

# online mapping with google maps

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## outline

google.com/mymaps (almost like qgis!)

other options

mmqgis

if we have time, revisit pretty.pdf



# let's start with Donald!

◇ http:

`//www.nytimes.com/interactive/2016/11/08/us/elections/  
how-trump-pushed-the-election-map-to-the-right.html`

◇ map is little fancy; unnecessarily fancy

- arrows actually little blur; could just do oldfashioned
- thematic showing changes over time

## examples

- ◇ <http://www.njspotlight.com/stories/12/12/20/crime-in-new-jersey/>
- data by PD, about 400 of them! and back to 1990
- <http://www.njsp.org/ucr/uniform-crime-reports.shtml>
- there is some way to download them in machine readable format
- i guess FBI UCR based on them
- ◇ <http://www.livebolamap.com/>

## why online maps?

- ◇ easy to share; higher quality than printout or even pdf
- ◇ can zoom in/out, pop up features etc
- ◇ especially good for low-level (hi-res) mapping
  - because you have a neat basemap with all the details...
- ◇ can embed on your website, like  
`http://people.hmdc.harvard.edu/~akozaryn/map1.html`
- ◇ can click to pop out other variables
  - (like identify feature in qgis but less clunky)
- ◇ can use for collaboration—just enable editing for anyone!
  - can also enable editing for a select group of folks
  - say those with special link
  - great tool for collaborative mapping!

## why online maps?

- ◇ even can have your own business/service/app/etc
- ◇ just display something interesting on the top of a google map
- ◇ e.g. <http://www.trulia.com>
- ◇ sounds impossible? look what Straso did:
- ◇ <http://cure-cnccs.camden.rutgers.edu/>
- ◇ another local map <http://camden-data.org/#body>

## before we get started

- ◇ need to have google account
- ◇ why google?
- ◇ actually, i've been playing with online mapping a lot
- ◇ found google maps much better/easier than anything else
- ◇ but you are free to use any other service, say bing
- ◇ in fact, you do not have to use online mapping at all
  - neither for next ps nor for final project
  - (but you need to compensate with something else)



## basic things in regular google maps

- ◇ (may not work sometimes: guess browser or OS)
- ◇ `https://maps.google.com/maps`
- ◇ search for 'rutgers camden'
- ◇ but can do polygons, too: '08102', 'university city, pa', etc
- ◇ can do lat/long: '38.8977 N, 77.0366 W' or '38.8977 ,  
-77.0366'
- ◇ `http://www.learner.org/jnorth/images/graphics/mclass/  
Lat_Long.gif`
- ◇ we'll be loading kml, which is just a bunch of coordinates

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## fire it up

- ◇ `google.com/mymaps`
- ◇ interface almost like qgis
  - some rudimentary tools at the top
  - layers on the left
  - even data table is accesible
- ◇ in the future, maybe all gis will be done online like this
  - for now, still need software like qgis

## limitations [otherwise use fusion tables]

- ◇ can import kml (and others)
- ◇ imports csv, tsv, kml, kmz, gpx, xlsx
- ◇ need to be <5mb (simplify polygons useful!)
- ◇ <10k features per map; <2k features per layer
- ◇ <50 attributes per feature
- ◇ can print high resolution
- ◇ <https://support.google.com/mymaps/answer/3370982?hl=en>

## not only display of imported kml; can create kml!

- ◇ as any google maps: markers, driving, cycling, etc
- ◇ also can draw any lines, polygons
- ◇ can add attributes
- ◇ can export as kml
- ◇ let's do it!

## generate map (your own gis data!) in google maps

◇ [google.com/mymaps](https://google.com/mymaps)

- ◇ this is actually made for generating your own gis data
- ◇ zoom in on Camden NJ—can just search it search box
- ◇ select placemark from the top and put onto R and mark 'R'
- ◇ and put placemark on patco station and call 'patco'
- ◇ from line segment select 'Add walking route'
  - and make a line to patco station and call it 'path' (pop up distance)
- ◇ and let's 'Add layer' on the left and
  - from line segment menu select 'Add line or shape'
  - and put a polygon on parking lot (just draw line around it)
  - and call it 'parking'; then click it to pop up acres
- ◇ now can save it as kml

◇ [google.com/mymaps](https://google.com/mymaps) to make like gis

# kml

- ◇ just another vector format like shp
- ◇ and just one file as opposed to shp
- ◇ can just use qgis to turn shp into kml
- ◇ but kml is a popular format and can often get data in kml
- eg <http://www.census.gov/geo/maps-data/data/tiger-kml.html>

## loading kml from goog maps to qgis

- ◇ first make sure each layer has a different name
  - (otherwise problems when importing to qgis)
  - so rename layer with points/placemarks to 'places'
  - and rename layer with parking to 'areas'
- ◇ click main menu (three dots vertically at the top-left):
  - 'Export to KML' and it will save it as kmz (zipped kml)
- ◇ load it to qgis as any vector layer
  - make sure you click 'Select All' !
- ◇ and viola! we have it in qgis
  - add openlayers basemap to put it in context



## can get creative

- ◇ mark points where you think it is unsafe
- ◇ mark your travel destinations (in addition to that map on your wall with pins)
- ◇ mark your jogging route (or use one of those apps to record it and then download to qgis)
- ◇ etc, etc; get creative!

## timeline

- ◇ as you imagine, google records your location
- the good thing is that you can download it :)
- ◇ `google.com/maps`
  - click menu (3 vertical dots on the left)
  - click 'Your timeline'
  - can browse it by date
  - at the bottom right click cog icon and
  - 'Download a copy of all your data'
  - select kml instead of json

## how about just displaying kml from qgis?

- ◇ can do that, too; though little less handy than in qgis
- ◇ can just use kml from qgis
- ◇ in fact can put the map straight from qgis onto google maps!
- ◇ but first, simplify polygons; again the bigger the number, the more simplification

## simplify polygons

- ◇ need to make it smaller so that it loads faster
- ◇ load our favorite nj counties
- ◇ [http://people.hmdc.harvard.edu/~akozaryn/myweb/bounds\\_nj\\_shp.zip](http://people.hmdc.harvard.edu/~akozaryn/myweb/bounds_nj_shp.zip)
- ◇ Vector-Geometry Tools-Simplify Geometries
- ◇ and simplify polygons with tolerance of 1k
  - if you do something like 25k, you'll mutate nj too much!)
- ◇ after simplifying, don't forget to toggle editing
- ◇ really, as a rule you want to simplify all gis data before online display

## make thematic map

- ◇ make it first little transparent \*under\*
- ◇ Single Fill and Simple Fill
- ◇ them usual thematic map say POP2010

## and export to kml

- ◇ MMQGIS-export-goog kml
- ◇ drop unnecessary stuff to avoid clutter
  - just keep few vars
- ◇ all the vars will pop up when you click on feature
- ◇ change 'Description Separator' to 'Field Names'
  - that way the popup will label values with var name

## uploading to google maps

- ◇ `google.com/mymaps`
- ◇ at top-left click 'Import'
- ◇ that's it! note you can upload and have multiple layers
- ◇ also note that when you click feature on a map it would pop up table info
- ◇ click menu next to layer (three dots vertically) and
  - 'Open data table'
  - it's all text format; click column menu (little triangle on column name)
  - and 'Duplicate' pick 'Number' as Type and close table

## other things

- ◇ finally, at top-left click 'share,' make it public and send me a link



## add colleges

- ◇ load our favorite colleges into qgis
- ◇ [http://people.hmdc.harvard.edu/~akozaryn/myweb/hsip\\_colleges.zip](http://people.hmdc.harvard.edu/~akozaryn/myweb/hsip_colleges.zip)
- ◇ MMQGIS-Import/Export-Google Maps KML Export
- ◇ and load into google maps
- ◇ can change style of placemarkers to something fancy
- ◇ first change 'Individual styles' to 'Uniform style'
- and on the right click a 'bucket icon' and 'More icons'

# that's it...

- ◇ please play with google maps
- ◇ it should be pretty straightforward and user-friendly

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## many options

- ◇ there are dozens of ways to make maps online
- ◇ even per google there are many ways to do it
- ◇ feel free to experiment and play around
- ◇ i am curious about your impressions
- ◇ especially if you find out something great, do let us know!
- ◇ many online options out there, for review:

DA Smith 2016 “Online interactive thematic mapping:  
Applications and techniques for socio-economic research”

<http://www.sciencedirect.com/science/article/pii/S0198971516300023>

## fusion tables

◇ can use Google's fusion tables

- https:

- [//support.google.com/fusiontables/answer/2571232?hl=en](https://support.google.com/fusiontables/answer/2571232?hl=en)

- more powerful in a sense that allows more data, obs, vars

- and can customize it using some java

◇ but less clear, i think

- and doesn't seem to work the way you want it to work

◇ but i am curious about your impressions

## mapbox and open map

- ◇ mapbox and open map seems like a good alternative to google
- ◇ <https://www.mapbox.com/about/maps/>
- ◇ example:
  - <http://www.wnyc.org/story/273686-mega-commuters-take-manhattan/>

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# animation

◇ <http://michaelminn.com/linux/mmqgis/>



## combine layers

- ◇ mmqgis-combine-merge layers (need to be same type: polygon, line, point)

## mmqgis more

- ◇ there is much more !
- ◇ just explore menu

## go places

- ◇ when you make maps and find things, go and visit that place—i drove through MI from TX to NJ

## combining layers

- ◇ there was a question about how to combine layers
- ◇ mmqgis-combine-merge layers
  - just make sure all are same type (polygon, line, point)
- ◇ more info on combining layers: <http://gis.stackexchange.com/questions/25061/how-to-merge-multiple-layers-to-one-layer-using-qgis>
  - <http://www.statsilk.com/maps/merge-multiple-map-layers-single-shapefile-using-quantum-gis>
  - <http://www.igismap.com/merge-two-shapefile-qgis/>

## cannot convert string to numeric in kml

- ◇ try saving as shapefile first
- ◇ or use [google.com/mymaps](https://www.google.com/mymaps) to duplicate column as numeric

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