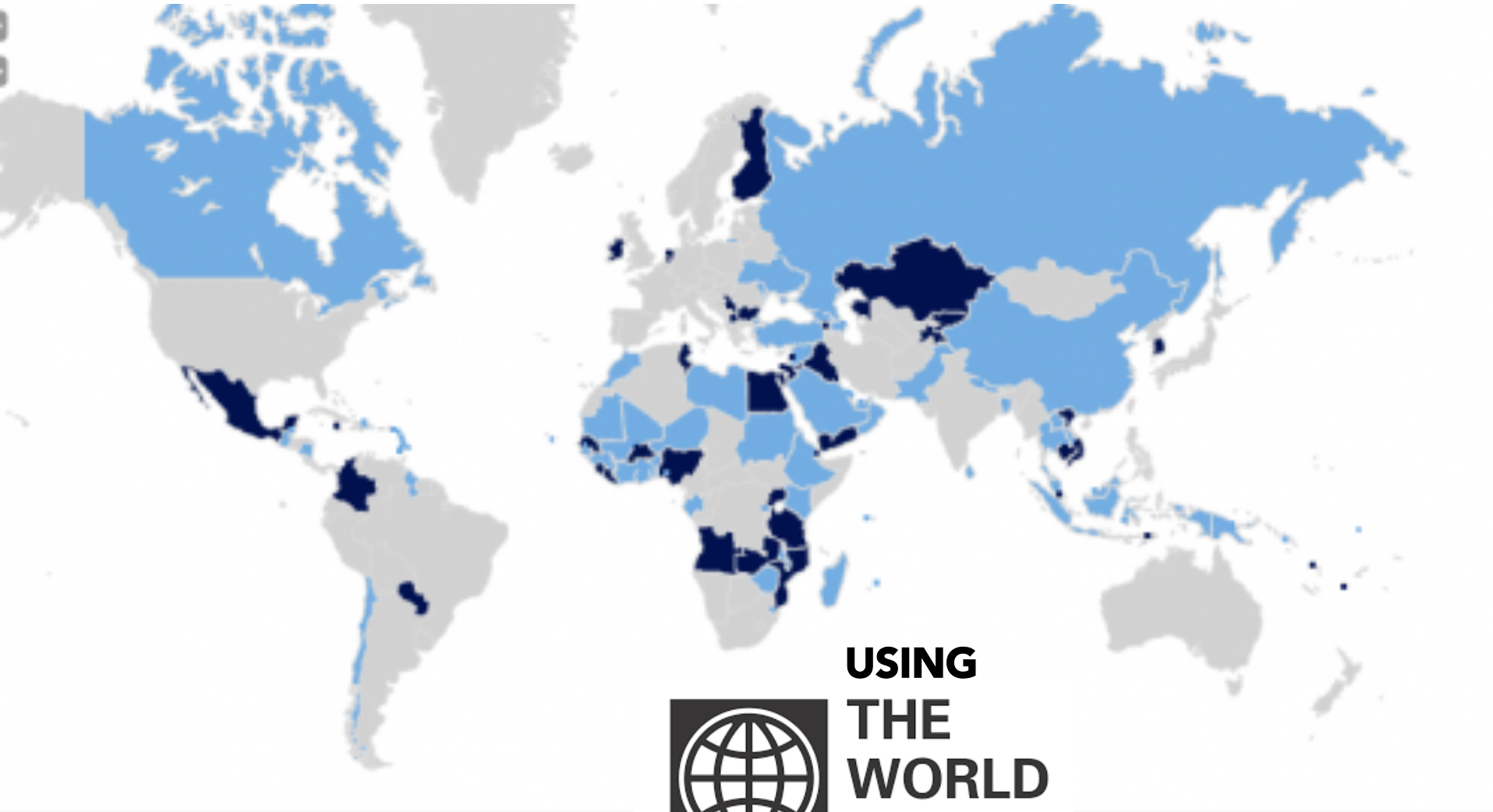# A Better World in Numbers

USING
THE
WORLD
BANK
DATABANK

Before We Start: Tableau

- Free for students!

- Download from www.tableau.com/academic/students

- Click through installer

- Verification takes a few minutes so

Where are we from?

You are all scientists and engineers
We have the power to make our communities better
What would you change?

Let's illustrate a map!

The World is Full of Problems

Education

Credit systems

Transportation

City Planning

Hunger

Healthcare

Gender equality
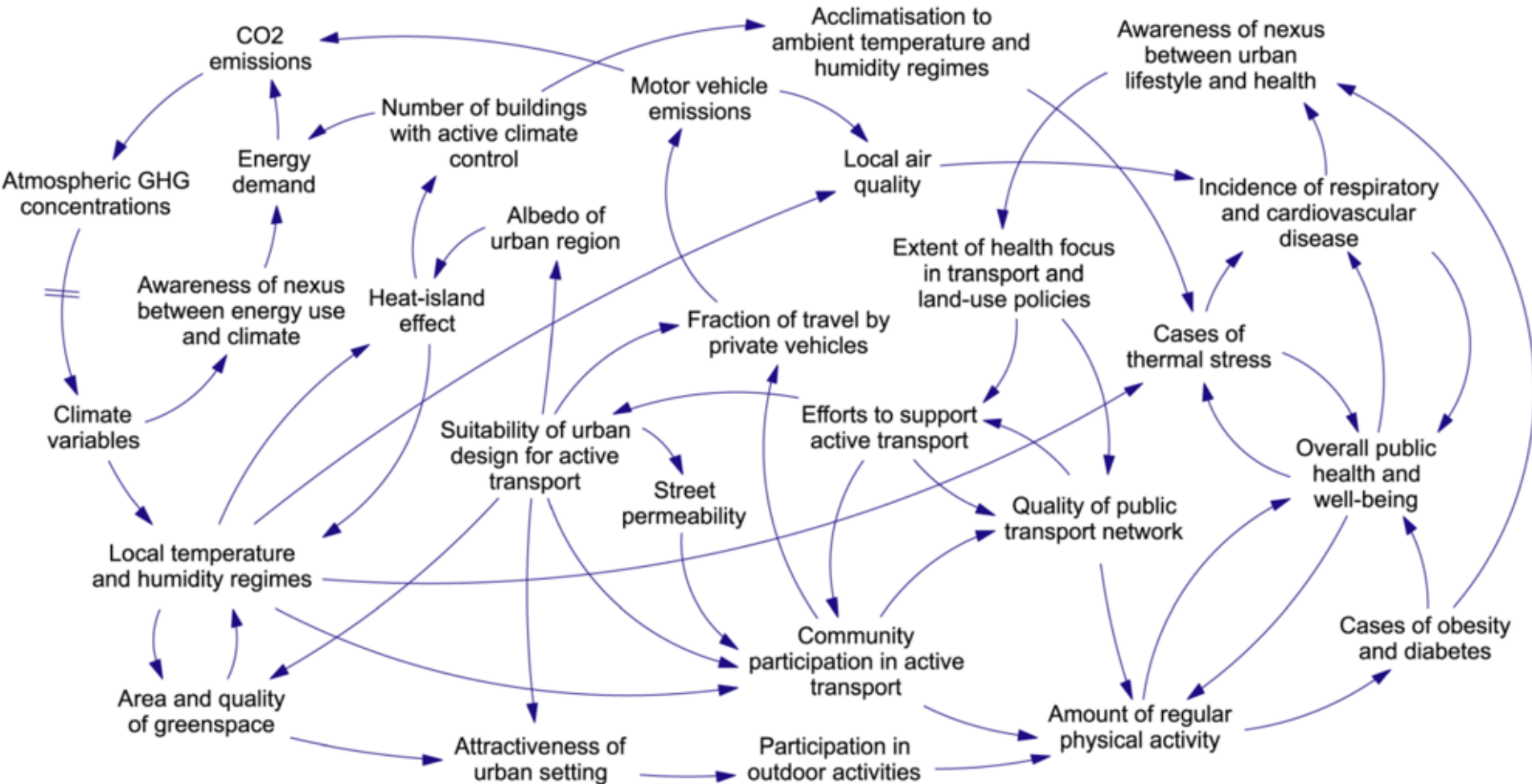
Poverty

Disaster Management
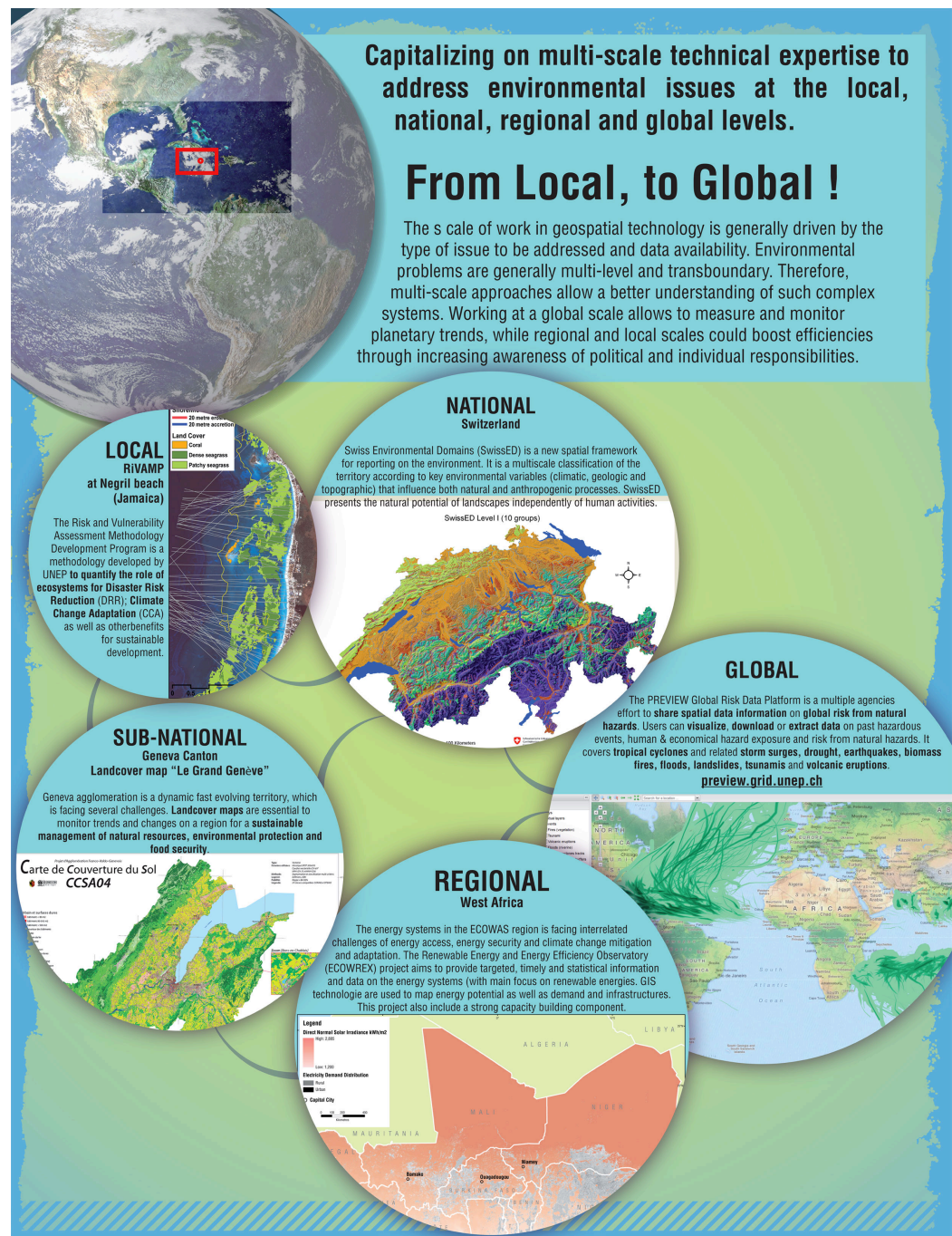
These Issues Can Get Chaotic Fast!

Issues at Different Scales Talk to Each Other

Example: Disaster management

Local measurements of tremors
Compiled into regional database
→ National database
→ Global database

Local information necessary to build big picture
Large scale patterns in space and time drive policy and infrastructure on local level

Creating Order from Chaos

Ultimately: Data Helps Us Understand Cause and Effect

But How Do We Get this Data?

- In some cases, we can collect microdata using smartphones and sensors in public spaces

THE LOCAL SENSE LAB   ☰

LIVE FROM DOWNTOWN CROSSING

30	**36 DB**	**77 °F**	**388 PPM**
people on Summer Street	noise level	temperature	carbon dioxide levels

Instead, today we let the World Bank do the work for us.

Global issues: Forest Cover

Where Have Forests Been Lost and Gained?
Change in forest area (km²) by country since 1990

Gained
Lost

1990

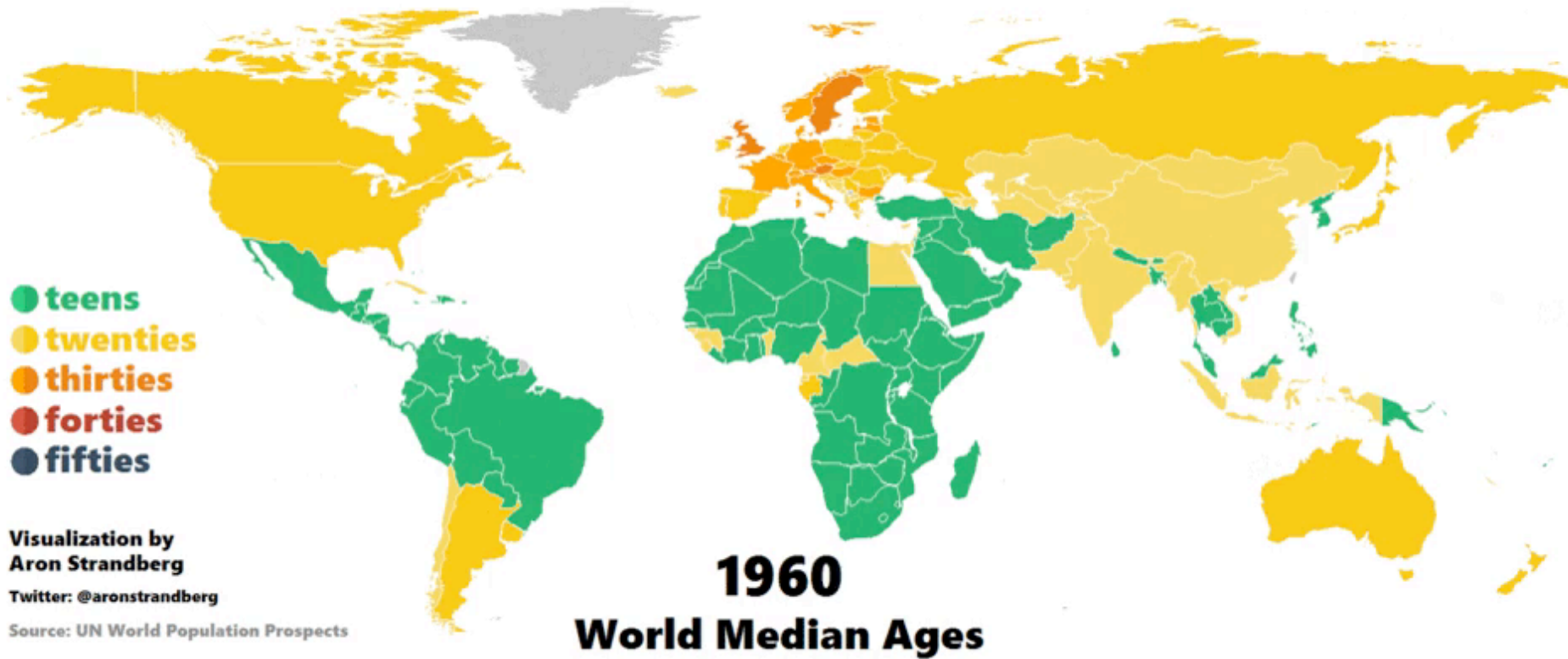1990

Source: http://data.worldbank.org/indicator/AG.LND.FRST.K2
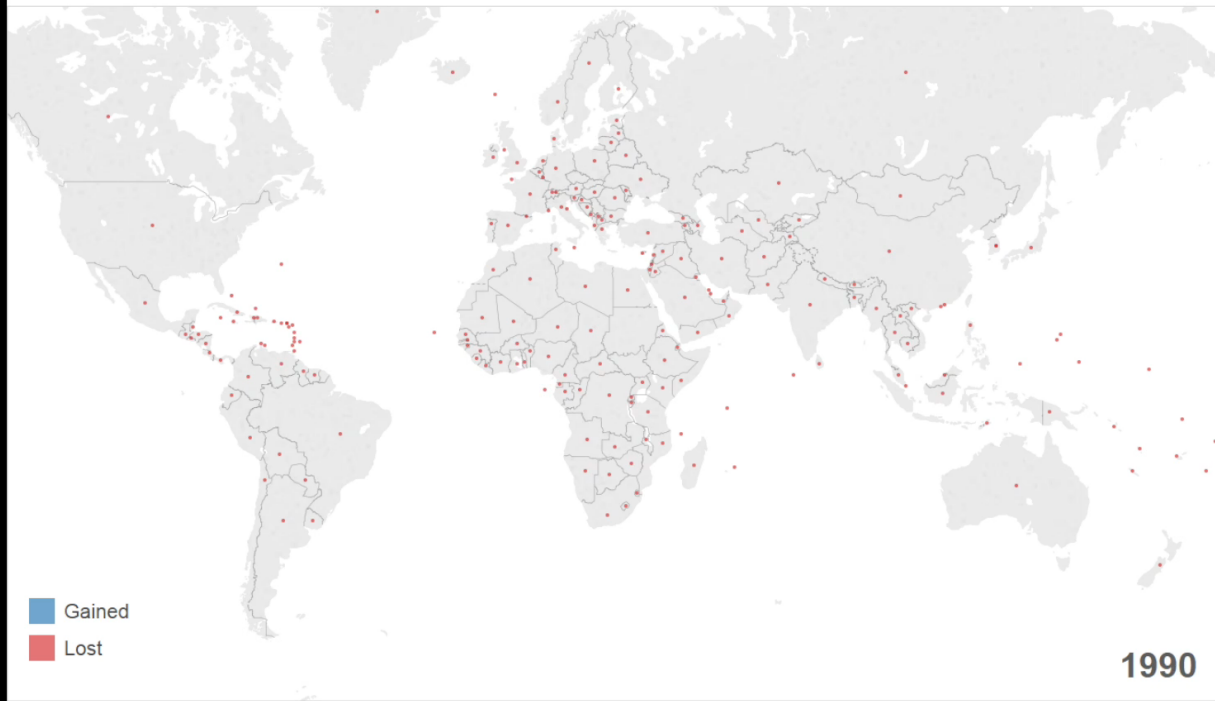
Global issues: Forest Cover

- Red stays red, blue stays blue

- Most gain has been in Europe, North America, China and India

- Most loss in South America and Africa

- Outliers?
  - Not obvious
  - How could we make this more obvious?

Regional issues: Aging

teens
twenties
thirties
forties
fifties

Visualization by Aron Strandberg
Twitter: @aronstrandberg
Source: UN World Population Prospects

1960
World Median Ages

Local issues: Entrepreneurship

So let's play!

Enter Tableau

- By now the installer should have opened Tableau

- Check your email for a license key

- Use that to Activate your Tableau

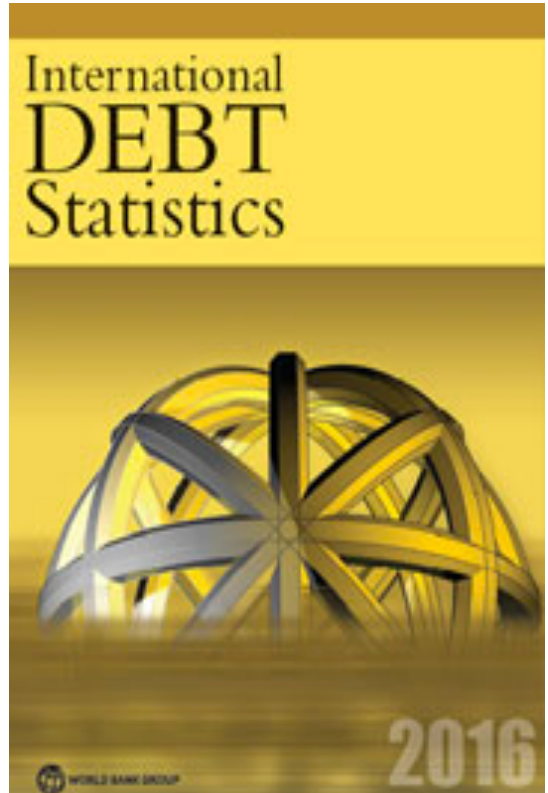# Common Thread: Visualization is Powerful

Making a Movie

- Digest this tutorial http://www.tableau.com/learn/training

- Use data from one of the sets above

- Compile images into animation using

- **If you have Mac:**
  - iMovie

- **If you have Windows:**
  - timelapsetool.com

- **If you have Unix:**
  - sudo apt-get install ffmpeg
  - ffmpeg –r 2 –l %04d.png –s hd480 –vcodec libx264 –vpre hq your-time-lapse-name.mp4

Lots More from the World Bank

Questions? Ideas!