

Data Visualization

Fundamentals of Visualization

What is Data Visualization and Why Do We Do It?

What is data visualization and why do we do it?



Data visualization is using pictures to represent data



John Snow's map of the 1854 Cholera spread



50 Years of Crime

Exploring five decades of crime in the United States

(Source: Uniform Crime Reporting Website – Click to View)

Hover anywhere on charts to explore!

US Heat Map
By Crime Rate

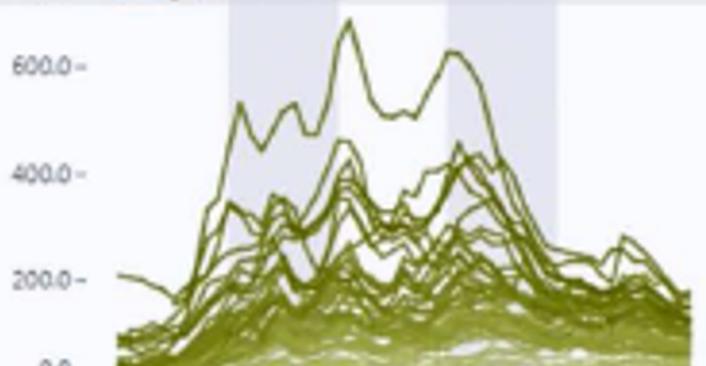
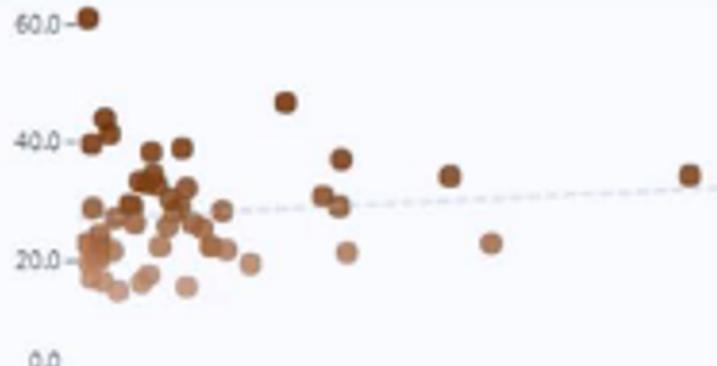
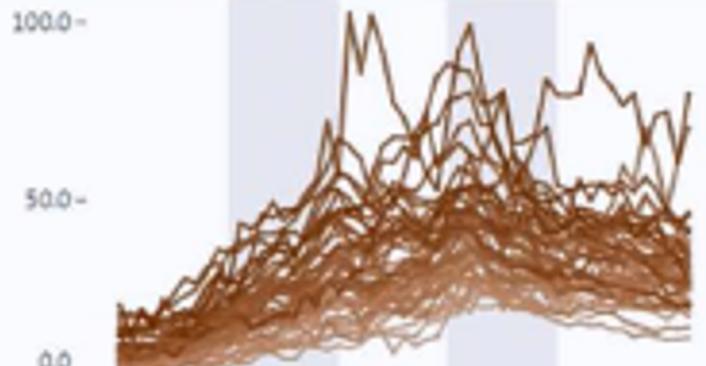
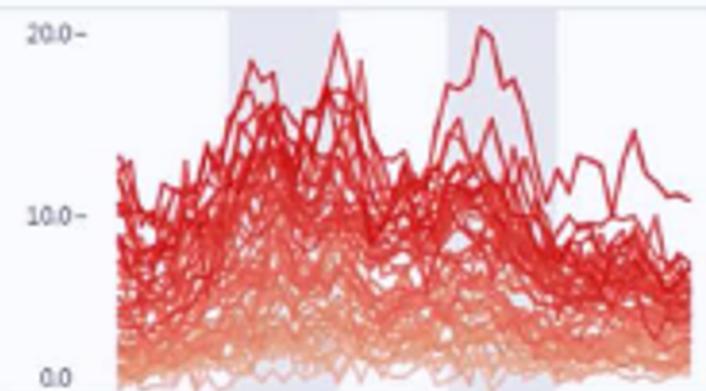
Crime Rate Trend by
State (1960 – 2012)

Crime Rate vs
State Population

All Crime Rates per 100,000 Population

PICK CRIME CATEGORY

- Property Crime
- Violent Crime



Asking questions

Using statistical and
quantitative tools

Explanatory and
predative analysis

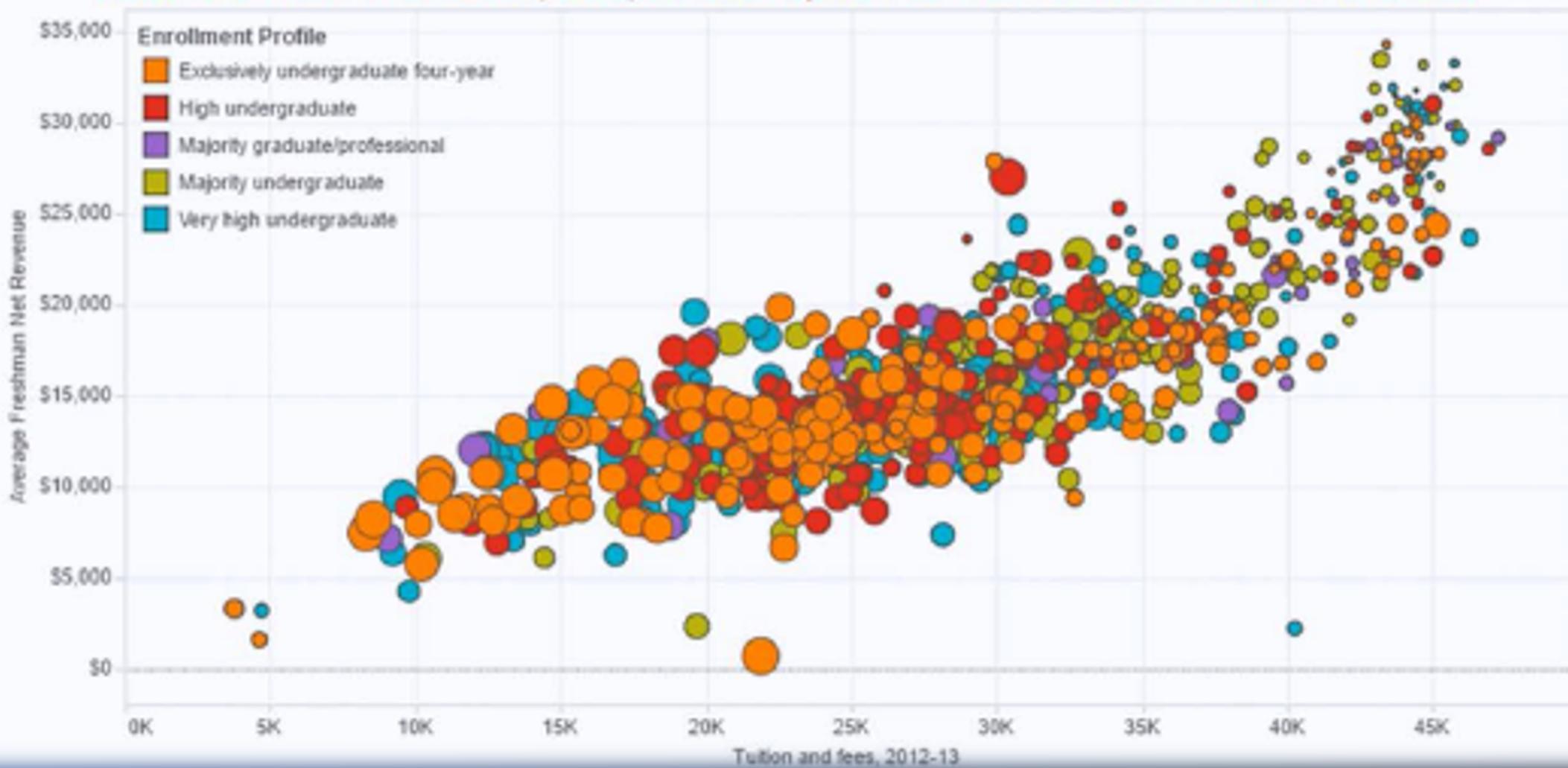


Data-driven or fact-based decision making

Decision makers can access the details they need quickly



Tuition and Net Revenue Scatter, 2012; Size shows percent of freshmen with Pell. Hover for details.



- Data visualization helps us process data faster
 - Known as “picture superiority effect”

	Product A	Product B	Product C	Product D	Product E	Product F	Product G	Product H
Northeast	\$ 15,749.00	\$ 40,195.00	\$ 15,472.00	\$ 63,029.00	\$ 8,509.00	\$ 42,987.00	\$ 27,778.00	\$ 12,510.00
Southeast	\$ 48,044.00	\$ 20,741.00	\$ 40,643.00	\$ 15,687.00	\$ 12,342.00	\$ 23,297.00	\$ 10,401.00	\$ 10,522.00
Central	\$ 5,240.00	\$ 45,296.00	\$ 16,114.00	\$ 63,359.00	\$ 58,198.00	\$ 24,191.00	\$ 46,826.00	\$ 50,278.00
Northwest	\$ 12,860.00	\$ 11,548.00	\$ 43,134.00	\$ 19,331.00	\$ 60,563.00	\$ 51,475.00	\$ 28,954.00	\$ 14,405.00
Southwest	\$ 37,087.00	\$ 61,506.00	\$ 54,084.00	\$ 14,715.00	\$ 17,811.00	\$ 32,814.00	\$ 47,853.00	\$ 44,639.00

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Big Data

- Increasing in volume
- High velocity
- A lot of variety

wind map

April 30, 2016

1:35 pm EST

(time of forecast download)

top speed: 30.5 mph
average: 10.2 mph



- The computational process (machine learning) uncovers relationships



- Real-time credit card monitoring
- Analyzing patterns and predicting fraud

Business Intelligence (BI)

- Tools and techniques used to transform raw info data for analysis

Big Data and Data Visualization

- A visual representation of data for use in decision making

Visual Description of Business Intelligence (BI)

