

Maps

Juan Salamanca

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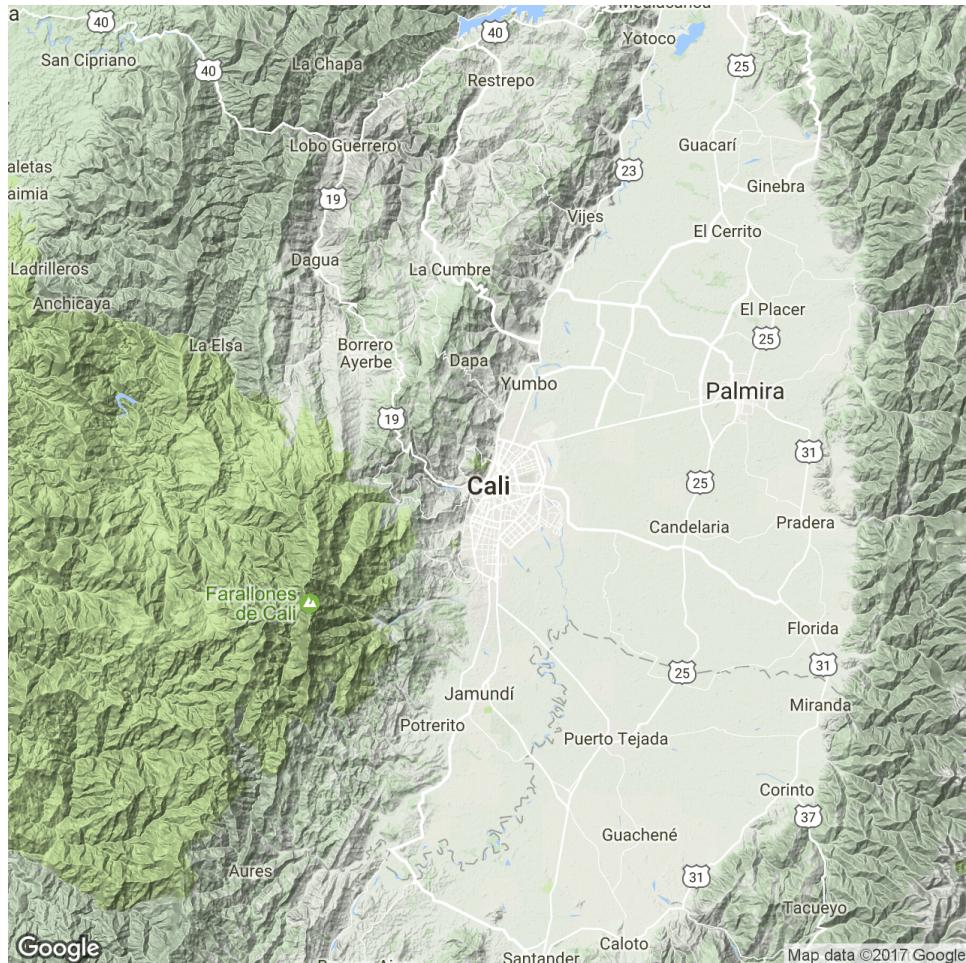
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Juan Salamanca, March 2016 Revised May 2017

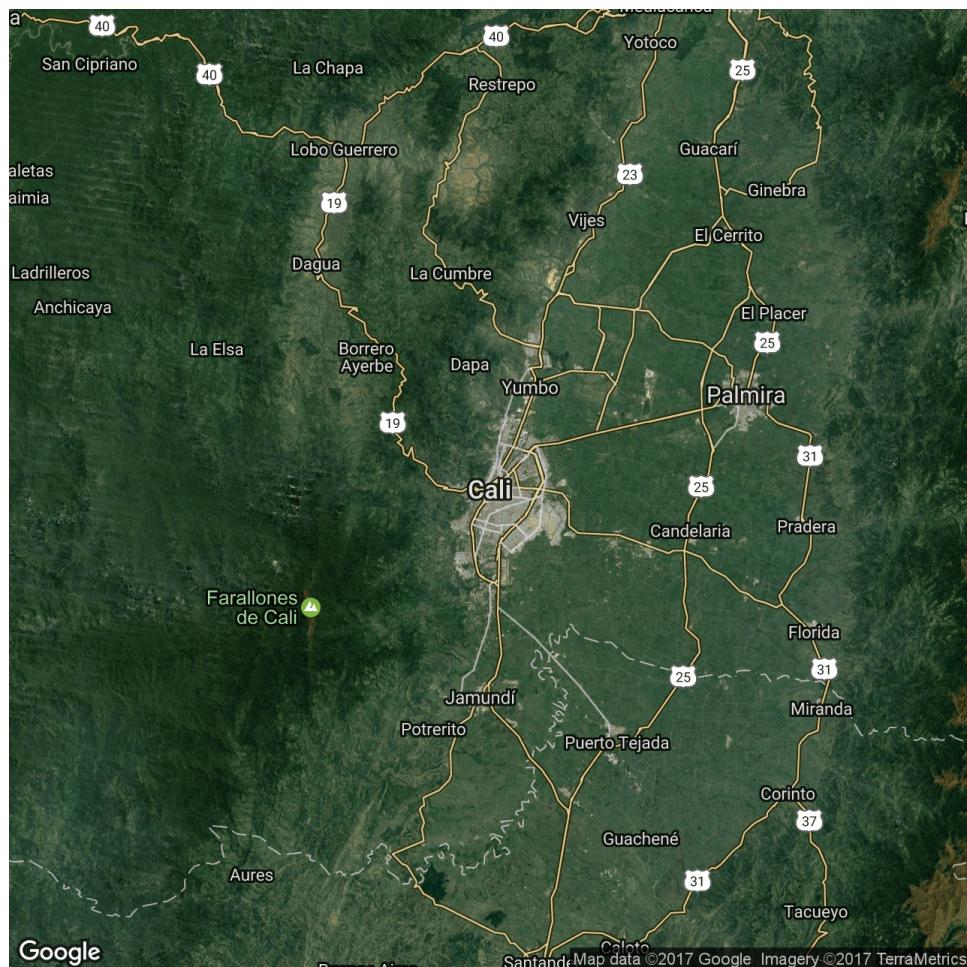
```
#Libraries:  
library(ggplot2)  
library(ggmap)  
# IMPORTANT: For problems with ggmap install the latest version from devtools::install_github("dkahle/ggmap")
```

GoogleMaps

```
# Quick plot of the City of Cali / Google Maps provider  
qmap("Cali", zoom = 10)
```

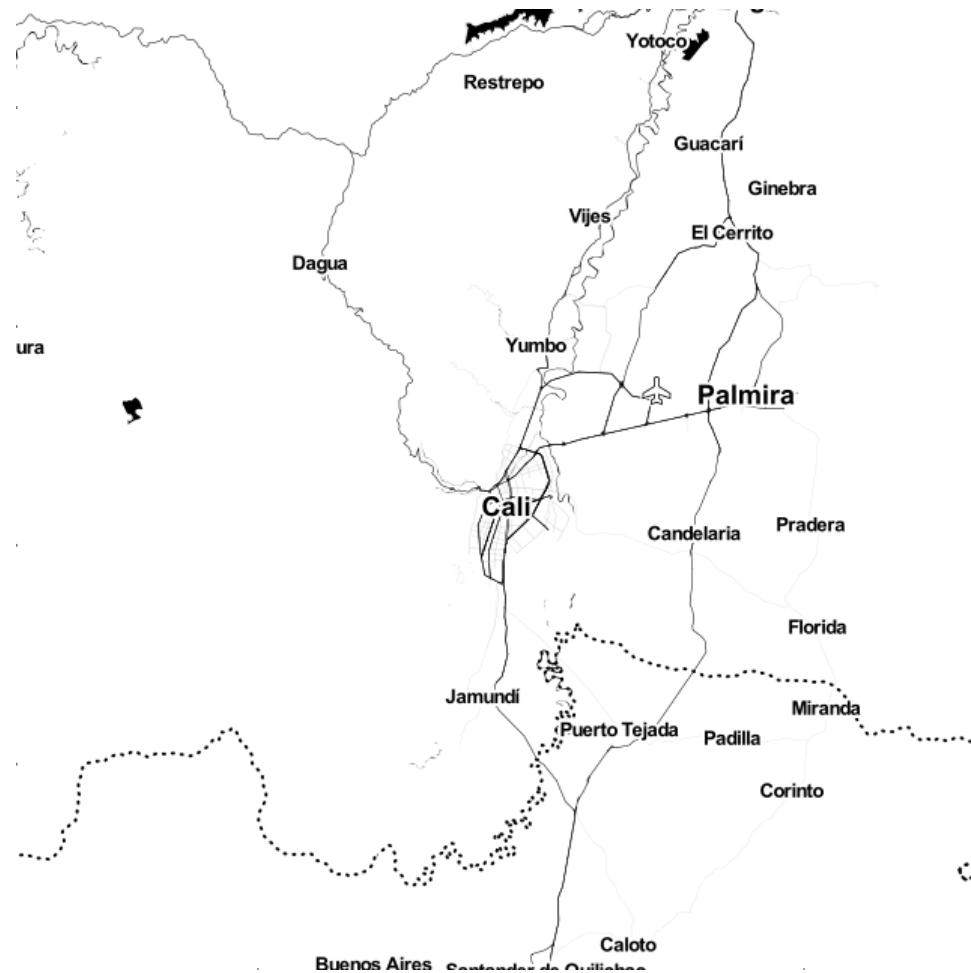


```
# get_goolglemap() can access Google Static Maps API and customize the map attributes. See:  
# https://developers.google.com/maps/documentation/static-maps/  
qmap("Cali", zoom = 10, maptype = "hybrid")
```



```
# Stamen and Cloudmade
```

```
# Stamen and Cloudmade are map providers with attractive styles: terrain, watercolor and toner  
qmap("Cali", zoom = 10, source = "stamen", maptype = "toner")
```



```
#CloudMade Maps require the user to register to obtain an API key and then pass the API key into  
#get_map with the api_key argument.
```

```
# The same map form OpenStreet Maps provider  
# qmap("Cali", zoom = 10, source = "osm")
```

```
# Markers on a map
```

The object *city* is actually a matrix of colors, i.e. a raster image containing the retrieved image from the provider. Let's take a look at the object:

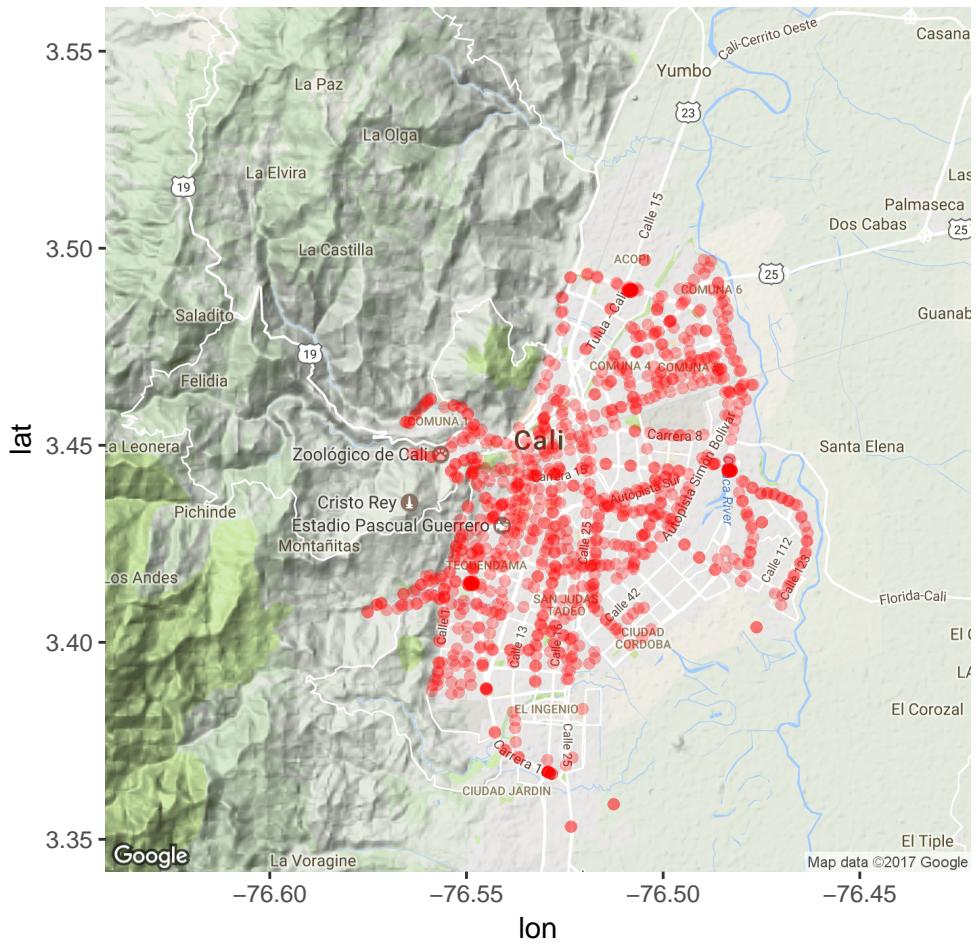
```
#Load a map
city <- get_map("Cali", zoom = 12)
# With that data and the long/lat of the center you can get the ggplot2 object used by ggmap to plot the map
str(city)

##  chr [1:1280, 1:1280] "#CFD6C9" "#D3D8CF" "#D8DFD3" "#DCE2D6" ...
##  - attr(*, "class")= chr [1:2] "ggmap" "raster"
##  - attr(*, "bb")='data.frame':   1 obs. of  4 variables:
##    ..$ ll.lat: num 3.34
##    ..$ ll.lon: num -76.6
##    ..$ ur.lat: num 3.56
##    ..$ ur.lon: num -76.4
##  - attr(*, "source")= chr "google"
##  - attr(*, "maptype")= chr "terrain"
##  - attr(*, "zoom")= num 12

# Cali coords
CalCoords <- geocode("Cali")
```

Get data to plot on the map

```
MioStops <- read.delim(file="STOPS.txt")
Cali <- ggmap(city)
Cali <- Cali + geom_point(aes(x= DECIMALLONGITUDE, y = DECIMALLATITUDE), data = MioStops, color = "red",
Cali
```



Zoom to city center

```
cityCenter <- get_map("Cali", source= "stamen", maptype="toner", zoom = 15)
CaliCenter <- ggmap(cityCenter)
CaliCenter <- CaliCenter + geom_point(aes(x= DECIMALLONGITUDE, y = DECIMALLATITUDE), data = MioStops, color = "red", size = 1)
CaliCenter
```

