

# Spatial Visualisations

## Usage of APIs

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Monday, October 27, 2014

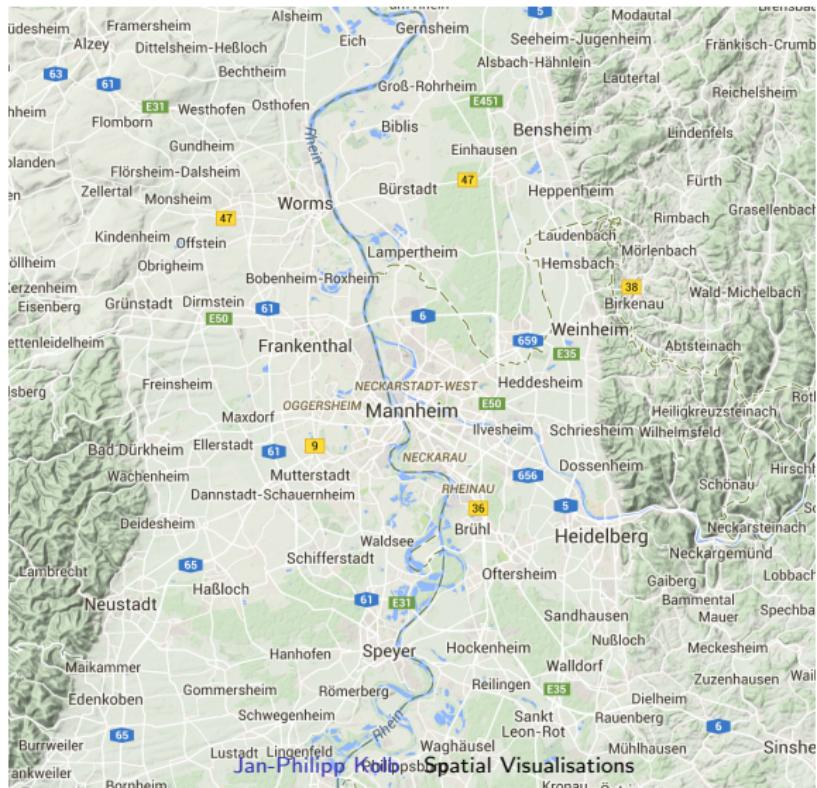


# Outline

## R-package ggmap

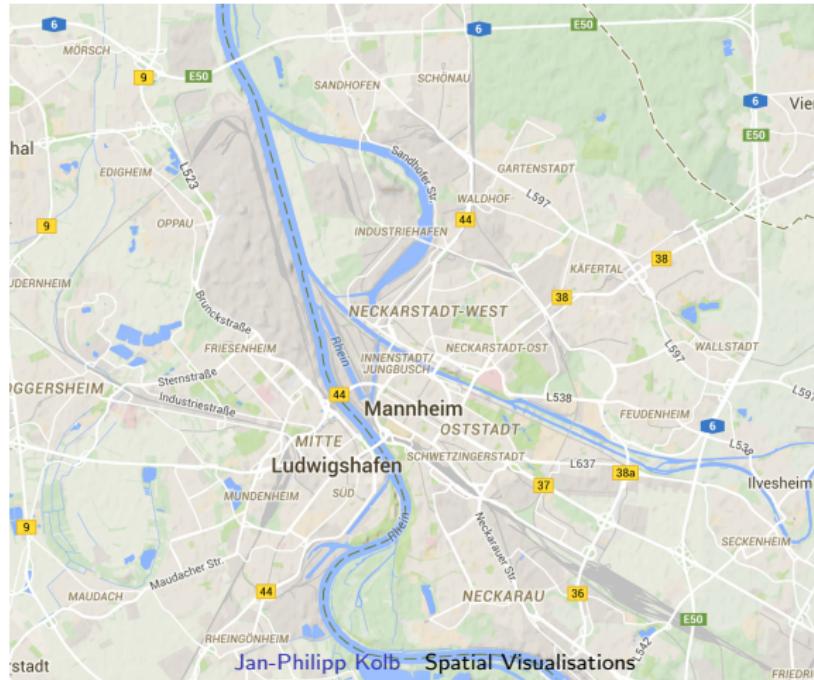
```
library(ggmap)  
qmap("Mannheim")
```

# R-package ggmap - Mannheim



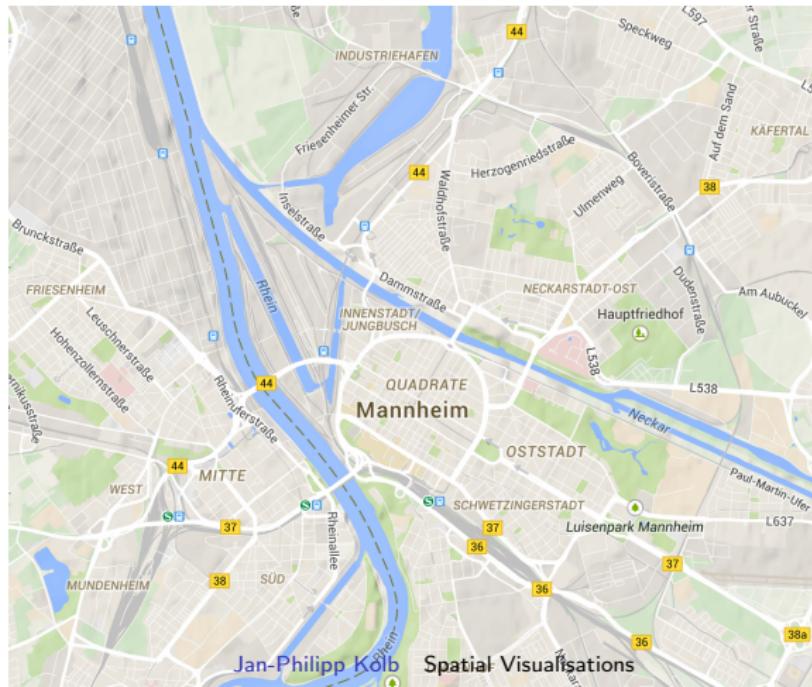
## R-package ggmap - zoom

```
qmap(location = 'Mannheim', zoom = 12)
```



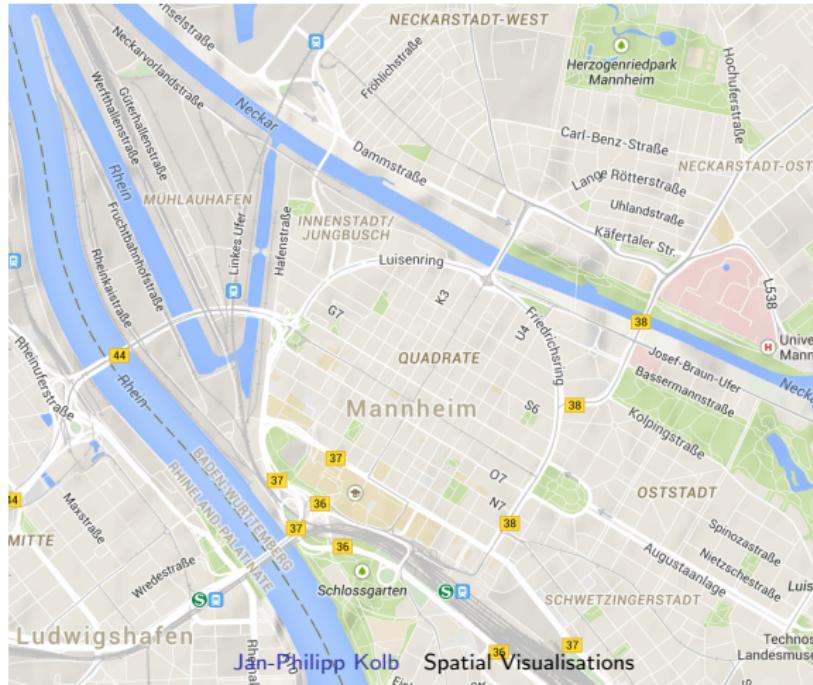
## R-package ggmap - zoom

```
qmap(location = 'Mannheim', zoom = 13)
```



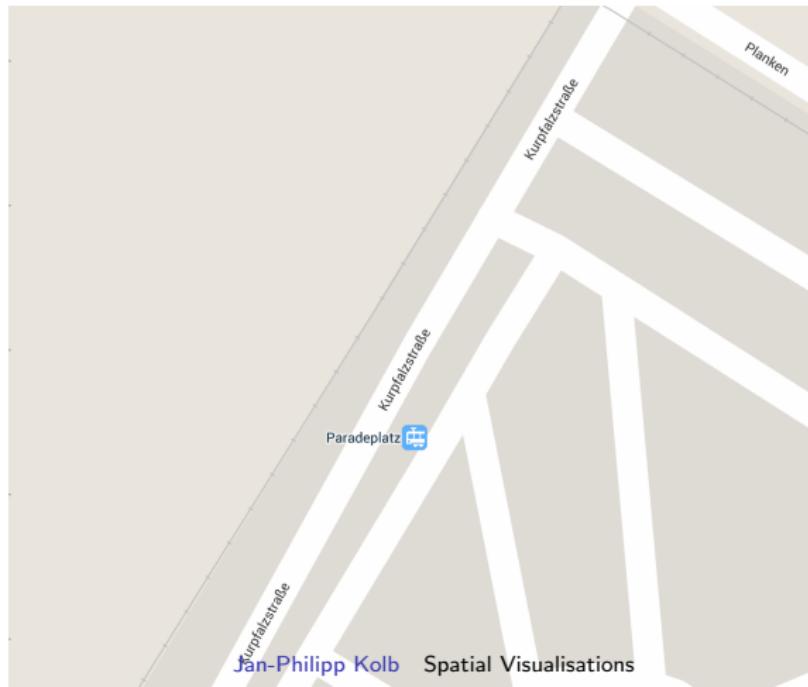
## R-package ggmap - zoom

```
qmap(location = 'Mannheim', zoom = 14)
```



## R-package ggmap - zoom

```
qmap(location = 'Mannheim', zoom = 20)
```



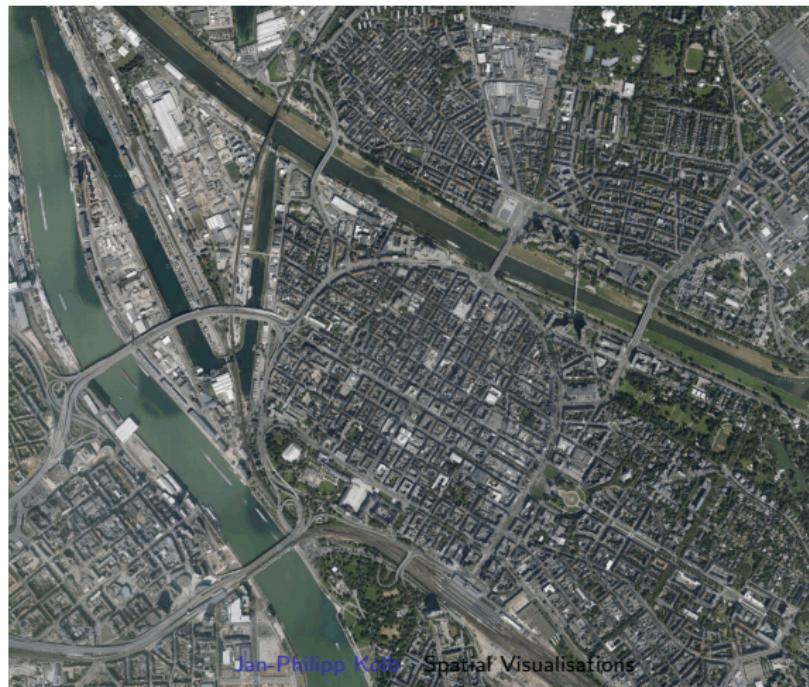
## R-package ggmap - source

```
qmap(location = 'Mannheim', zoom = 14, source="osm")
```



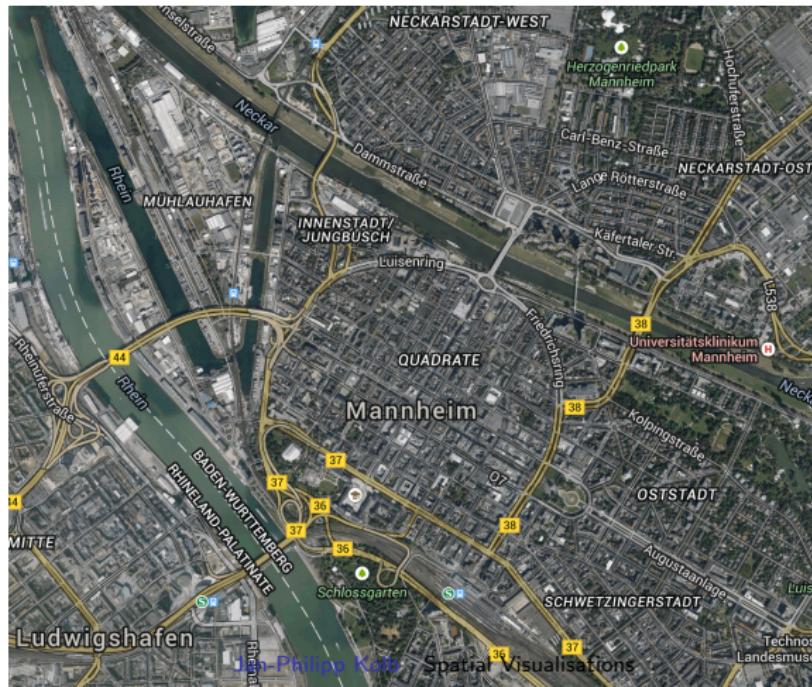
## R-package ggmap - maptype

```
qmap(location = 'Mannheim', zoom = 14, maptype="satellite")
```



## R-package ggmap - maptype

```
qmap(location = 'Mannheim', zoom = 14, maptype="hybrid")
```



## R-package ggmap - maptype

```
qmap(location = 'Mannheim', zoom = 14,  
      maptype="toner",source="stamen")
```



## R-package ggmap

If you want to work more on the map, it is better to have it as an object:

```
map <- get_map(location = 'Mannheim', zoom = 14)
ggmap(map)
```

## R-package ggmap

How can I draw a map of MODERN Europe?

```
library(ggmap)
library(mapproj)
map <- get_map(location = 'Europe', zoom = 4)
ggmap(map)
```

## R-package ggmap

```
map3 <- get_map(location = "Berkeley, California",
zoom = 13, source = "osm")
```

[http://rstudio-pubs-static.s3.amazonaws.com/10823\\_e15ce99b55424ac9ad57c2ca11bf636c.html](http://rstudio-pubs-static.s3.amazonaws.com/10823_e15ce99b55424ac9ad57c2ca11bf636c.html)

## R-package ggmap

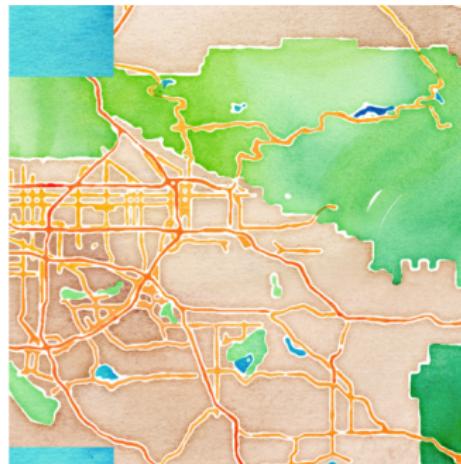
```
map3 <- get_map(location = "Berkeley, California",
zoom = 13, source = "osm")
ggmap(map3)
```



[http://rstudio-pubs-static.s3.amazonaws.com/10823\\_e15ce99b55424ac9ad57c2ca11bf636c.html](http://rstudio-pubs-static.s3.amazonaws.com/10823_e15ce99b55424ac9ad57c2ca11bf636c.html)

## R-package ggmap

```
qmap("Redlands, California", zoom = 10,  
source = "stamen", maptype = "watercolor")
```



[http://rstudio-pubs-static.s3.amazonaws.com/10823\\_e15ce99b55424ac9ad57c2ca11bf636c.html](http://rstudio-pubs-static.s3.amazonaws.com/10823_e15ce99b55424ac9ad57c2ca11bf636c.html)

## R-package ggmap

```
qmap("Redlands, California", zoom = 13,  
source = "stamen", maptype = "toner")
```



[http://rstudio-pubs-static.s3.amazonaws.com/10823\\_e15ce99b55424ac9ad57c2ca11bf636c.html](http://rstudio-pubs-static.s3.amazonaws.com/10823_e15ce99b55424ac9ad57c2ca11bf636c.html)

# Outline

## R-package ggmap

### Geocoding the Wasserturm

```
geocode("Mannheim Wasserturm")
```

Leads to the following result:

	lon	lat
1	8.473664	49.48483

## R-package ggmap

Geocoding more than one point of interest:

```
POI <- c("B2, 1 Mannheim", "Hauptbahnhof Mannheim")  
  
ListPOI <- data.frame(lat=NA, lon=NA)  
  
for ( i in 1:length(POI)){  
  geoPOI <- geocode(POI[i])  
  ListPOI[i,"lat"] <- geoPOI$lat  
  ListPOI[i,"lon"] <- geoPOI$lon  
}  
}
```

## R-package ggmap - mapdist

Computing the distance:

```
mapdist("Q1, 4 Mannheim", "B2, 1 Mannheim")
```

Leads to the following result:

	m	km	miles	seconds	minutes	hours
1	807.00	0.81	0.50	178.00	2.97	0.05

## R-package ggmap - mapdist

Computing the distance (by walking):

```
MA_dist_w <- mapdist("Q1 , 4 Mannheim", "B2 , 1 Mannheim",
                      mode=c("walking"))
```

Leads to the following result:

	m	km	miles	seconds	minutes	hours
1	546.00	0.55	0.34	416.00	6.93	0.12

## R-package ggmap - mapdist

Computing the distance (by bicycling):

```
MA_dist_b <- mapdist("Q1, 4 Mannheim", "B2, 1 Mannheim",
                      mode=c("bicycling"))
```

Leads to the following result:

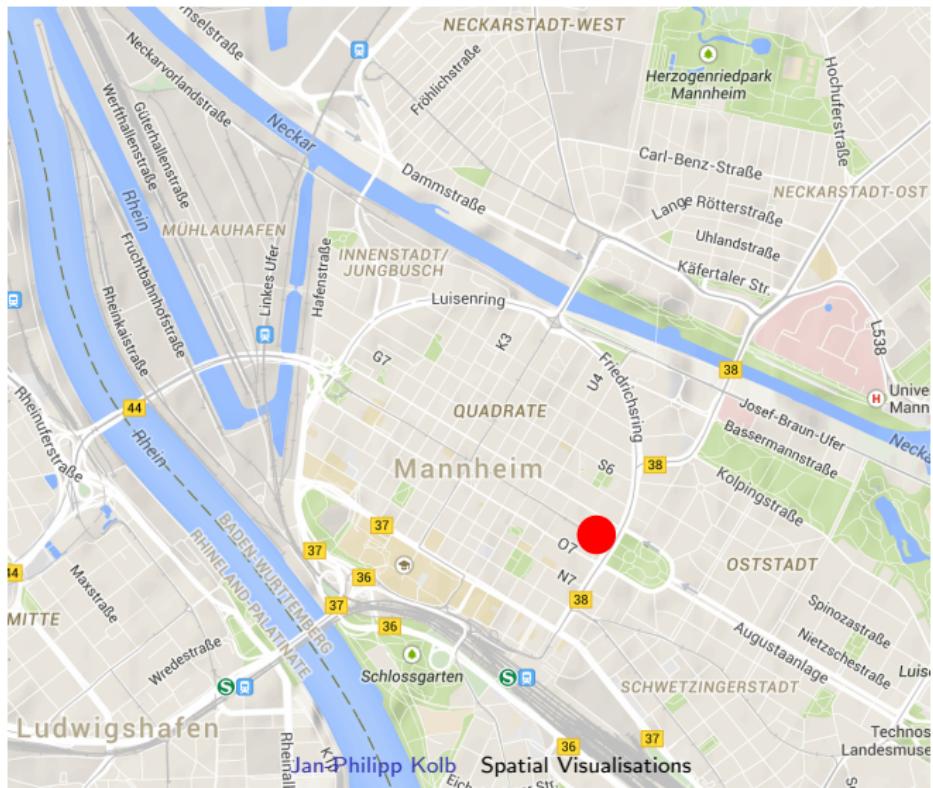
	m	km	miles	seconds	minutes	hours
1	556.00	0.56	0.35	215.00	3.58	0.06

## R-package ggmap

```
map <- qmap(location = 'Mannheim', zoom = 14)
address <- geocode("Mannheim Wasserturm")

map + geom_point(data = address,
                  aes(x = lon, y = lat),
                  color = "red",
                  size = 10)
```

# R-package ggmap



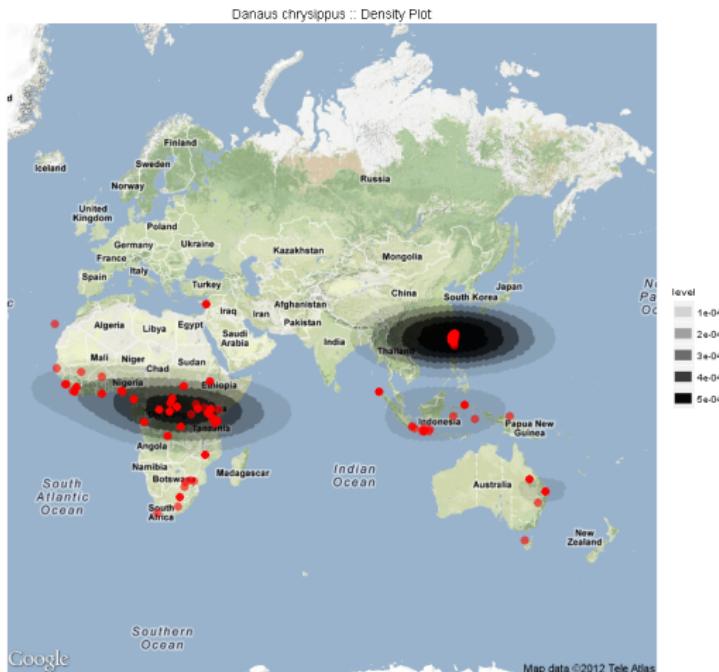
# Outline

## R-package dismo

```
library(dismo)
mymap <- gmap("France") # choose whatever country
plot(mymap)
```

<http://pakillo.github.io/R-GIS-tutorial/#gmap>

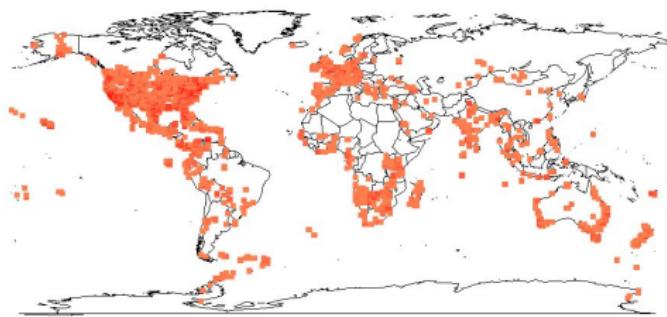
## R-package dismo - France



## R-package dismo - Mannheim

```
MAmap <- gmap("Mannheim")
plot(MAmap)
```

## R-package dismo - Mannheim



[https://vijaybarve.files.wordpress.com/2013/04/world\\_density1.jpg](https://vijaybarve.files.wordpress.com/2013/04/world_density1.jpg)

## R-package dismo

```
mymap <- gmap("France", type = "satellite")
plot(mymap)
```

<http://pakillo.github.io/R-GIS-tutorial/#gmap>

## R-package RgoogleMaps

```
library(RgoogleMaps)
newmap <- GetMap(center = c(52.52001,13.40495), zoom = 14,
                  destfile = "Berlin.png",
                  maptype = "satellite")
```

## R-package rworldmap

```
library(rworldmap)
newmap <- getMap(resolution = "low")
plot(newmap)
```

<http://www.milanor.net/blog/?p=534>