TOD for HSR Success along the Northeast Corridor

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Regional Plan Association

With Support From: Lincoln Institute of Land Policy

October 17th, 2011

Possible Next-Gen High Speed Rail Alignments for New England Explored by Amtrak

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Evaluative Criteria

- Speed and travel times
- Projected Ridership
- **Development impact around stations**
- Local transit connectivity
- Carbon reduction from concentration of growth in city centers
- Ease and cost of acquiring and constructing right of way
- Political realities
- Existing population centers
- Existing employment centers
- Existing auto congestion and travel patterns

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NE Corridor build-out Modeling

Beyond the ¼ mile: Define a "primary impact area"

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Infill Build-out Land Use Types

- Downtown Core (large cities)
- Downtown Core (small cities)
- Transition (large cities)
- Transition (small cities)
- Office
- Industrial
- Multifamily Residential

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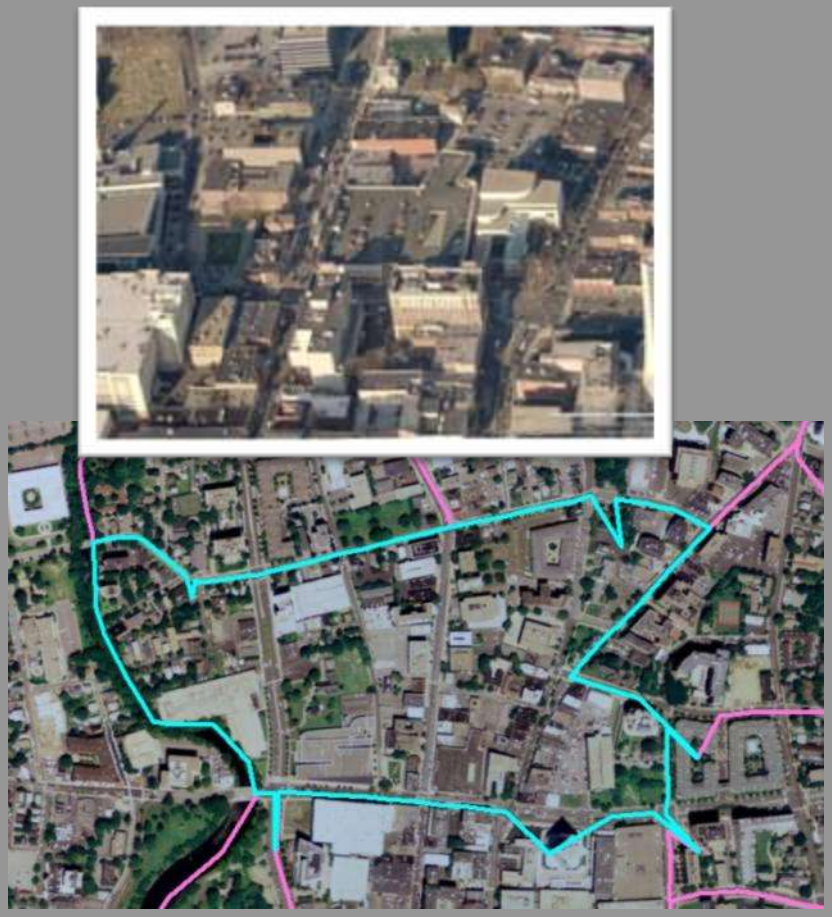
Large Downtown Core



Large Core with room to grow (Stamford, CT)
45 jobs/acre
7.5 du/acre

Large Core (White Plains, NY)
81 jobs/acre
9.2 du/acre

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Small Downtown Core

Small Core
(Bridgeport, CT)
35 jobs/acre
1.6 du/acre

Small Core room to grow (Woonsocket, RI)
11 jobs/acre
4 du/acre

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Large City Transition

Large City Transition (Palo Alto, CA)
39 jobs/acre
3.5 du/acre

Large City Transition with room to grow (Danbury, CT)
26 jobs/acre
0 du/acre

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Small City Transition

Small City Transition
with room to grow
(Bridgeport, CT)
3.3 jobs/acre
2.2 du/acre

Small City Transition
(Stamford, CT)
24 jobs/acre
14 du/acre

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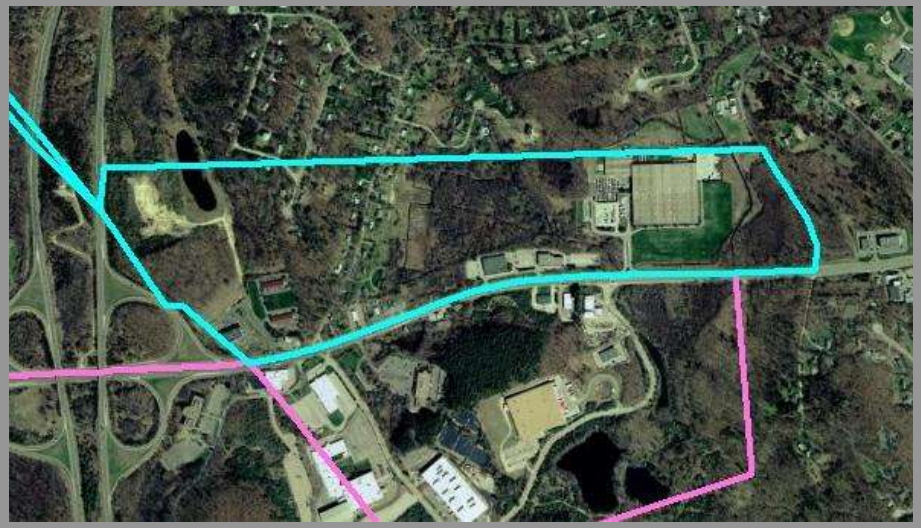
Office

Office (Route 128, MA)
25 jobs/acre

Office with room to grow (MetroWest, MA)
5.3 jobs/acre



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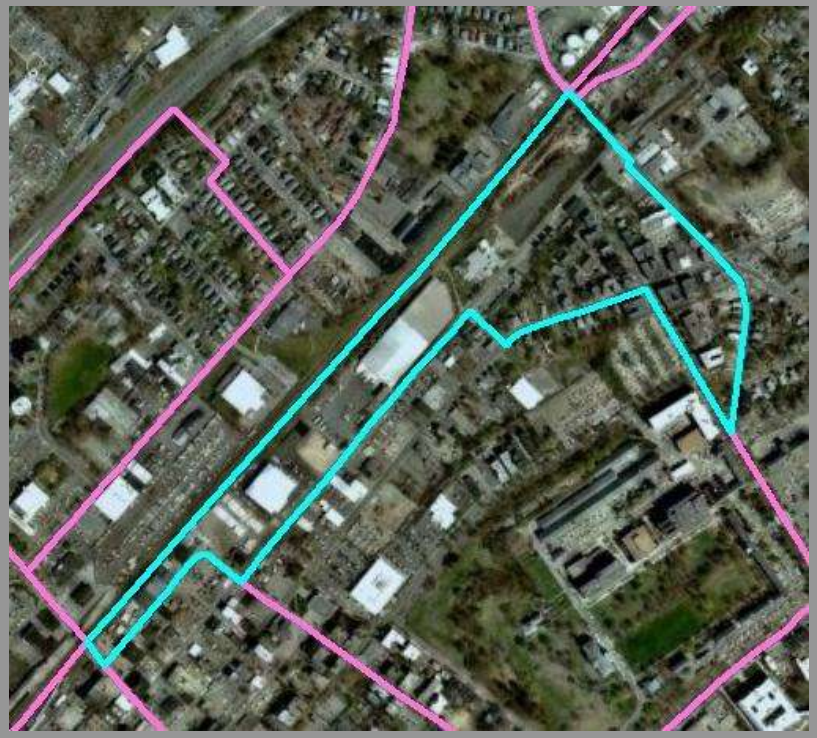
Industrial

Industrial with room to grow (Springfield, MA)
2.6 jobs/acre



Office (Springfield, MA)
22 jobs/acre

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Multi-family Residential

Multi-family with room to grow (Springfield, MA) 13 du/acre

Multi-family (Stamford, CT) 26 du/acre

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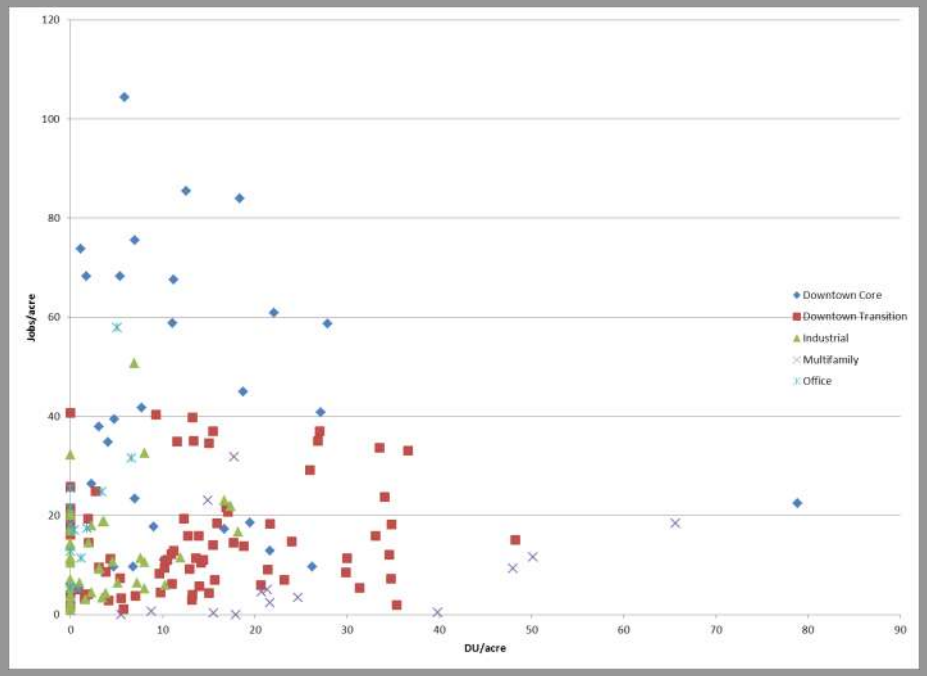
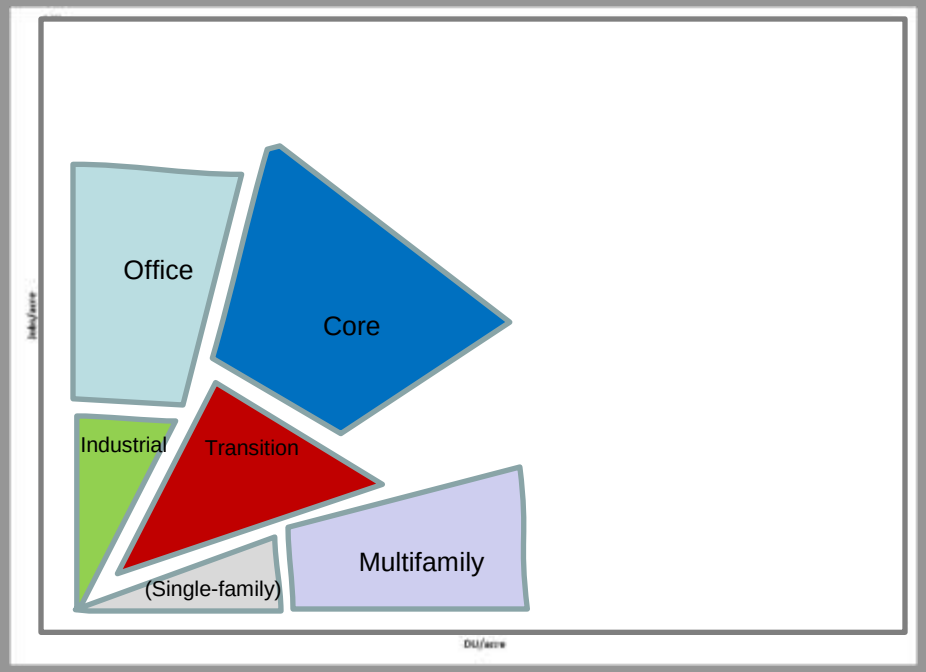
Land Use Composition





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Benchmark Numbers

Land use type	Benchmark Jobs/acre	Benchmark DU/acre
Core (large city)	75	25
Core (small city)	35	15
Transition (large city)	40	25
Transition (small city)	20	20
Office	30	0
Industrial	20	0
Multi-family Residential	0	25

**Large/small core is above/below 42 jobs/acre*

**Large/small transition is above/below 24 jobs/acre*

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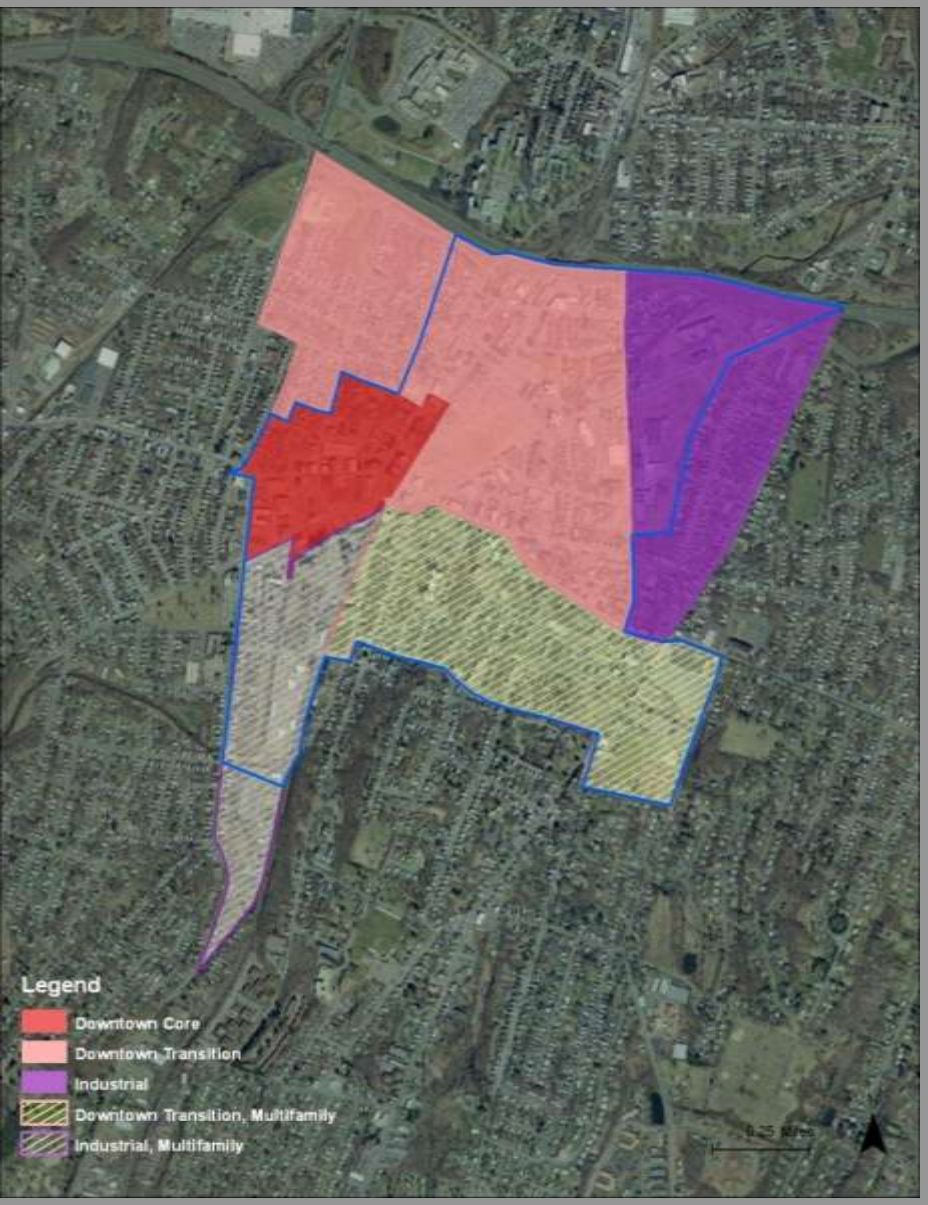
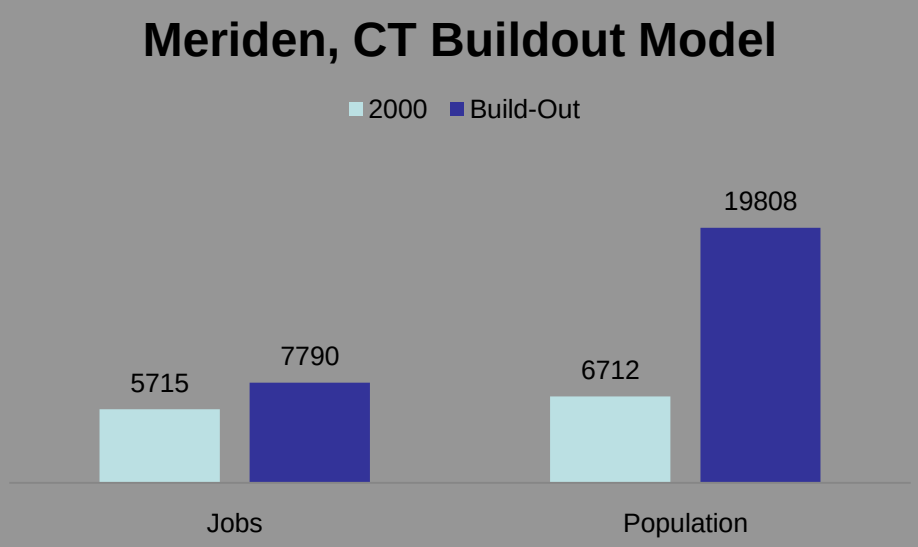
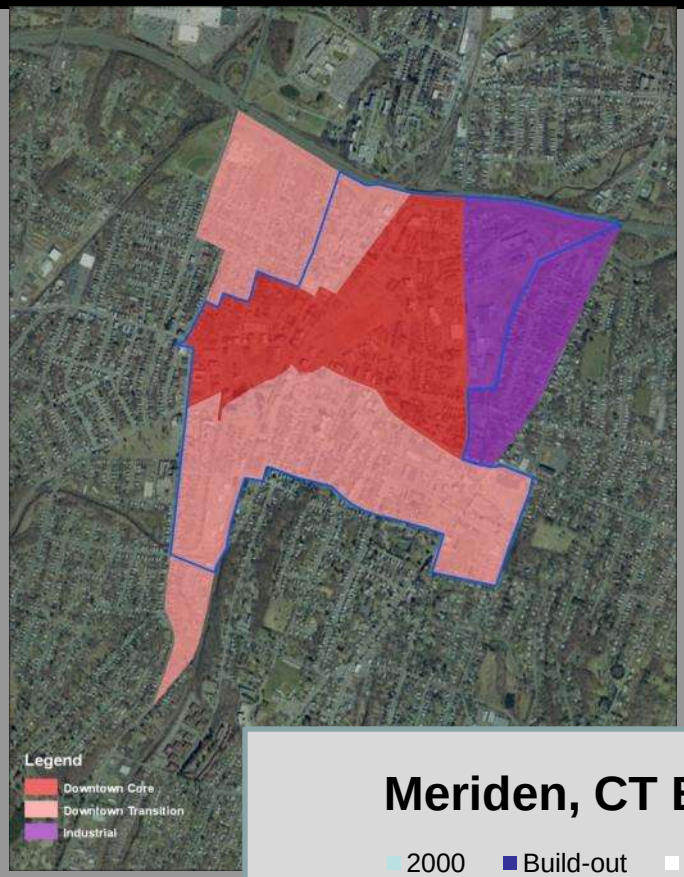
NE Corridor build-out Modeling

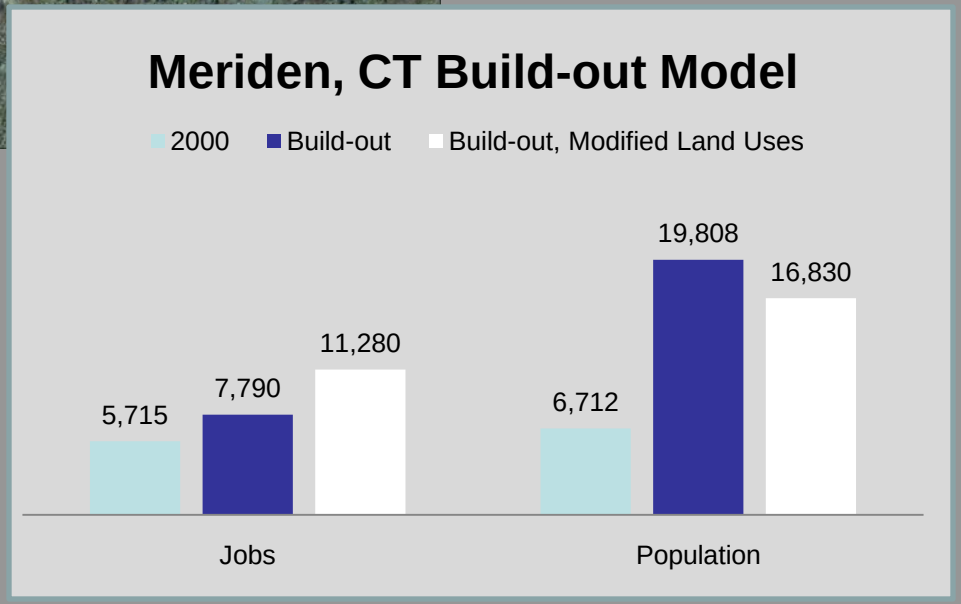
Meriden, CT





NE Corridor build-out Modeling





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NE Corridor build-out Modeling

Route		New York City	Jamaica/JFK	Ronkonkoma	New Rochelle	HPN	Danbury	Waterbury	Stamford	Bridgeport	New Haven	Meriden	Hartford	Uconn	Woonsocket	Springfield	Metrowest	Riverside	New London	Providence	Route 128	Boston	Total additional employment /population
1	employment				4,149				13,606	25,354	20,023								2,524	12,506	26,729		**104,891**
	population				12,923				36,926	61,140	64,289								5,672	27,478	0		**208,428**
2	employment		x	x							20,023	2,074	5,880	x	5,061						26,729		**59,767**
	population		x	x							64,289	13,095	48,494	x	10,436						0		**136,314**
3	employment				4,149	x	2,774	7,970					5,880	x	5,061						26,729		**52,563**
	population				12,923	x	10,689	15,390					48,494	x	10,436						0		**97,932**
4	employment				4,149				13,606	25,354	20,023	2,074	5,880			49,668	13,848	1,264					**135,866**
	population				12,923				36,926	61,140	64,289	13,095	48,494			97,387	0	0					**334,254**
5	employment		x	x							20,023								2,524	12,506	26,729		**61,782**
	population		x	x							64,289								5,672	27,478	0		**97,439**
6	employment		x	x							20,023	2,074	5,880			49,668	13,848	1,264					**92,757**
	population		x	x							64,289	13,095	48,494			97,387	0	0					**223,265**
7	employment				4,149	x	2,774	7,970					5,880			49,668	13,848	1,264					**85,553**
	population				12,923	x	10,689	15,390					48,494			97,387	0	0					**184,883**
8	employment				4,149				13,606	25,354	20,023	2,074	5,880	x	5,061						26,729		**102,876**
	population				12,923				36,926	61,140	64,289	13,095	48,494	x	10,436						0		**247,303**
9	employment		x	x							20,023	2,074	5,880	x			13,848	1,264					**43,089**
	population		x	x							64,289	13,095	48,494	x			0	0					**125,878**

Matrix of alternative routes built-up from different segment combinations.

Each alternative route has A different total build-out.

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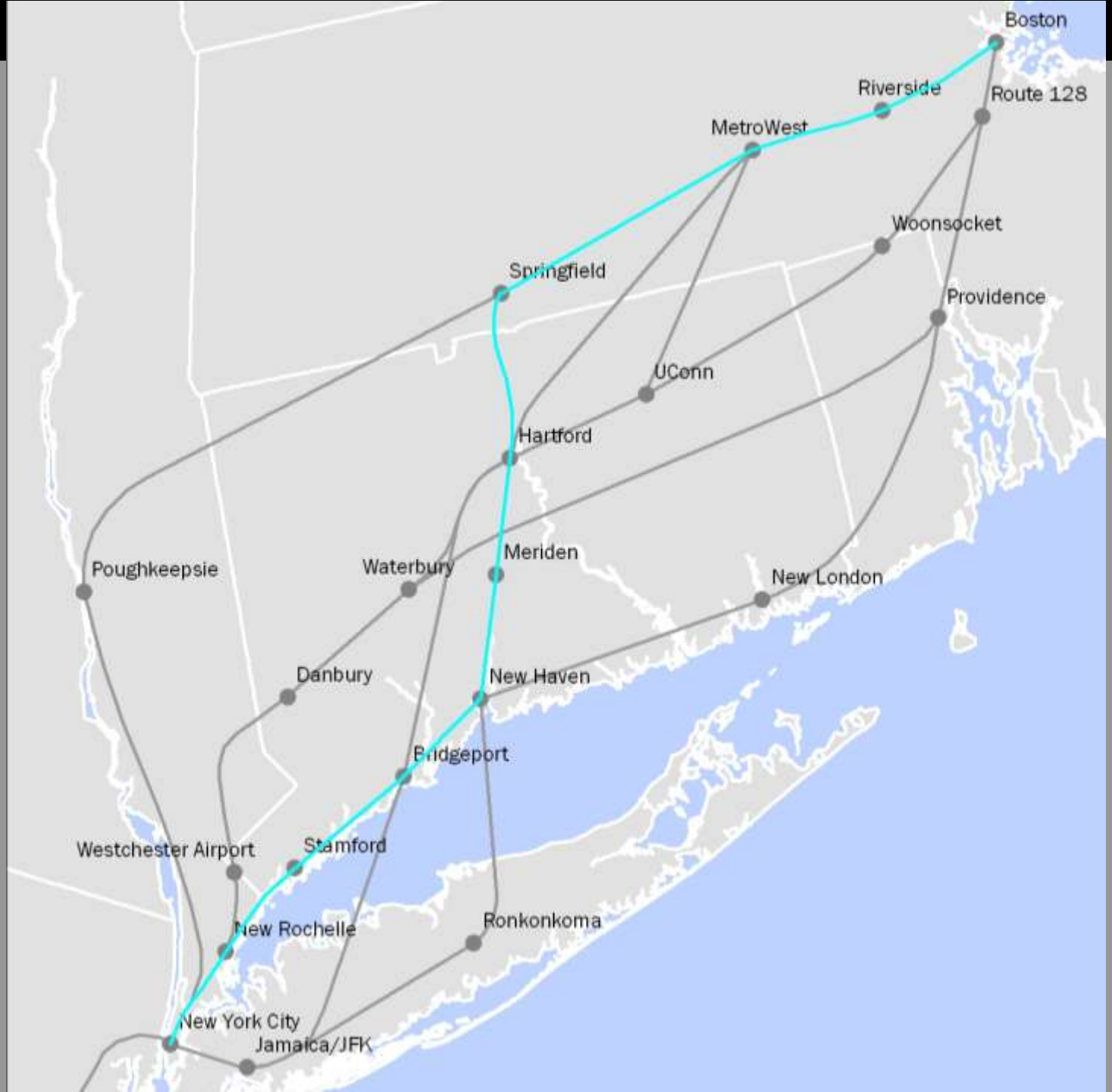
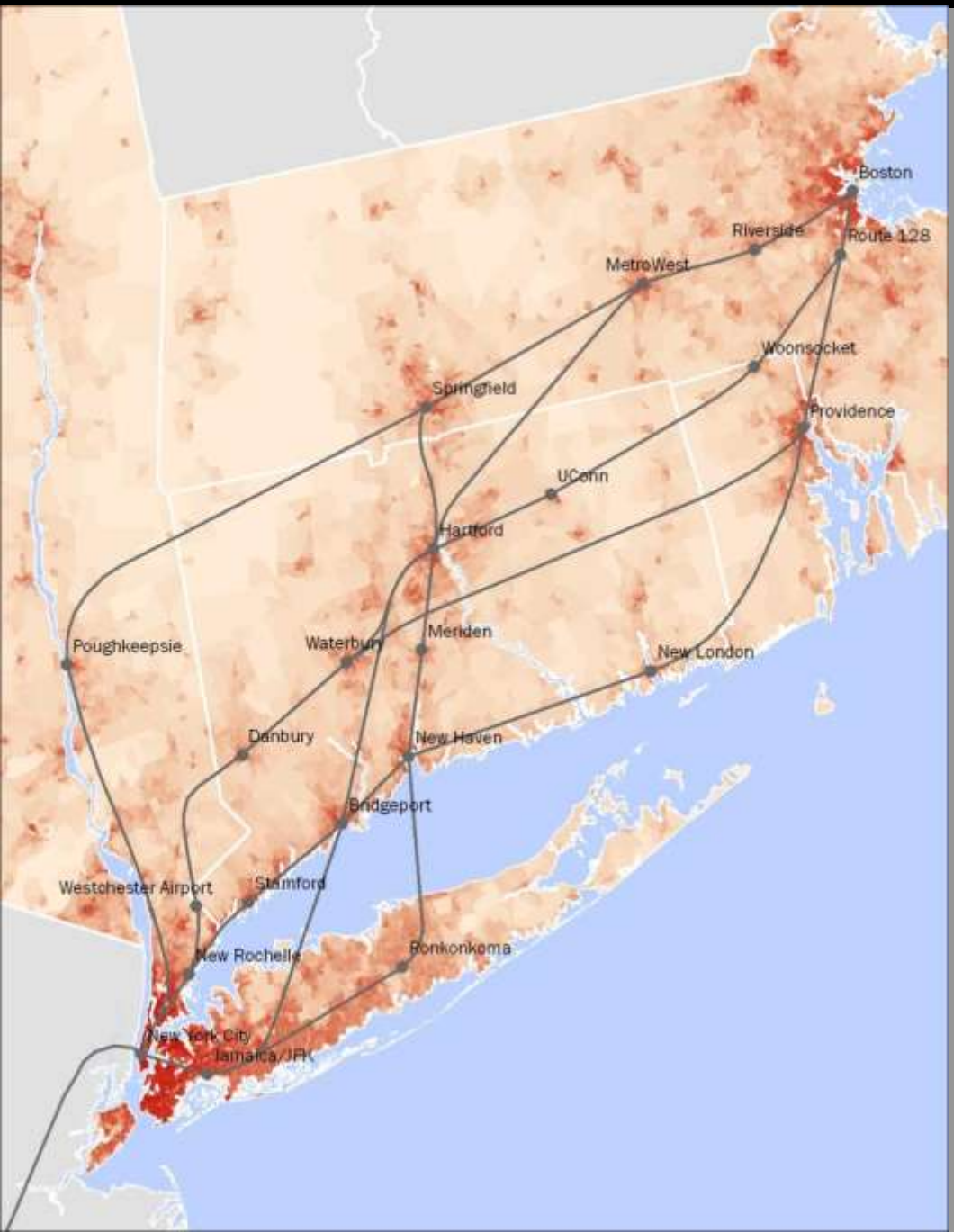

Boston
Riverside
Route 128
MetroWest
Woonsocket
Springfield
Providence
UConn
Hartford
Meriden
Poughkeepsie
Waterbury
New London
Danbury
New Haven
Bridgeport
Westchester Airport
Stamford
New Rochelle
Ronkonkoma
New York City
Jamaica/JFK



Population Density along the Corridor

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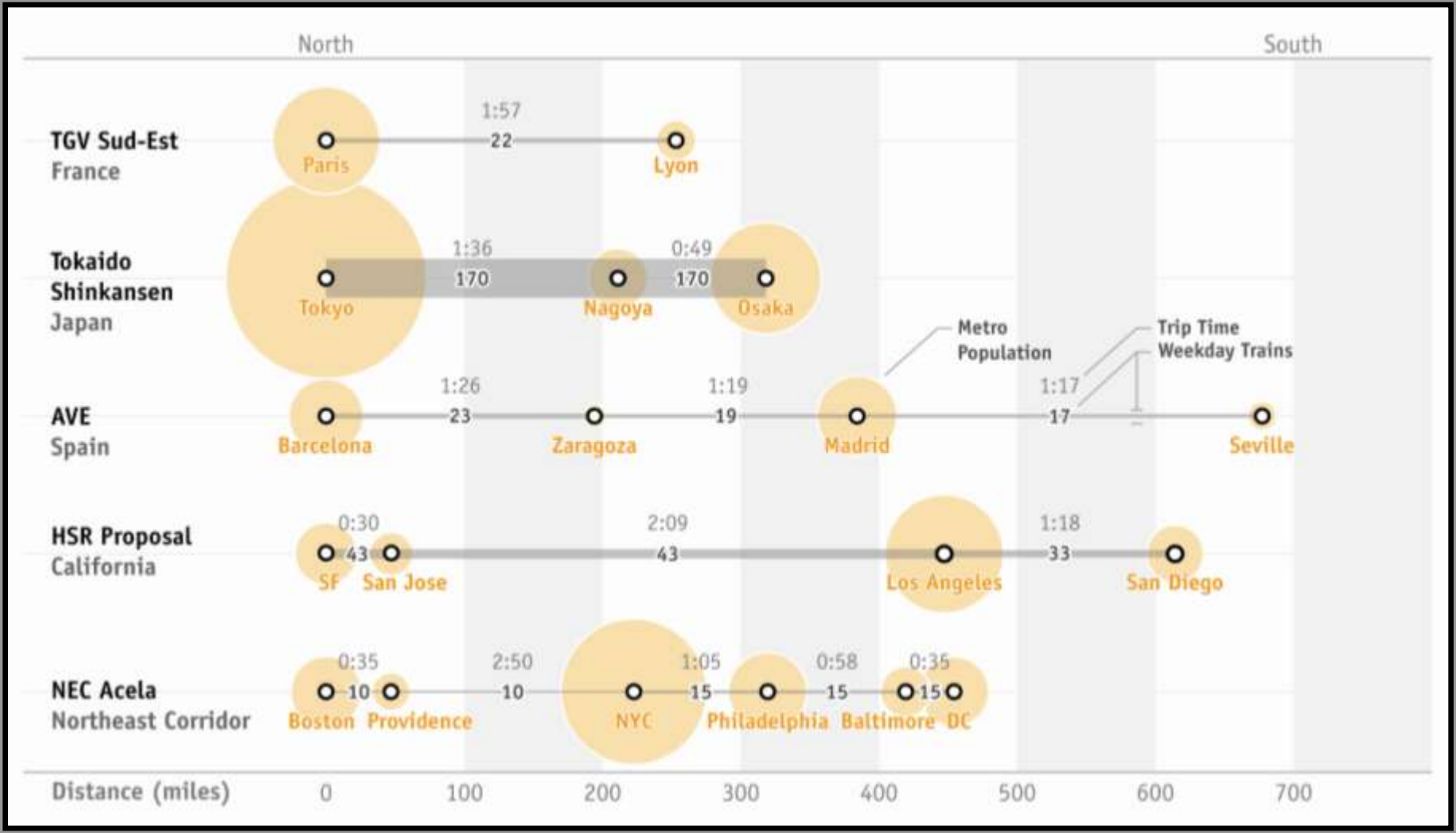
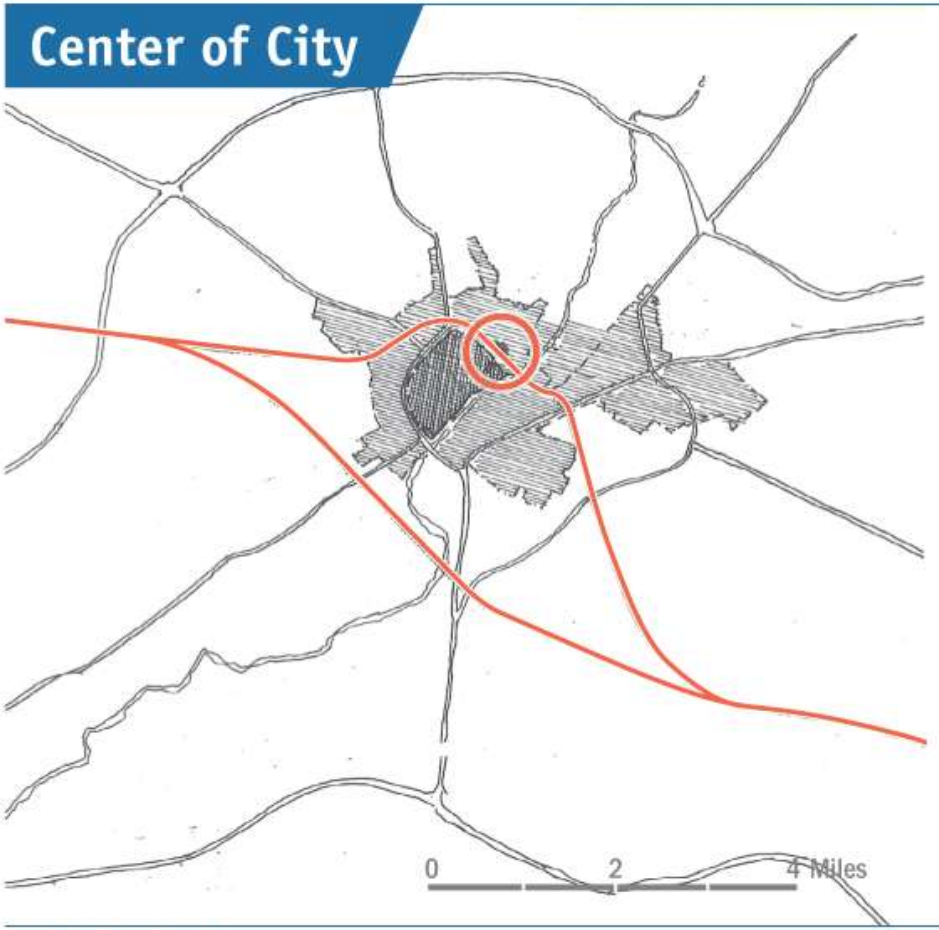
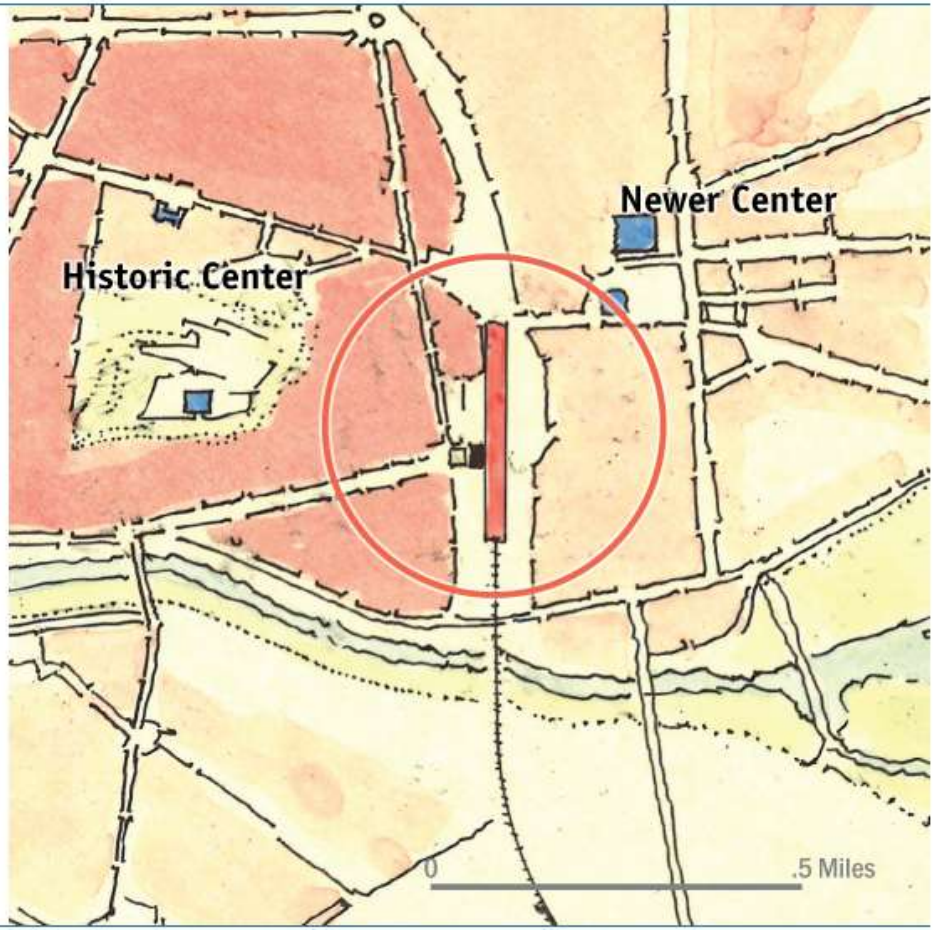
U.S. High-Speed Rail Corridors: Comparable to Global Examples



Center of City : Lleida, Spain





Lleida, Spain

City Population: **137,000**
Metro Population: **250,000**
Year Opened: **2003**
Frequency of Service **41 trains daily**
Distance to Major Destinations:
2 hrs to Madrid; 1 hr to Barcelona

Impact

Tourism grew 15% annually. Business conventions up 20%. New high-tech industrial park built nearby.

Lessons Learned

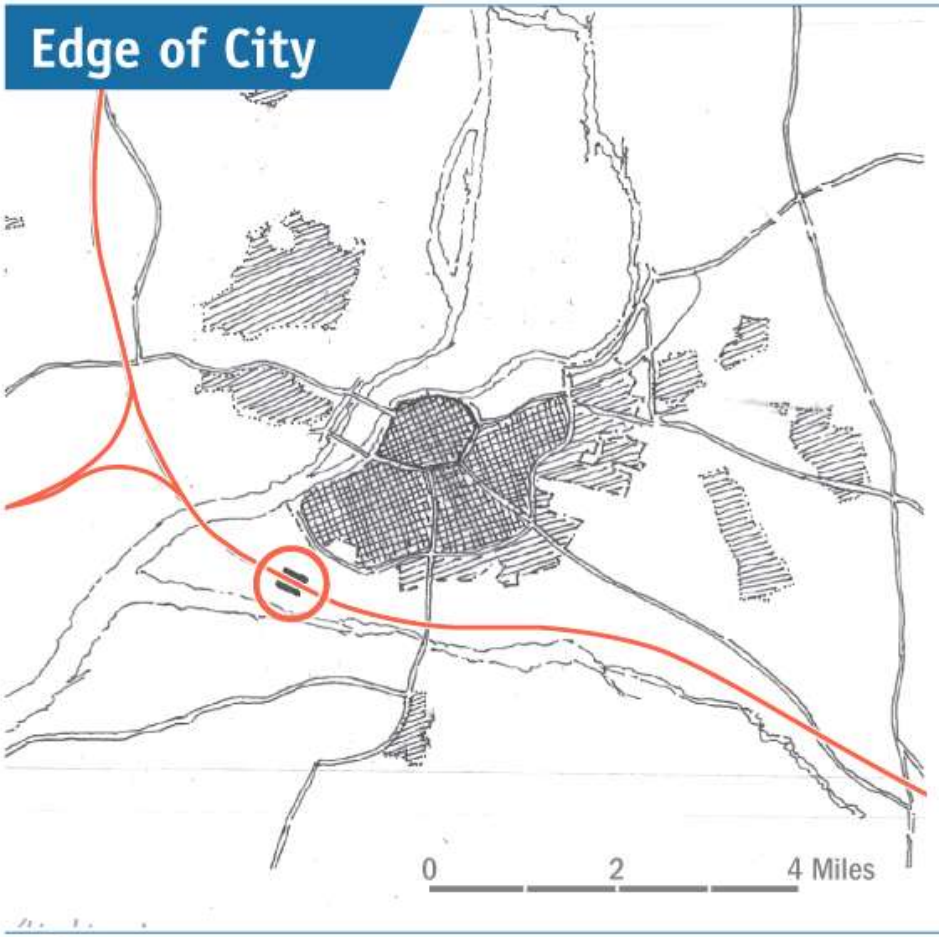
Supporting urban design interventions beyond the immediate station area leveraged the role of the station as a seam between older and newer parts of the center city.

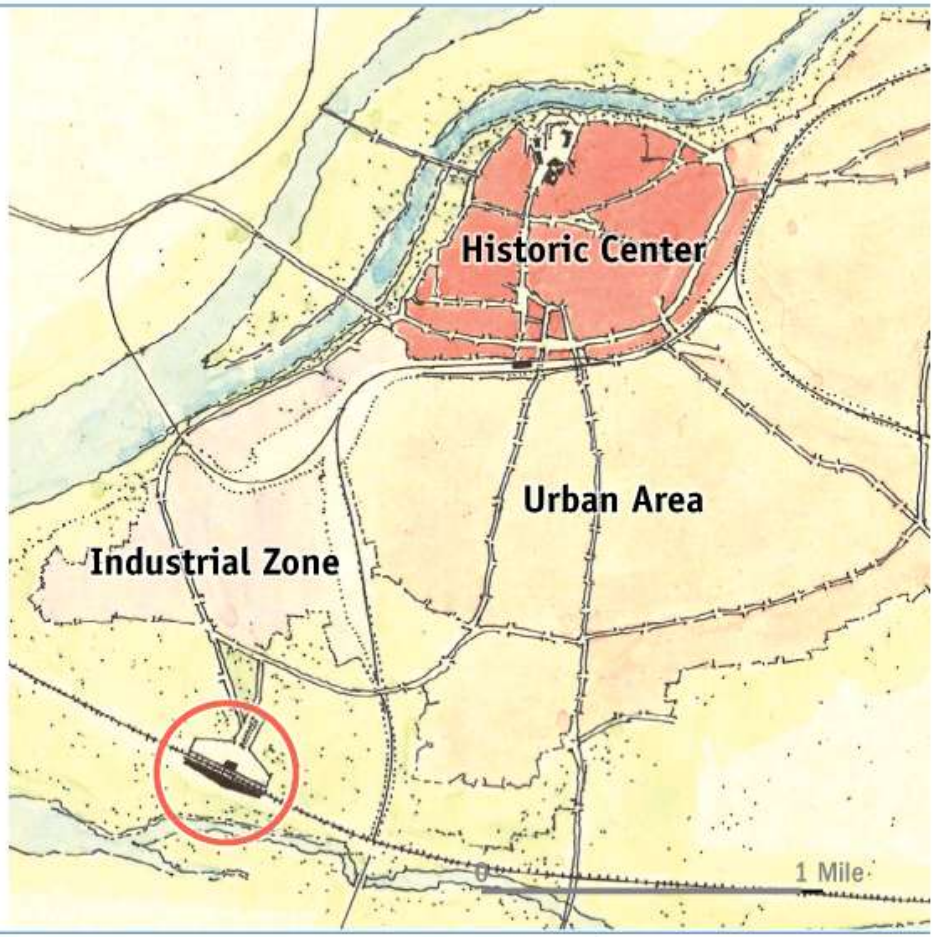
Center of City: Leida, Spain

Lessons Learned

- Strategic location
- Comprehensive urban design plan and public realm investments.
- Connected to regional rail and local, regional bus network.
- Benefits to tourism, economy, region.

Edge of City: Avignon, France





Avignon, France

City Population: **95,000**
Metro Population: **255,000**
Year Opened: **2001**
Frequency of Service: **65 trains daily**
Distance to Major Destinations:
2 hrs 40 min to Paris; 1 hr to Lyon

Impact

The economic development impacts are unclear at best. If anything, the historic center city station area may have declined.

Lessons Learned

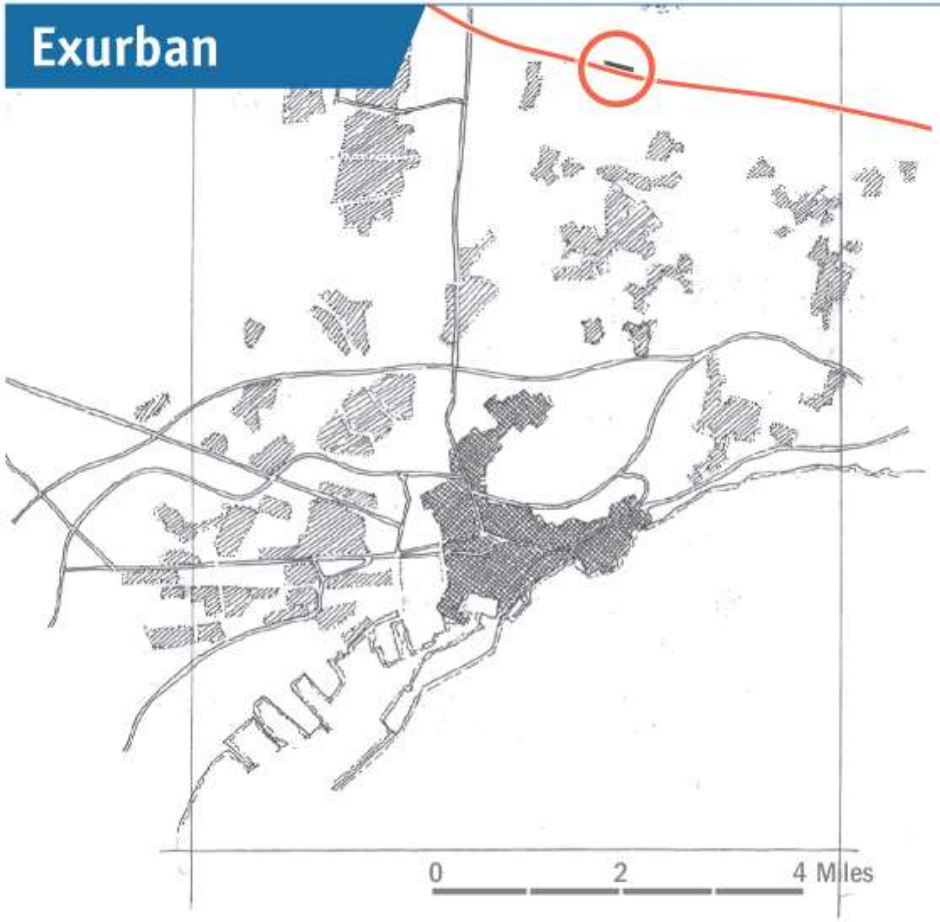
Lack of integration with the historic center city, in part because of physical barriers, has created a competitive rather than complementary dynamic with the center city station area.

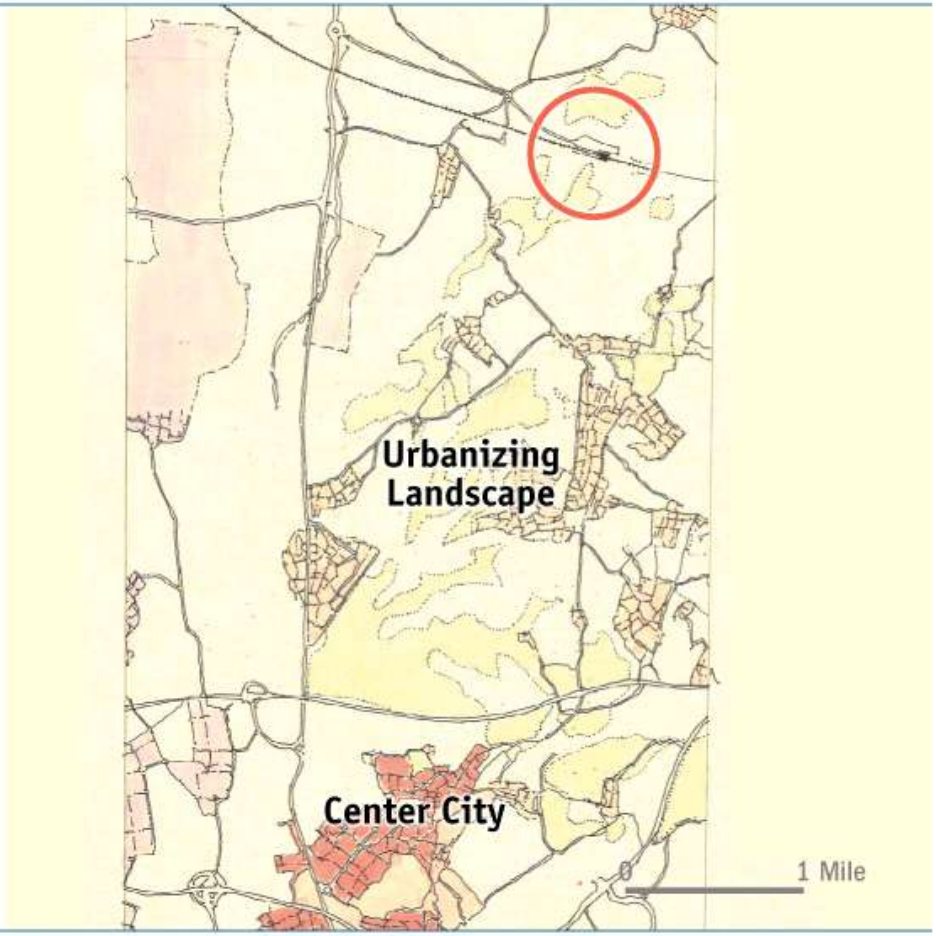
Edge of City: Avignon, France

Lessons Learned

- Physical barriers separate station from city center prevented economic synergies.
- Unclear economic development impacts.

Case Study – Exurban: Tarragona





Tarragona, Spain (Camp de Tarragona Station)

City Population: **155,000**
Metro Population: **676,000**
Year Opened: **2006**
Frequency of Service: **46 trains daily**
Distance to Major Destinations:
2 hrs 40 min to Madrid; 30 min to Barcelona

Impact

HSR connectivity with the rest of Europe has reinforced the role of Tarragona as a industrial center.

Lessons Learned

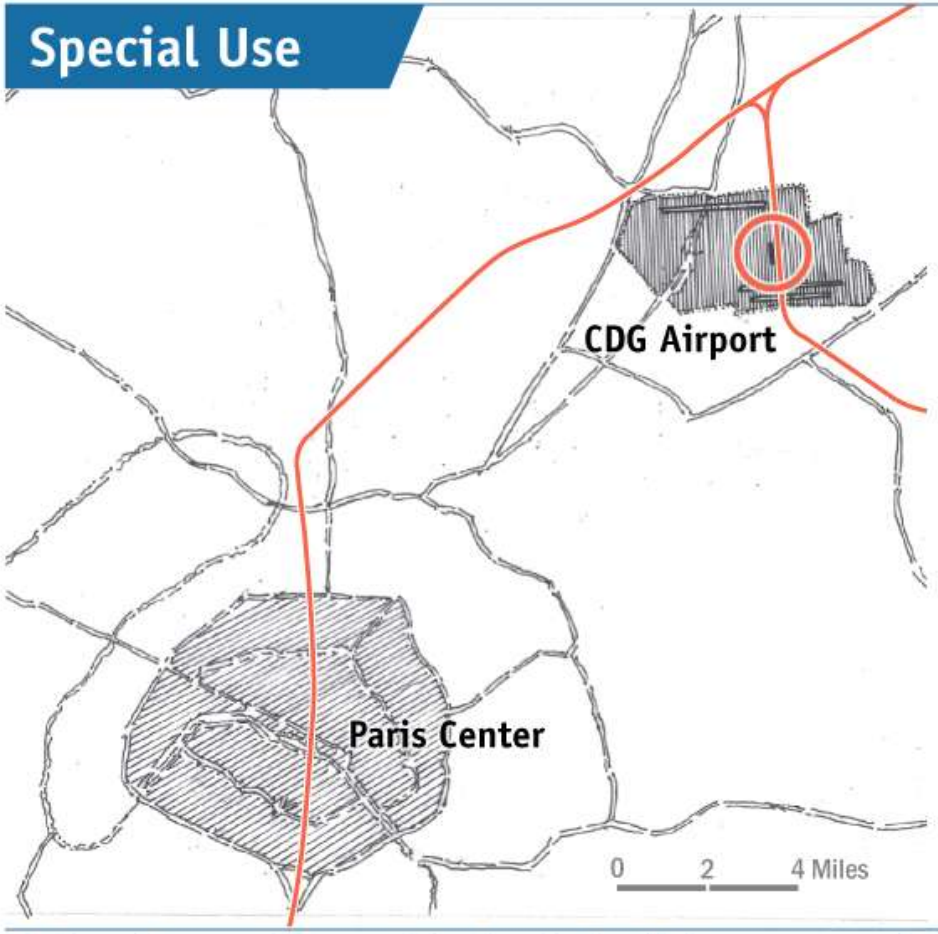
Because the city is already well-connected to metroplitan Barcelona, and given the cost of bringing HSR into the center, the decision to locate HSR in an outlying but urbanizing part of the landscape makes sense in this case.

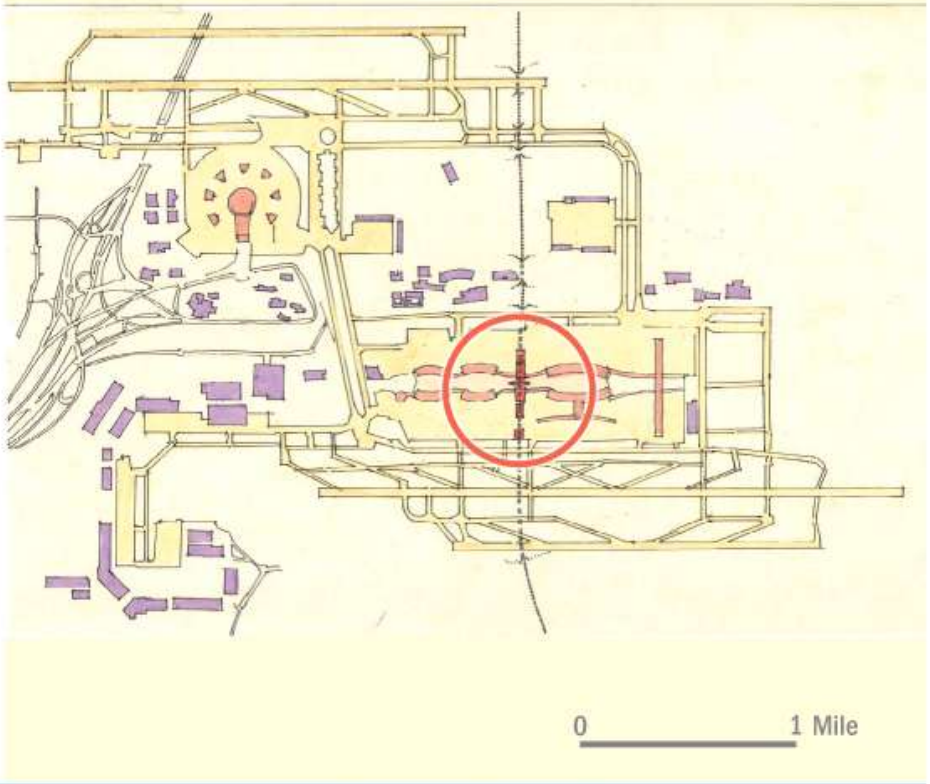
Exurban: Tarragona, Spain

Lessons Learned

- Tarragona already has good links to Barcelona via conventional rail and bus.
- Because of existing connections, investment in bringing train into center may not be justified.

Special Use: CDG Airport, France





Roissy, France (Airport Charles de Gaulle)

City Population: **2,500**
Metro Population: **11.8M**
Year Opened: **1994**
Frequency of Service: **46 trains daily**
Distance to Major Destinations: **22 miles to center of Paris; 2 hrs to Lyon; 3 hrs to Marseille**

Impact

Economic development impacts are difficult to determine.

Lessons Learned

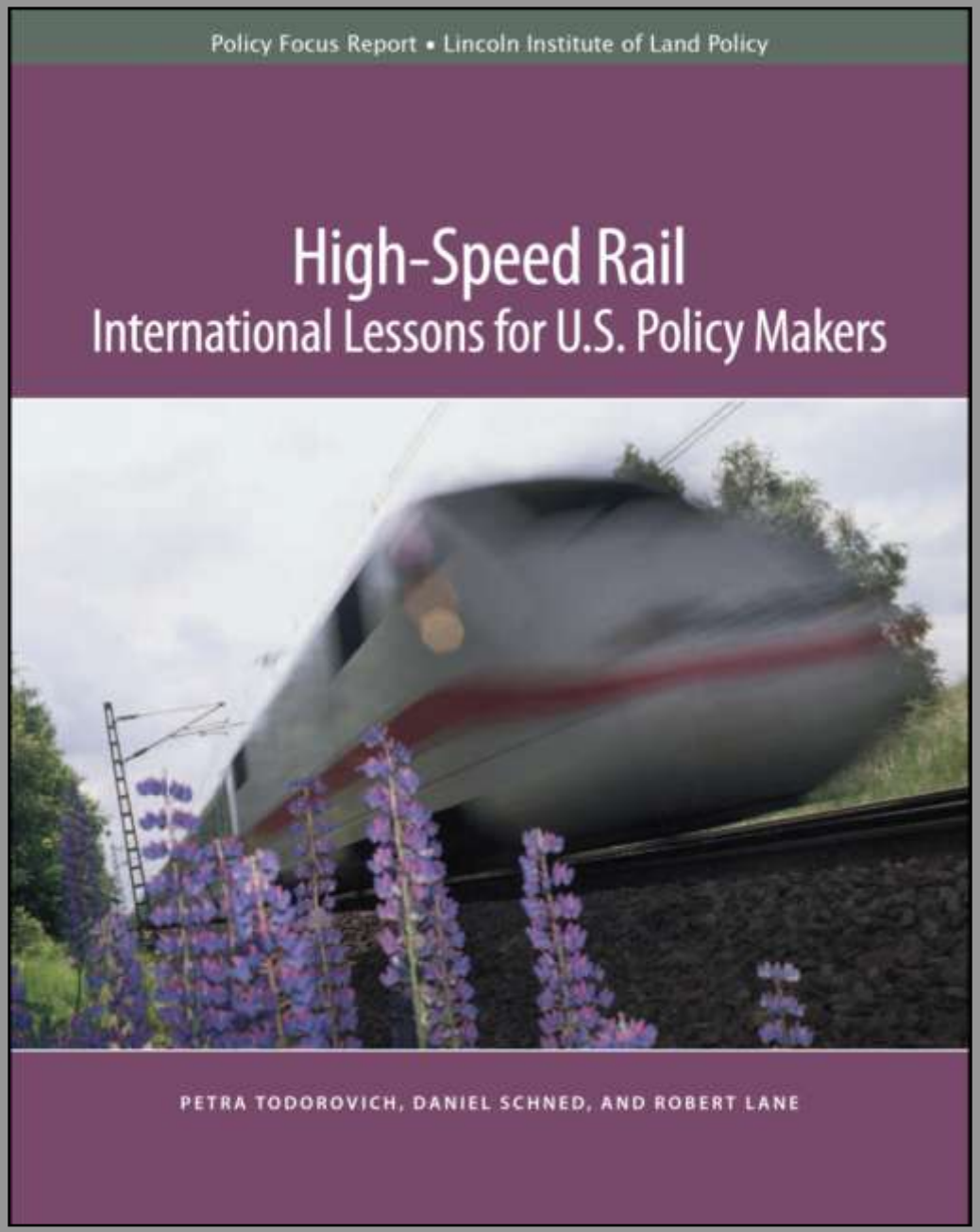
The station successfully serves its purpose as an intermodal center and as such helps distribute the benfits of international air travel to a variety of provincial centers.

Special Use: CDG Airport, France

Lessons Learned

- Complements air service by connecting airport to provincial destinations.
- Difficult to quantify economic impact.
- Frees up capacity at CDG for long haul flights.

Charles de Gaulle Airport Station.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High-Speed Rail
International Lessons for U.S. Policy Makers
PETRA TODOROVICH, DANIEL SCHNED, AND ROBERT LANE

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