NATIONAL GOVERNORS ASSOCIATION

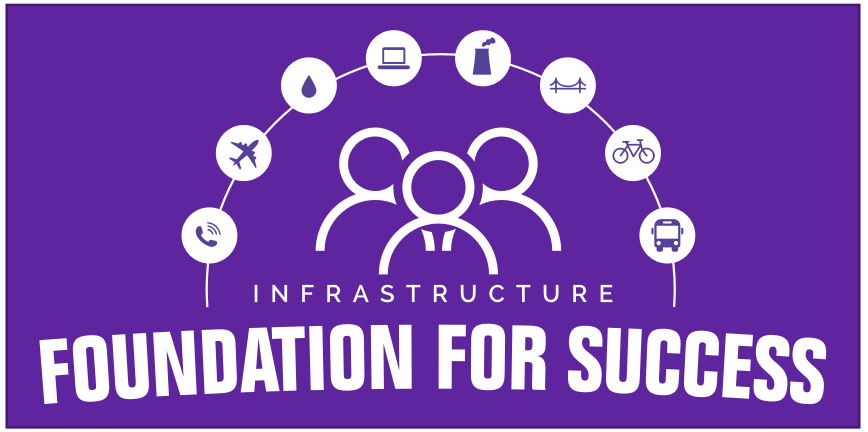
Mapping Congestion

Infrastructure Stakeholder Summit I

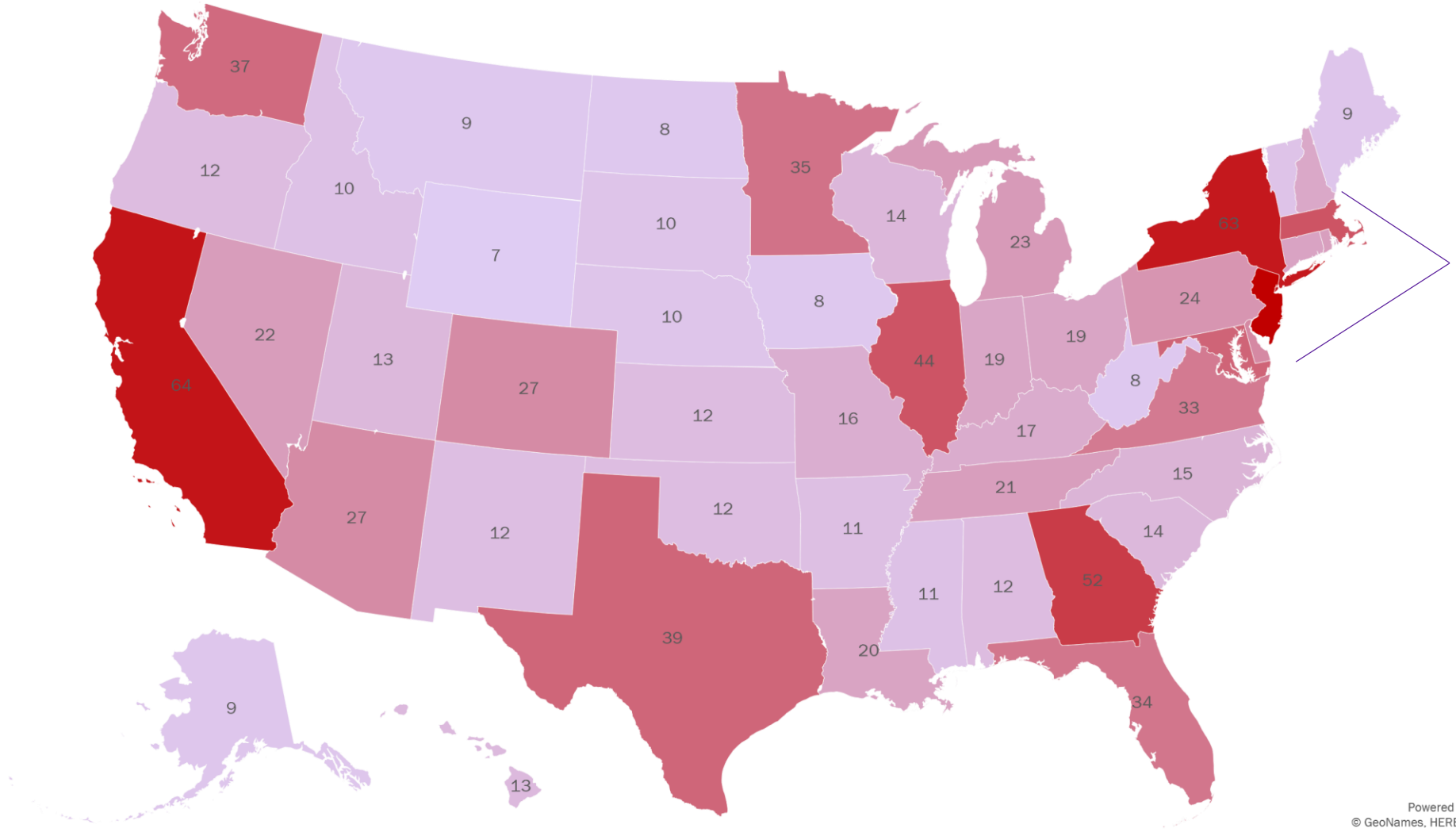
Governor Larry Hogan NGA Chair's Initiative

Boston, Mass

August 27, 2019



Congestion Ranking by Largest Urban Area
(Peak Hours Annually Spent in Congestion per Driver)



State	Hours
Connecticut	20
New Hampshire	18
New Jersey	70
Maryland	39
Massachusetts	44
Rhode Island	21
Vermont	10

Source: Reason Foundation, *24th Annual Highway Report*, 2019. *Data for all Territories not available.

Lowest to Highest: Congestion Ranking by Largest Urban Area (Peak Hours Annually Spent in Congestion per Driver)

States	Hours	States	Hours	States	Hours	States	Hours
Wyoming	7	Oklahoma	12	Louisiana	20	Texas	39
West Virginia	8	Kansas	12	Connecticut	20	Maryland	39
Iowa	8	Oregon	12	Rhode Island	21	Illinois	44
North Dakota	8	Alabama	12	Tennessee	21	Massachusetts	44
Montana	9	Hawaii	13	Nevada	22	Georgia	52
Alaska	9	Utah	13	Michigan	23	California	64
Maine	9	South Carolina	14	Pennsylvania	24	New York	63
Nebraska	10	Wisconsin	14	Arizona	27	New Jersey	70
South Dakota	10	North Carolina	15	Colorado	27		
Vermont	10	Missouri	16	Delaware	28		
Idaho	10	Kentucky	17	Virginia	33		
Mississippi	11	New Hampshire	18	Florida	34		
Arkansas	11	Indiana	19	Minnesota	35		
New Mexico	12	Ohio	19	Washington	37		

Source: Reason Foundation, *24th Annual Highway Report*, 2019. *Data for all Territories not available.

NGA

National Urban Congestion Trends Improved from 2016 to 2017

CONGESTED HOURS

-26 minutes
Average duration of daily congestion

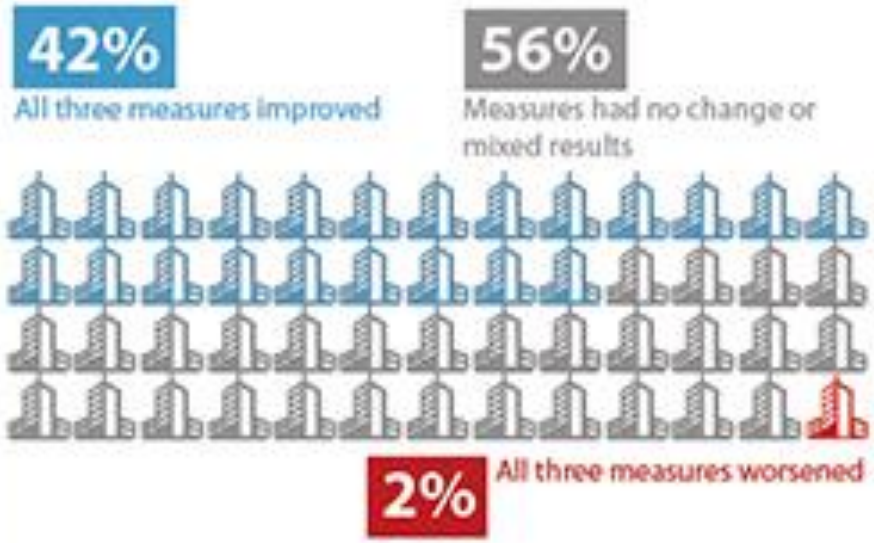
TRAVEL TIME INDEX

-2 points
Peak-period vs. off-peak travel times

PLANNING TIME INDEX

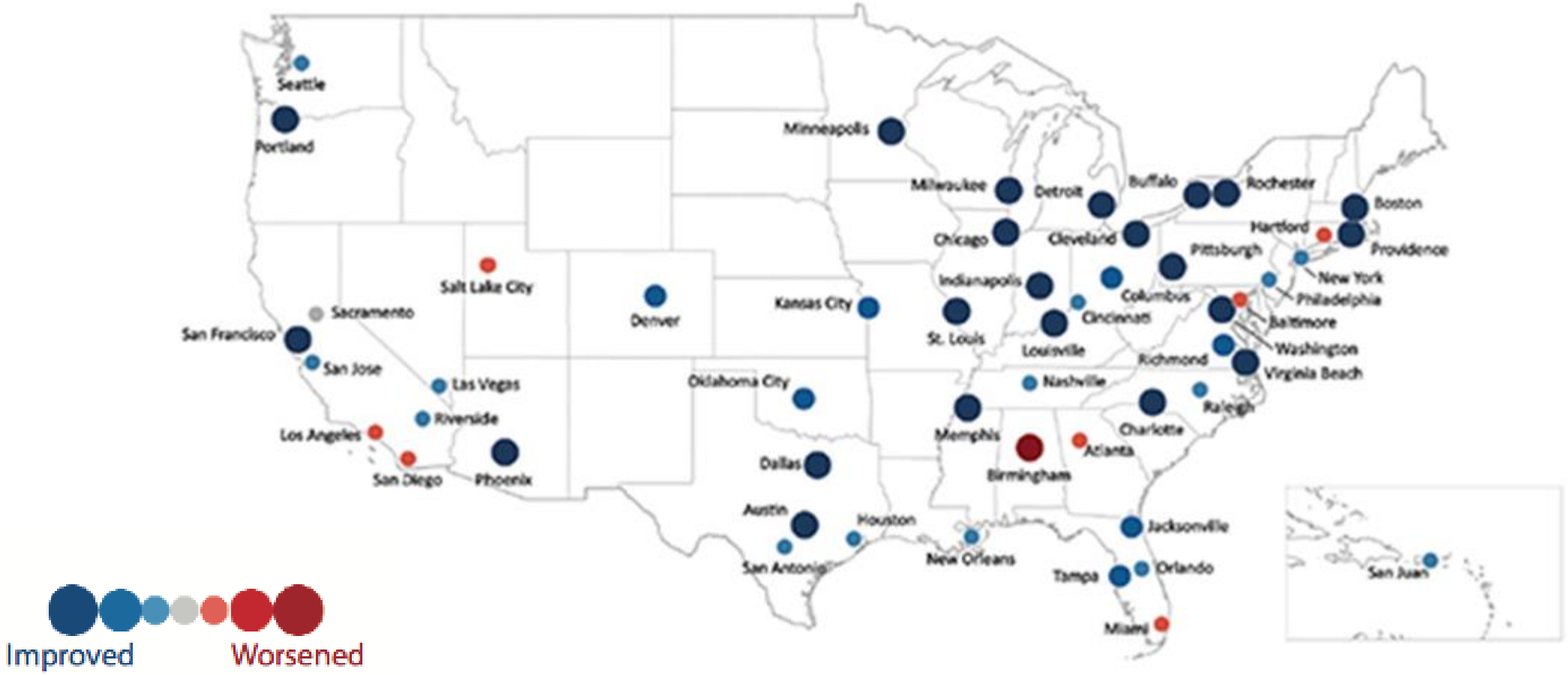
-47 points
Unreliability (variability) of travel

METROPOLITAN AREAS



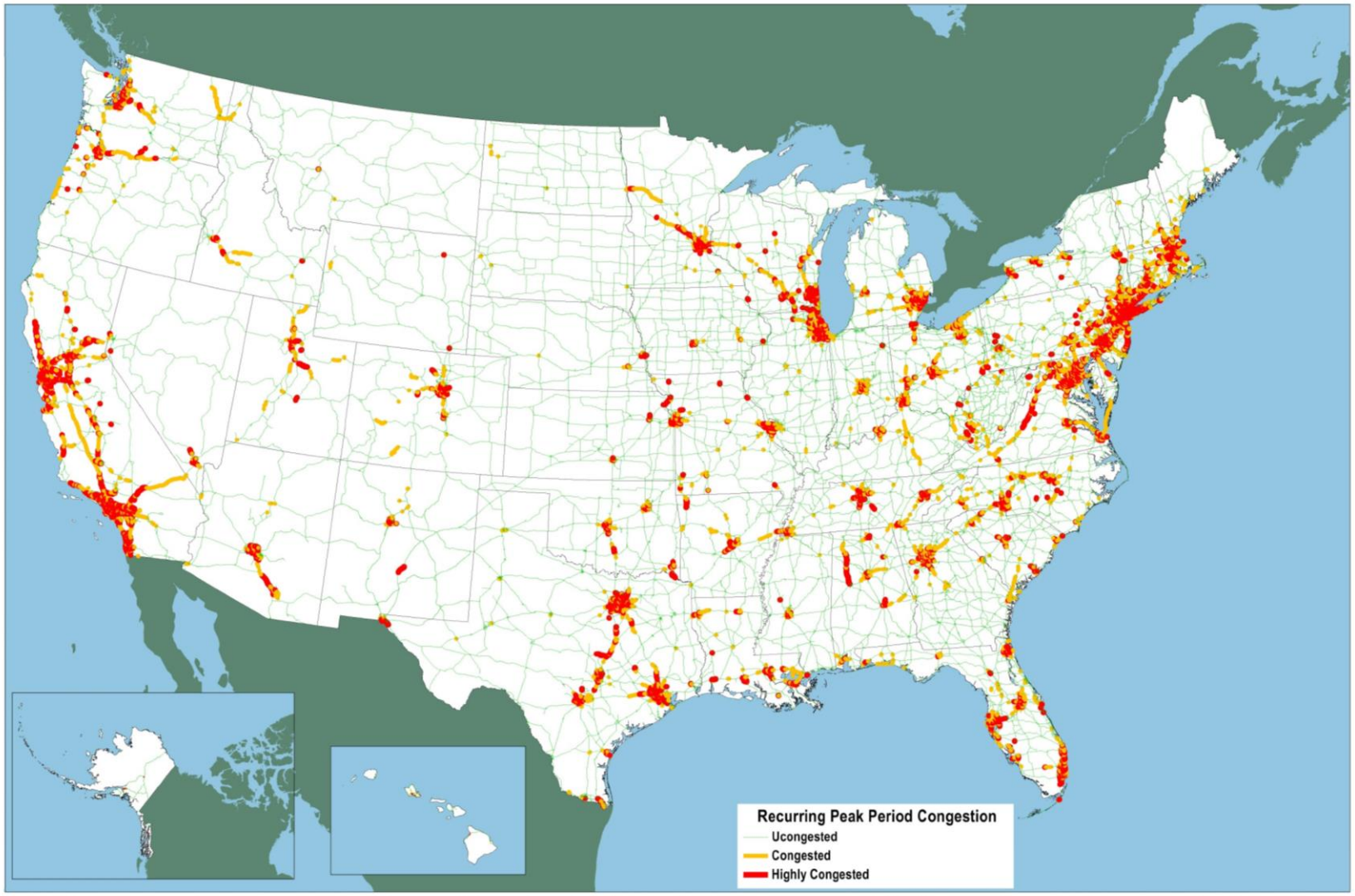
Source: Federal Highway Administration, 2018 *Data for all Territories not available.

Urban Congestion Trends (2015 to 2016)



Source: Federal Highway Administration, 2018 *Data for all Territories not available.

Peak Period Highway Congestion (2012)

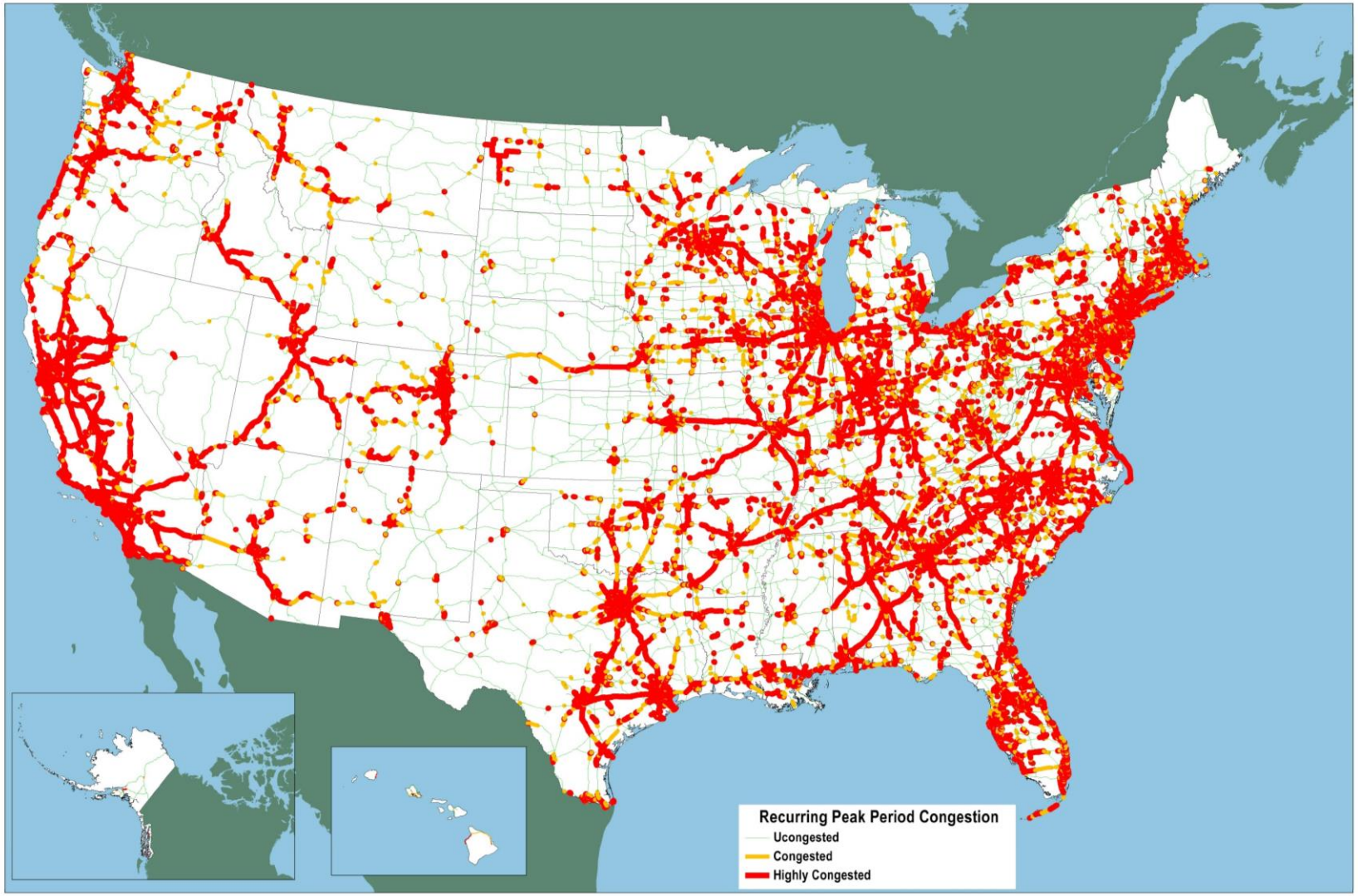


Notes: Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segment have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95. The volume/service flow ratio is estimated using the procedures outlined in the HPMS Field Manual Appendix N
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 4.3, 2017.

Source: U.S. Department of Transportation, Federal Highway Administration, 2017. *Data for all Territories not available.

NGA

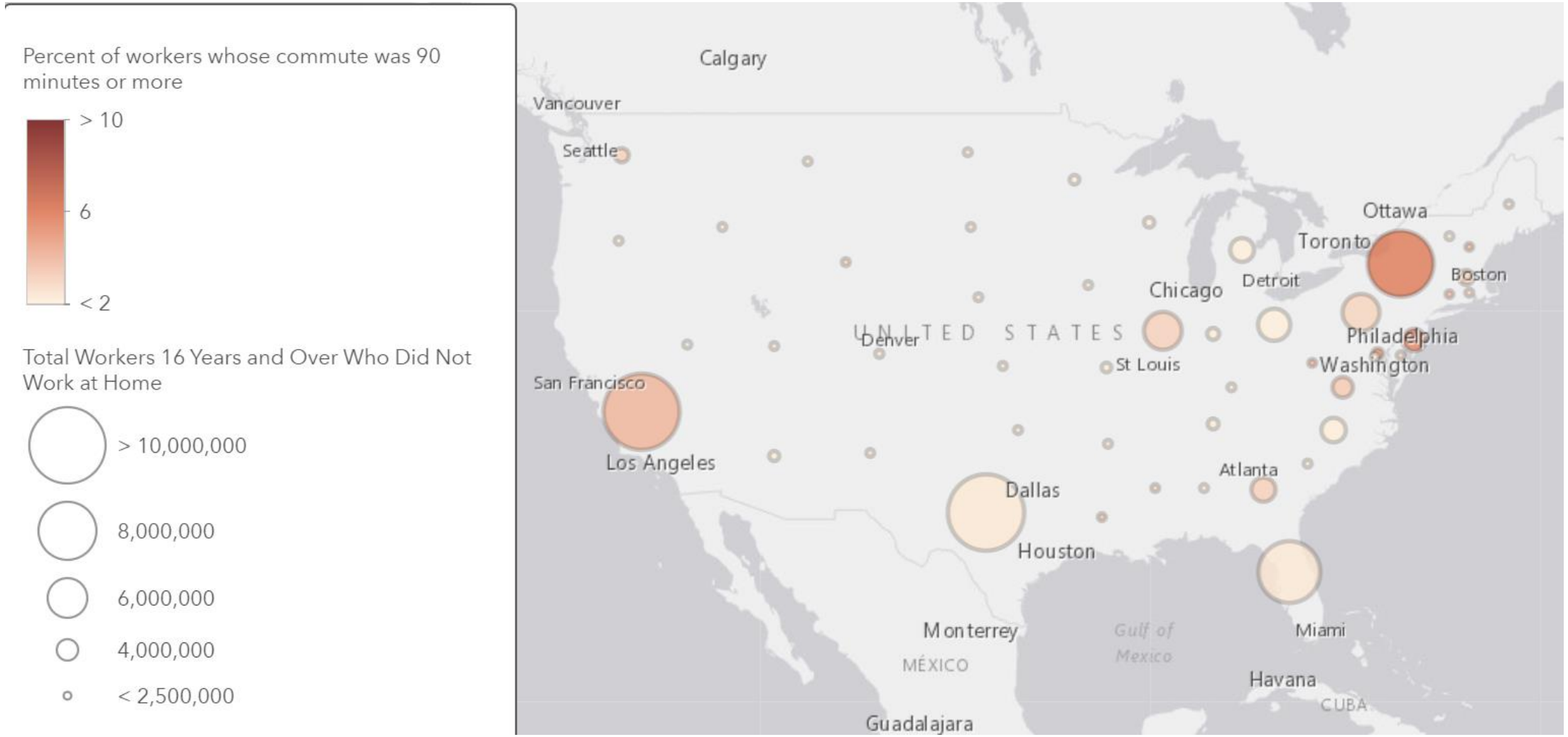
Predicted Peak Period Highway Congestion by 2045



Notes: Highly congested segments are stop-and-go conditions with volume/service flow ratios greater than 0.95. Congested segment have reduced traffic speeds with volume/service flow ratios between 0.75 and 0.95. The volume/service flow ratio is estimated using the procedures outlined in the HPMS Field Manual Appendix N
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 4.3, 2017.

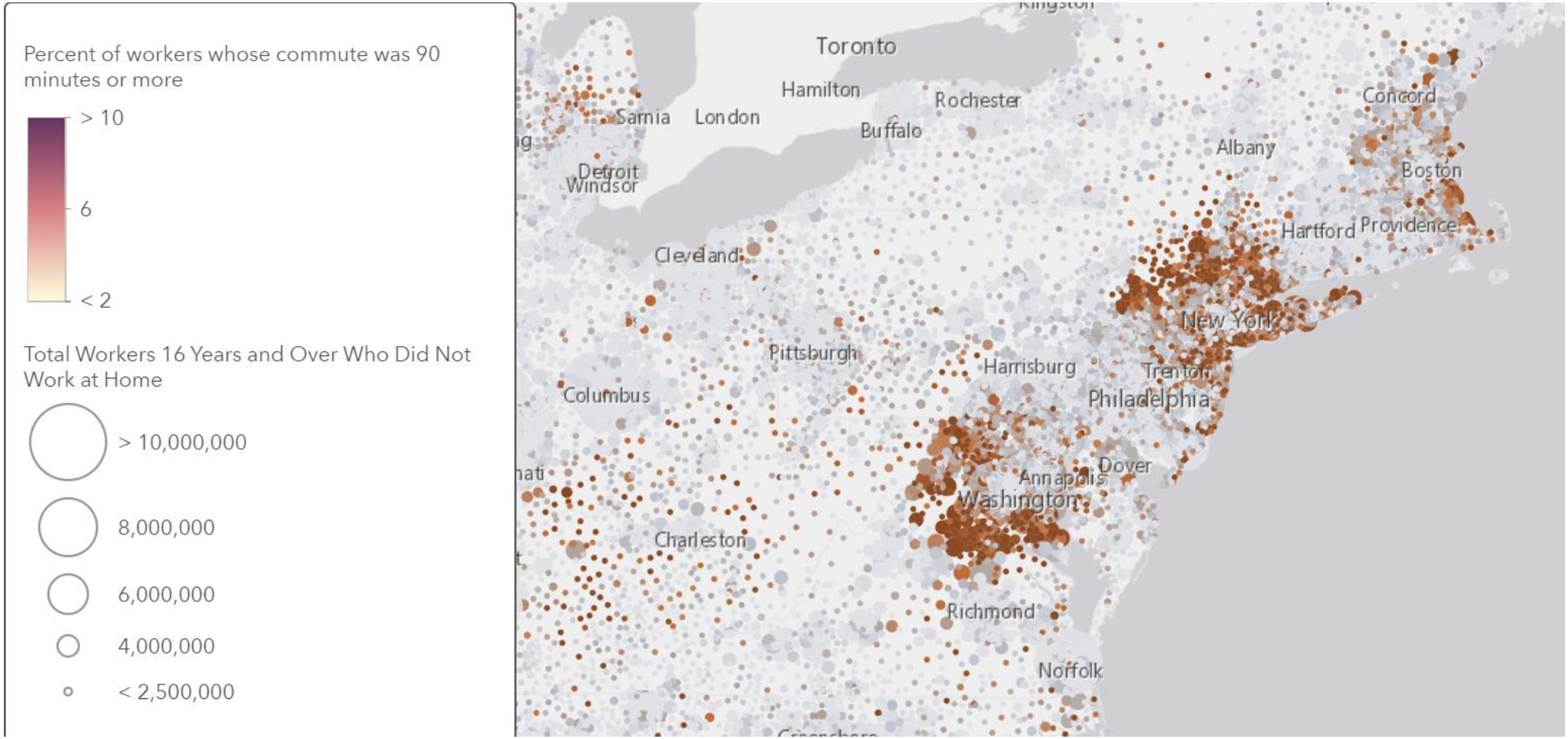
Source: U.S. Department of Transportation, Federal Highway Administration, 2017. *Data for all Territories not available.

Percent of workers with a commute of 90 minutes or more, by state



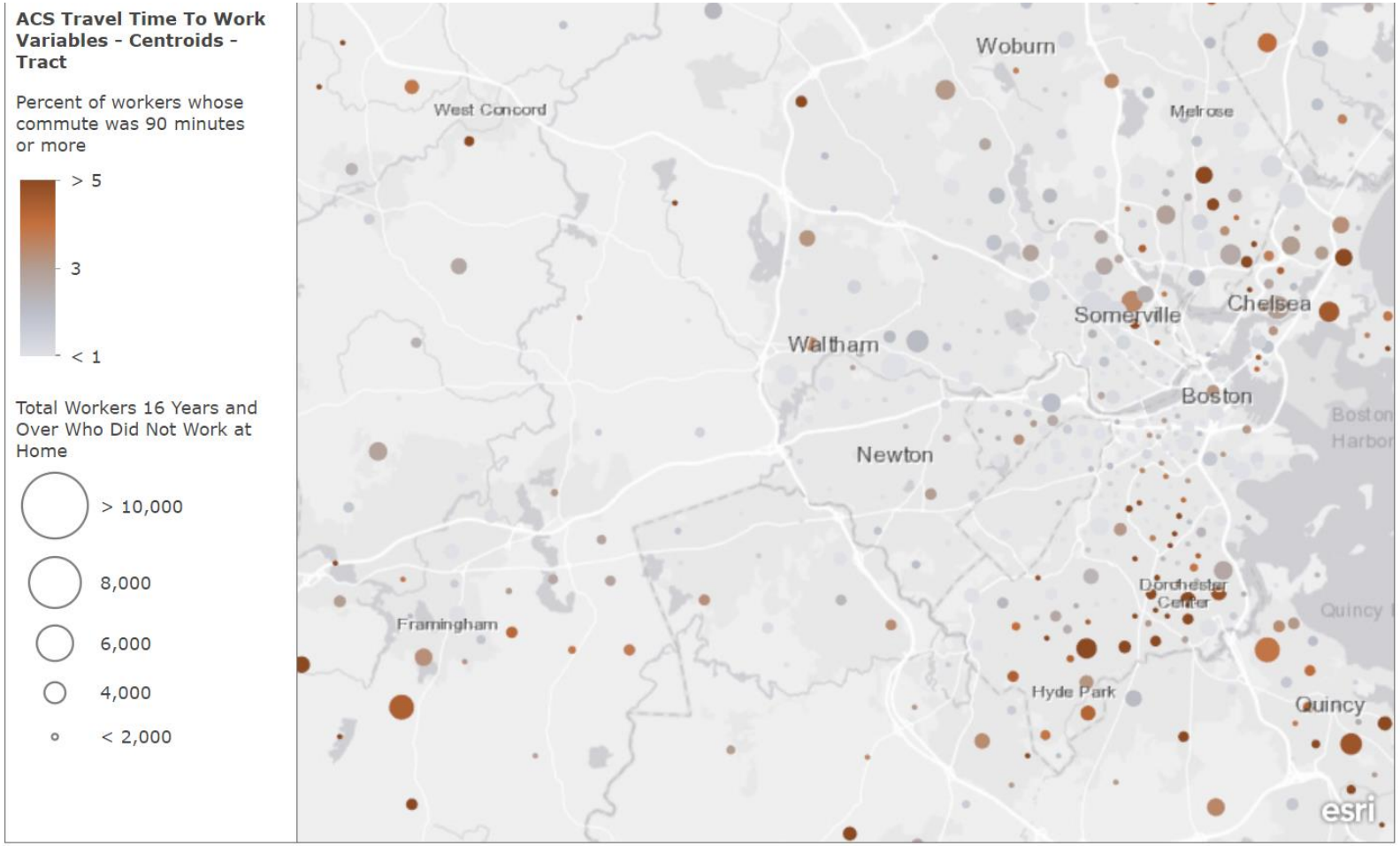
Source: American Community Survey, 2017 *Data for all Territories not available.

Percent of workers with a commute of 90 minutes or more, by census tract



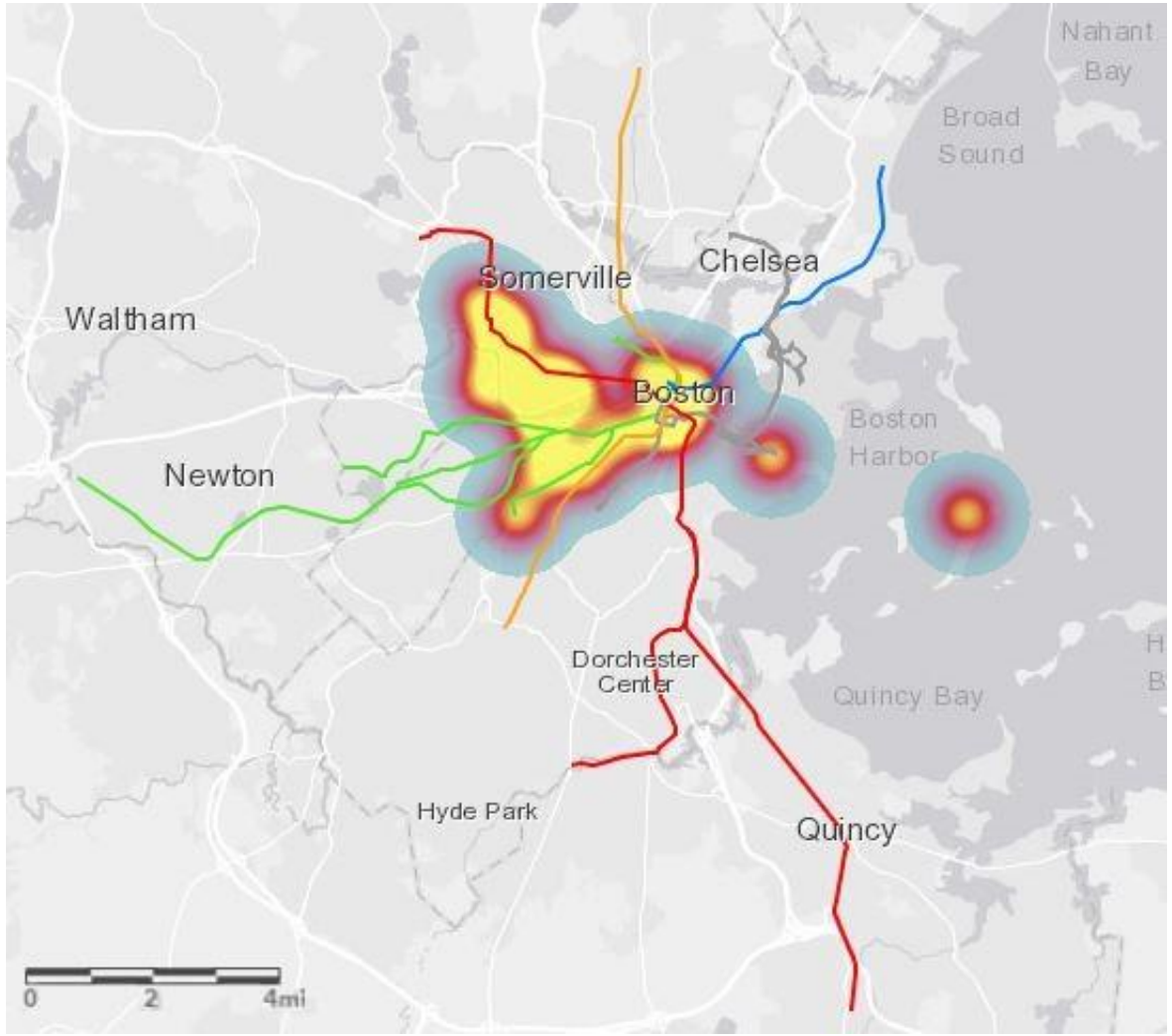
Source: American Community Survey, 2017

Percent of Boston-area workers with a commute of 90 minutes or more, by census tract



Source: American Community Survey, 2017

Boston household commute times less than national average (shown with the Boston “T” system lines)



Source: American Community Survey, 2017

Travel Speed

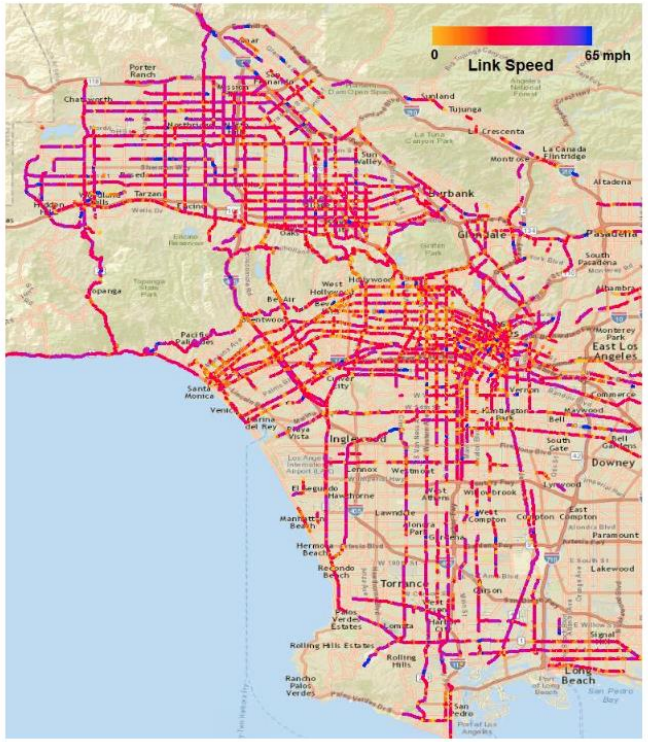


Figure 10. Average link speed in downtown LA

Particulate Matter 2.5

Figure 24. Annual peak hour PM2.5 concentration in Los Angeles

CO_2 Concentrate

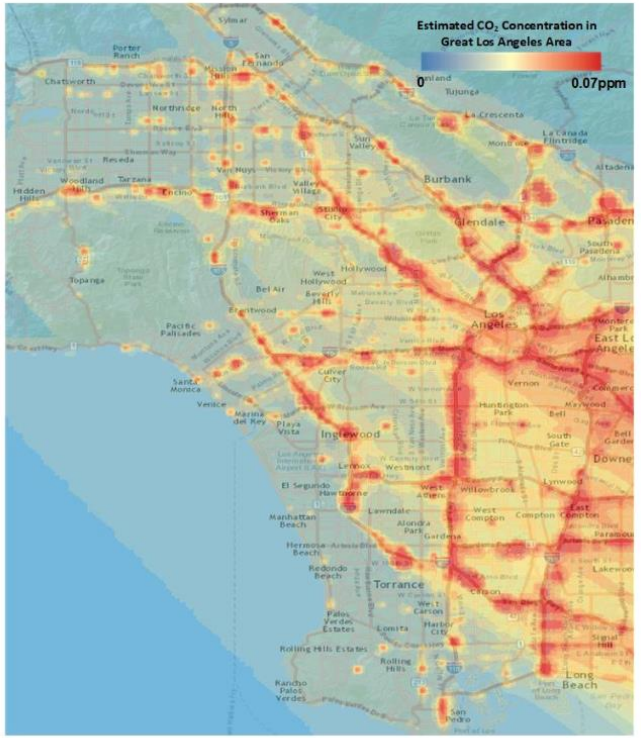
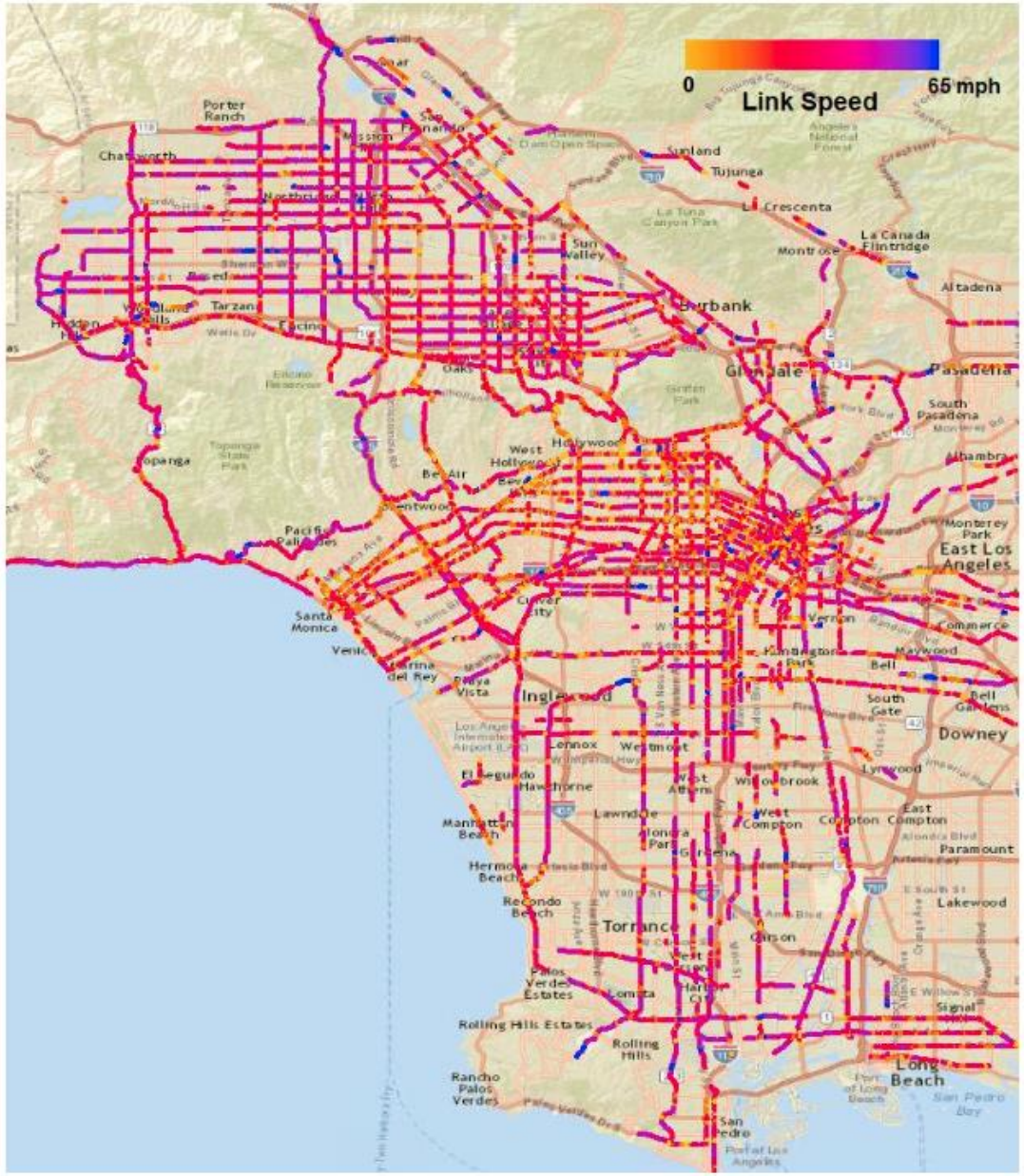


Figure 28. Annual peak hour CO2 concentration in Los Angeles

Congestion and Air Quality in the Greater Los Angeles Area

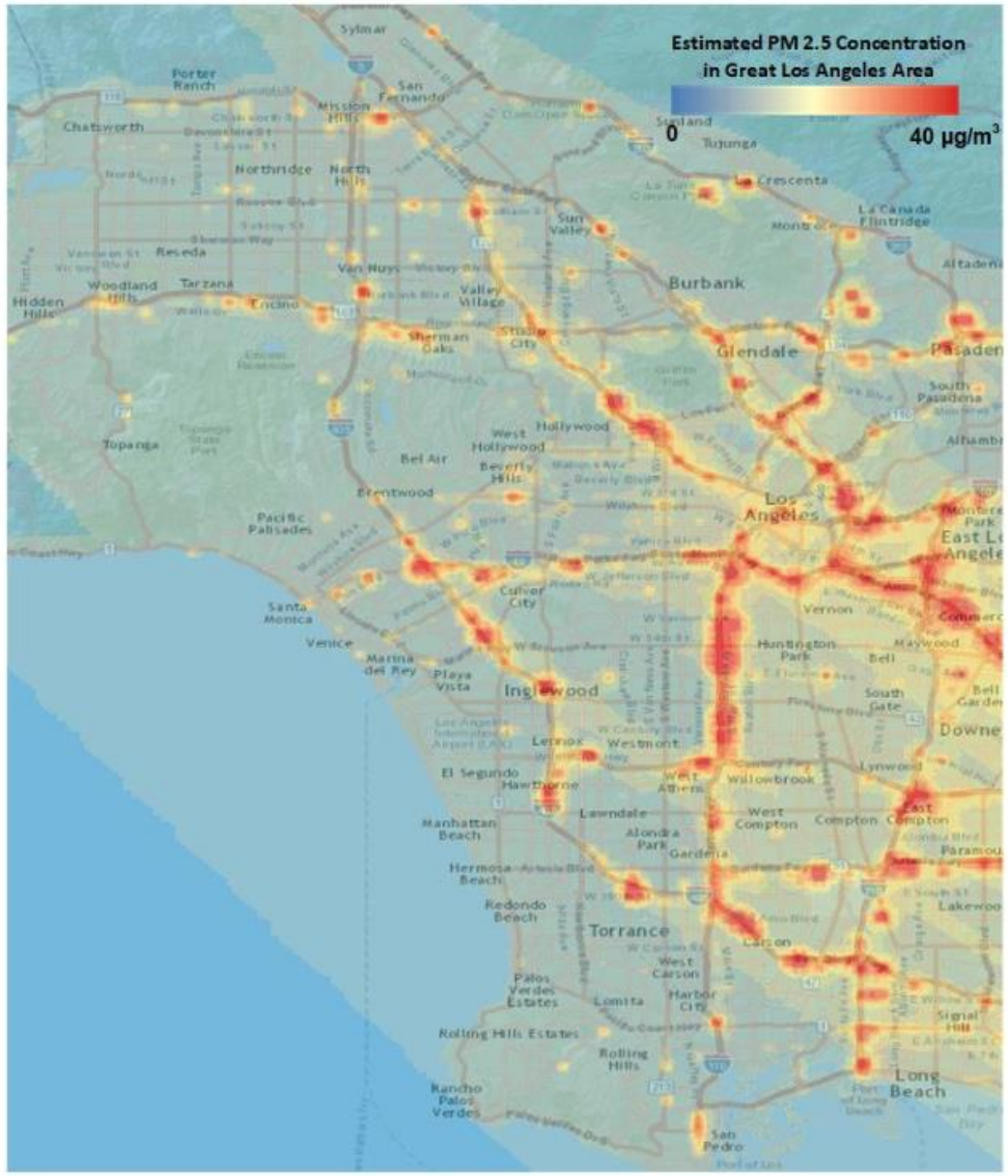
Source: Peng Hao, Evaluating Environmental Impact of Traffic Congestion in Real Time Based on Sparse Mobile Crowd-Sourced Data, University of California, Riverside (CalTrans), February 2018

Average trip segment speed



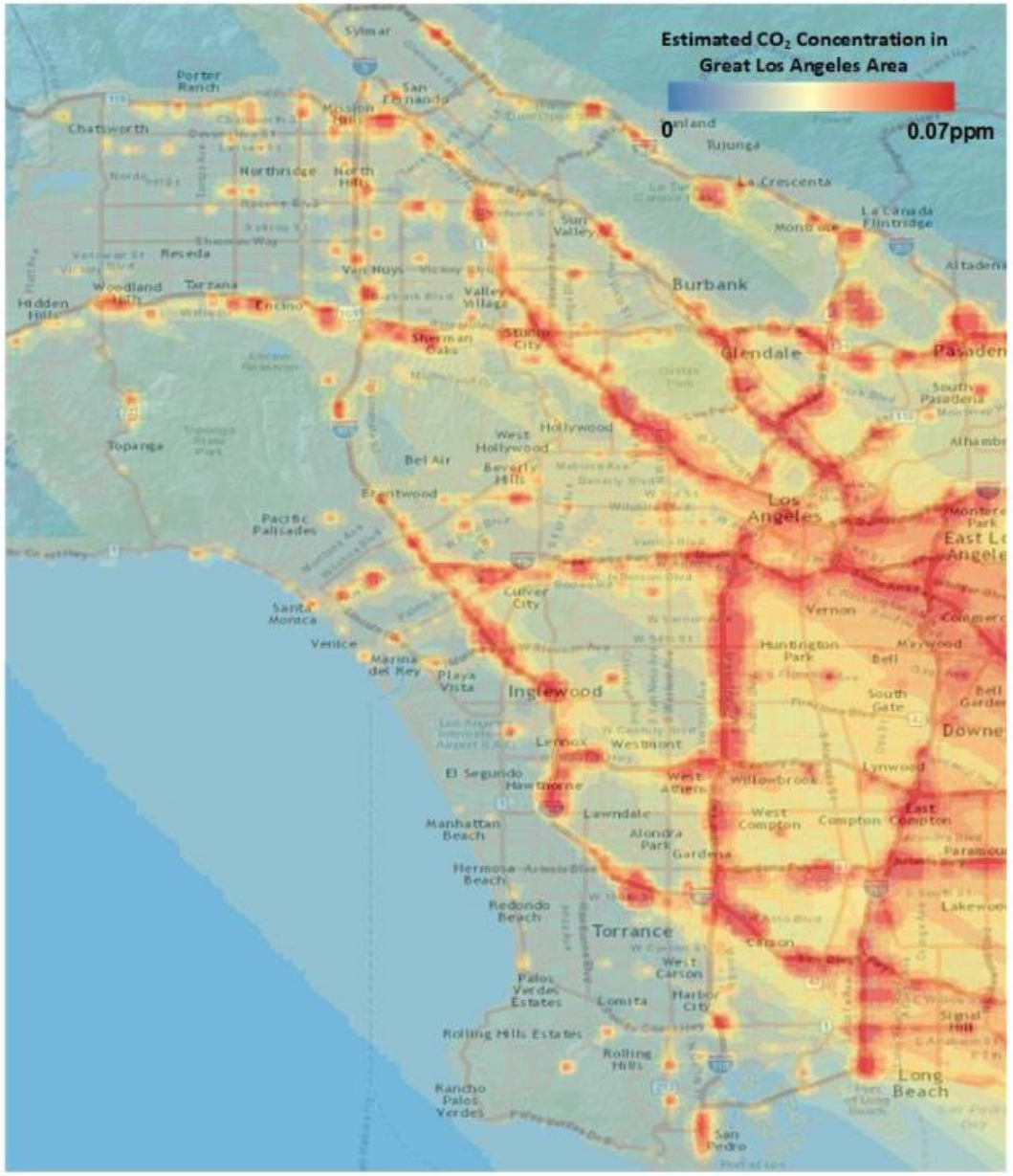
Source: Peng Hao, Evaluating Environmental Impact of Traffic Congestion in Real Time Based on Sparse Mobile Crowd-Sourced Data, University of California, Riverside (CalTrans), February 2018

Estimated Particulate Matter (2.5) Concentration in Annual Peak Hour



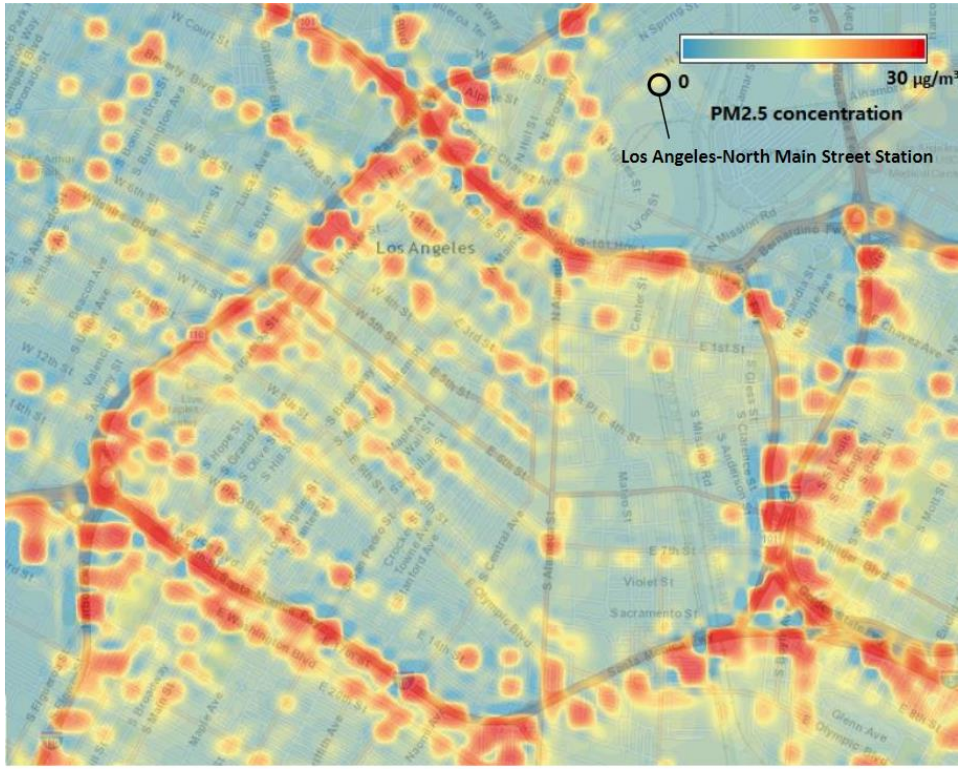
Source: Peng Hao, Evaluating Environmental Impact of Traffic Congestion in Real Time Based on Sparse Mobile Crowd-Sourced Data, University of California, Riverside (CalTrans), February 2018

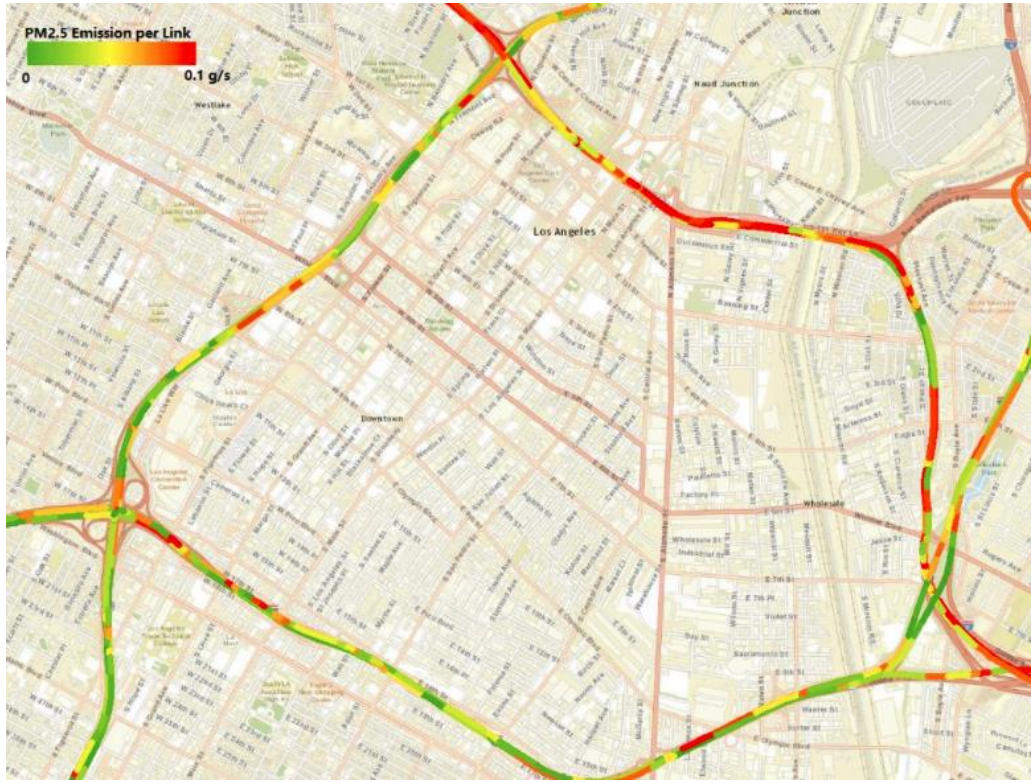
Estimated CO_2 Concentration in Annual Peak Hour



Source: Peng Hao, Evaluating Environmental Impact of Traffic Congestion in Real Time Based on Sparse Mobile Crowd-Sourced Data, University of California, Riverside (CalTrans), February 2018

Los Angles Particulate Matter in Peak Traffic





Source: Peng Hao, Evaluating Environmental Impact of Traffic Congestion in Real Time Based on Sparse Mobile Crowd-Sourced Data, University of California, Riverside (CalTrans), February 2018