

# VISUALIZING INFORMATION

# the functional art

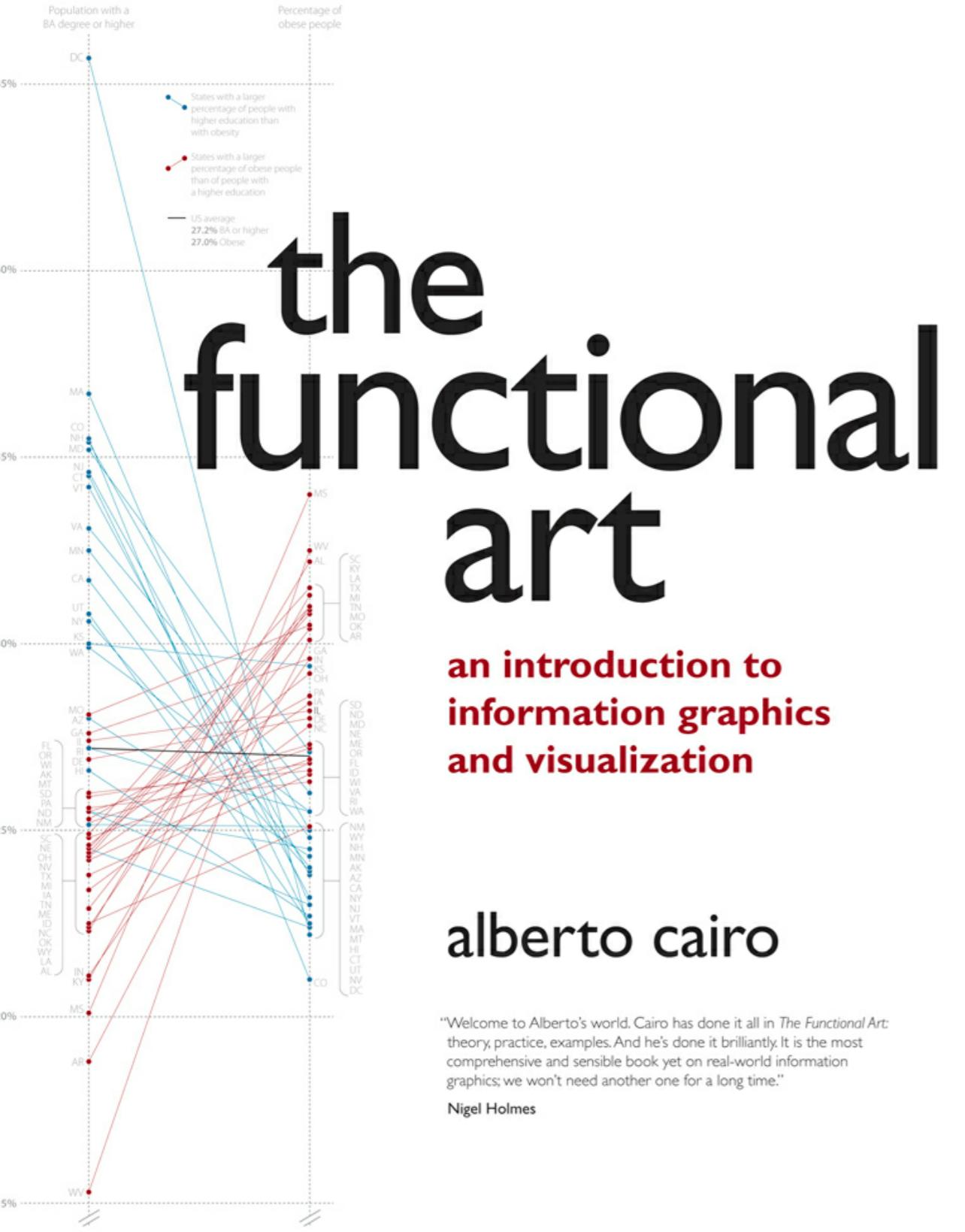
**an introduction to  
information graphics  
and visualization**

alberto cairo

"Welcome to Alberto's world. Cairo has done it all in *The Functional Art*: theory, practice, examples. And he's done it brilliantly. It is the most comprehensive and sensible book yet on real-world information graphics; we won't need another one for a long time."

Nigel Holmes

A visualization is a graphical representation of evidence, a tool for analysis, communication, and understanding



# the functional art

an introduction to  
information graphics  
and visualization

alberto cairo

"Welcome to Alberto's world. Cairo has done it all in *The Functional Art*: theory, practice, examples. And he's done it brilliantly. It is the most comprehensive and sensible book yet on real-world information graphics; we won't need another one for a long time."

Nigel Holmes

A visualization is a graphical representation of evidence, a tool for analysis, communication, and understanding

We use graphs and maps because in many cases they are the only way to see truths in the data

# Kiev, Ukraine



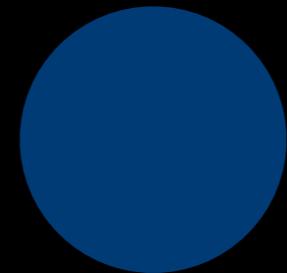
I guess that none of you understands Ukrainian  
(neither do I!), but let's do a little visual exercise:

**I am going to show you a map**

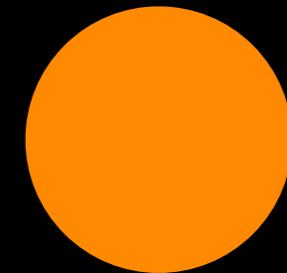
I guess that none of you understands Ukrainian (neither do I!), but let's do a little visual exercise:

**I am going to show you a map**

**I. The color of each circle represents what party won more votes in the 2012 Parliamentary elections**



Party of Regions  
(party of the current president)

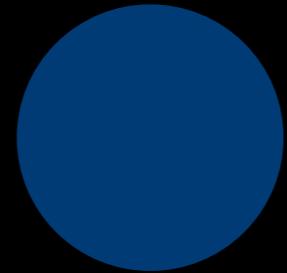


Fatherland Party  
(opposition, pro-Western)

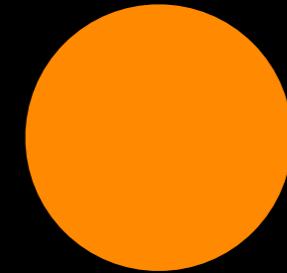
I guess that none of you understands Ukrainian (neither do I!), but let's do a little visual exercise:

**I am going to show you a map**

**I. The color of each circle represents what party won more votes in the 2012 Parliamentary elections**

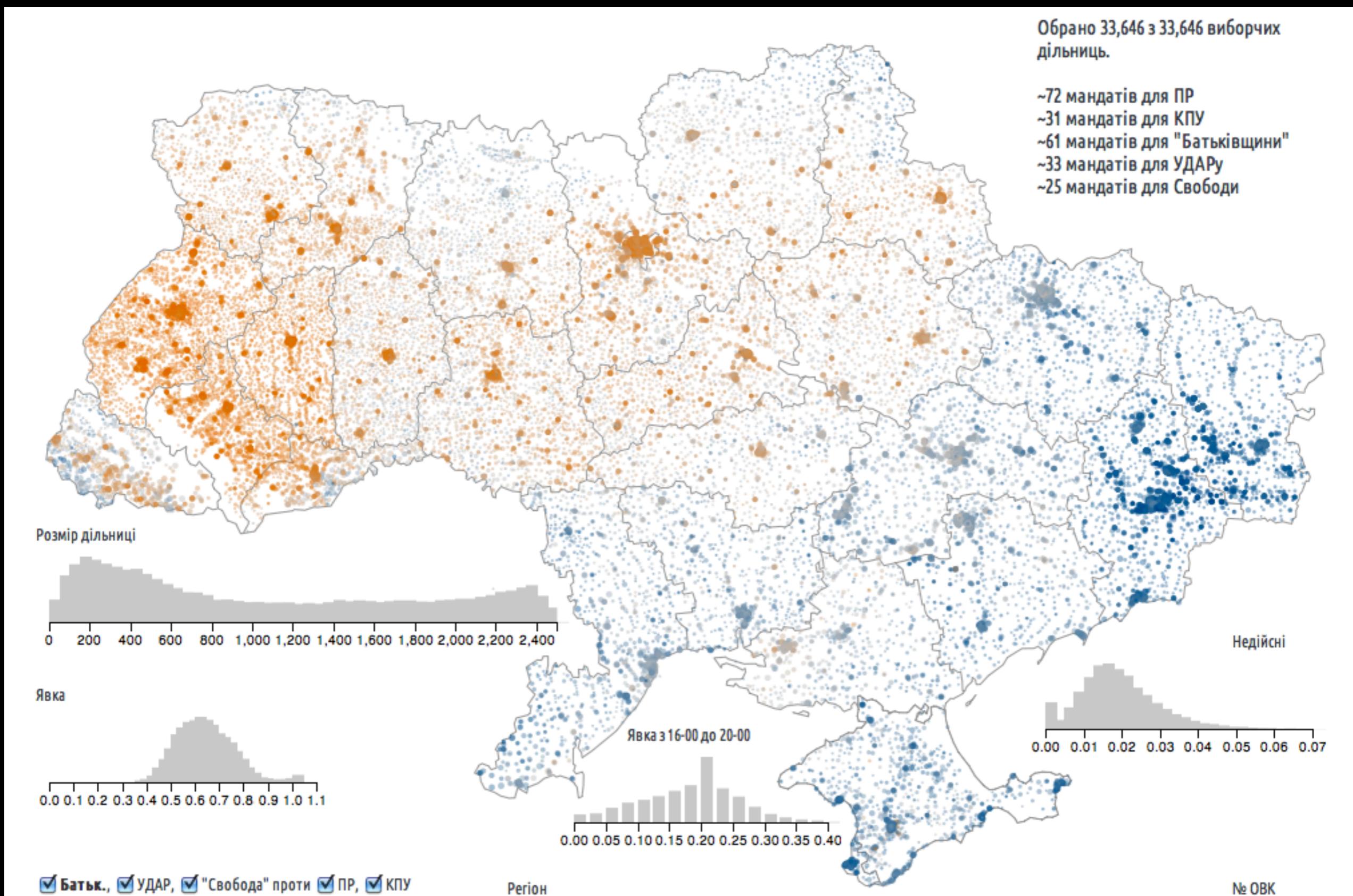


Party of Regions  
(party of the current president)



Fatherland Party  
(opposition, pro-Western)

**2. The size of each circle is proportional to the advantage of the party who got more votes**



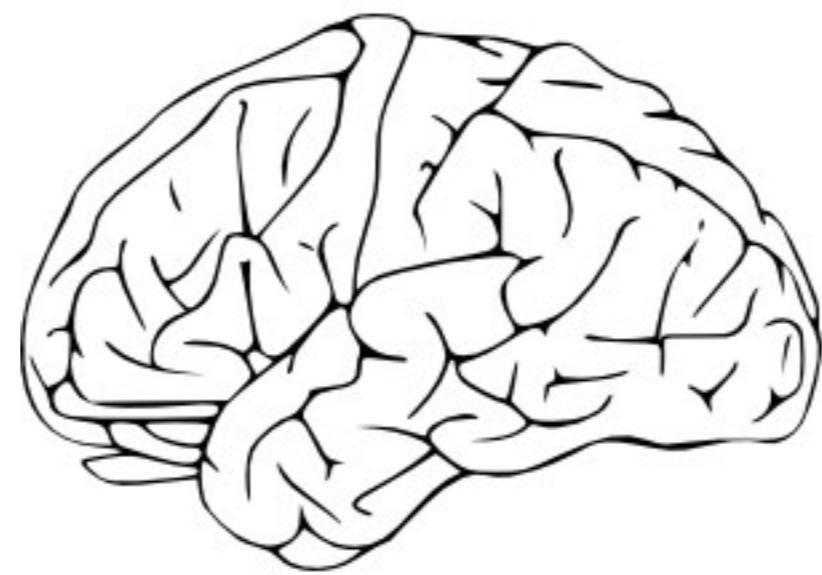
# Common misconceptions about information visualization

# Common misconceptions about information visualization

“Only great designers  
can create visualizations”



**Good graphics don't depend on this**



**But on this**

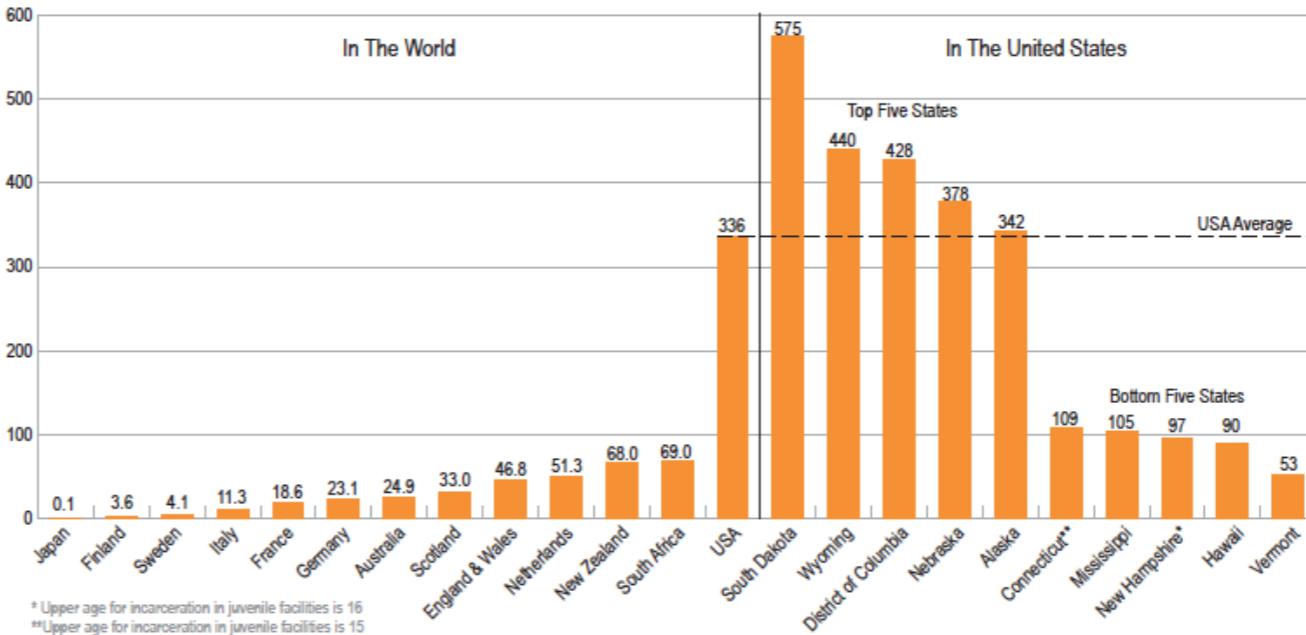
# Infographic by Morgan Visalli

## Juvenile Incarceration

is more prevalent in the United States than anywhere else in the world. In 2010, there were **70,792 minors** incarcerated in juvenile corrections institutions and an estimated **10,000 minors** incarcerated in adult prisons. Although research has shown these facilities to be dangerous, expensive and inappropriate locations for troubled youth, juvenile imprisonment remains the predominant strategy for the treatment and punishment of youth offenders in the United States.

### Youth Incarceration Rates (In Juvenile Facilities) Per 100,000 of Population Under 18

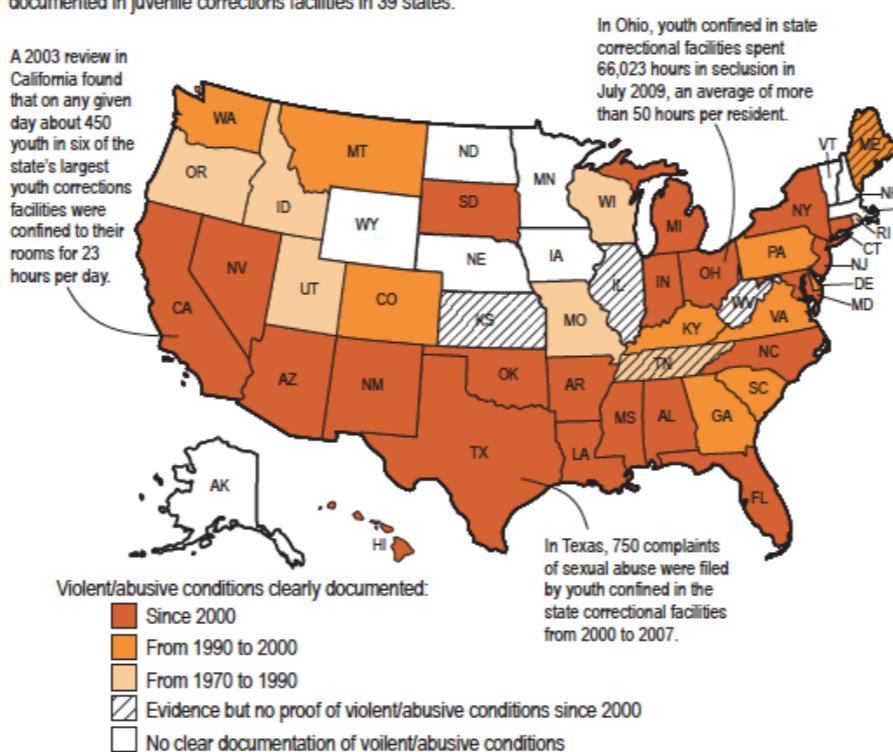
America's heavy reliance on juvenile incarceration is unique among the world's developed nations. The juvenile incarceration rate in the United States (336 of every 100,000 youth) is nearly five times the rate of the next highest nation, South Africa (69 per 100,000 youth).



### Maltreatment in Juvenile Corrections Facilities: 1970 to Present

Since 1970, systemic violence, sexual abuse, and/or excessive use of isolation or restraints has been documented in juvenile corrections facilities in 39 states.

A 2003 review in California found that on any given day about 450 youth in six of the state's largest youth corrections facilities were confined to their rooms for 23 hours per day.



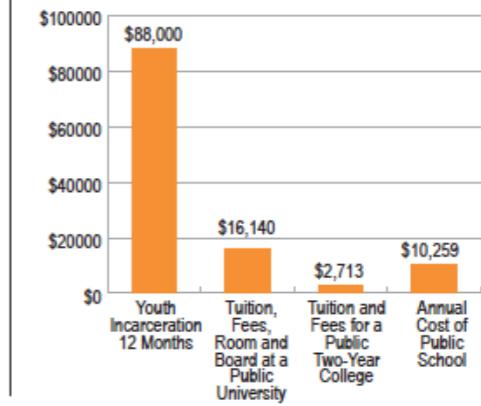
Sources: Annie E. Casey Foundation: "No Place for Kids" [www.aecf.org/noplaceforkids](http://www.aecf.org/noplaceforkids)  
Office of Juvenile Justice and Delinquency Prevention: "Juvenile Residential Facility Census, 2008: Selected Findings"  
Office of Juvenile Justice and Delinquency Prevention: "Juvenile Custody Rates By State: 2010"

### For Every 10 Incarcerated Youth...

- 3 have attempted suicide.
- 7 have seen someone severely injured or killed.
- 3 have been sexually and/or physically abused.
- 6.5 suffer from one or more mental health conditions.
- 6 are African American or Hispanic.
- 7 are rearrested within three years of being released.

### Cost of Incarceration Vs. Education

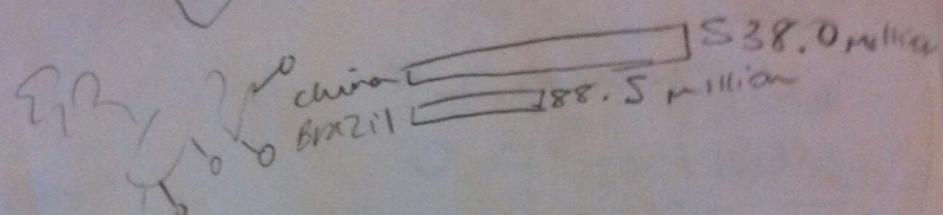
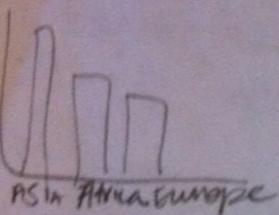
Most states devote the bulk of their juvenile justice budget to incarceration facilities, resulting in a major misallocation and waste of taxpayer dollars. In 2008, taxpayers spent about \$5 billion on youth imprisonment.



## HEADLINE (CHINA) (INTRO)

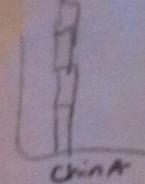
INTERNET  
USERS  
DATA

MAP OF  
ASIA



E-commerce  
& segments

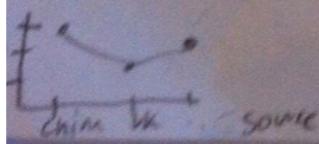
china breakdown  
(slide 7)



lowest  
# of  
rejections  
↳ 3% (?)

80% buy online

not only are  
they buying the  
most on the  
internet, they're also  
utilizing M-platform  
media to do so



a trend that has been  
growing in the past  
years & other countries,  
w/ china still in the lead  
(slide 10)

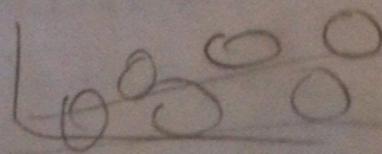
china  
SK  
UK  
USA

or dot graph  
or graph on  
slide 11

PRODUCTS

online purchase  
vs research

AND china is not  
buying impulsively  
they're doing their  
research too (slide 27)



Adobe Illustrator  
Data Wrapper  
Google Fusion Tables  
iCharts  
Tableau (Public)  
D3 (Javascript)  
R

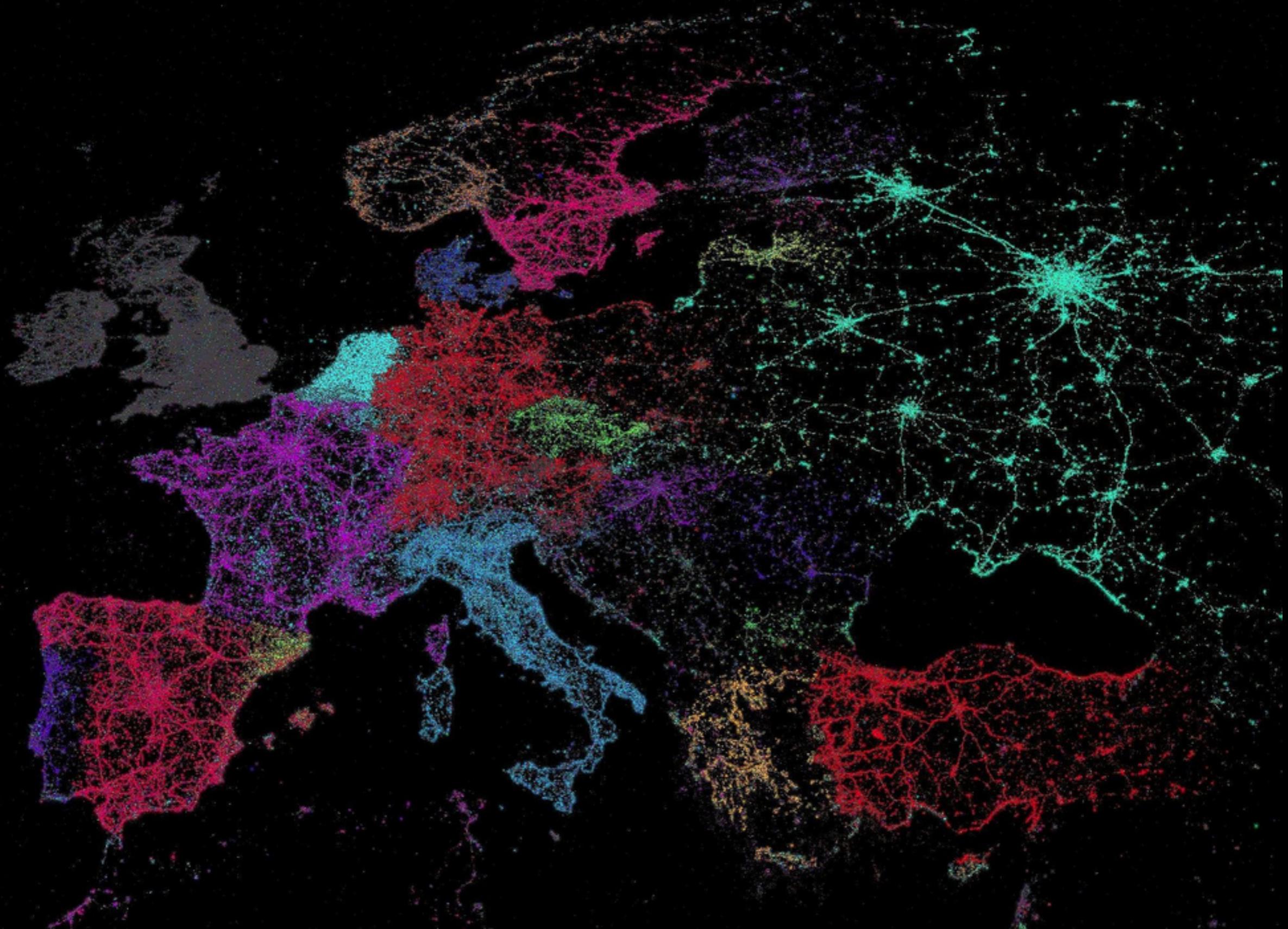
...and so many others!

# Common misconceptions about information visualization

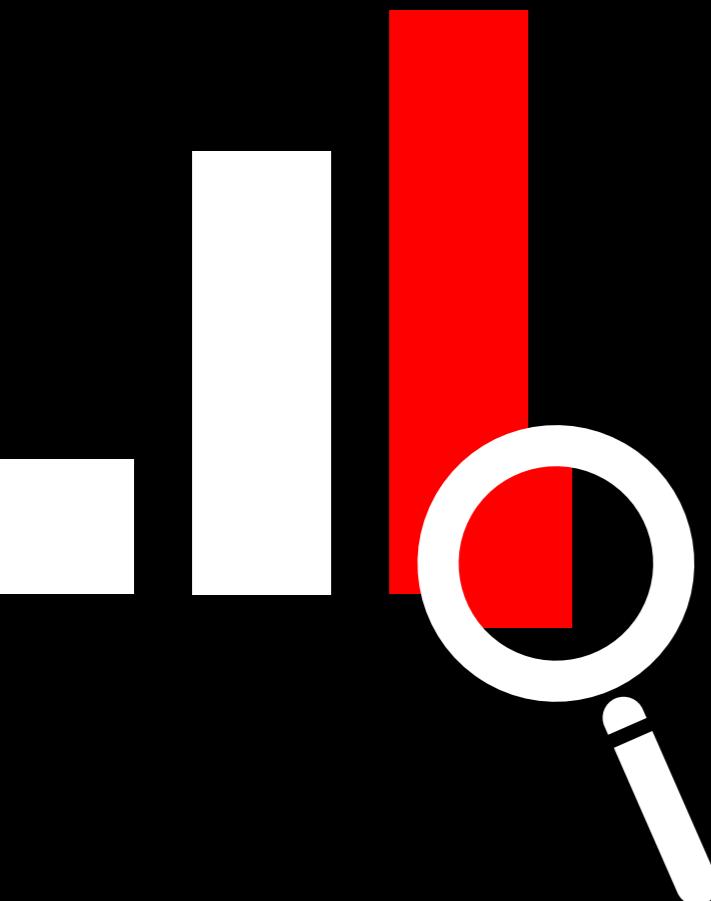
“Infographics is about  
designing cool pictures”

Many visualizations today are  
**beautiful**, and even **functional**,  
but not particularly **insightful**.

Fischer, Eric (2012). Language Communities of Twitter

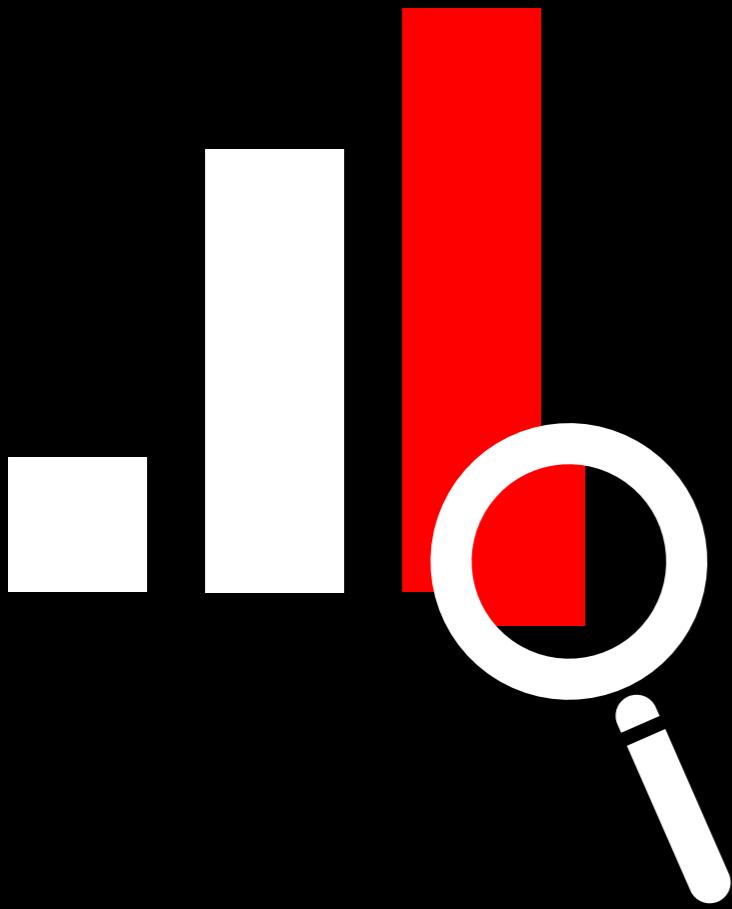


Visualization is not just  
about graphics, but about  
finding the right  
symbiosis between great  
writing and great visuals



# THANK YOU!





# FUNCTIONALITY AND BEAUTY IN INFORMATION VISUALIZATION

What are the  
features that define a  
**great** visualization?

# I. Functional

1. Functional  
2. Beautiful

1. Functional
2. Beautiful
3. Insightful

1. Functional
2. Beautiful
3. Insightful
4. Enlightening

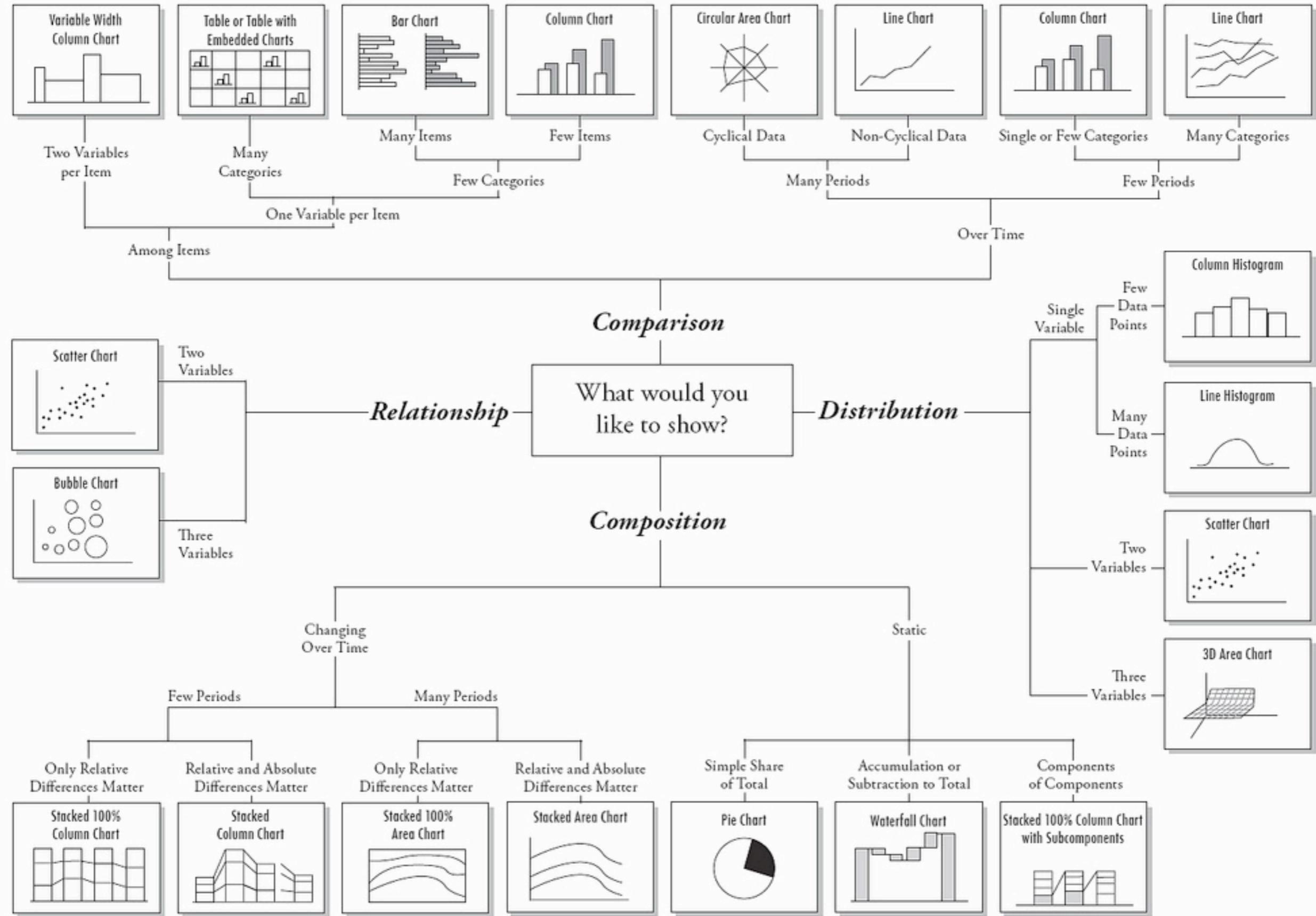
1. Functional
2. Beautiful
3. Insightful
4. Enlightening

Is it possible to **objectively**  
decide which graphic forms  
are more appropriate?

**To a certain extent, yes**

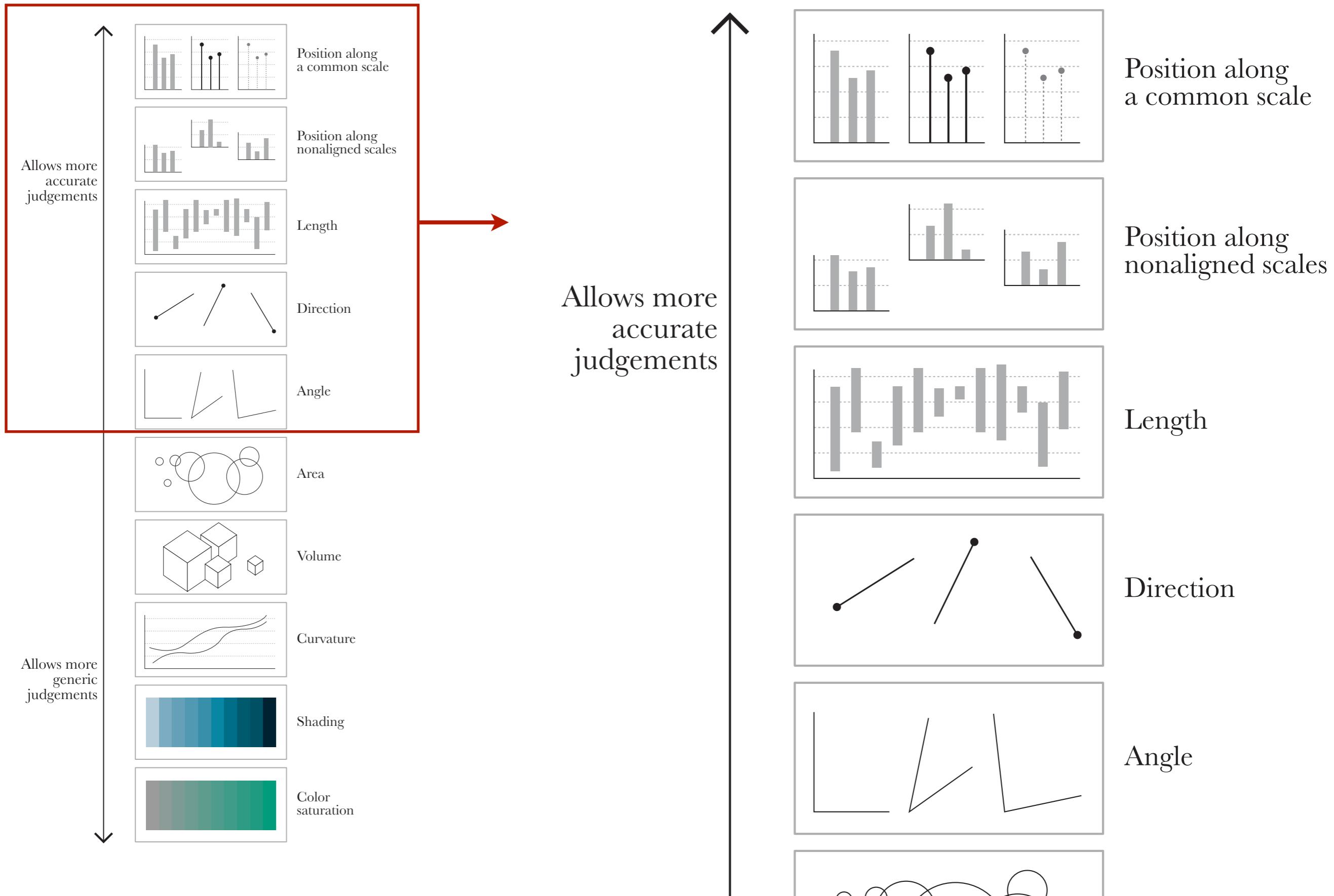
1. Think about the audience and the publication
2. Think of the questions your graphic should help readers answer
3. Can you understand it without reading every single figure?

# Chart Suggestions—A Thought-Starter

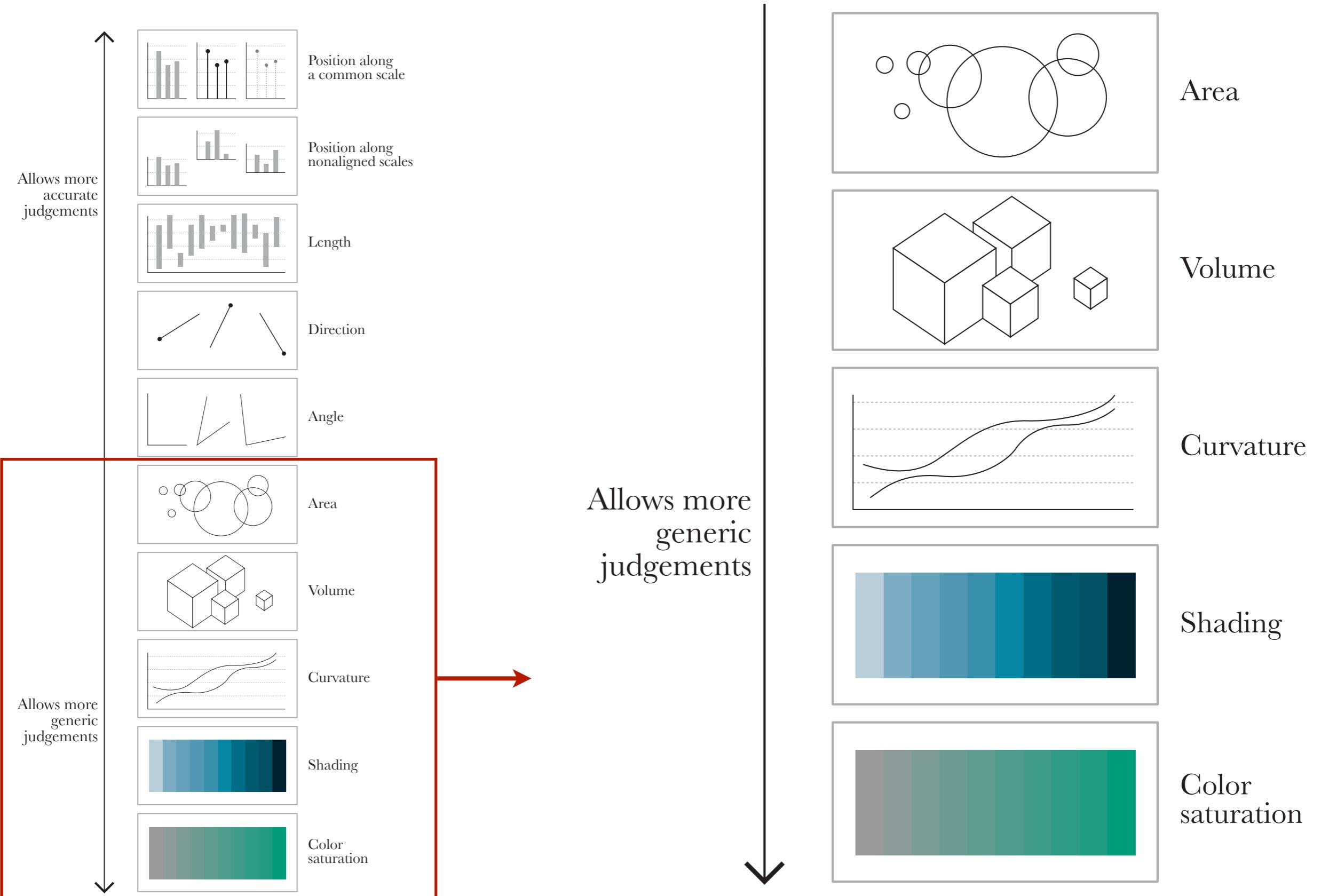


© 2006 A. Abela — a.v.abela@gmail.com

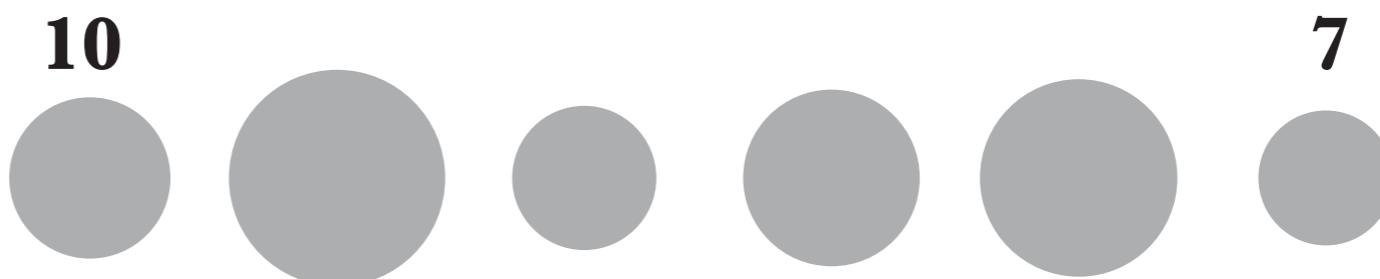
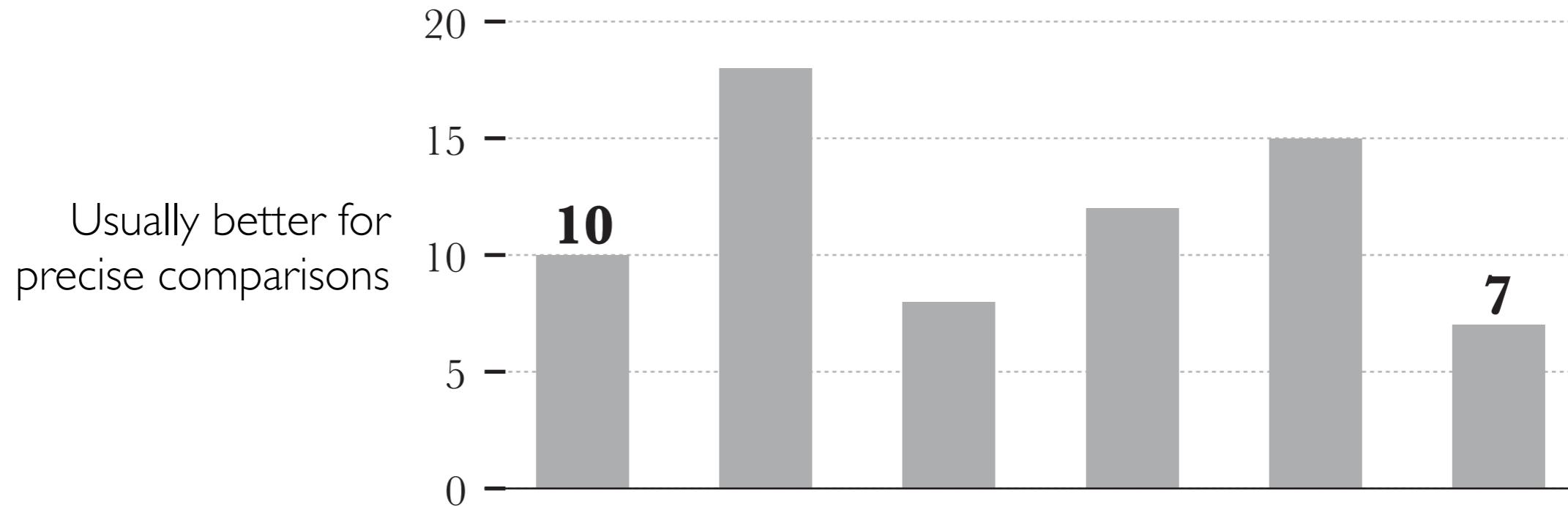
# William Cleveland and Robert McGill



# William Cleveland and Robert McGill



# William Cleveland and Robert McGill



It may work for overviews of large datasets (choropleth maps, for instance)





## BANKING ON THE WORLD BANK

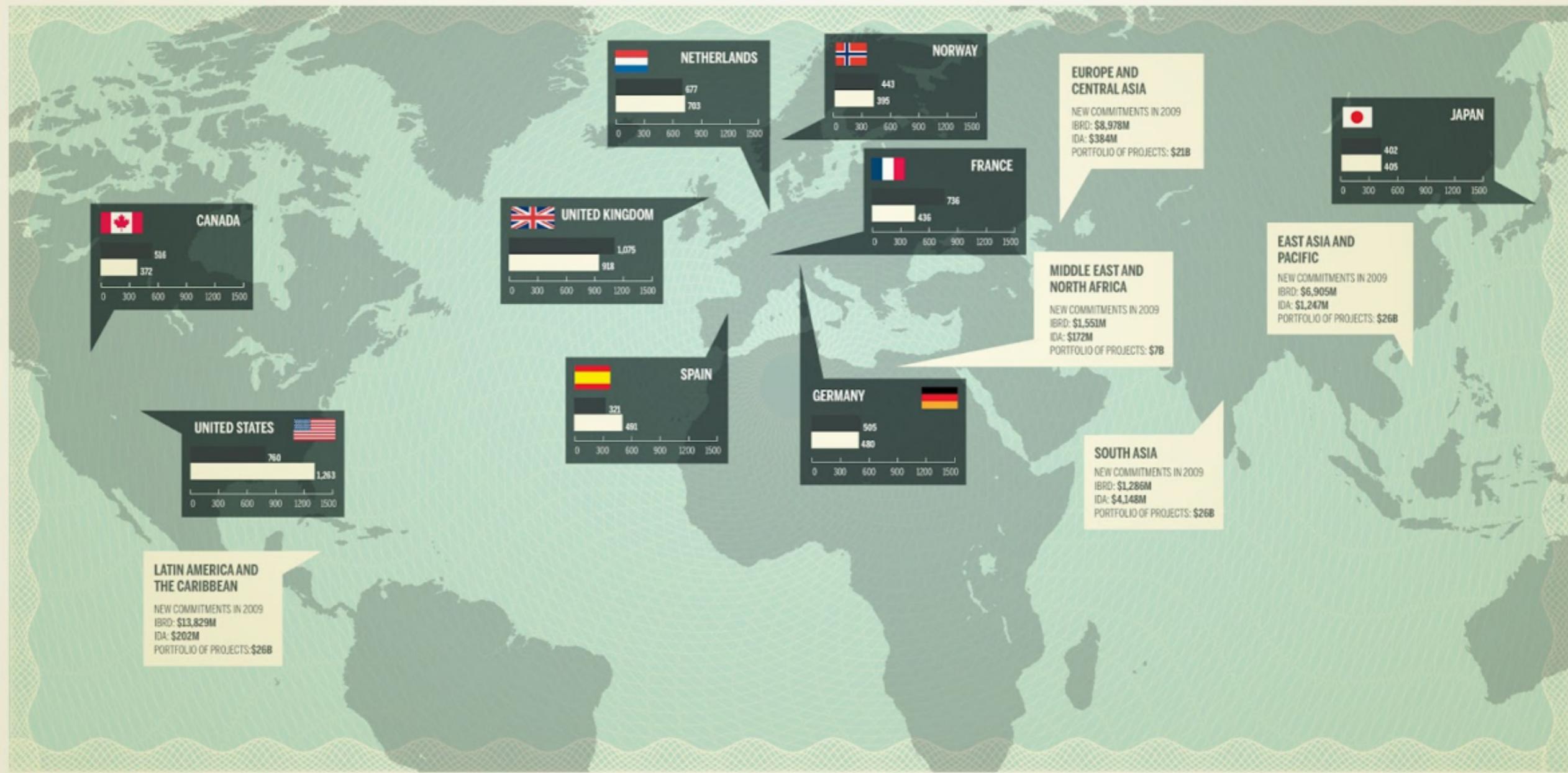
Developing countries around the world depend on assistance from the World Bank to help support their often fragile economies. We have highlighted the regional recipients and respective outlays, as well as the nine largest donor countries contributing to the Fund's efforts to fight poverty around the globe.

IBRD: THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
IDA: THE INTERNATIONAL DEVELOPMENT ASSOCIATION



AID RECEIVED BY REGION

SOURCE: WORLDBANK.ORG



A COLLABORATION BETWEEN GOOD AND COLUMN FIVE



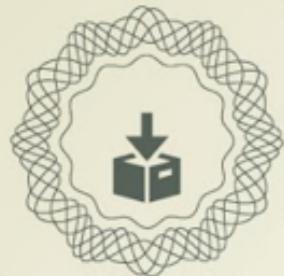
	ABSOLUTE GIVING	
	2008	2009
Canada	516	372
US	760	1263
UK	1075	918
Spain	321	491
Netherlands	677	703
Norway	443	395
France	736	436
Germany	505	480
Japan	402	405

	ABSOLUTE GIVING		Population	PER CAPITA GIVING	
	2008	2009		2008	2009
Canada	516	372	35.1	14.7	10.6
US	760	1263	316.1	2.4	4.0
UK	1075	918	63.2	17.0	14.5
Spain	321	491	47.1	6.8	10.4
Netherlands	677	703	16.8	40.3	41.8
Norway	443	395	5.1	86.9	77.5
France	736	436	65.6	11.2	6.6
Germany	505	480	80.3	6.3	6.0
Japan	402	405	127.3	3.2	3.2

	ABSOLUTE GIVING		Population	PER CAPITA GIVING	
	2008	2009		2008	2009
Canada	516	372	35.1	14.7	10.6
US	760	1263	316.1	2.4	4.0
UK	1075	918	63.2	17.0	14.5
Spain	321	491	47.1	6.8	10.4
Netherlands	677	703	16.8	40.3	41.8
Norway	443	395	5.1	86.9	77.5
France	736	436	65.6	11.2	6.6
Germany	505	480	80.3	6.3	6.0
Japan	402	405	127.3	3.2	3.2
GIVING COMPARED TO GDP (Millions)					
	GDP	2008%	2009%		
Canada	1736000	0.030	0.021		
US	14991000	0.005	0.008		
UK	2430000	0.044	0.038		
Spain	1352000	0.024	0.036		
Netherlands	773000	0.088	0.091		
Norway	501000	0.088	0.079		
France	2775000	0.027	0.016		
Germany	3600000	0.014	0.013		
Japan	5870000	0.007	0.007		

	ABSOLUTE GIVING		Population	PER CAPITA GIVING	
	2008	2009		2008	2009
Canada	516	372	35.1	14.7	10.6
US	760	1263	316.1	2.4	4.0
UK	1075	918	63.2	17.0	14.5
Spain	321	491	47.1	6.8	10.4
Netherlands	677	703	16.8	40.3	41.8
Norway	443	395	5.1	86.9	77.5
France	736	436	65.6	11.2	6.6
Germany	505	480	80.3	6.3	6.0
Japan	402	405	127.3	3.2	3.2
GIVING COMPARED TO GDP (Millions)					
	GDP	2008%	2009%		
Canada	1736000	0.030	0.021		
US	14991000	0.005	0.008		
UK	2430000	0.044	0.038		
Spain	1352000	0.024	0.036		
Netherlands	773000	0.088	0.091		
Norway	501000	0.088	0.079		
France	2775000	0.027	0.016		
Germany	3600000	0.014	0.013		
Japan	5870000	0.007	0.007		
	DIFFERENCE 2008-2009 (%)				
	-27.906977				
	66.1842105				
	-14.604651				
	52.9595016				
	3.84047267				
	-10.835214				
	-40.76087				
	-4.950495				
	0.74626866				

HELP GOES TO Millions)	Int. Bank Reconstruction & Development	Int. Devel. Assoc.	PORTFOLIO
Latin America/	13829	202	26000
Europe/Central	8978	384	21000
Middle East/N..	1551	172	7000
East Asia/Pacif	6905	1247	26000
South Asia	1286	4184	26000



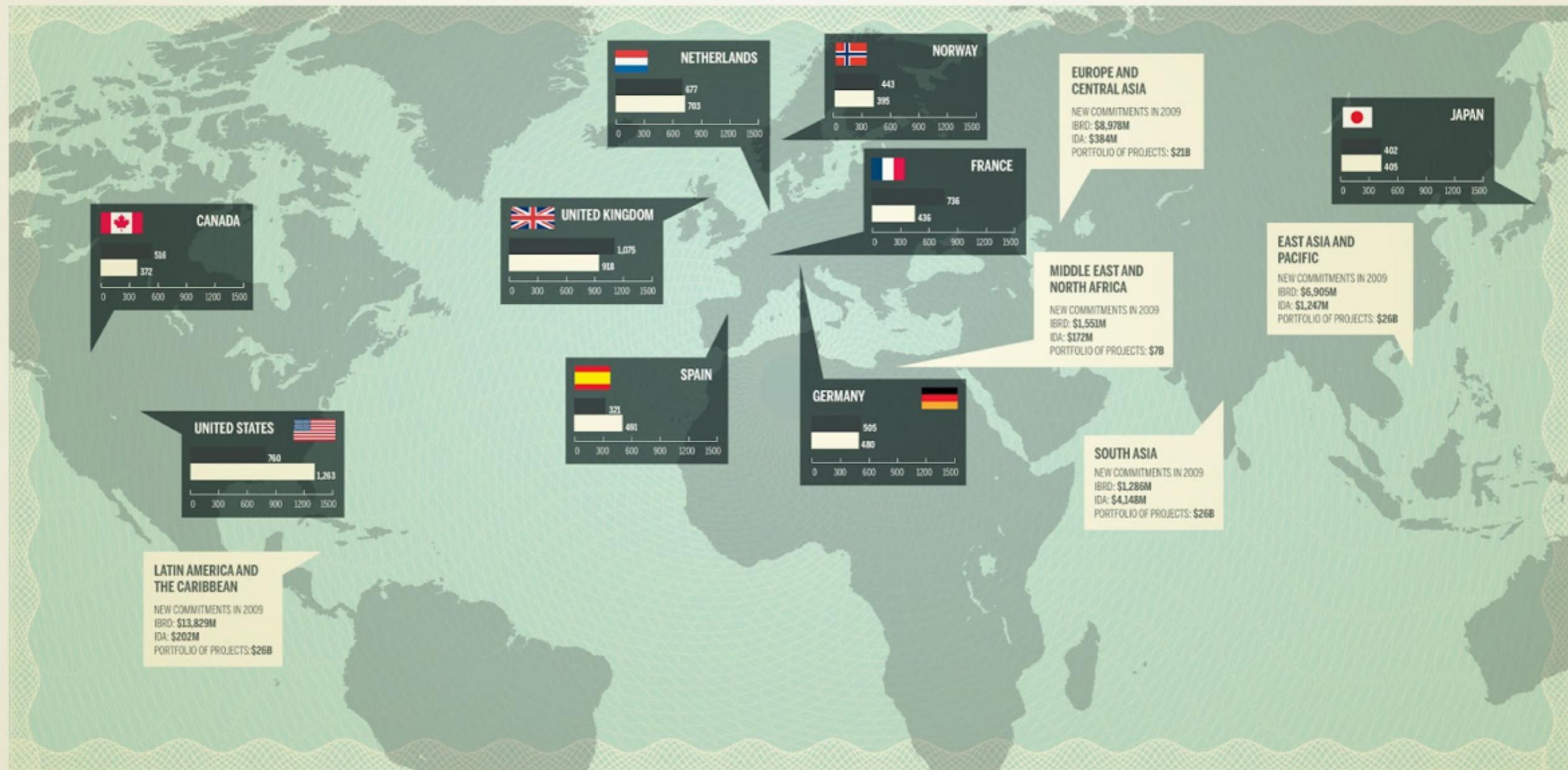
## BANKING ON THE WORLD BANK

Developing countries around the world depend on assistance from the World Bank to help support their often fragile economies. We have highlighted the regional recipients and respective outlays, as well as the nine largest donor countries contributing to the Fund's efforts to fight poverty around the globe.

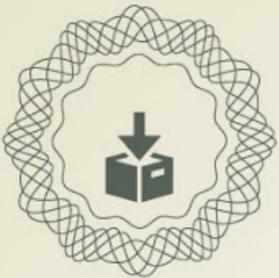
IBRD: THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
IDA: THE INTERNATIONAL DEVELOPMENT ASSOCIATION



SOURCE: WORLDBANK.ORG



A COLLABORATION BETWEEN GOOD AND COLUMN FIVE



# BANKING ON THE WORLD BANK

Developing countries around the world depend on assistance from the World Bank to help support their often fragile economies. We have highlighted the regional recipients and respective outlays, as well as the nine largest donor countries contributing to the Fund's efforts to fight poverty around the globe.

SOURCE: WORLDBANK.ORG

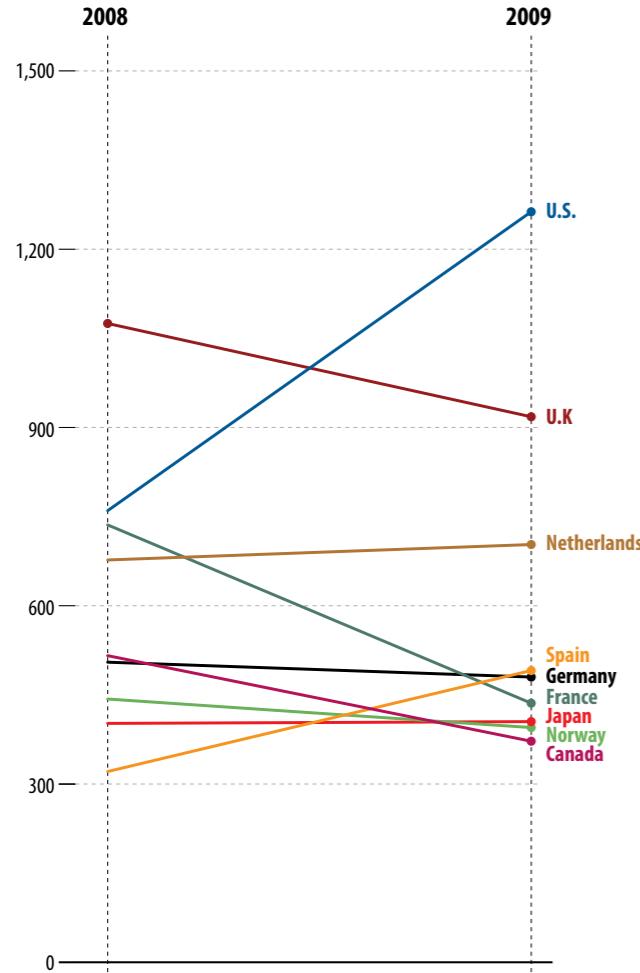
## THE 9 LARGEST CONTRIBUTORS

Write a nice introduction here, perhaps just 1-line long will be enough

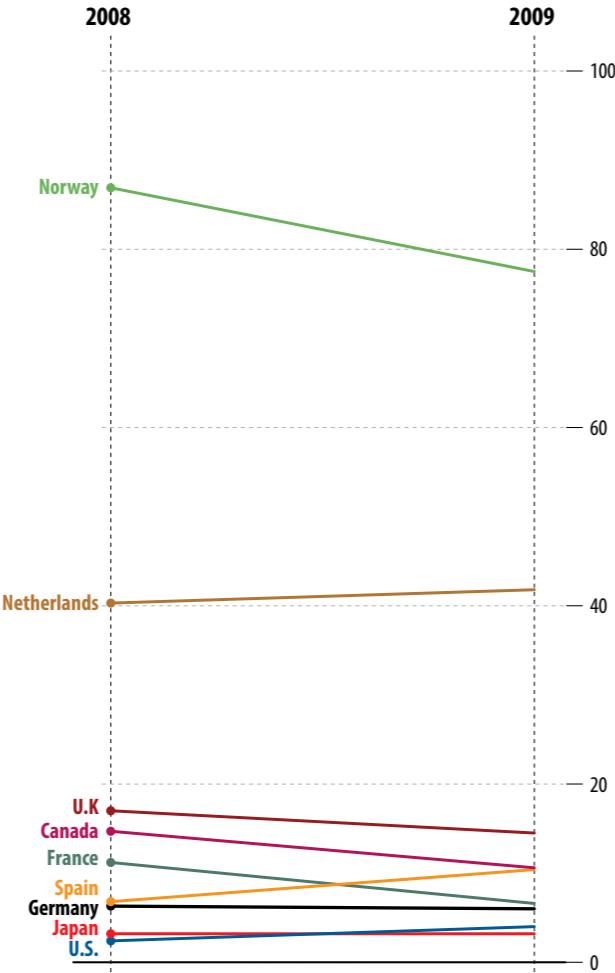
**THE U.S. LEADS THE WORLD IN ABSOLUTE TERMS...**

**...BUT NOT IN RELATIVE TERMS**

*Total annual contributions in millions of U.S. dollars*



*Annual per capita contributions, in U.S. dollars*

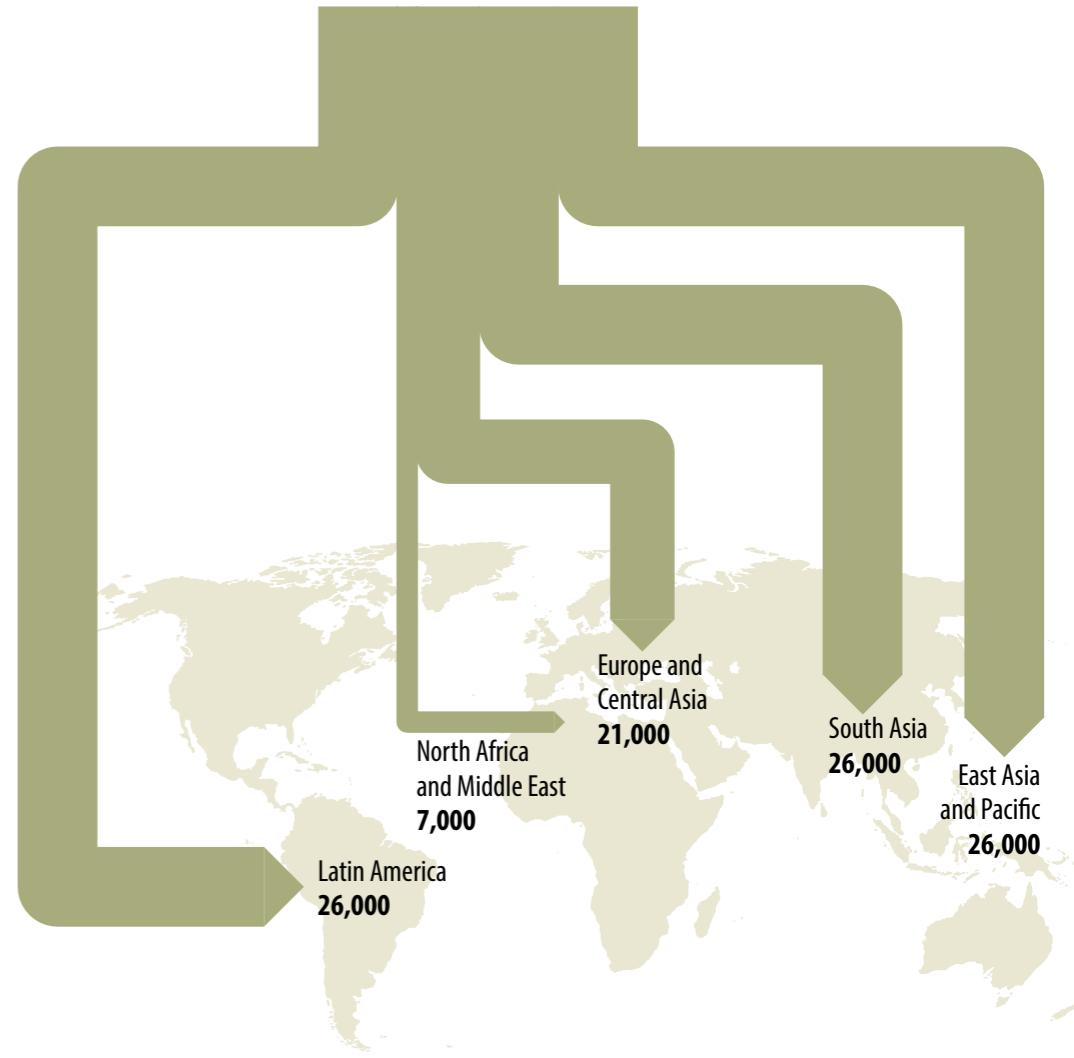


## WHERE THE MONEY GOES

Write a nice introduction here, perhaps just 1-line long will be enough

*Millions of U.S. dollars*

**TOTAL: 106,000**



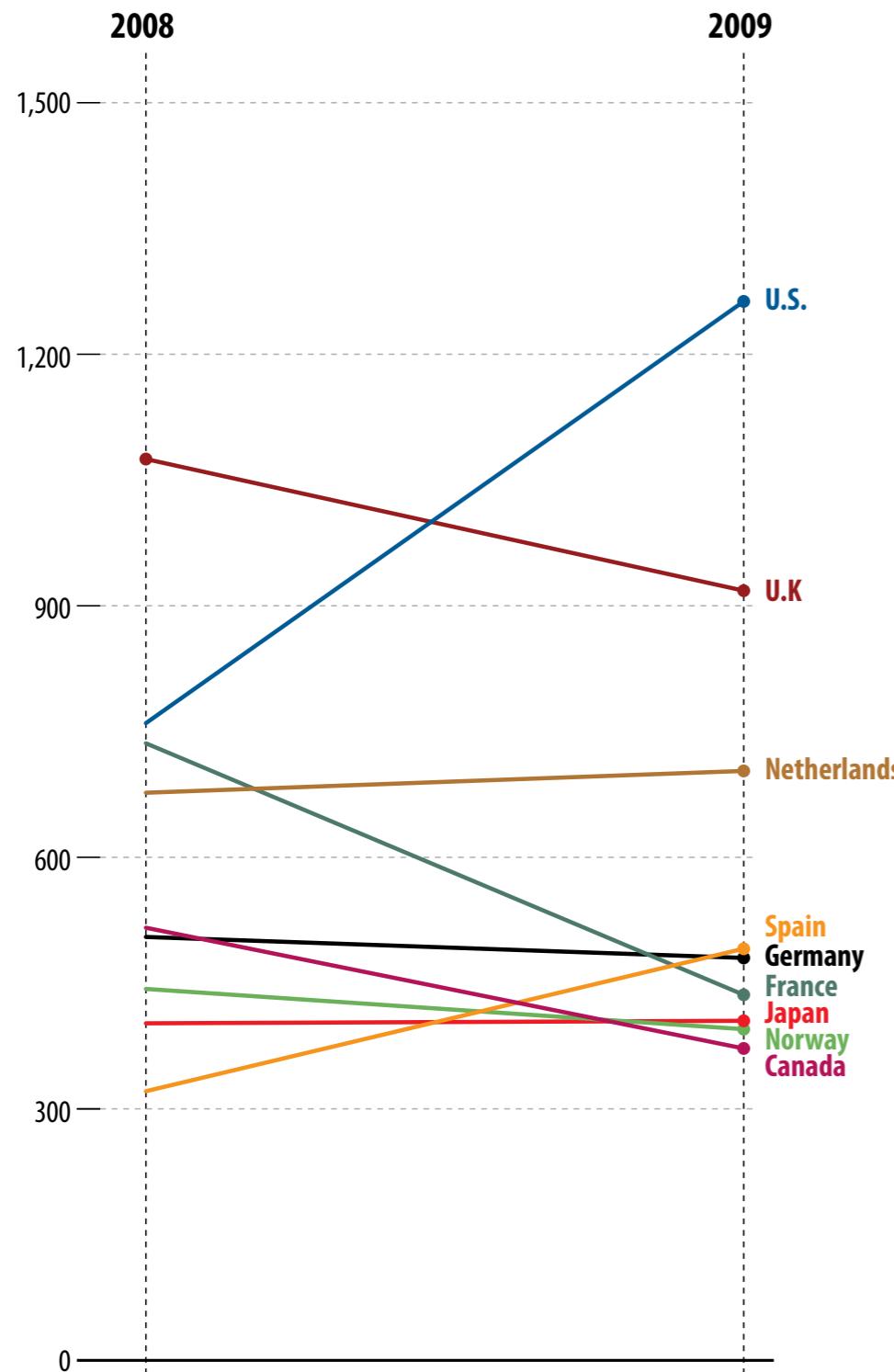
A COLLABORATION BETWEEN GOOD AND COLUMN FIVE

# THE 9 LARGEST CONTRIBUTORS

Write a nice introduction here, perhaps just 1-line long will be enough

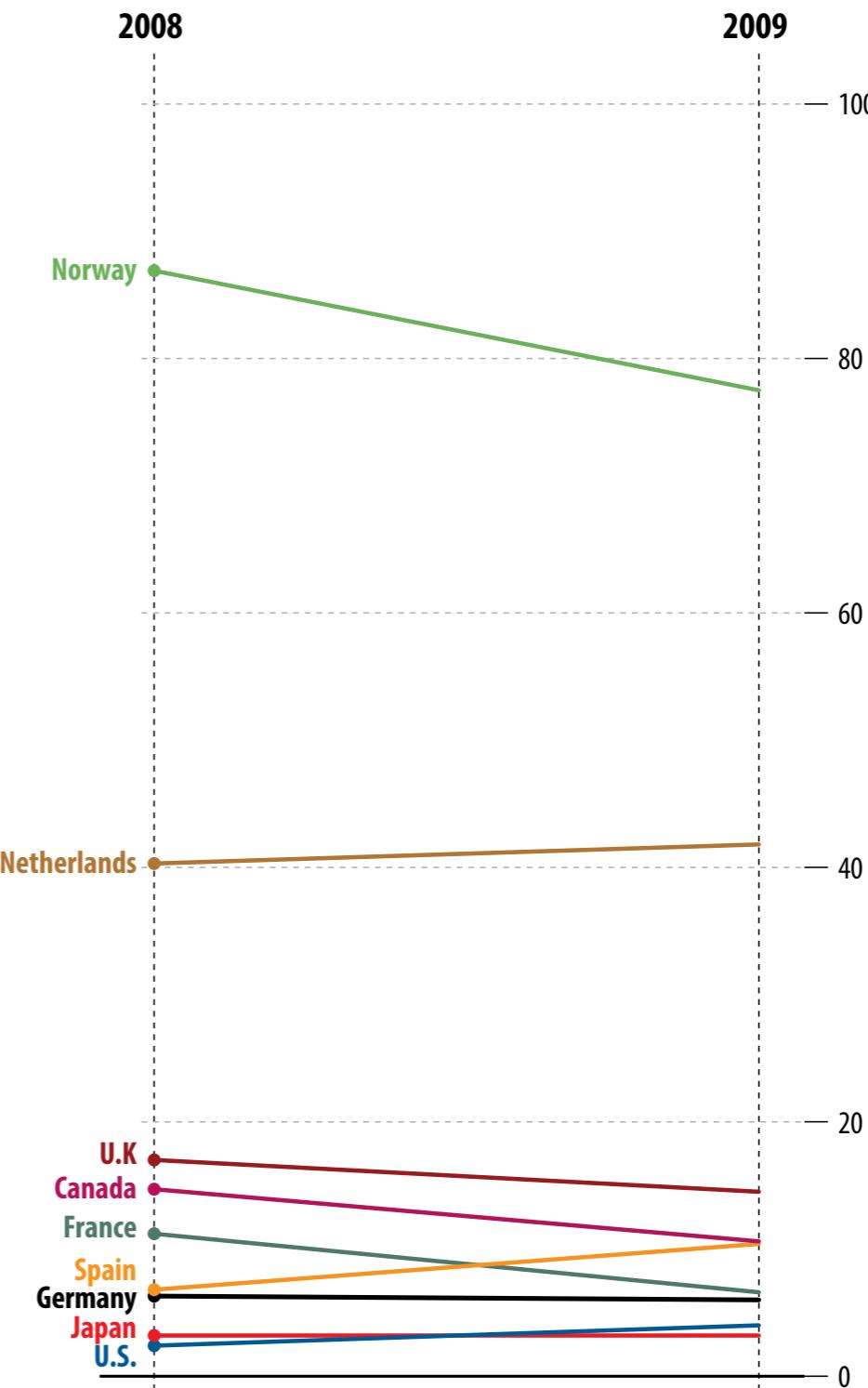
**THE U.S. LEADS THE WORLD IN ABSOLUTE TERMS...**

*Total annual contributions in millions of U.S. dollars*



**...BUT NOT IN RELATIVE TERMS**

*Annual per capita contributions, in U.S. dollars*



# WHERE TO GO FROM HERE

Write a nice introduction here, perhaps just 1-line long will be enough

*Millions of U.S. dollars*

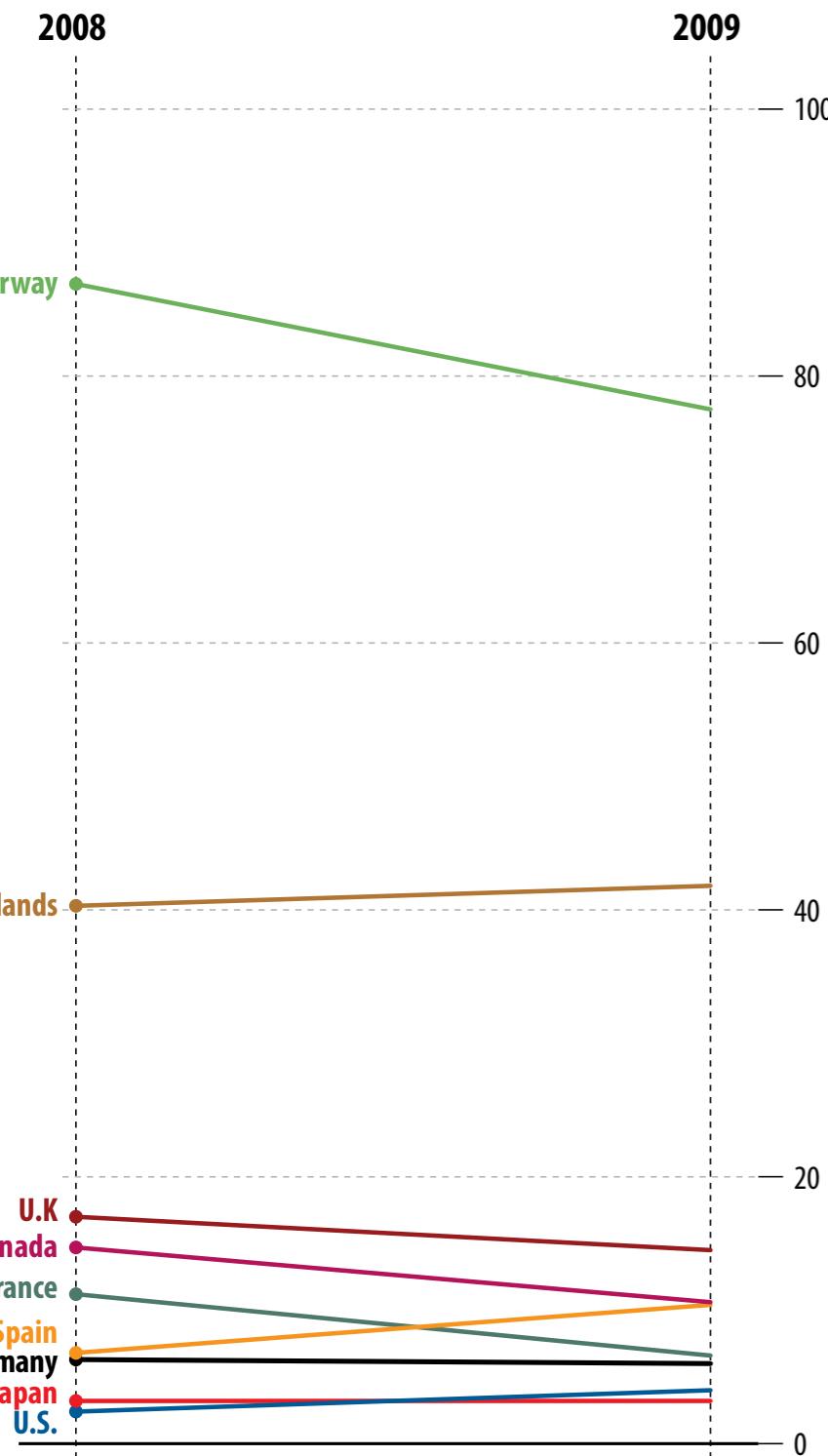


# WHERE THE MONEY GOES

Write a nice introduction here, perhaps just 1-line long will be enough

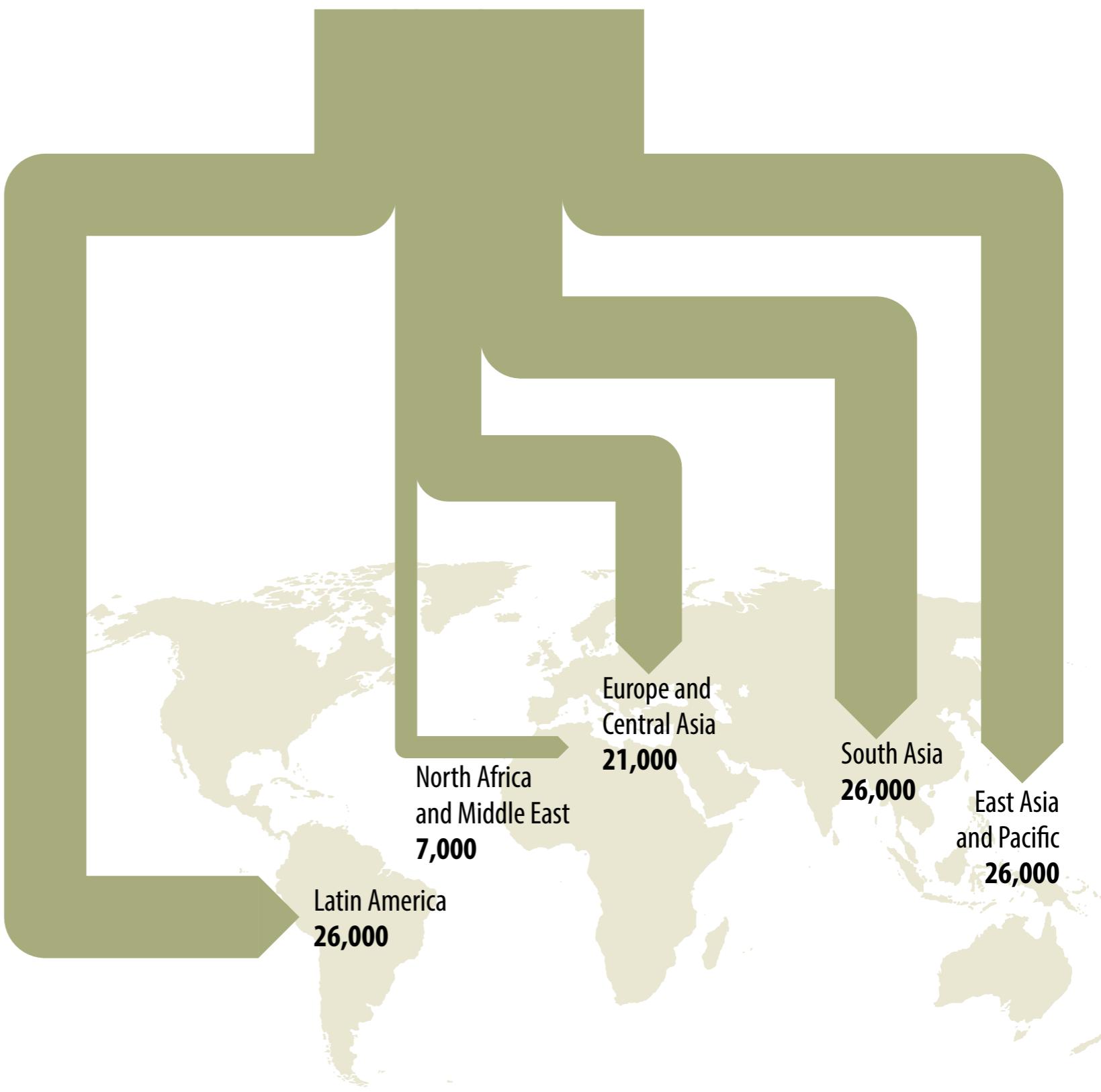
## BUT NOT IN RELATIVE TERMS

Annual per capita contributions, in U.S. dollars

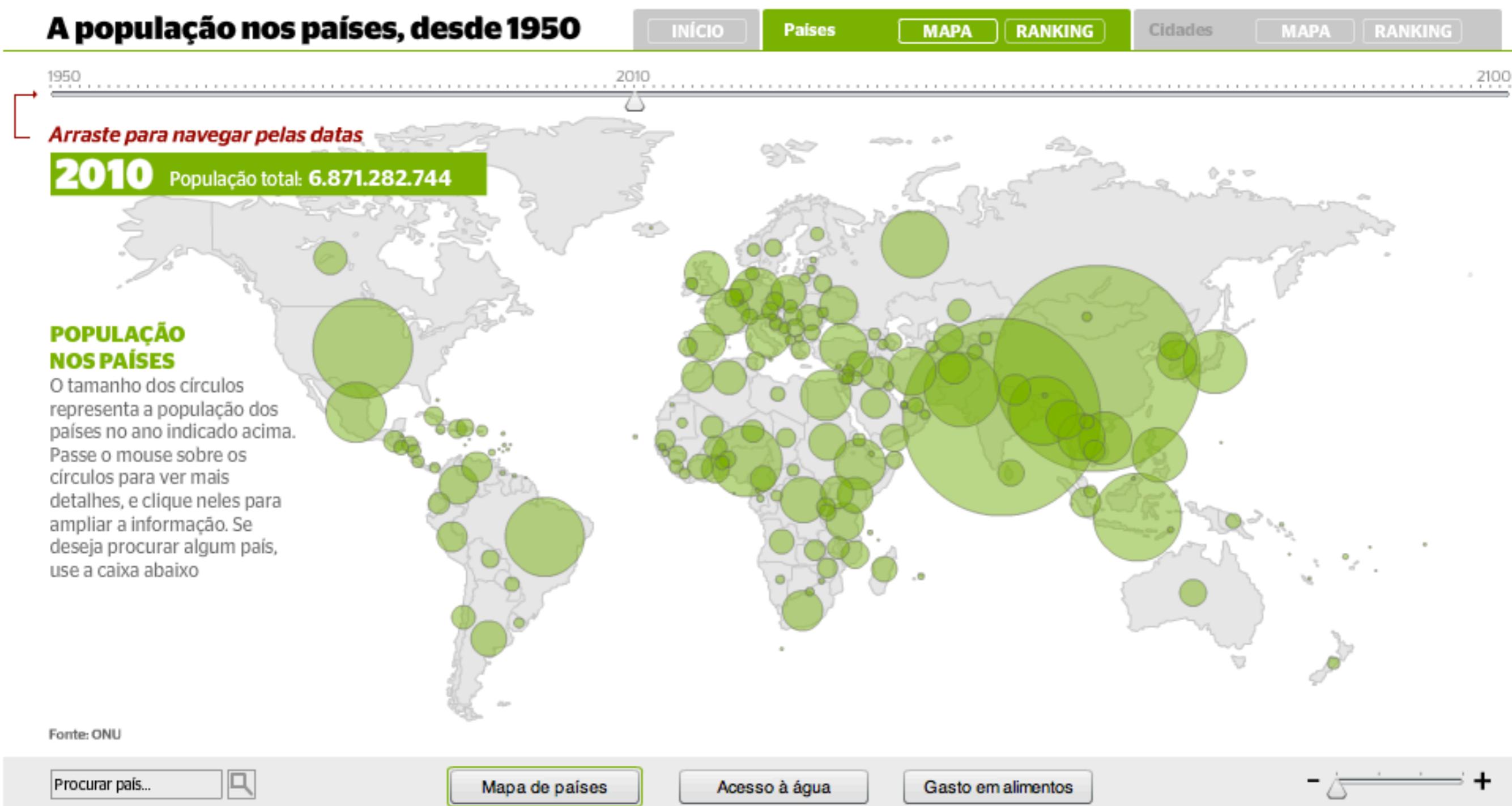


Millions of U.S. dollars

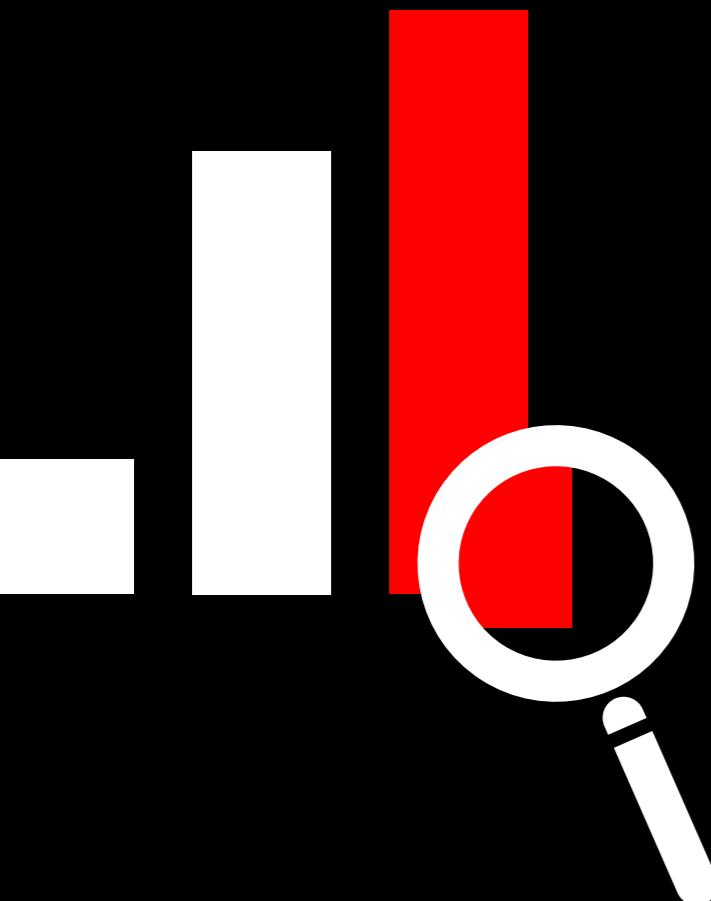
**TOTAL: 106,000**



In some cases, it is appropriate to represent your data more than once

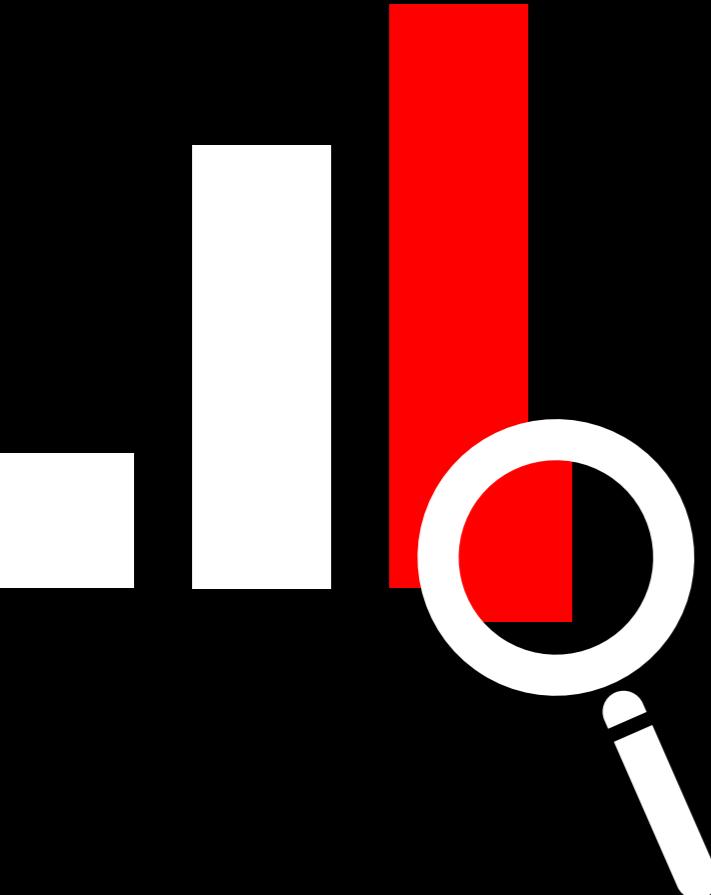


ÉPOCA magazine: <http://revistaepoca.globo.com/Revista/Epoca/0,,EMI238256-17445,00.html>



# THANK YOU!





# VISUALIZATION: AN INSIGHTFUL ART

BEYOND FUNCTIONALITY AND BEAUTY

0. Introduction

1. Functional

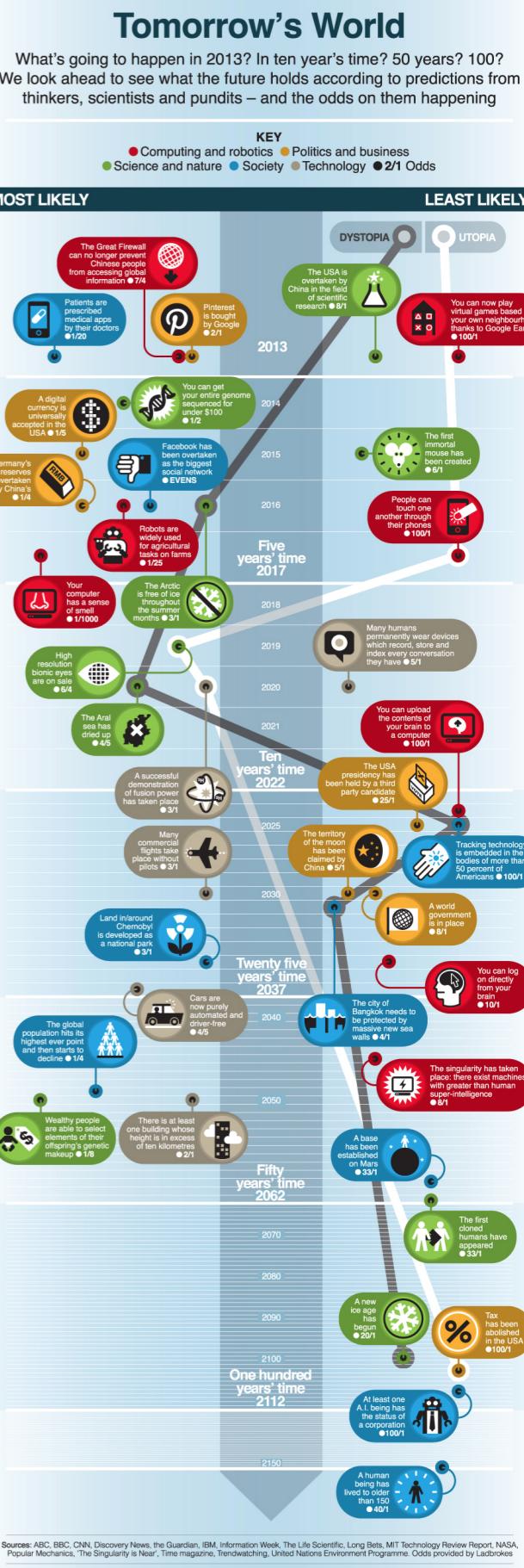
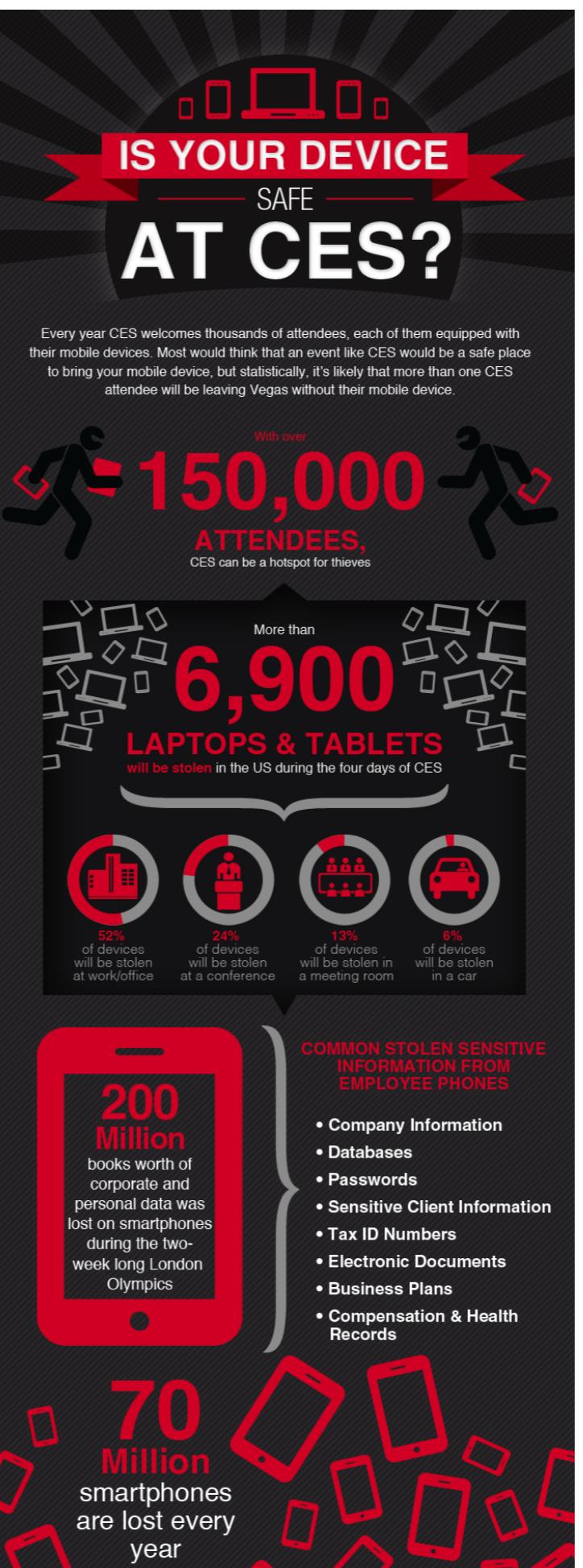
2. Beautiful

3. Insightful

4. Enlightening

**Insight** is the discovery of non-trivial,  
complex, deep, unexpected, or  
relevant truths about the information

Many so-called  
“infographics”  
nowadays are not  
particularly  
insightful



What's your point?  
What's the story?

# Use the annotation layer

<http://apps.washingtonpost.com/investigative/homicides/#0:0:all:all:all:all:all>

## Homicides in the District

The Post tracked all homicides in D.C. between 2000 and 2011 to learn what happened to each case. It found that fewer than a third of the homicides have led to a conviction for murder or manslaughter. Find homicides in your neighborhood and see citywide trends here.

### SEARCH

See homicides and victims  
in your neighborhood:

e.g. Mt. Pleasant, Capitol Heights



### EXPLORE

See the main trends we've  
discovered in this map.



Homicide rate  
falling in the  
District of Columbia »



About 30 percent  
of homicides have  
led to convictions



Drug killings  
down 84 percent  
since 2000 »



Most dangerous age:  
24 percent of those  
killed were in their early  
20s »

### DISTRICT OF COLUMBIA

Year: 2000-2011

ABOUT >

Case Status: All

>

Victim Race: All Age: All

>

Motive: All

>

Manner: All

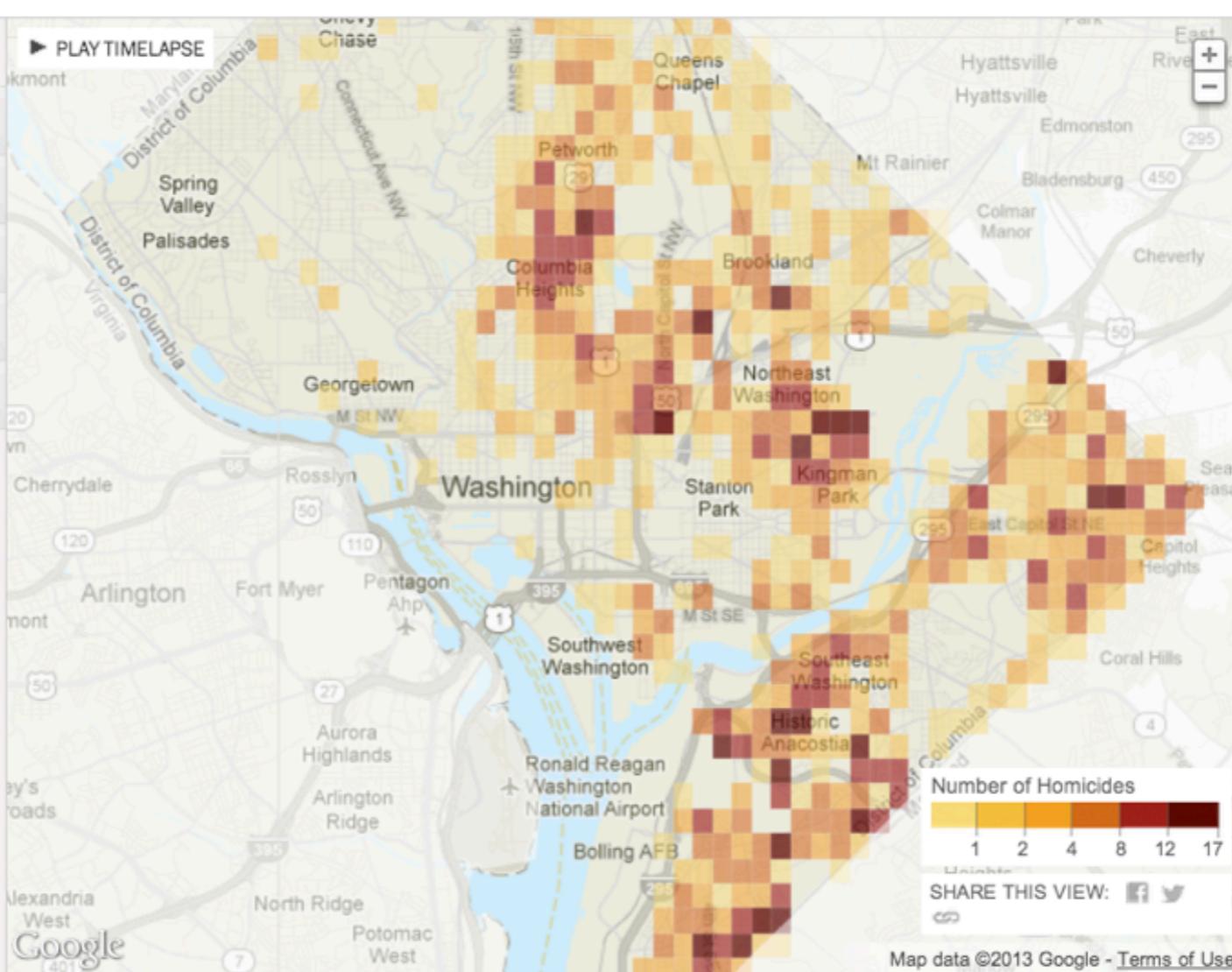
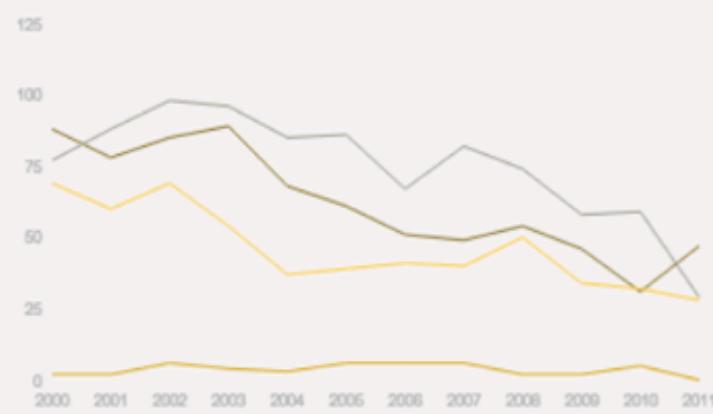
>

Citywide: 2,294 homicides

[Clear filters](#) | [View a list of these homicides](#) »

Homicide cases by quadrant, 2000-2011

— NE — SE — SW — NW



In certain cases, you may want to present the main insights, instead of letting readers figure everything out on their own

# Storytelling

## DIAGRAM

NEWS IN PERSPECTIVE

### Brazil's Demographic Opportunity

How Brazil can take advantage of a future with fewer children per couple.

Alberto Cairo, Francine Lima,  
Marco Vergotti

#### PRELIMINARY DATA FROM THE 2010 CENSUS

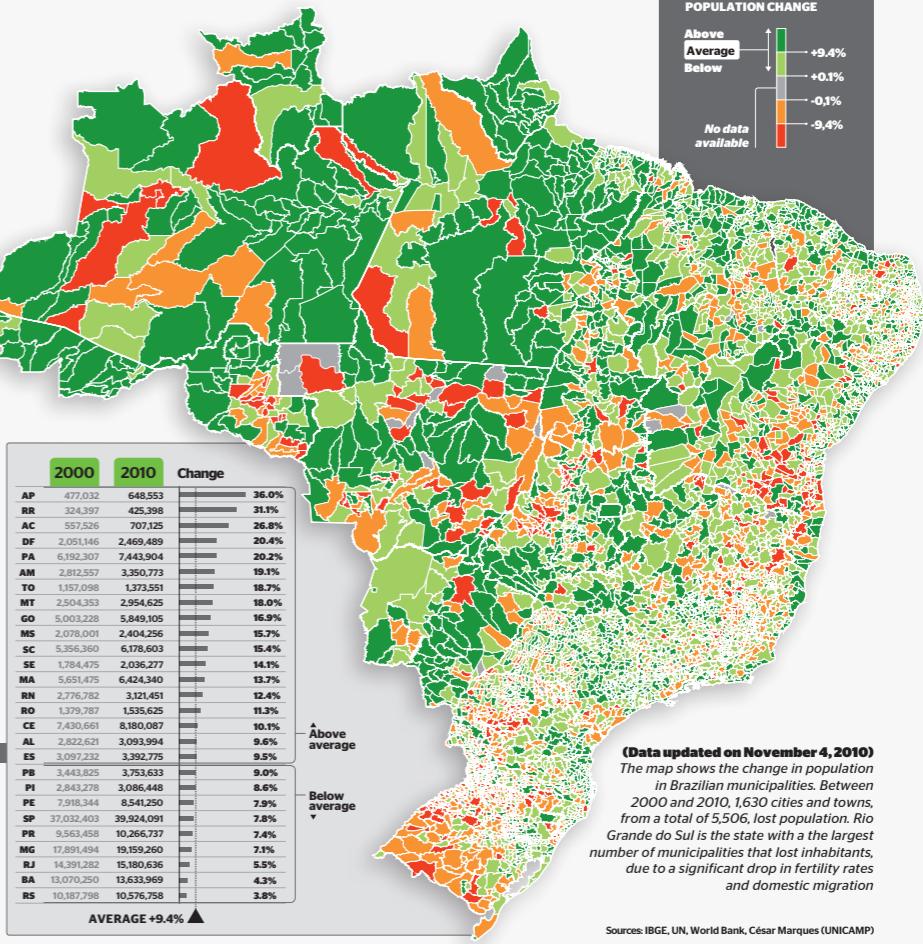
Create an interesting picture of the changes that the Brazilian population has gone through in the past ten years. Brazil's population grew, on average, 10% between 2000 and 2010, but the fertility rate is below 2.1 children per woman, the minimum to keep a population from shrinking. According to César Marques, a demographer from the University of Campinas, the main challenge Brazil will face in the future is how to maintain a healthy Social Security system if the number of older and retired people will likely be much larger than it is today. Read on to learn about all the variables at play in this story.

#### 1 BRAZIL'S POPULATION IS BIGGER

The 2010 Census has revealed a 9.4% population increase between 2000 and 2010. The differences between states, as you can see on the chart on the right, are noticeable. Most rich states, such as São Paulo and Rio, didn't grow as fast as the ones in the north east.

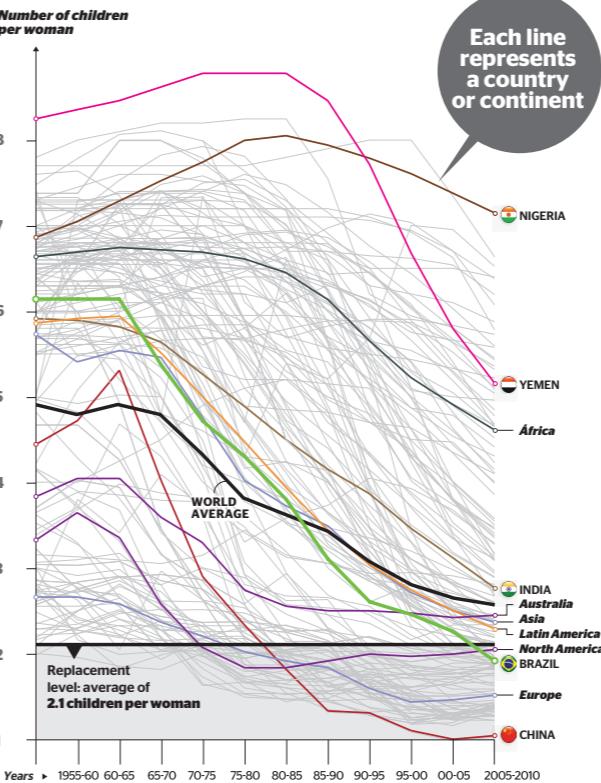
2000 169,799,170  
2010 190,732,694

AVERAGE +9.4%



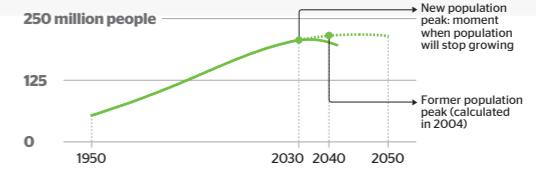
#### 2 —BUT THE FERTILITY RATE IS MUCH LOWER THAN EXPECTED

A study in 2004 estimated that in 2010, the fertility rate would be 2.4 children per woman, on average. But new data collected by the IBGE prove that the fertility rate is already 1.9, below the threshold called "replacement rate". When the fertility rate drops below this number, the population of a country will eventually start to shrink and grow older.



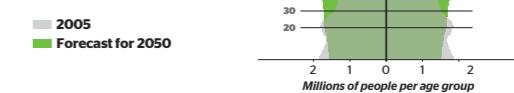
#### 3 —AS A CONSEQUENCE, POPULATION WILL STOP GROWING—

Forecasts made in 2004 anticipated that Brazil's population would stop growing in 2040. But the most recent data from the IBGE suggests that this could happen much earlier, in 2030.



#### 4 —AND IT WILL BECOME OLDER

Comparing the current population pyramid with the one predicted for 2050



#### How Brazil can transform the population challenge into an opportunity

- As the population ages, the proportion of people of working age increases. The country will therefore have more people producing wealth (if the labor market can absorb them) and fewer children to consume investments. It is a window of opportunity, because in some cases the number of people of working age to fall back when older people are leaving the market.
- The population under 15 years of age is falling today. A smaller number of students in public schools will facilitate the quality of teaching, if the amount invested in education stays the same.
- Educational policy focused on low-income youth favors the formation of more skilled workforce and greater social mobility.
- In the future, Brazil will reach the stage of Europe and Japan, which struggle to support their elders. This is why it's so important to prepare a more balanced retirement system, which will include retirement at a later age.

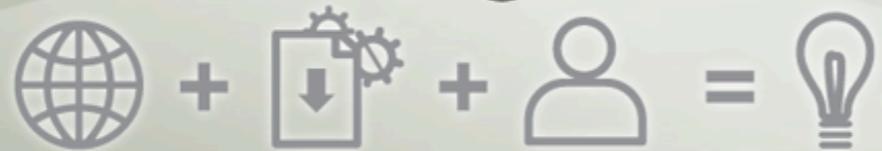
## Data

[By Country](#) | [By Topic](#) | [Indicators](#) | [Data Catalog](#) | [News](#) | [About](#) | [For Developers](#) | [Products](#)

This page in: [English](#) | [Español](#) | [Français](#) | [العربية](#)

# Apps for Development

A competition brought to you by  THE WORLD BANK



**Enter by January 10, 2011**

## Apps for Development Competition

Over 1,000 people have registered to support the competition. Click here for more details, to get involved, and to check out the applications that have already been submitted.



THE WORLD BANK

## Open Data

BROWSE DATA



### By Country

View profiles for over 200 countries and economies



### Indicators

View data for over 1,200 indicators

The [Data Catalog](#) provides download access to over 2,000 [indicators](#) from World Bank data sets.

### Find an indicator

GNI per capita, Atlas method (current US\$)

Go

[Learn more about data sets ▶](#)



### By Topic

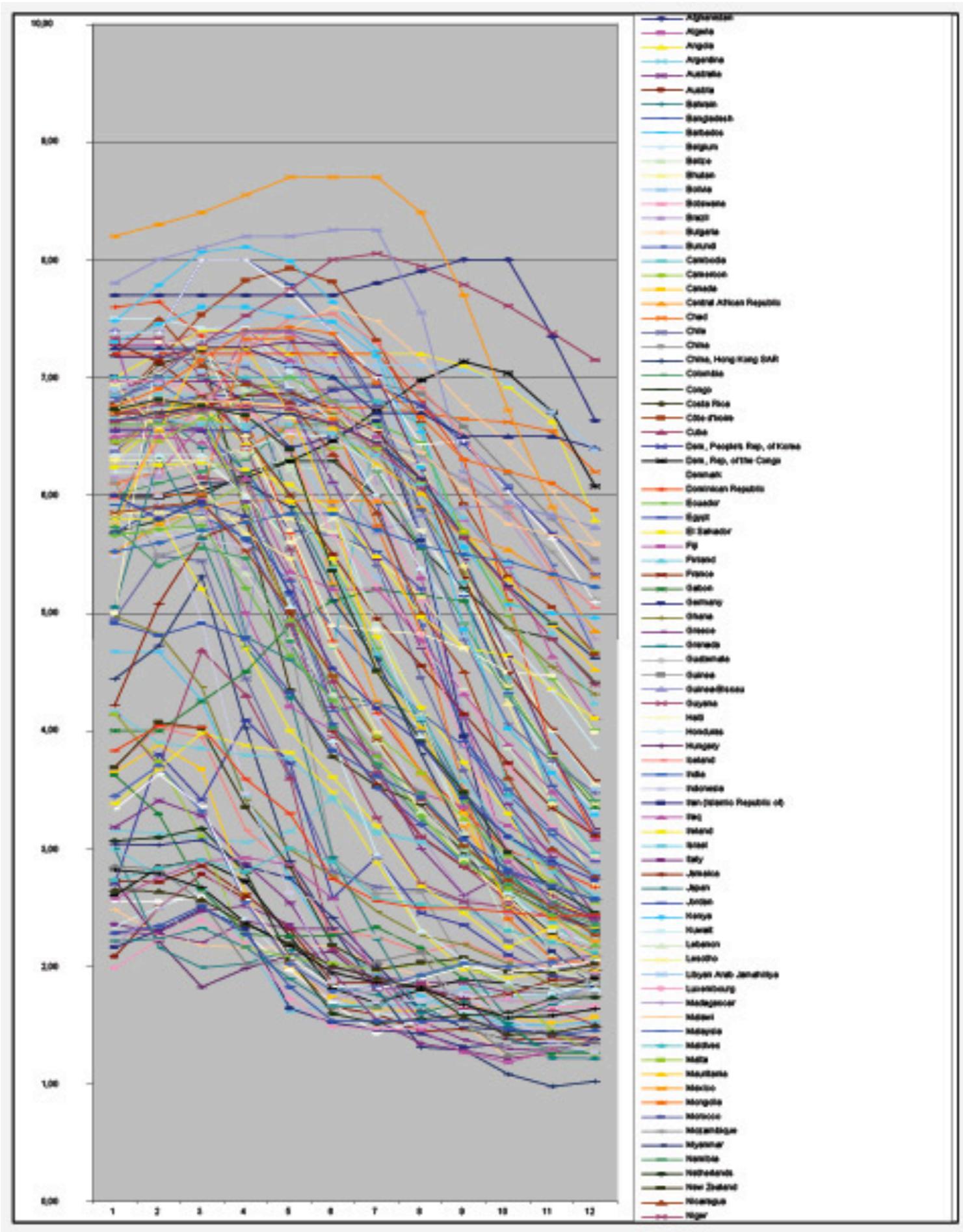
See key indicators for a variety of topics



### Use our Data

Learn how to use World bank's data

		Microsoft Excel - POPULACAO BOM GDP Per capita.xls																				
		Arquivo Editar Exibir Inserir Formatar Dados Janela Contribuye Ajuda																				
		Formatos																				
		Formatos																				
T1	= 2008	Formatos																				
1	Country or A	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	N	O	P	Q	R	S	T	U	V
2	Afghanista	7,70	7,70	7,70	7,70	7,70	7,70	7,80	7,90	8,00	8,00	7,35	6,63				Afghanistan	147,7133	465,9868923	215,4671	-13,84	
3	Algeria	7,28	7,28	7,38	7,38	7,38	7,18	6,49	5,29	4,13	2,89	2,53	2,38				Algeria	375,8692	4958,84537	1219,301	-67,71	
4	Angola	7,00	7,20	7,40	7,40	7,20	7,20	7,20	7,20	7,10	6,92	6,63	5,79				Angola	470,9031	1942,142686	312,4294	-19,65	
5	Argentina	3,15	3,13	3,09	3,05	3,15	3,44	3,15	3,05	2,90	2,63	2,35	2,25				Argentina	1306,446	8357,509649	539,7134	-28,34	
6	Australia	3,18	3,41	3,27	2,87	2,54	1,99	1,91	1,86	1,86	1,78	1,75	1,83				Australia	3375,216	48252,77501	1329,62	-27,81	
7	Austria	2,08	2,50	2,78	2,57	2,04	1,65	1,59	1,44	1,47	1,37	1,39	1,38				Austria	2044,135	49596,39333	2326,277	-32,20	
8	Bahrain	6,97	6,97	7,18	6,97	5,95	5,23	4,63	4,08	3,36	2,76	2,51	2,29				Bahrain	1680,851	28239,78497	1580,088	-61,44	
9	Banglades	6,70	6,76	6,85	6,85	6,85	6,63	5,92	4,89	3,96	3,30	2,80	2,36				Bangladesh	89,56228	493,7427057	451,2842	-65,5	
10	Barbados	4,67	4,67	4,26	3,45	2,74	2,19	1,92	1,75	1,60	1,50	1,50	1,53				Barbados	799,694	14422,38651	1703,488	-44,34	
11	Belgium	2,34	2,50	2,64	2,39	2,02	1,71	1,60	1,56	1,61	1,60	1,64	1,77				Belgium	2736,932	47609,44498	1639,519	-12,10	
12	Belize	6,65	6,55	6,45	6,35	6,25	6,20	5,40	4,70	4,35	3,85	3,35	2,94				Belize	205,5303	4569,421947	2123,235	-53	
13	Bhutan	6,67	6,67	6,67	6,67	6,67	6,45	6,26	5,41	4,23	3,38	2,68				Bhutan	211,3921	1932,838541	814,338	-59,86		
14	Bolivia	6,75	6,75	6,63	6,56	6,50	5,80	5,30	5,00	4,80	4,32	3,96	3,50				Bolivia	239,8159	1722,815344	618,3909	-46,15	
15	Botswana	6,50	6,58	6,65	6,70	6,55	6,37	5,97	5,11	4,32	3,70	3,18	2,90				Botswana	123,528	6108,004265	4844,633	-55,75	
16	Brazil	6,15	6,15	6,15	5,38	4,72	4,31	3,80	3,10	2,60	2,45	2,25	1,90				Brazil	440,9046	8311,117551	1785,015	-59,72	
17	Bulgaria	2,48	2,27	2,18	2,15	2,17	2,17	2,01	1,92	1,51	1,22	1,25	1,40				Bulgaria	1060,124	6572,845401	520,0072	-35,39	
18	Burundi	6,80	6,80	6,80	6,80	6,80	6,80	6,80	6,79	6,45	6,08	5,41	4,66				Burundi	69,85529	137,6211112	97,00885	-31,55	
19	Cambodia	6,29	6,29	6,29	6,22	5,54	4,70	6,60	6,00	5,55	4,45	3,41	2,96				Cambodia	90,85125	768,6257419	746,0266	-46,4	
20	Cameroon	5,68	5,68	5,90	6,10	6,30	6,40	6,40	6,10	5,70	5,10	4,92	4,67				Cameroon	169,1264	1217,845953	620,0803	-25,92	
21	Canada	3,65	3,88	3,68	2,61	1,98	1,73	1,63	1,62	1,69	1,56	1,52	1,57				Canada	3973,997	45166,19217	1036,543	-20,7	
22	Central Afr	5,52	5,75	5,90	5,95	5,95	5,95	5,95	5,90	5,65	5,54	5,30	4,85				Central Afric	128,4357	464,4922527	261,6536	-18,54	
23	Chad	6,10	6,20	6,30	6,40	6,60	6,74	6,75	6,70	6,65	6,62	6,54	6,20				Chad	112,3869	765,4590255	581,0928	-6,136	
24	Chile	4,95	5,49	5,44	4,44	3,63	2,80	2,67	2,65	2,55	2,21	2,00	1,94				Chile	970,1871	10091,24945	940,1343	-46,44	
25	China	6,11	5,48	5,61	5,94	4,77	2,93	2,61	2,63	2,01	1,80	1,77	1,77				China, Peop	114,2003	3292,122201	2782,761	-62,95	
26	China, Hor	4,44	4,72	5,31	4,02	2,89	2,32	1,80	1,31	1,29	1,08	0,98	1,02				China: Hong	966,995	30872,11565	3092,583	-64,70	
27	Colombia	6,76	6,76	6,76	6,18	5,00	4,34	3,68	3,24	3,00	2,75	2,55	2,45				Colombia	449,9515	5415,088629	1103,483	-51,00	
28	Congo	5,68	5,79	5,99	6,19	6,29	6,29	5,99	5,55	5,21	4,87	4,78	4,41				Congo	196,6705	2933,563991	1391,613	-29,92	
29	Costa Rica	6,72	7,11	7,23	5,80	4,35	3,78	3,53	3,37	2,95	2,58	2,28	1,96				Costa Rica	686,7874	6599,109373	860,8664	-54,90	
30	Côte d'Ivoir	6,77	7,15	7,53	7,83	7,93	7,81	7,31	6,61	5,92	5,31	5,05	4,65				Côte d'Ivoire	286,8446	1136,703705	296,2786	-41,39	
31	Cuba	4,15	3,70	4,68	4,30	3,60	2,15	1,85	1,85	1,65	1,61	1,63	1,50				Cuba	653,2217	5596,276931	756,7194	-58,34	
32	Dem. Peop	2,70	3,80	3,41	4,09	3,72	2,58	2,93	2,45	2,35	2,09	1,92	1,86				Democratic	387,6021	555,3673573	43,28287	-49,91	
33	Dom. Dom	5,98	5,98	6,04	6,15	6,20	6,46	6,72	6,98	7,14	7,04	6,70	6,07				Democratic	92,394	180,7331607	95,61137	-3,416	



## Diagrama

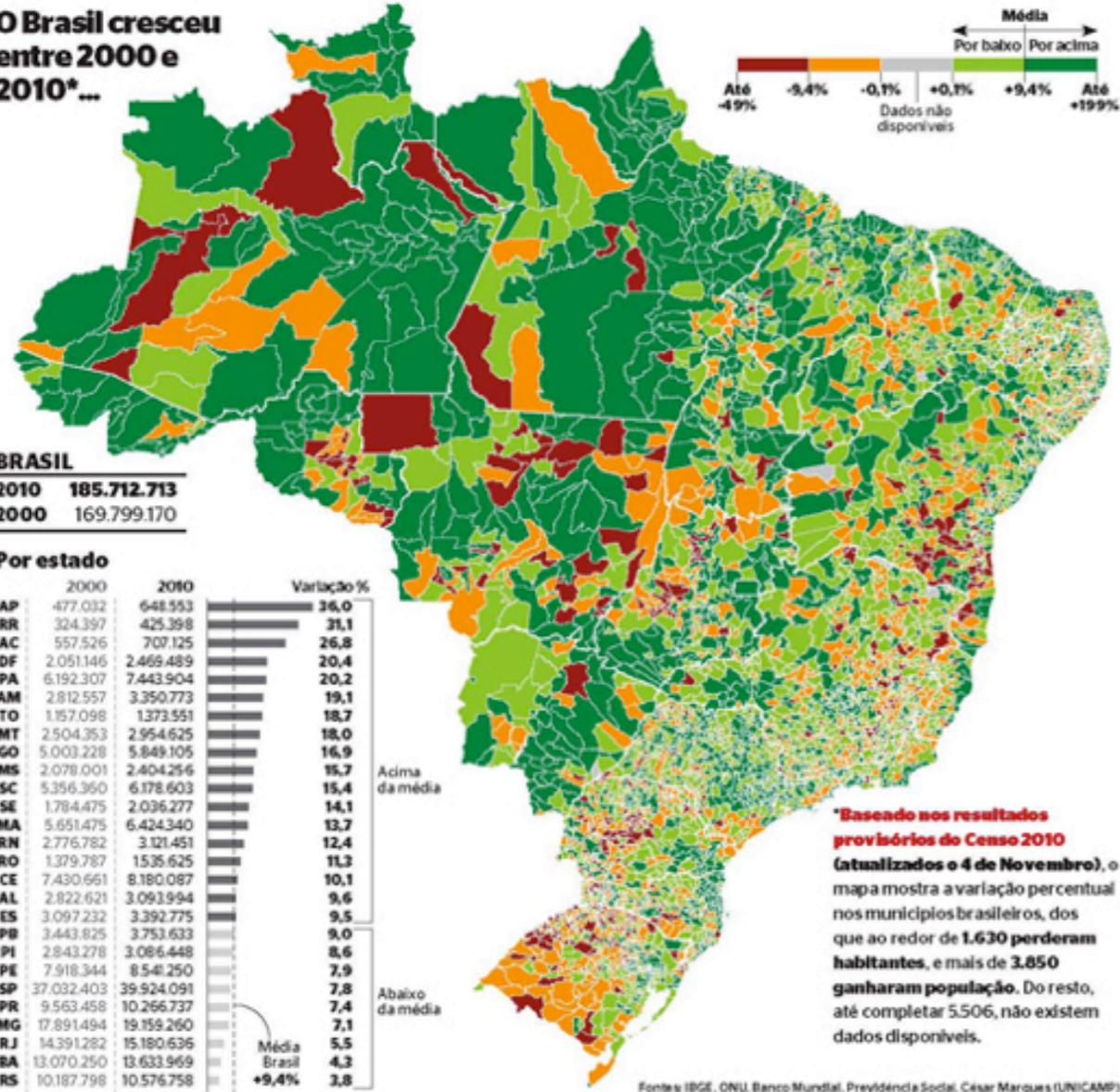
A NOTÍCIA EM PERSPECTIVA

### A oportunidade demográfica

E como o Brasil pode se aproveitar de uma população mais velha e envelhecida

Alberto Cairo e Francine Lima

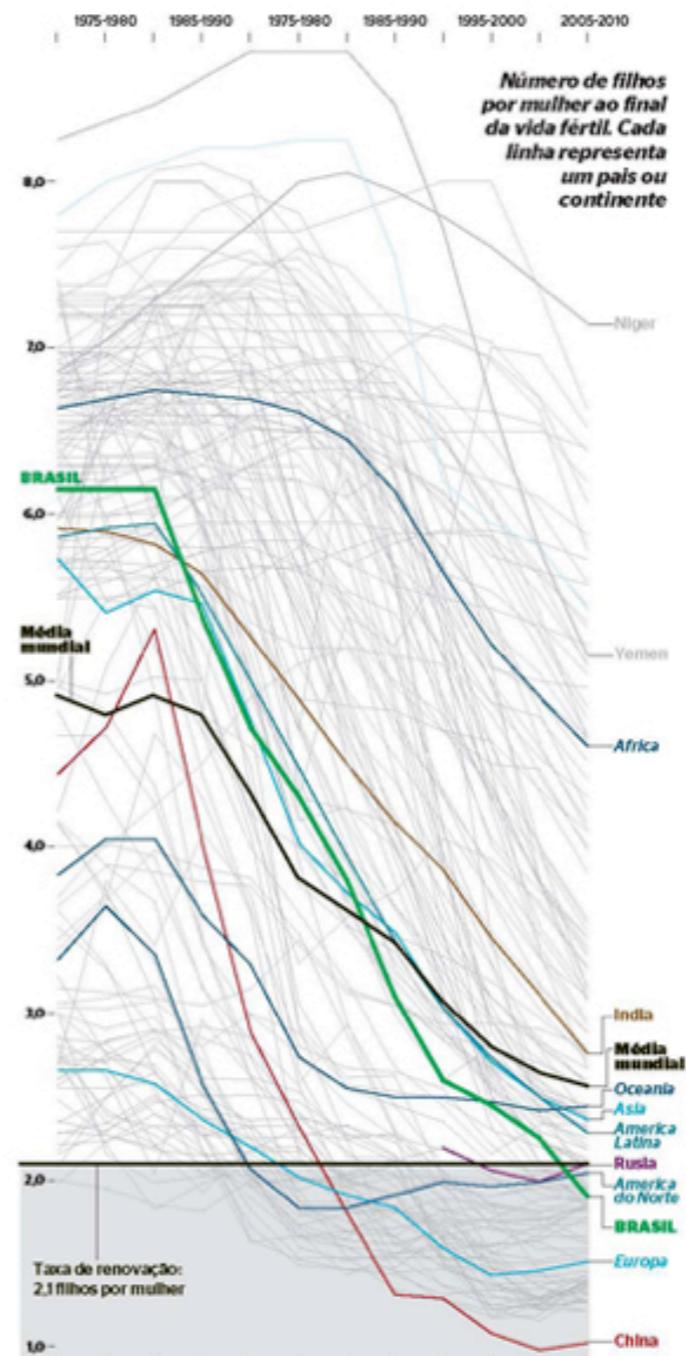
#### O Brasil cresceu entre 2000 e 2010\*



OS dados provisórios do Censo de 2010 oferecem um retrato mixto da evolução da população no Brasil. Por uma parte, a população tem crescido perto do 10% em 10 anos mas as previsões apontam a que a taxa de fertilidade está por baixo da de renovação, 2,1 filhos por mulher. Sem dúvida o Censo indica uma série de desafios, principalmente na relação da estrutura etária com o mercado de trabalho, educação, sistema previdenciário e inclusive com a questão ambiental, já que isso, juntamente com os padrões econômicos, impacta a questão ambiental.

#### ...mas a taxa de fertilidade está abaixo do previsto...

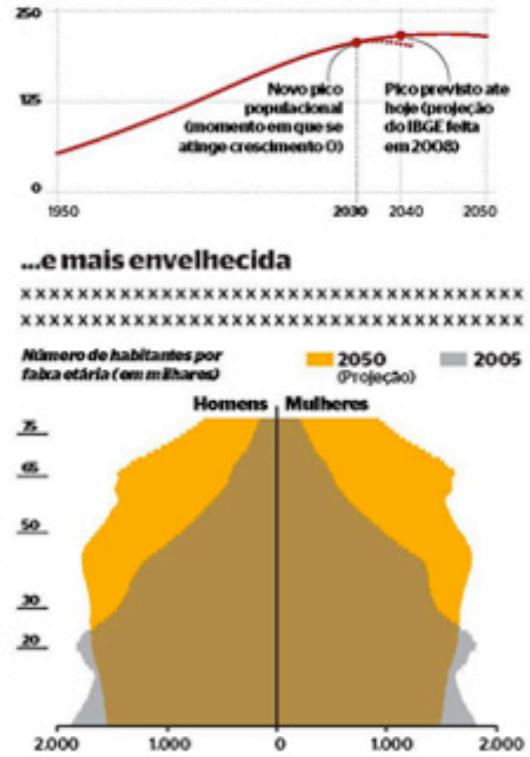
A taxa de natalidade no Brasil é menor do que as projeções previam, o que pode parar o crescimento da população antes do esperado. Um estudo de 2004 estimou que em 2010 a natalidade estaria em torno a 2,3 ou 2,4. Mas novo cálculo é de 1,9. Isto deixa o Brasil longe da natalidade de outros países em desenvolvimento e acelera o envelhecimento. A China é especial



#### ...o que levará uma população menor...

As últimas previsões antes do censo falavam que a população ia parar de crescer ao redor de 2040. Mas, comprovado que a taxa de fertilidade está por baixo do esperado, é possível ela cair a partir de 2030.

Milhões de habitantes. Projeções 1950-2050



#### E como o Brasil pode transformar isto em uma oportunidade

Ainda há tempo para o país se preparar. Aproveitar aumento da população entre 15 e 64 anos que mais geram renda e participam do mercado.

A proporção de pessoas em idade ativa (PIA) está aumentando e também envelhecendo. Se esse contingente for absorvido pelo mercado de trabalho essa poderá ser uma grande oportunidade para a preparação de um sistema previdenciário mais equilibrado e pronto para o futuro.

A população com menos de 15 anos está caindo hoje. Isso abre preciosas oportunidades no campo da educação até 2030.

A existência de muitos jovens em famílias pobres, que devem ser priorizados na formulação das políticas educacionais, visando o aumento da sua mobilidade

In certain cases, you may want to present the main insights, instead of letting readers figure everything out on their own

# Storytelling

# DIAGRAM

EINS IN PERSPEKTIVE

FWS IN PERSPECTIVE

# Brazil's Demographic Opportunity

How Brazil can take advantage of a future with fewer children per couple.

lberto Cairo, Francine Lima,  
arco Vergotti

RELIMINARY DATA FROM THE 2010 CENSUS

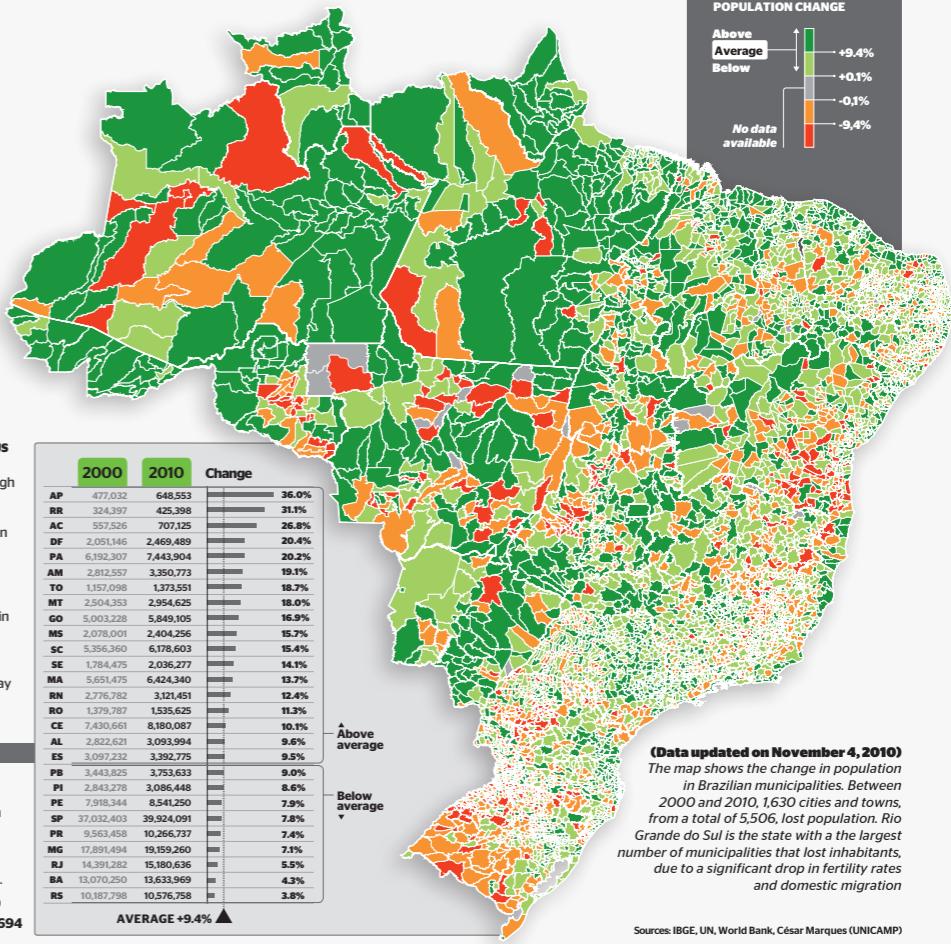
eat an interesting picture of the changes at the Brazilian population has gone through the past ten years. Brazil's population grew, on average, 10% between 2000 and 2010, but the fertility rate is below 21 children per woman, the minimum to keep a population from shrinking. According to Ésai Marques, a demographer from the University of Campinas, the main challenge Brazil will face in the future is how to maintain healthy Social Security system if the number of older and retired people will likely be much larger than it is today.

#### BRAZIL'S POPULATION IS BIGGER

The 2010 Census has revealed a 9.4% population increase between 2000 and 2010. The differences between states, as you can see on the chart on the right, are noticeable. Most rich states, such as São Paulo and Rio, didn't grow as fast as the ones in the north east

2000		<b>169,799,170</b>
2010		<b>190,732,694</b>

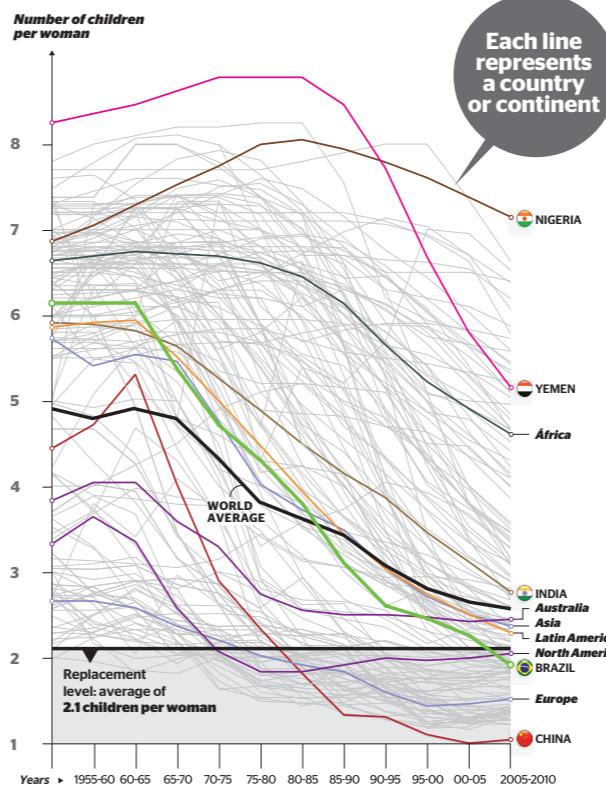
PRELIMINARY DATA FROM THE 2010 CENSUS				
		2000	2010	Change
AP	477,032	648,553		36.0%
RR	324,397	425,398		31.1%
AC	557,526	707,125		26.8%
DF	2,051,146	2,469,489		20.4%
PA	6,192,207	7,443,904		20.2%
AM	2,812,557	3,350,773		19.1%
TO	1,057,098	1,373,551		18.7%
MT	2,504,333	2,954,625		18.0%
GO	5,003,228	5,849,105		16.9%
MS	2,078,001	2,404,256		15.7%
SC	5,356,360	6,176,603		15.4%
SE	1,784,475	2,036,277		14.1%
MA	5,651,475	6,424,340		13.7%
RN	2,776,782	3,214,251		12.4%
RO	1,379,787	1,535,625		11.3%
CE	7,430,661	8,180,087		10.1%
AL	2,822,621	3,093,994		9.6%
ES	3,097,232	3,397,275		9.5%
PB	3,443,825	3,753,533		9.0%
PI	2,463,278	3,086,448		8.6%
PE	7,918,344	8,541,250		7.9%
SP	37,032,403	39,924,091		7.8%
PR	9,563,458	10,266,737		7.4%
MG	17,891,494	19,159,260		7.1%
RJ	14,391,282	15,180,636		5.5%
BA	13,070,250	13,633,969		4.3%
RS	10,187,798	10,576,588		3.8%
		AVERAGE	169,799,170	AVERAGE +9.4% ▲
			190,732,694	



Sources: IBGE, UN, World Bank, César Marques (UNICAMP)

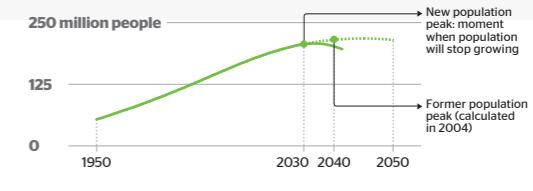
## **2 –BUT THE FERTILITY RATE IS MUCH LOWER THAN EXPECTED**

A study in 2004 estimated that in 2010, the fertility rate would be 2.4 children per woman, on average. But new data collected by the IBGE prove that the fertility rate is already 1.9, below the threshold called "replacement rate". When the fertility rate drops below this number, the population of a country will eventually start to shrink and grow older.



### **3 AS A CONSEQUENCE, POPULATION WILL STOP GROWING—**

Forecasts made in 2004 anticipated that Brazil's population would stop growing in 2040. But the most recent data from the IBGE suggests that this could happen much earlier, in 2030.



**4** –AND IT WILL BECOME OLD

Comparing the current population pyramid with the one predicted for 2050



## **How Brazil can transform the population challenge into an opportunity**

- As the population ages, the proportion of people of working age increases. The country will therefore have more people producing wealth (if the labor market can absorb them) and fewer children to consume investments. It is a window of opportunity, because in some cases the number of people of working age to fall back when older people are leaving the market.
  - The population under 15 years of age is falling today. A smaller number of student in public schools will facilitate the quality of teaching, if the amount invested in education stays the same.
  - Educational policy focused on low-income youth favors the formation of more skilled workforce and greater social mobility.
  - In the future, Brazil will reach the stage of Europe and Japan, which struggle to support their elders. This is why it's so important to prepare a more balanced retirement system, which will include retirement at a later age.

1. Functional
2. Beautiful
3. Insightful
4. Enlightening

Enlightenment in the sense of deeply  
changing readers' minds for the better



## Enem Inscrição 2012

Prezado Participante,

Todas as informações prestadas nesta inscrição são de sua inteira responsabilidade. Confira atentamente todos os seus dados.

Após a confirmação da inscrição, qualquer alteração nos dados cadastrais será feita por meio do acompanhamento da inscrição.

O Inep não se responsabiliza por informações incorretas ou não recebidas por motivos de ordem técnica, como falhas de computadores ou outros que impossibilitem a conclusão da inscrição.

A taxa de inscrição para participar do ENEM 2012 é de R\$ 35,00 (trinta e cinco reais). No entanto, estão isentos do pagamento da taxa:

- **Automaticamente:** Alunos matriculados no último ano (concluintes) do Ensino Médio em instituições públicas de ensino (federais, estaduais e municipais);
- **Mediante Declaração de Carência:** Demais participantes, desde que declarem carência no ato de sua inscrição e que a declaração seja aprovada pelo Inep.

Versão: 0.1.0 59059



CopyRight MEC - INEP - Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira

Município	Colégio	Rede	Média Geral	Ranking NOF	Ranking ERJ
<b>B. J. DO ITABAPOANA</b>	I. F. FLUMINENSE	Federal	568,5982	7	275
<b>S. A. DE PADUA</b>	CE PEDRO BATISTA DE SOUZA		529,4268	12	443
<b>ITAOCARA</b>	CIEP 275 - LENINE C. FALANTE		522,2513	13	474
<b>ITAPERUNA</b>	CE DEZ DE MAIO		518,9427	14	484
<b>SANTO A. DE PADUA</b>	CE JOAO MAURICIO BRUM		506,1569	15	534
<b>SANTO A. DE PADUA</b>	CE ALMIRANTE BARAO DE TEFFE		504,5241	16	544
<b>ITAPERUNA</b>	CE LUIZ FERRAZ		502,9819	17	554
<b>NATIVIDADE</b>	CE FRANCISCO PORTELLA		495,1667	18	581
<b>ITAOCARA</b>	CE JOHENIR HENRIQUES VIEGAS		493,9515	19	587
<b>ITAPERUNA</b>	CE NICOLAO BASTOS FILHO	Estadual	487,6472	20	607
<b>ITAPERUNA</b>	CIE DE AGROPEC. DE ITAPERUNA		486,6833	21	612
<b>MIRACEMA</b>	CE DEODATO LINHARES		484,1723	22	619
<b>ITAPERUNA</b>	CE ROMUALDO M. DE BARROS		478,4391	23	631
<b>SANTO A. DE PADUA</b>	CE DOUTOR LEONEL H. DA COSTA		470,6926	24	645
<b>BOM J. DO ITABAPOANA</b>	CE EUCLIDES FELICIANO TARDIN		465,4951	25	654
<b>NATIVIDADE</b>	CE FLAVIO RIBEIRO DE REZENDE		460,5013	26	660
<b>SAO JOSÉ DE UBA</b>	CE MARIA LENY VIEIRA F. SILVA		459,6856	27	662
<b>BOM J. DO ITABAPOANA</b>	CE GOVERNADOR R. SILVEIRA		449,2385	28	672
<b>SANTO A. DE PADUA</b>	CE TEMISTOCLES DE ALMEIDA		433,1016	29	679
<b>B. J. DO ITABAPOANA</b>	EE MARCILIO DIAS		432,4150	30	680

# Confira a média e o ranking das escolas na prova do Enem 2010

Pesquise na tabela completa das escolas participantes do Enem e categorizadas por Estado, rede e nível de participação

GERARDO RODRIGUEZ; CAMILA GUIMARÃES E ALBERTO CAIRO



ESCOLAS ACIMA E ABAIXO DA MÉDIA

RANKING DE ESCOLAS

PARTICIPAÇÃO DAS ESCOLAS

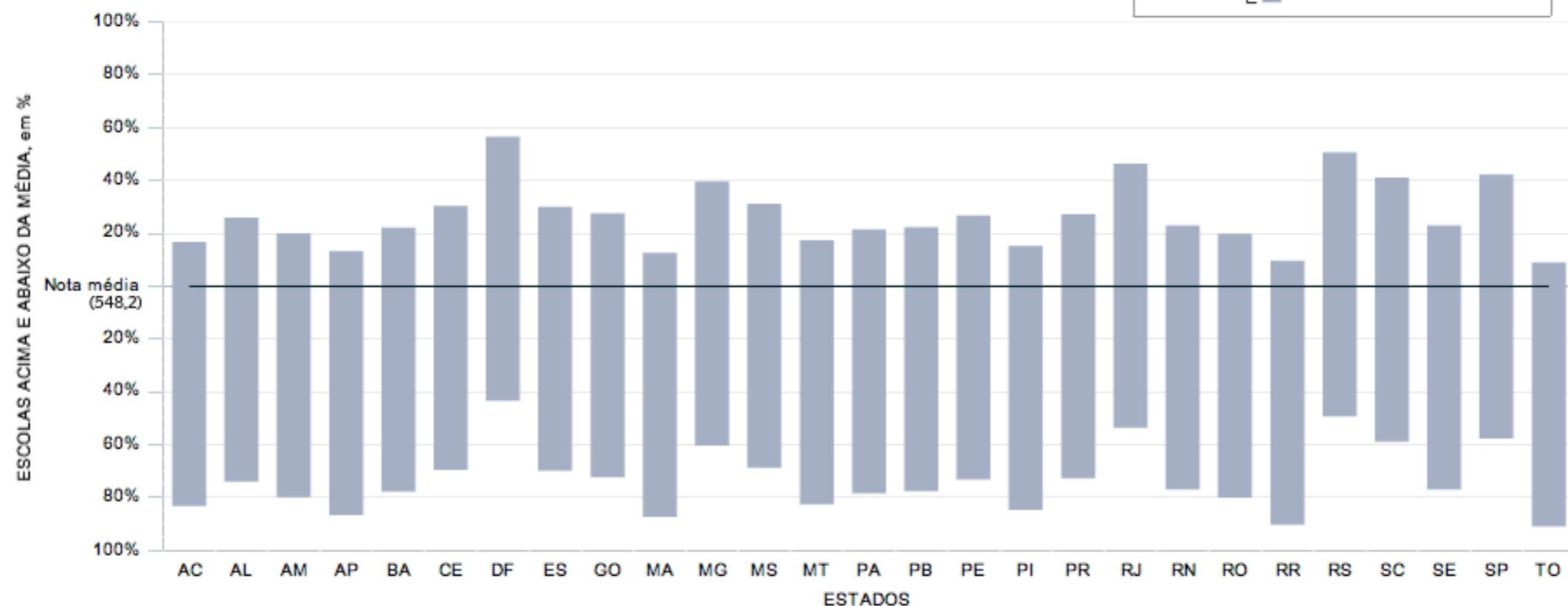
## Escolas acima e abaixo da média nacional no Enem 2010

Com qualquer taxa de participação

Redes pública e particular

100% das escolas

- % acima da média
- Média
- % abaixo da média



**Claves do gráfico:** A média nacional das escolas foi calculada de acordo com cada faixa de participação dos alunos na prova. Não foram consideradas, no cálculo da média, as escolas sem nota

Na menor faixa de participação de alunos na prova, a maioria das escolas, em todos os estados, ficam abaixo da média

Mais da metade das escolas da Bahia, Rio de Janeiro, São Paulo, Minas Gerais, Goiás e do Distrito Federal, na faixa de participação acima de 75%, ficaram acima da média



THANK YOU!