Leveraging Data to Tell a Performance Story:

Previewing the (MAP-21) Road Ahead via MTC's Vital Signs Initiative

David Vautin, Senior Transportation Planner – Metropolitan Transportation Commission

MAP-21 Data Workshop – August 24, 2015 – Sacramento, California

Image Source: https://www.flickr.com/photos/basetree/14712339642

1. **Thinking about Data's Role in Performance**
2. Where Does MTC's Data Come From?
3. Case Study: Vital Signs Initiative
4. Looking Ahead to MAP-21

Image Source: https://www.flickr.com/photos/tq2cute/4407502443

The public has high expectations that states and regions are using data to make performance-driven decisions.

Image Source: https://www.flickr.com/photos/adabo/12038310014

The world of data is complex and messy. How do we identify data sources to leverage and then leverage them efficiently?

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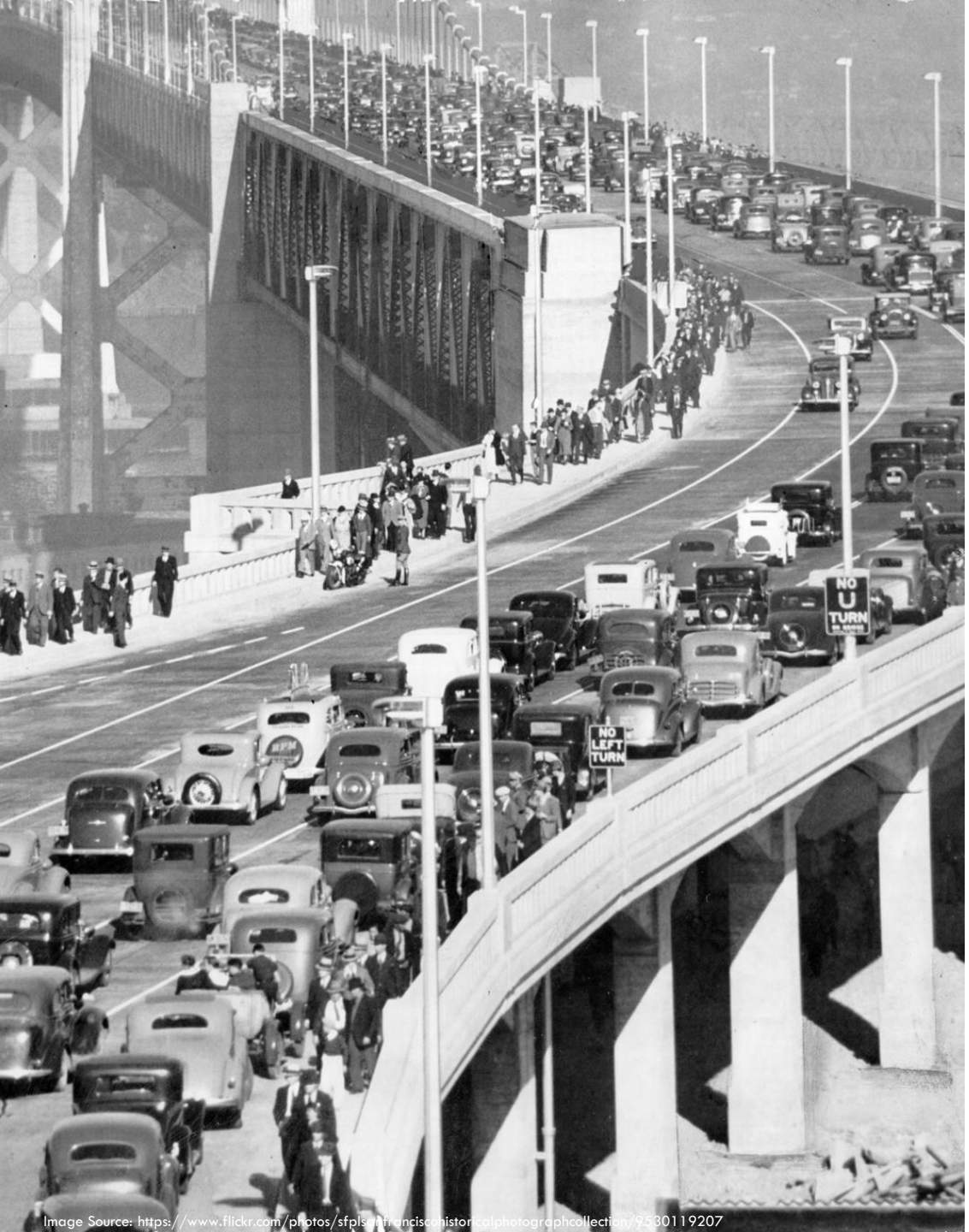

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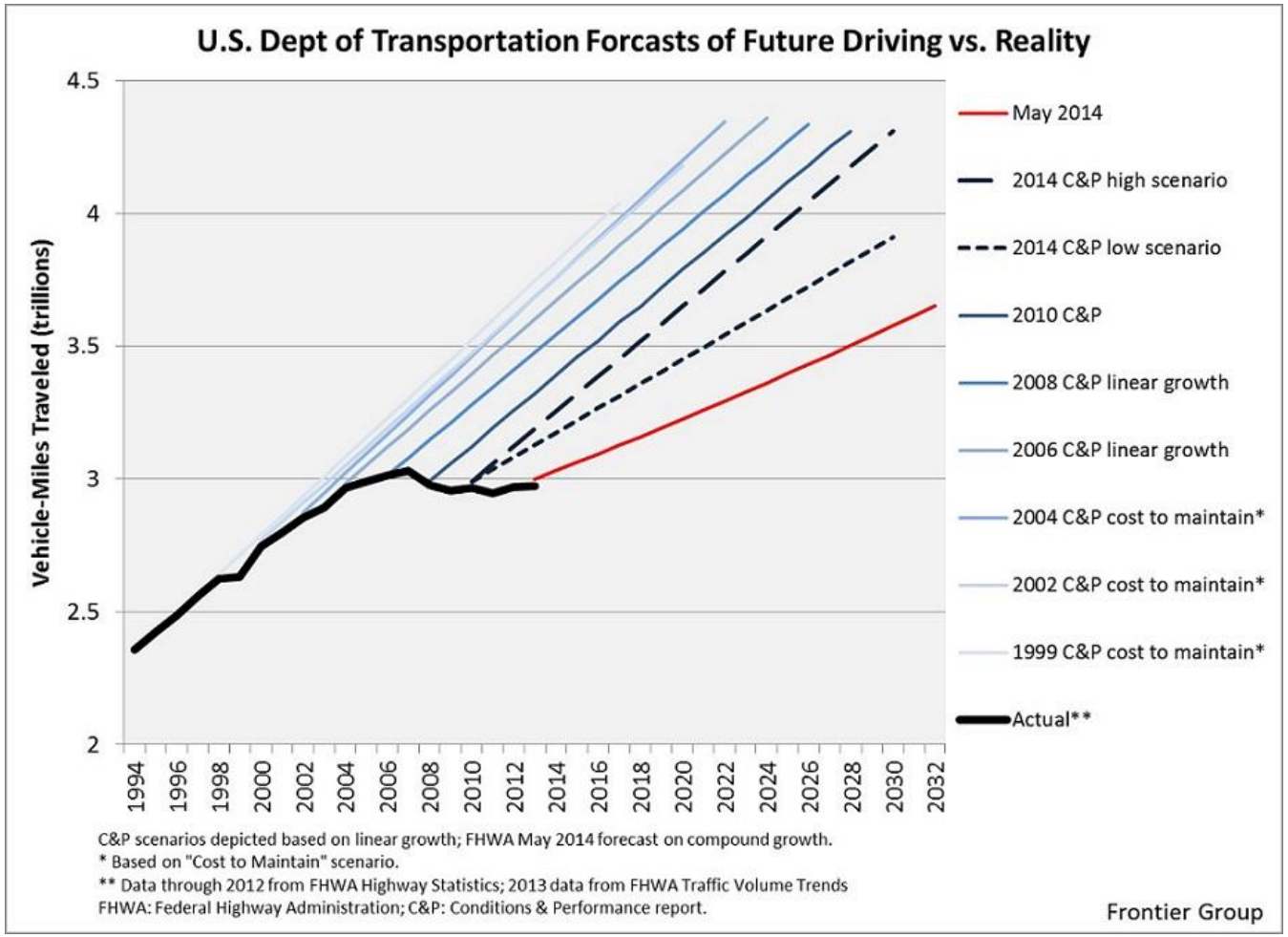
To set smart targets, we need historical data to make informed decisions. **But extrapolating past trends isn't always the best predictor for the future.**



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MTC leads a handful of key data collection efforts – and also partners with local agencies to fill data gaps.

StreetSaver Program

(pavement condition data on local streets)

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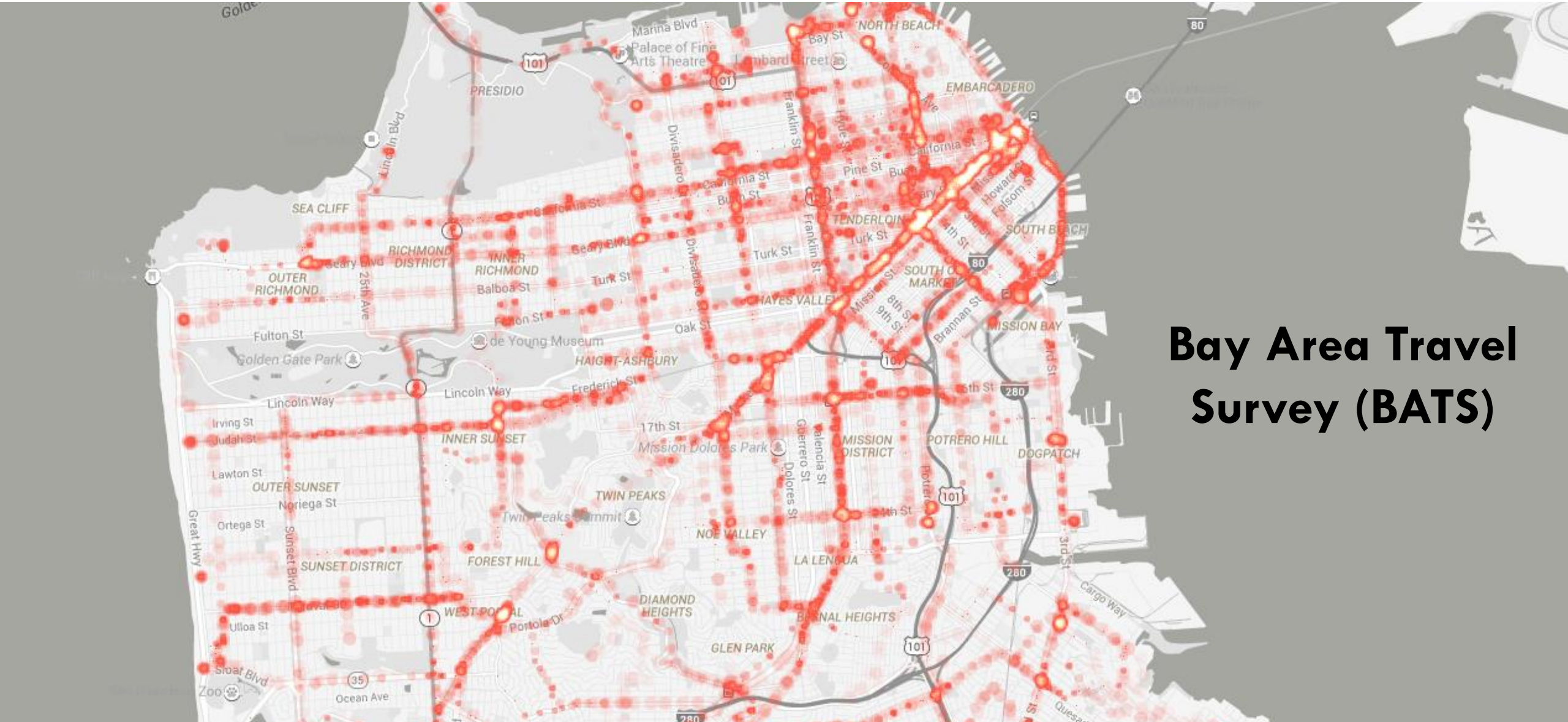
MTC leads a handful of key data collection efforts – and also partners with local agencies to fill data gaps.

Regional Transit Capital Inventory

Image Source: https://www.flickr.com/photos/nathan_y/2824325481/

MTC leads a handful of key data collection efforts – and also partners with local agencies to fill data gaps.



Bay Area Travel Survey (BATS)

MTC leads a handful of key data collection efforts – and also partners with local agencies to fill data gaps.

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MPOs also purchase data to support operations and planning decisions – often with a performance objective.

INRIX

Dun & Bradstreet

AirSage

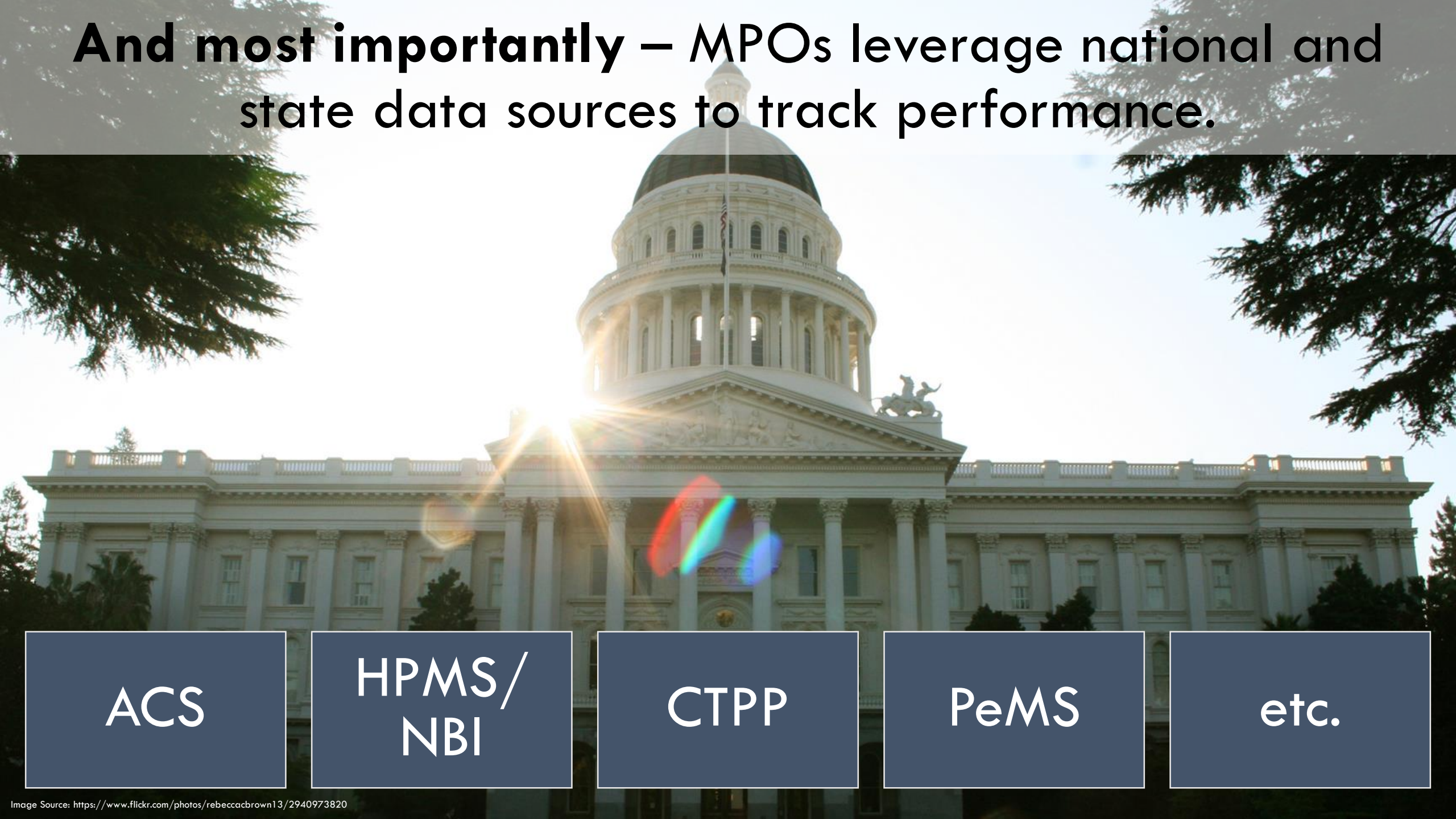
etc.

Image Source: https://www.flickr.com/photos/thomashawk/486980992

It's critical to remember that large MPOs in California are dealing with issues (and data) beyond transportation.

Image Source: https://www.flickr.com/photos/proimos/758121 5472; * = number rounded for simplicity

And most importantly – MPOs leverage national and state data sources to track performance.



ACS	HPMS/ NBI	CTPP	PeMS	etc.

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2. Where Does MTC's Data Come From?
3. **Case Study: Vital Signs Initiative**
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Data is imperative to determine real-world progress (or lack thereof).

** Not an actual travel demand model.

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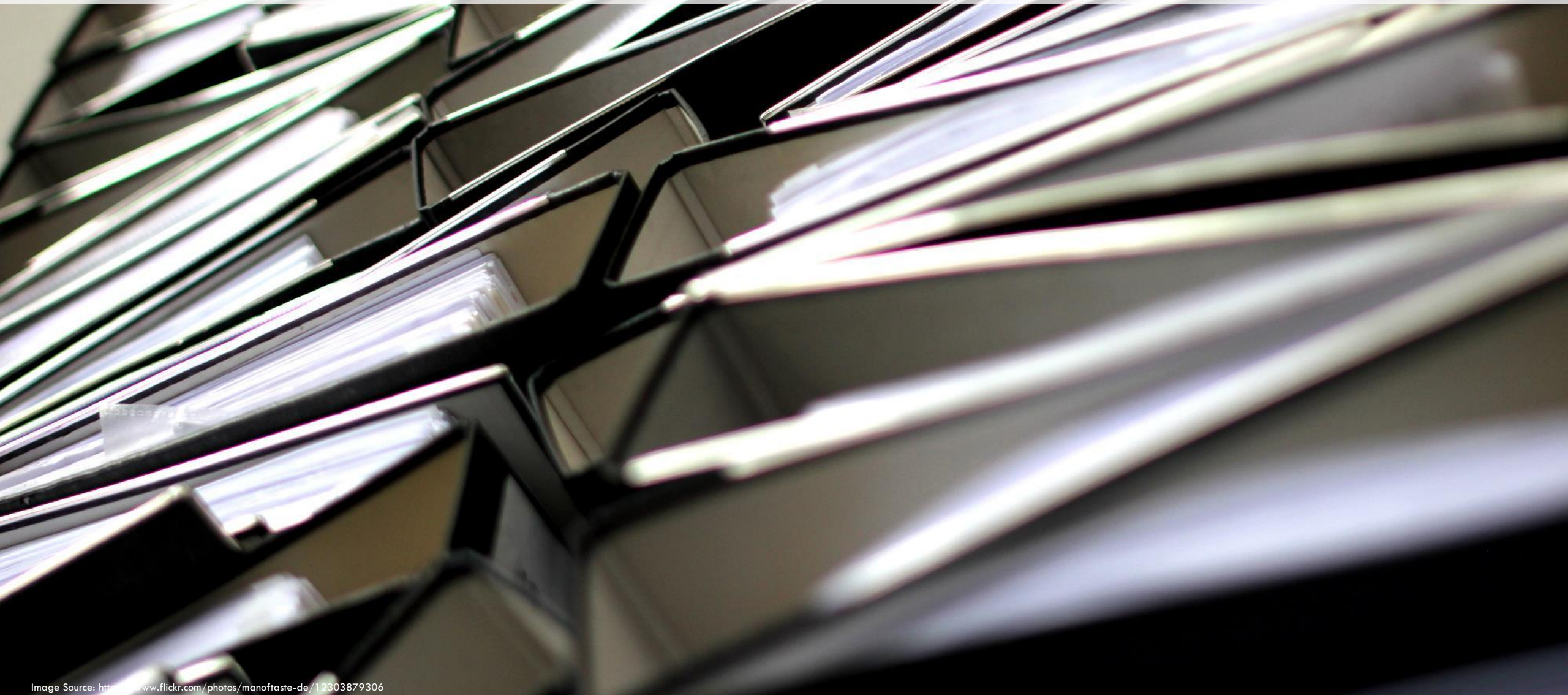
We need to be able to translate the data into something the public can understand and can easily explore.



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VITAL SIGNS

The Bay Area's Performance Monitoring Initiative

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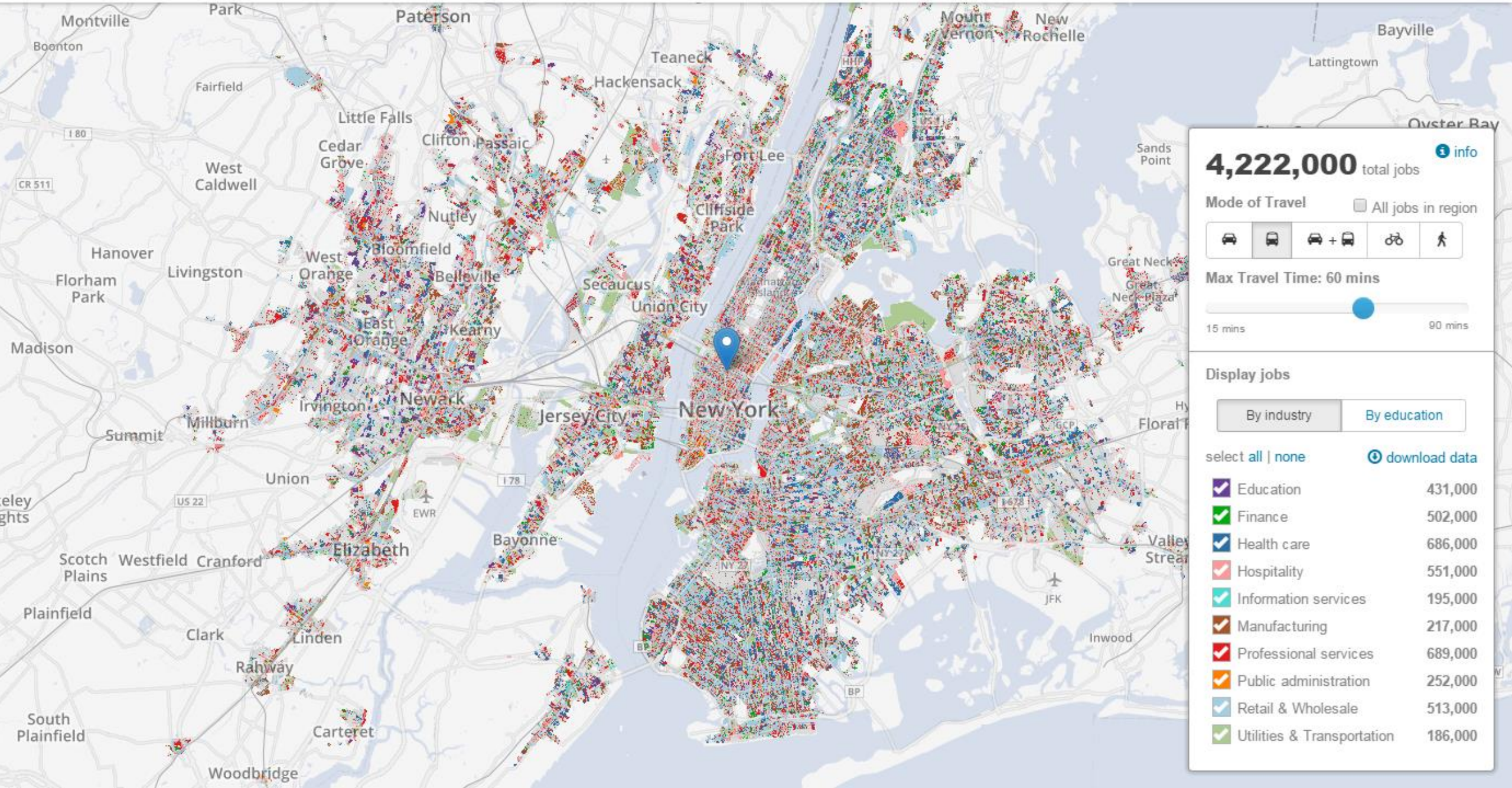
Montville
Park
Paterson
Boonton
Fairfield
Teaneck
Hackensack
Mount Vernon
New Rochelle
Bayville
Lattingtown
Oyster Bay
Little Falls
Cedar Grove
Clifton
Passaic
Fort Lee
Sands Point
West Caldwell
Nutley
Cliffside Park
Hanover
Bloomfield
West Orange
Livingston
Florham Park
Belleville
Secaucus
Union City
Great Neck
Great Neck Plaza
East Orange
Kearny
Madison
Newark
Irvington
Jersey City
New York
Millburn
Summit
Union
Elizabeth
Bayonne
Scotch Plains
Westfield
Cranford
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Woodbridge
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Valley Stream
Floral
EWR
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4,222,000 total jobs
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Mode of Travel
All jobs in region
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Display jobs
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By education
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Education 431,000
Finance 502,000
Health care 686,000
Hospitality 551,000
Information services 195,000
Manufacturing 217,000
Professional services 689,000
Public administration 252,000
Retail & Wholesale 513,000
Utilities & Transportation 186,000

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Urban Observatory™

1!2(21 Project

Compare cool facts and live data about multiple cities anywhere, anytime.
(Caution: it's addictive)

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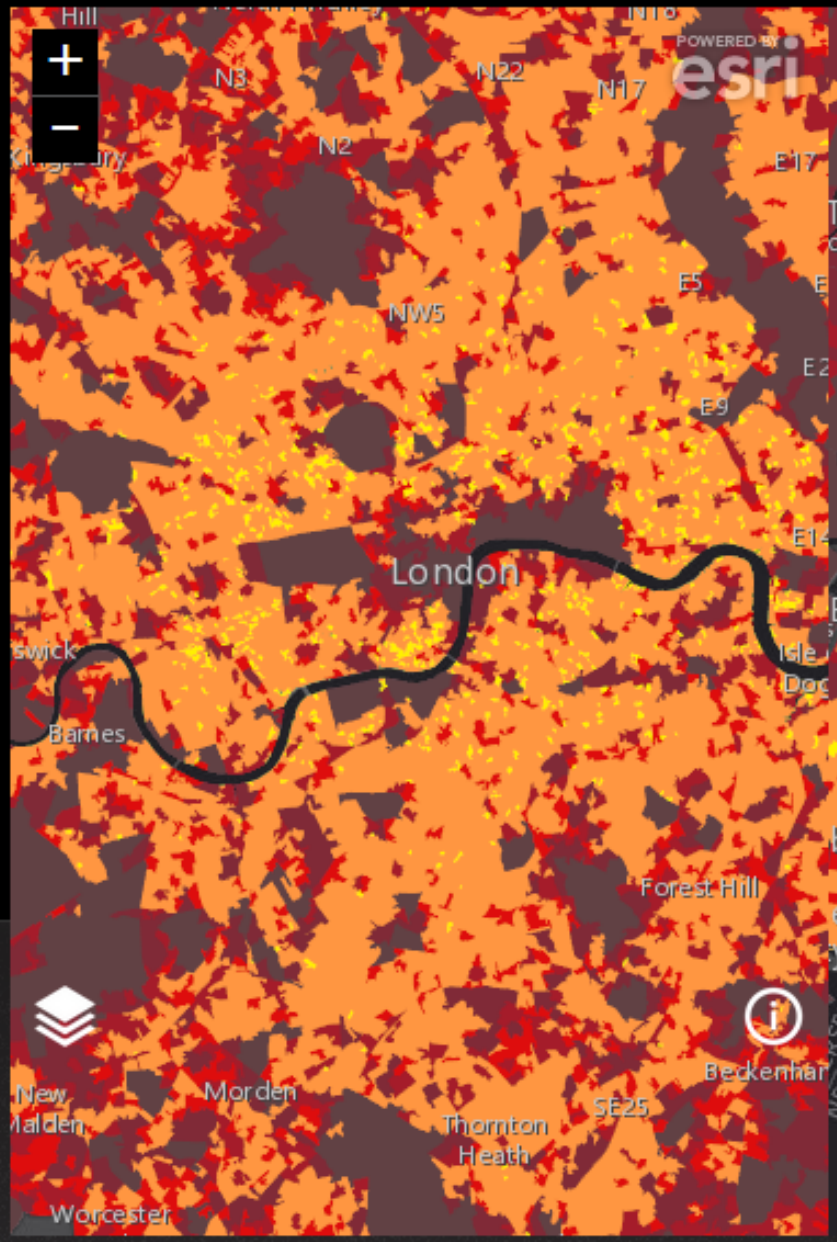

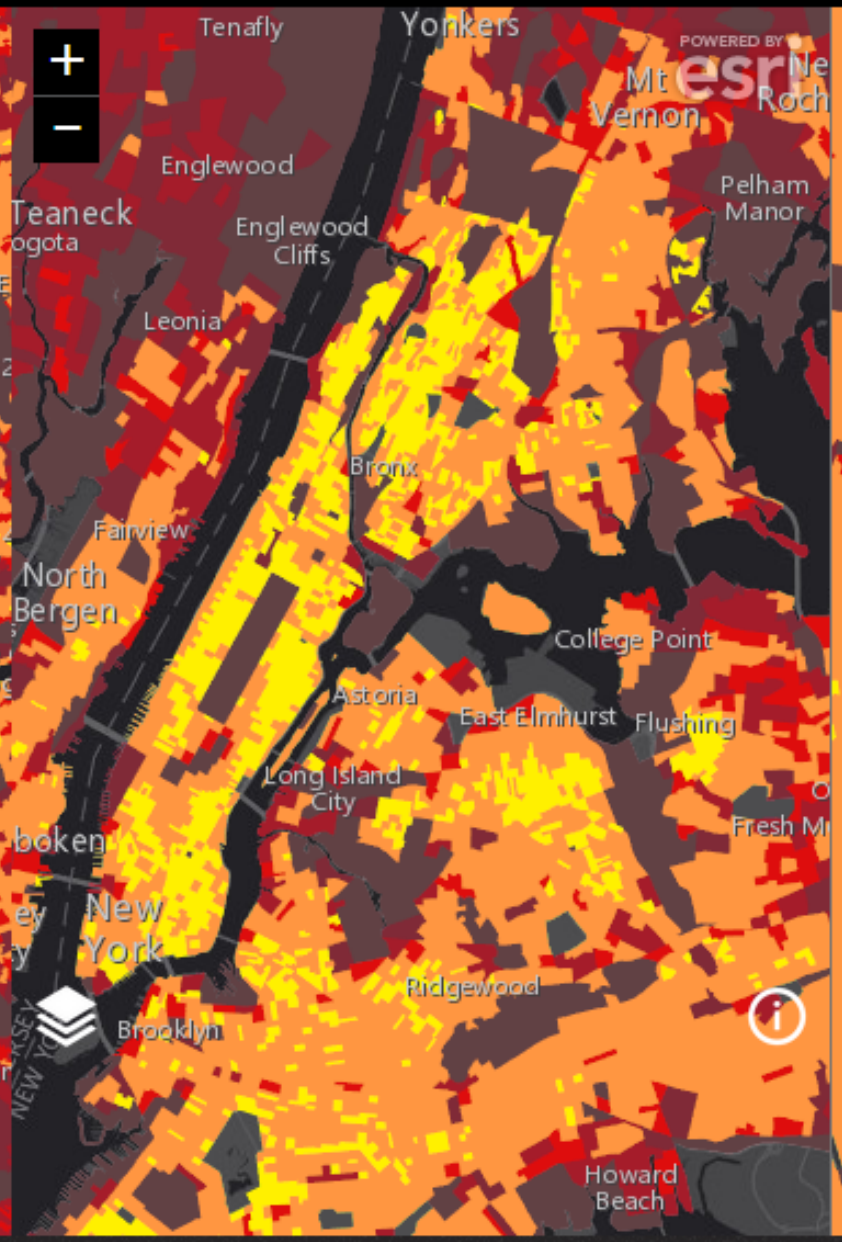

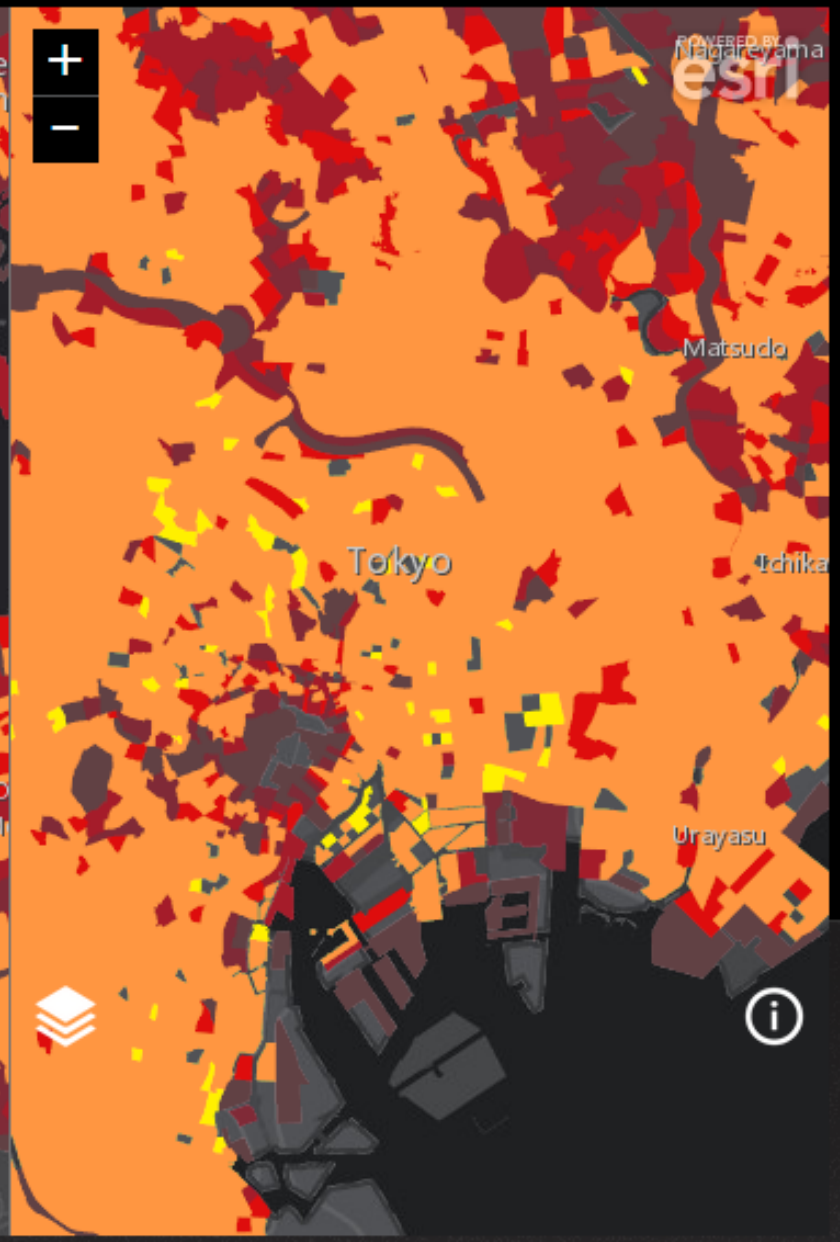

The biggest hurdle: data silos and institutional barriers.

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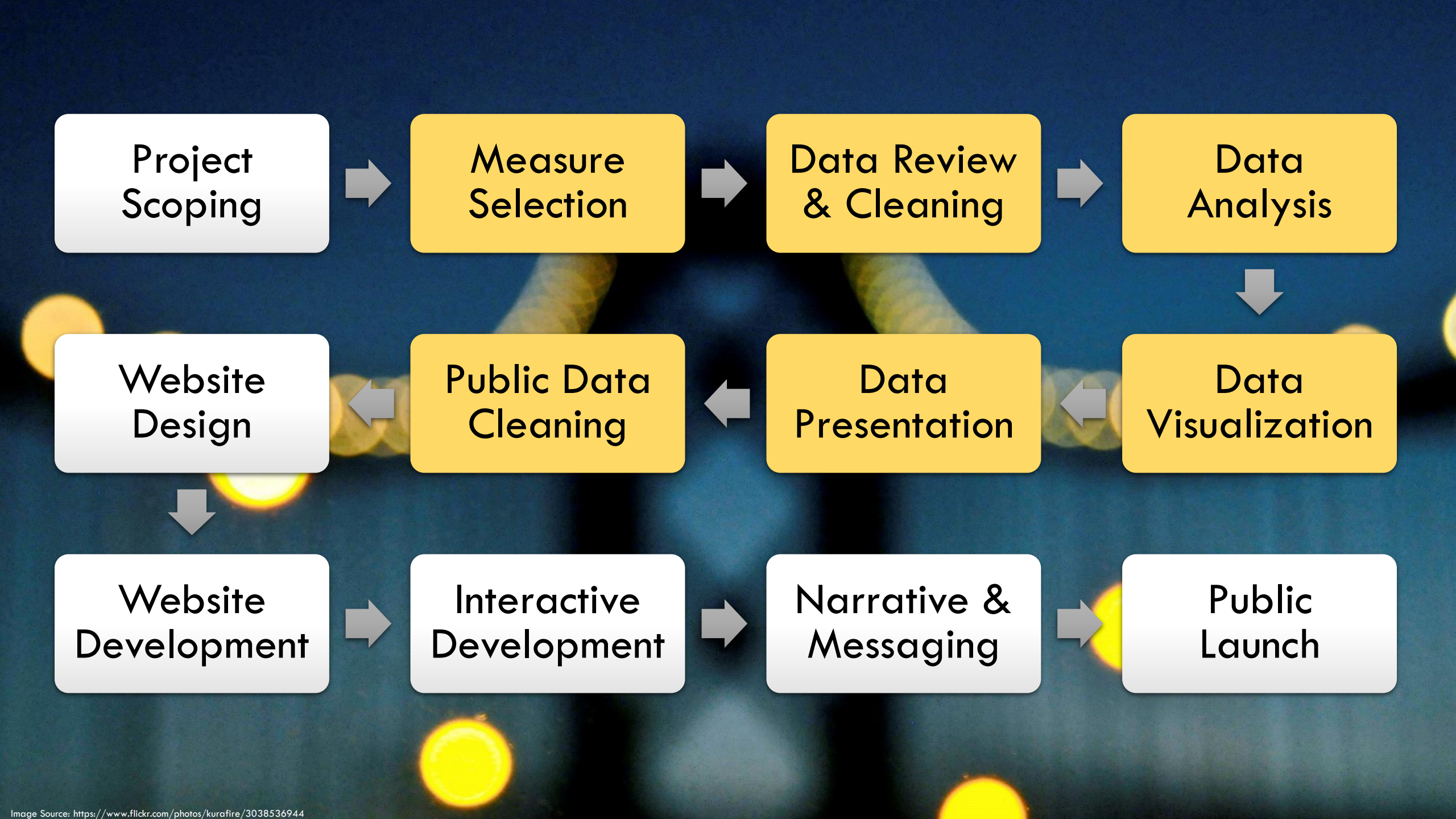

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Explore interactive maps and zoom into your local neighborhood

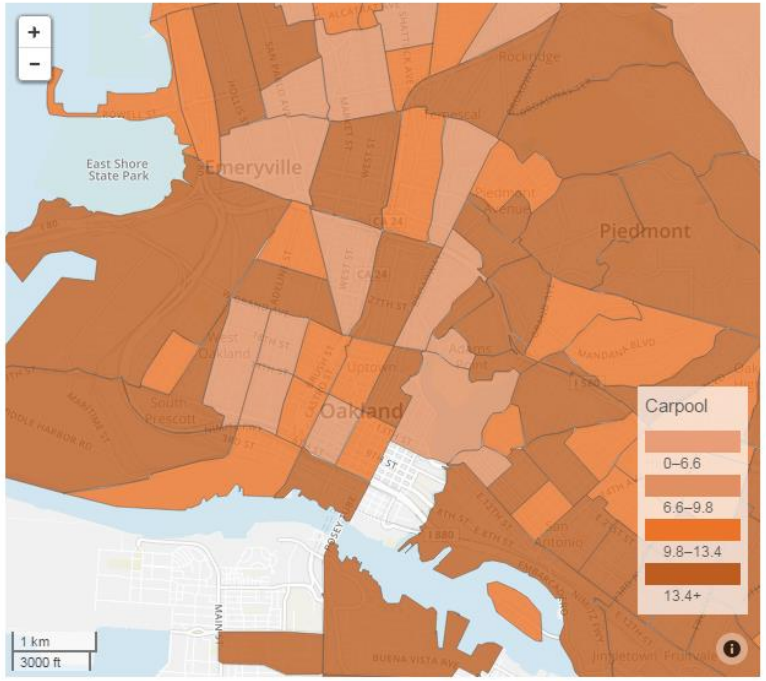
VITAL SIGNS

Transportation | Land Use | Economy | Environment | Measures | Data Center

COMMUTE MODE CHOICE Regional Performance Local Focus National Context ShareThis

2013 Commute Mode Choice for Counties and Cities

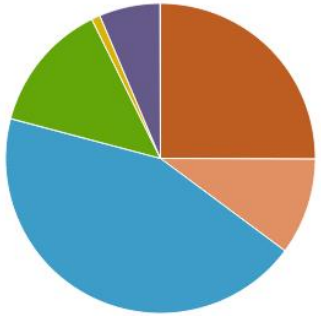
Auto | Carpool | Transit | Walking | Biking | Other | Telework | Home | Work



Top Cities for Carpool

1. San Pablo: 22.8%
2. Calistoga: 19.6%
3. Pittsburg: 18.9%
4. Hercules: 17.7%
5. Richmond: 17.6%
6. Colma: 17.3%
7. Vallejo: 16.6%
8. Gilroy: 16.4%
9. Antioch: 15.5%
10. Pinole: 15.4%

Tract 6001402900



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STREET PAVEMENT CONDITION Regional Performance Local Focus ShareThis

Local Focus

Pavement conditions vary widely—not only from street to street, but also from city to city.

Pavement in the region's three largest cities – San Jose, San Francisco, and Oakland – falls squarely into the "fair" range of the PCI scale. This performance level is not unique to the largest jurisdictions; most Bay Area cities have PCIs ranging between 60 and 79 (reflecting fair-to-good conditions). Some suburban communities have seen major improvements in their pavement condition over the last year – in San Mateo County alone, Menlo Park, Woodside and Colma all experienced three-point improvements in PCI in 2013.

Read More

2013 Pavement Condition Index (PCI)

Segment Details

PCI At Risk

Street: CARROT LANE

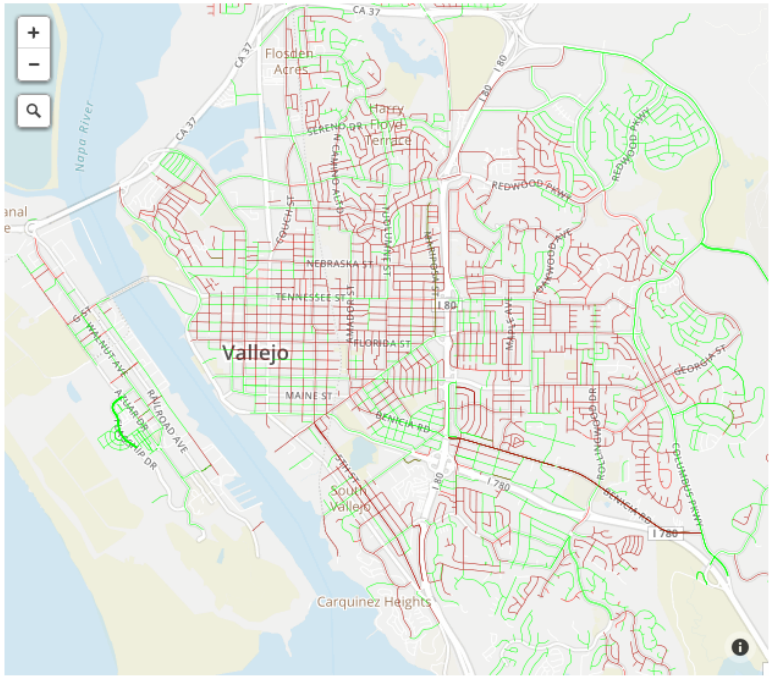
From: Gilcrest Avenue

To: Ridge Avenue

Legend

Condition (PCI range)

- Poor/Failed (0-49)
- At Risk (50-59)
- Good/Fair (60-79)
- Excellent/Very good (80-100)



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Create customized charts that can be exported to PowerPoint with one click

VITAL SIGNS

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TRANSIT RIDERSHIP | Regional Performance | Local Focus | National Context | ShareThis

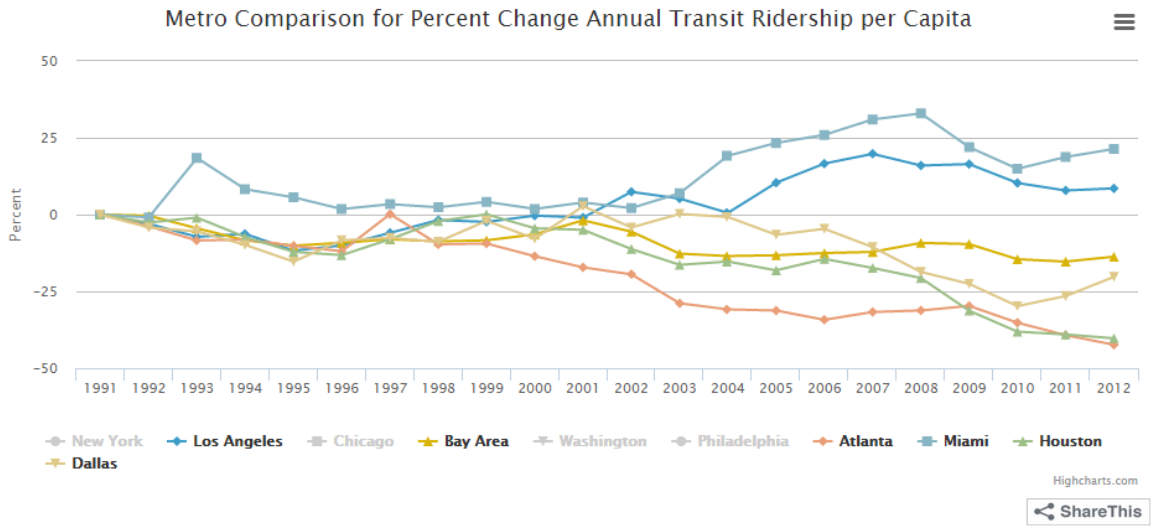
National Context

In terms of generating transit ridership, the San Francisco Bay Area is being outpaced by its peers.

While the Bay Area remains one of the nation's most transit-oriented metro areas, New York, Chicago, Philadelphia and Miami have all experienced notable growth in overall and per-capita ridership since 2002. In that same time, the Bay Area has seen declines in both measures – a 3 percent slide in total ridership and a 10 percent decline on a per-capita basis. The only metros with greater declines in ridership than the Bay Area were Houston, Dallas and Atlanta.

Read More

Total | Total Percent Change | Per Capita | Per Capita Percent Change



VITAL SIGNS

Transportation | Land Use | Economy | Environment | Measures | Data Center

BRIDGE CONDITION | Regional Performance | Local Focus | National Context | ShareThis

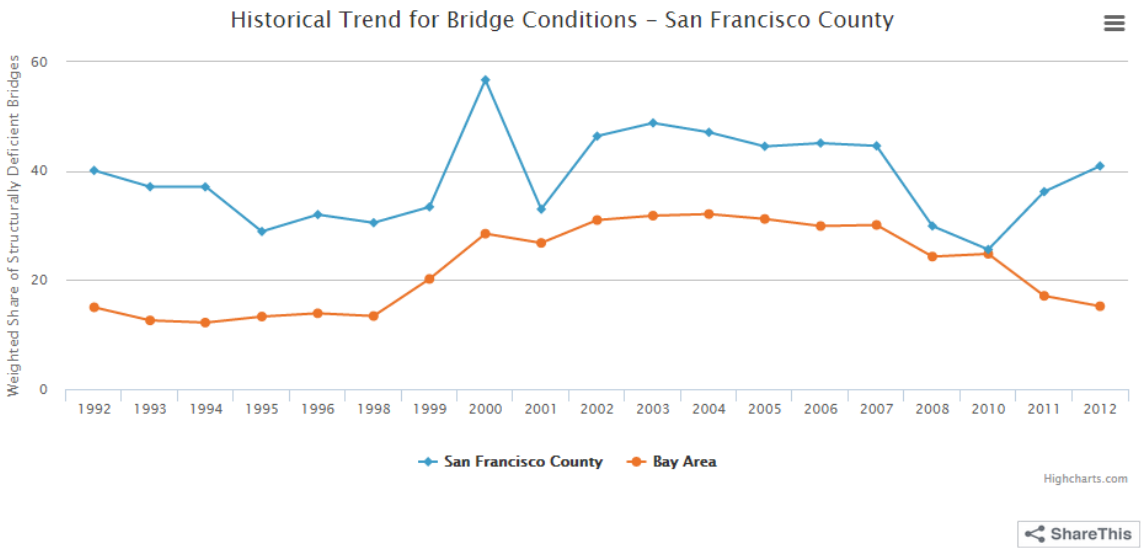
Regional Performance

Bay Area bridge conditions have significantly improved over the past decade.

Bay Area bridges and overpasses are in their best shape since 1998, thanks to substantial efforts to improve the seismic and structural safety of these critical facilities. In 2012, the share of bridges flagged as structurally deficient fell by two percentage points – and now stands at just 15 percent.

Read More

San Francisco



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San Jose Mercury News

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EVEN IF IT'S LONG, YOU CAN RELY ON IT

Our drive-times place first for predictability among major U.S. metro areas, and new study also finds that we spend slightly less time behind the wheel

STAFF ARCHIVES

Most predictable a.m. commutes

- 242 From I-680 to Highway 4
- 380 From I-280 to Highway 101
- 85 From Highway 17 to 101

Most unpredictable a.m. commutes

- 242 From Highway 4 to I-680
- 80 From I-580 to Highway 4
- 101 From Hwy. 85 to I-280/I-680

MORE COMPLETE LIST, PAGE A8

How do we rank in predictability?

The Bay Area, with a Buffer Time Index of 0.41, is the most predictable in the nation. Next up:

2. Philadelphia **0.46** 4. Chicago **0.53**
3. Houston **0.49** 5. Atlanta **0.60**

SEE THE ENTIRE TOP TEN, PAGE A8

By Gary Richards
grichards@mercurynews.com

In the predawn darkness, traffic is already at a crawl on Interstate 580 through Livermore, on Highway 101 approaching Mountain View and before the toll plaza on the Bay Bridge, where a single fender bender can mean long delays for thousands of drivers.

Bay Area commuting can be torture, at levels not felt in more than a decade.

But a new study suggests that the region's road warriors have one advantage over the rest of the country: Freeway commute times here are more predictable than in any other major U.S. metro area.

"Yes, we have plenty of congestion," said John Goodwin of the Metropolitan Transportation Commission, "but it's congestion we can count on."

It's what transportation experts call a "reliable commute." If your commute stinks today, it likely will stink tomorrow. If it's a breeze on Monday and Tuesday, you'll typically have no problem Wednesday, Thursday and Friday. Either way, you'll know exactly when you have to leave your house to get to work each day on time.

Of the 10 regions in the study,

See **COMMUTE**, *Page 8*

ONLINE EXTRA

For more on Bay Area commuting, go to www.mercurynews.com/traffic.

Who bikes to work?

23% Increase in bike commuting from 2009 to 2013

Who works where they live?

88% Share of Santa Clara County residents who work there (No. 1 in region)

Who uses public transit to commute?

32% Share of San Francisco's who use public transit (No. 1 in region)

How long do our commutes take?

28:00 Average commute in the Bay Area

Source: Metropolitan Transportation Commission

DAMPENING THE DROUGHT

Finally, a vital dose of relief

'Pineapple Express' could bring up to 3 inches of rain to thirsty cities in Bay Area

By Paul Rogers
progers@mercurynews.com

After the driest January in recorded history, the Bay Area is back in the rain business.

Meteorologists are reporting that conditions in the Pacific are generating what appears to be a strong "Pineapple Express" storm that is expected to hit Northern California starting Thursday evening, bringing steady rain through the weekend to the drought-stressed Golden State.

Although conditions could still change, the storm is expected to bring between 1 and 3 inches of rain to the Bay Area, with the heaviest amounts in the Santa Cruz Mountains and other high elevations, and up to 5 inches in North Bay communities like Sonoma County by Monday morning.

"This is the first big storm since December," said Austin Cross, a meteorologist with the National Weather Service in Monterey. "One storm

See **STORM**, *Page 8*

WHERE THE RAIN MAY FALL

Forecast precipitation, in inches

Source: Plymouth State University, BAY AREA NEWS GROUP

1 to 3" Rain predicted for the Bay Area

10" Rain predicted for Redding and other cities in far Northern California

8,000 Predicted snow level, in feet, meaning the storm will leave rain, not snow, on much of the Sierra

ANALYSIS

Obama unrelenting in quest to reassert Progressive ideals

By David Lightman
McClatchy Washington Bureau

WASHINGTON — President Barack Obama wants the era of big government back.

Unleashed from elections, entering the final two years of his presidency and wrestling with a legacy that includes a struggling middle class,

BUSINESS

Tesoro refinery idled after strike

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Comics B8
Lottery A2
Movies B4
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Opinion A9
People A2
Puzzles B4, C6
Roadshow A2
Television B8

WEATHER PAGE B10
Partly cloudy
H: 62-73 L: 43-49

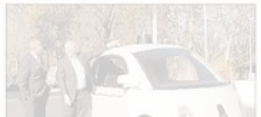
LOOKING TO THE FUTURE

Valley innovations drive 30-year vision on transportation in U.S.

By Matt O'Brien
mobrien@mercurynews.com

Riding to the Googleplex in a driverless car, U.S. Secretary of Transportation Anthony Foxx unveiled on Monday a 30-year vision for what American transportation might look like in the coming decades.

Automated cars, such as the models



San Francisco Chronicle

From among the brutal commutes, a new king of gridlock is crowned

By Michael Cabanatuan

The Bay Area's economy is booming, and with it comes a rise in gridlock and the time drivers spend stuck in traffic. That's a familiar theme. But the worst commute around — that's changing.

The king of the region's terrible commutes is now the evening drive out of San Francisco across the Bay Bridge. Eastbound traffic on Interstate 80

» **Hellish commutes:** Drivers share their tales of woe trying to get between work and home. **A8**

creeps from Highway 101, then crawls in fits and starts across the bridge's west span to east of the Yerba Buena Island tunnel.

That tortuous stretch supplants a longtime champion. Since Caltrans started keeping records in 1981, the morning commute westbound on I-80 from Hercules to the Bay Bridge toll plaza had held the top spot for all but one year — 1998 — when Interstate 680 over the Sunol Grade captured the dubious honor.

"Same bridge but different direction and different time of day," said Amy Rein Worth, chairwoman of the Bay Area Metropolitan Transportation Commission, which compiled the new rankings based on

Traffic continues on A8

Michael Macor / The Chronicle

Traffic on eastbound Interstate 80 leaves San Francisco for the Bay Bridge, the newly crowned king of painful commutes.

San Jose Mercury News

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TRAFFIC CONGESTION UP 65 PERCENT

Economy on rise — and so is risk of gridlock

Biggest blockage is I-80 out of San Francisco in the afternoon commute

By Denis Cuff
dcuff@bayareanewsgroup.com

OAKLAND — The Bay Area freeway commute is moving at its slowest pace in over a decade, as an economy that has shifted into overdrive leaves drivers idling on gridlocked roads.

In its first congestion report card in five years, the Bay Area's transportation planning agency said that average congestion — defined as traffic moving 35 mph or less — increased 65 percent in the Bay Area from 2009 to 2013.

To address the growing problem, transportation leaders are calling for more carpool and toll lanes, improved public transit and more commuters shifting work times.

"It's good news and bad news," said Amy Worth, the Metropolitan Transportation Commission chairwoman and also an Orinda councilwoman. "The good news is more people are finding work; the bad news is it's taking them longer to get there."

Overall congestion in 2013 was the worst in 15 years. Congestion figures for 2014 are not available yet. But officials said it's all but certain gridlock

See **TRAFFIC**, *Page 10*

WORST OF THE WORST See the full list on Page 10

1. **Eastbound Interstate 80 out of San Francisco** in the afternoon. Congestion that used to start at 3 p.m. on weekdays is now starting closer to 1:30 p.m.
2. **Interstate 880 in southern Alameda County**, a popular morning gateway to Silicon Valley.
3. **Southbound Highway 101** between Fair Oaks Avenue and 18th Street during the afternoon commute.

Cathy Chea @urbangeekbot

New BayAreaVitalSigns tool from @MTCBATA visualizes/tracks transpo performance data! **Your turn SoCal!** #opendata vitalsigns.mtc.ca.gov

CA High-Speed Rail @CaHSRA

Data, lots of data, the most data. @MTCBATA unveiled their Vital Signs site **and it's awesome.** #BayArea #SF #transit vitalsigns.mtc.ca.gov

TransForm @TransForm_Alert

We are nerding out on @MTCBATA's new Vital Signs website: bit.ly/1x91RVY

TransitWiki @TransitWiki

Awesome new #data tool out of @MTCBATA. vitalsigns.mtc.ca.gov **Enjoy, #transponerds!**

Melanie Curry @currymel

New Vital Signs website from MTC is **fun for all data nerds** la.streetsblog.org/2015/02/06/new… via @streetsblogla

2013 Time Spent in Congestion along Freeway Segments

Time 5pm

Click on a corridor on the map for more information.

Segment Details

PCI	At Risk

Street: College Av.

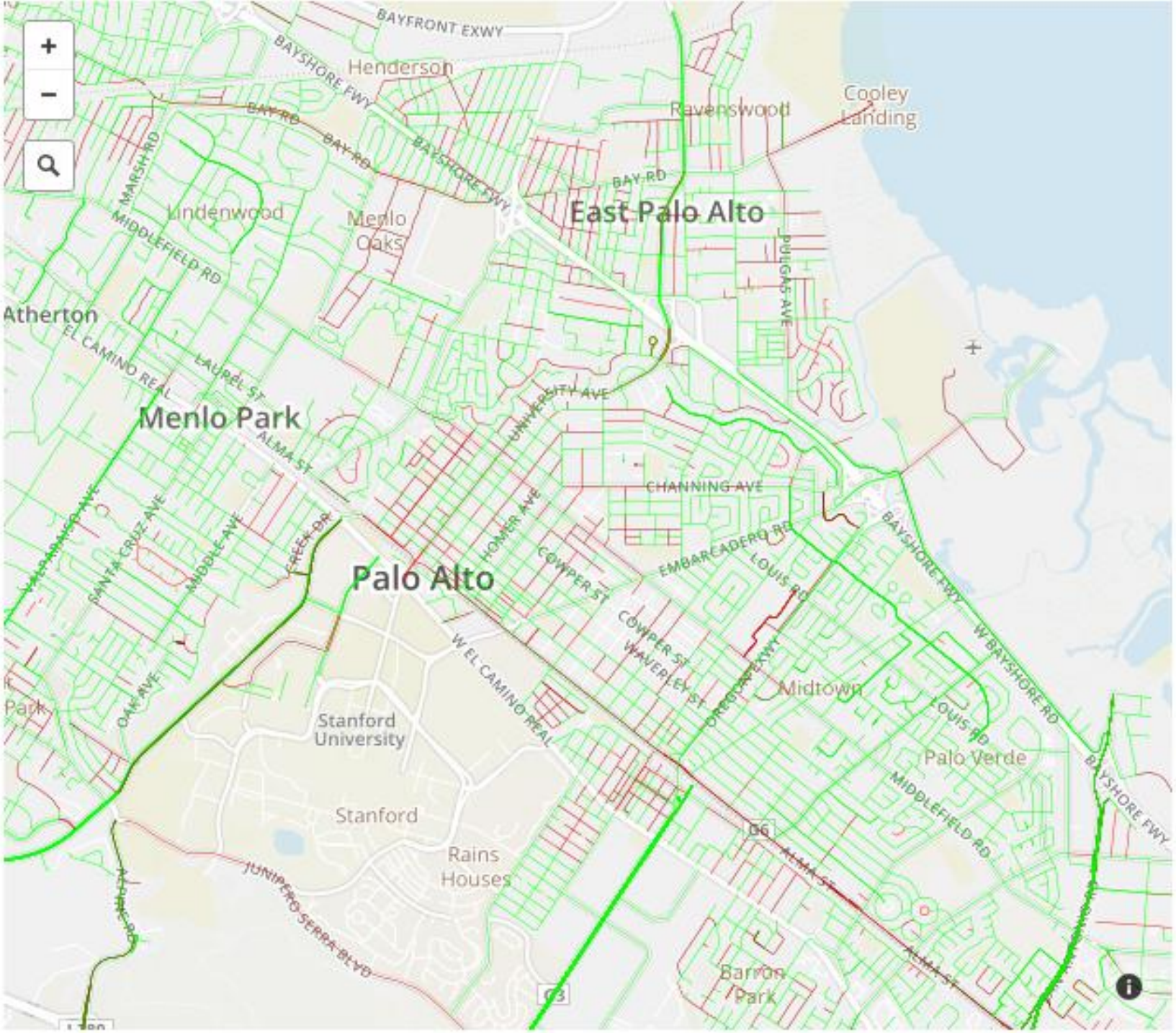
From: University Dr.

To: El Camino Real

Legend

Condition (PCI range)

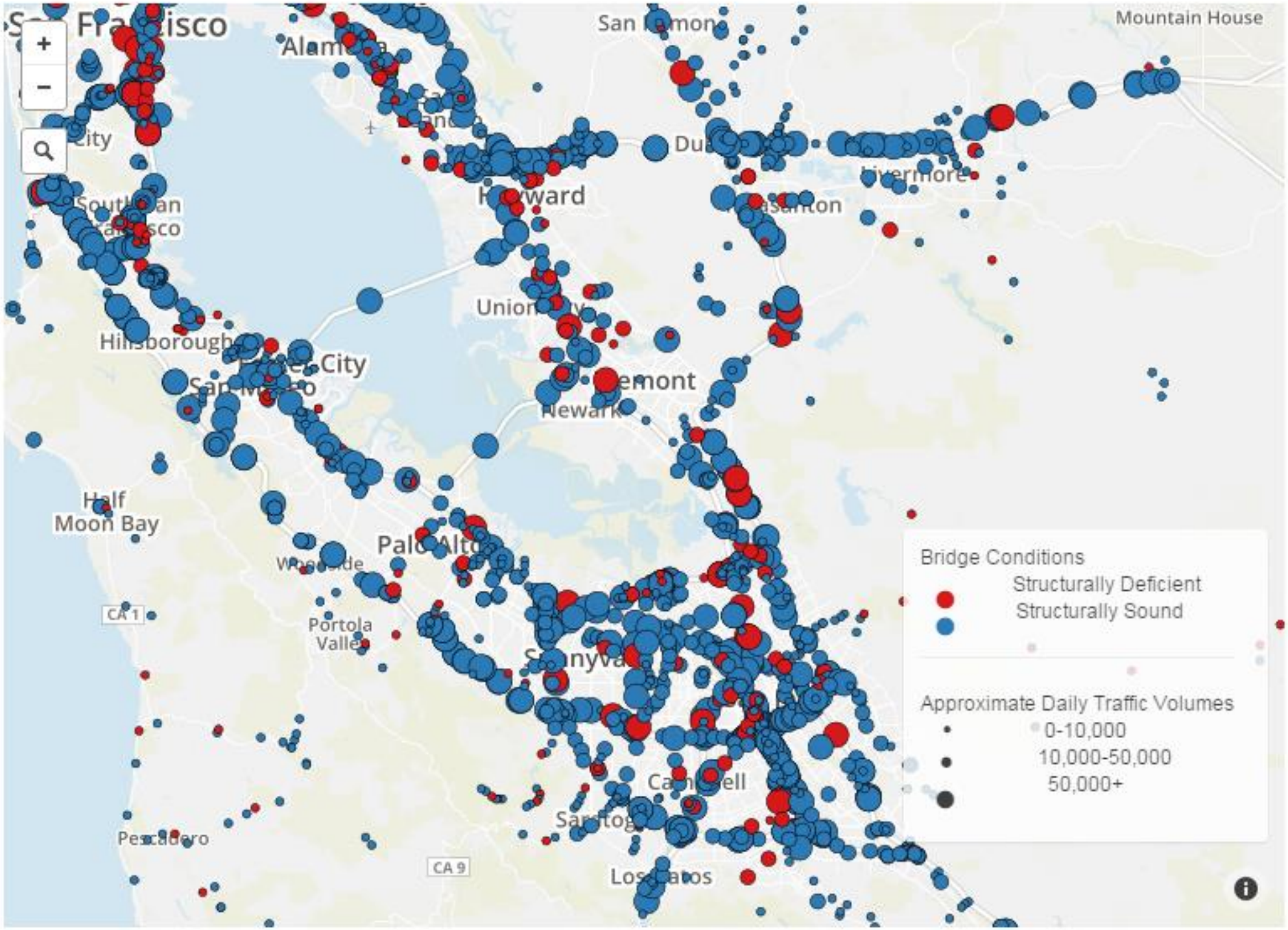
- Poor/Failed (0-49)
- At Risk (50-59)
- Good/Fair (60-79)
- Excellent/Very Good (80-100)



Bridge Condition

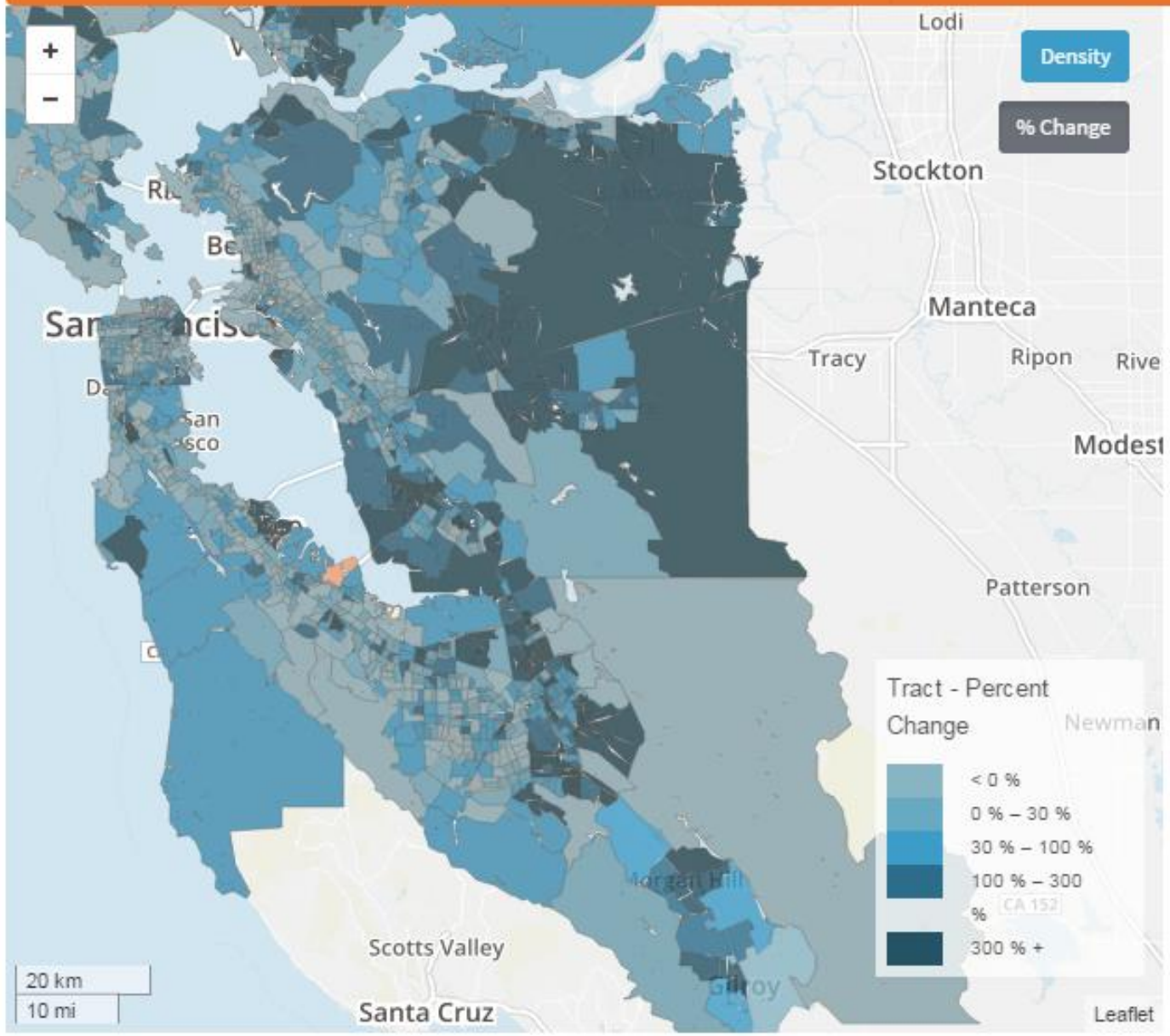
NB INTERSTATE 280

Structurally Sound

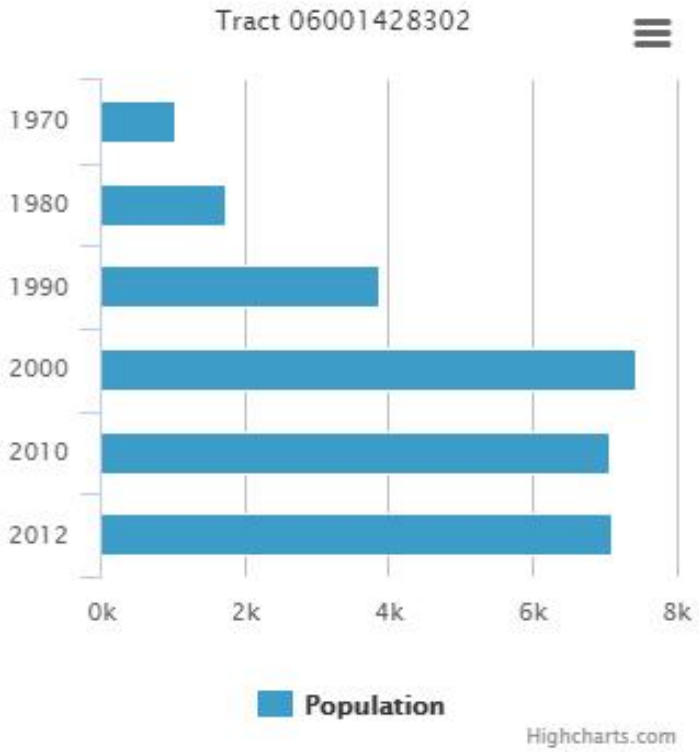


Percent Change Since 1970 for Tracts

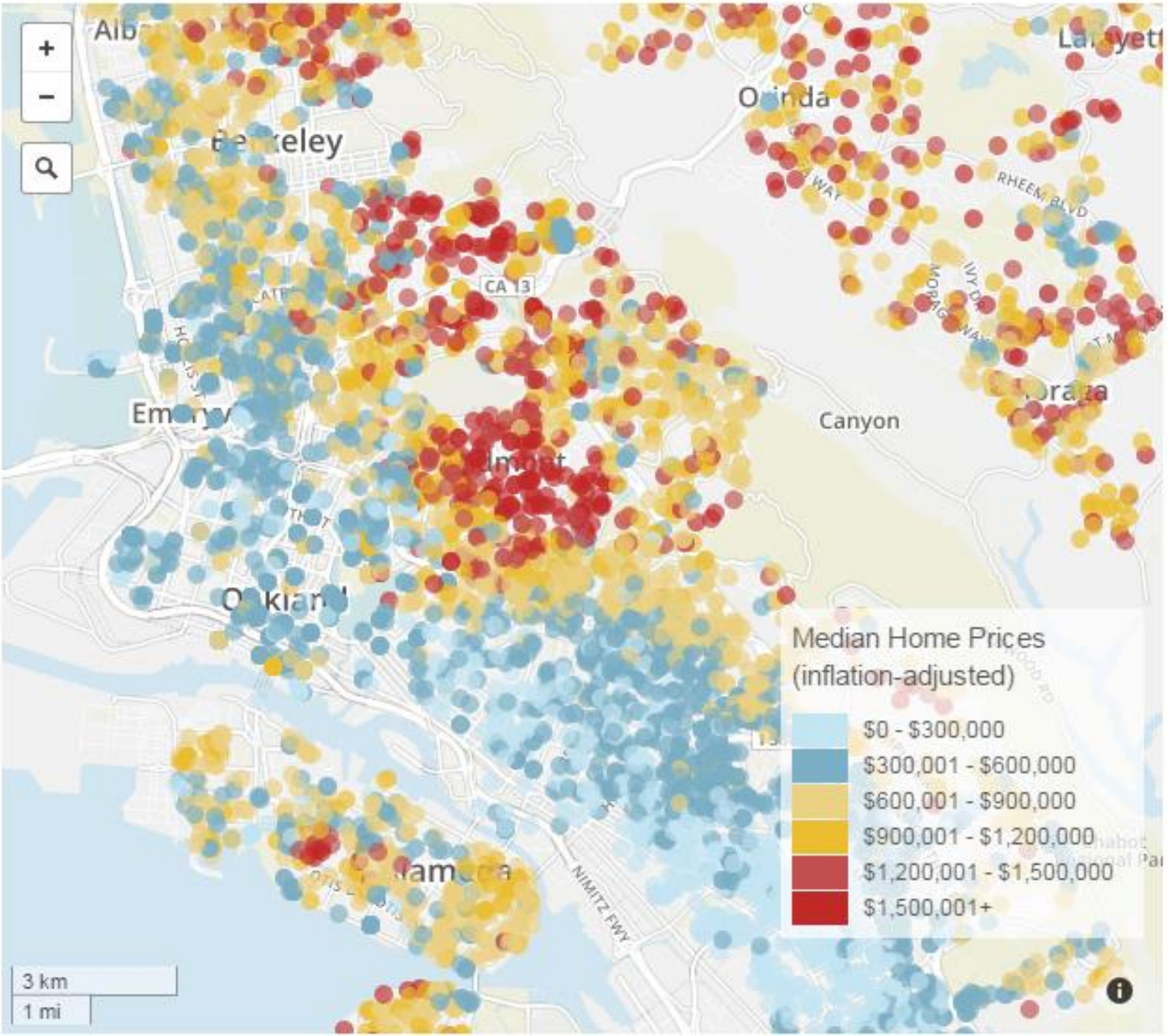
PDA | Tracts



The percent change in population in Tract **06001428302** from 1970 to 2012 was **576.6%**. The population in 2012 was **7,112** people.



Home Prices by Year - 2014



Explore prices by year

Zoom in to see more details, including individual home sales. Click on a shape on the map for more information.

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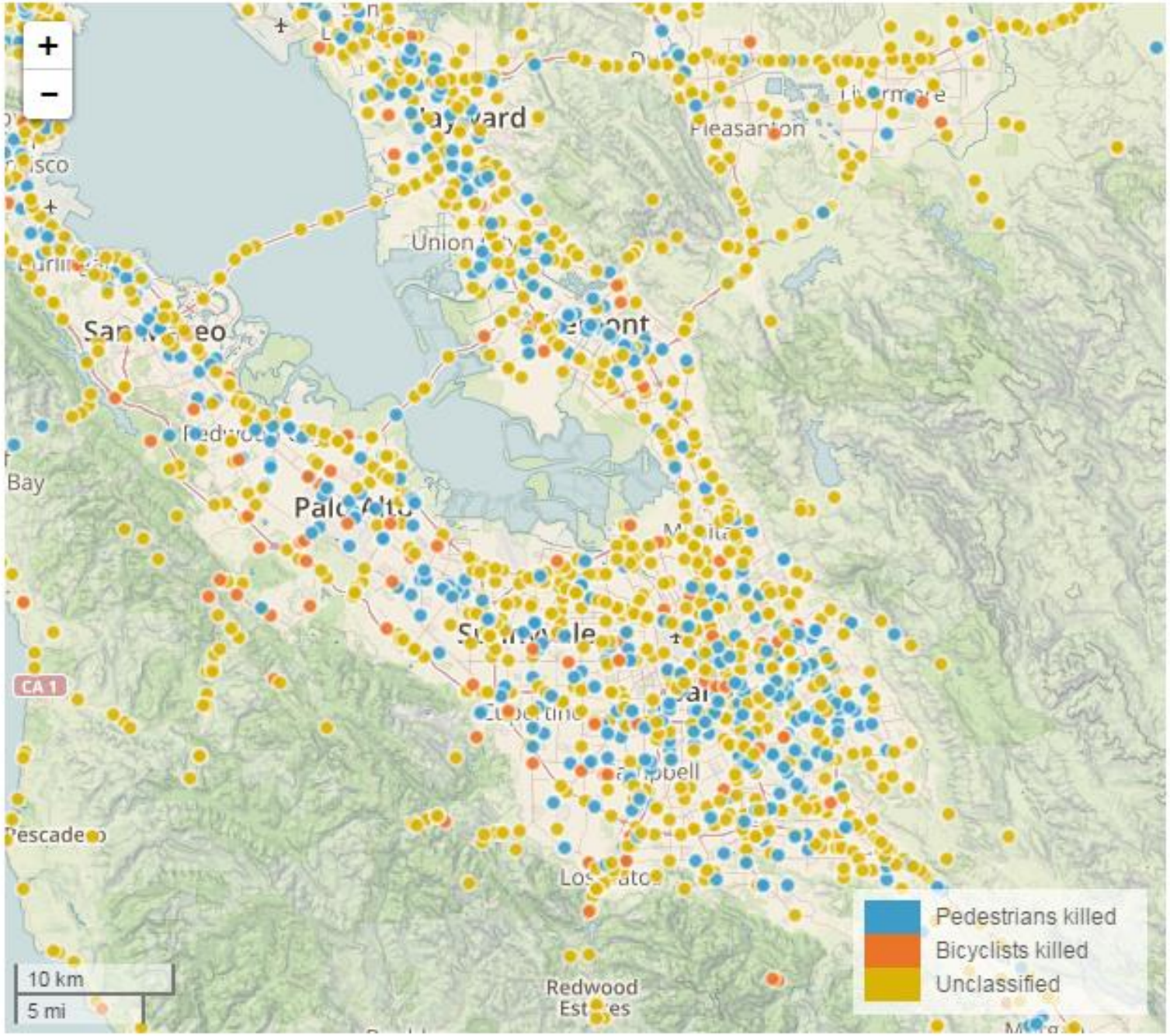
Fatalities from Crashes (2001 to 2012)



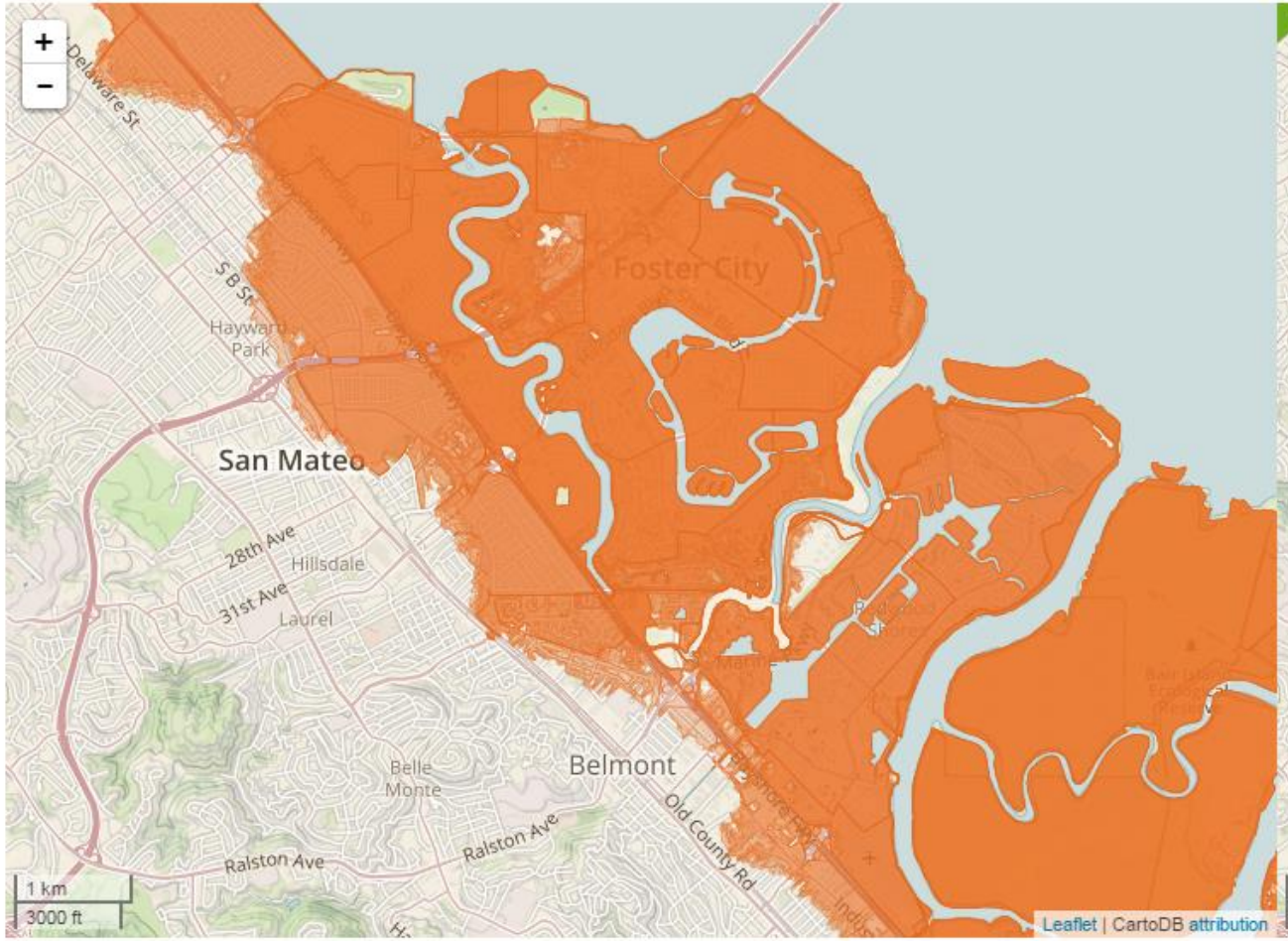
1 killed in March 2001

Location:
SAND HILL RD at OAK CRK DR E
City:
PALO ALTO
County:
SANTA CLARA
Time of day:
6:00 PM
Pedestrians killed:
1
Bicyclists killed:
0
Motorists killed:
0

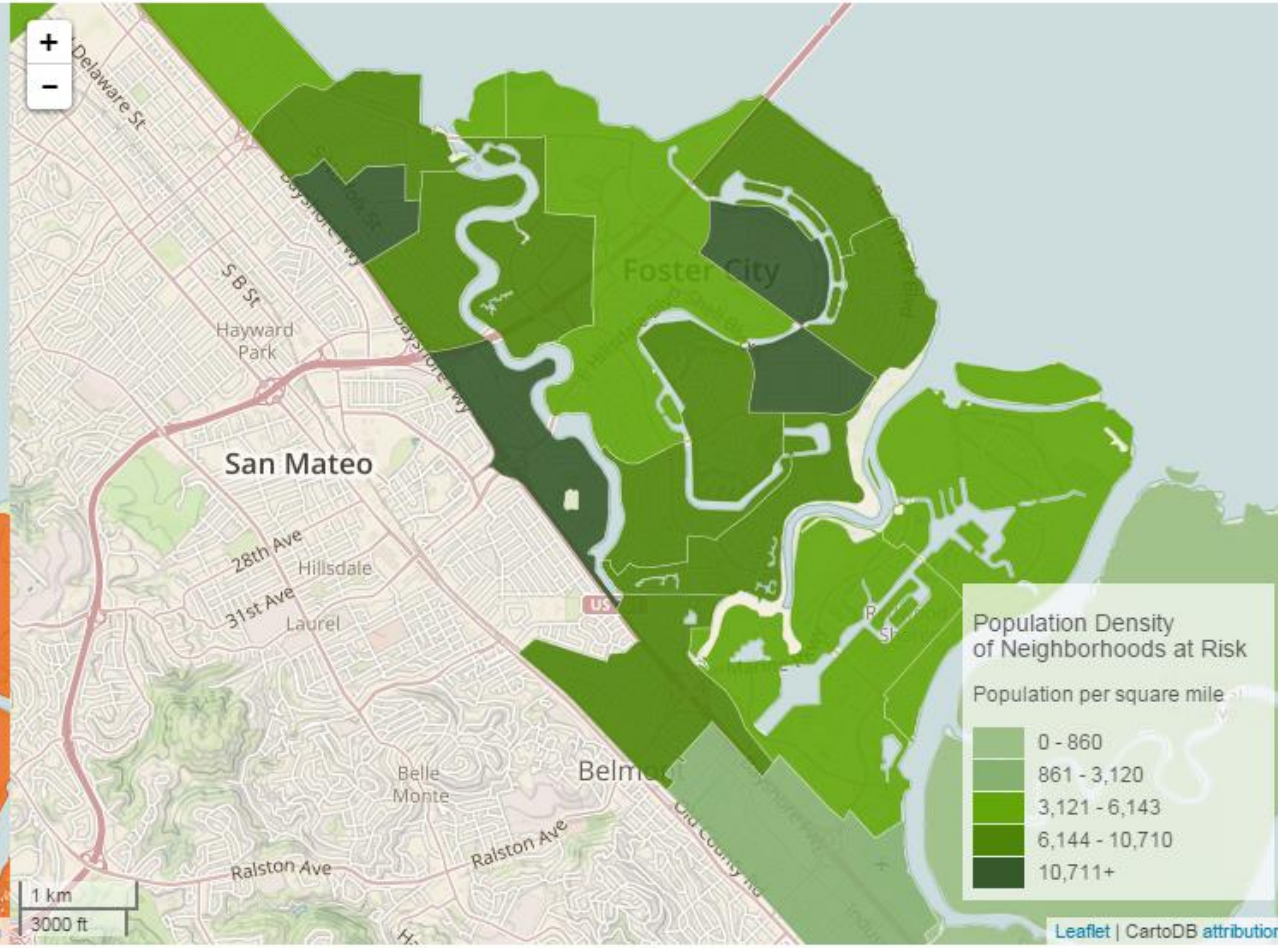
2012 Population at Risk of Impacts from Sea Level Rise of **6 Feet**

Select sea level rise forecast:

Impacted Land Area



Population at Risk of Impacts



1. Thinking about Data's Role in Performance
2. Where Does MTC's Data Come From?
3. Case Study: Vital Signs Initiative
4. **Looking Ahead to MAP-21**

Image Source: https://www.flickr.com/photos/tq2cute/4407502443

Are California MPOs ready for MAP-21?

Yes…

and no.

What did we learn from Vital Signs? **It isn't easy.**

- **The world of performance data is messy.**
  - Requires expertise with numerous sources and formats (ranging from SQL to paper!)
  - Dependence on existing national and state datasets is critical – due to lack of funding
- Even under ideal conditions (and data!), **target-setting will be an inherently challenging exercise.**
- Target-setting is important, but **clearly communicating performance to the public is even more important.**

State DOTs & MPOs need to think about how to integrate federal MAP-21 performance measures into existing monitoring programs.

Image Source: http://upload.wikimedia.org/wikipedia/commons/6/64/Capitol_at_Dusk_2.jpg

There are clearly economies of scale when it comes to data collection and analytics – what is the role of the state & national governments when it comes to MAP-21 compliance?

Image Source: https://www.flickr.com/photos/wwworks/2712986388

Image Source: http://www.flickr.com/photos/rao_anirudh/8732828358/sizes/o

A few more things to think about…

- **Data formats:** inconsistent and often difficult to work with
- **Data quantity:** too much data? too little data?
- **Data quality:** questionable for certain datasets?
- **Data reliability:** can we depend on the state to collect data?
- **Data utility:** are we measuring what matters?
- **Data analytics:** are staff prepared to leverage data?
- **Data openness:** are we engaging the public with data?

Image Source: https://www.flickr.com/photos/calwhiz/3394628026
Data may be challenging to procure and analyze.
But leveraging it to improve performance & tell the story to the public is worth it.

Questions?

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Check out the Vital Signs website at:
vitalsigns.mtc.ca.gov

Image Source: https://www.flickr.com/photos/thomashawk/8611096293