DATA VISUALIZATION

PRINCIPLES OF ANALYTICAL DESIGN

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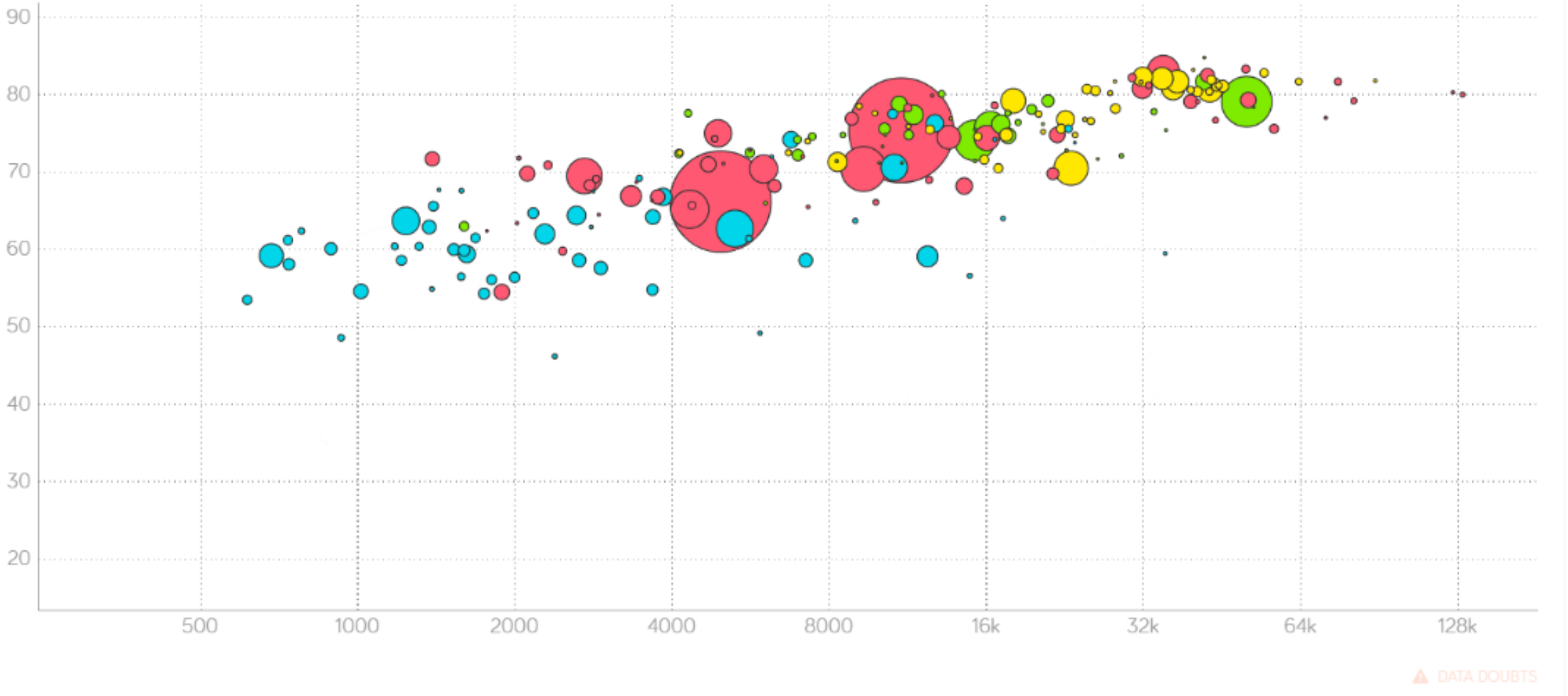
Reasoning and **communicating** our thoughts are intertwined with our lives in a causal and dynamic multivariate Universe.

Symmetry to visual displays of evidence: consumers should be seeking exactly what producers should be providing, namely:

- meaningful comparisons
- potential causal networks and underlying structure
- multivariate links
- integrated and relevant data
- honest documentation
- primary focus on content

[E. Tufte, Beautiful Evidence]

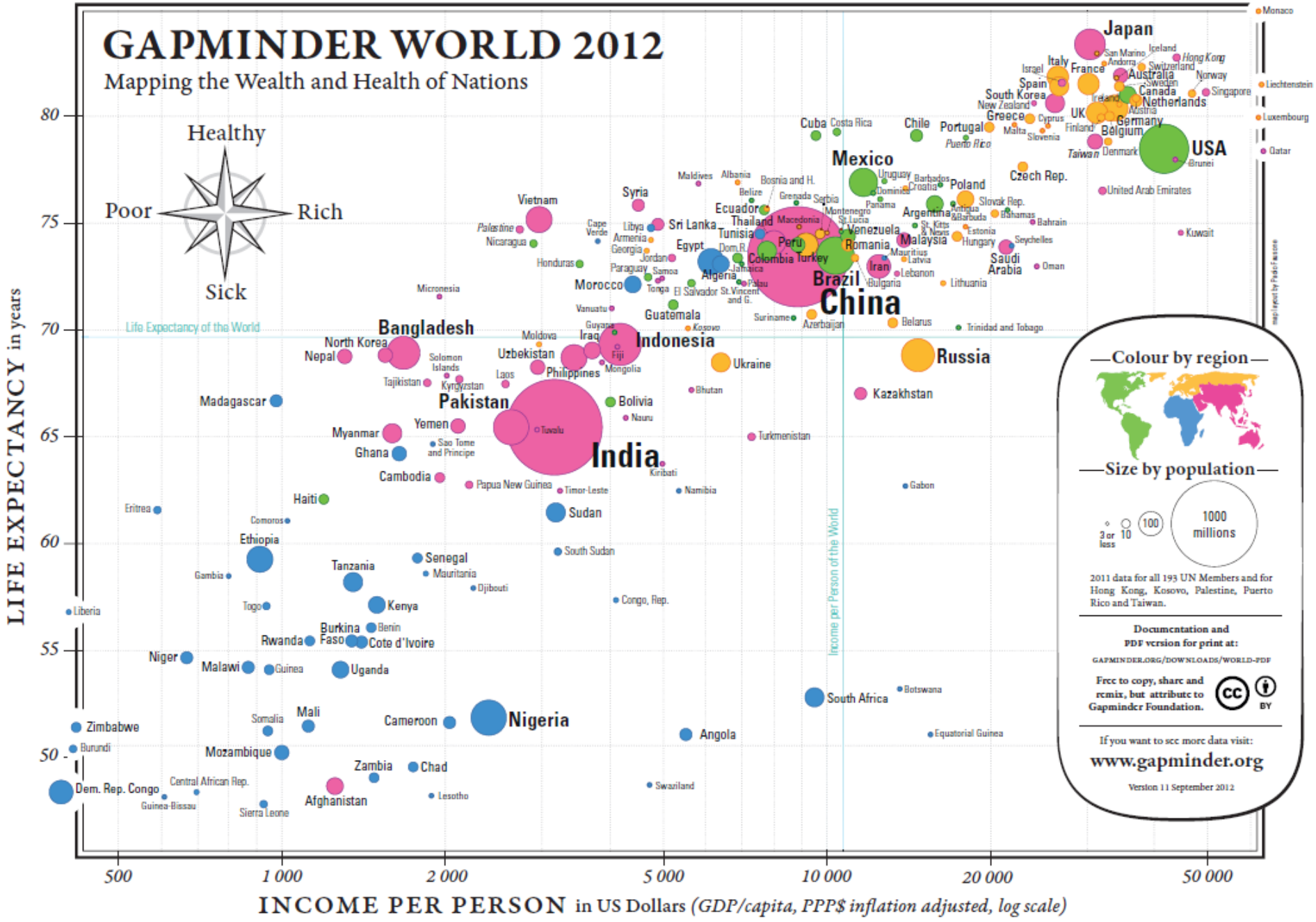
[Gapminder Foundation]



Non-Integrated Data

data-action-lab.com

[Gapminder Foundation, https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen]



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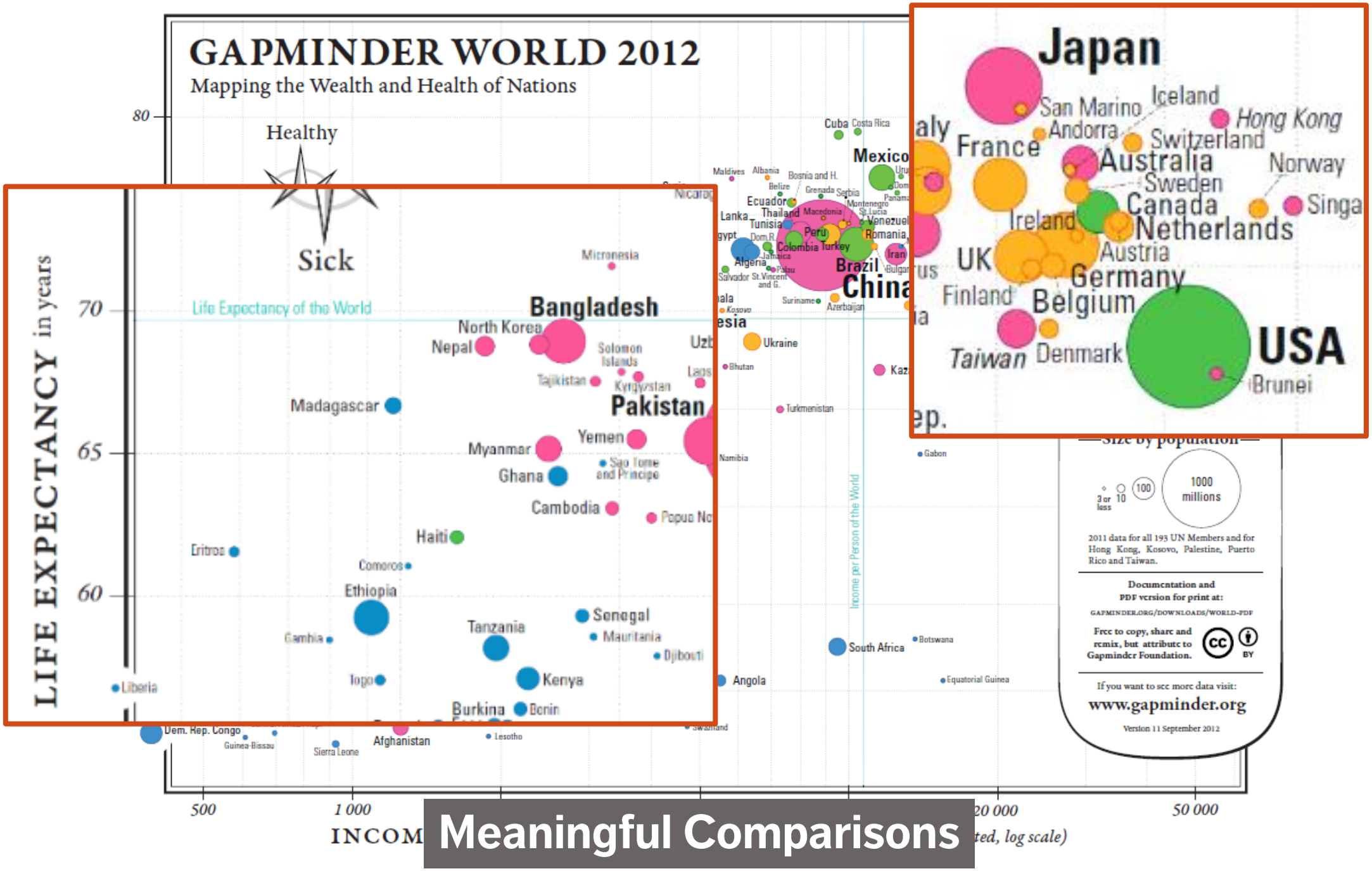
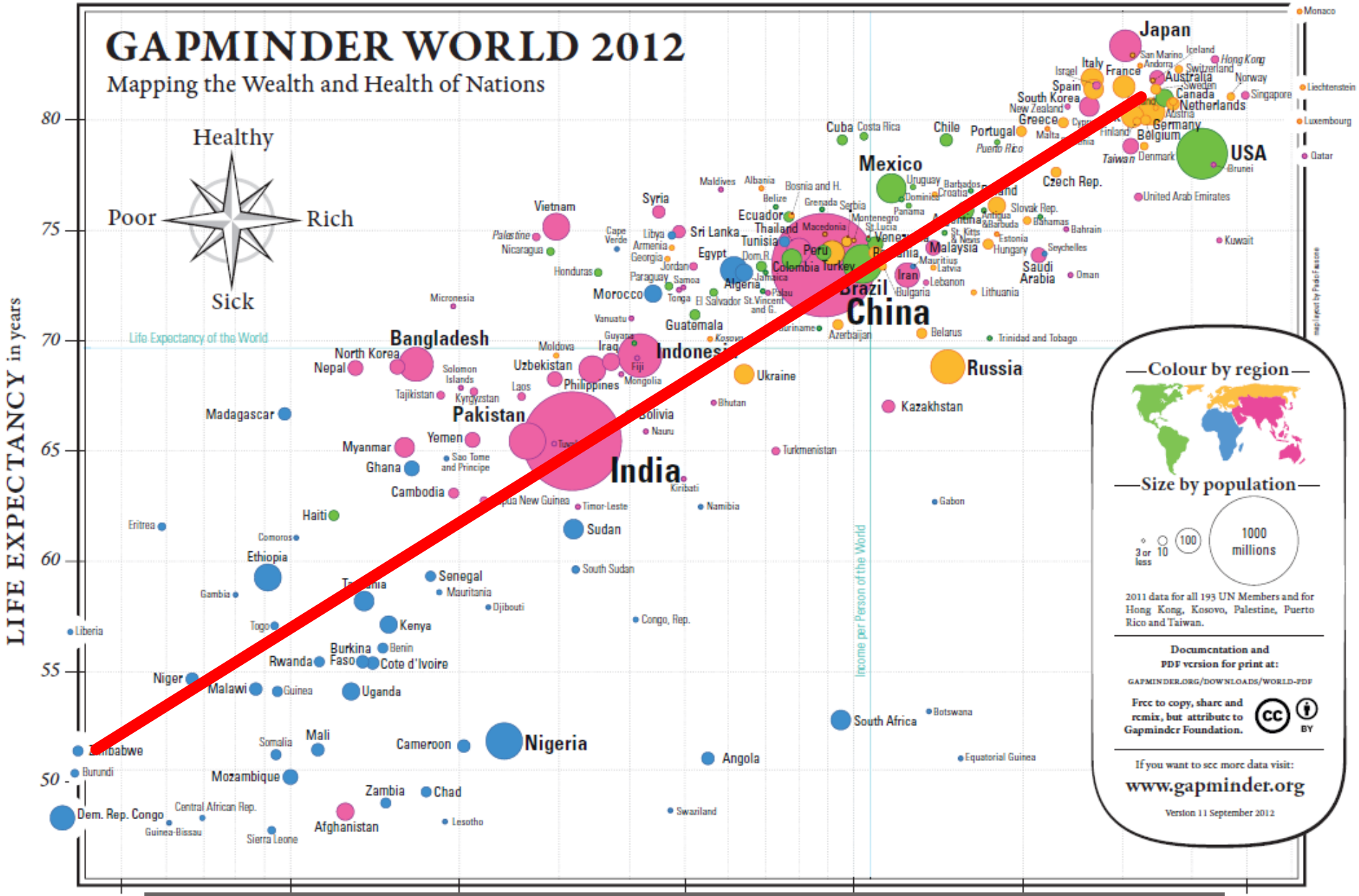


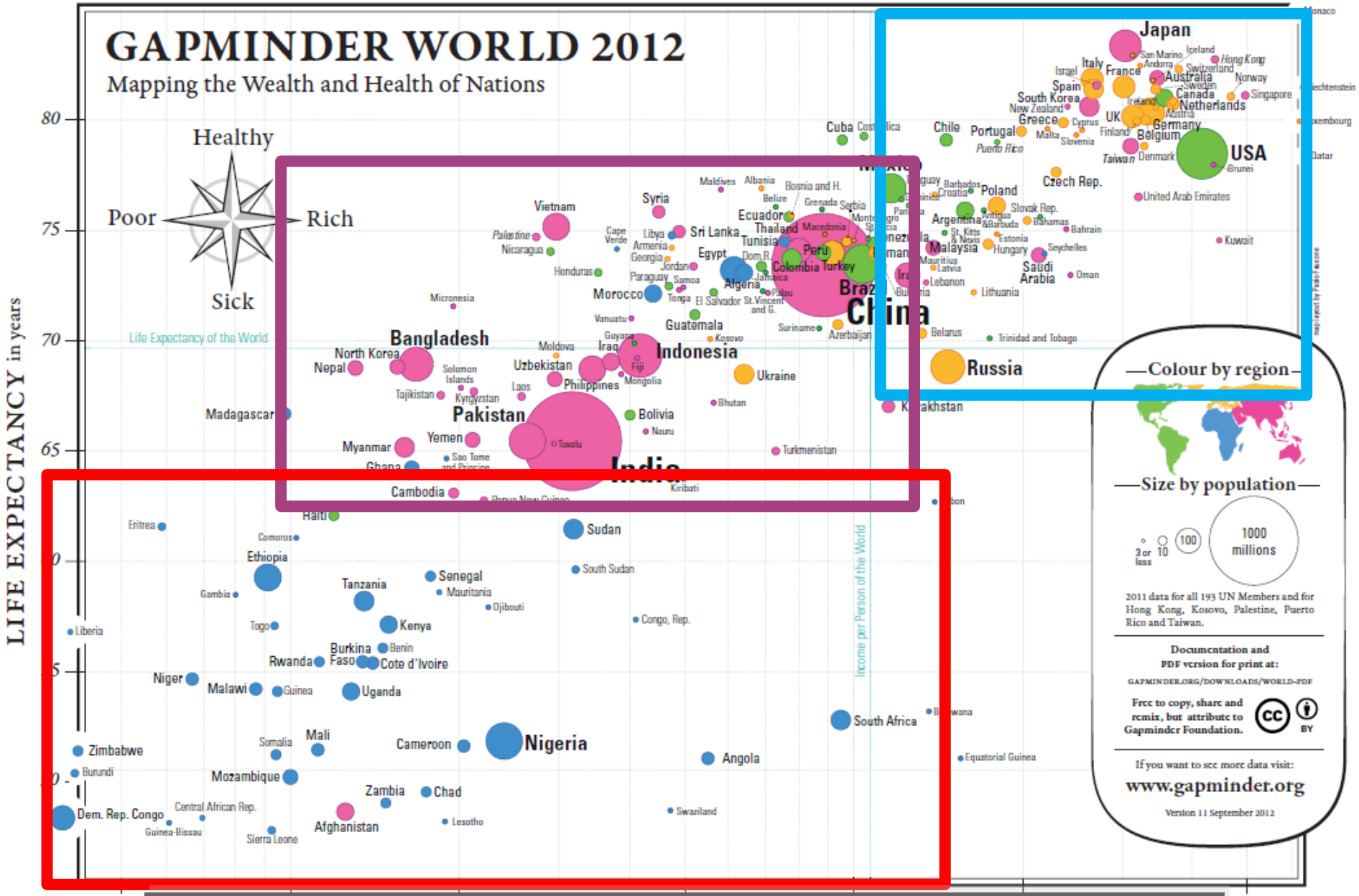
Meaningful Comparisons

[Gapminder Foundation, https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen]



Underlying Structure and Multivariate Links

[Gapminder Foundation, https://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen]



Underlying Structure and Multivariate Links

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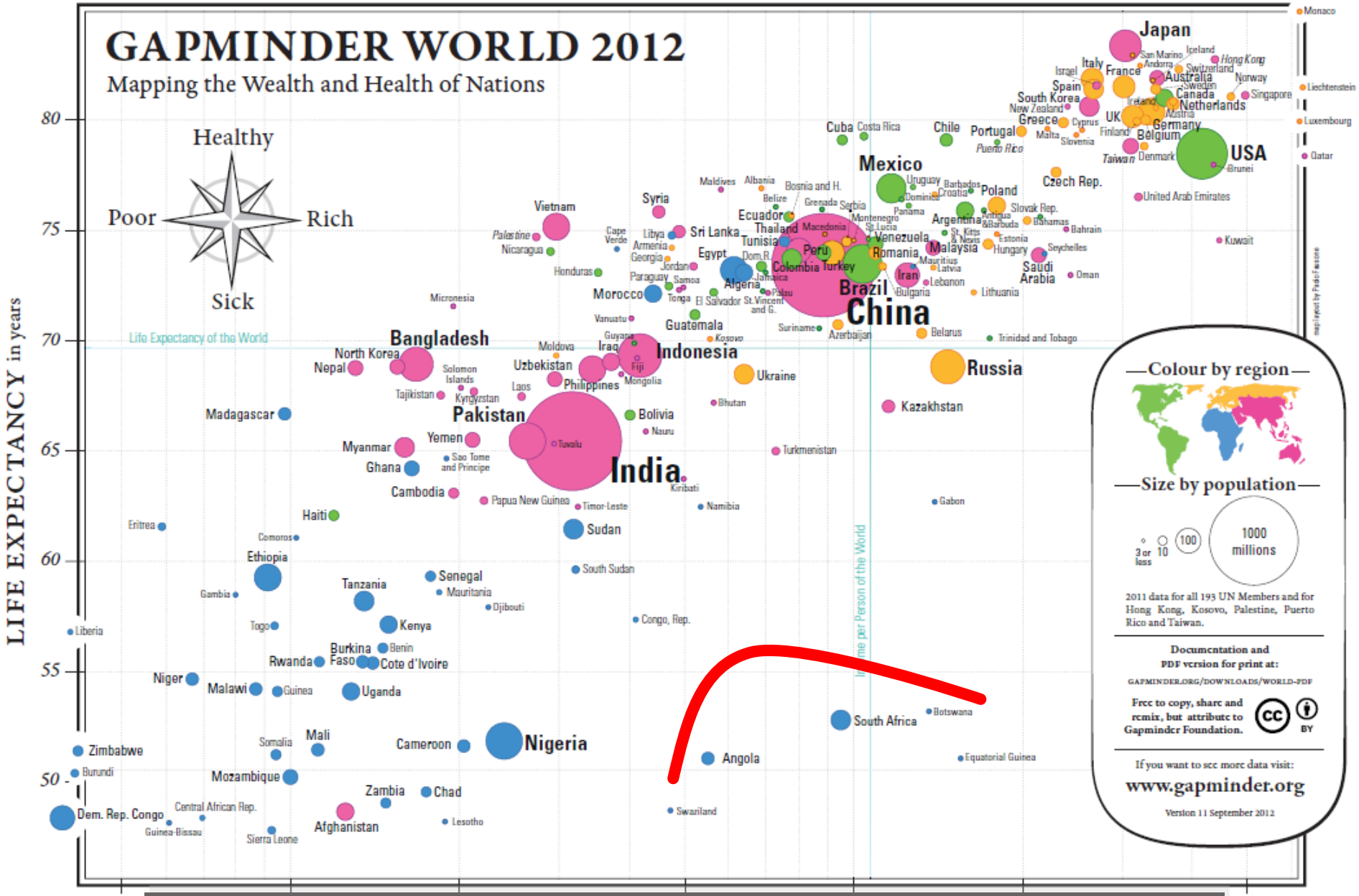

Underlying Structure and Multivariate Links

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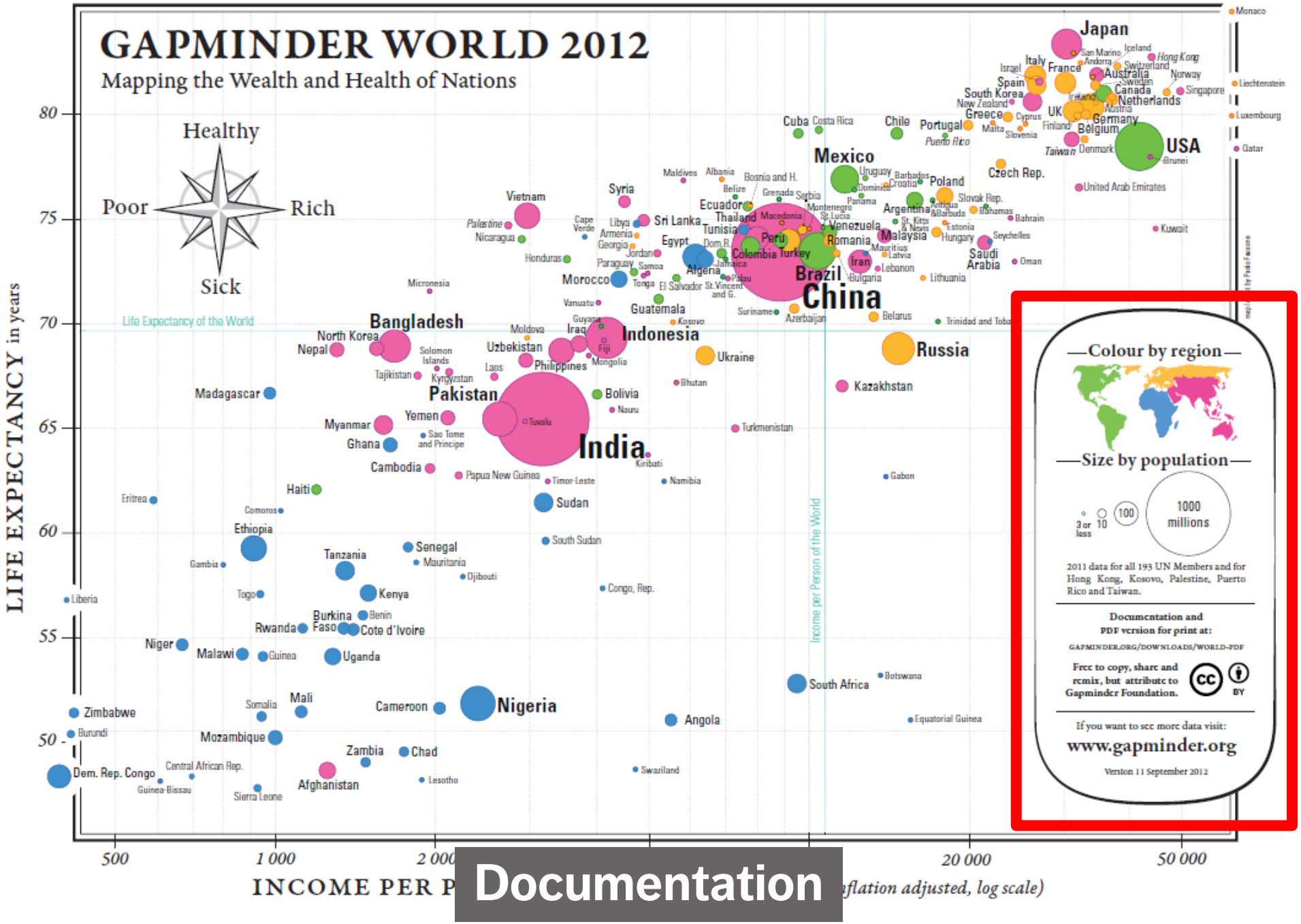


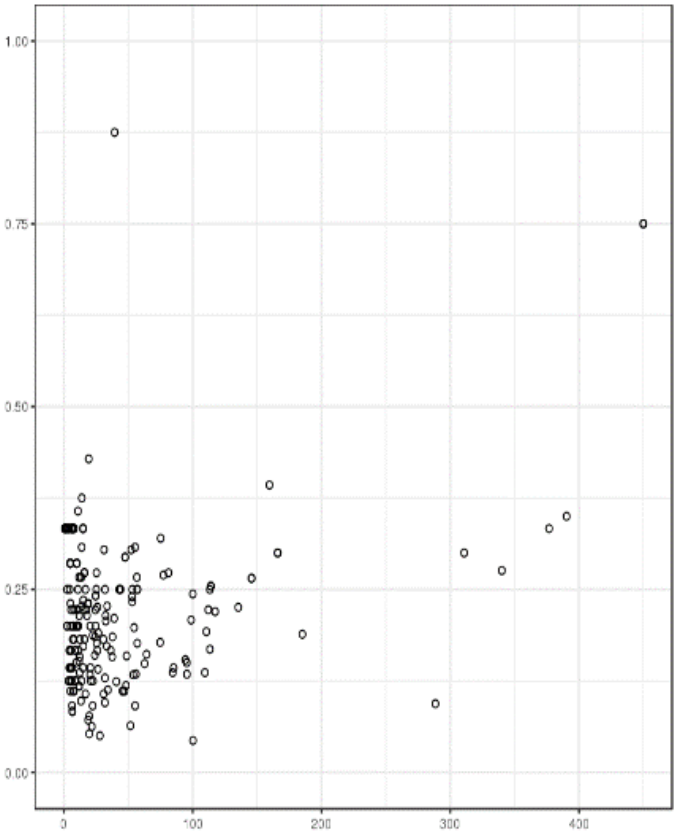
Documentation

[http://promise.site.uottawa.ca/SERepository/datasets/cm1.arff]

REPRESENTING MULTIVARIATE DATA

2 variables can be represented by **position** in the plane.
Additional factors can be depicted with:

- size
- color
- value
- texture
- line orientation
- shape
- (motion?)



NASA CM1 Dataset (subset)

[http://promise.site.uottawa.ca/SERepository/datasets/cm1.arff]

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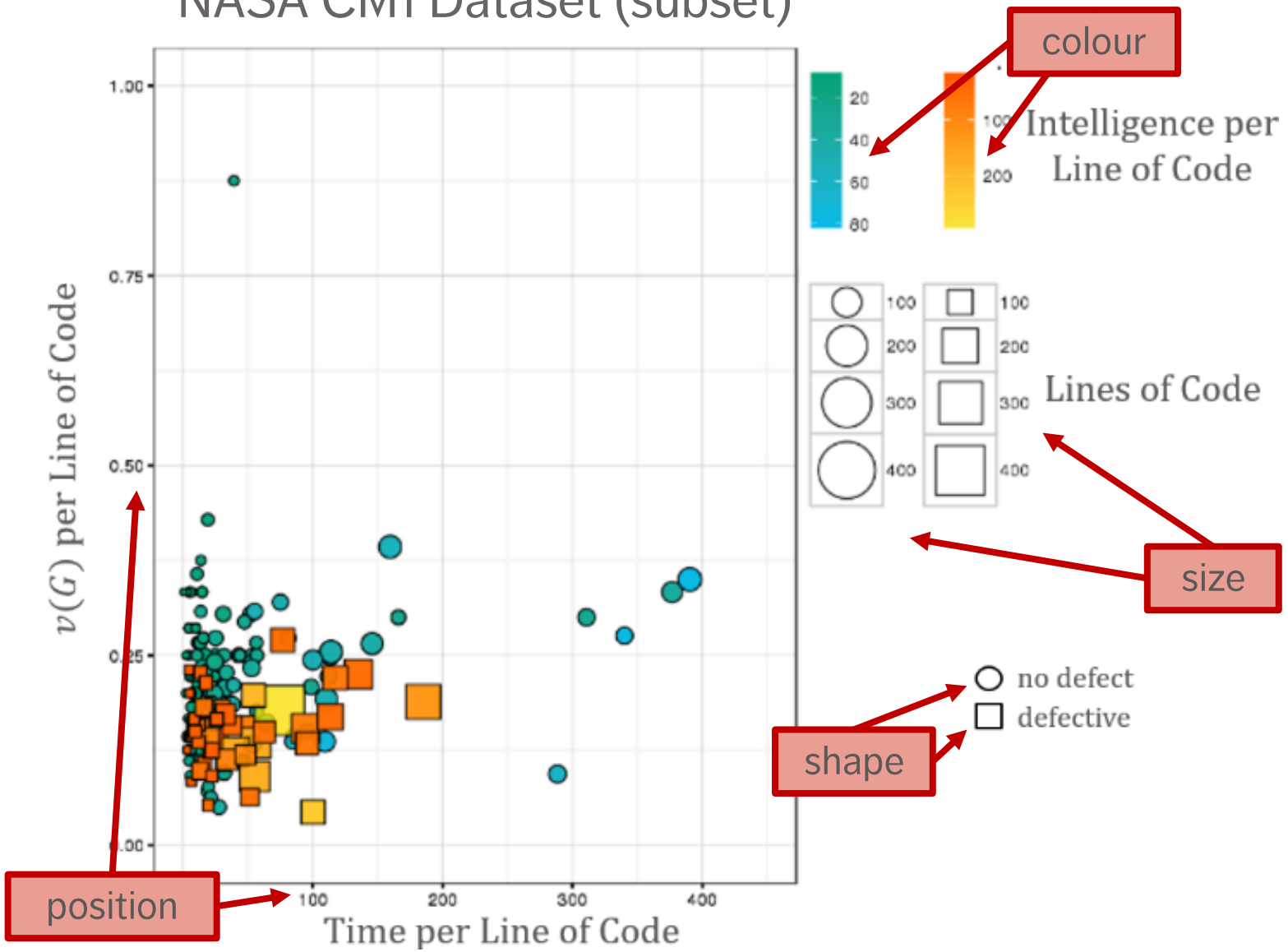

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