

# Visual Analytics— Coordinated Multiple Views

Dr. Ab Mosca (they/them)

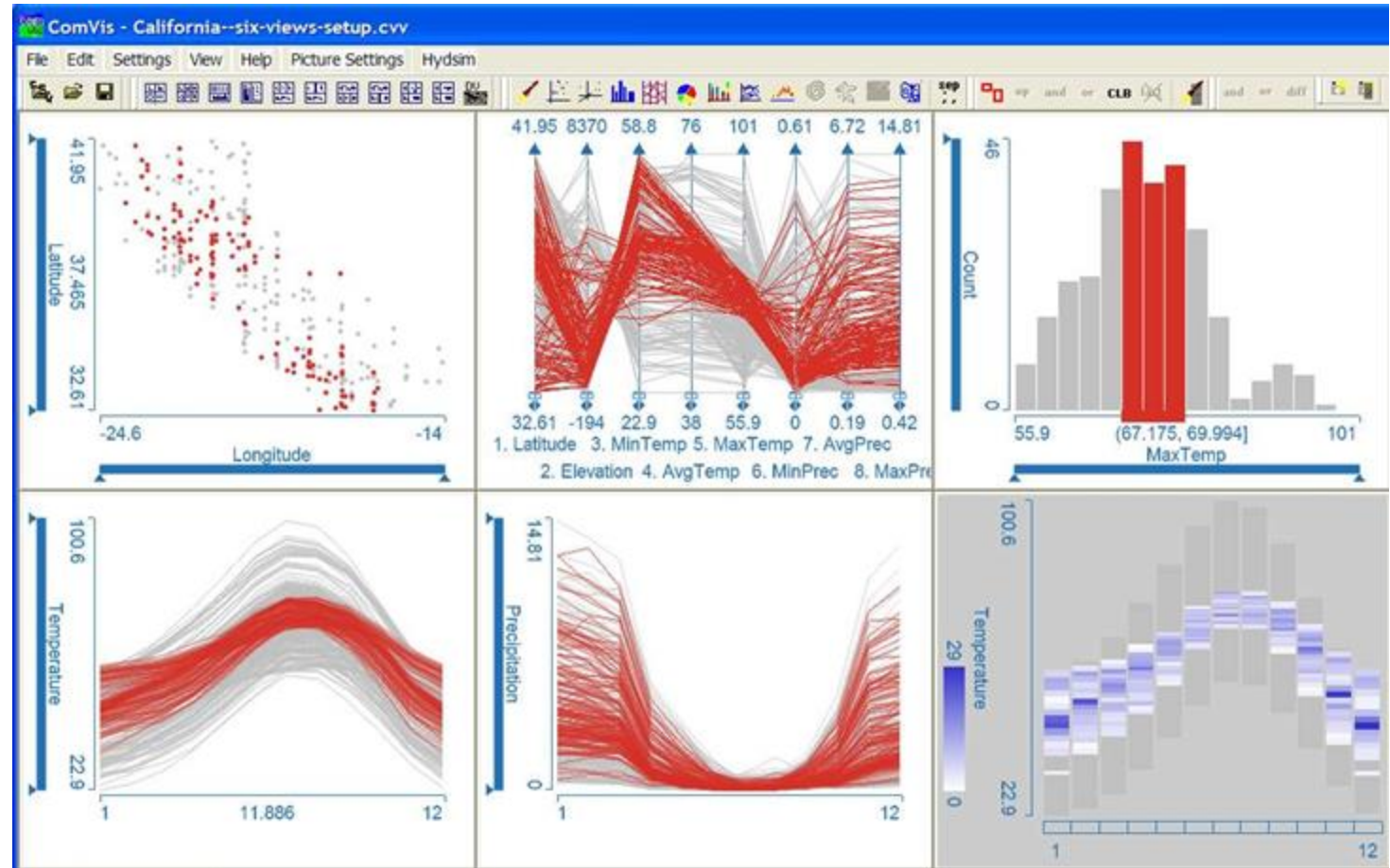
Slides based off slides courtesy of Jordan Crouser (<https://jcrouser.github.io/>)

# Plan for Today

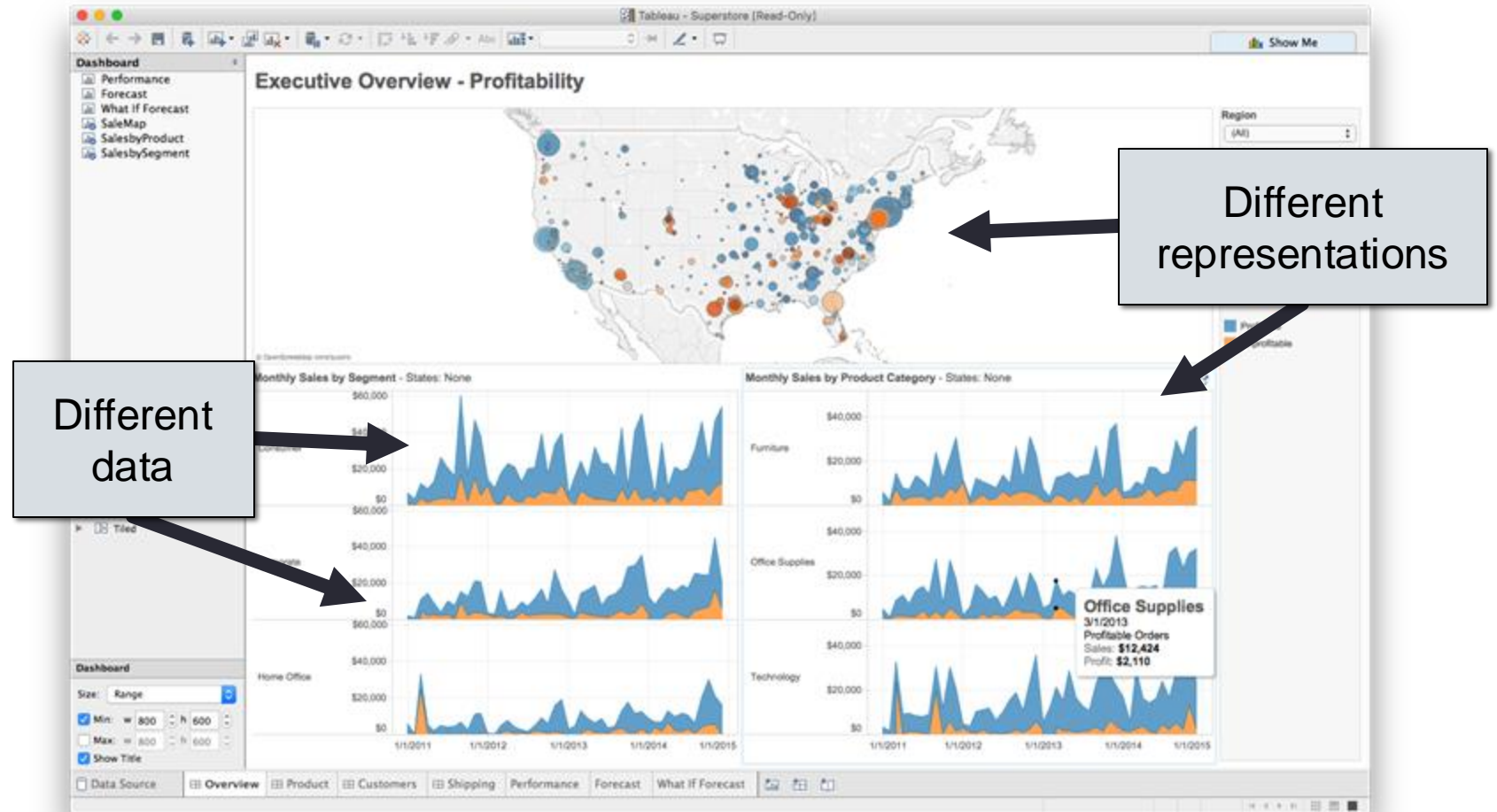
- Interaction as context-preserver
  - Coordinated multiple views (CMV)
  - Brushing and linking
- Practice: plotly

Show me related items: coordinated multiple views (CMV)

Recap:  
7. Connect



# Multiple views

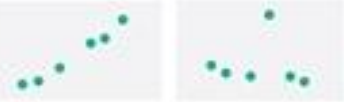



Systems that use **two or more distinct views** to support the exploration of a single concept or domain


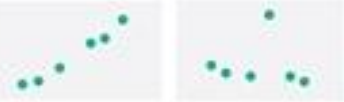


## When to use multiple views?

- The data is too big
  - Lots of attributes
  - Lots of observations
- The data is too complicated
  - Lots of data sources
  - Lots of data types
- The data has several interesting parts, but no one visualization highlights them all

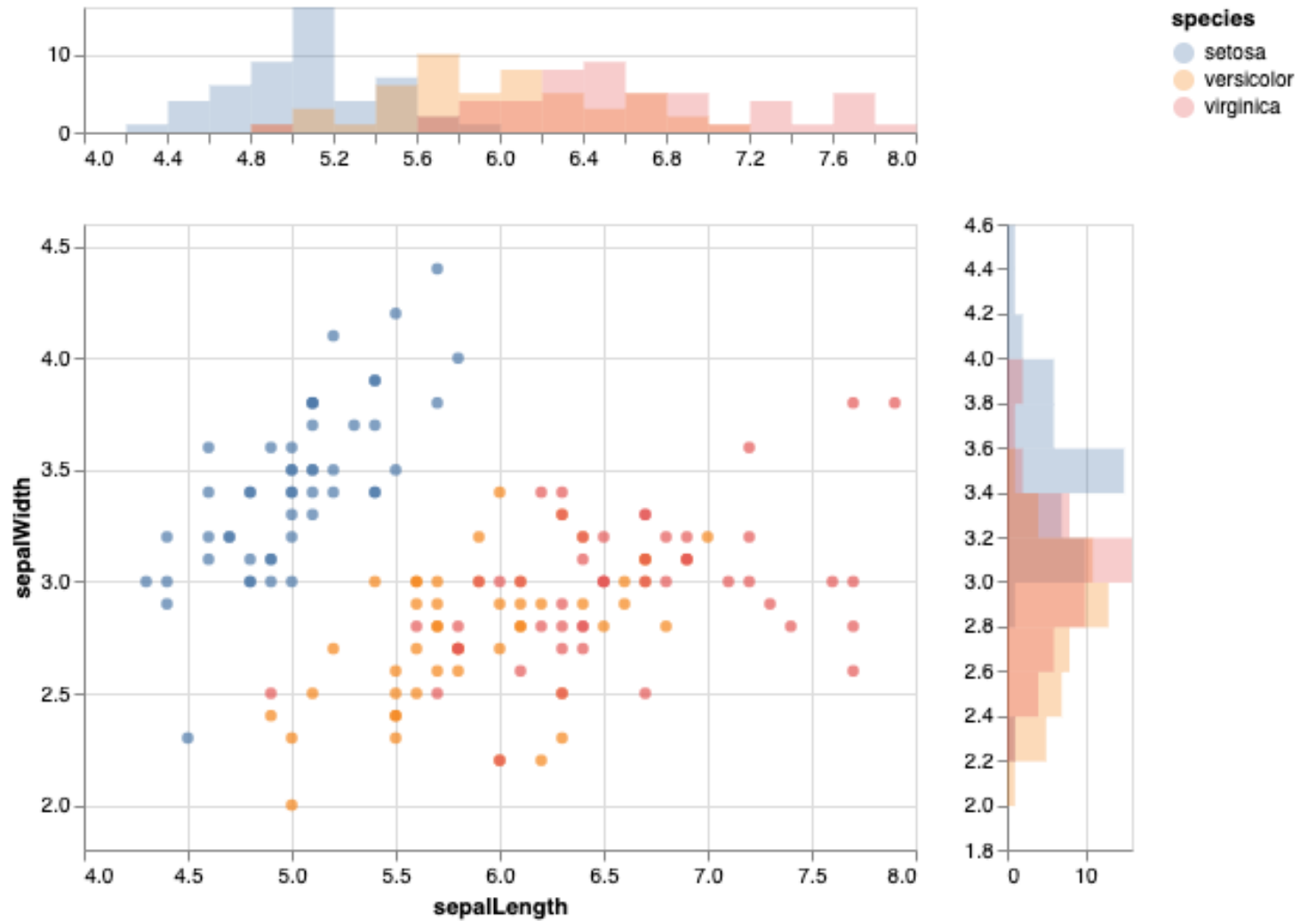
# Multiple View Designs

		Data		
		All	Subset	None
Encoding	Same	Redundant	 Overview/ Detail	 Small Multiples
	Different	 Multiform	 Multiform, Overview/ Detail	No Linkage

# Multiple View Designs


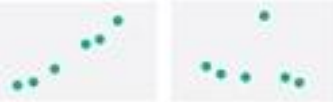


		Data		
		All	Subset	None
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# Multiple View Designs: Multiform

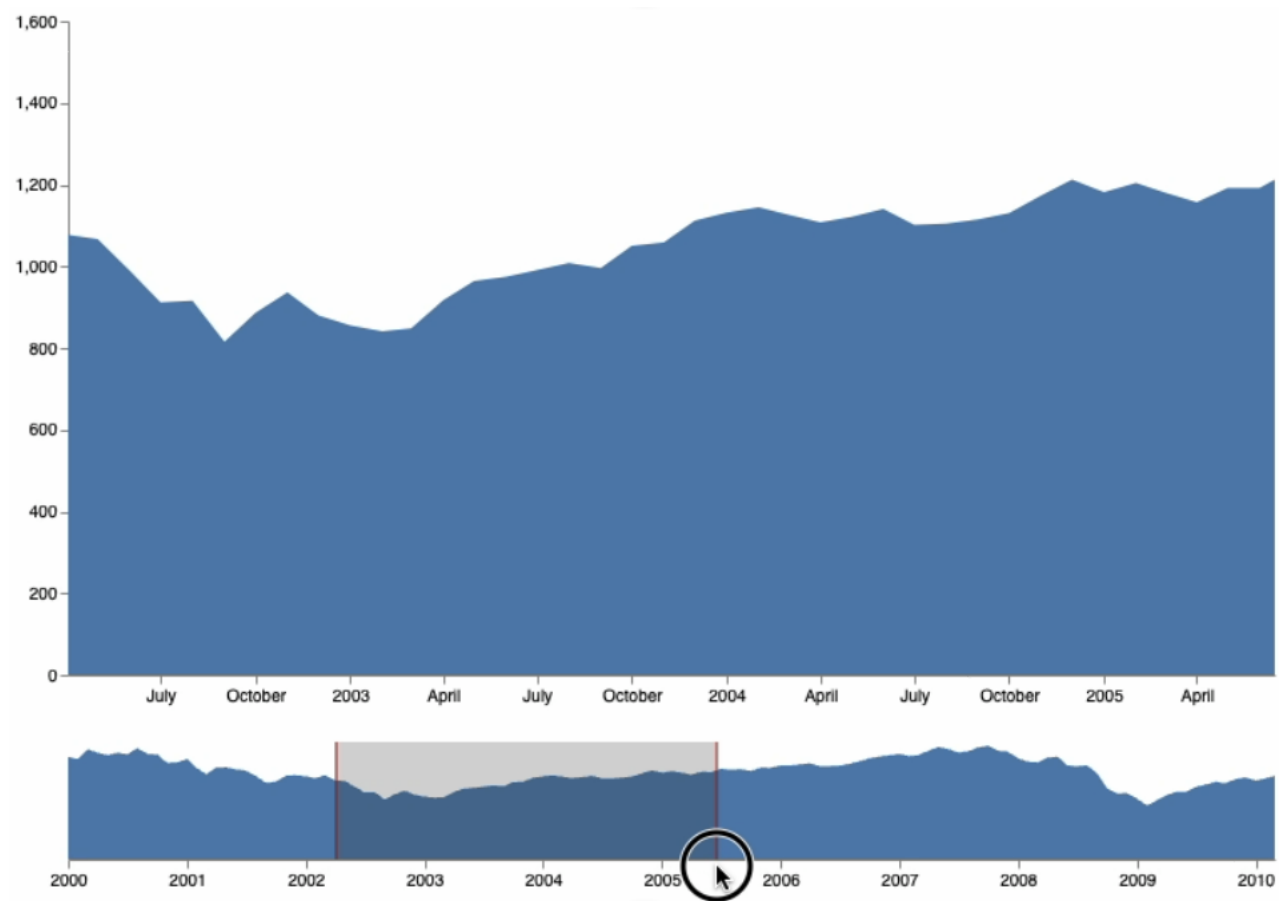




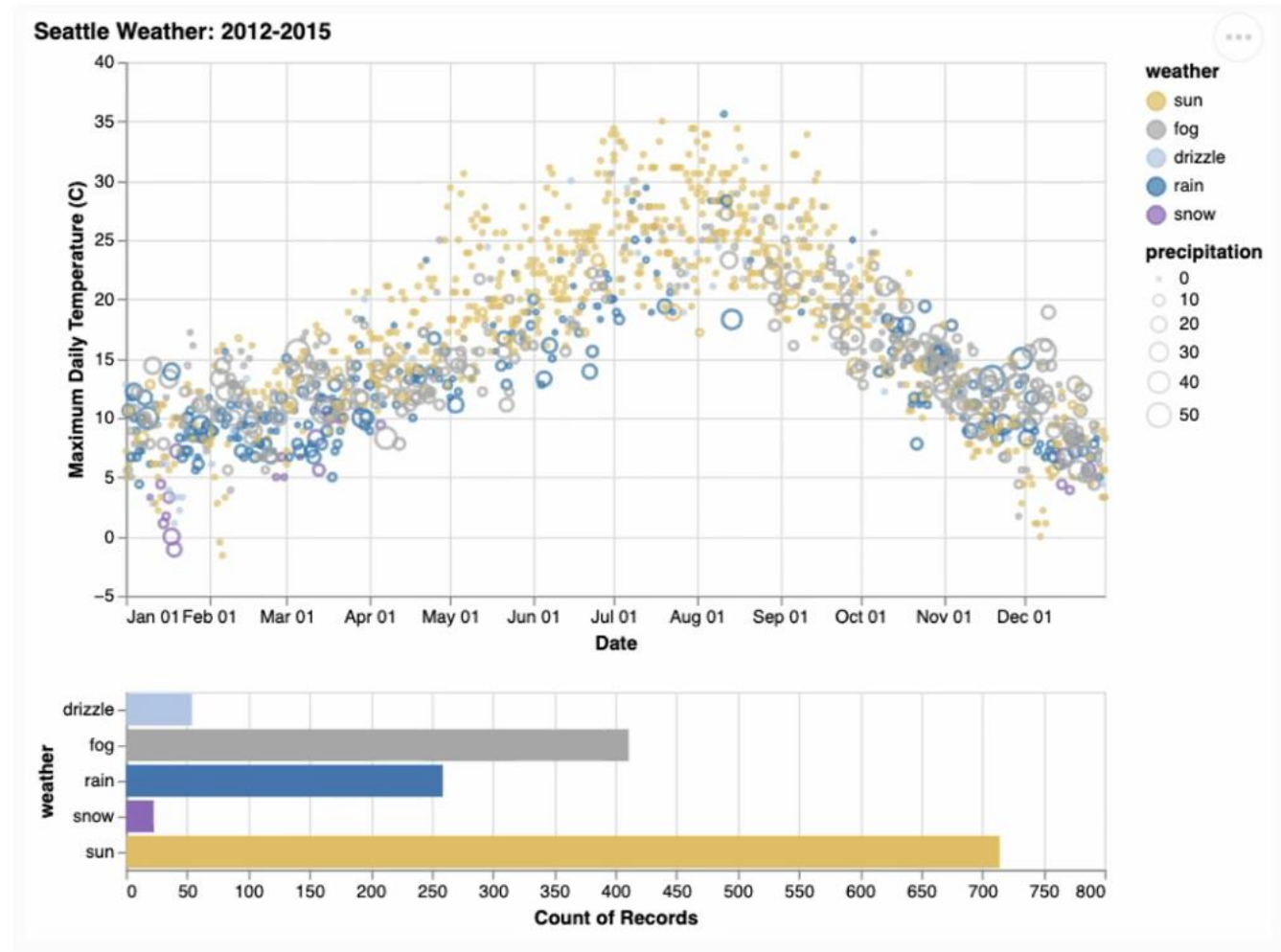
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# Multiple View Designs: Overview / Detail



# Multiple View Designs: Multiform Overview / Detail



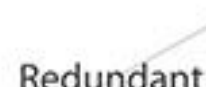





# Overview / Detail

Also called Filter + Context Designs

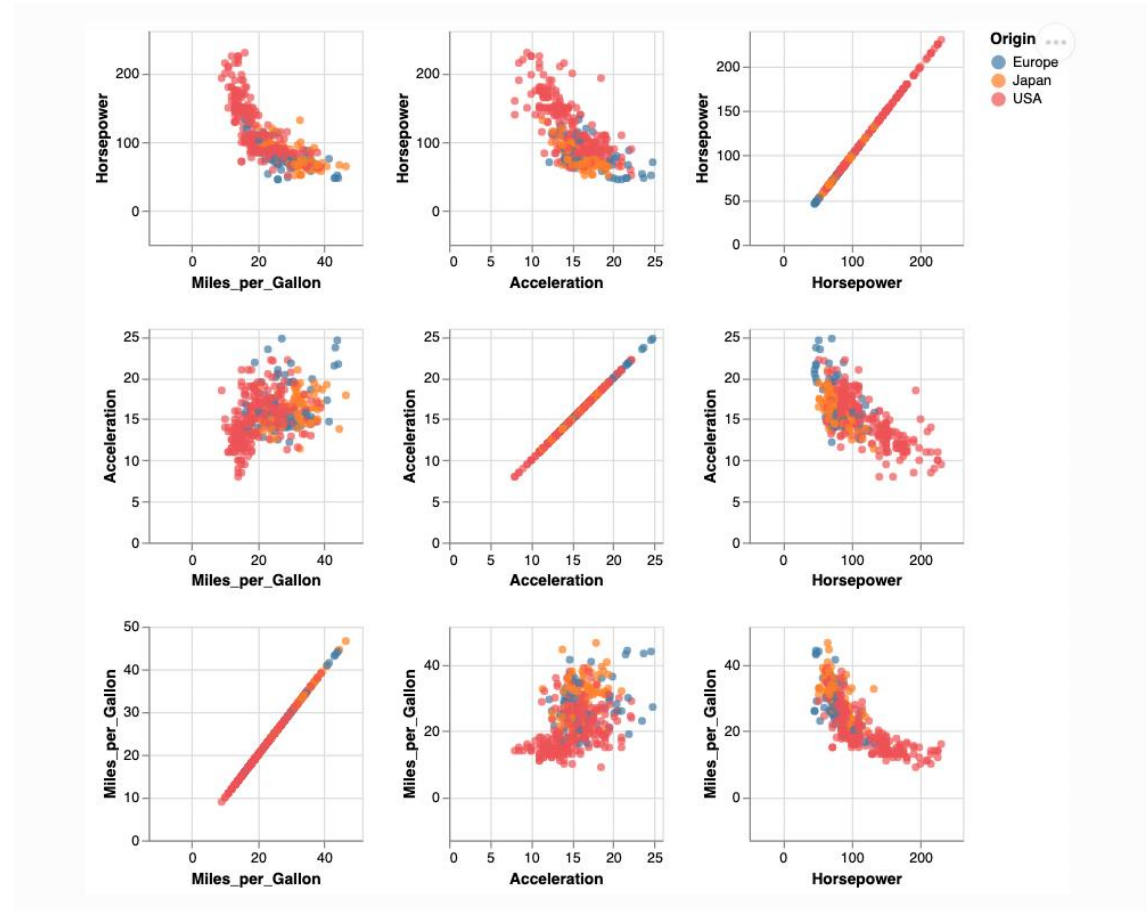
Overview first, zoom and filter, then details-on-demand  
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- Ben Shneiderman

# Multiple View Designs

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	Different	 Multiform	 Multiform, Overview/ Detail	No Linkage 

# Multiple View Designs: Small Multiples

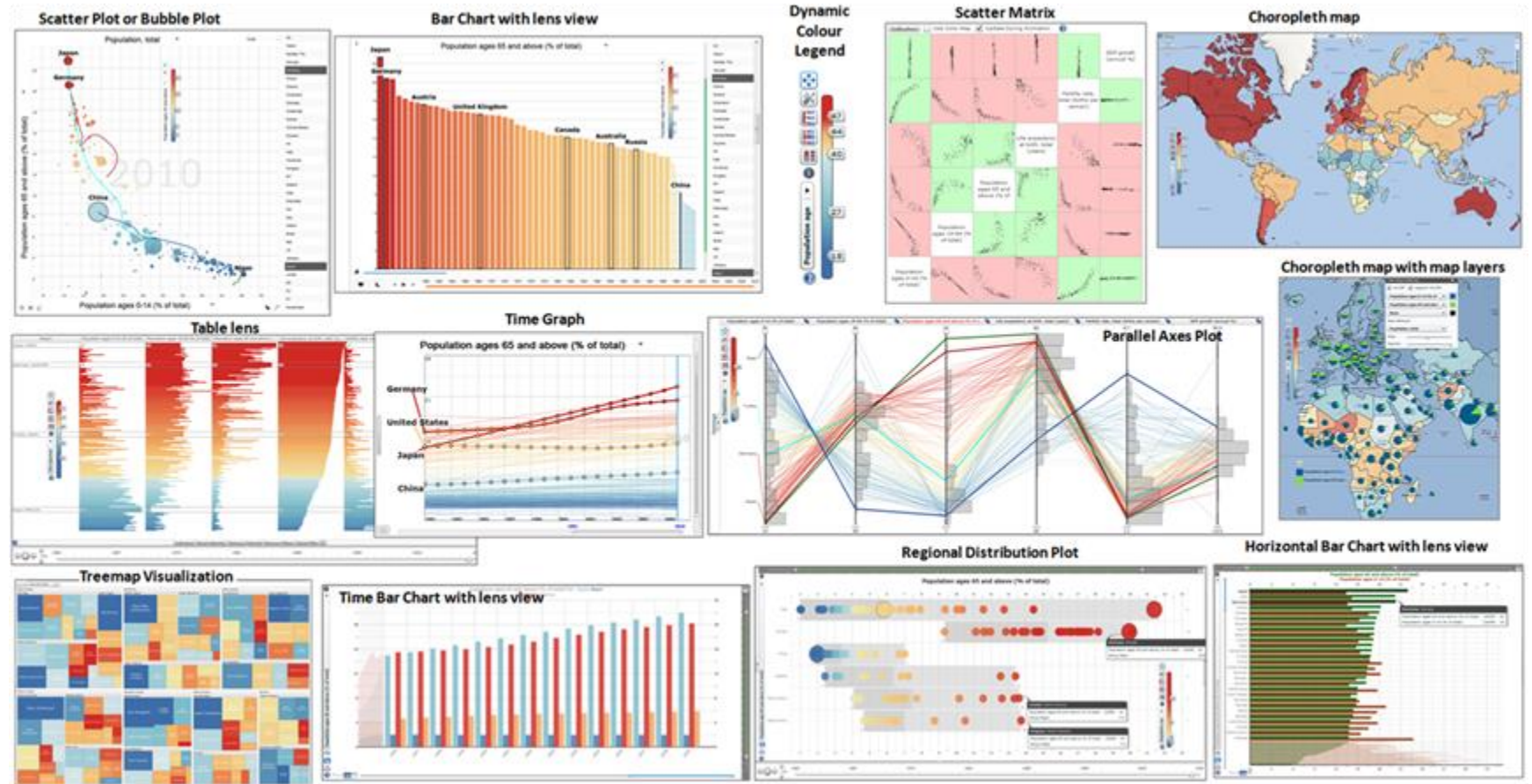


Need to think about:  
resource  
optimization





Need to think  
about:  
resource  
optimization





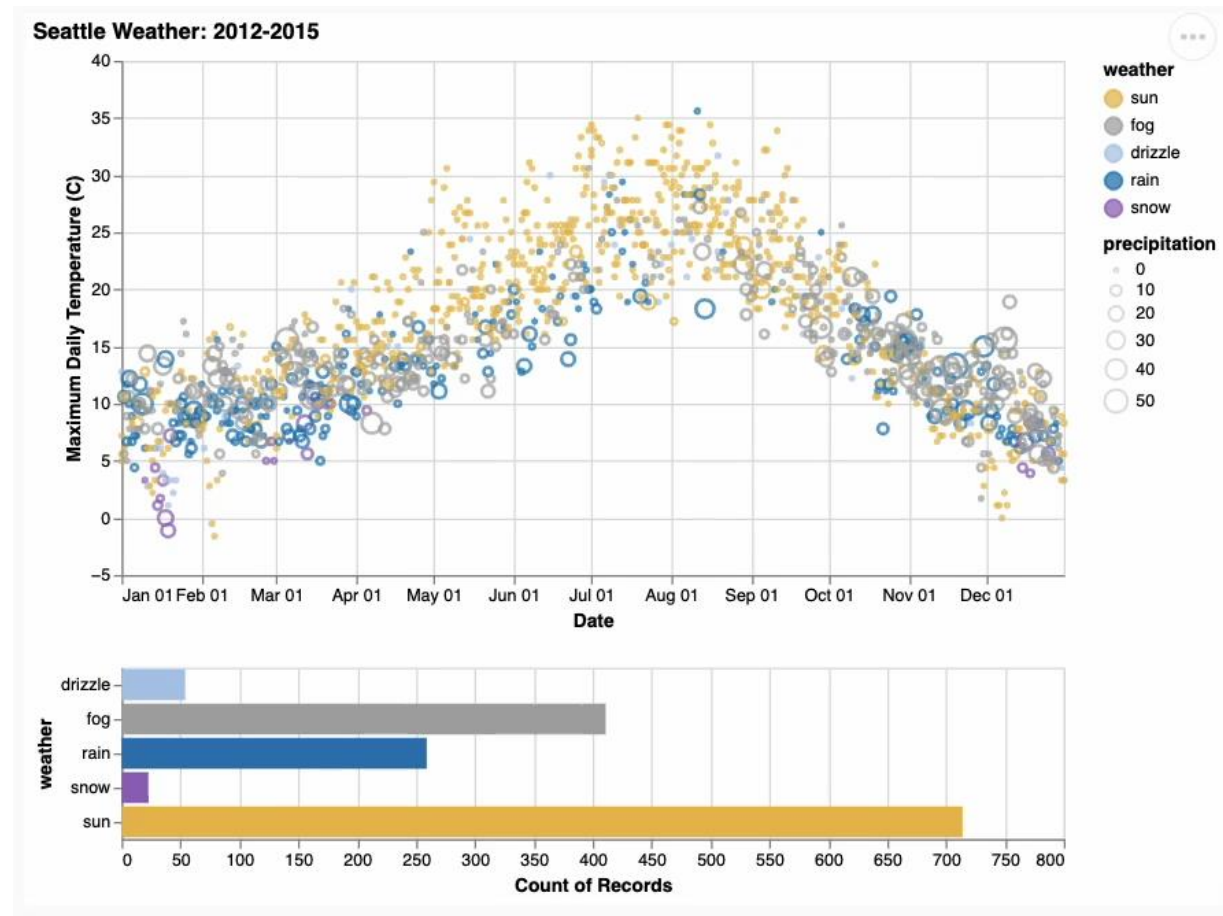
## Guidelines for multiple views

- Balance the **costs** of presenting multiple views with the **benefits** of using the views
- Split complex data into multiple views to create **manageable chunks**
- Use views that are complimentary, bringing out **correlations and/or disparities**
- Use **perceptual cues** to:
  - make relationships more apparent to the reader
  - focus the reader's attention on the right view at the right time

## Coordination: brushing and linking

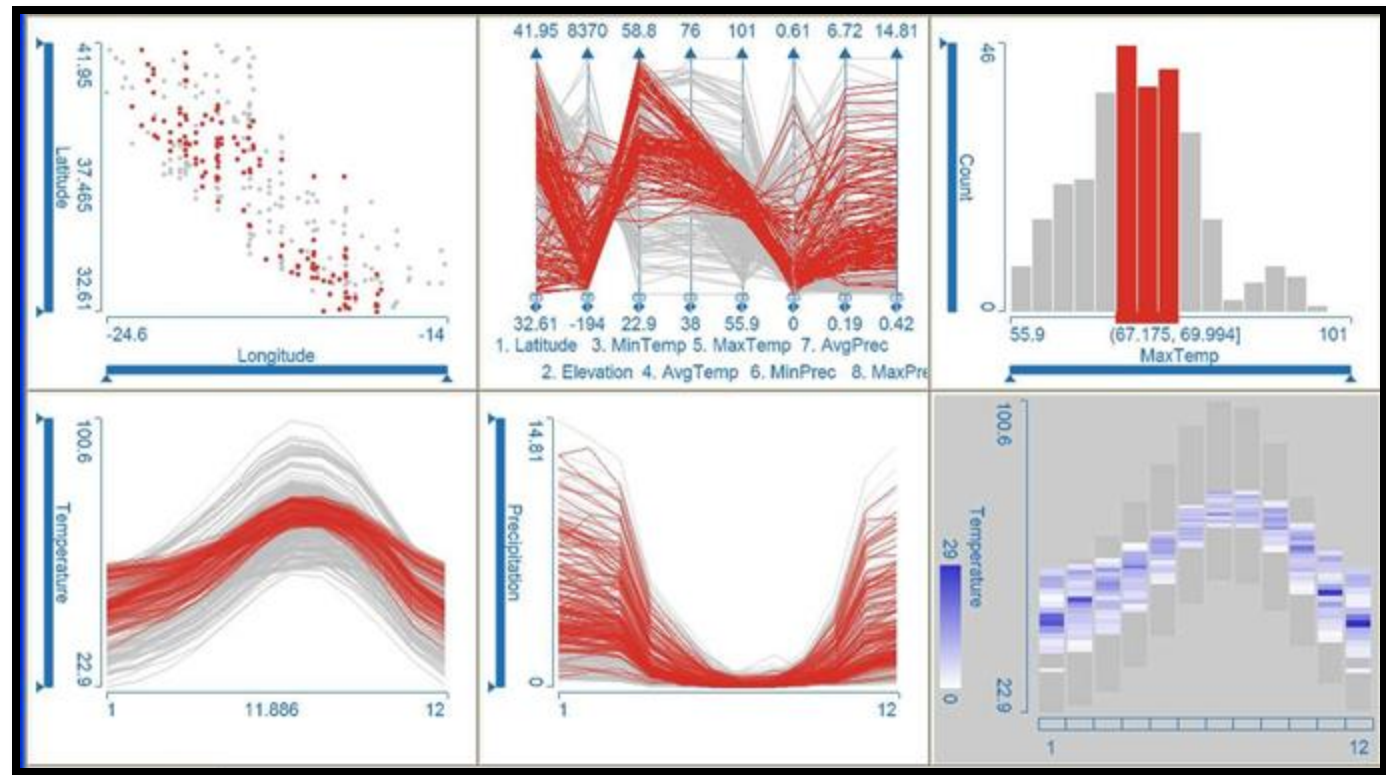
- **Big idea:** actions in the real world have ripple effects; actions on a visualization should too
- **Brushing:** the visualization responds (usually through highlighting) as a person “brushes past” data points
- **Linking:** the visualization connects related data points across multiple views

# Coordination: brushing and linking



# Coordinated multiple views

- Multiple views + brushing and linking
- **Big idea:** propagate interaction from one view to all others, respond as appropriate



# Practice

- Find a partner and work through the R or Python coordinated multiple views demo on the class website