intro

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outline

general overview; approach and policies

why?

what is GIS?

[skip, nobody likes it] qgis on apps.rutgers

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extra credit opportunities

- present something we did not cover (has to be GIS, of course)
- present alternative way of doing something that we have covered
- civic engagement: Michael D'Italia
  michael.ditalia@camden.rutgers.edu

about myself

- theaok.github.io

3 questions about yourself

- what do you research?
  - using any data?
- what do you expect from this class?

weekly labs; do we need that?

- find out good time for weekly labs, say one hour before the class?

2 keys to success

- start early on ps
- ask questions

approach

- applied, data-driven
- you are encouraged to collaborate (prep for class, ps, paper)
- free to choose data/topics as long as relevant to the class
  - bring your own data; kill 2 birds with one stone
  - you need to have some data for this class
  - don't worry, as long as you have any interest, you are likely to find data about it
  - we'll go over data sources in few classes

before and after the midterm

- 1st half basics, go fast
- 2nd half more extras, relax with pace of material but work on paper (final ps/presentation)
- before: basics, data, theory, general
- after: more specific and advanced topics
- more research oriented

communication

- during the class interrupt me as often as necessary
- after the class email me if you have questions – i check email frequently
- everyone got welcome email? no? email me
- stop by my office!

ps tips

- important: people never follow it
- start early
- late ps *not* accepted
- ask questions early!
  - do not hesitate to ask questions
  - there are no “silly” questions
  - it is normal to get stuck and ask questions when learning new software

class website=syllabus

- slides are linked from the syllabus
- i try to post about a week ahead, but tentative only
- print, if you like, right before the class–i am updating continuously

a general thought about maps

- maps are always useful
- no matter what you study it always takes place somewhere and place matters
- so you should use maps for whatever you study in *all* other classes
- and all other projects outside of school
- it will always help with understanding of what is going on
- and it is not that difficult!
- most of you are already at stage where you produce great maps!

the difference

- this class is different from other classes
- fundamentally this class is about software
  - and hands-on, applied, usage of it
- it is impossible for me to cover everything that you may bump into
- that's why it is key for us to communicate well
  - don't hesitate asking the questions
  - use email extensively (eg couple times per day)

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so what? geography matters!

- with maps you get insight you won't get otherwhise
- oftentimes all you have to do is to map it
  - and think **a lot** about what you have mapped
  - and what it really means
  - eg Dick De Veaux: faulty devices around Rocky Mountains
  - eg Cooper's Hospital dr Brenner: map ER visits home addresses
  - send nurses to homes and cut costs dramatically and improve health (i think!, correct me if i am wrong!)

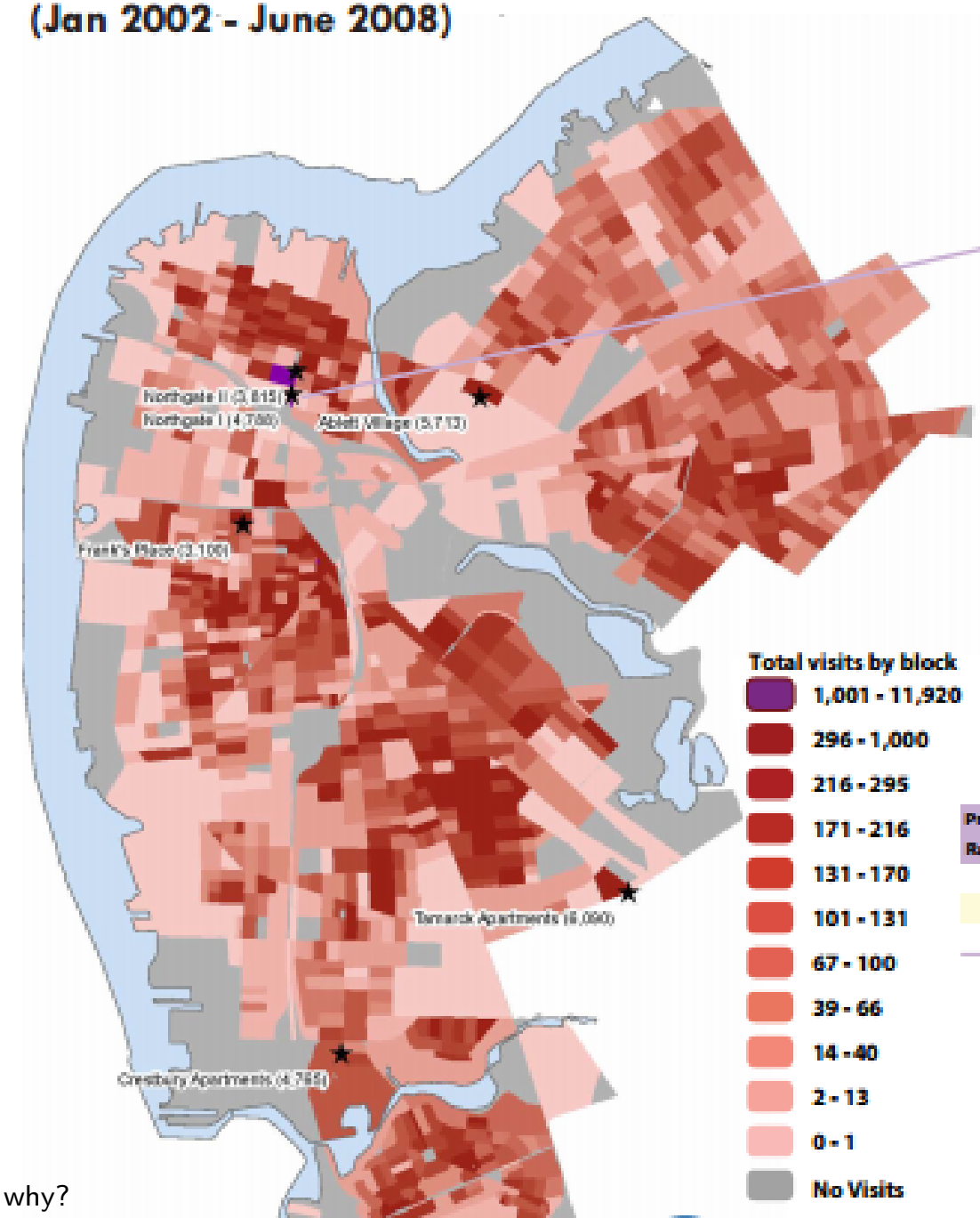
`https://www.camdenhealth.org/dr-brenner-discusses-the-nations-healthcare-system/`

- `http://www.rwjf.org/en/library/articles-and-news/2014/02/improving-management-of-health-care-superutilizers.html`

why? discovery! just put it on a map

- Dick De Veaux: blackboard: US map with loc of faulty devices
- and Cooper's dr Brenner on next slide

Inpatient and Emergency Room Visits in Camden, NJ
(Jan 2002 - June 2008)



Northgate I Public Housing

	Visits	Patients	Charges	Receipts	Collected
Cooper	3,172	749	$42,144,897	$4,994,658	12%
Lourdes	811	337	$7,848,899	$1,028,611	13%
Virtua	805	331	$1,742,487	$345,092	20%
2005	838	378	$10,834,420	$1,268,373	12%
2006	738	355	$6,867,995	$880,549	13%
2007	790	369	$7,979,262	$901,181	11%
ED	3882	978	$6,150,592	$864,019	14%
Inpatient	906	408	$45,584,781	$5,504,342	12%
Total	4,788	1,078	$51,735,374	$6,368,361	12%

Primary Diagnosis

Rank	ED	Inpatient
1	abdominal pain (789.0)	live birth (V3X.0)
2	acute URI NOS (465.9)	chest pain (786.5)
3	chest pain (786.5)	congestive heart failure NOS (428.0)

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what is there?

- GIS Geographic Information Systems
  - Geographic: Cities, Roads, Rivers, Countries, etc
  - Information Systems: data, software, programming,
  - like MIS (Management Information Systems) or IT
- GIS=CS(graphics, database/sys adm, coding)+geography
- really, much of the GIS is data management
- geographic=geospatial=spatial (synonymous)

past and future

- much of the gis has been (still is) done with ArcGIS/ArcMap
  - this is more of a dinosaur, however
- the future is open source software like QGIS
- and internet companies like Google

what we'll be doing

- obtain (download, but also eg smartphone/gps), manage and display data
  - a display is usually a map
  - really, this class is mostly about producing maps
- there is much more to the GIS, of course
- this class is applied mapping

maps

- keep in mind that a map is visual representation of data
- there is always a database behind a map
- (database is like spreadsheet, but bigger and fancier)
- or more precisely:
- there is sometimes a map on the top of the database
- so maps is just data in the picture
- the bottom line is data !

why GIS in social science?

- local government
  - zoning, public works (streets, water supply, sewers), garbage collection, land ownership and valuation, public safety (fire and police)
- federal/state
  - natural resource management
  - highways and transportation
- academics: ALL "no matter what you study it takes place somewhere"
  (place always matter)
  - but especially public health/epidemiology and criminology

why GIS?

- businesses
  - retail site selection & customer analysis
  - logistics: vehicle tracking & routing
  - natural resource exploration (petroleum, etc.)
  - civil engineering/construction
- so you see that you can do a lot with GIS
- yes, it gives you specific, marketable job skills

maps are fun!

- let's look at some interesting maps
  - see patterns that cannot see otherwise
  - absorb easily lots of information
  - compare easily

the big sort

- "The big sort
  why clustering of like-minded America is tearing us apart"
- America polarizes by county
  (counties are becoming either R or D)
- `http://www.thebigsort.com/maps.php`

who is your city

- http://www.creativeclass.com/_v3/whos_your_city/maps

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server/cloud

- we will try to use apps.rutgers
- why bother with this?
- this is the future, in 10 years everybody will use it
  - so you may get used to it now
- and a part of data management is to use a remote server
  - again GIS≈data management
- faster, more reliable, accessible from anywhere, persistent sessions
- but you can run it on any pc, any OS

today

- first, the difficult part
- connect to apps.rutgers

we'll work on apps

- make sure you have it enabled
- go to `http://netid.rutgers.edu/`
- on the left, click "service activation"
- and activate "apps cloud service"

connect to apps.rutgers

- Either go to `https://apps.rutgers.edu` or `https://apps.rutgers.edu/novnc/` (clunkier, but works on tablets)
- To copy files, you can either `https://apps.rutgers.edu`
- For a nicer interface install `http://winscp.net/`, run it and connect to: Host name: "apps.rutgers.edu"; User name: "your Rutgers NetID"; Password: "your Rutgers password"

but you can just use your PC

- QGIS is open-source
- just google it...
- then you can brig your own laptop and work there...