

# Effective use of color

Jonas Schöley

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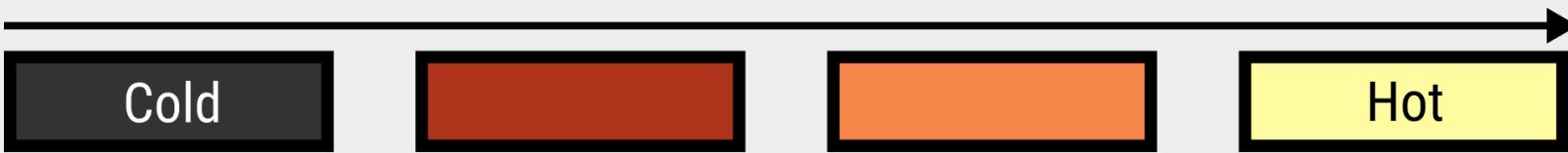


Max-Planck Odense Center on the  
Biodemography of Aging



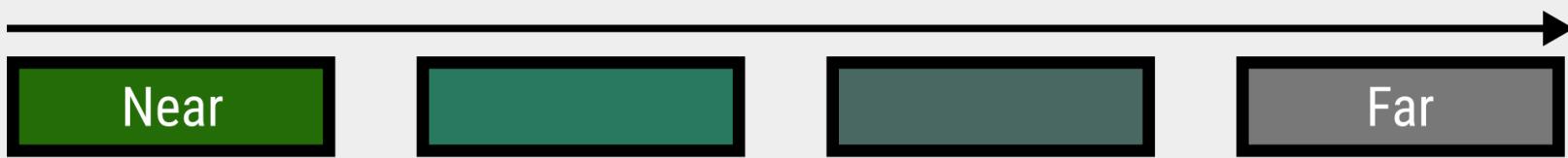
Department of Public Health  
University of Southern Denmark

# Color-coding magnitudes



Hawaii Volcano Observatory (2003). [http://hvo.wr.usgs.gov/multimedia/archive/2003/May/20030503-0021\\_DAS\\_large.jpg](http://hvo.wr.usgs.gov/multimedia/archive/2003/May/20030503-0021_DAS_large.jpg)

# Color-coding magnitudes



Milan Cernak (2011). "Pieniny from Magura".

# Color-coding categories

Operations

Captain

Sciences

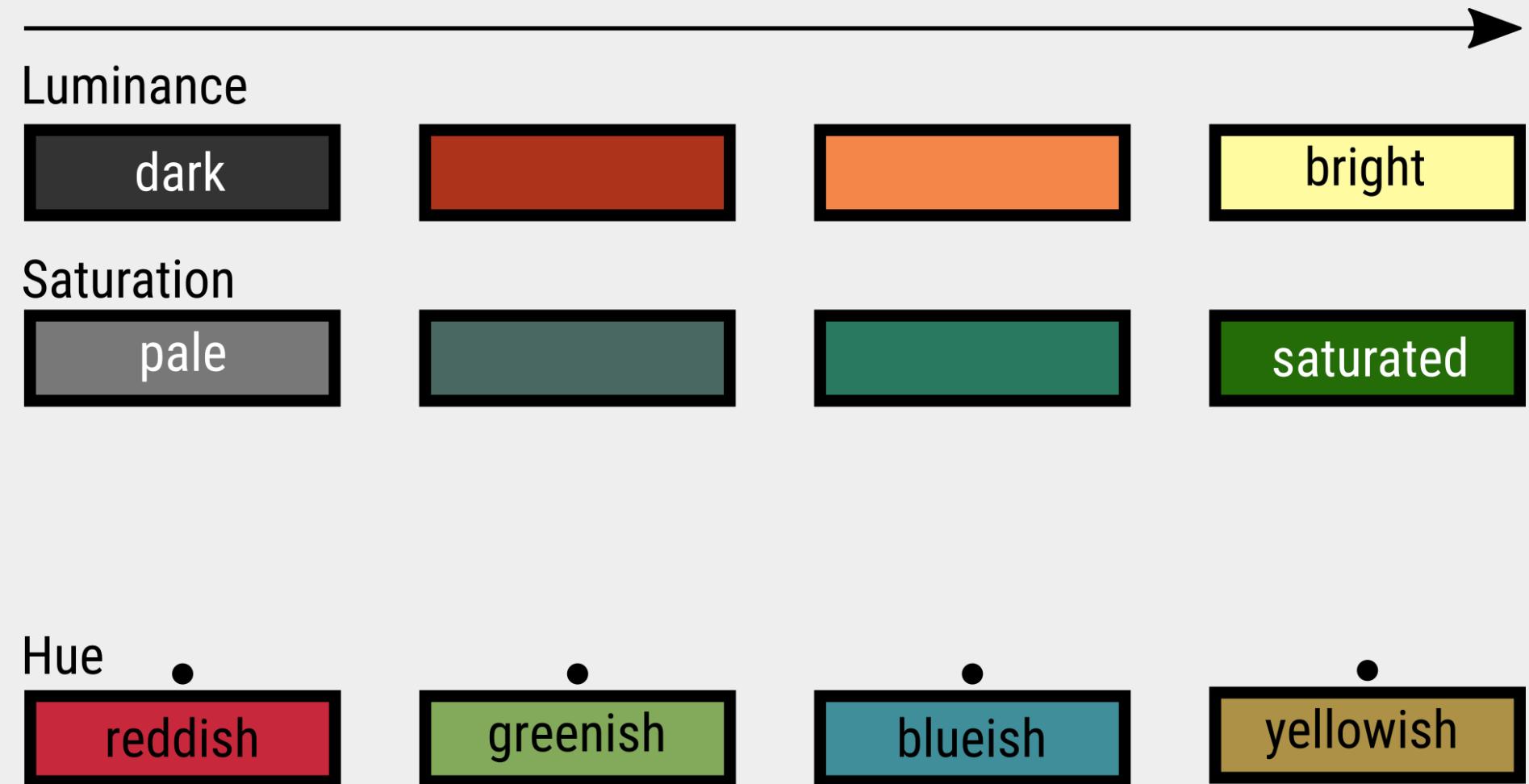
Command



CBS Television.

# Perceptual color dimensions

5



# Matching color- and data dimensions

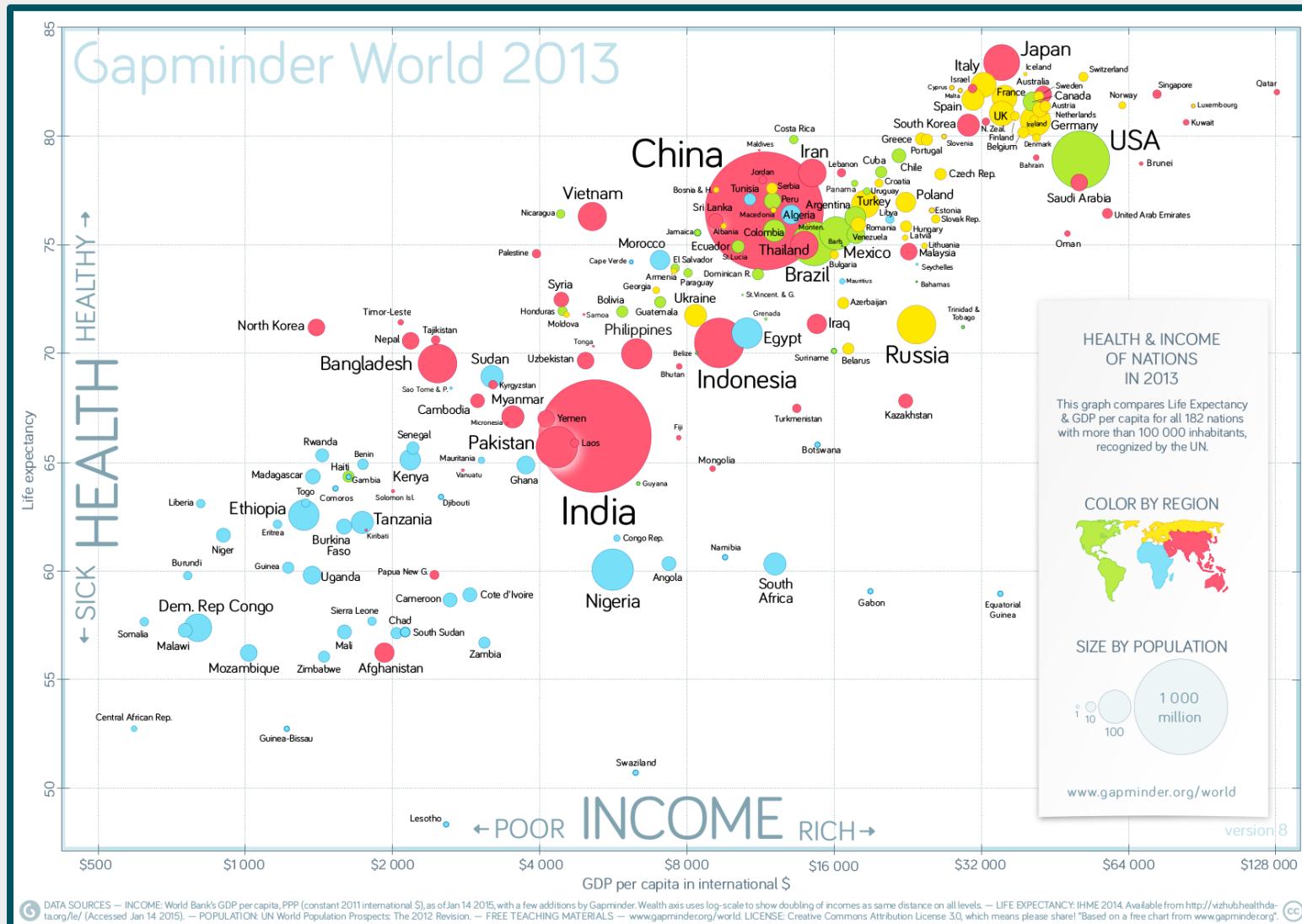
Magnitudes (ordered)



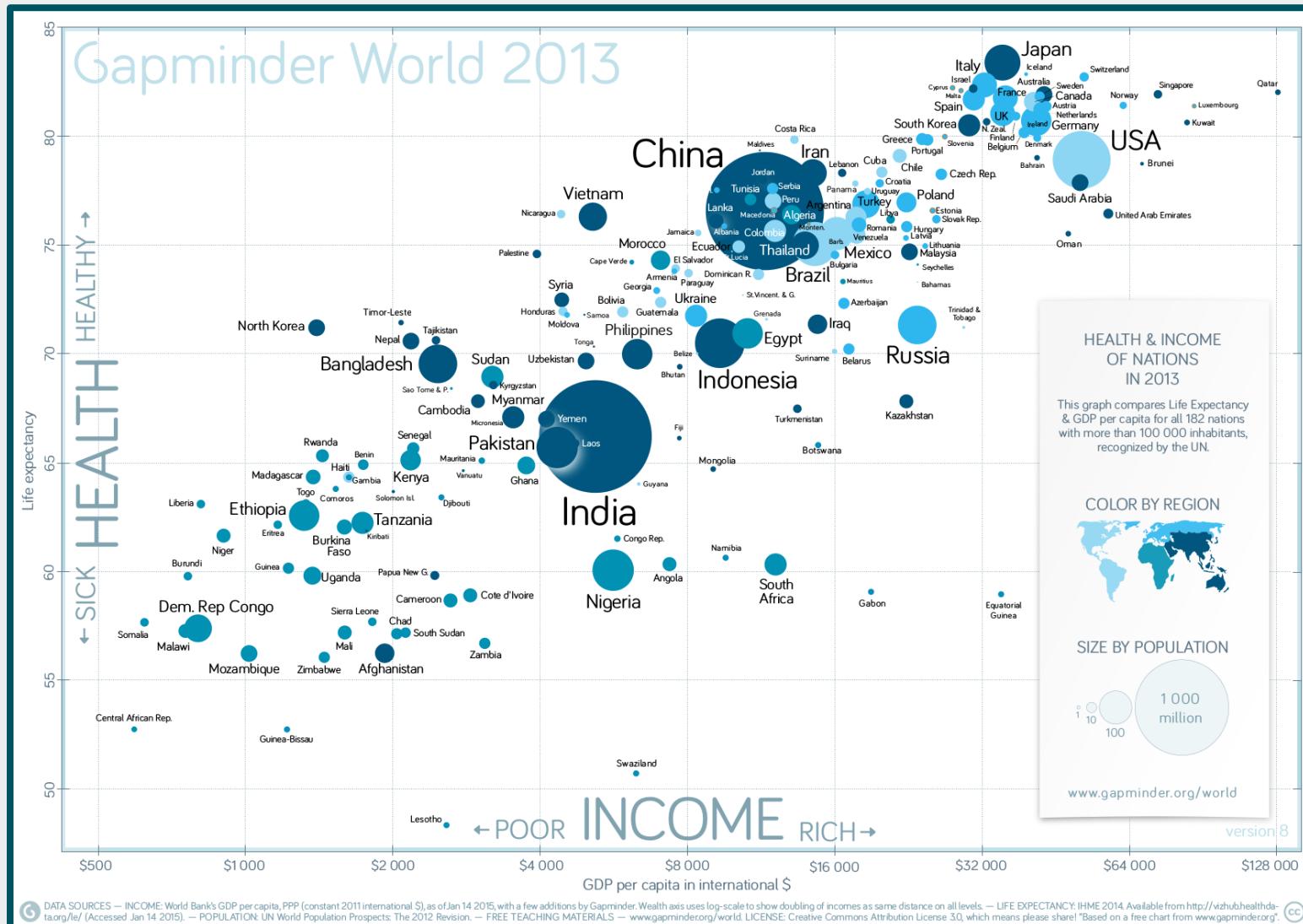
Categories (unordered)



# Color-coding categories

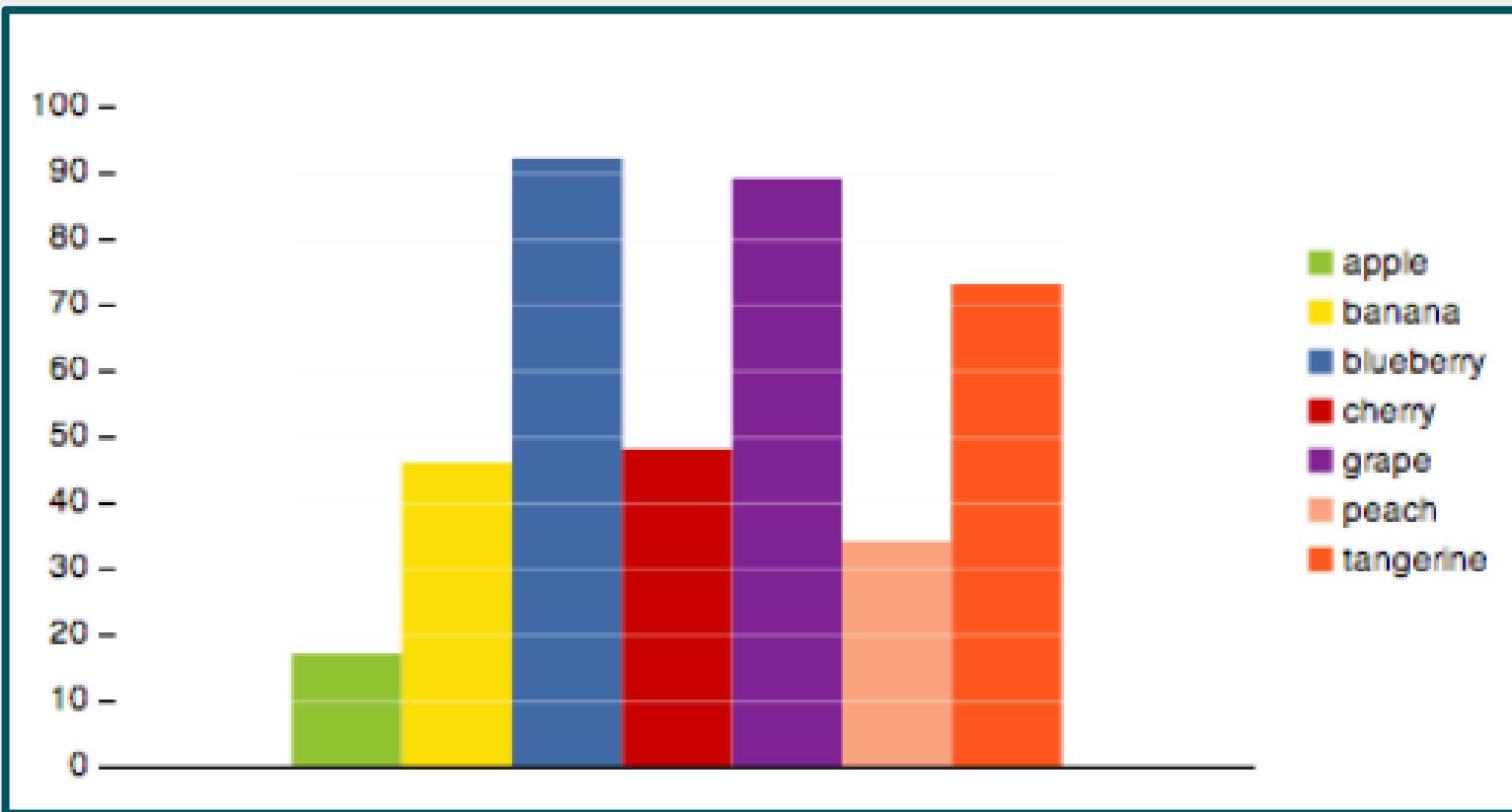


# Ineffective color-coding



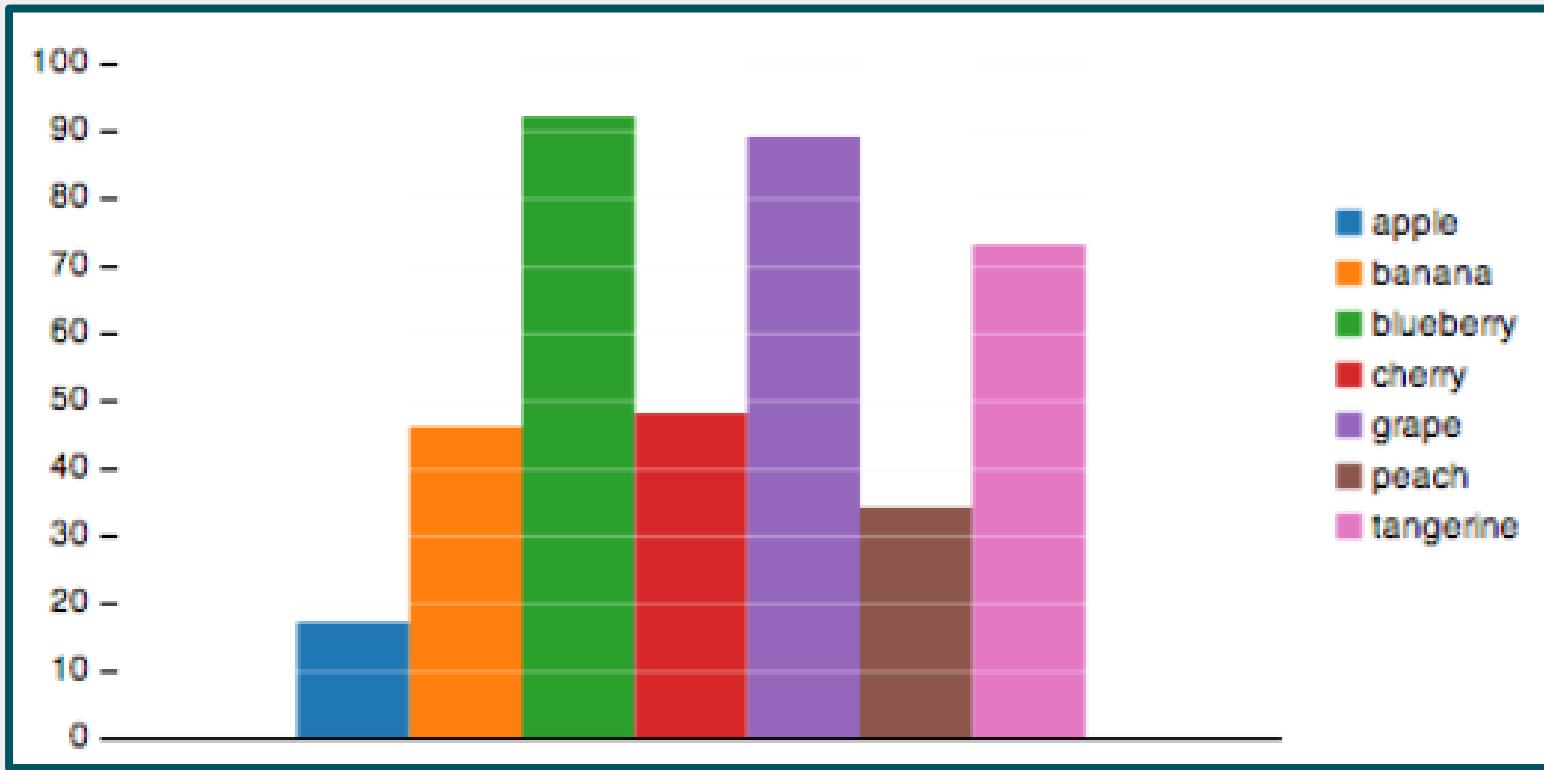
Redrawn from Gapminder World (2014).

# Semantically resonant colors



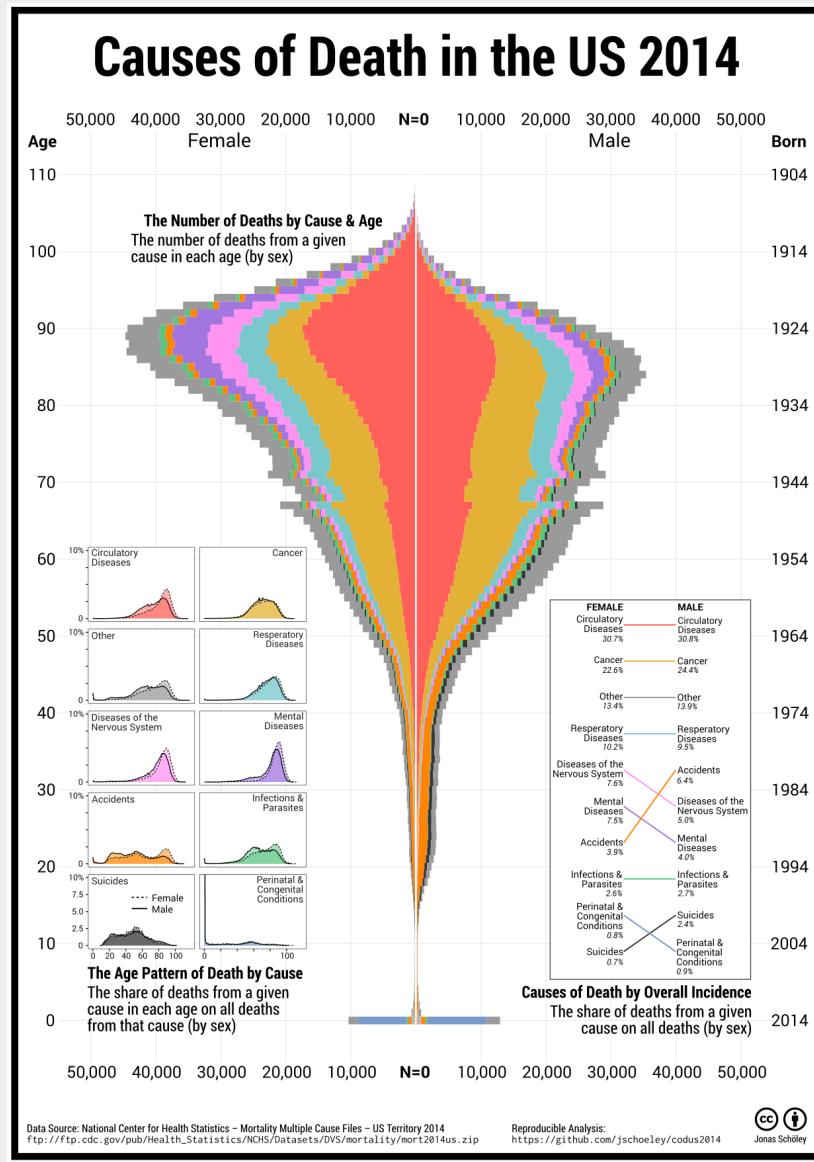
Sharon Lin et al. (2013). "Selecting Semantically-Resonant Colors for Data Visualization". In: Computer Graphics Forum 32.3, pp. 401–410.

# Semantically resonant colors



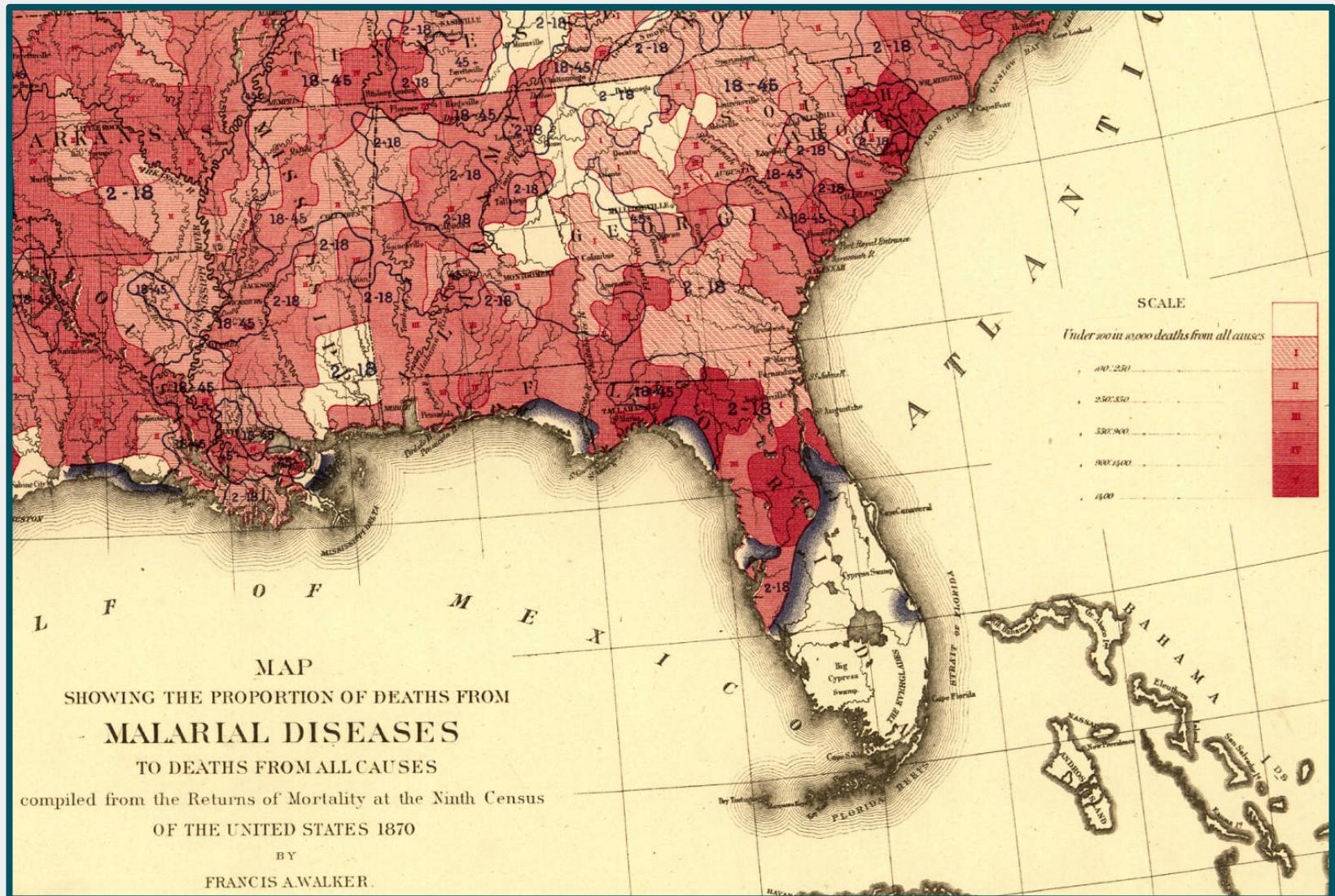
Sharon Lin et al. (2013).

# How would you color death?



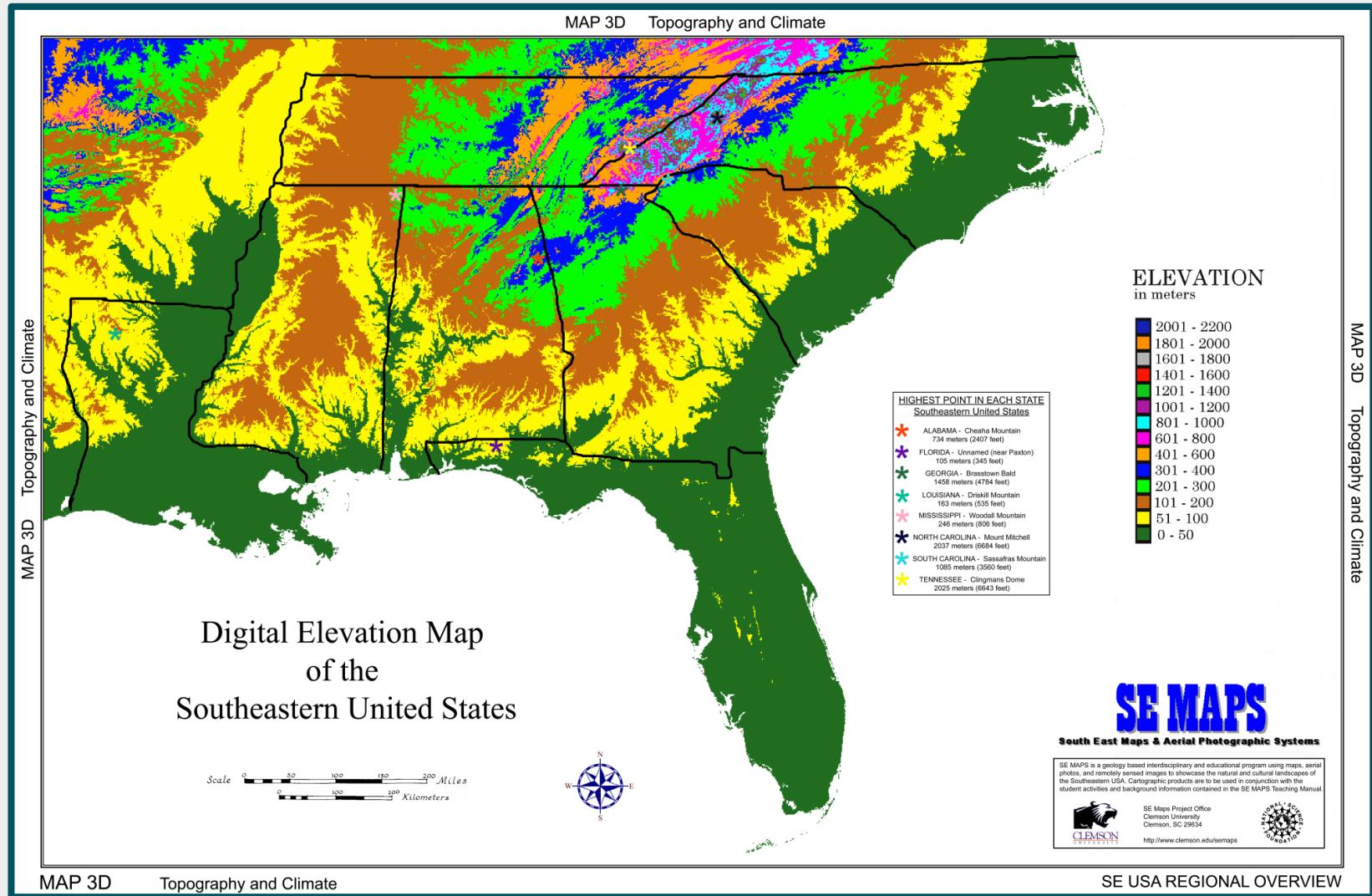
Jonas Schöley (2016).  
[github.com/jschoeley/codus2014](https://github.com/jschoeley/codus2014)

# Color-coding magnitudes



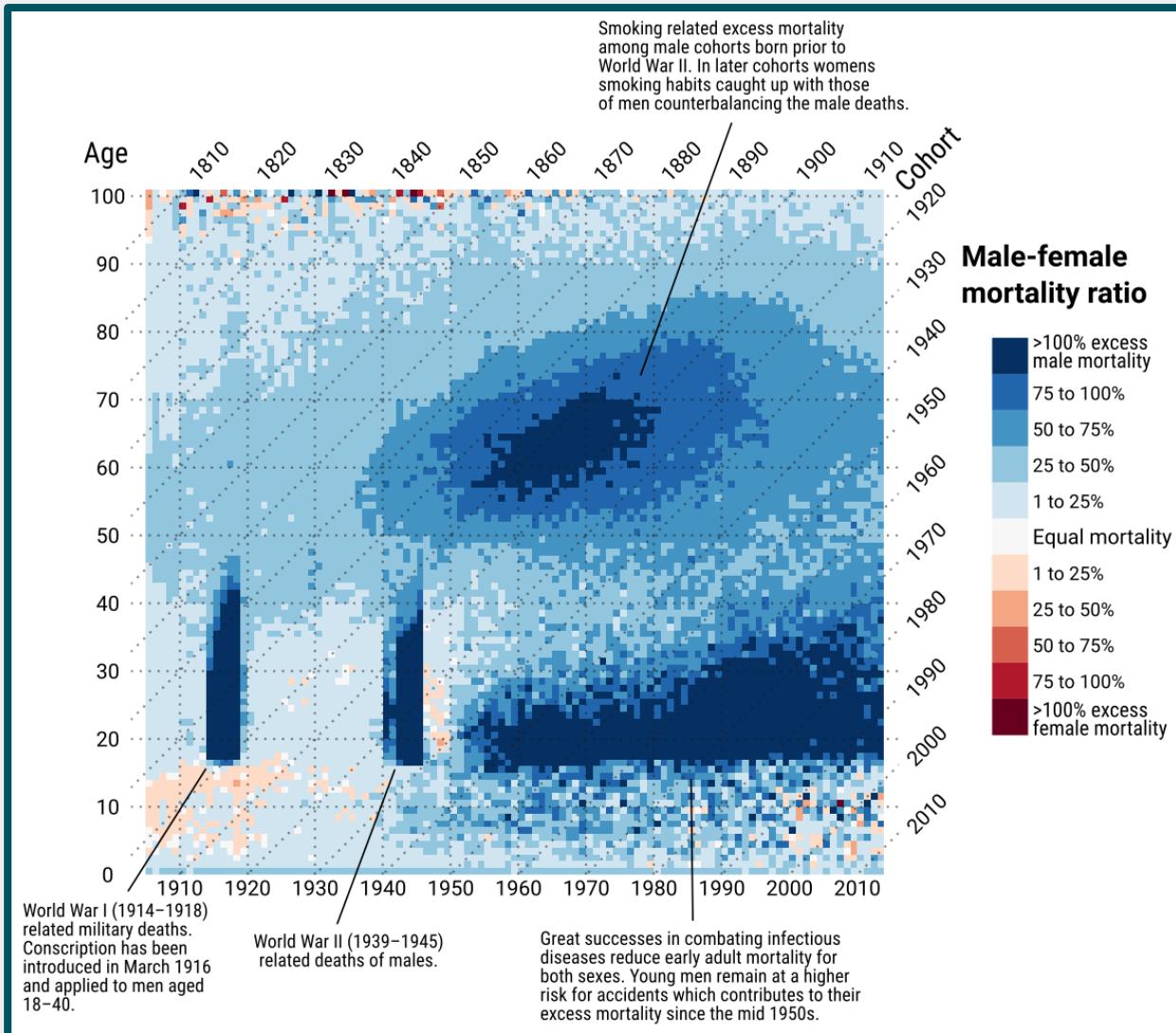
Cutout from Francis Walker (1874). "Statistical Atlas of the United States". <https://www.loc.gov/item/05019329/>

# Ineffective color-coding



South East Maps & Aerial Photographic Systems. <http://www.clemson.edu/ces/geolk12/semaps/seregional/hires/digielmap.jpg>

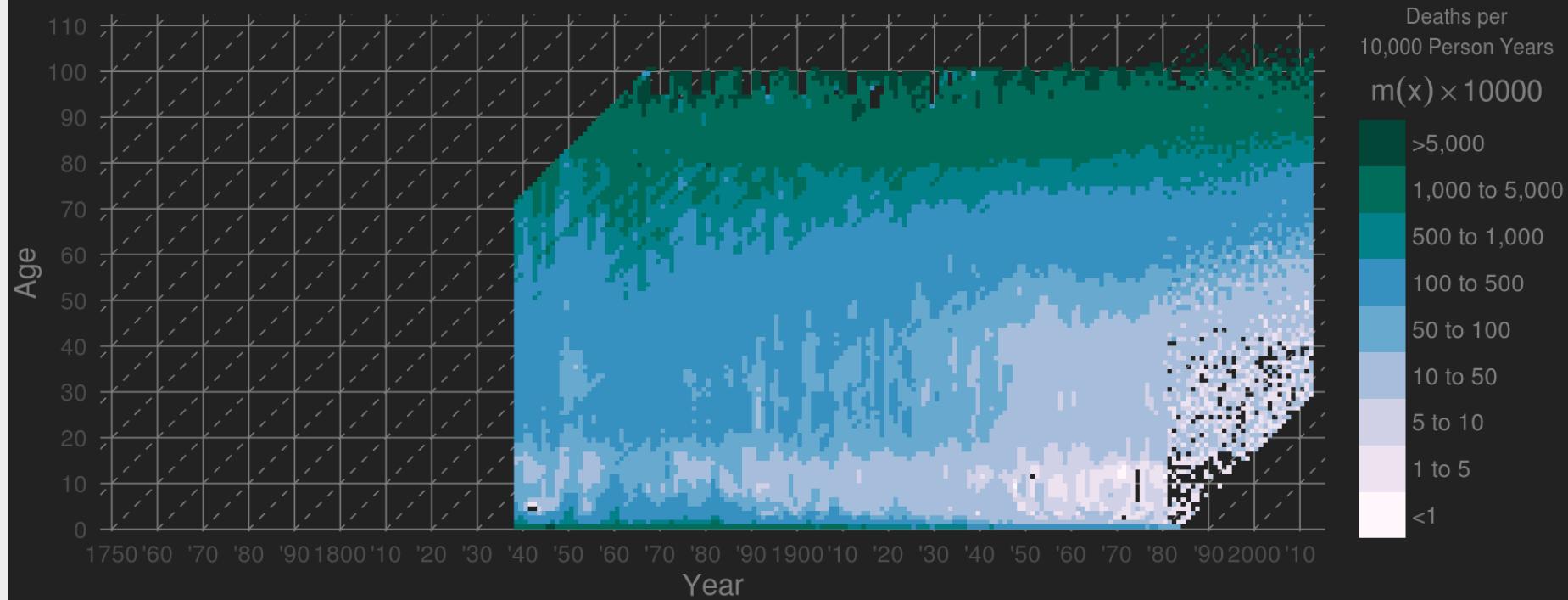
# Color-coding divergent magnitudes



Jonas Schöley & Frans Willekens (2016). "Visualizing compositional data on the Lexis surface." Data: HMD.

# Discrete color scales

## Mortality Rates of Iceland Cohort 1838 to 2012, Male



Jonas Schöley (2016). "The Human Mortality Explorer". [jschoeley.shinyapps.io/hmdexp](http://jschoeley.shinyapps.io/hmdexp)

# Continuous color scales



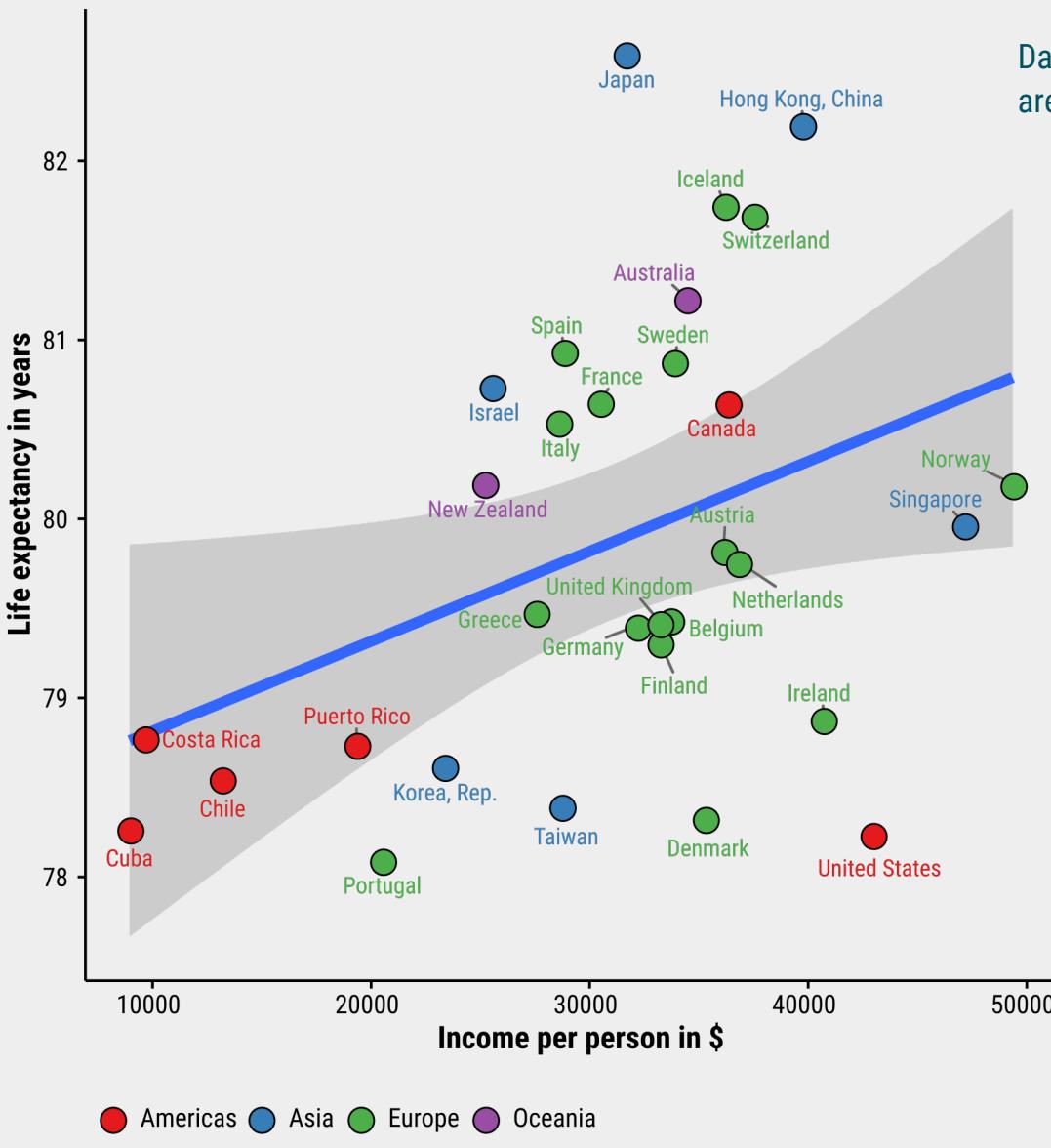
Jonas Schöley (2016). "The Human Mortality Explorer". [jschoeley.shinyapps.io/hmdexp](http://jschoeley.shinyapps.io/hmdexp)

# Separating foreground & background



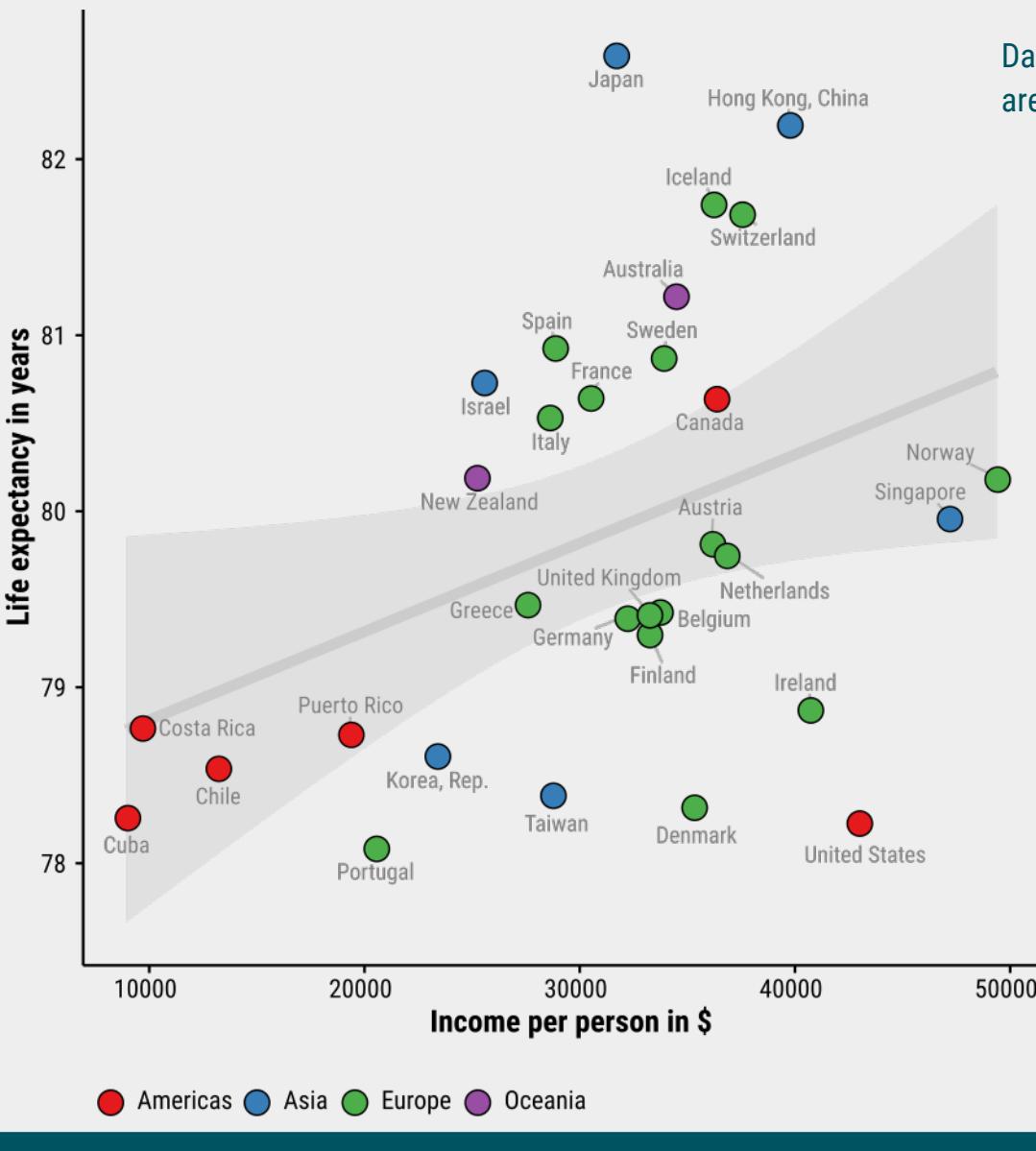
Pablo Picasso (1905). "Au Lapin Agile".

# Separating foreground & background



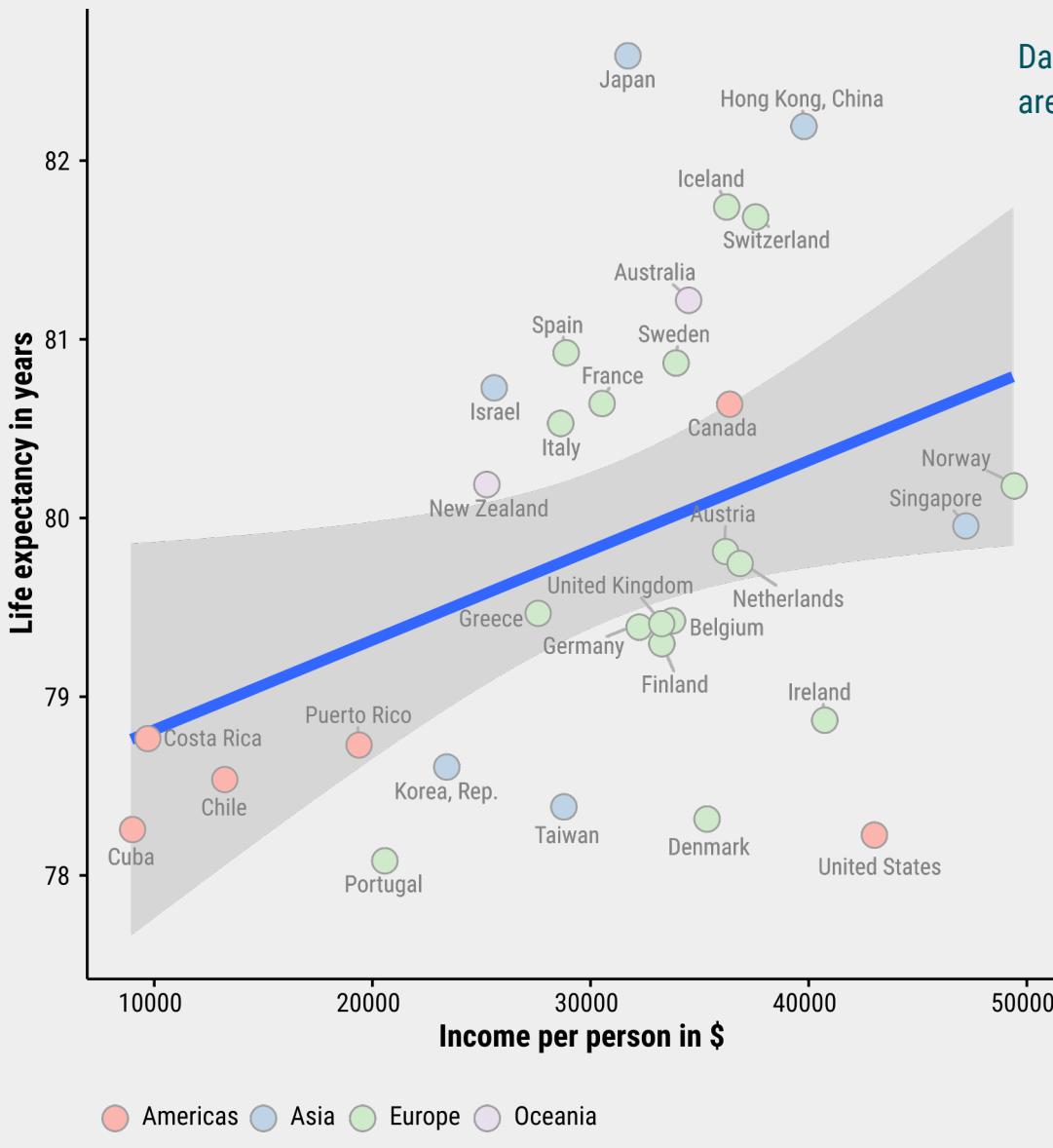
Data: gapminder.org – displayed are data for the year 2007.

# Separating foreground & background



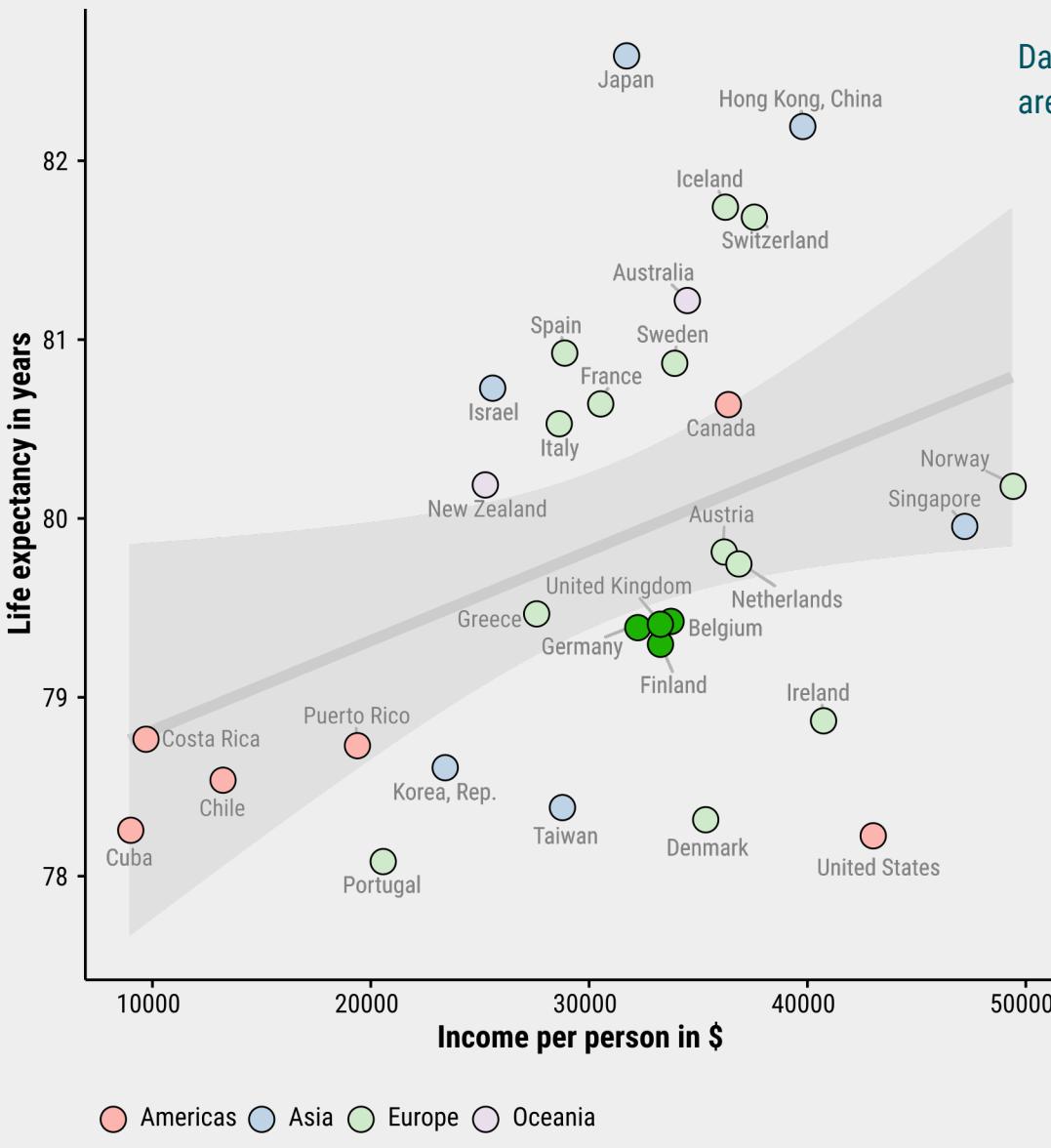
Data: gapminder.org – displayed are data for the year 2007.

# Separating foreground & background



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Data: gapminder.org – displayed are data for the year 2007.

# Further reading

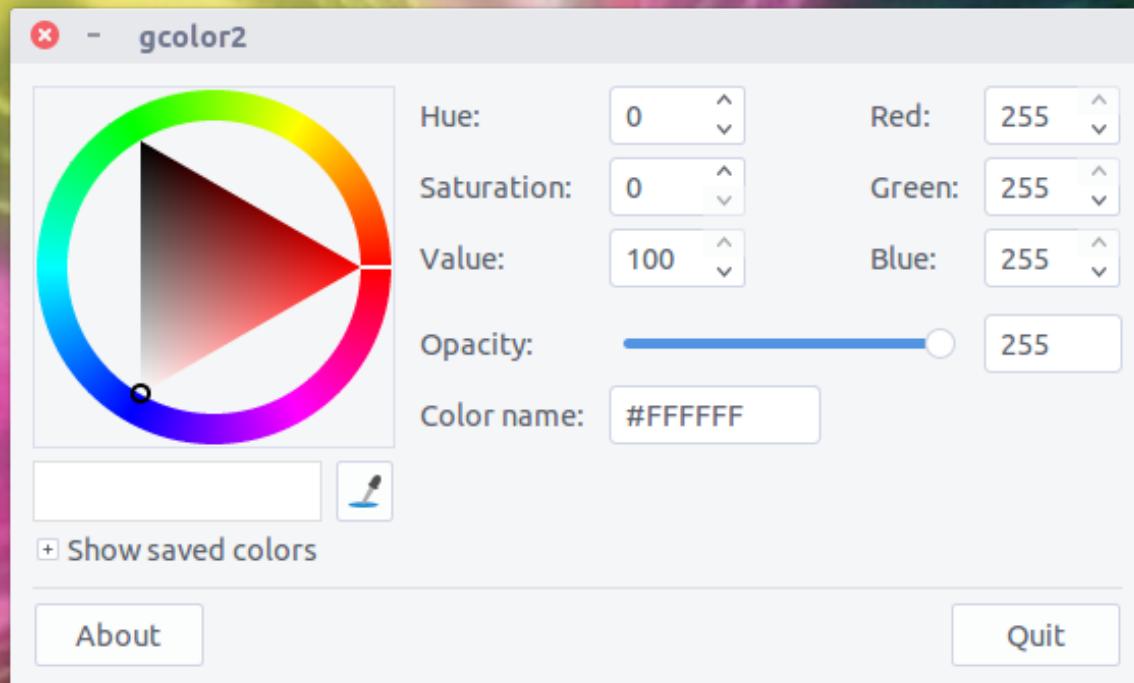
**Brilliant color advice from NASA**

[earthobservatory.nasa.gov/blogs/elegantfigures/2013/08/05/subtleties-of-color-part-1-of-6](http://earthobservatory.nasa.gov/blogs/elegantfigures/2013/08/05/subtleties-of-color-part-1-of-6)

**Seminal paper on construction of qualitative, sequential, divergent color scales** Brewer, Cynthia A. 1994. "Guidelines for Use of the Perceptual Dimensions of Color for Mapping and Visualization." In SPIE, edited by Jan Bares, 2171:54–63. doi:10.1117/12.175328.

**Color scales for data-viz** [colorbrewer2.org](http://colorbrewer2.org)

# You take control!



**Slides available at**  
[github.com/jschoeley/2016-edsd-viz](https://github.com/jschoeley/2016-edsd-viz)

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