

Why Study Statistics?

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“Statistics ... the most important science in the whole world: for upon it depends the practical application of every other science and of every art; the one science essential to all political and social administration, all education, all organisation based upon experience, for it only gives the results of our experience.”

- Florence Nightingale

Why Study Statistics?

Statistics is a tool

Statistics provides us the rational basis to:

- review the past
- evaluate the present
- forecast the future

Information Age

From medical studies to research experiments, from satellites continuously orbiting the globe to ubiquitous social network sites like Facebook or MySpace, from polling organizations to United Nations observers, data are being collected everywhere and all the time. Knowledge in statistics provides you with the necessary tools and conceptual foundations in quantitative reasoning to extract information intelligently from this sea of data.

Teach Statistics Before Calculus

Mathemagician Arthur Benjamin



"Statistics -- that's a subject that you could, and should, use on daily basis. Right? It's risk. It's reward. It's randomness. It's understanding data."

Teach Statistics Before Calculus

Mathemagician Arthur Benjamin



“if all of the American citizens -- knew about probability and statistics, we wouldn't be in the economic mess that we're in today. Not only that but if it's taught properly, it can be a lot of fun. I mean, probability and statistics, it's the mathematics of games and gambling. It's analyzing trends. It's predicting the future.”

Teach Statistics Before Calculus

Mathemagician Arthur Benjamin



"the world has changed from analog to digital. And it's time for our mathematics curriculum to change from analog to digital, from the more classical, continuous mathematics, to the more modern, discrete mathematics -- the mathematics of uncertainty, of randomness, of data -- that being probability and statistics.

Doing the Math to Find the Good Jobs

Mathematicians Land Top Spot in New Ranking of Best and Worst Occupations in the U.S.

Email Print 54 Comments



By SARAH E. NEEDLEMAN

Updated Jan. 6, 2009 11:59 p.m. ET



The Best and Worst Jobs

Of 200 Jobs studied, these came out on top – and at the bottom:

The Best	The Worst
1. Mathematician	200. Lumberjack
2. Actuary	199. Dairy Farmer
3. Statistician	198. Taxi Driver
4. Biologist	197. Seaman
5. Software Engineer	196. EMT
6. Computer Systems Analyst	195. Roofer
7. Historian	194. Garbage Collector
8. Sociologist	193. Welder
9. Industrial Designer	192. Roustabout
10. Accountant	191. Ironworker
11. Economist	190. Construction Worker
12. Philosopher	189. Mail Carrier
13. Physicist	188. Sheet Metal Worker
14. Parole Officer	187. Auto Mechanic
15. Meteorologist	186. Butcher
16. Medical Laboratory Technician	185. Nuclear Decontamination Tech
17. Paralegal Assistant	184. Nurse (LN)
18. Computer Programmer	183. Painter
19. Motion Picture Editor	182. Child Care Worker
20. Astronomer	181. Firefighter

Who needs statistics?

- Anyone who wants to be able to look critically at information and not be misled
- Anyone who has a problem to solve that they won't be able to solve until they find out a little information

Why Study Statistics?

Without Statistic:

- Personal Bias
- Outdated Facts
- Media Bias

Building a fact-based world view

- Replace devastating myths with a fact-based world view
- Make data easy to understand

Building a fact-based world view

Gapminder is a non-profit foundation based in Stockholm. Our goal is to replace devastating myths with a fact-based worldview. Our method is to make data easy to understand. We are dedicated to innovate and spread new methods to make global development understandable, free of charge, without advertising. We want to let teachers, journalists and everyone else continue to freely use our tools, videos and presentations.

Take a minute over some of the features

To reload the default graph click the "Gapminder World" heading at the top of the page (not shown here).

Select between Chart and Map view.

Click here for a short tutorial video.

Click here to get a short link to the specific graph you have created.

Click here if you are using the graph in a lecture. The graph will cover the whole screen.

Click here to select indicators for the y axis.

Hover your mouse over the bubble to reveal the names of the countries.

If you want information about the sources you can click on the small text next to the axis.

Click here to open a tool that help you zoom in or out. Click 100% to see the whole graph again.

The countries on the graph are colour coded by continent. Here you can choose to colour code them by other indicators.

Select individual countries here by clicking the boxes. You can also click on the bubbles.

Deselect all countries here.

Remove all countries other than those selected here.

The size of the bubble normally represents the population of the country. Click here to make the size proportional to another indicator.

Change the size of the bubbles here.

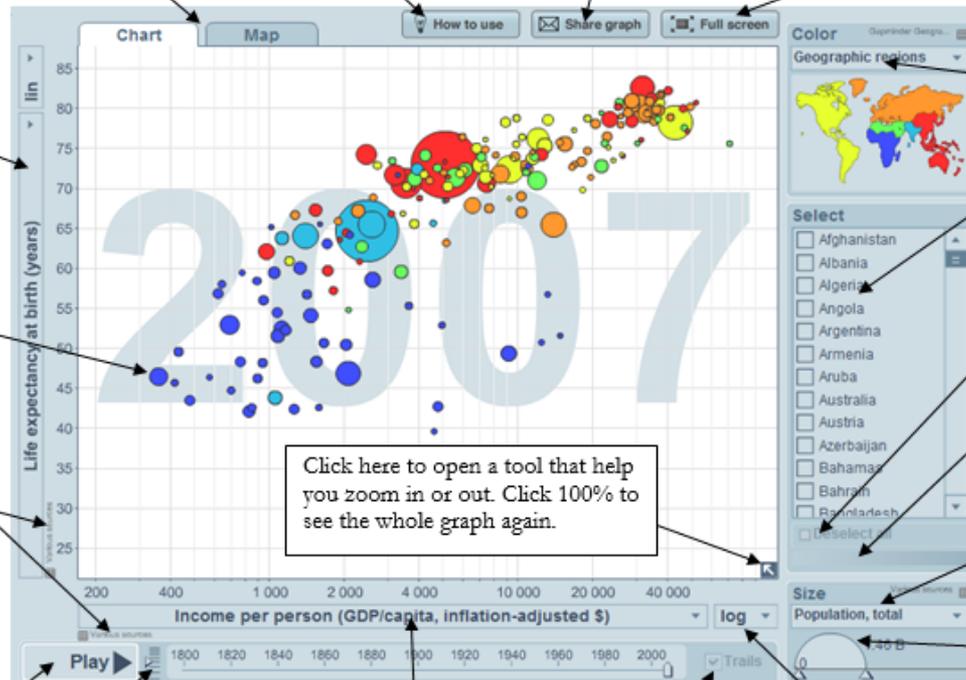
Watch the graph change over time by using these buttons.

Change the speed of the graph here.

Click here to select indicators for the x axis. You can also choose to display time on this axis.

Click Trails to track a selected country while an animation plays.

Both the x and y axis scales can be linear or logarithmic. Choosing a log scale may make it easier to see the trends on the graph.



Gapminder Quiz

<http://tinyurl.com/gapquiz07>

QUIZ 7 (CO2 emissions)

The Quiz

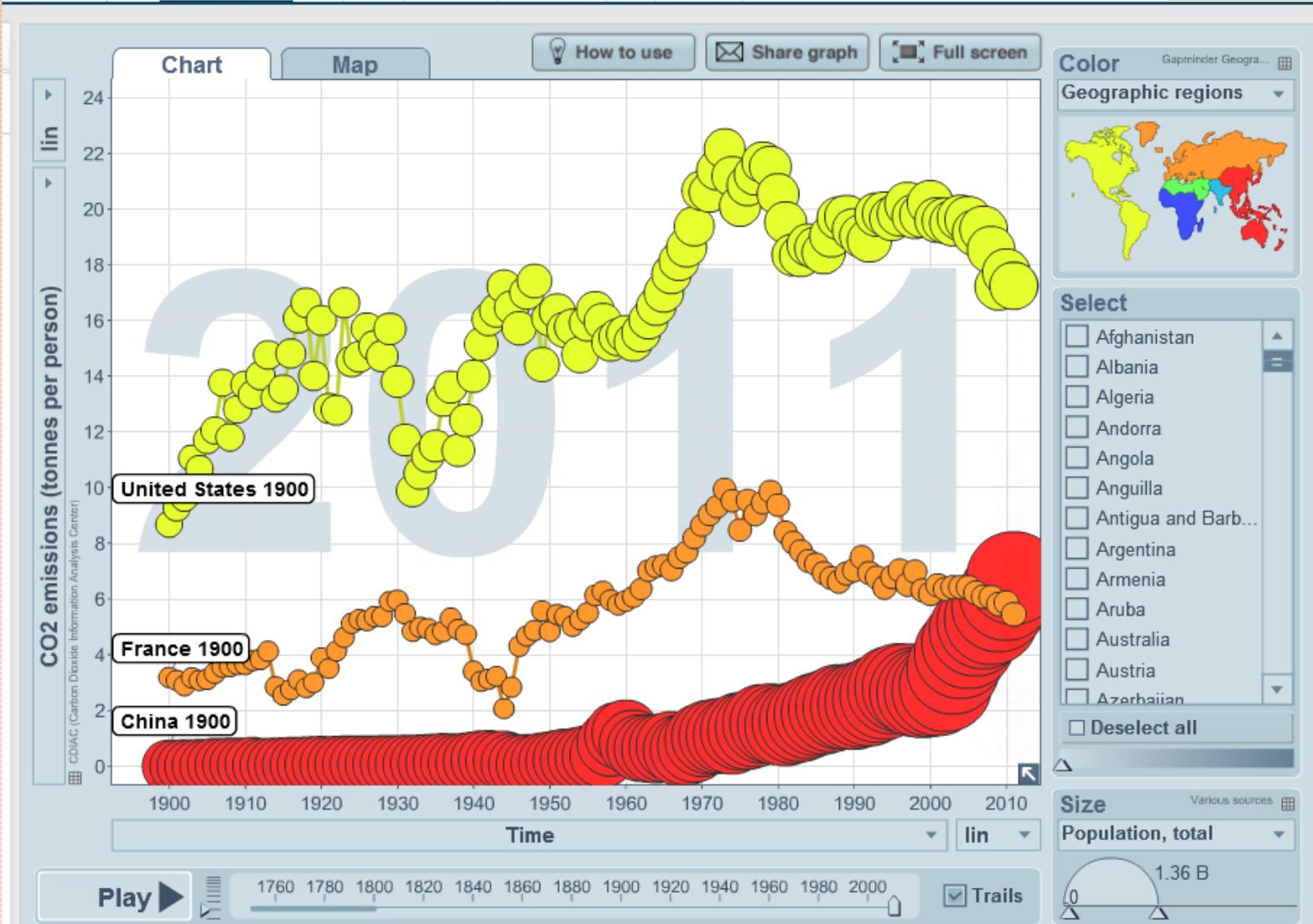
Ask the students: Which country emits most tones of CO2 per person today: China, France or USA?

The quiz graph

Link to quiz graph: <http://tinyurl.com/gapquiz07>

Or adjust the graph manually:

- For Y-axis select: "CO2 emissions (tonnes per person)"
- Select Argentina China, France and USA
- Pull back the time bar to 1900



Quiz 7 - If students asks

- *China* is today the country that emits most CO₂ in total, but that is because it has such a large population. Each American still emits almost four times as many tonnes CO₂ as each Chinese person do. In 1900 China emitted negligible amounts of CO₂ per person and it increased very slowly. From the 1970s, the emissions had started to grow faster, as economic growth accelerated.
- *The US and France* were both industrialised by 1900. Various energy sources were more readily available in the US than in France. Hence, the energy system was more energy intensive from an early date in the US.
- Income per person grew strongly during the 20th century in both countries, and the CO₂ emissions followed this pattern. Numerous crises affected the emission of CO₂: the 1st world war (mostly in France), the depression after 1929 (with the strongest effect in the US) and the 2nd world war (mainly seen in France).
- In the 1970s the oil prices increased massively at two occasions. These events are known as the 1st and 2nd oil crisis. They provoked actions to use the energy more efficient and to switch to energy sources with less emission of CO₂, e.g. nuclear power. Many of these changes remained even after the oil-price dropped again in the 1980s. Furthermore, the production in the high income countries became more focused on producing things that required less energy (e.g. producing medicines, just to take one example).
- from the start World War One seen for France, the downturn during the depression is visible for both (most for the US) and the WW2 is visible for France.
- Oil crisis visible in the 70s, then things done. Nuclear power, especially in France.

Why Study Statistic?

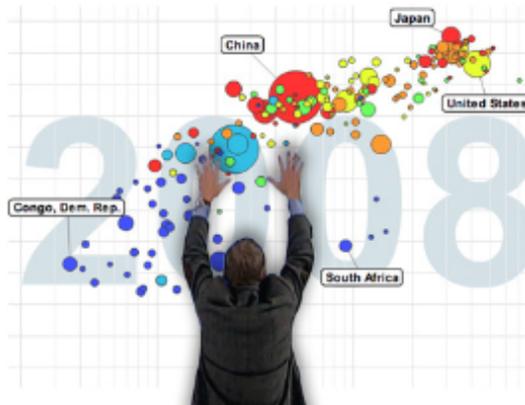
How does Alaska's income per person compare to the rest of the country?

Explore the world

Gapminder World shows the World's most important trends

- > Wealth & Health of Nations
- > CO₂ emissions since 1820
- > Africa is not a country!
- > Is child mortality falling?
- > Where is HIV decreasing?

Load Gapminder World



Rosling's Twitter

twitter.com/HansRosling

“ Thoughts from Liberia: Space tourism is like Ebola; it's lethal, it's costly and the world is better without it!

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Will saving poor children lead to overpopulation?

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Gapminder Labs



Gapminder Agriculture
700 indicators from the Food and Agriculture Organization (FAO).



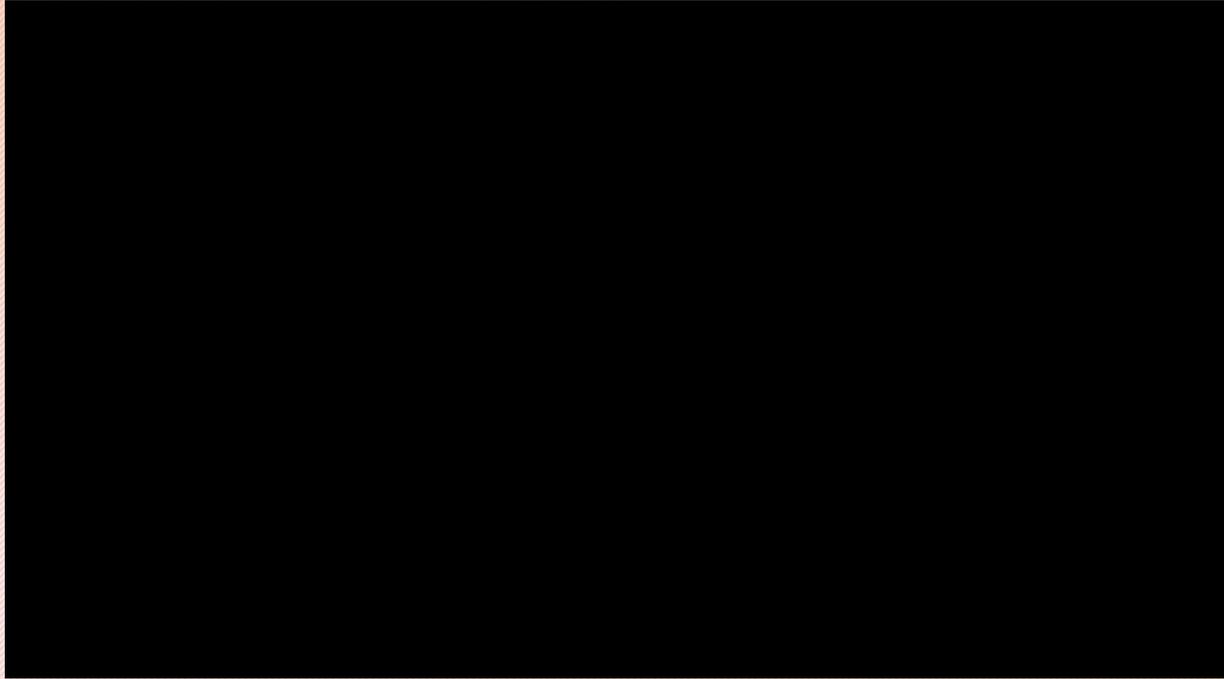
Gapminder USA
Compare Washington, Minnesota and Texas with countries of the World.

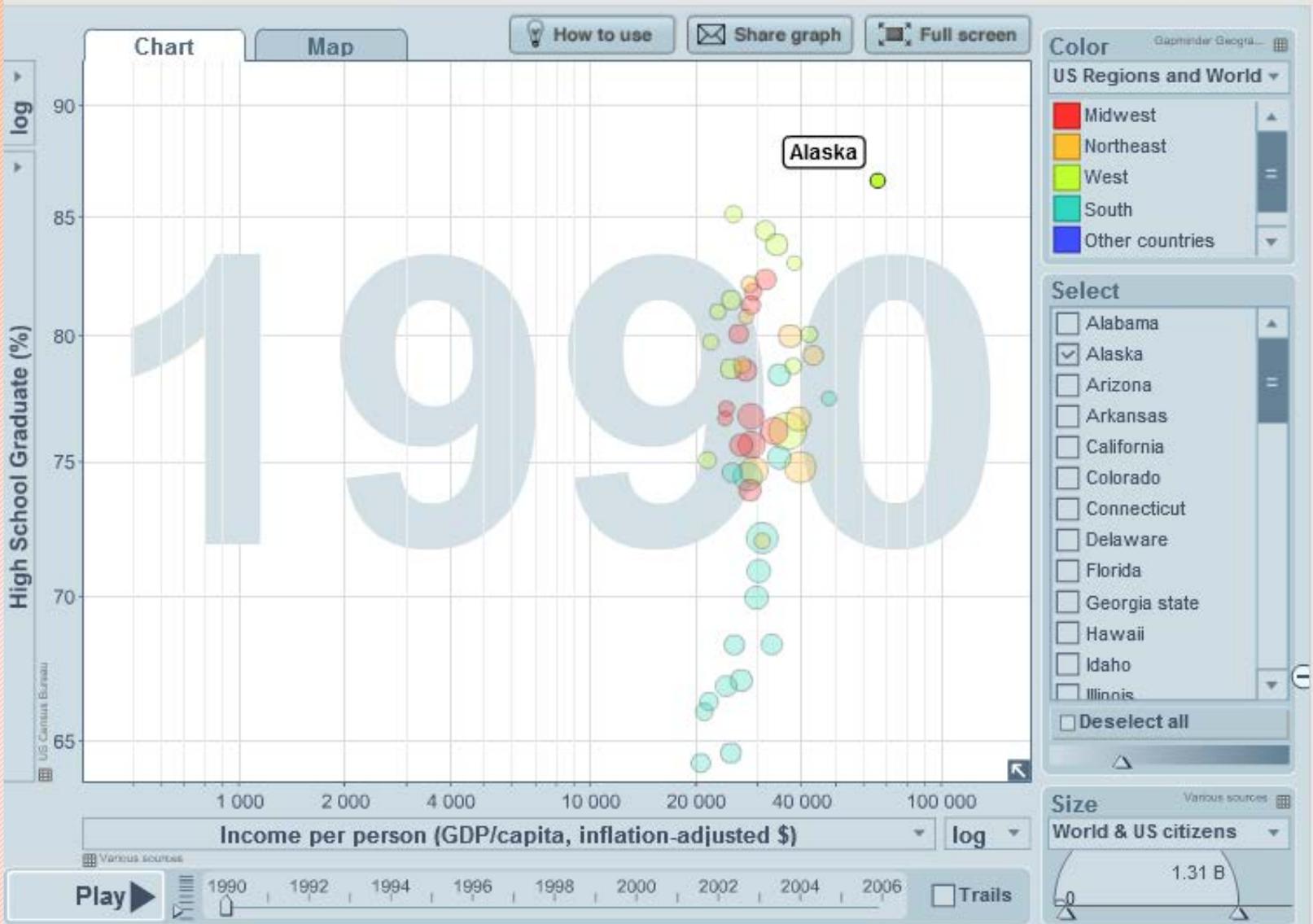
Go to the Labs

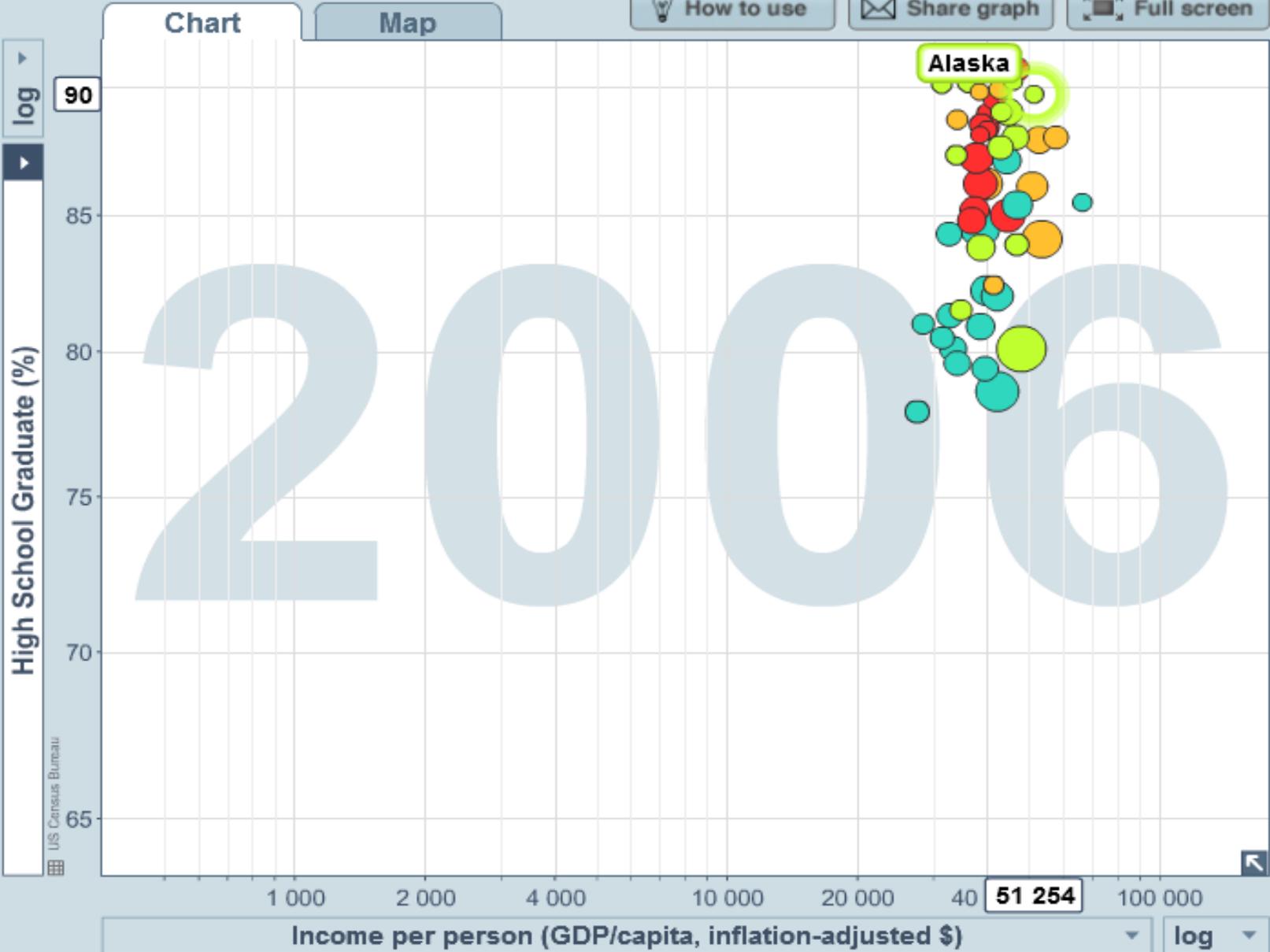
News

- > Hans Rosling in Monrovia, Phone Interview, 20 (...)
- > Ignorance Survey in Germany 2014
- > Swedish and Norwegian Ignorance results
- > Swedish Ignorance 2013

More news







High School Graduate (%)

US Census Bureau

Income per person (GDP/capita, inflation-adjusted \$)

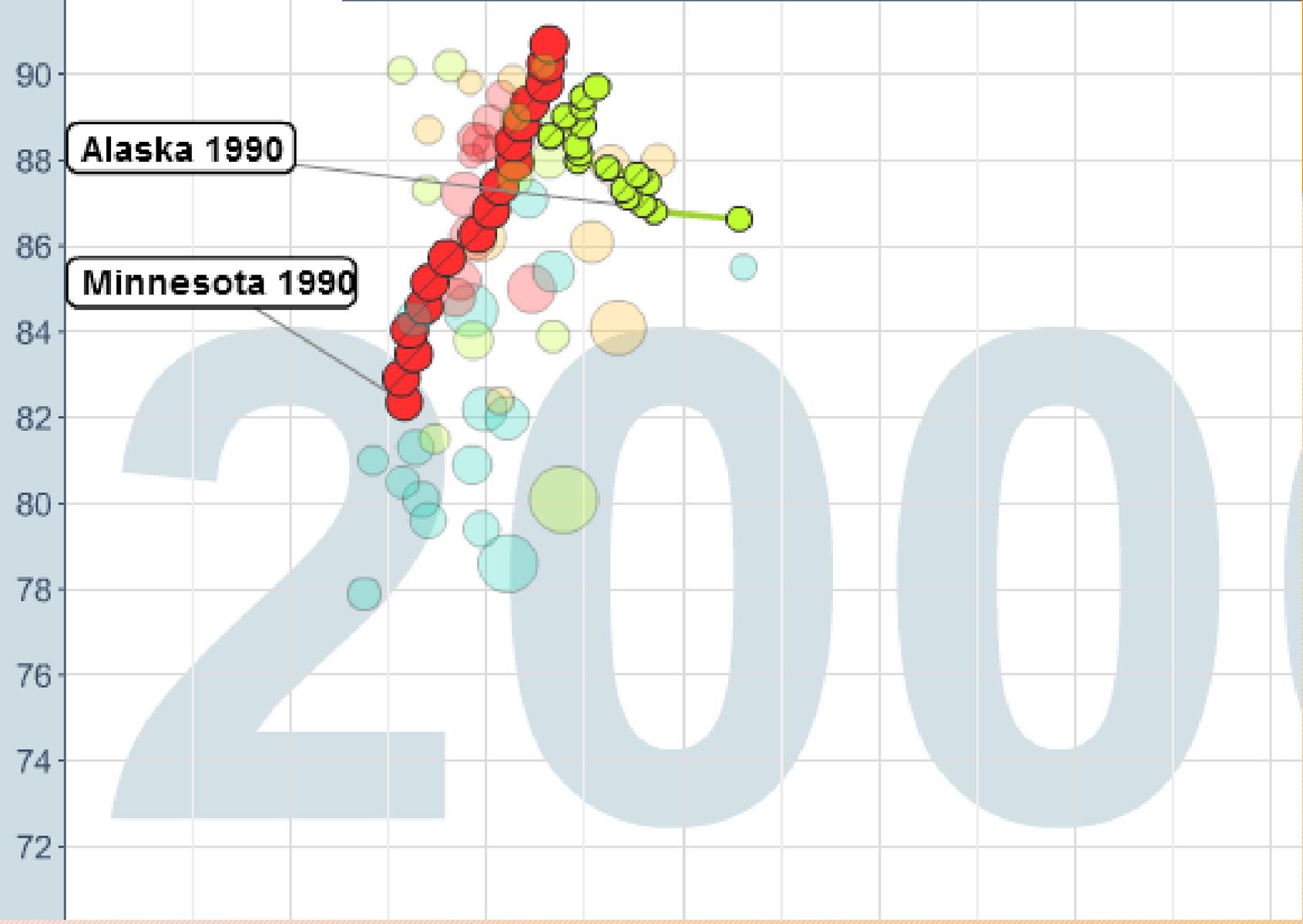
Chart

Map

lin



High School Graduate (%)



Replacing Myths with Facts

How does the USA rank in terms of math?

Have our math score scores been improving?

Chart

Map



How to use



Share graph



Full screen

lin

lin

Math achievement - 8th grade



Color

Copyright Geog...

Geographic regions



Select

- Algeria
- Armenia
- Australia
- Canada
- Colombia
- Czech Republic
- El Salvador
- Georgia
- Hong Kong, China
- Hungary
- Iran
- Italy
- Japan
- Deselect all

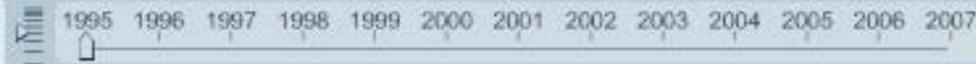
Size

Various source

Population, total



Play



Trails

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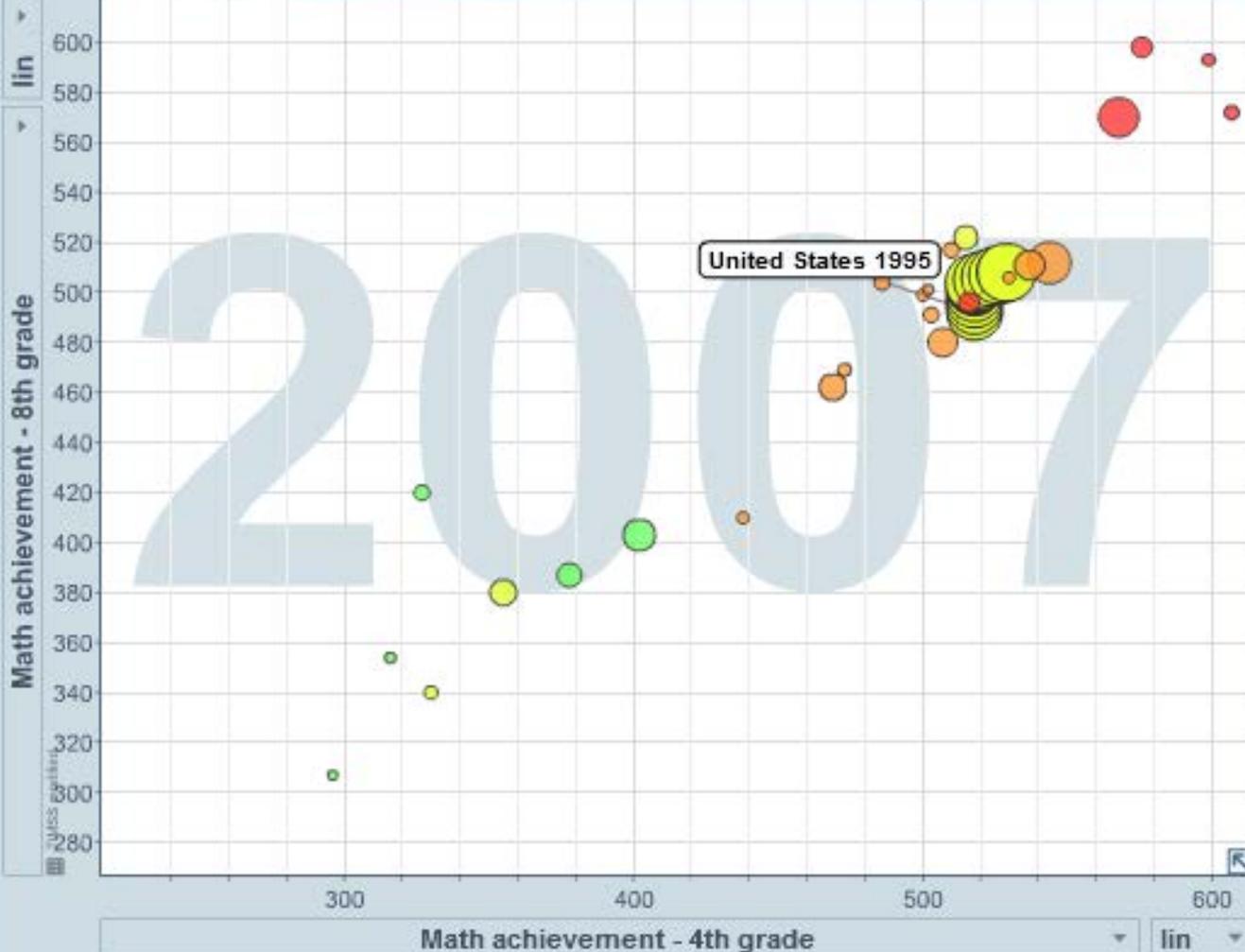
Chart

Map

How to use

Share graph

Full screen



Color

Geographic regions



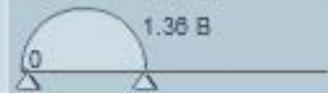
Select

- Algeria
- Armenia
- Australia
- Canada
- Colombia
- Czech Republic
- El Salvador
- Georgia
- Hong Kong, China
- Hungary
- Iran
- Italy
- Japan
- Deselect all

Size

Various sources

Population, total



Play

1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007

Trails

Terms of use

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Ask students to arrange the country cards according to development level

A card game with The Gapminder World Map

About this lesson

Level: secondary school. *Subjects:* history, geography & social studies. *What you need:* only this document.

Outline: The students will try to arrange "country cards" in an order that illustrates the gaps in the world today. They

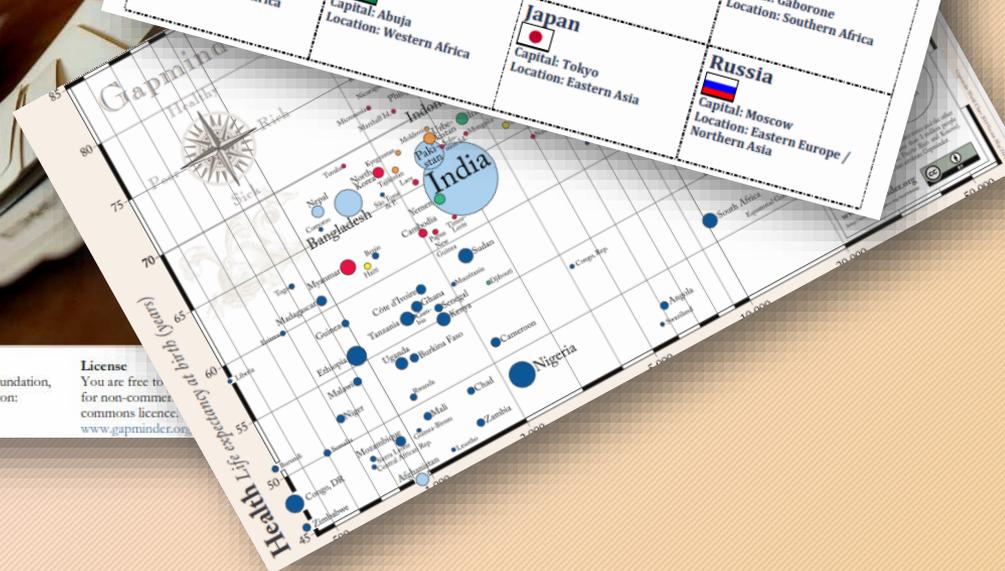
About this document

By Mattias Lindgren, the Gapminder Foundation, based on an idea by Paula Cooper. Version: 02/09/2010

This guide is available at:

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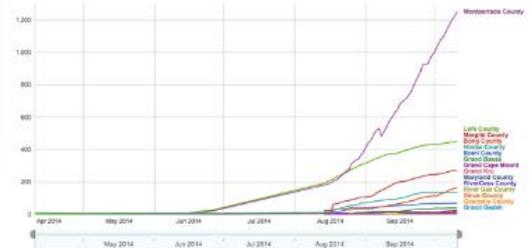
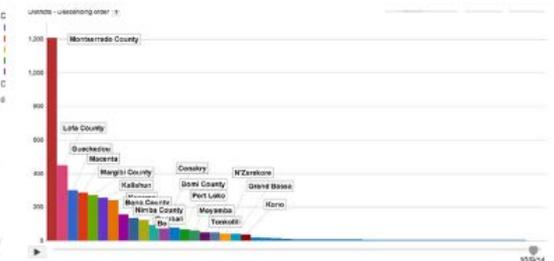
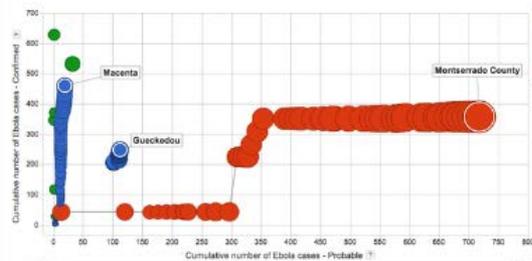
Rosling's Twitter

twitter.com/HansRosling

“ Liberia each week have fewer Ebola cases. The challenge now is that many smaller outbreaks occur across the country

<http://t.co/IXMWFv5PSP>

Explorer bit.ly/1DIWxi0 @HansRosling @Gapminder



213 102

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