

Stats 170A/B, Data Visualization, Part II

Chen Li¹ and Vladimir Minin²

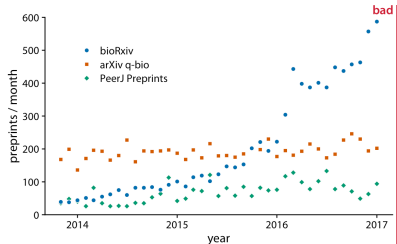
¹Department of Computer Science

²Department of Statistics

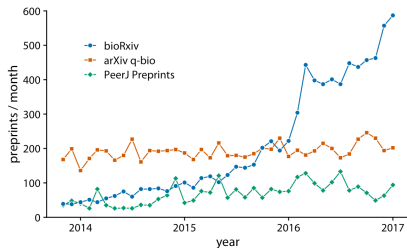
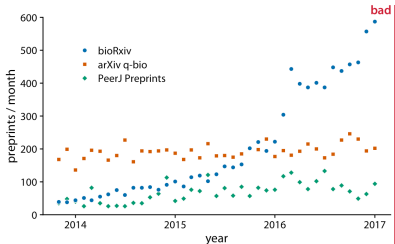
Bren School of Information and Computer Sciences
University of California, Irvine

February 5, 2020

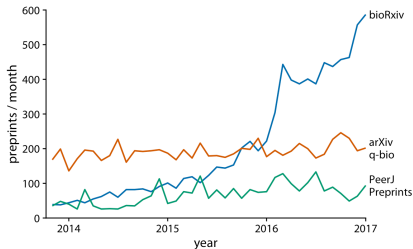
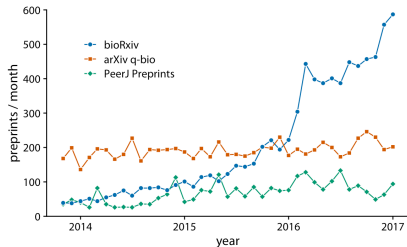
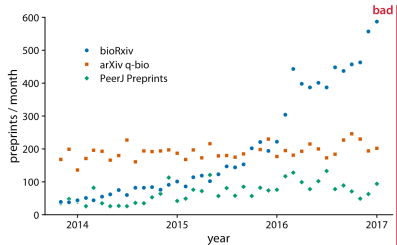
Visualizing time series — multivariate, the same y-axis



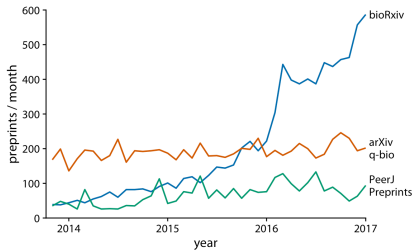
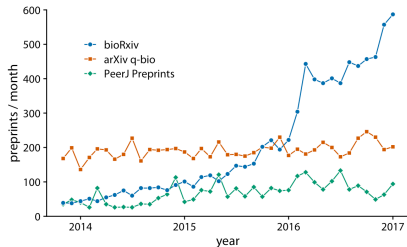
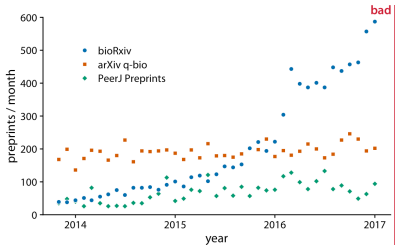
Visualizing time series — multivariate, the same y-axis



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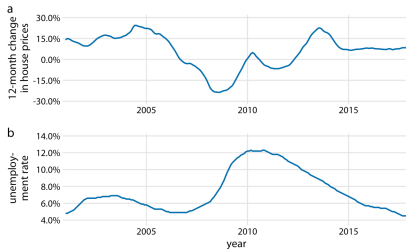
Visualizing time series — multivariate, the same y-axis



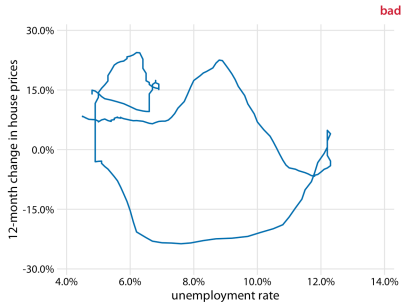
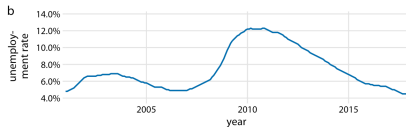
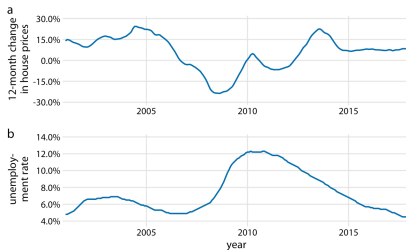
Consider replacing legends with direct labeling.

Make sure it is easy to compare objects of interest

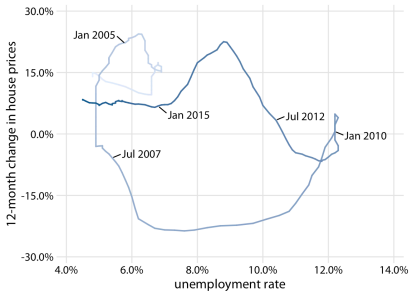
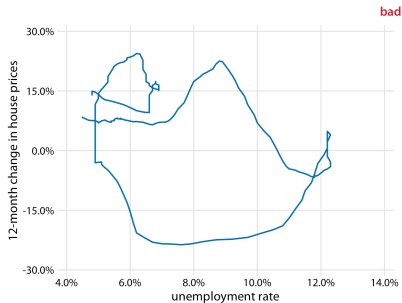
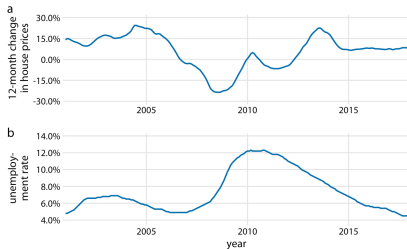
Visualizing time series — more than one y-axis



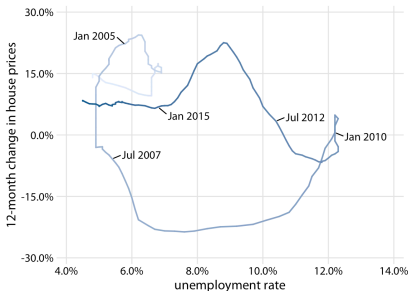
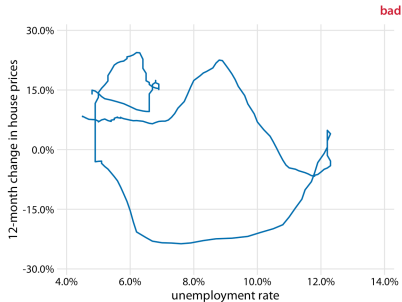
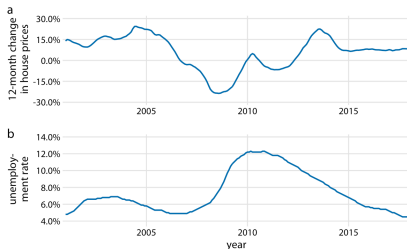
Visualizing time series — more than one y-axis



Visualizing time series — more than one y-axis



Visualizing time series — more than one y-axis

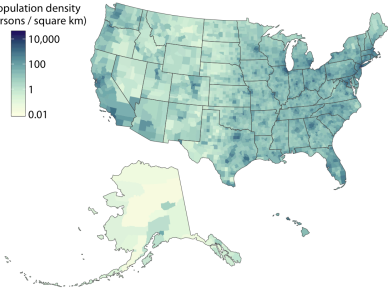


Connected scatter plots are great, but don't forget to indicate both the direction and the temporal scale of the data. .

When you have more than two y-axes, use dimension reduction techniques to map \mathbb{R}^n onto \mathbb{R}^2 .

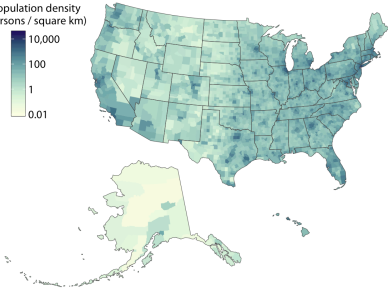
Visualizing geospatial data

population density
(persons / square km)

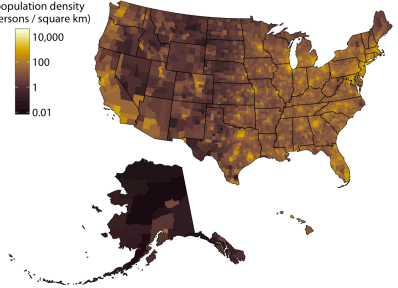


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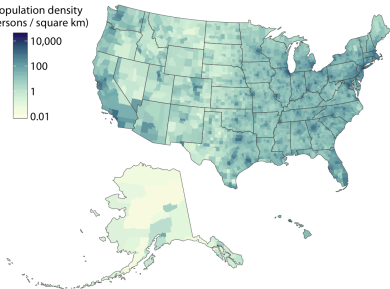


population density
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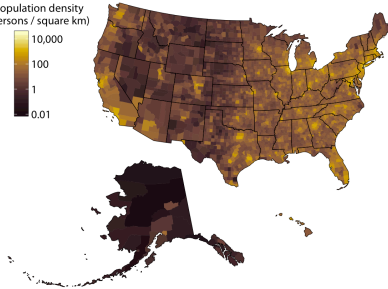


Visualizing geospatial data

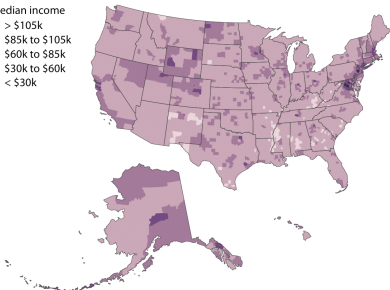
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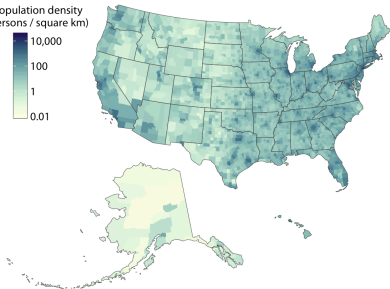


median income

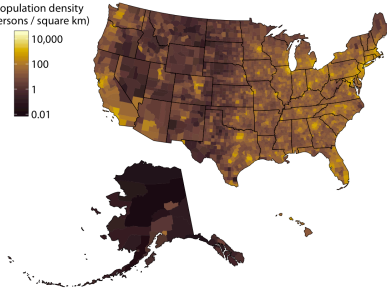


Visualizing geospatial data

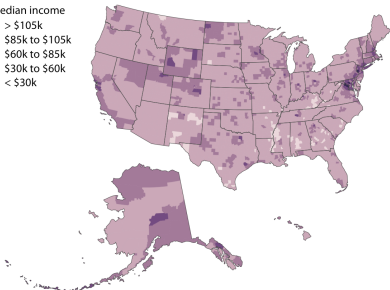
population density
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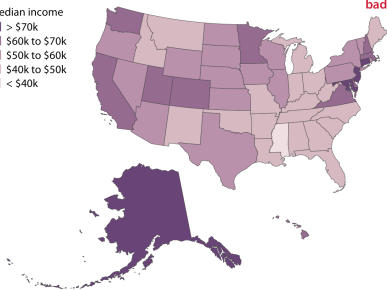
population density
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median income



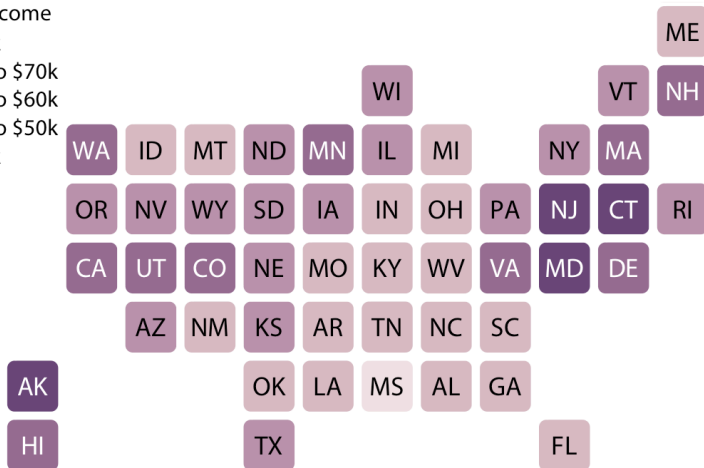
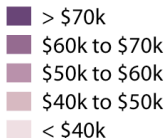
median income



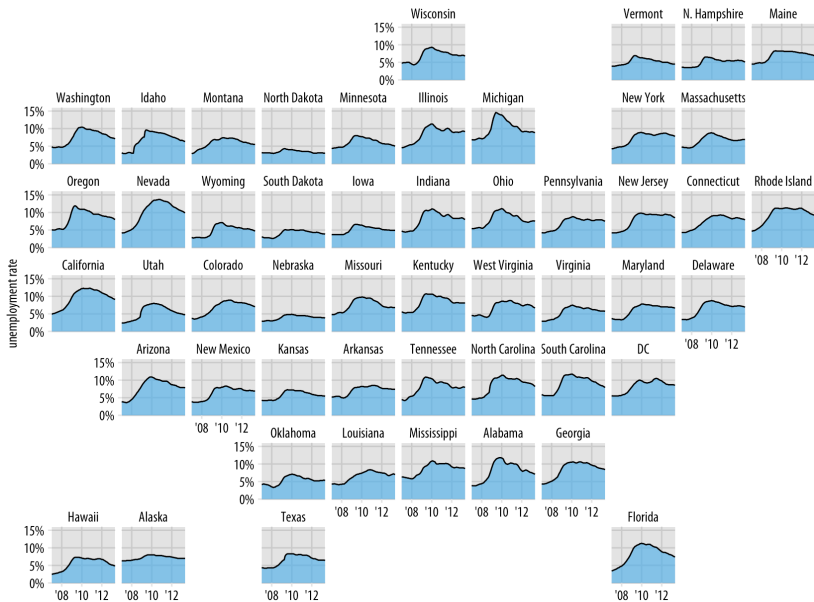
bad

Visualizing geospatial data without maps

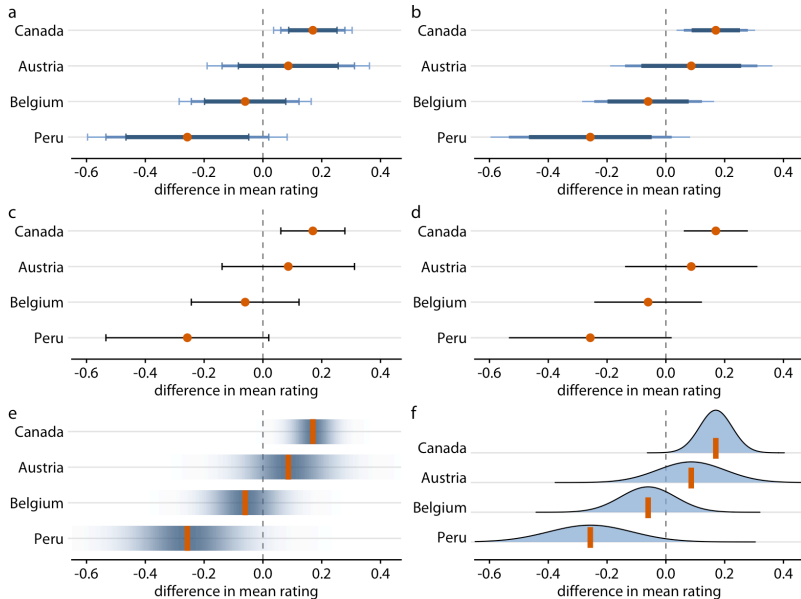
median income



Visualizing geospatial data without maps

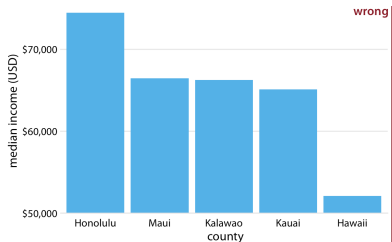


Visualizing the uncertainty of point estimates



The principle of proportional ink

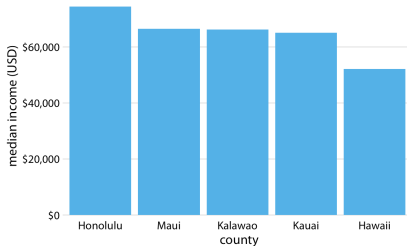
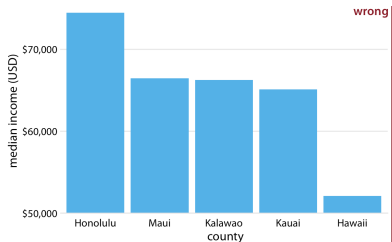
The principle of proportional ink: The sizes of shaded areas in a visualization need to be proportional to the data values they represent.



Bars on a linear scale must always start at 0.

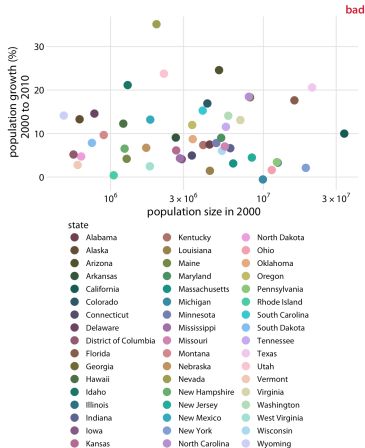
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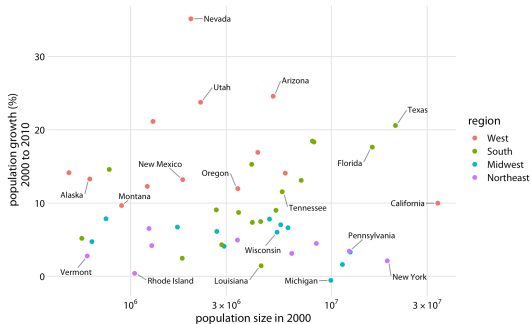
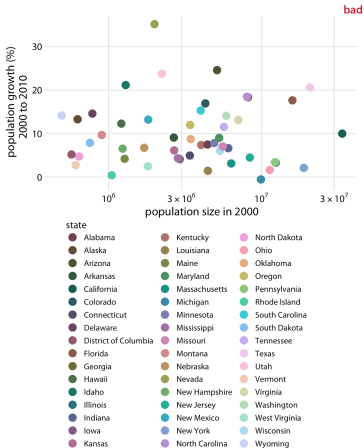


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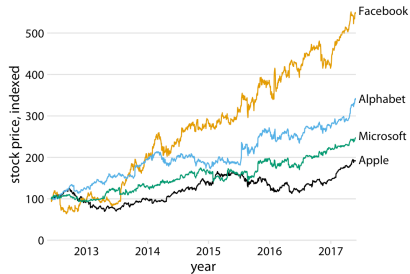
Common pitfalls of color use



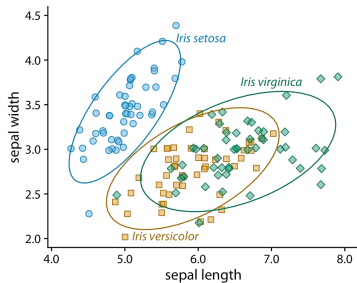
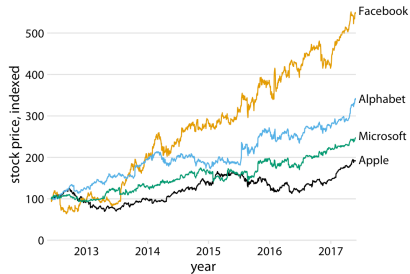
Common pitfalls of color use



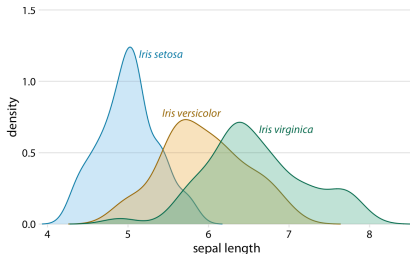
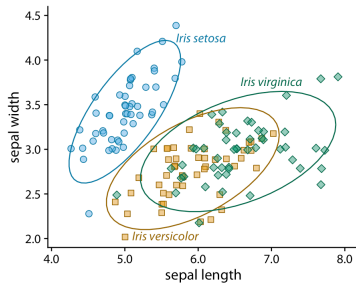
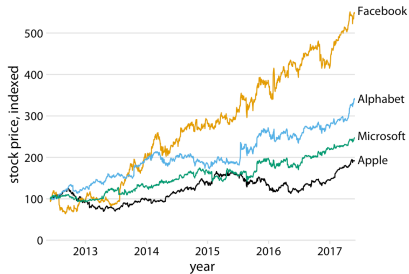
Figures without legends



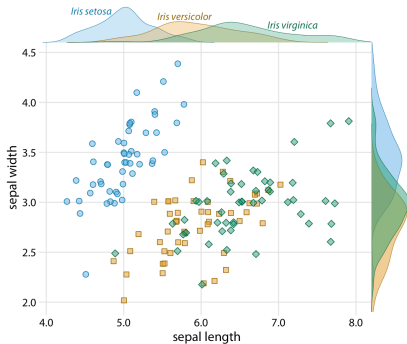
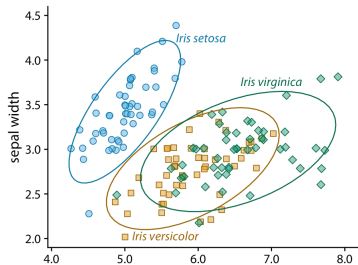
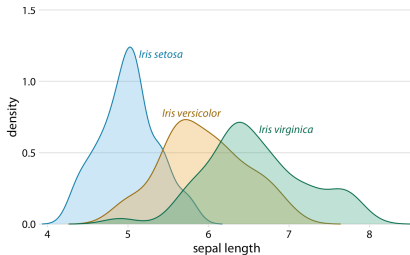
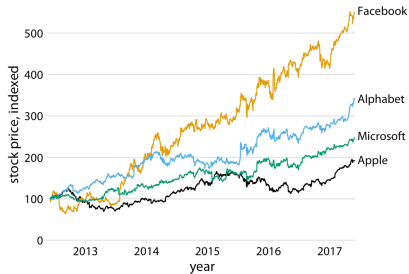
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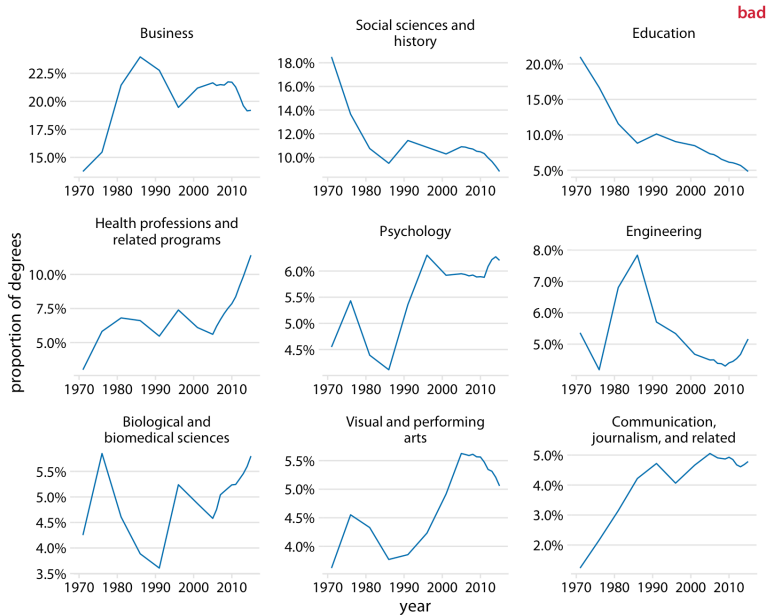
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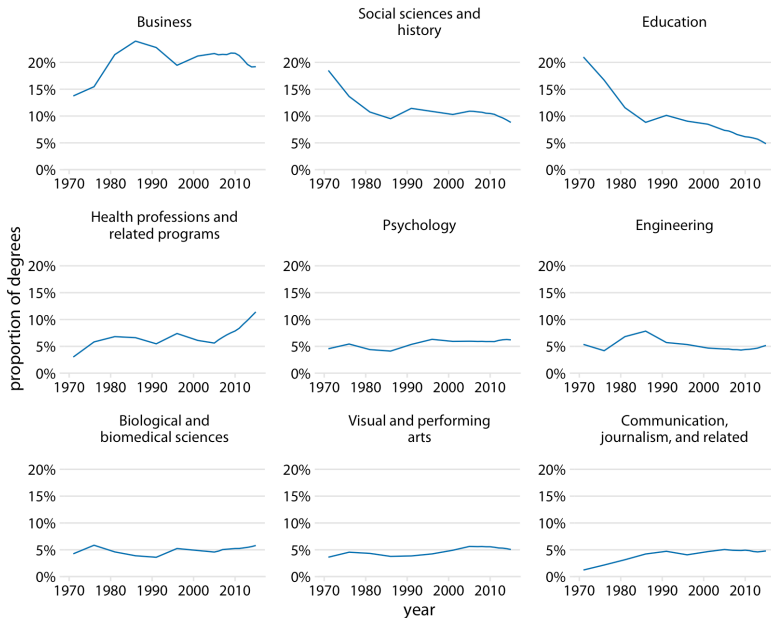
Figures without legends



Multi-panel figures



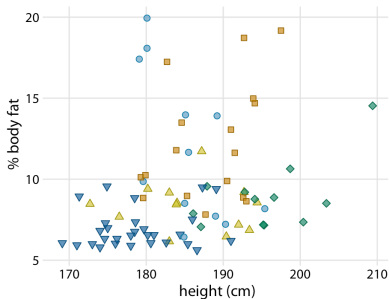
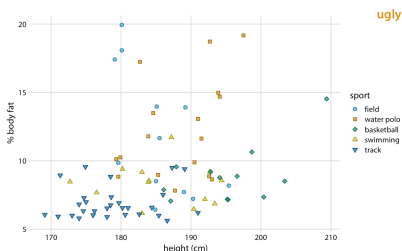
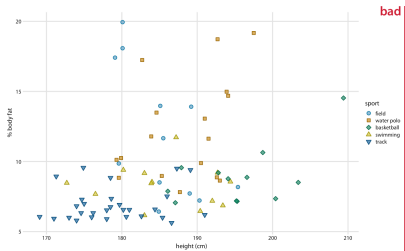
Multi-panel figures



Titles and captions

- ▶ Always label your axes!
- ▶ Captions of figures and tables should be self-explanatory.

Your axis labels are too small



Don't go 3D

