

# thematic maps

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this version: Thursday 5<sup>th</sup> October, 2023 12:47

# outline

basics again

classification methods: 2 useful references

thematic mapping



## data science people slow down

- quality trumps quantity
- yes better meaningful one or two maps than 10 so so
- always do think about it, interpret it

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## variable definitions

- be very clear about what you are measuring
  - put on the map, in description, or into appendix, but have to have it somewhere!
  - eg do we have small breweries that are at some bars?  
how exactly is a brewery defined?
  - eg what is exactly a bike lane—incl paths in parks?  
does it have to be designated for bikes only?  
and paths not for bikes but used by bikes?
  - ideally map them all!

## map labeling: clarity and simplicity!

- always have a self explanatory title/caption and legend
- self-explanatory means a random person will understand what it's about
- in other words it will pass “a grandma test”
  - give it to your grandma and she'll get it
  - if she doesn't, then it isn't clear enough

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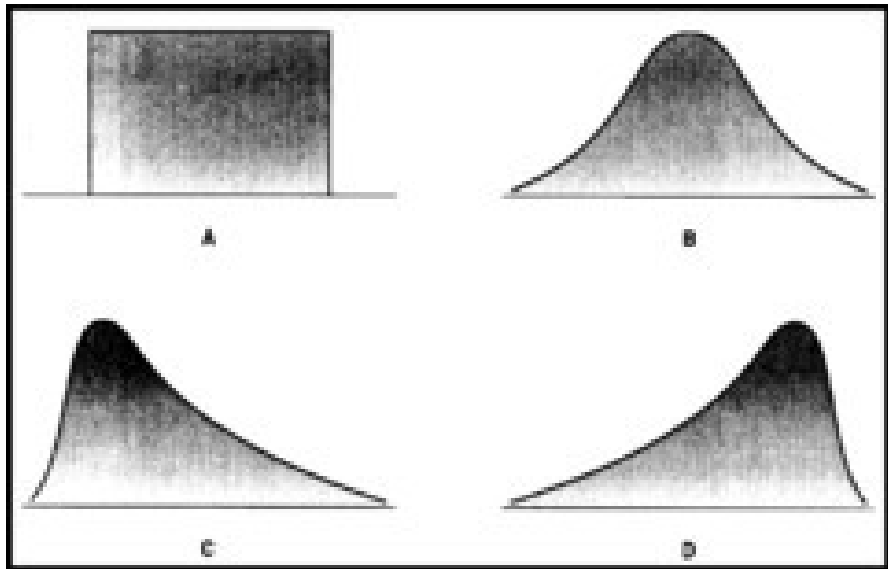
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## Properties-Style-histogram tab; skew



## references: very useful!

- let's open both and do 2nd pdf: 7,8: creating classes
- and then do each classification type one by one from BOTH docs; and s15 from 2nd on counts v ratios
- [http://www.gitta.info/Statistics/en/html/StandClass\\_learningObject2.html](http://www.gitta.info/Statistics/en/html/StandClass_learningObject2.html)
- [http://www.geo.umass.edu/courses/geo494a/thematic\\_map\\_design.pdf](http://www.geo.umass.edu/courses/geo494a/thematic_map_design.pdf)
- [\*] aficionados may do value-by-area

<https://magrawala.github.io/cs448b-fa17/assets/docs/Dent-Chap11.pdf>

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## always think abt the meaning; interpret!

- always interpret the map, think about what it means
  - usually want to standardize to achieve meaningfulness
- standardize by area (“per sq km”) or by pop (“per capita”)
- or even: specific (eg habitable) area; specific (eg disadvantaged) pop
  - eg much of area may be water or forest, so hydrants/inhabited sq km
  - similar with populations-they may only work or sleep in some area, (Cherry Hill is a bedroom city) etc
  - eg Cape May has many liquor stores per capita (just because nobody lives there)

## classification methods

- always understand the distribution—use hist!
  - have a hist in ps (at least of main var)
  - think about it, discuss and motivate classification meth
  - (i'll cut points)
- i like NATURAL BREAKS/JENKS or QUANTILES
- usually more “truthful” than equal intervals
- start with many, say 7, then shrink it to say 5 or 3 without loosing too much detail
  - make it as parsimonious, clean, and simple as possible

## choice of classification method is critical

- be as objective as possible
- never choose classification forcing your story
- let the data speak, listen carefully, don't force it
- scientist must be objective
- play with it: explore the distribution and categorize differently
- then pick the most parsimonious AND best representing the pattern
- (put the alternative ones into appendix, so can always compare)
- let the data speak! do not force your story

## let the data speak, but you pick the story!

- data have always many stories to tell
  - and you choose which one you want to present
- say may emphasize extremes with dramatic colors
  - eg purple for values way different from everything else
  - (for intervention, disaster response, etc)
- or paint the gradient, where values raise and level off etc
  - like my urban-rural happiness gradient
- also in space: clusters of happiness: <https://link.springer.com/content/pdf/10.1007/s11205-010-9671-y.pdf>
  - (still using alt classifications for robustness)
  - (and std dev in addition to levels)

## categorized symbology

- good for categorical data
- what are categorical data ?
- examples ?
- continuous vs ordinal, nominal (multinomial and binary)
- categorized symbology—how it works?
  - pick colors (or symbols) for levels of a variable