



Data Science for Smart Cities

CE88

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CE88 in title



Today

Urban data collection, handling and processing.

Agenda:

Lecture 5. Data acquisition: measurement and crowd-sensing.

Lecture 6. Community surveys, population census,
open government data, APIs.

Break

Mini-lab



Open Data

<https://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-13.pdf>

In general, open data will be consistent with the following **principles**:

Public. Consistent with Open Government Directive, agencies must adopt a presumption in favor of openness to the extent permitted by law and subject to privacy, confidentiality, security.

Accessible. Open data are made available in convenient, modifiable, and open formats that can be retrieved, downloaded, indexed, and searched. Formats should be machine-readable.

Described. Open data are described fully so that consumers of the data have sufficient information to understand their strengths, weaknesses, analytical limitations, security requirements, as well as how to process them.

Reusable. Open data are made available under an open license that places no restrictions on their use.

Complete. Open data are published in primary forms (i.e., as collected at the source), with the finest possible level of granularity that is practicable and permitted by law and other requirements. Derived or aggregate open data should also be published but must reference the primary data.

Timely. Open data are made available as quickly as necessary to preserve the value of the data. Frequency of release should account for key audiences and downstream needs.

Managed Post-Release. A point of contact must be designated to assist with data use and to respond to complaints about adherence to these open data requirements.



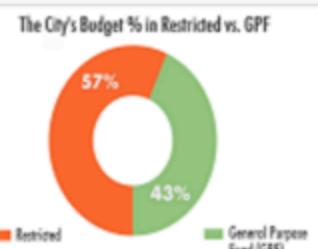
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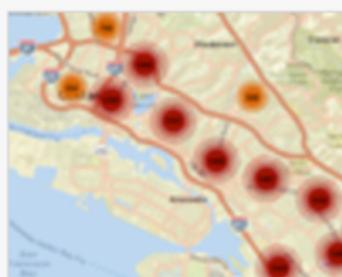
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TOTAL
Revenue
\$1.1 Billion*
(*grows to \$1.23 billion at the end of FY 2019-2020)



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On May first the Mayor

[Financial Forecast 2016-2020](#)

Every two years the city

[CrimeWatch Maps Past 90-Days](#)

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Resilience is the capacity of individuals, communities and systems to survive, adapt, and



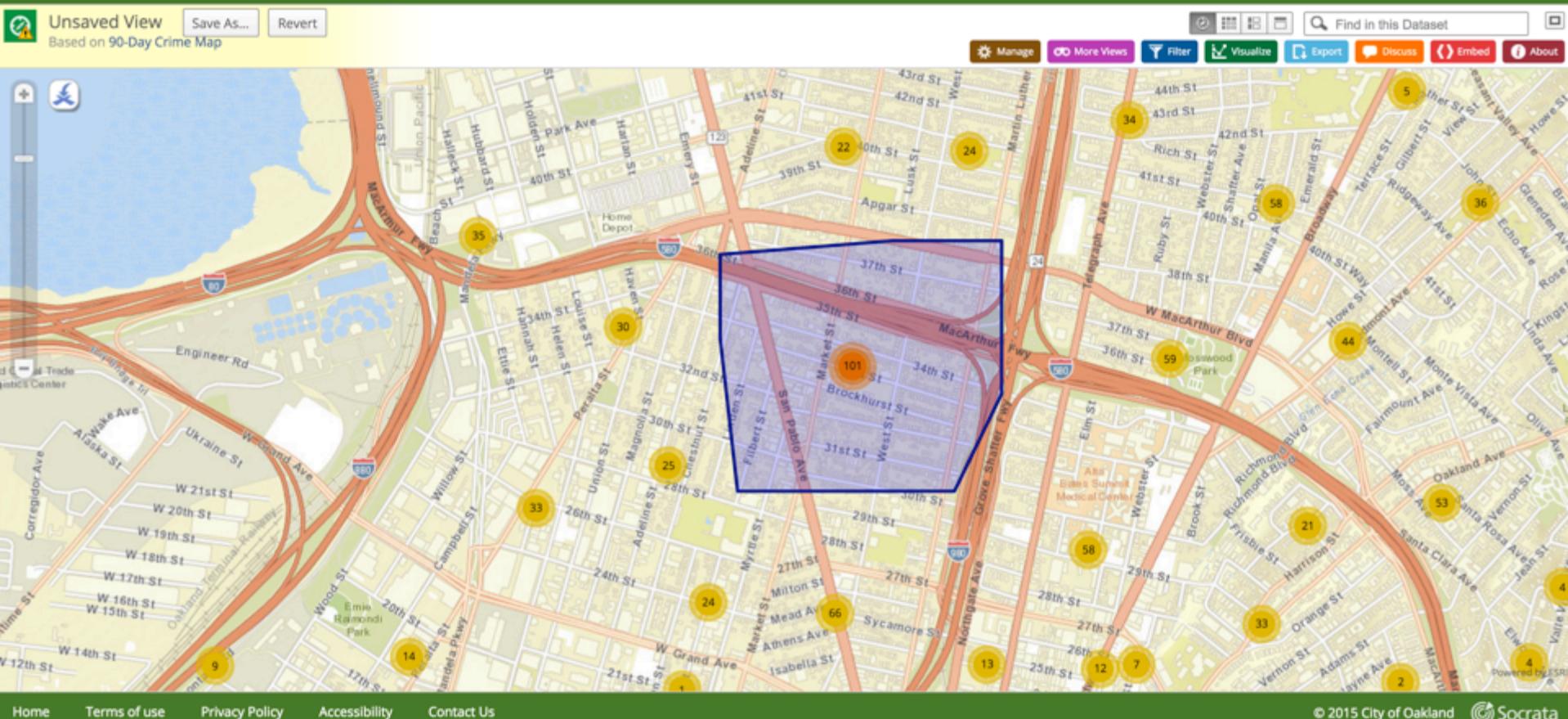
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90-Day Crime Map



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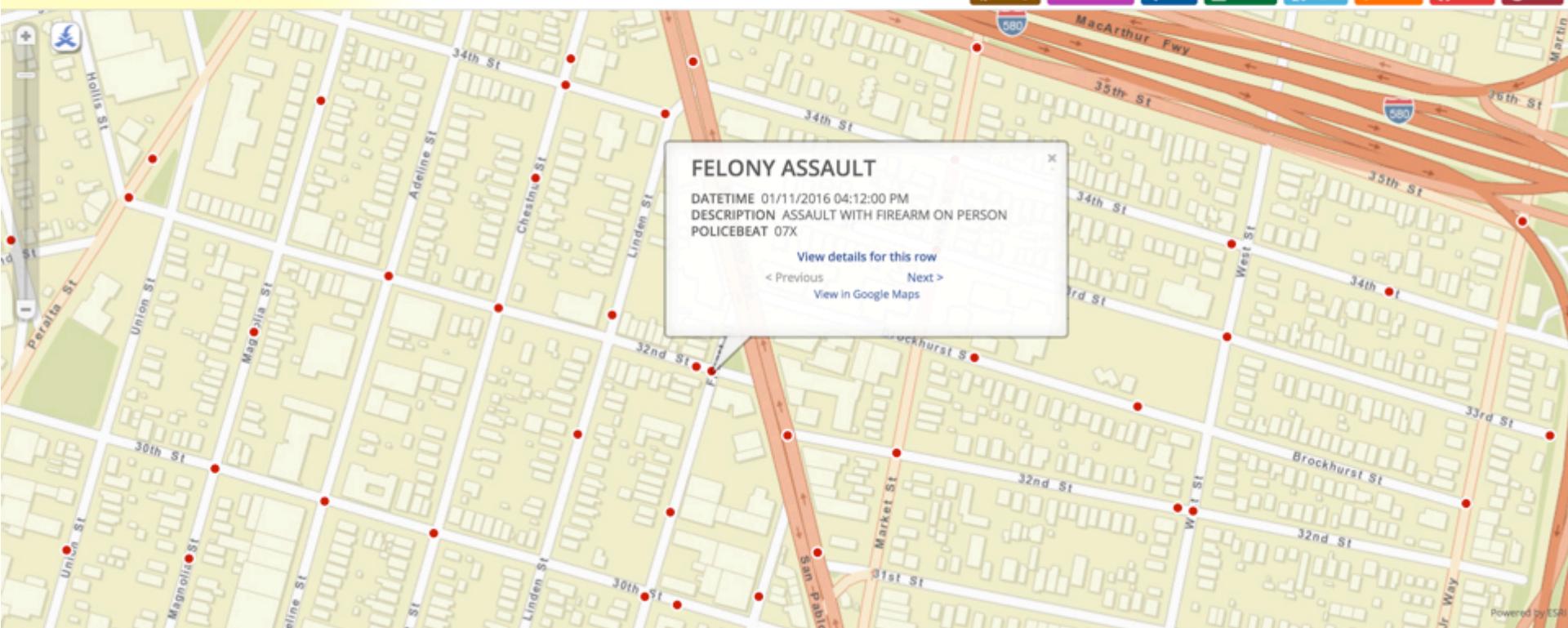
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Based on 90-Day Crime Map

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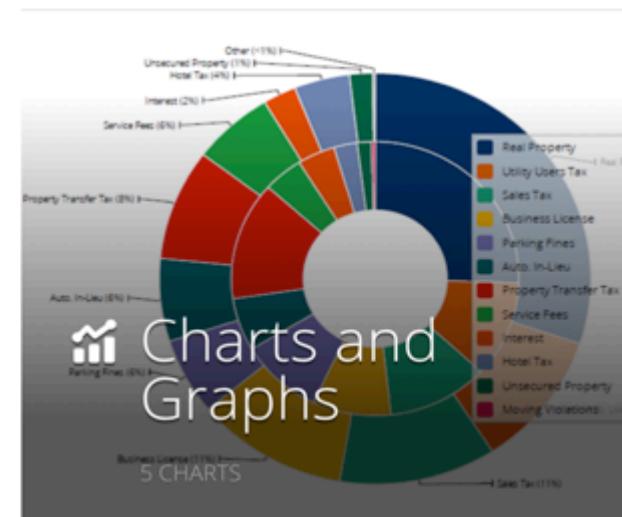


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Access video tutorials to help you navigate the data portal!

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21 DATASETS



Open Budget
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Capital Projects

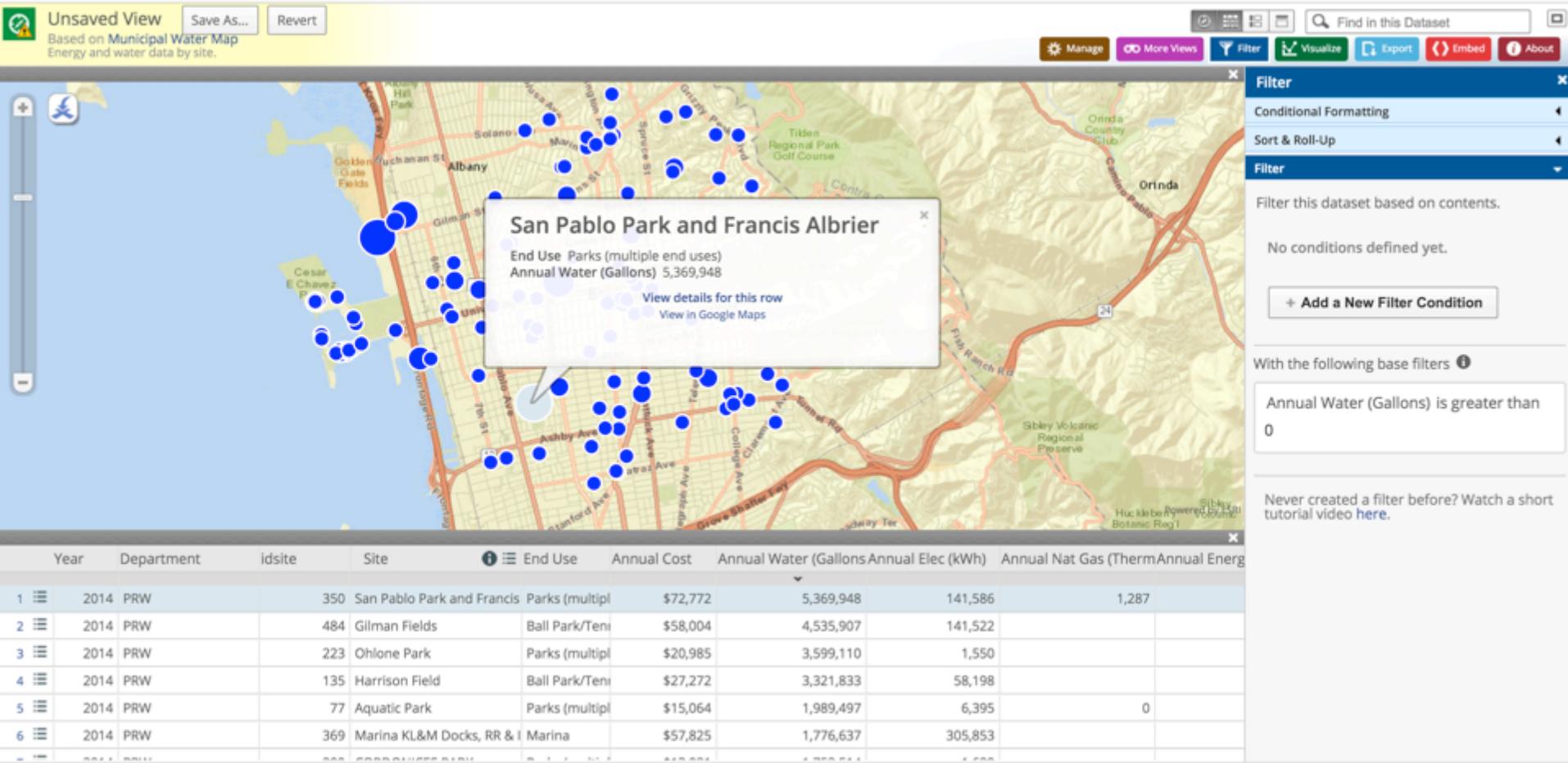


Berkeley

Municipal Water Map

City of Berkeley Open Data

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San Francisco

The network of bike routes, lanes, and paths around the city of San Francisco.

SF OpenData

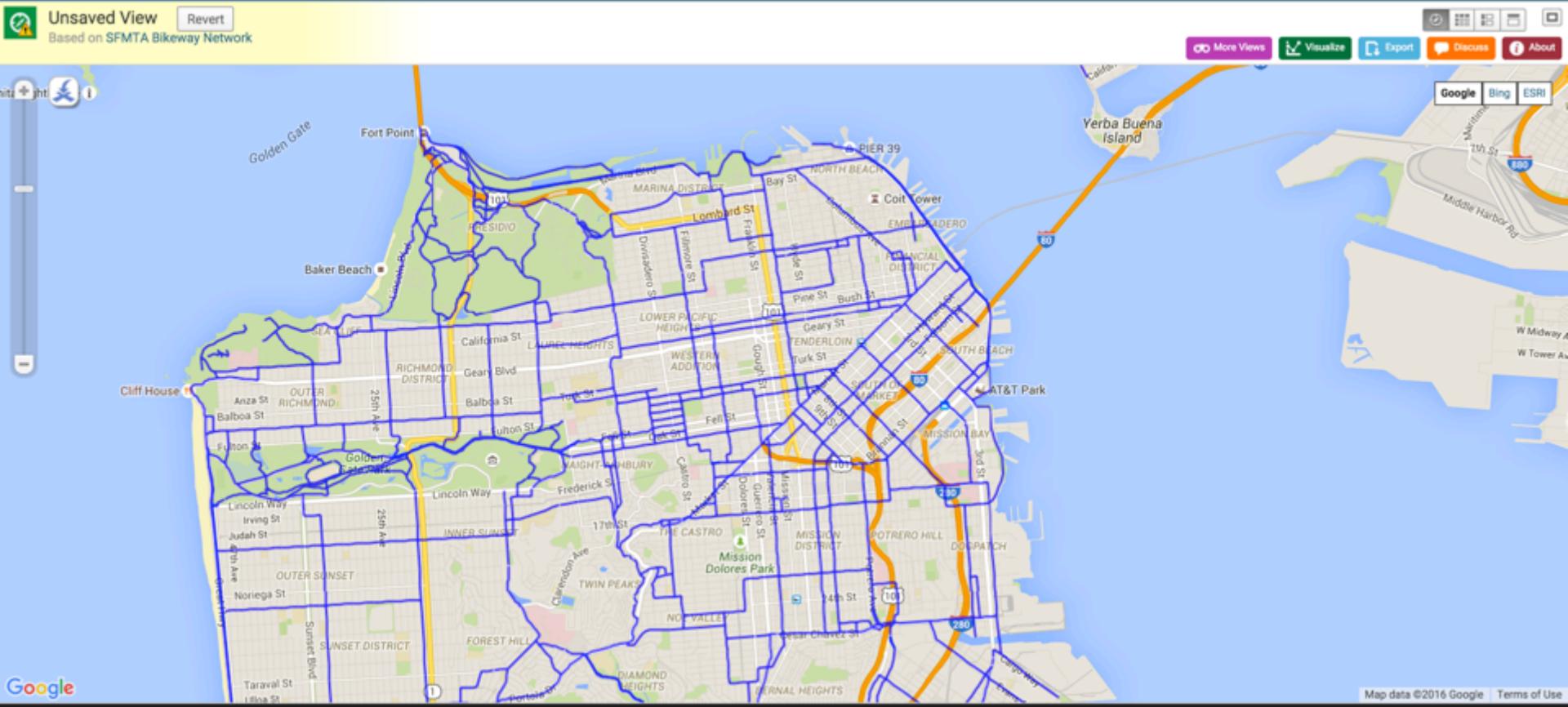
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San Francisco

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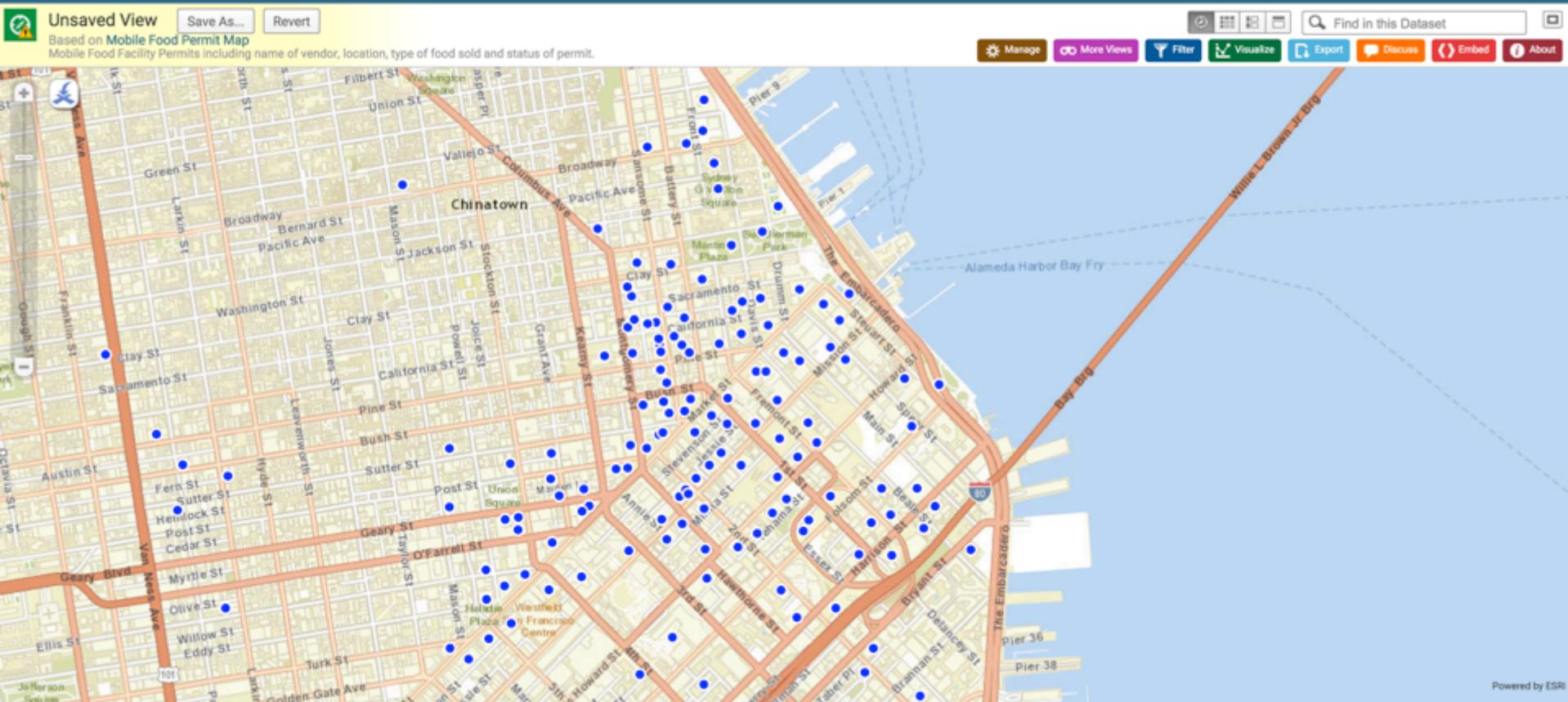
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Los Angeles

<https://data.lacity.org/>



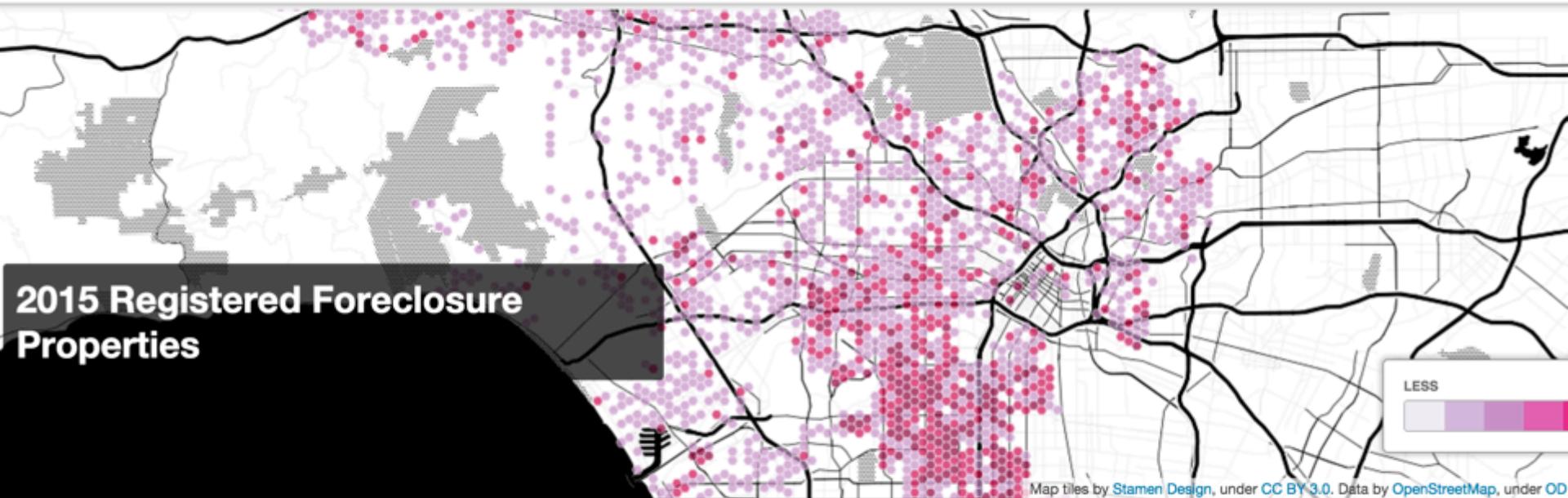
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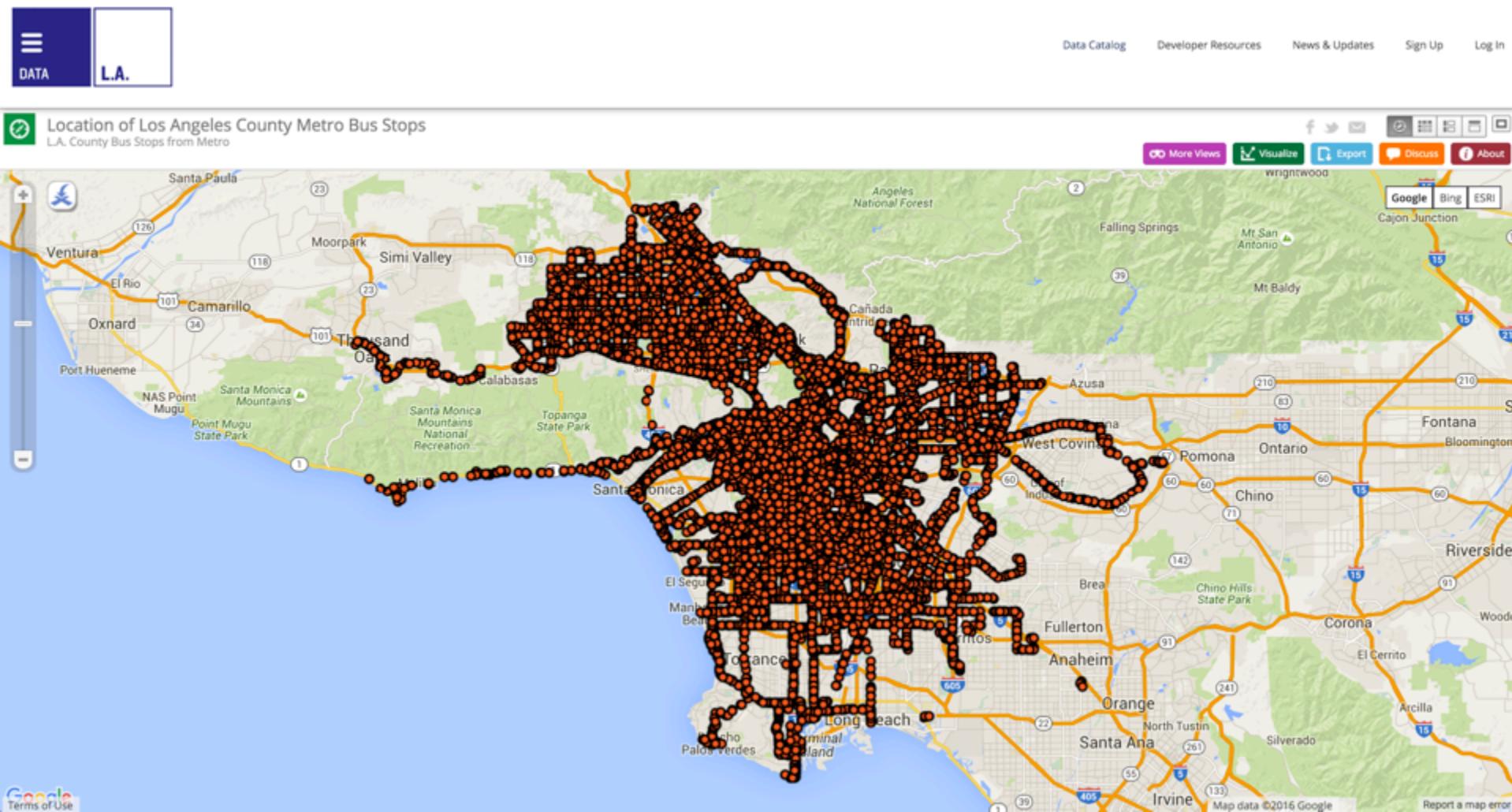
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Information, Insights, and Analysis from the City of Los Angeles



Los Angeles

Location of Los Angeles County Metro Bus Stops





Socrata



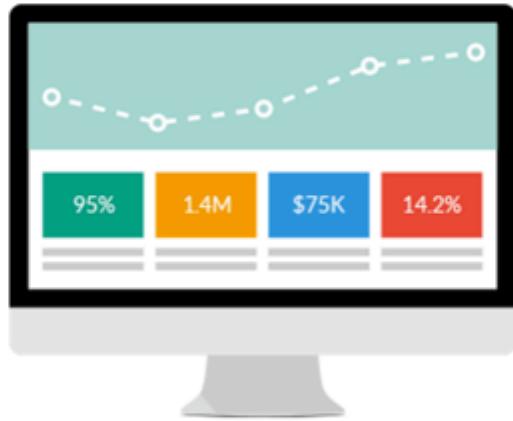
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Socrata's mission is to unleash the power of government data to improve society. To that end we offer several products that help make data more accessible, more understandable, and more actionable by everyone who wants to know more about their government and communities.



Open Data



Open Performance



Perspectives

Socrata Open Data supports the entire lifecycle of data, from publishing your data to the cloud, all the way to empowering developers to utilize that data to build apps that impact the community directly.

Socrata Open Performance is the premier performance management solution for governments of all sizes to establish and communicate their goals and tangible achievements.

Socrata Perspectives enables governments and data experts to connect the dots between policy and outcomes to better engage their constituents, using the data and expert insight only they can provide.

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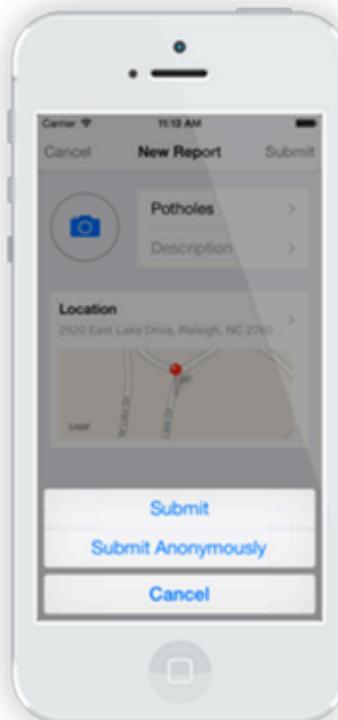
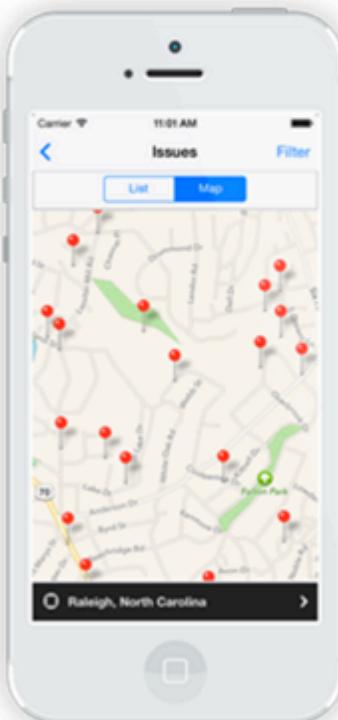
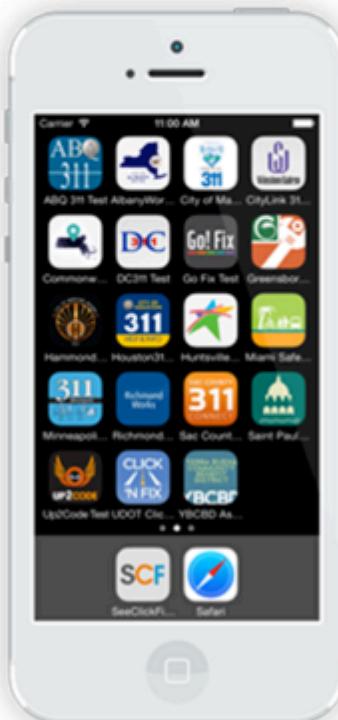
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Slide Hill Park, Davis, CA



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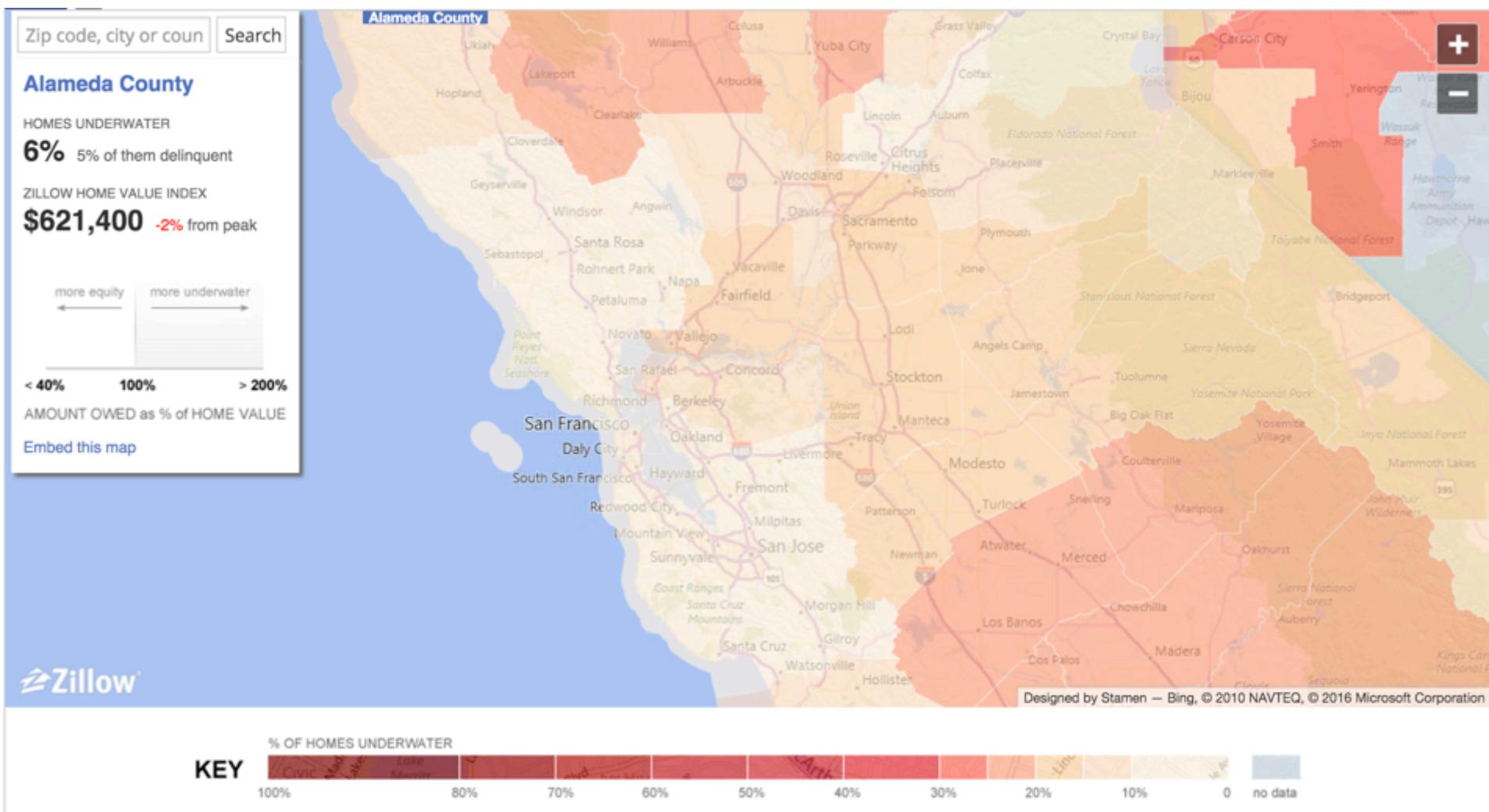
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Percentage of homes in negative equity (homeowners owe more than houses are worth)





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APIs

An **application programming interface** (API) is a set of subroutine definitions, protocols, and tools for building software and applications.

An API specification may include specifications for routines, data structures, object classes, variables, or remote calls.

Web APIs are the defined interfaces through which interactions happen between an enterprise and applications that use its assets. When used in the context of web development, an API is typically defined as a set of Hypertext Transfer Protocol (HTTP) request messages, along with a definition of the structure of response messages, which is usually in an Extensible Markup Language (XML) or JavaScript Object Notation (JSON) format. While "web API" historically has been virtually synonymous for web service, the recent trend (so-called Web 2.0) has been moving away from Simple Object Access Protocol (SOAP) based web services and service-oriented architecture (SOA) towards more direct representational state transfer (REST) style web resources and resource-oriented architecture (ROA).^[19] Part of this trend is related to the Semantic Web movement toward Resource Description Framework (RDF), a concept to promote web-based ontology engineering technologies. Web APIs allow the combination of



APIs

APIs are one of the most common ways technology companies integrate with each other. The main policies for releasing an API are:

Private: The API is for internal company use only.

Partner: Only specific business partners can use the API.

Public: The API is available for use by the public. An important factor when an API becomes public is its interface stability. Changes by a developer to a part of it—for example adding new parameters to a function call—could break compatibility with clients that depend on that API.

Data are often made accessible via a public API that describes request parameters and response formats.