THE IMPACT OF AUTO-ORIENTED POLICIES ON DOWNTOWN SOLVENCY

Effects of Urban Fabric Changes on Real Estate Property Tax Revenue

Evidence from Six American Cities

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Christopher McCahill, and Norman W. Garrick

Parking serves as the terminal facility for automobile-oriented transportation systems, but the impacts of its provision are often left unstudied. Providing too much parking in cities can undermine long-term transportation and development goals by creating a sparse or fragmented built environment. This study examined the changes in parking supplies, development characteristics, and travel mode shares in the past 60 years in six medium-sized cities. In three of these cities, parking supply increased significantly during the study period; in the other three cities parking supply increased only slightly. The main objective of this paper is to illustrate how these changes in parking supplies have affected the tax revenues in each city. An analysis based on geographic information systems was used to calculate the tax revenue of all properties in the study area of each city. Tax revenues generated from parking were quantified and were compared with tax revenues from nonparking uses on a proportional basis. Across the six cities, land occupied by surface parking contributed between 5% and 17% of the tax revenue that land occupied by taxable nonparking uses contributed. The analysis characterized an important concession involved in devoting large areas of land in the center of a city to surface parking.

the land use of each city were characterized with aerial photographs and other available visual representation of the cities. First, changes in the distribution and configuration of parking and buildings—the urban fabric—were quantified. Tax records were then evaluated to assess the impact that these changes had on the distribution of tax revenues yielded from the central business district (CBD) of each city. Geocoded tax records for the entire study area in each city were obtained from municipal assessment agencies. The amount of tax revenue generated by buildings, surface parking, and structured parking in the CBD was calculated. These data were then used to determine the relative contribution of each of these types of land use to tax revenue.

BACKGROUND

Literature Review

This study is grounded partly in land economics, in which each parcel of land has a value that is determined by its locational features. The theories of land economics have their origin in the ideas of Johann

FIGURE 1 Qualitative urban fabric change, Cambridge: (*a*) 1952 and (*b*) 2009 (*2*).

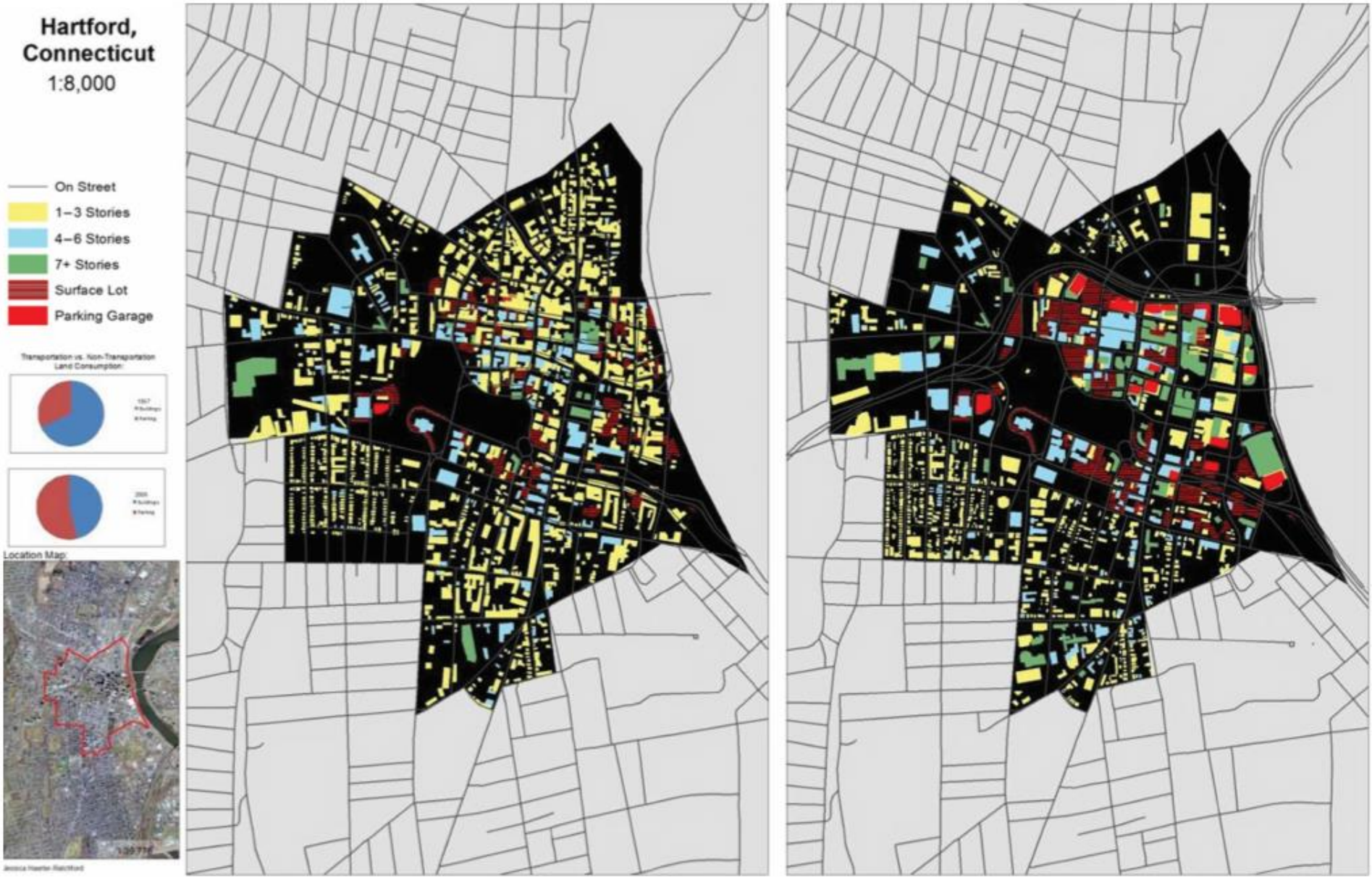


FIGURE 2 Qualitative urban fabric change, Hartford: (*a*) 1957 and (*b*) 2006 (*2*).

TABLE 5 Land Compositions Circa 2009

Attribute	Arlington	Berkeley	Cambridge	Hartford	Lowell	New Haven
Total CBD area (acres)	1,389	502	688	1,168	258	593
Building footprint as percentage of CBD	16	29	27	20	21	29
Surface parking footprint as percentage of CBD	7	5	3	15	15	13
Structured parking footprint as percentage of CBD	<1	<1	<1	2	1	3

TABLE 8 Opportunity Cost Calculation

Attribute	Arlington	Berkeley	Cambridge	Hartford	Lowell	New Haven
Average surface parking tax rate ($ per ft^2)	$0.61	$1.00	$2.20	$1.48	$0.31	$0.69
Average taxable nonparking tax rate ($ per ft^2)	$4.16	$2.74	$5.37	$6.62	$1.99	$3.69
Net tax rate increase for land conversion ($ per ft^2)	$3.55	$1.75	$3.18	$5.14	$1.67	$3.00
1950s surface parking (MSF)	3.12	1.30	0.66	3.34	1.00	1.11
2000s surface parking (MSF)	3.94	1.22	0.92	8.61	1.89	3.91
Difference (MSF)	0.82	–0.08	0.26	5.23	0.88	2.80
Opportunity cost (millions)	$2.91	–$0.24	$0.55	$21.78	$1.21	$6.49
2012 CBD tax revenue (%)	2.70	0.80	1.10	29.00	23.70	21.50
Opportunity cost per acre ($ per acre)	$2,097	–$470	$804	$18,655	$4,690	$10,945

Visualizing Urban Parking Supply Ratios

Congress for the New Urbanism 22nd Annual Meeting

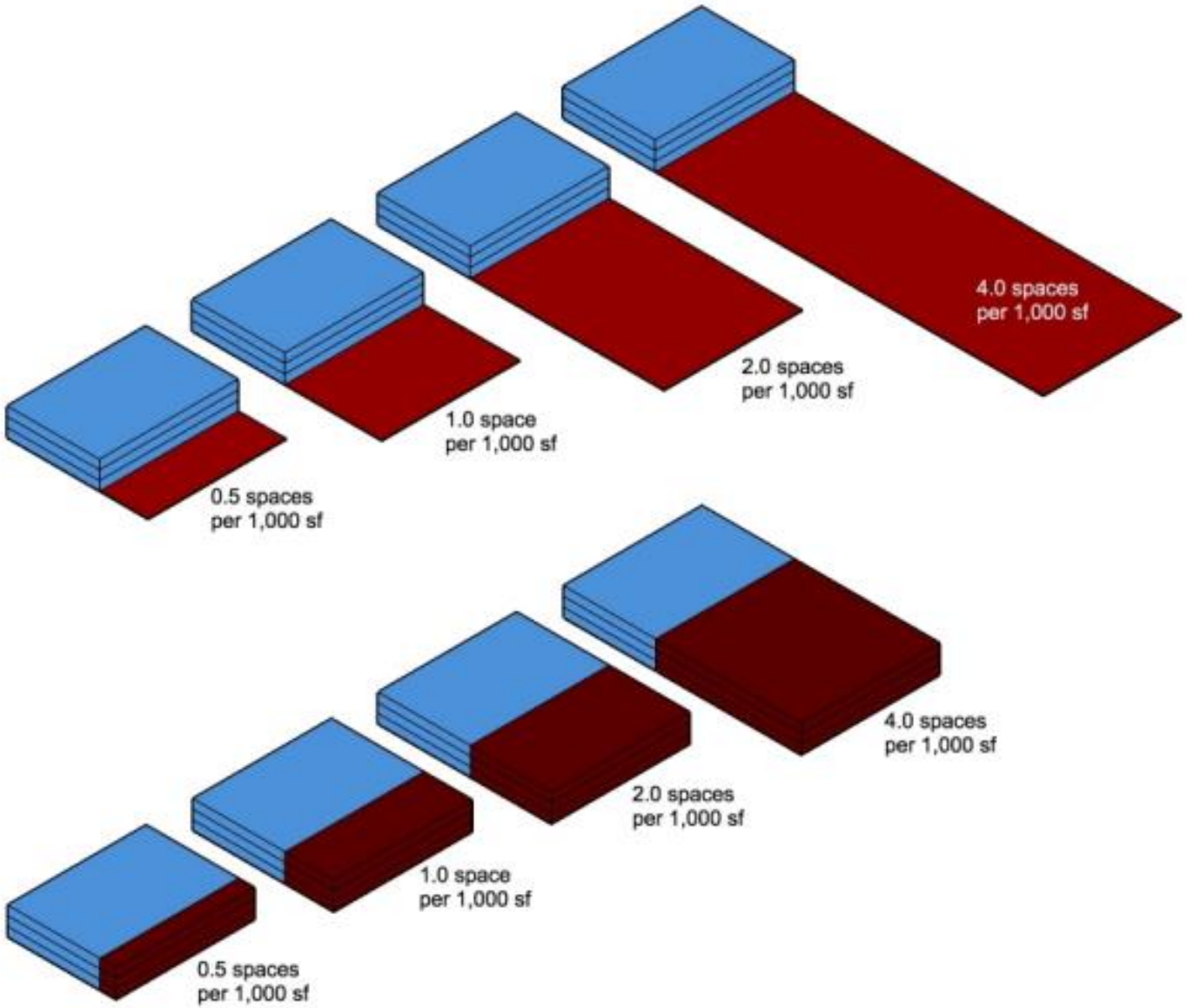
Buffalo, New York

June 4-7, 2014

ABSTRACT

This work illustrates the potential impacts of minimum parking requirements on the built environment in urban areas. For this paper, we estimated area wide parking supply ratios in four urban centers representing a range of values. We depict the differences among these four scenarios to demonstrate the magnitude of impacts on the built environment.

The existing parking supply ratios in this study range from 0.1 to 0.9 parking spaces per 1,000 ft^2 of building space. As parking supply ratios increase within this range, structures generally become taller with larger footprints. However, buildings also become more sparsely distributed and parking becomes a more dominant feature of the built environment. This work allows policymakers to visualize different parking ratios and offers valuable perspective for evaluating parking policies in terms of land use patterns and other broad policy goals.


4.0 spaces
per 1,000 sf
2.0 spaces
per 1,000 sf
1.0 space
per 1,000 sf
0.5 spaces
per 1,000 sf
4.0 spaces
per 1,000 sf
2.0 spaces
per 1,000 sf
1.0 space
per 1,000 sf
0.5 spaces
per 1,000 sf
surface parking lot
multi-level parking structure
3-story building

Cambridge, Massachusetts

0.09 parking spaces per 1,000 ft^2

1- to 3-story building
4- to 6-story building
7+ stories
surface parking lot
multi-level parking structure

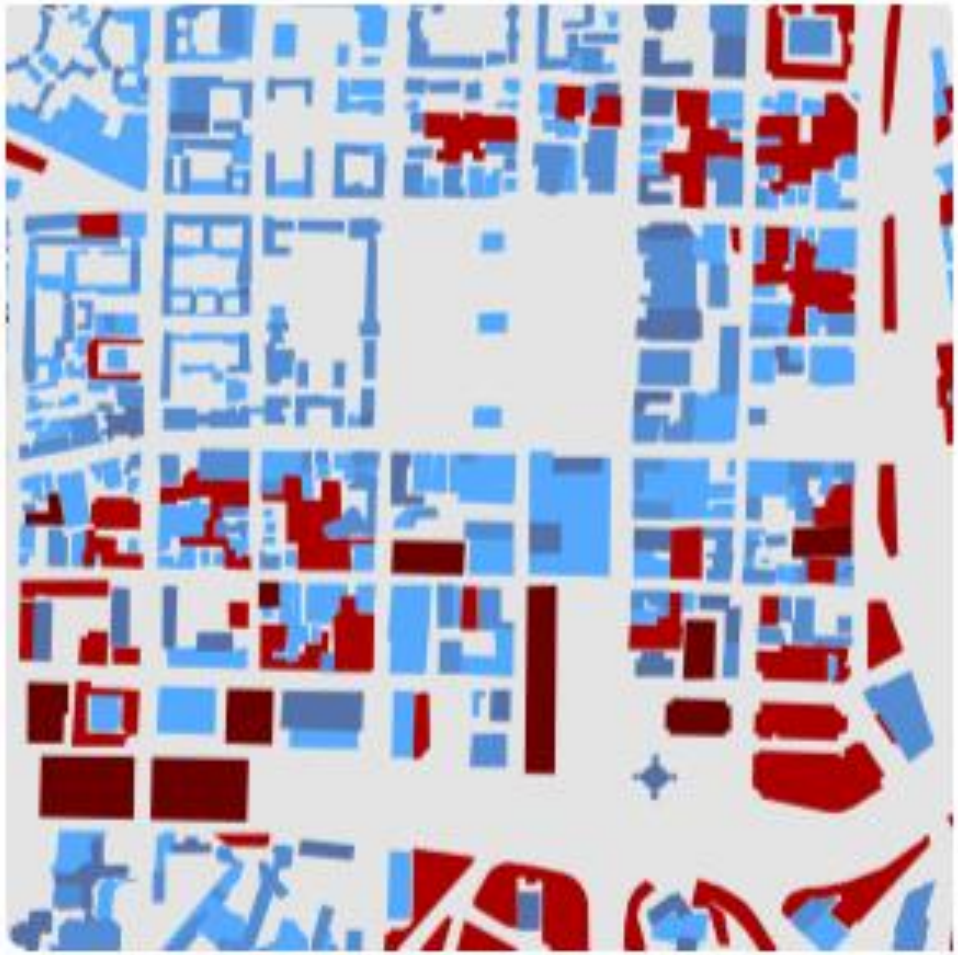
Berkeley, California

0.25 parking spaces per 1,000 ft^2

1- to 3-story building
4- to 6-story building
7+ stories
surface parking lot
multi-level parking structure

New Haven, Connecticut

0.60 parking spaces per 1,000 ft^2



Hartford, Connecticut

0.86 parking spaces per 1,000 ft^2

1- to 3-story building
4- to 6-story building
7+ stories
surface parking lot
multi-level parking structure

ESTIMATES OF OFF-STREET PARKING SUPPLY RATIOS

Central Business District	Off-street parking spaces		Building area (1,000 ft^2)		Off-street supply ratio	
	1960	2000	1960	2000	1960	2000
Cambridge	1,890	2,620	19,860	28,990	0.10	0.09
Berkeley	4,160	3,880	13,450	15,650	0.31	0.25
New Haven	3,070	19,680	20,600	32,710	0.15	0.60
Hartford	10,130	39,590	36,520	46,220	0.28	0.86

ESTIMATES OF OFF-STREET PARKING SUPPLY RATIOS

Central Business District	Buildings				Off-Street Parking			
	Percent of land		Average height (levels)		Percent of land		Average height (levels)	
	1960	2000	1960	2000	1960	2000	1960	2000
Cambridge	20%	27%	3.2	3.6	2%	3%	1.0	1.0
Berkeley	27%	29%	2.3	2.5	7%	6%	1.0	1.1
New Haven	32%	30%	2.5	4.3	4%	16%	1.0	1.6
Hartford	23%	20%	3.2	4.7	7%	18%	1.0	1.5

PARKING MANAGEMENT STRATEGIES

From:

Parking Management Strategies, Evaluation and Planning

September 2016

Todd Litman Victoria

Transport Policy Institute

Table 1 **Parking Management Strategies**

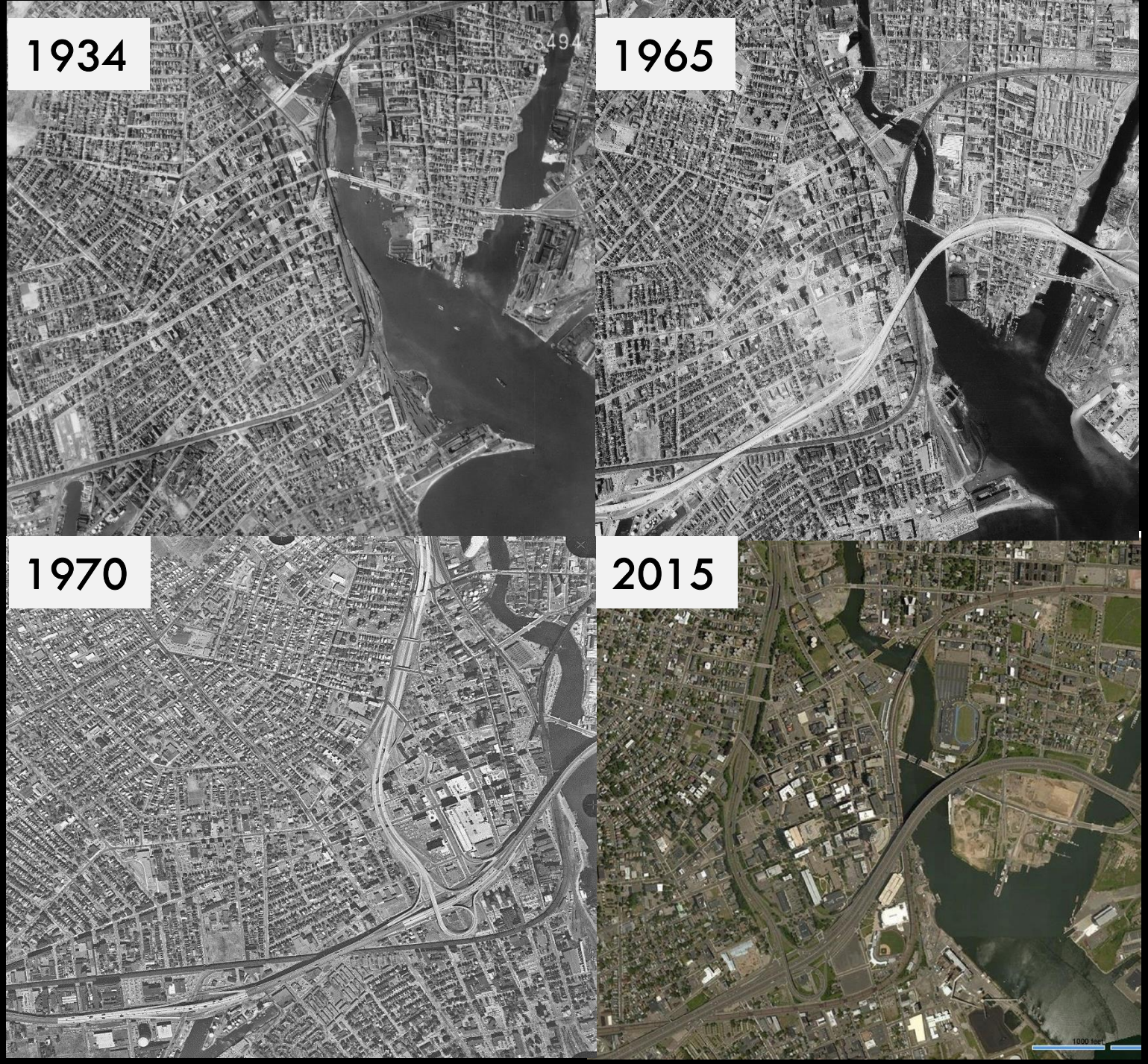
Strategy	Description	Typical Reduction	Traffic Reduction
Shared Parking	Parking spaces serve multiple users and destinations.	10-30%	
Parking Regulations	Regulations favor higher-value uses such as service vehicles, deliveries, customers, quick errands, and people with special needs.	10-30%	
More Accurate and Flexible Standards	Adjust parking standards to more accurately reflect demand in a particular situation.	10-30%	
Parking Maximums	Establish maximum parking standards.	10-30%	
Remote Parking	Provide off-site or urban fringe parking facilities.	10-30%	
Smart Growth	Encourage more compact, mixed, multi-modal development to allow more parking sharing and use of alternative modes.	10-30%	X
Walking and Cycling Improvements	Improve walking and cycling conditions to expand the range of destinations serviced by a parking facility.	5-15%	X
Increase Capacity of Existing Facilities	Increase parking supply by using otherwise wasted space, smaller stalls, car stackers and valet parking.	5-15%	X
Mobility Management	Encourage more efficient travel patterns, including changes in mode, timing, destination and vehicle trip frequency.	10-30%	X
Parking Pricing	Charge motorists directly and efficiently for using parking facilities.	10-30%	X
Improve Pricing Methods	Use better charging techniques to make pricing more convenient and cost effective.	Varies	X
Financial Incentives	Provide financial incentives to shift mode, such as cash out.	10-30%	X
Unbundle Parking	Rent or sell parking facilities separately from building space.	10-30%	X
Parking Tax Reform	Change tax policies to support parking management objectives.	5-15%	X
Bicycle Facilities	Provide bicycle storage and changing facilities.	5-15%	X
Improve User Information and Marketing	Provide convenient and accurate information on parking availability and price, using maps, signs, brochures and electronic communication.	5-15%	X
Improve Enforcement	Insure that parking regulation enforcement is efficient, considerate and fair.	Varies	
Transportation Management Associations	Establish member-controlled organizations that provide transport and parking management services in a particular area.	Varies	X
Overflow Parking Plans	Establish plans to manage occasional peak parking demands.	Varies	
Address Spillover Problems	Use management, enforcement and pricing to address spillover problems.	Varies	
Parking Facility Design and Operation	Improve parking facility design and operations to help solve problems and support parking management.	Varies	

CASE STUDY: BRIDGEPORT, CT

THE SUSTAINABLE CITIES GROUP
University of Connecticut

WESTCOG

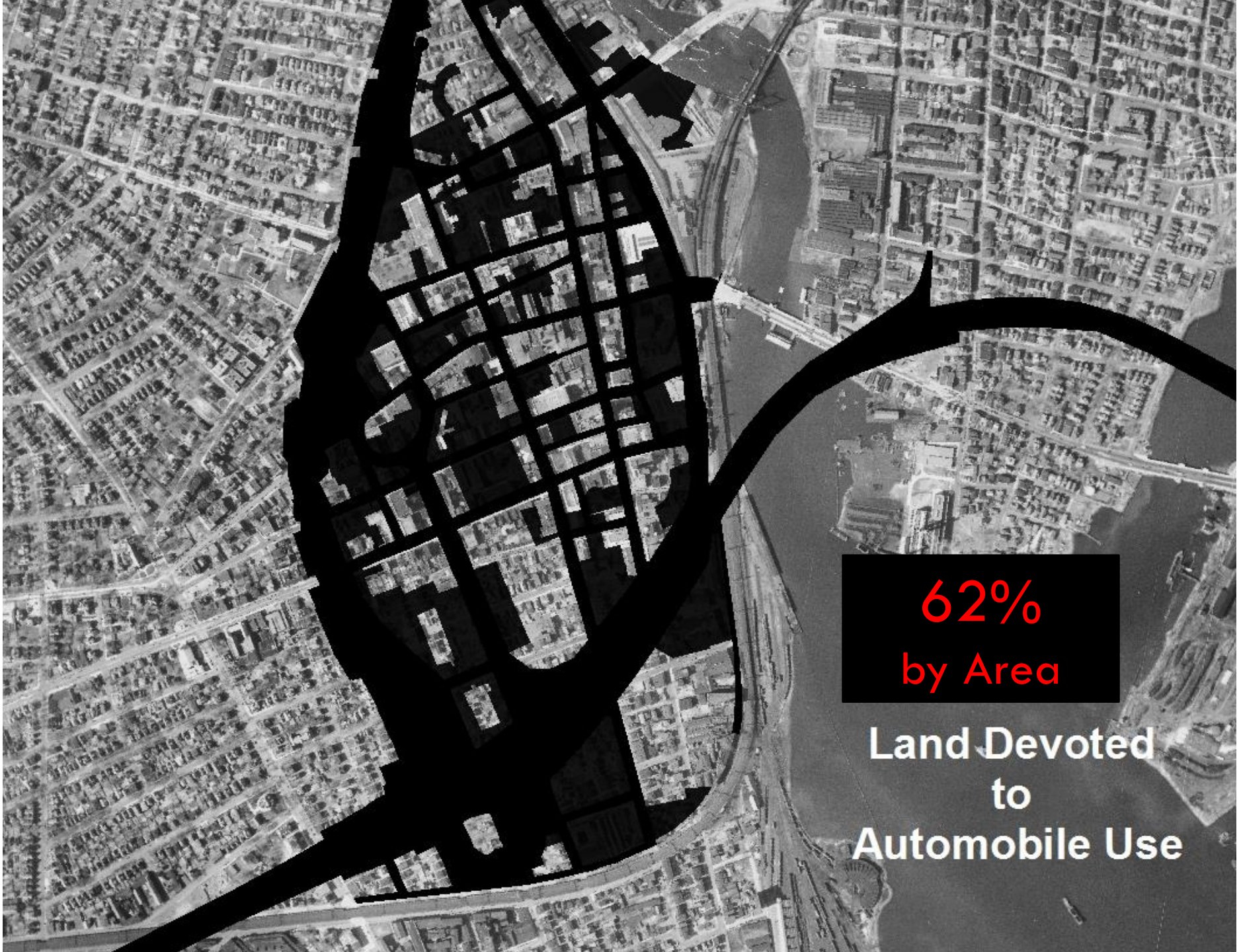
Bridgeport, CT: 1934

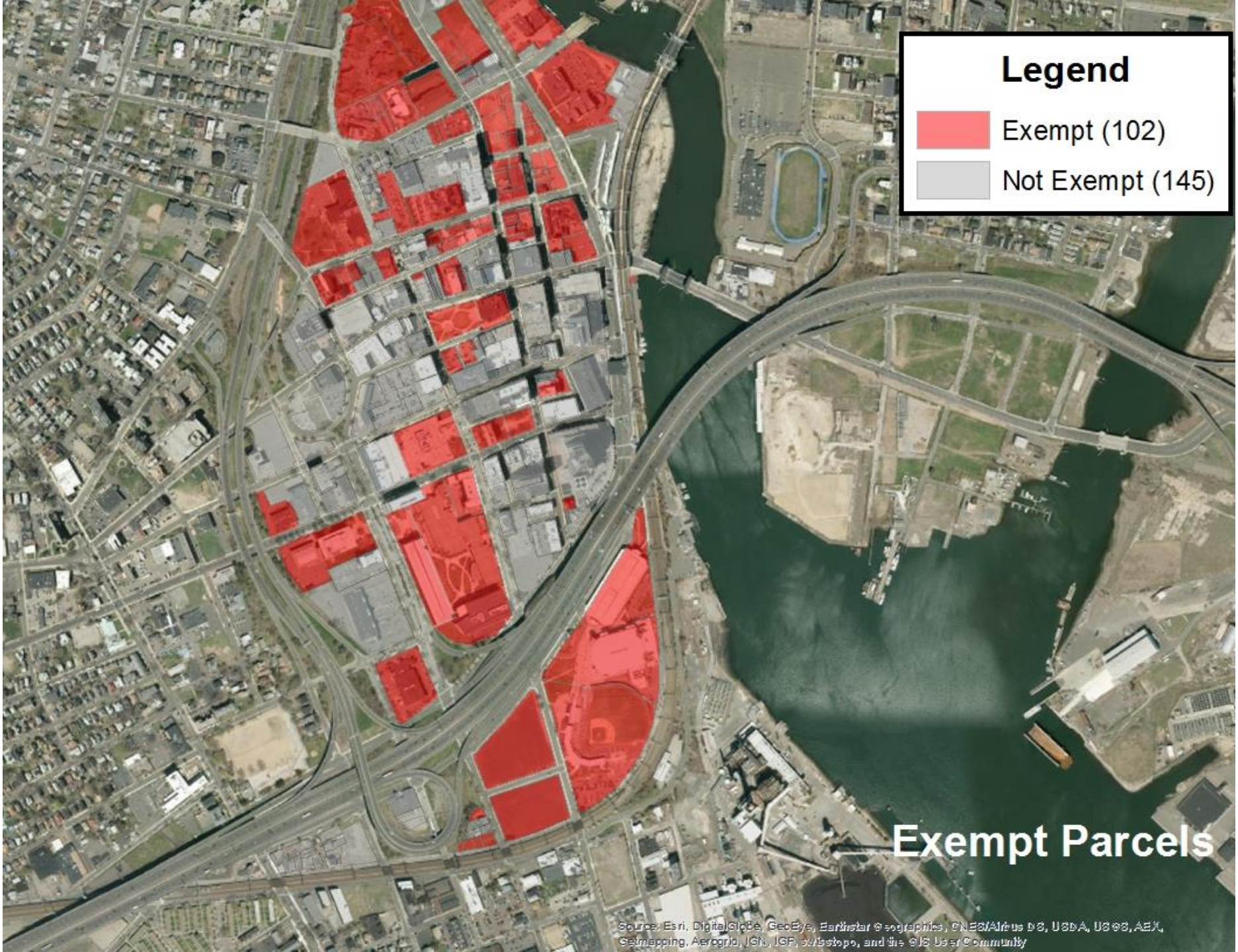

1934
1965
1970
2015


Bridgeport, CT: 2015
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Legend
Surface Lot
Structure
Parking
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Land Devoted
to
Automobile Use
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


62%
by Area
Land Devoted
to
Automobile Use


Legend
Exempt (102)
Not Exempt (145)
Exempt Parcels
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


22%
by Area
Tax Productive Land


Interstate


Parking

QUESTIONS OR COMMENTS?

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