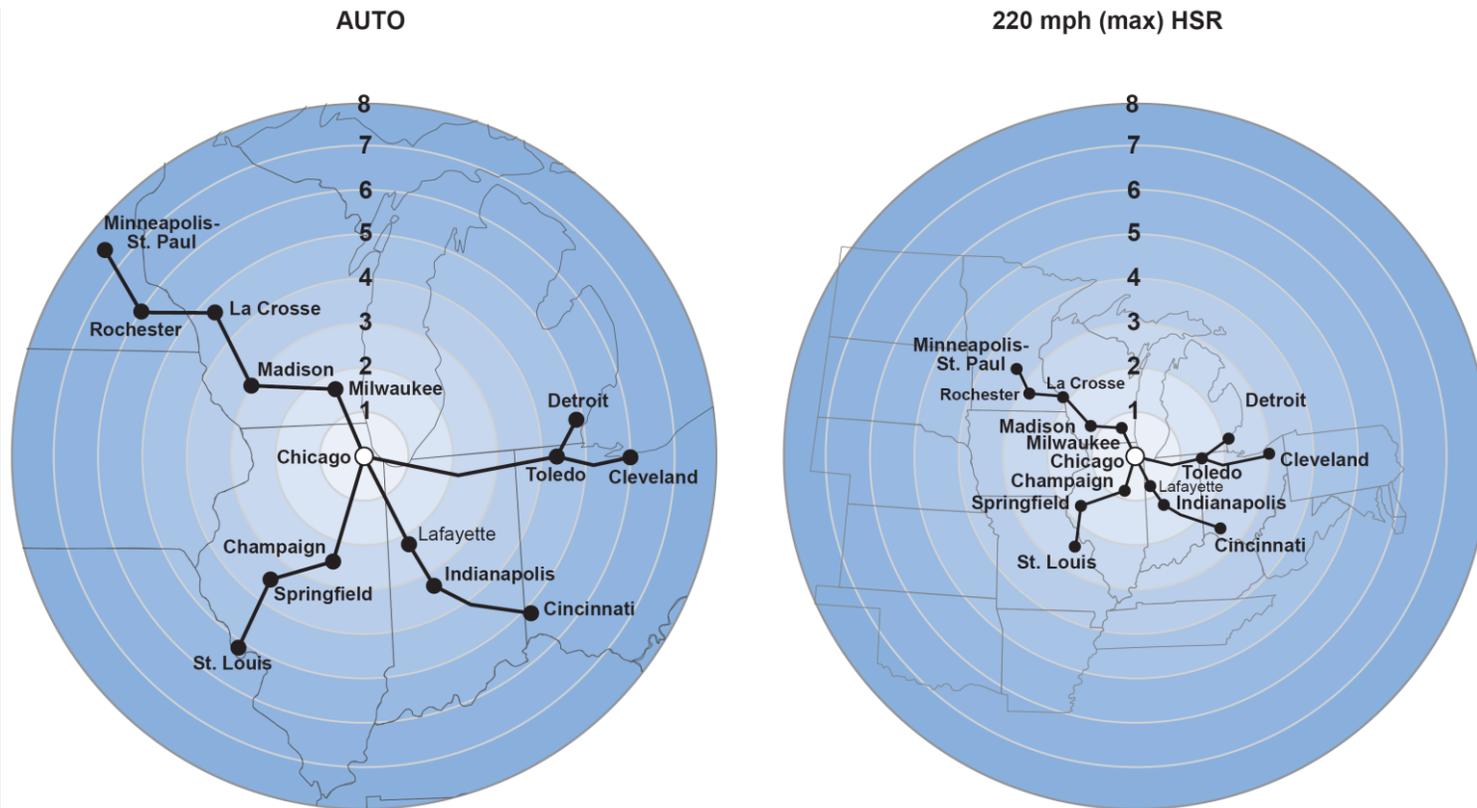
- Phase 1: Emerging Corridor – Class 5 track with a maximum permissible freight speed of 80 mph and 90 mph passenger operations
- Phase 2: Regional Corridor – Separate passenger track within a shared corridor supporting passenger speeds up to 110 mph; grade crossings with upgraded “sealed corridor” safety treatments
- Phase 3: Regional Corridor – Separate directional tracks for speeds between 110 and 125 mph; elimination of grade crossings
- Phase 4: Core Express Corridor – Electrification of passenger tracks allow true HSR speeds where track alignment and station spacing permit

Upgrade vehicle fleet in a parallel to 110, 125 and true HSR (150 – 250mph):



Source: AECOM and EDR Group, 2011

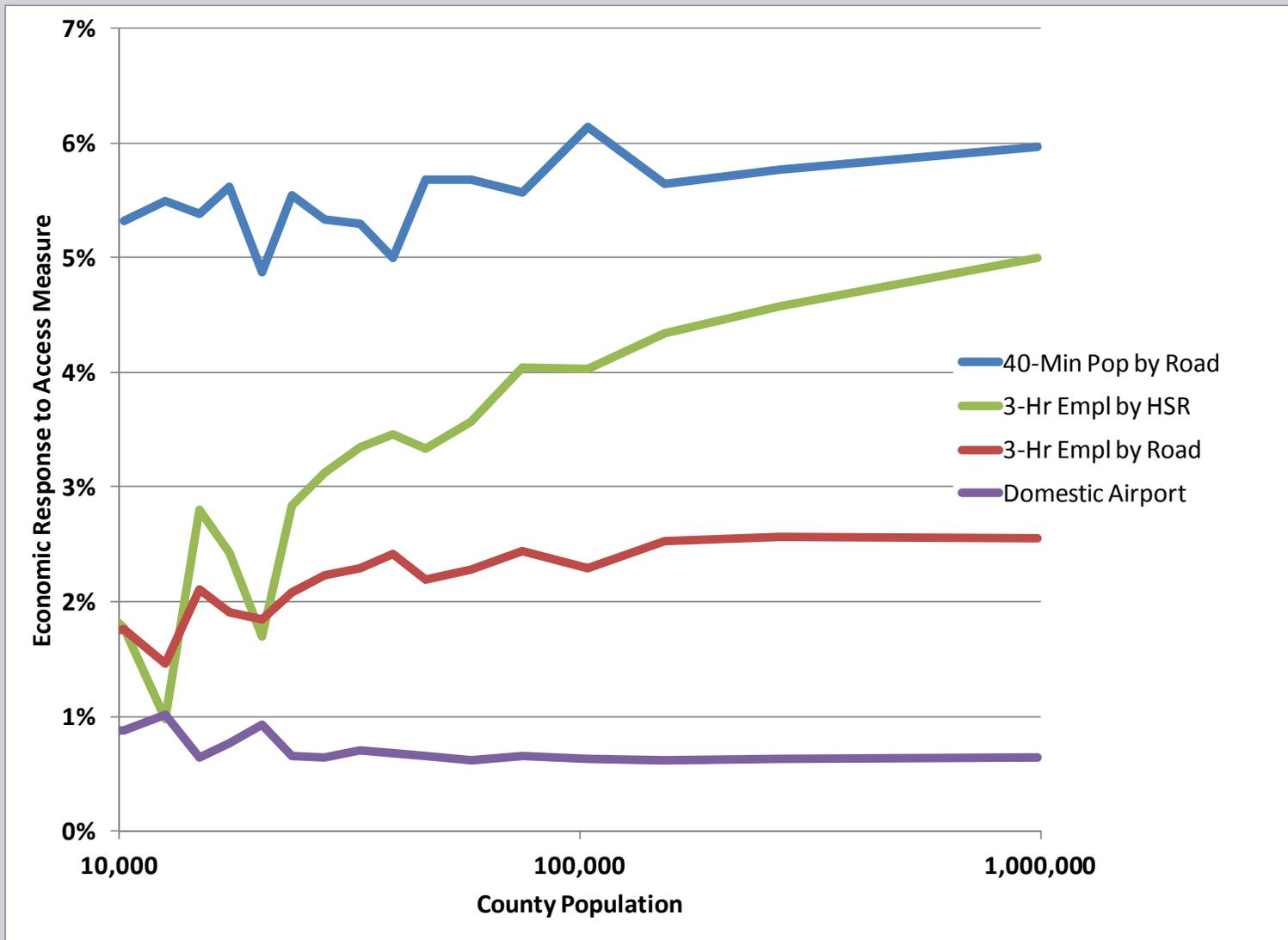
220 Service Provides Single Day Round-Trip



HSR reduces travel times and “shrinks” the distances between cities.

Travel time by automobile is shown on the left and by 220-mph HSR on the right, holding the travel time scale constant. The Midwest’s largest metropolitan areas would be less than three hours from Chicago via HSR.

Sensitivity to Market Access for Professional, Scientific, Technical Services Sector



Chicago Infrastructure Study Findings



Four corridors centered on Chicago appear appropriate for eventual upgrade to true HSR service (220+ mph): Minneapolis/St. Paul, St. Louis, Cincinnati and Detroit/Cleveland.

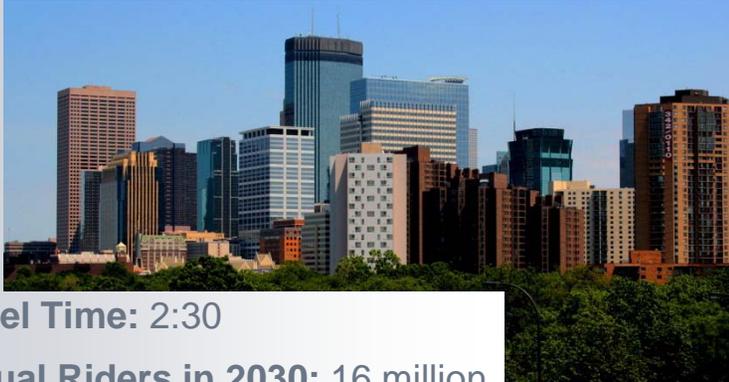


HSR network would serve the nine largest metropolitan areas of the Midwest, and a total of 17 major cities, providing end-to-end service under three hours in each corridor.



By 2030, the entire HSR network would carry 43 million riders with nearly 22 million destined for the Chicago metropolitan area.

Midwest HSR (220-mph) Corridors



Travel Time: 2:30
Annual Riders in 2030: 16 million
Capital Cost Estimate: \$29 billion

Twin Cities



Travel Time: 1:55
Annual Riders in 2030: 8 million
Capital Cost Estimate: \$16 billion

St. Louis



Travel Time: 1:55
Annual Riders in 2030: 7 million
Capital Cost Estimate: \$14 billion

Cincinnati



Travel Time: 1:55/ 2:15
Annual Riders in 2030: 13 million
Capital Cost Estimate: \$27 billion

**Detroit/
Cleveland**

Estimated Annual Impacts for 2030

Impacts on:	Measured by:	150-mph Service	220-mph Service
Jobs	<i>Employees</i>	58,000	103,600
Income	<i>(\$ billions)</i>	\$3.0	\$5.5
Business Sales	<i>(\$ billions)</i>	\$7.6	\$13.8

- For the 220-mph scenario, approximately 21.2 million riders out of the 43.7million estimated (one-way) riders are Chicago-based .
- For the 150-mph service scenario, 16.7million of the approximately 35.0million annual riders are Chicago-based.
- Impacts include direct and multiplier effects for the Chicago metropolitan area.

Sources of Economic Impacts

Impact Category	Units	220-mph Service		
		Travel Time Savings	Visitors	Improved Market Access
Jobs <i>(percent of total employment)</i>	Jobs	27,040 26.1%	11,410 11.0%	65,160 62.9%
Income <i>(percent of total income)</i>	(\$ billion)	\$ 1.3 23.2%	\$ 0.4 7.6%	\$ 3.8 69.2%
Business Sales <i>(percent of total output)</i>	(\$ billion)	\$ 3.4 24.6%	\$ 1.1 8.2%	\$ 9.2 67.1%

Market access impacts come from both induced and diverted trips; Travel time savings accrue to current travelers; Visitor impacts come from both diverted and new trips to the metro area.

Visitor Spending Impacts for the City of Chicago

Visitor Spending by 2030 in Cook County *(in \$ millions)*

<u>Impacts on:</u>	<u>150-mph Service</u>	<u>220-mph Service</u>
New Visitor Spending	\$107.3	\$157.8
Diverted/Rerouted Visitor Spending	\$122.5	\$156.3
Total Visitor Spending	\$229.8	\$314.1
Visitor-Related Jobs	4,400	6,000

- Visitor spending reflects new and induced trips for both tourists (recreational and leisure) and business travelers.
- Spending patterns also reflect travelers arriving at the downtown Chicago and Metra stations served by HSR, who would have driven or flown to locations in the metropolitan area outside of Cook County

Chicago Study Conclusions



Increased attention to network effects increases economic benefits by over 40%



Designing feeder systems for HSR also expands HSR markets and contributes to sustainable ridership for supporting networks



Overall system design is optimized when same-day round trips are feasible (3-hour maximum travel times) between major metropolitan areas in network

HSR Development “Checklist”

. . . Key System Planning Considerations

Identify economic connections to other metro market areas

Locate and develop key downtown HSR stations

Consider intermediate HSR station market conditions

Consider potential for through or connecting rail service

HSR Development “Checklist”

. . . Key Station Planning Considerations

Design multimodal access improvements to station areas

Create connecting rail, transit and local distribution services

Create short-term transition to support phasing plans

Coordinate long-term systems plans to support true HSR

Economic Development Initiatives: Interactive Effects

- **Effects of Concurrent Infrastructure**

- Water, sewer, broadband, power, etc.
- Range of effects: -40% to +31%

- **Supportive Land Use Policies**

- Permitting, zoning, special districts, etc.
- Range of effects: -34% to +24%

- **Business Incentives**

- Tax increment financing, abatements, job training programs, etc.
- Range of effects: -12% to +20%

Important Station Area Development Characteristics

- **Distances between HSR metro-area stations**
 - “Rationalize” current and/or future development patterns
- **Scale**
 - Supportive density and allowable building codes
- **Connectivity**
 - Available/planned surface linkages with transit and commuter systems
 - Feeder systems designed to deliver intercity ridership
 - Local circulation and access characteristics
- **Markets**
 - Critical mass of existing or developing businesses
 - Absorption potential that corresponds to increased market access
- **Value Capture Potential**
 - Value proposition based on location, scale, connectivity and market factors
 - Business case for high-density development

Regional/Commuter Served Centers

Amtrak Station	2010 Population in Market Area*	Distance to Major City CBD	2010 Population in CBD Market Area*
New Carrollton, MD	5,409,400	12 miles to DC	5,207,500
		30 miles to Baltimore	3,512,500
Metropark, NJ	12,340,880	30 miles to Manhattan	15,315,800
		70 miles to Philadelphia	5,177,700
Stamford, CT	8,380,700	40 miles to Manhattan	15,315,800
		43 miles to New Haven	1,827,500
Providence, RI	4,063,352	52 miles to Boston	4,063,400
		175 miles to Manhattan	15,315,800

Primary HSR Markets in Northeast

City-Pair		Drive Distance	Drive Time	150- mph Service	220- mph Service	Air Passenger Volume
Montreal	Hartford	330 mi	5:35	3:57	2:03	N/A
Brattleboro	Hartford	85 mi	1:26	1:13	0:42	N/A
Boston	Hartford	100 mi	1:49	1:22	0:46	287
New York	Hartford	122 mi	2:08	1:46	1:01	26,303

- **Travel times for 220-mph service within the 3-hours Same-Day window**

- **HSR generally diverts between 40% and 70% of air passenger volume depending on relative time savings**

QUESTIONS?

