

# Spatial Visualisations

## Advanced Visualisations

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Monday, November 03, 2014



# Outline

Choropleth Maps

Heatmaps

Dotmaps

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Heatmaps

Dotmaps

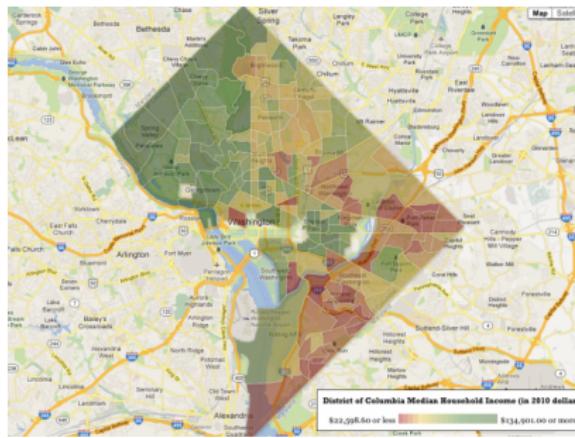
# Rich Blocks Poor Blocks



Source: <https://www.richblockspoorblocks.com/>

# Rich Blocks Poor Blocks

- ▶ information about income in their neighborhoods,
- ▶ using the 2006-2010 American Community Survey estimates
- ▶ compiled by the U.S. Census Bureau.
- ▶ map of Washington, D.C., which is segregated by race, educational attainment and income:



# Example Wikipedia

## Wirtschaft

Wappen	Land	BIP in Mrd. € <sup>[16]</sup>	Pro Kopf in € <sup>[16]</sup>	EK/K in € <sup>[17]</sup>	Schulden (2007) in Mrd. € <sup>[18]</sup>	Pro Kopf (2007) in € <sup>[18]</sup>	Schulden (2012) in Mrd. € <sup>[19]</sup>	Pro Kopf (2012) in € <sup>[20]</sup>	AQ <sup>[21]</sup>
	BW	407,2	37.472	19.261	44.113	4.109	67.471	6.255	3,7
	BY	488,0	38.429	18.775	23.075	1.857	42.794	3.397	3,4
	BE	109,2	30.642	14.797	61,0 <sup>[22]</sup>	17.968 <sup>[23]</sup>	61.220	17.482	12,0
	BB	59,1	23.751	14.634	16,4 <sup>[22]</sup>	6.640 <sup>[22]</sup>	21.336	8.549	9,8
	HB	28,6	43.085	19.933	13,4 <sup>[22]</sup>	20.178 <sup>[22]</sup>	19.660	29.729	11,0
	HH	97,7	53.611	22.908	20.045	15.417	24.256	13.484	7,4
	HE	235,7	38.490	18.658	32.289	5.300	55.497	9.110	5,6
	MV	37,1	22.817	13.953	10.894	6.417	12.222	7.476	11,2
	NI	239,0	30.149	17.105	51.332	6.425	69.557	8.790	6,2
	NW	599,8	33.621	18.724	115,0 <sup>[22]</sup>	6.398 <sup>[22]</sup>	237.497	13.311	8,0
	RP	121,6	30.420	17.101	27.485	6.771	44.097	11.027	5,2
	SL	32,1	31.834	17.138	9.346	8.880	16.015	15.804	6,6

[http://de.wikipedia.org/wiki/Land\\_%28Deutschland%29](http://de.wikipedia.org/wiki/Land_%28Deutschland%29)

# Census results - Germany

## Welcome to the census database of the Census 2011

How do you want to get the results?

Easy way to results	Dynamic and individual results	Results cartographically and visually
 Retrieval of Population figures, summarized results by regions and predefined tables and diagrams by topic	 Create your own flexible tables, flexible diagrams and comparison of Municipalities and regions	 Presentation of various indicators at Land, district and municipal level with the possibility of adjusting the class number and class limits.

[Important information](#)

<https://ergebnisse.zensus2011.de/>

## Census results - Germany

The tables available have to be adapted:

	A	B	C	D	
1	Gebiet	Anteil des selbst genutzten Wohneigentums	Leerstandsquote (Wohnungen)	Anteil des zu Wohnzwecken vermieteten Wohneigentums (auch mietfrei)	
2	Baden-Württemberg	51,3	4,1	44,7	
3	Bayern	49,1	3,7	47,2	
4	Berlin	15	3,5	81,5	
5	Brandenburg	42,3	5,6	52	
6	Bremen	37,8	3,6	58,6	
7	Hamburg	23,7	1,5	74,8	
8	Hessen	47,1	3,7	49,2	
9	Mecklenburg-Vorpommern	36,2	6,2	57,7	
10	Niedersachsen	52,4	3,6	44	
11	Nordrhein-Westfalen	41,4	3,6	55	
12	Rheinland-Pfalz	54,7	4,3	41	
13	Saarland	59,4	5,7	34,9	
14	Sachsen	30	9,8	60,2	
15	Sachsen-Anhalt	38,3	9,4	52,3	
16	Schleswig-Holstein	49,2	2,7	48,1	
17	Thüringen	42,8	6,8	50,4	
18					

<https://ergebnisse.zensus2011.de/>

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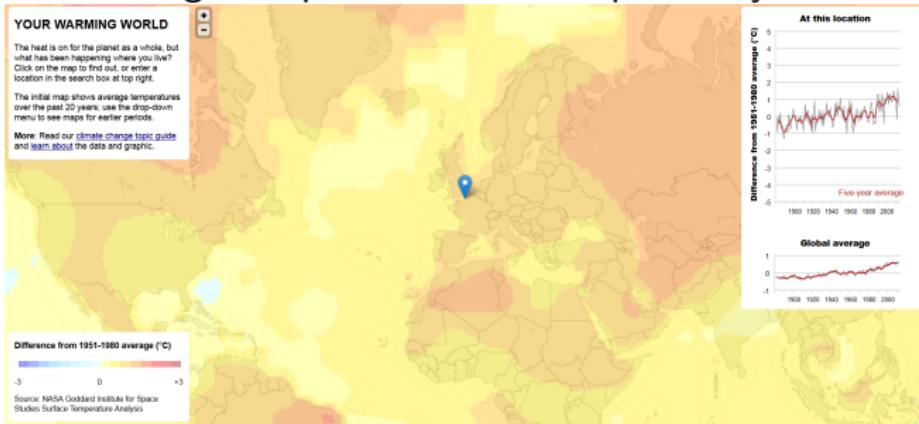
## Heatmaps

- ▶ A heat map is a graphical representation of data where the individual values contained in a matrix are represented as colors.
- ▶ Fractal maps and tree maps often use a similar system of color-coding

Source: [http://en.wikipedia.org/wiki/Heat\\_map](http://en.wikipedia.org/wiki/Heat_map)

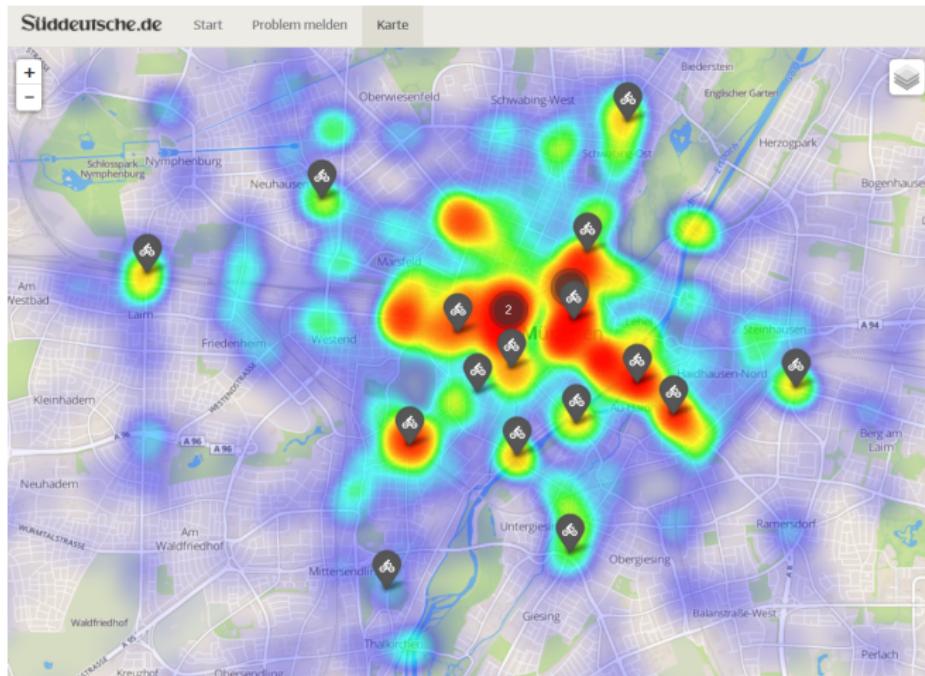
# Heatmaps

Average temperature over the past 20 years.

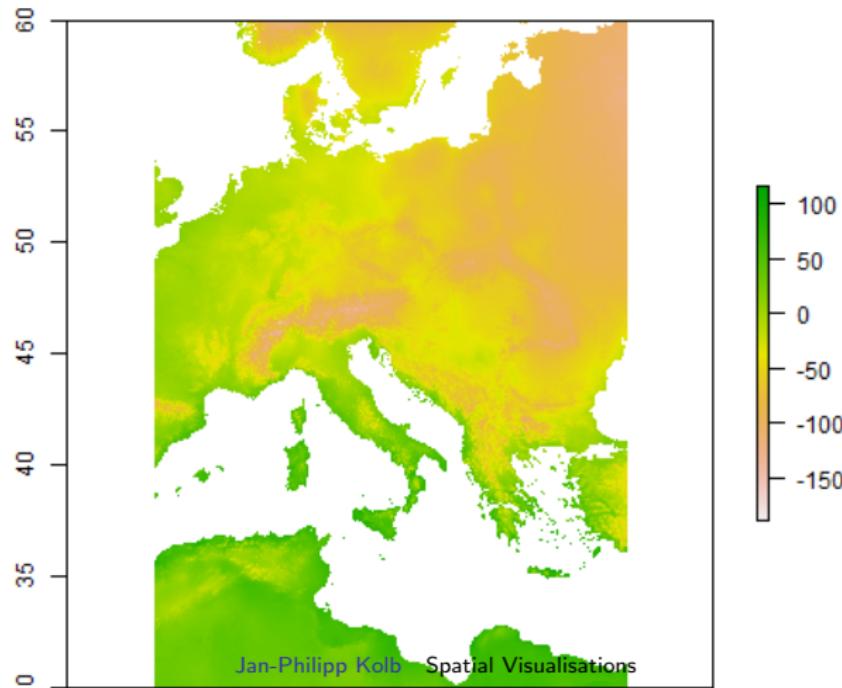


Source: <http://warmingworld.newscientistapps.com/>

# Heatmaps



# Heatmaps



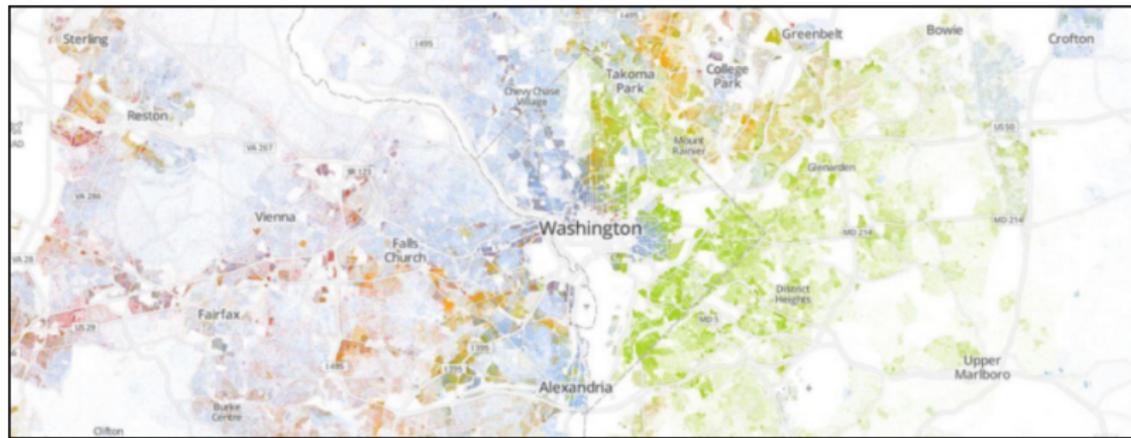
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## One dot per person



Source: <http://demographics.coopercenter.org/DotMap/index.html>

## One dot per person



2010 Census Block Data

1 Dot = 1 Person

- White
- Black
- Asian
- Hispanic
- Other Race / Native American / Multi-racial

What am I looking at...?

## One dot per person



## Every River in America



Source: <http://demographics.coopercenter.org/DotMap/index.html>

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# Das Paket ggmap

## Georeferencing with R-Package ggmap

```
> geocode("zeltingen")
Information from URL :
http://maps.googleapis.com/maps/api/geocode/json?
address=zeltingen&sensor=false
Google Maps API Terms of Service :
http://developers.google.com/maps/terms
      lon     lat
1 7.013036 49.95489
```

## Measuring distance with R-package ggmap

```
> mapdist("Trier","zeltingen")
Information from URL :
http://maps.googleapis.com/maps/api/distancematrix/json?
origins=Trier&destinations=Zeltingen&mode=driving&sensor=false
Google Maps API Terms of Service :
http://developers.google.com/maps/terms
      from        to       m       km    miles seconds minutes    hours
1 Trier zeltingen 48467 48.467 30.11739      2323 38.71667 0.6452778
```