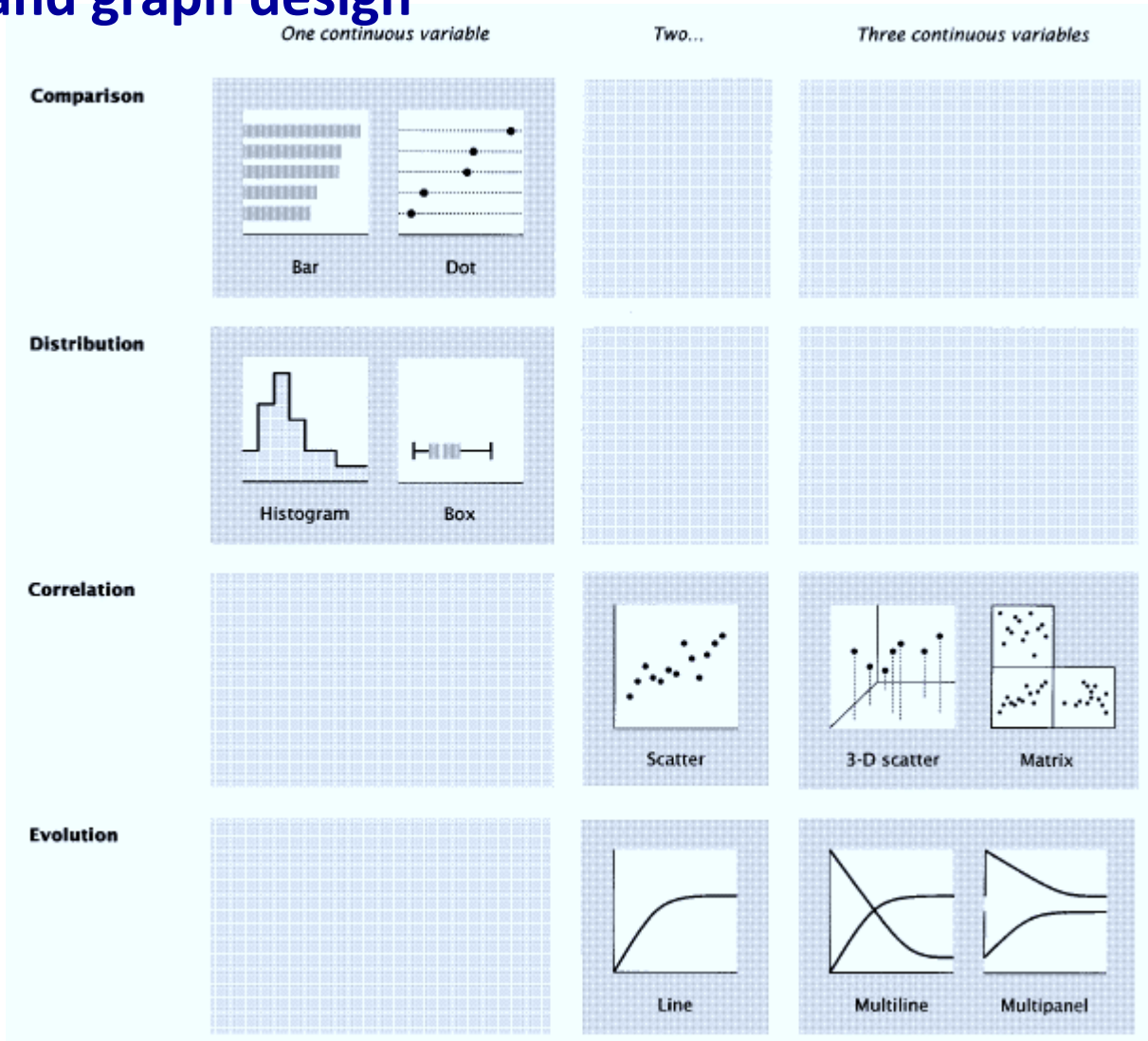
Worksheet answers

Relating data structure and graph design

ME447 Visualizing Data
Spring 2019–20

Richard Layton



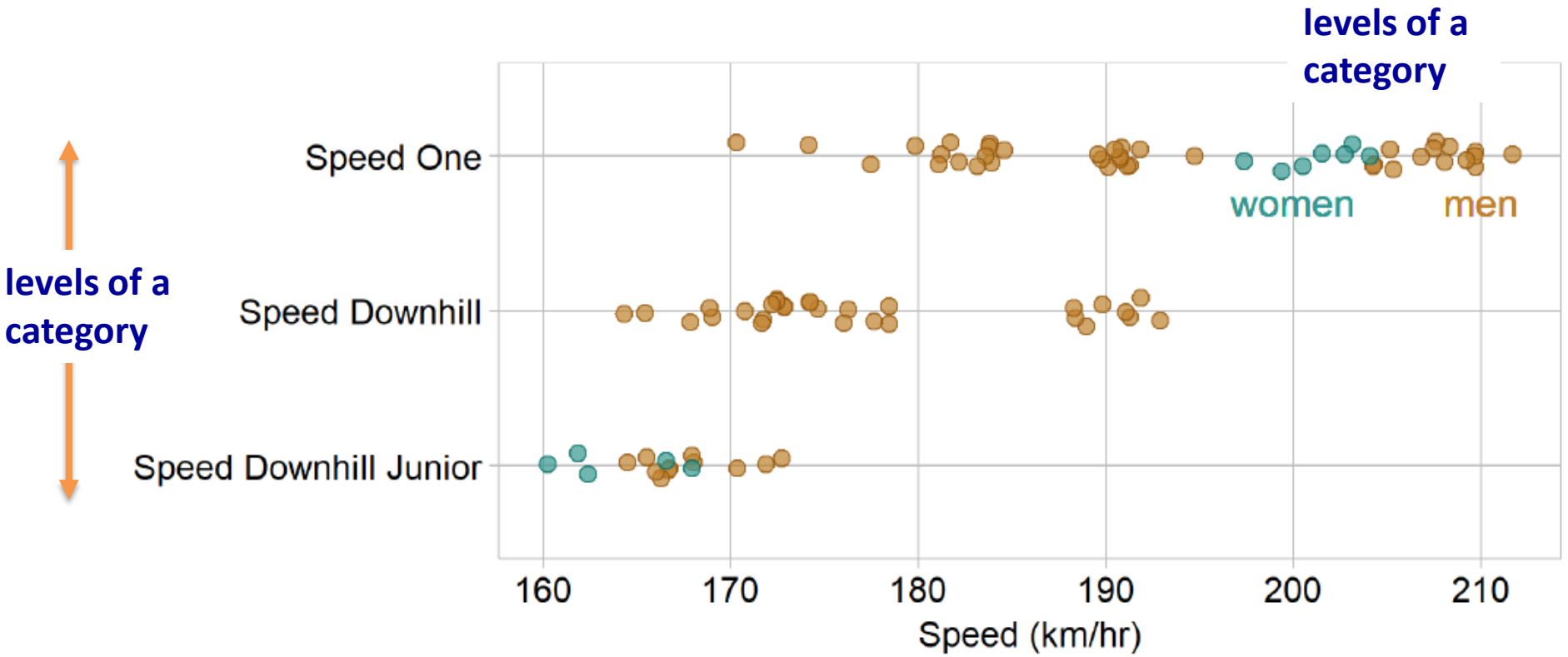
ROSE-HULMAN INSTITUTE OF TECHNOLOGY

Based on Jean-luc Doumont and Philippe Vandenbroeck (2002 March) Choosing the right graph, *IEEE Transactions on Professional Communication* 45(1)

Story: distribution and comparison
Data: 1 quantitative, 2 categorical

1. Strip plot

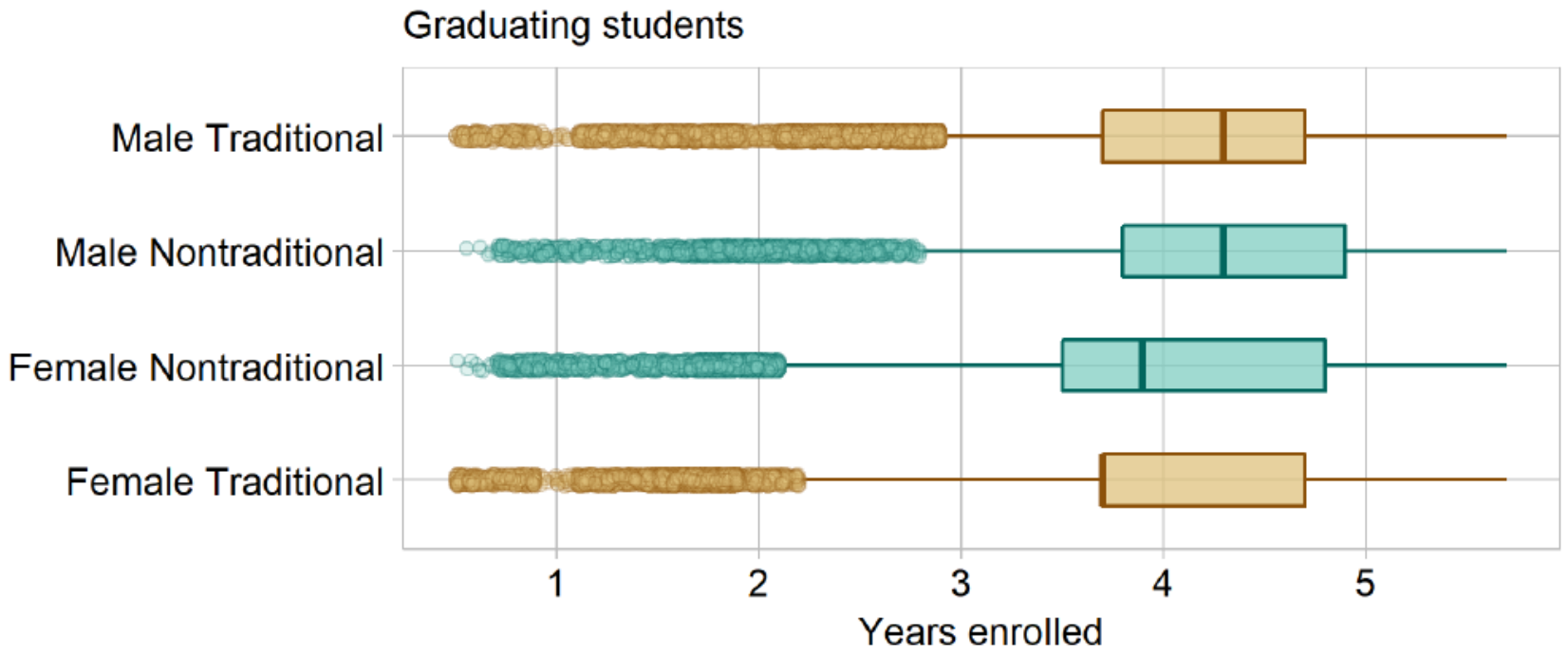
Olympic speed skiing



Story: distribution and comparison
Data: 1 quantitative, 1 categorical

2. Box plot

Years to graduation



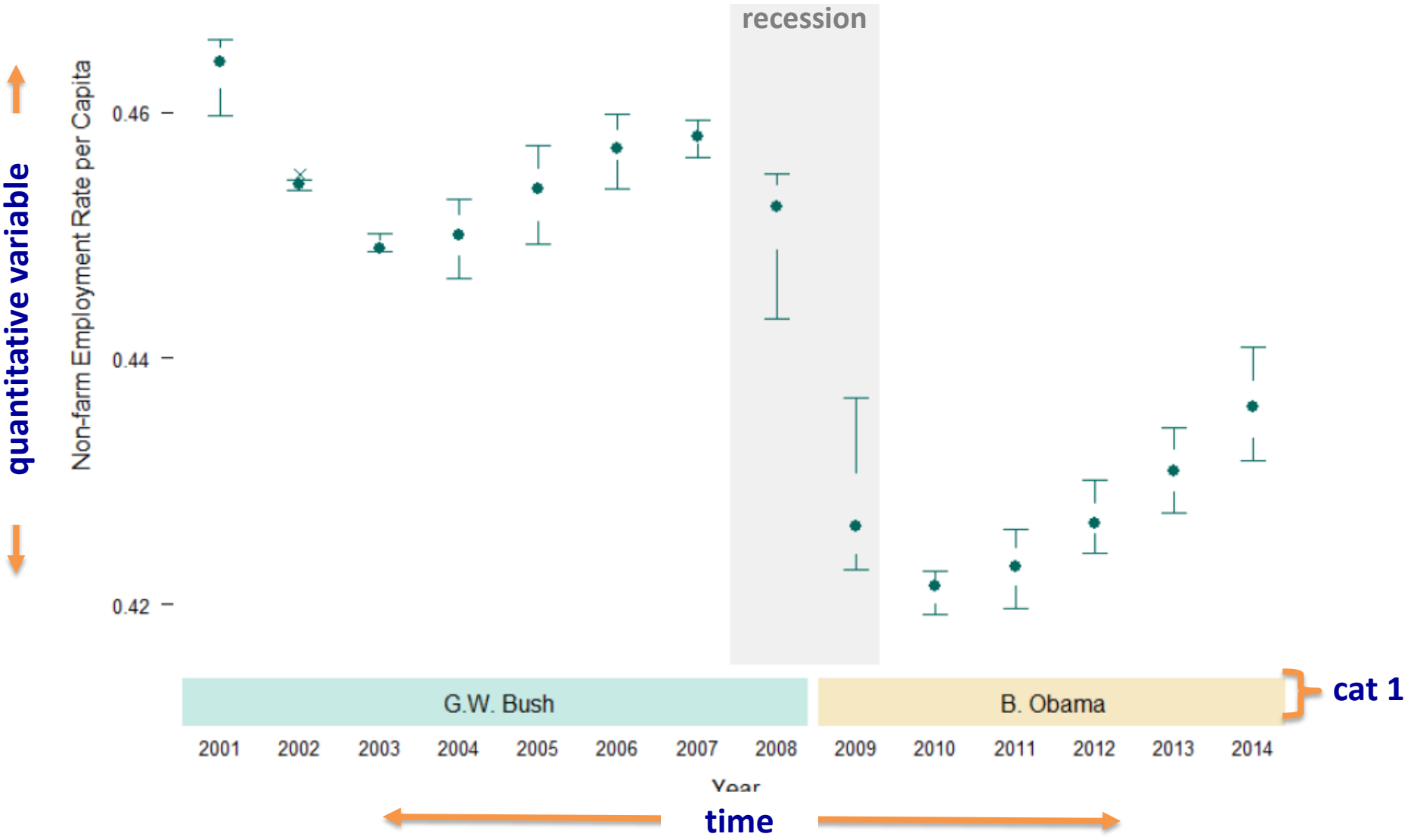
levels of a category

quantitative variable

Story: evolution of distributions
Data: 1 quantitative, 2 categorical

3. Box plot

US employment

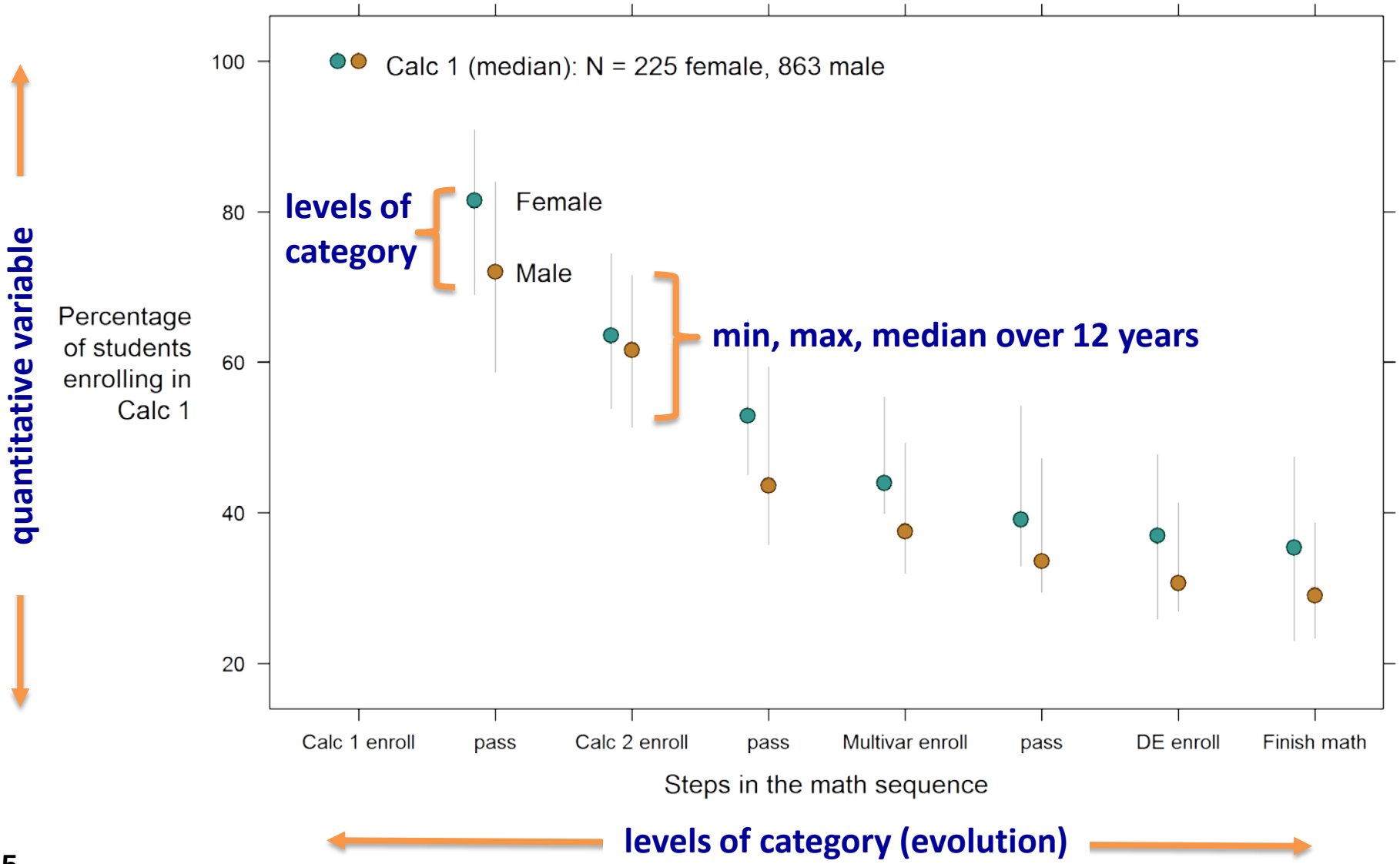


4. Distributions

Math sequence attrition

Story: evolution of distributions

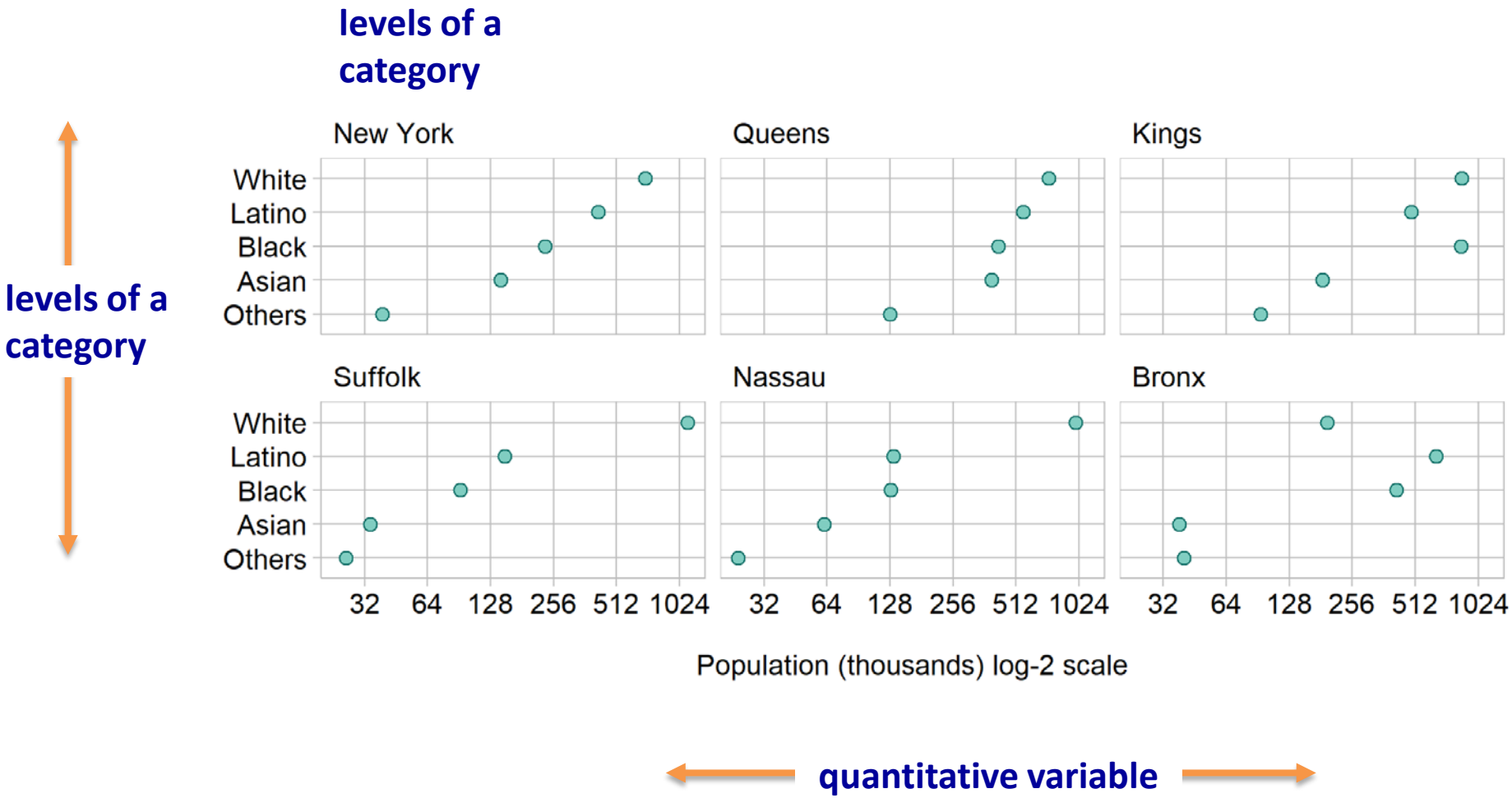
Data: 1 quantitative, 2 categorical



Story: comparing data
Data: 1 quantitative, 2 categorical

5. Multiway

County population in NY State

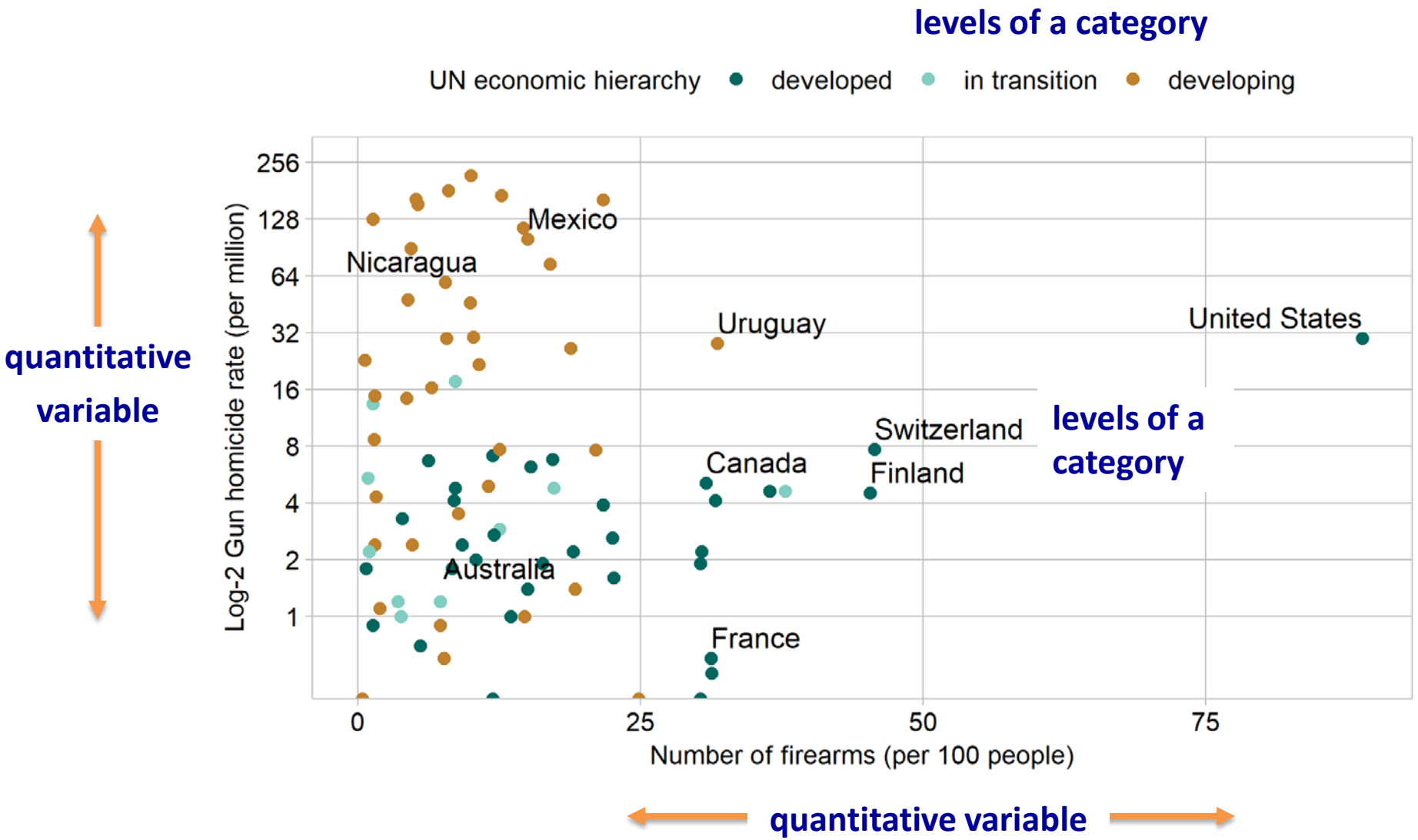


Story: comparing data and correlation

Data: 2 quantitative, 2 categorical

6. Scatterplot

Gun ownership and gun homicides



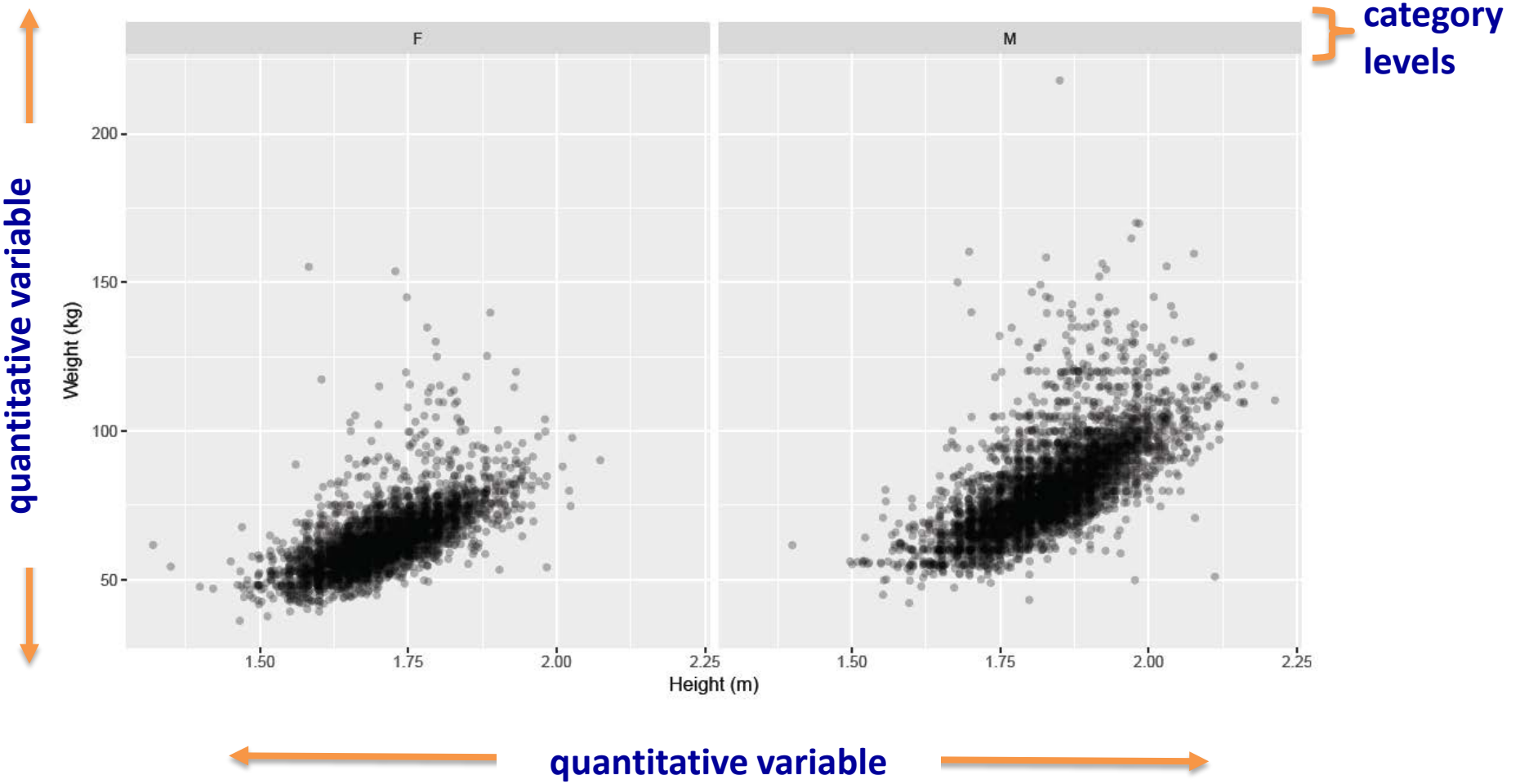
Story: correlation & comparison

Data: 2 quantitative, 1 categorical

7. Scatterplot

multi-panel

Olympians' height and weight



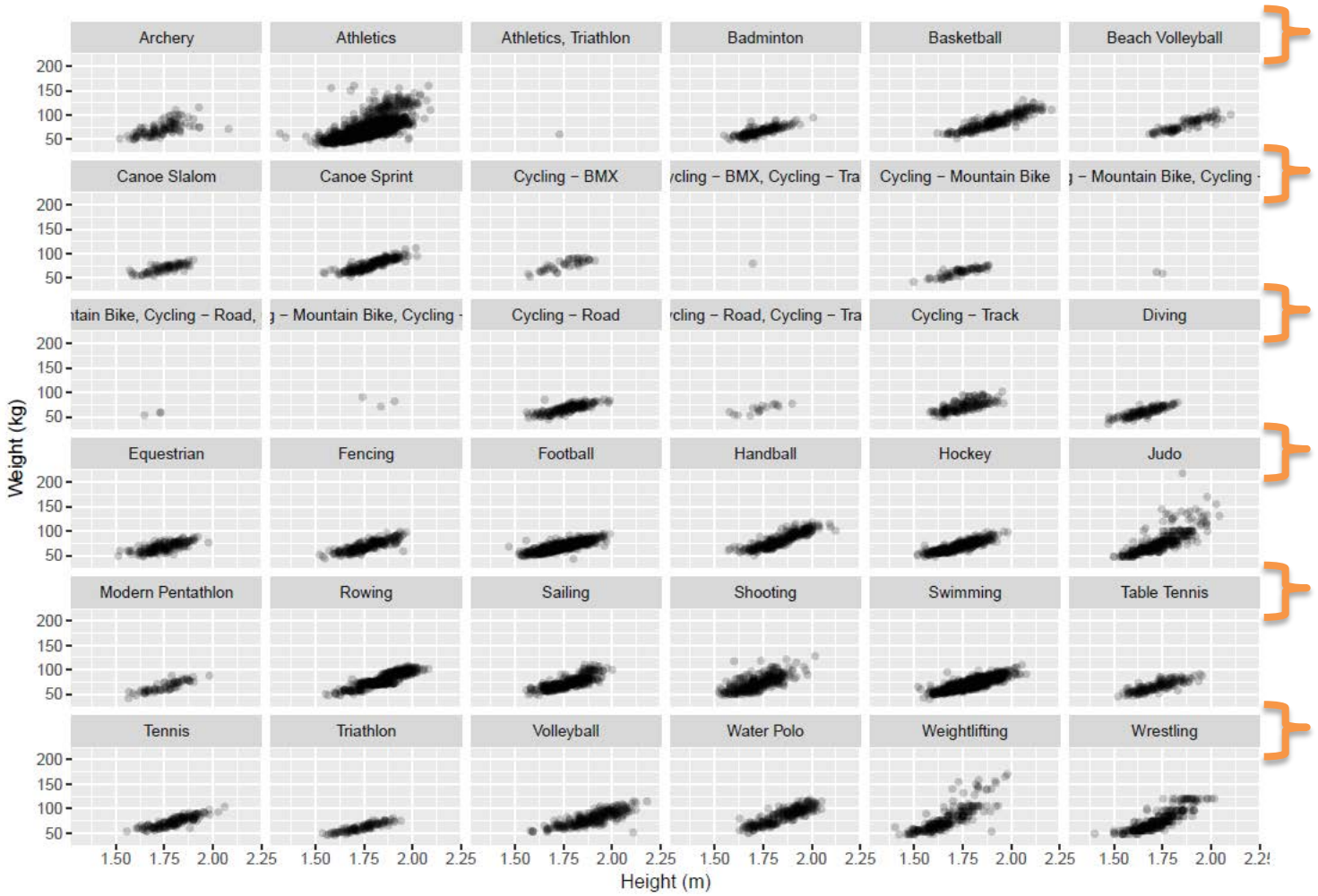
Story: correlation & comparison

Data: 2 quantitative, 1 categorical

8. Scatterplot

small multiples

Olympians' height and weight, by event



category levels

quantitative variable

quantitative variable

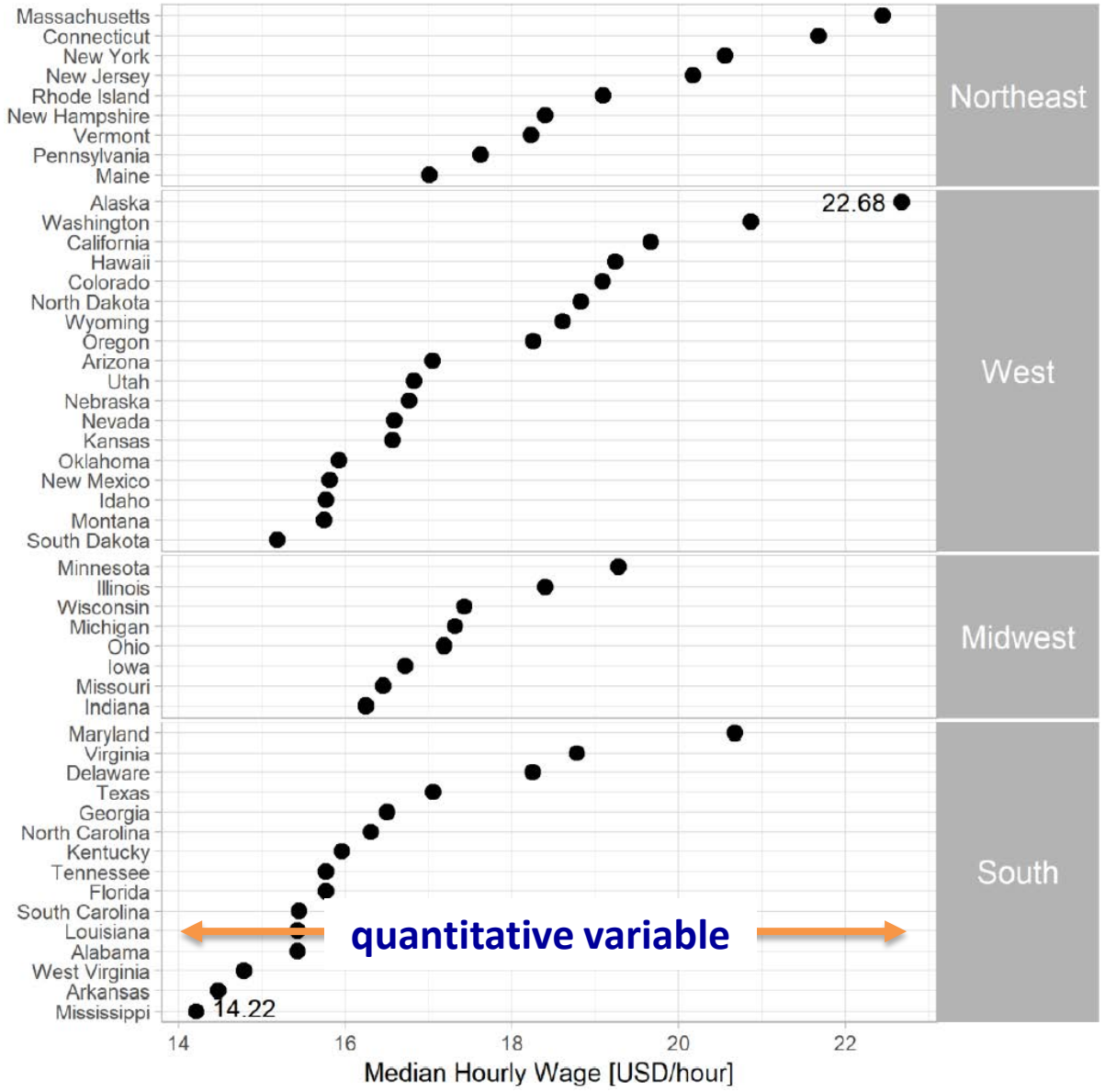
Story: comparing data

Data: 1 quantitative, 2 categorical

9. Cleveland dot plot

US median hourly wages

levels of a category



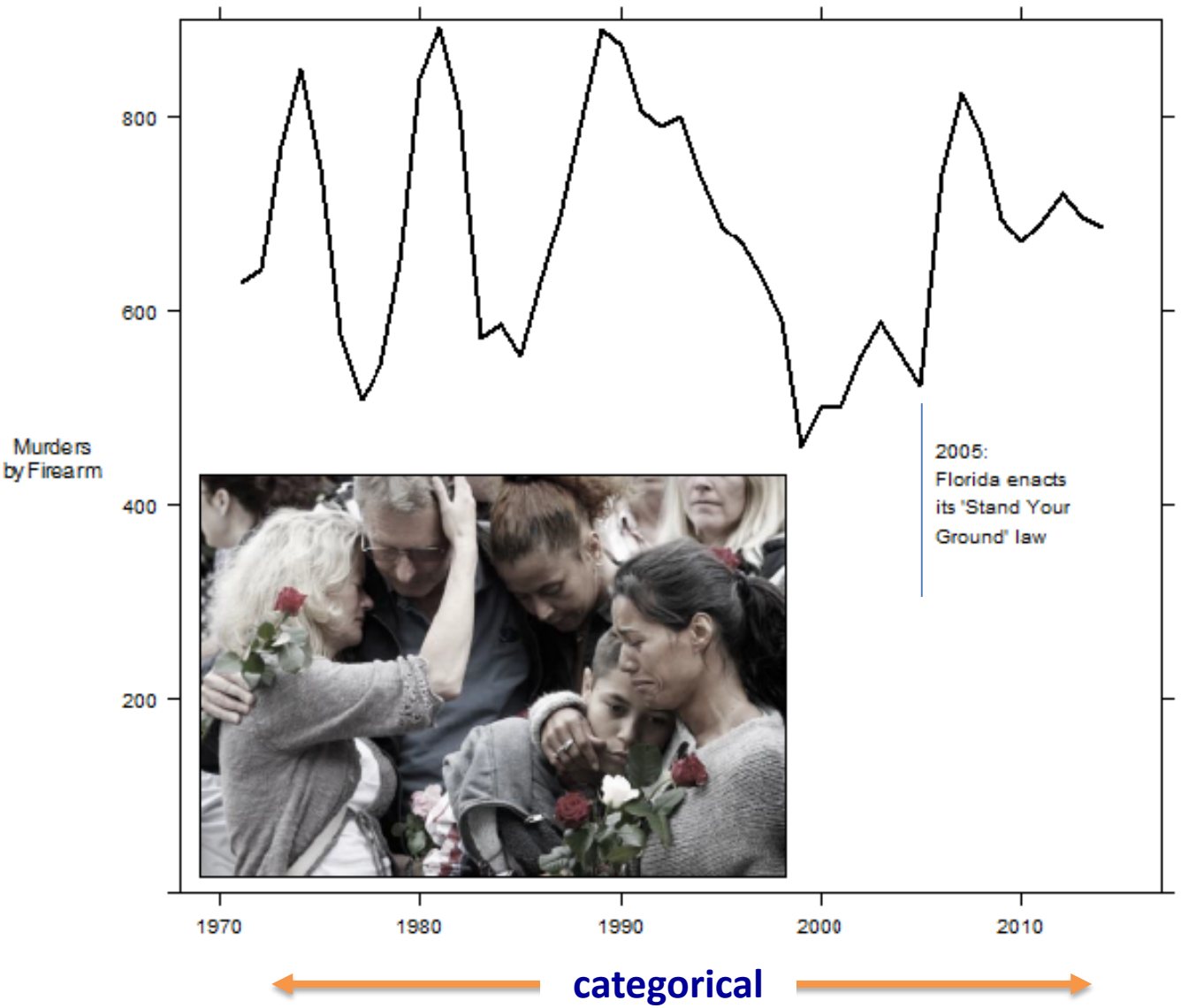
levels of a category

Story: evolution

Data: 1 quantitative, 1 categorical

10. Line graph

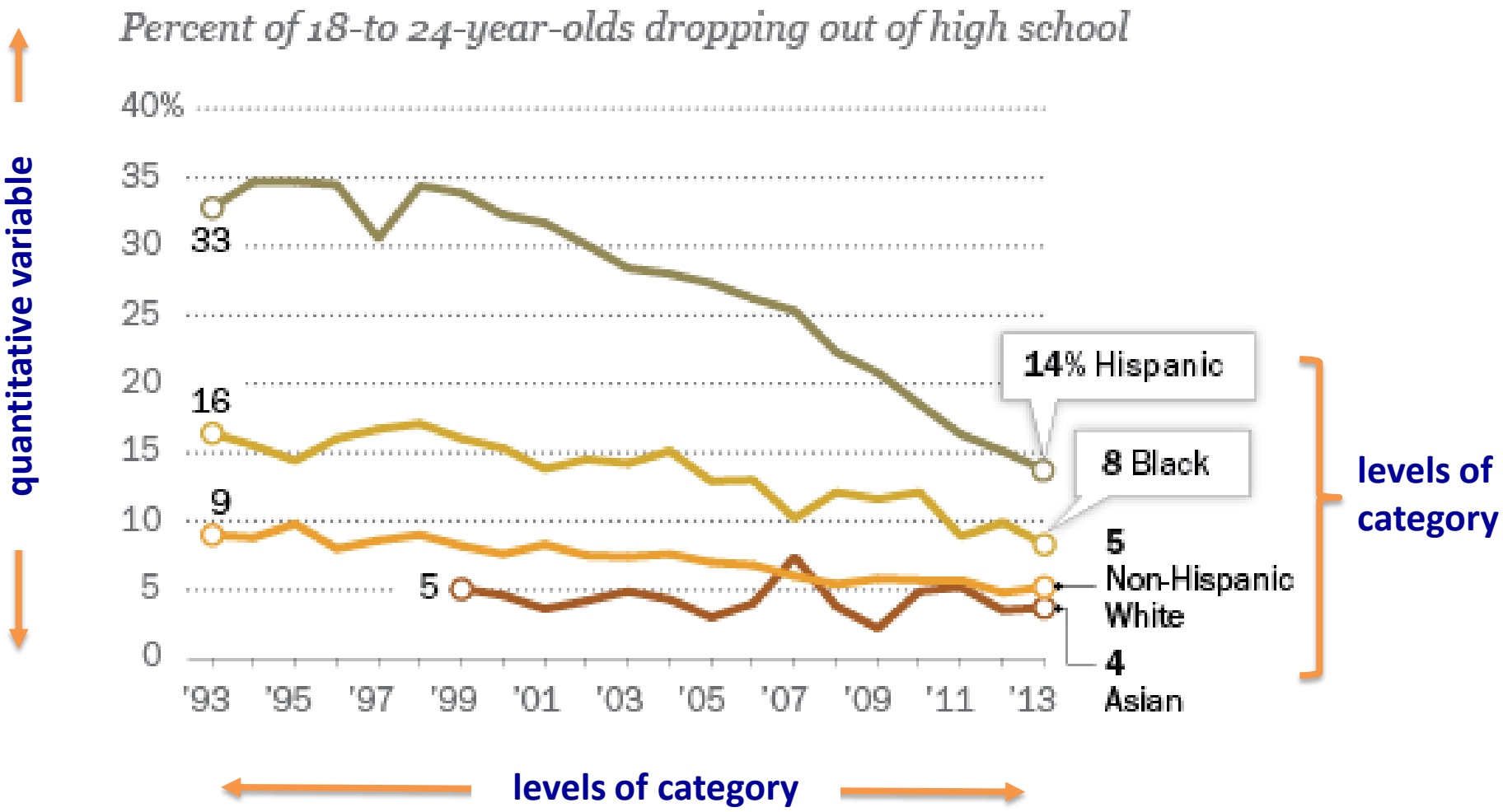
US firearm deaths



Story: evolution & comparison
Data: 1 quantitative, 2 categorical

11. Line graph

US high school dropout rates



Story: evolution and comparing data
Data: 1 quantitative, 3 categorical

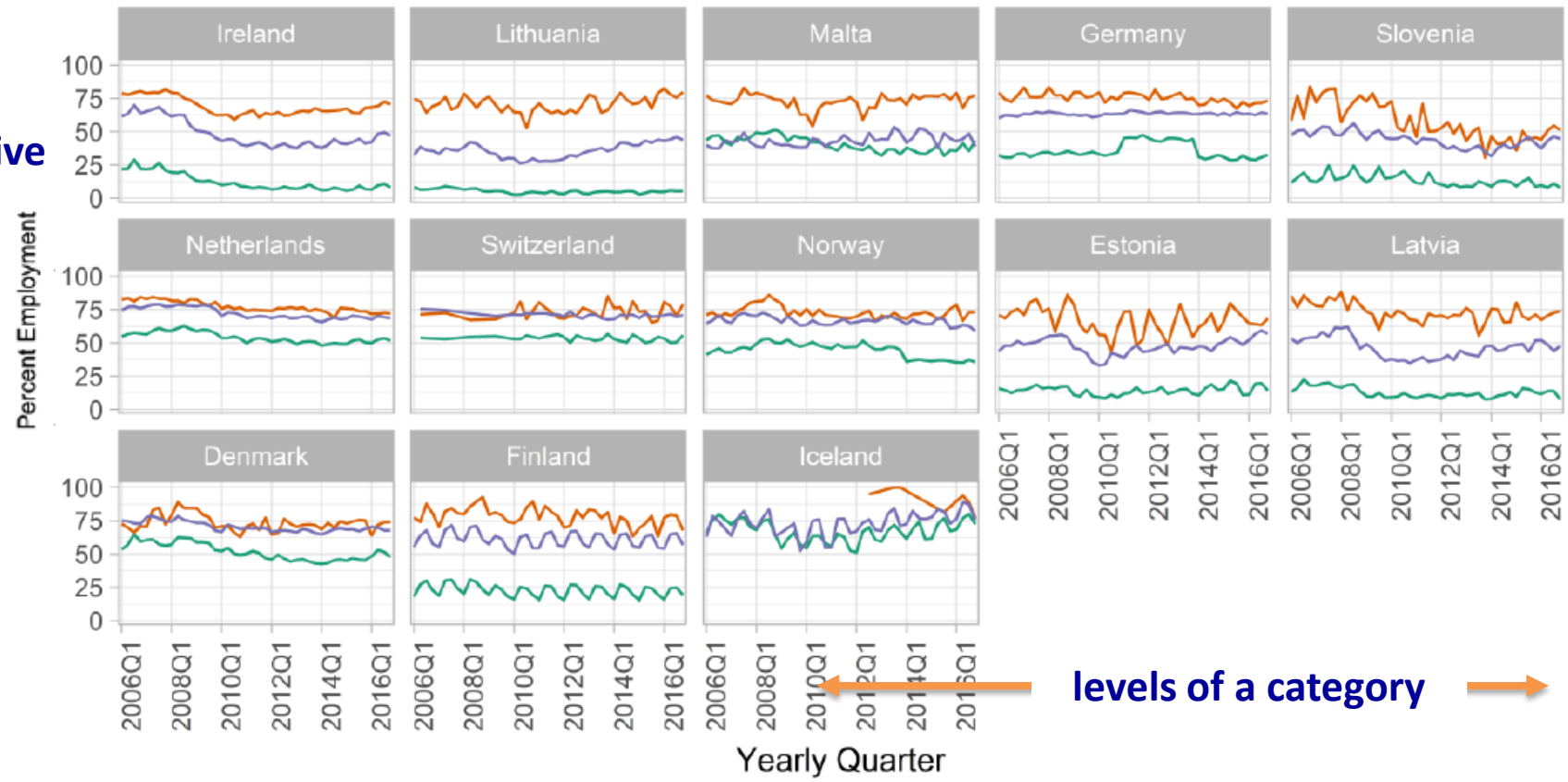
12. Line graph

small multiples

EU employment by education level

levels of a category

quantitative variable



levels of a category

levels of a category

Education Level Completed

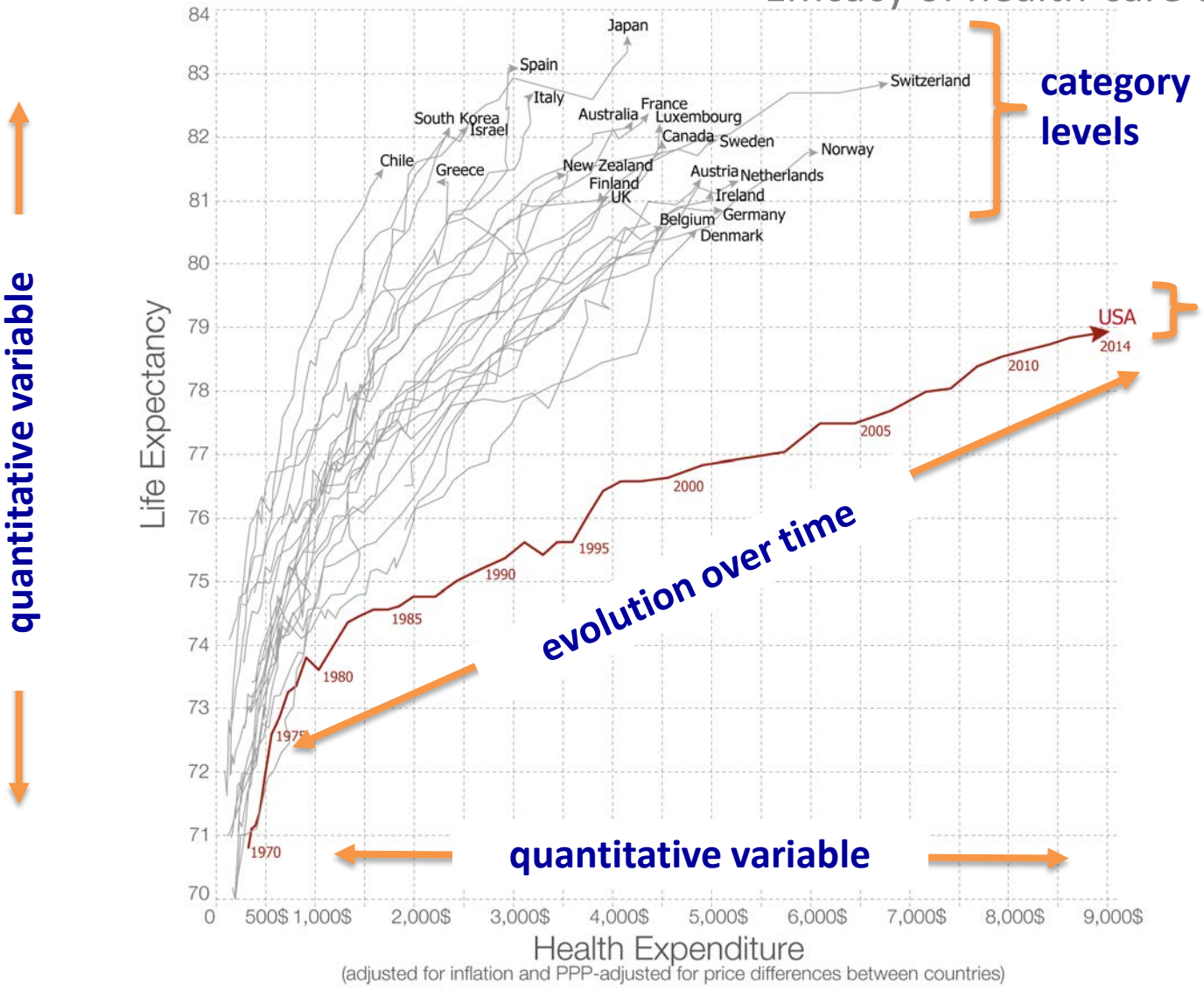
- Less than primary, primary and lower secondary education (levels 0-2)
- Upper secondary and post-secondary non-tertiary education (levels 3 and 4)
- Tertiary education (levels 5-8)

Story: correlation & comparison

Data: 2 quantitative, 2 categorical

13. Line graph

Efficacy of health-care expenditures



Data source: Health expenditure from the OECD; Life expectancy from the World Bank Licensed under CC-BY-SA by the author Max Roser.
The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic.

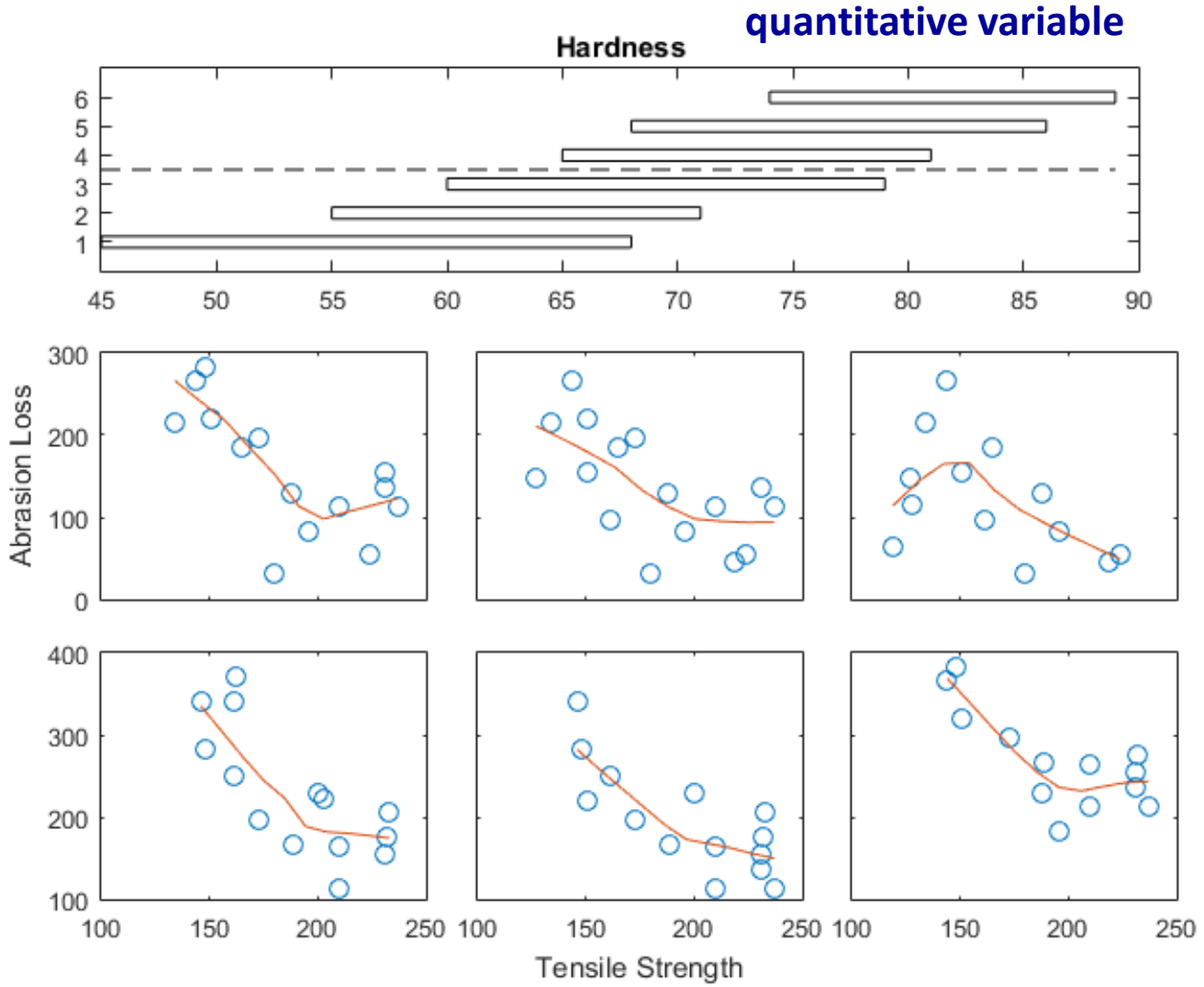
www.ineteconomics.org/perspectives/blog/the-link-between-health-spending-and-life-expectancy-the-us-is-an-outlier

Story: **revealing correlations**

Data: **3 quantitative**

14. Conditioning plot

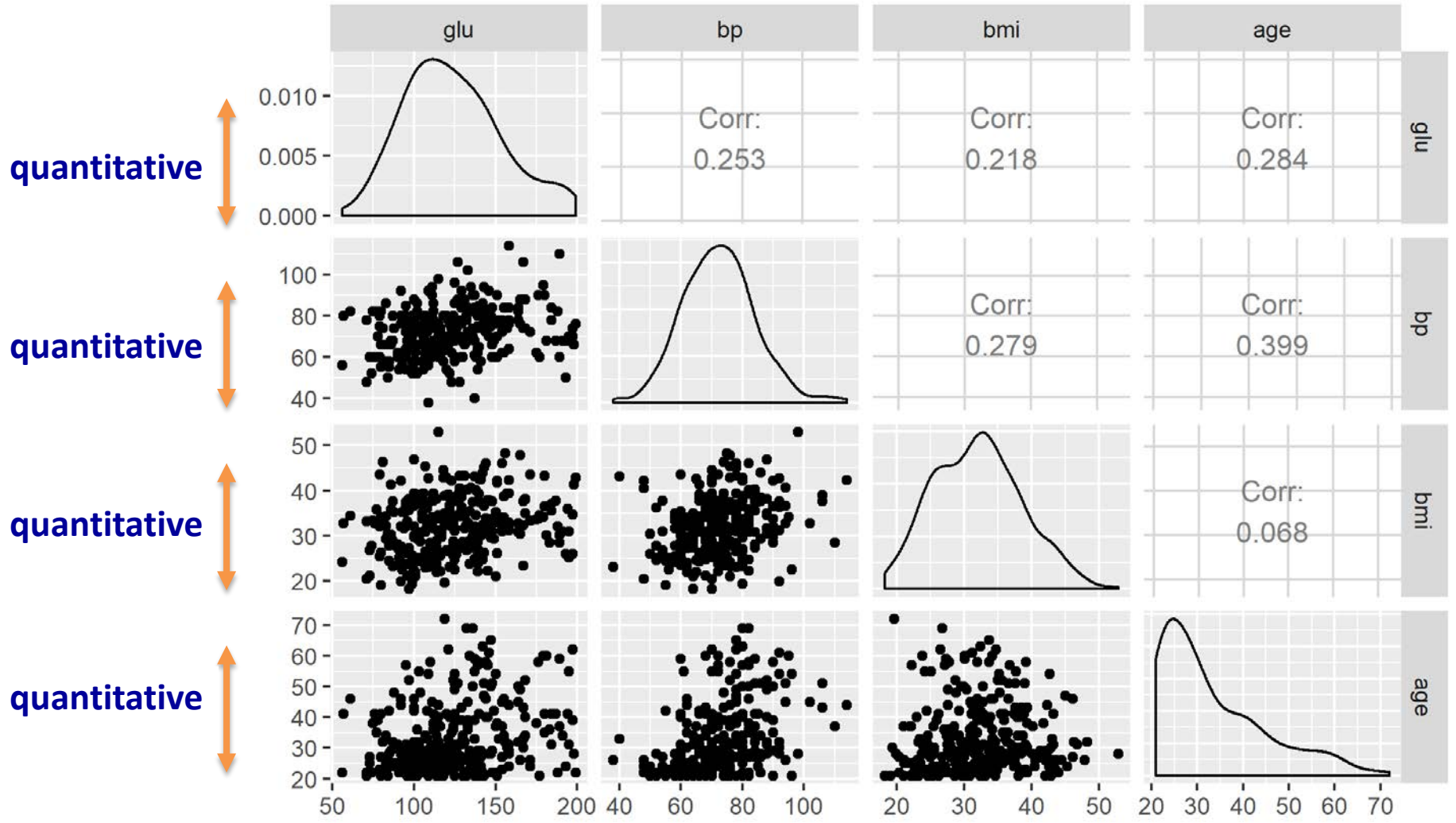
Properties of rubber



Story: **revealing correlations**
Data: **4 quantitative**

15. Scatterplot matrix

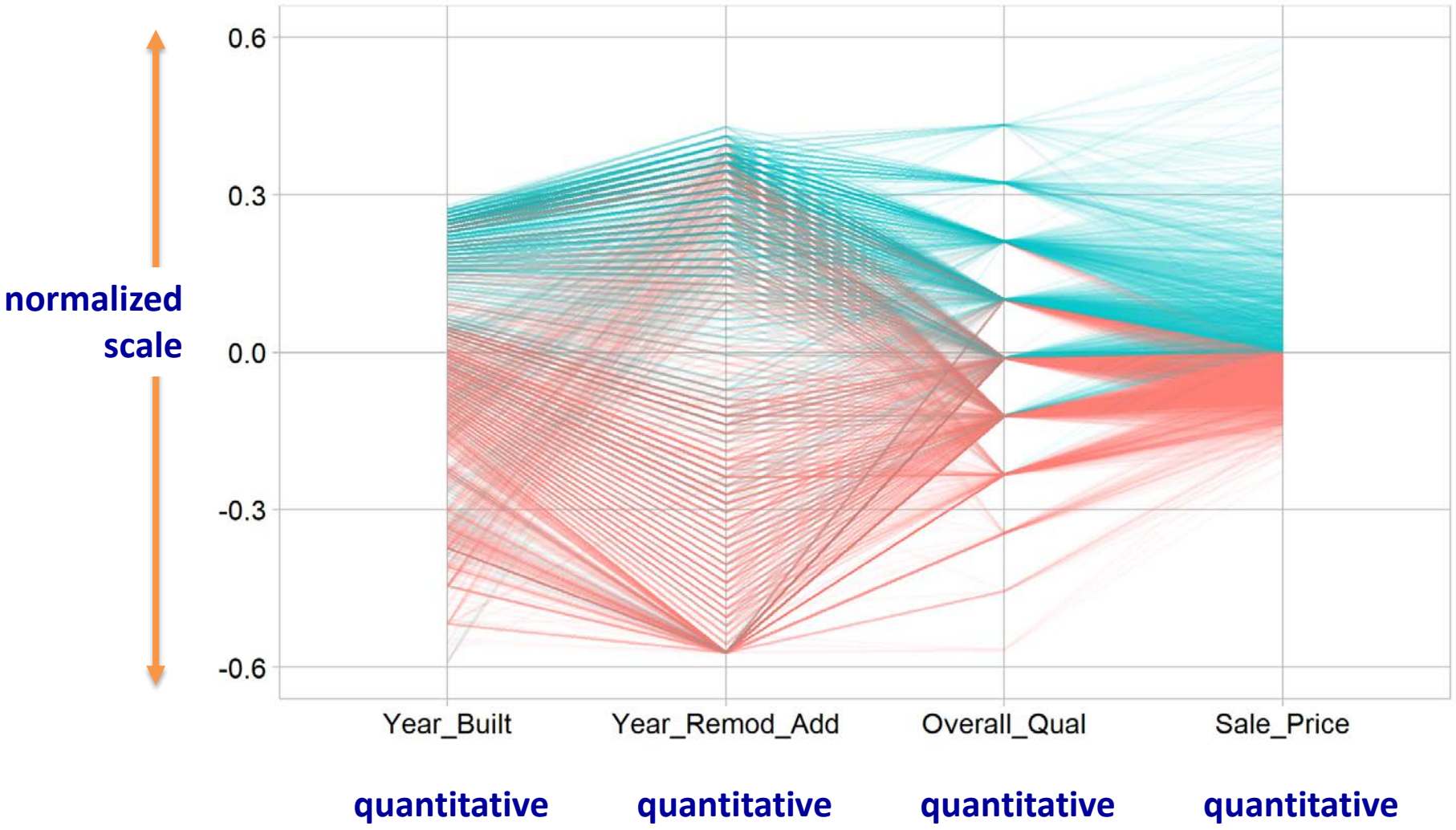
Diabetes in Pima women



16. Parallel coordinate

Story: revealing correlations
Data: 4 quantitative

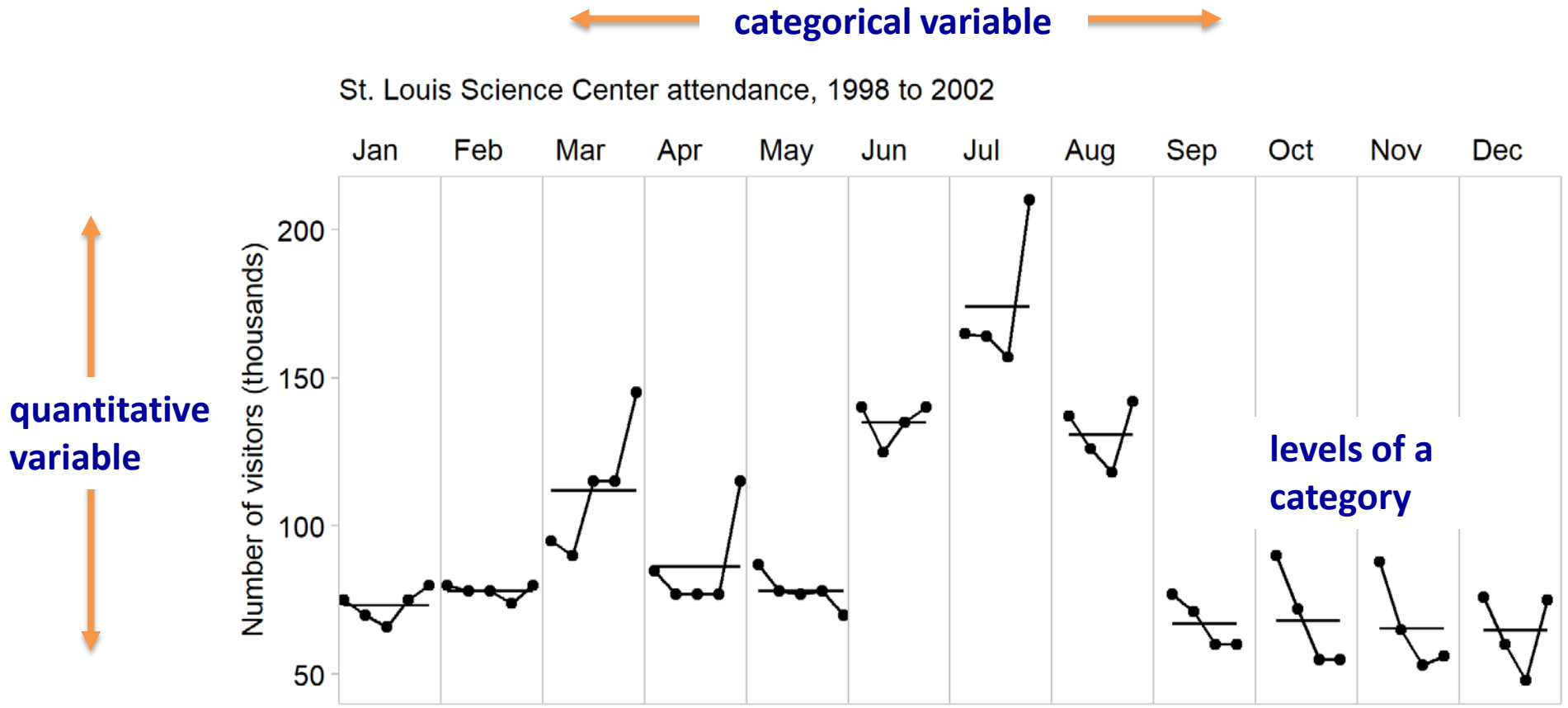
House pricing



Story: evolution and comparison
Data: 1 quantitative, 2 categorical

17. Cycle plot

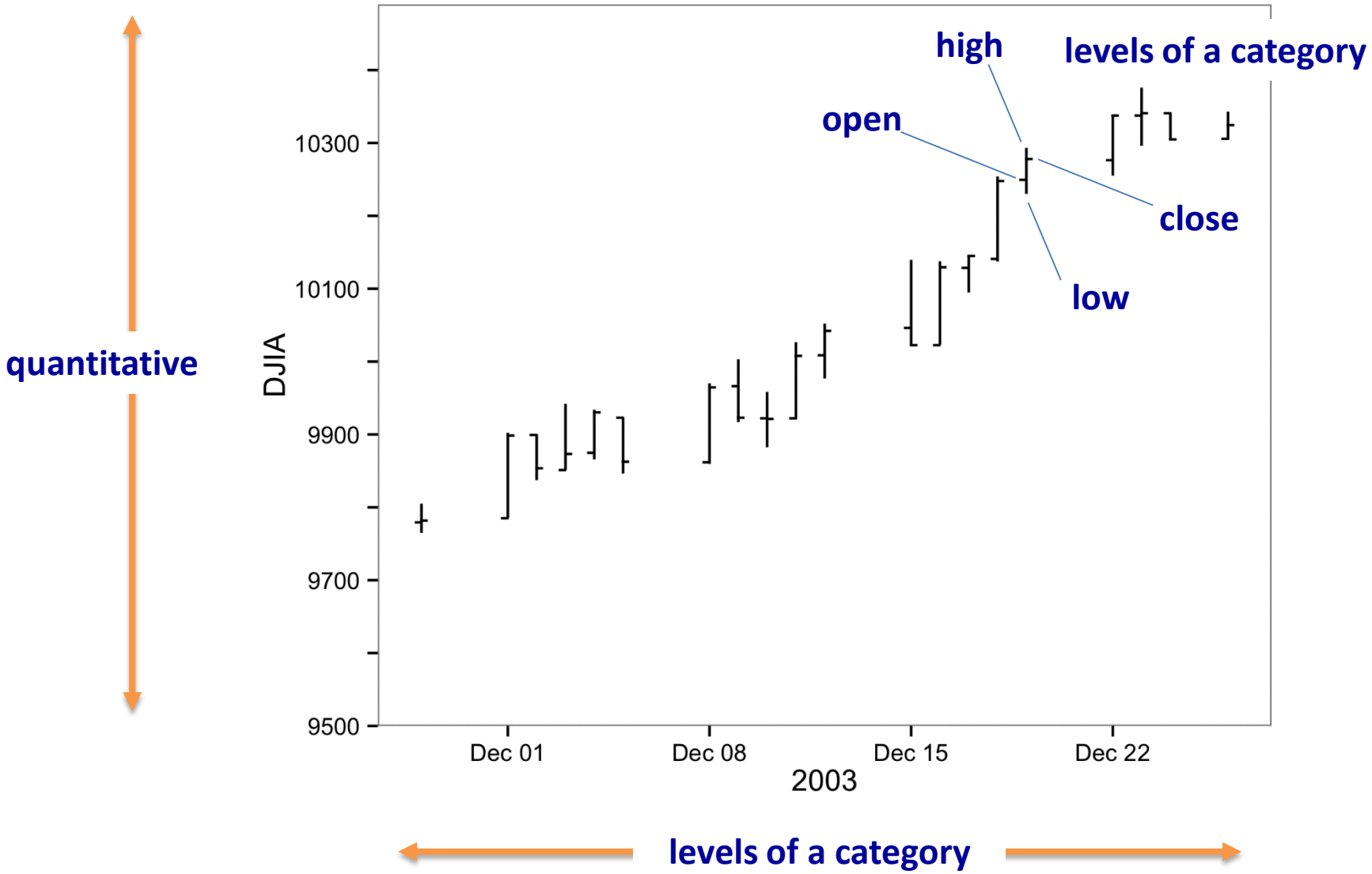
Science center attendance



Story: evolution and comparison
Data: 1 quantitative, 2 categorical

20. Financial plot

Dow Jones Industrial Average

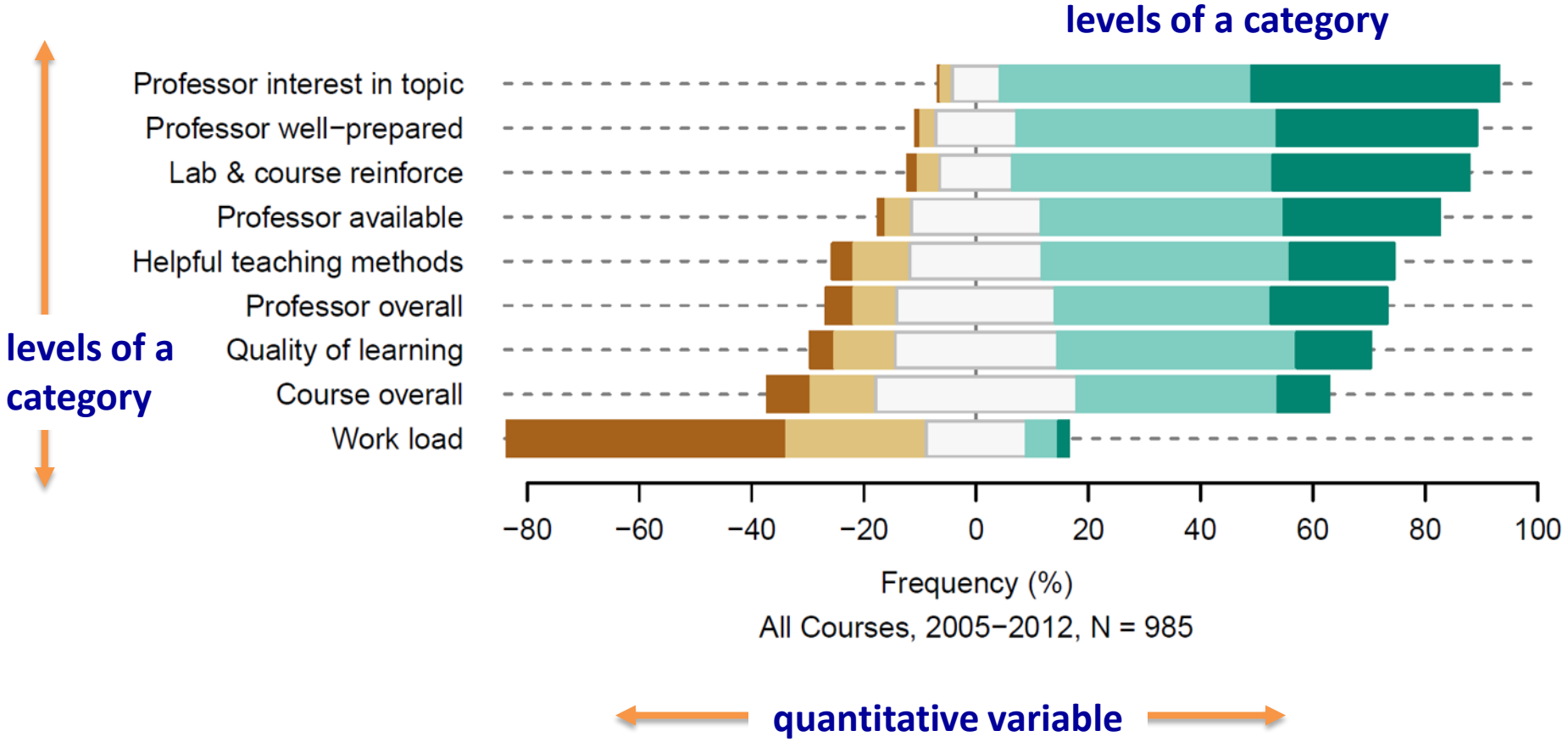


Story: comparing data

Data: 1 quantitative, 2 categorical

21. Diverging stacked bar

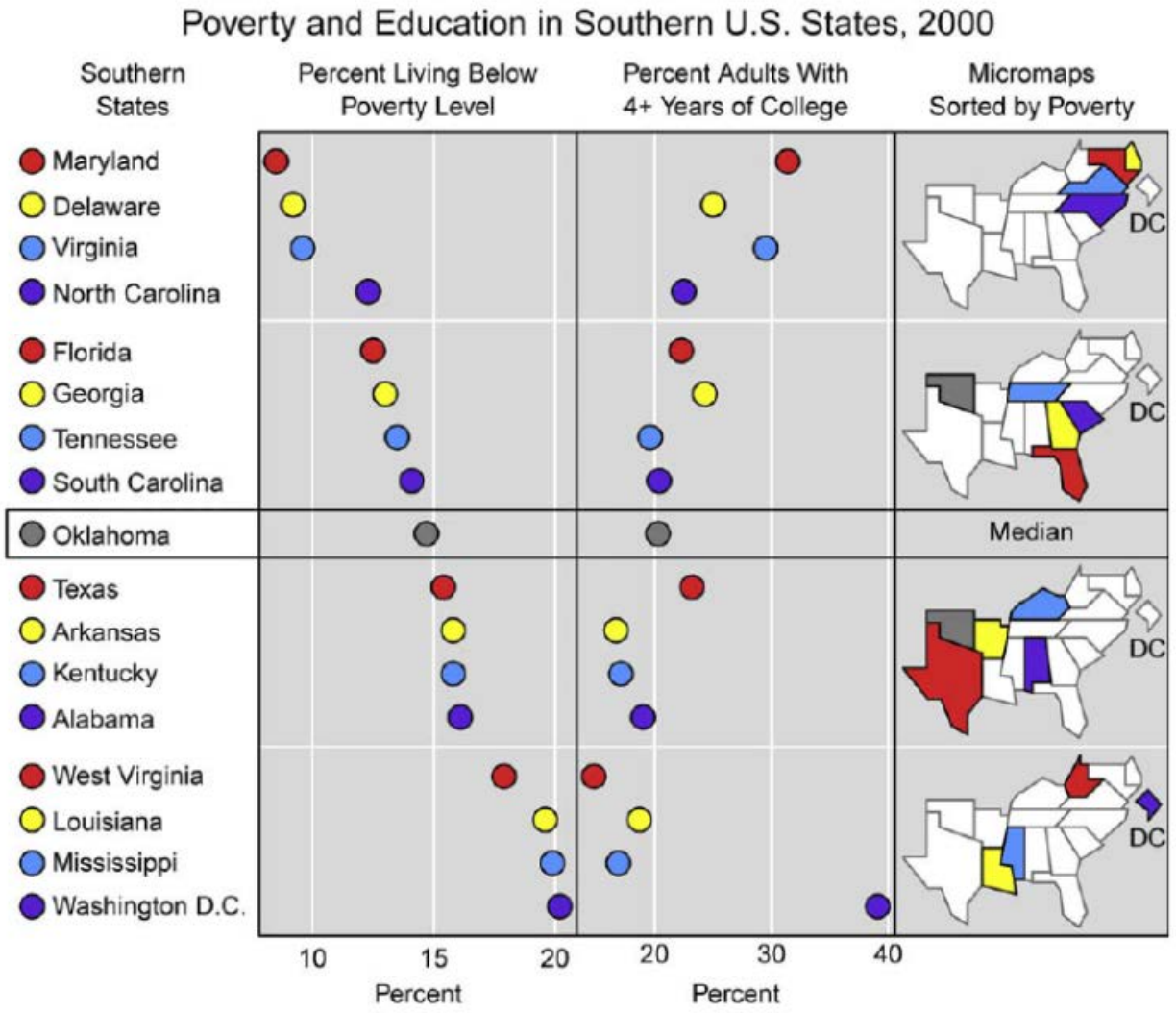
Course evaluation survey results



Story: comparing, correlations
Data: 2 quantitative, 2 categorical

22. Linked micromaps

Poverty and education level



levels of a category

levels of a category

quantitative

quantitative

23. Proportional symbol

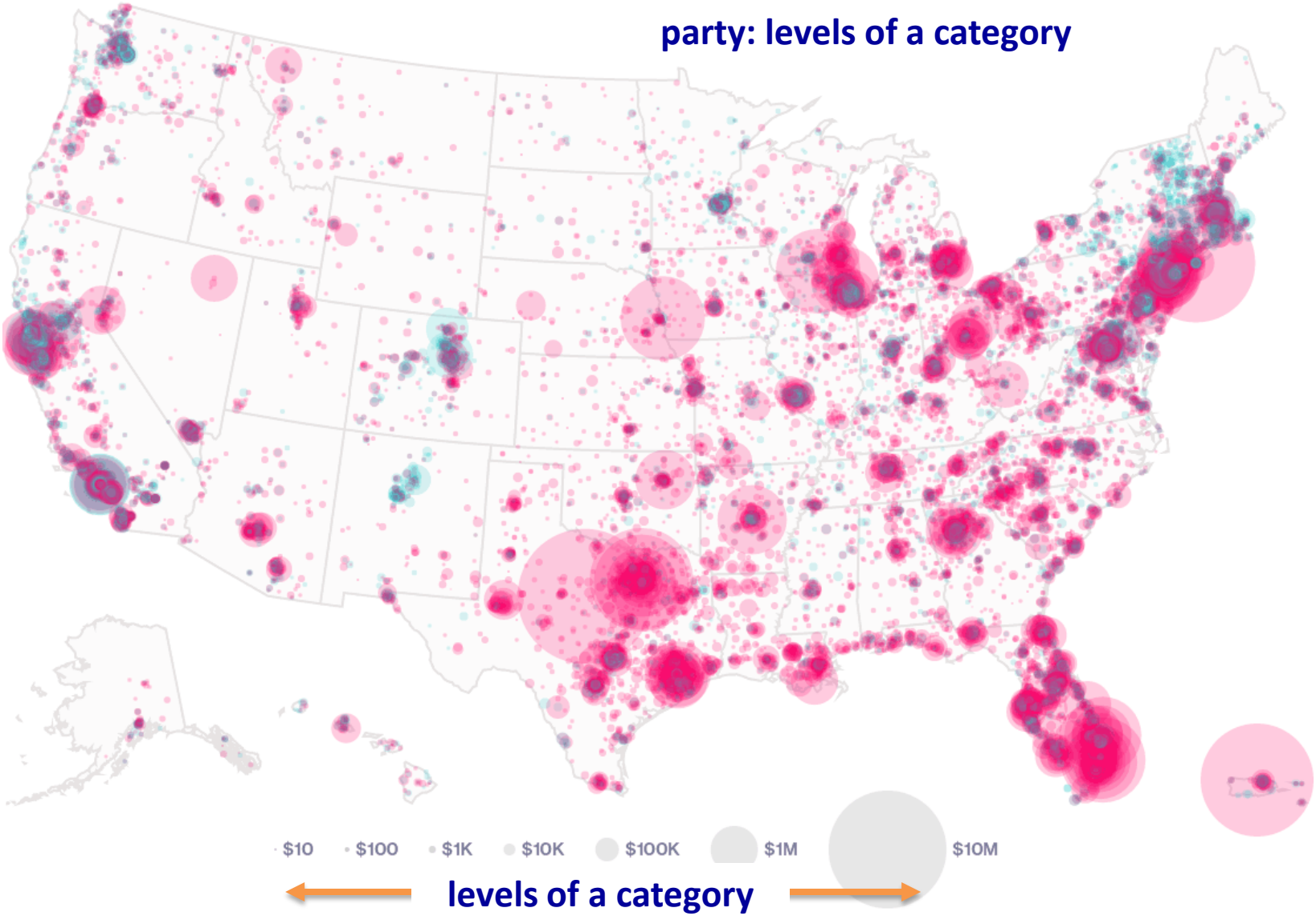
Presidential election fundraising

Story: spatial distribution, comparing data

Data: 3 categorical

ZIP code: levels of a category

party: levels of a category



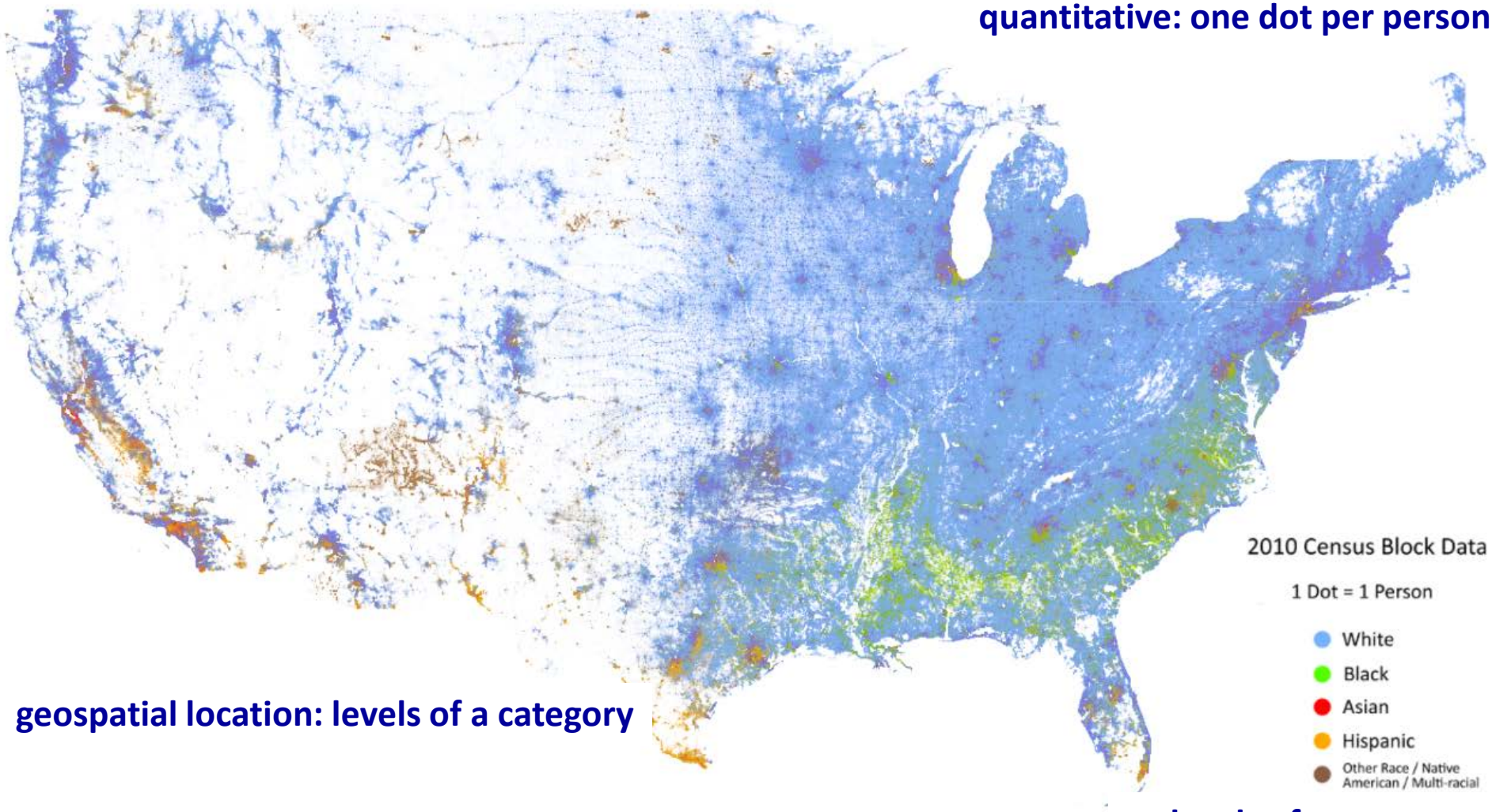
Story: spatial distribution, comparing data

Data: 1 quantitative, 2 categorical

24. Dot density

2010 Census population density

quantitative: one dot per person



geospatial location: levels of a category

levels of a category