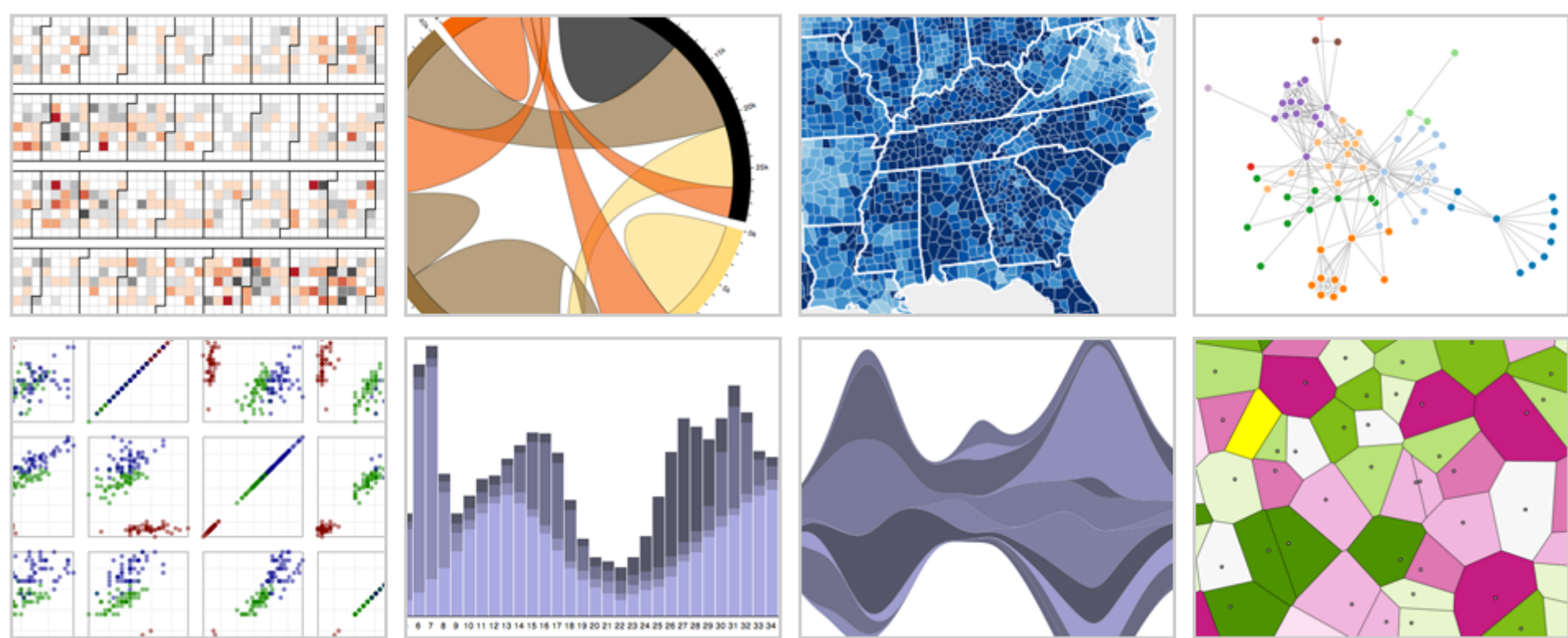


d3.js Data-Driven Documents



Scott Murray, Jerome Cukier & Jeffrey Heer

VisWeek 2012 Tutorial

**How much data (bytes)
did we produce in 2010?**

2010: 1,200 exabytes

Gantz et al, 2008, 2010

2010: 1,200 exabytes
10x increase over 5 years

Gantz et al, 2008, 2010

The ability to take data—to be able to **understand** it, to **process** it, to **extract value** from it, to **visualize** it, to **communicate** it—that's going to be a hugely important skill in the next decades, ... because now we really do have **essentially free and ubiquitous data**. So the complimentary scarce factor is the ability to understand that data and extract value from it.

Hal Varian, Google's Chief Economist
The McKinsey Quarterly, Jan 2009

How do people create visualizations?

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Chart Typology

Pick from a stock of templates

Easy-to-use but limited expressiveness

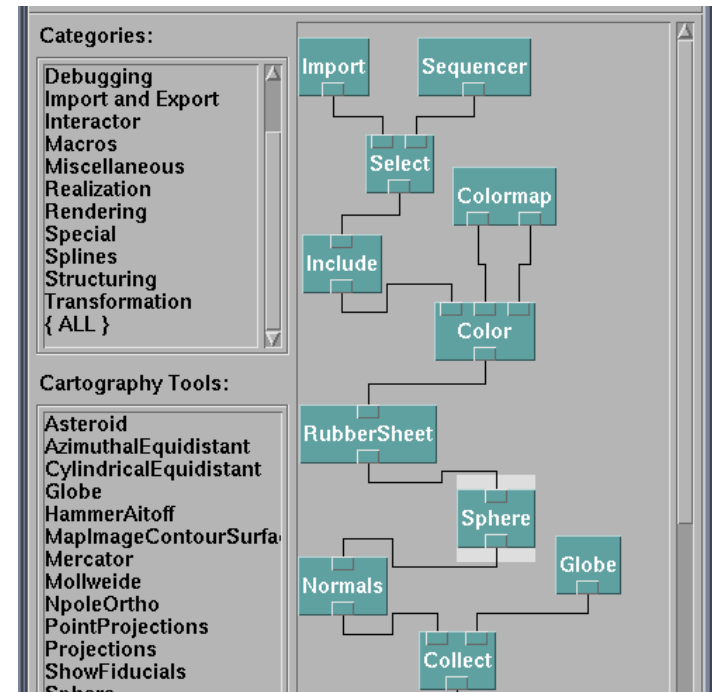
Prohibits novel designs, new data types

How do people create visualizations?



Chart Typology

Pick from a stock of templates
Easy-to-use but limited expressiveness
Prohibits novel designs, new data types



Component Architecture

Permits more combinatorial possibilities
Novel views require new operators,
which requires software engineering.

Graphics APIs

OpenGL, Java2D, GDI+, Processing

Component Model Architectures

Prefuse, Flare, Improvise

Graphics APIs

OpenGL, Java2D, GDI+, Processing

Visual Analysis Languages

Tableau VizQL, ggplot2

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Prefuse, Flare, Improvise

Graphics APIs

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Chart Typologies

Excel, Many Eyes, Google Charts

Visual Analysis Languages

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Component Model Architectures

Prefuse, Flare, Improvise

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OpenGL, Java2D, GDI+, Processing

Efficiency



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Excel, Many Eyes, Google Charts

Visual Analysis Languages

Tableau VizQL, ggplot2

Component Model Architectures

Prefuse, Flare, Improvise

Graphics APIs

OpenGL, Java2D, GDI+, Processing

Efficiency

A blue vertical arrow pointing upwards, indicating increasing efficiency from bottom to top.

Chart Typologies

Excel, Many Eyes, Google Charts

Visual Analysis Languages

Tableau VizQL, ggplot2

Component Model Architectures

Prefuse, Flare, Improvise

Graphics APIs

OpenGL, Java2D, GDI+, Processing

Expressiveness

A blue vertical arrow pointing downwards, indicating increasing expressiveness from top to bottom.

Efficiency

A blue arrow pointing upwards, indicating increasing efficiency from bottom to top.

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Excel, Many Eyes, Google Charts

Visual Analysis Languages

Tableau VizQL, ggplot2

?

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OpenGL, Java2D, GDI+, Processing

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d3.js Data-Driven Documents

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A JavaScript tool for visualization on the web

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A JavaScript tool for visualization on the web

Written and maintained by Michael Bostock

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The successor to our *Protovis* framework

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Generate interactive web pages

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Bind data to elements in an HTML document

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Leverage web standards: HTML, SVG, CSS

Flexibility, debugging and “future-proofing”

**coffee-script**

jashkenas

4,733 watching

Unfancy JavaScript

**socket.io**

LearnBoost

4,454 watching

Realtime application framework for Node.JS, with HTML5 WebSockets and cross-browser fallbacks support.

**gitignore**

github

4,437 watching

A collection of useful .gitignore templates

**underscore**

documentcloud

4,434 watching

JavaScript's utility _ belt

**d3**

mbostock

4,286 watching

A JavaScript visualization library for HTML and SVG.

**linux**

torvalds

4,280 watching

Linux kernel source tree

**symfony**

symfony

4,209 watching

The Symfony2 PHP framework

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thoughtbot

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Easy file attachment management for ActiveRecord

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antirez

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Redis is an in-memory database that persists on disk. The data model is key-value, but many different kind of values are supported: Strings, Lists, Sets, Sorted Sets, Hashes



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11th most watched project on GitHub**d3**

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[Front-end Developer - Protovis / D3 / raphael.js](#) - NEW

Tracelytics - Providence, RI

(we use jQuery) Know the latest in HTML5, CSS, SVG: no worrying about legacy browser clients Proficient in Python, or fast learner Bonus **Protovis / D3 / raphael.js** Experience...

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[d3.js, highcharts, jQuery Visualization Plugin, JS Charts, jqPlot.](#)

Compnova - San Francisco, CA

Skill: **d3.js**, highcharts, jQuery Visualization Plugin, JS Charts, jqPlot. Extensive experience with HTML5 & CSS3. Experience in developing dynamic, highly interactive user...

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[Lead Front-End Engineer](#)

Adroit Resources - Austin, TX

- RequireJS / AMD Modules - Facebook APIs - **Protovis / D3.js** - Less CSS - easyXDM (or similar) - plain JavaScript Facebook: Adroit Resources Twitter: Adroitjobs LinkedIn Grp: PERM...

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[UI / UX Developer](#)

Deepfield Networks - Ann Arbor, MI

hopefully, your experience with D3 or **Protovis**, to build an intuitive, but powerful Advanced visualizations utilizing D3 or **Protovis** Required Expertise in web...

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[Systems Administrator 3](#) - NEW

University of California Berkeley - Berkeley, CA

processing.js, raphael.js, **protovis** or **d3.js** o Experience with CentOS, Matlab, Java/Scala, Matlab, and desktop applications o Experience with and understanding of version...

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[Web Developer](#)

Visual.ly - San Francisco, CA

ated near San Francisco and able to start right away. Nice to have: experience with javascript/svg based data visualization packages like **Protovis** or **d3.js** and experience with...

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[Data Analyst Intern](#) - NEW

Etsy - Brooklyn, NY

(Cleveland, Tufts) and tools (ggplot2, **D3.js**, ...) * A passion and intuition for the business side and analyses that drill down to the dollar level * A proven history of...

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[Computer Scientist](#) - NEW

Mount Sinai Medical Center - Manhattan, NY +1 location

for the web and print. Previous work with **d3.js**, or other similar libraries, is highly desirable. * Design, management, query and ETL techniques for RDBMs and or distributed data...

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[DATA SCIENTIST](#)

University of Washington - Seattle, WA

visualization tools built in **Protovis/D3** * Proactively suggest new ways to leverage ... JavaScript, JQuery, ideally also HTML5 * Experience visualizing large,...

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[Data Scientist](#)

Yammer - San Francisco, CA

Things we love: Git Ruby on Rails Javascript / JQuery / **d3.js** PostgreSQLVertica & Hadoop About Yammer, Inc. Yammer (www.yammer.com) is an Enterprise Social Network that enables...

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[Front-End Engineer](#)

Metamarkets - San Francisco, CA

into the node.js ecosystem are welcome, as are junior developers willing to deepen their skill sets. Core Technical Skills: Node.js, Javascript, **Protovis / D3**, JQuery, HTML5,...

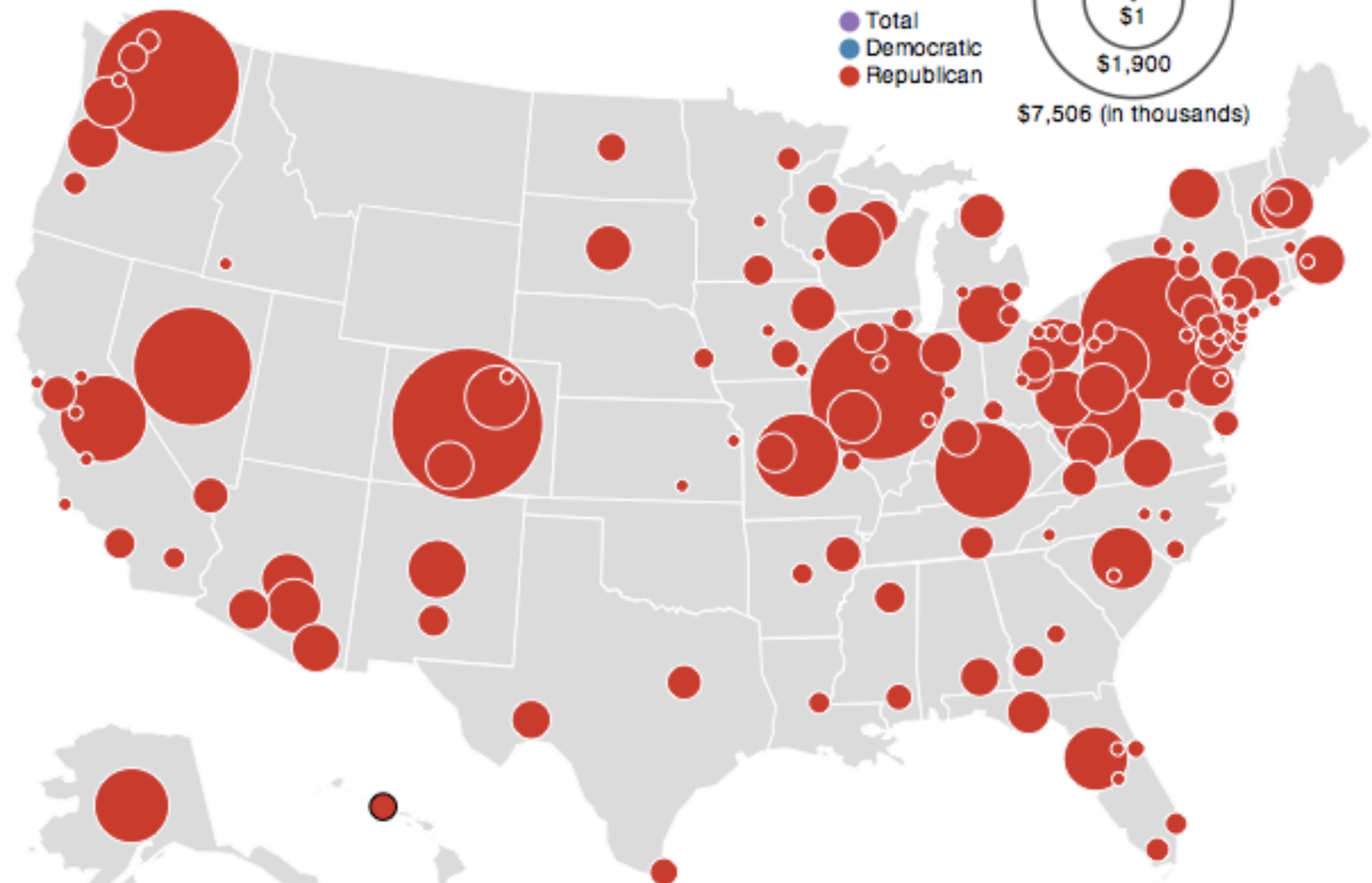
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[Javascript Developer](#)

SMRT - San Francisco, CA

Experience with visualization libraries (**Protovis**, D3) Commercial experience in Web Application development and / or software development (desirable, not essential). Good levels...

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The Washington Post

Four Ways to Slice Obama's 2013 Budget Proposal

Explore every nook and cranny of President Obama's federal budget proposal.

All Spending

Types of Spending

Changes

Department Totals

Mandatory

\$2.5 trillion

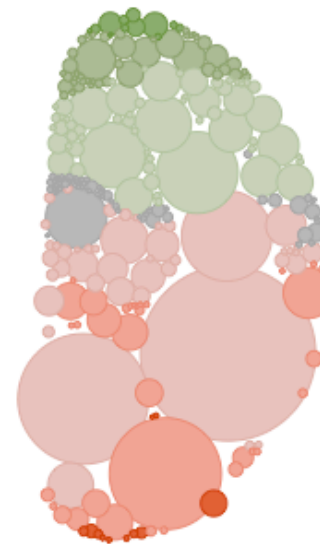
About 70 percent of budgetary spending is controlled by existing laws, including entitlements like Medicare, Medicaid and Social Security.



Discretionary

\$1.1 trillion

Only about 30 percent of the budget is controlled by the annual budget process. Last August, the White House and Congress agreed to a cap on this spending.



The New York Times

Chart shows \$3.7 trillion authorized to be spent in 2013. (Total spending is estimated to be \$3.8 trillion, including funds authorized in other years). Negative budget authority, which results from fees or other collections, is shown only on the department totals tab, but is included in other totals.

By SHAN CARTER | [Send Feedback](#)

Office of Management and Budget

stamen design



stamen design



↑
d3

↑
d3



