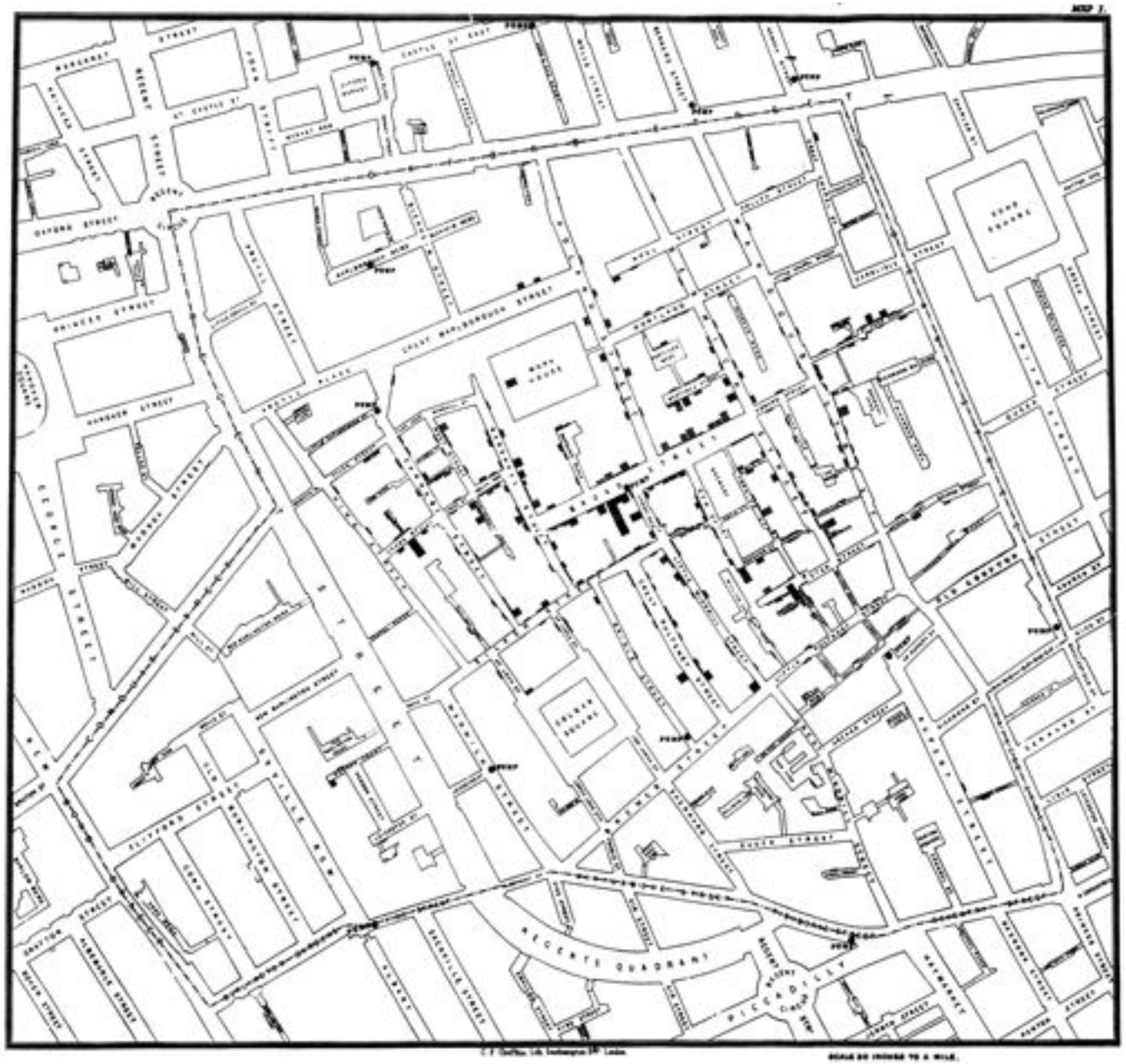
data visualization **for social good**

Aaron Hill | @aaronxhill
Parsons | The New School

these slides available at http://tinyurl.com/sxgood

MAP 1.

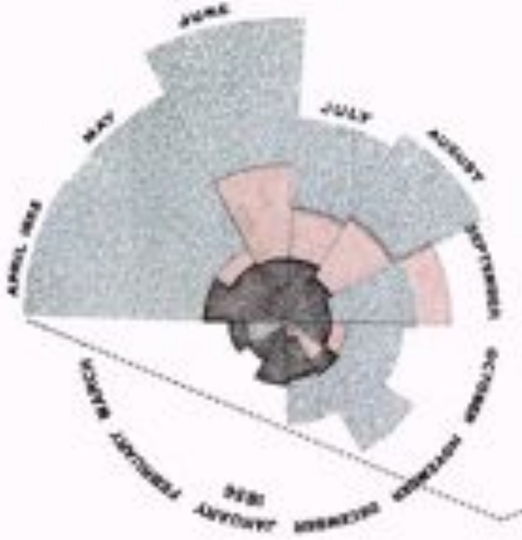


SCALE 30 INCHES TO A MILE.

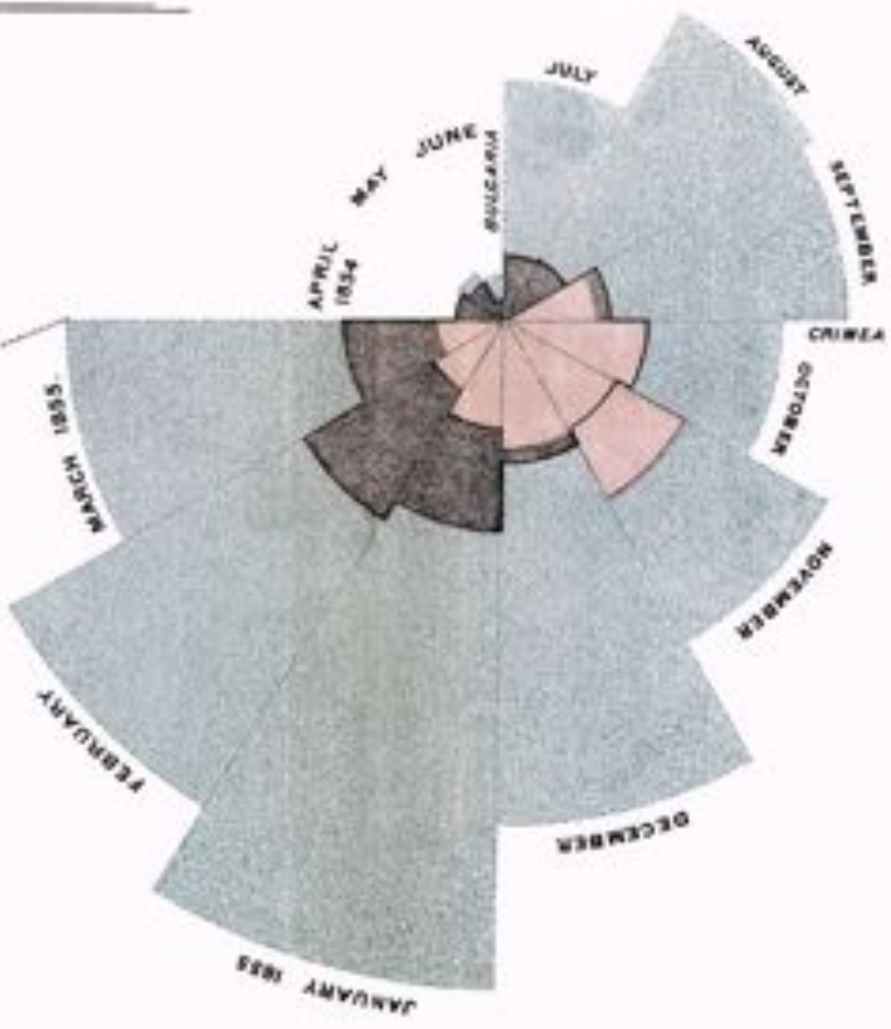
http://www.theguardian.com/news/datablog/interactive/2013/mar/15/cholera-map-john-snow-recreated

DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST.

2.
APRIL 1855 TO MARCH 1856.



1.
APRIL 1854 TO MARCH 1855.



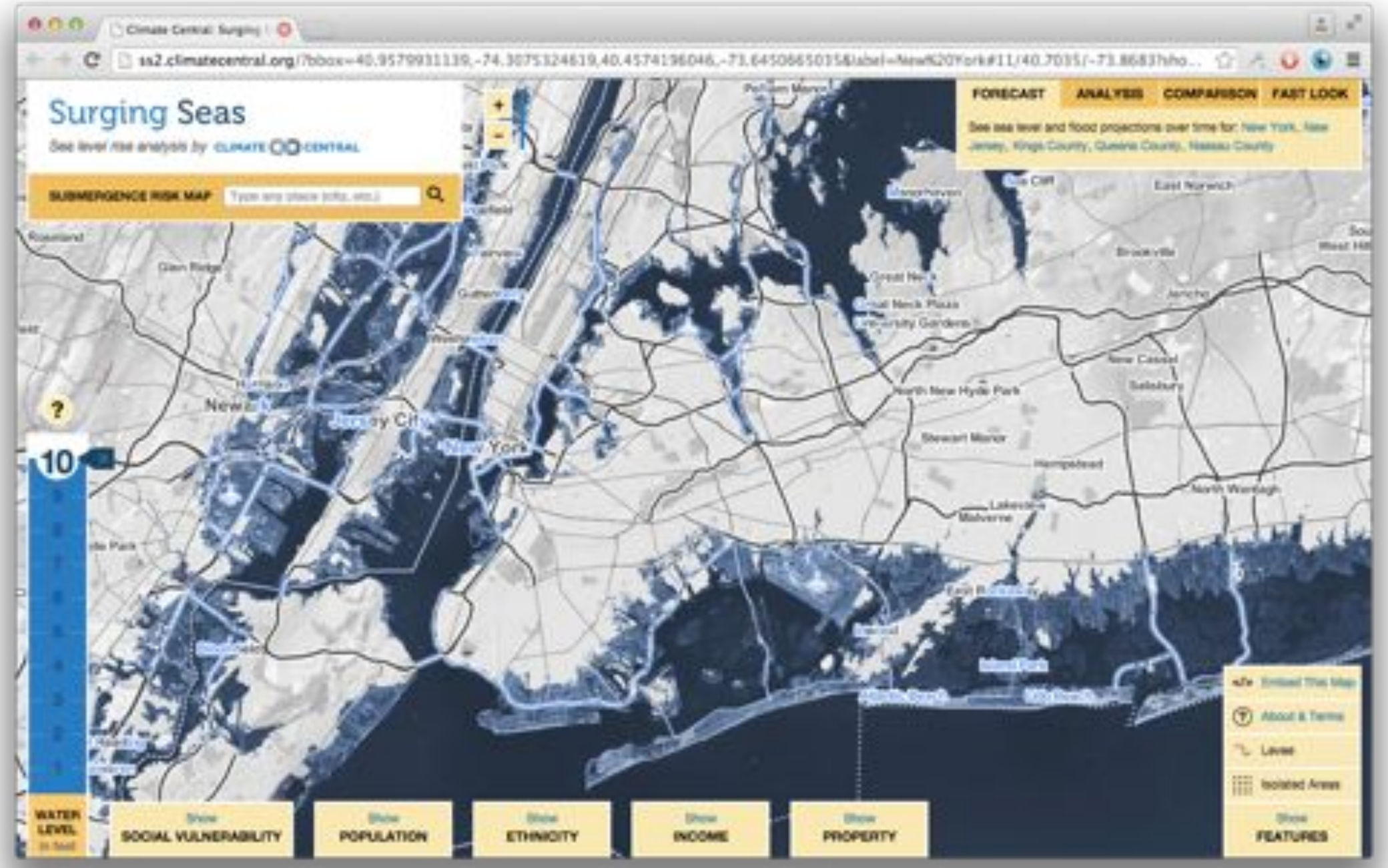
The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex.

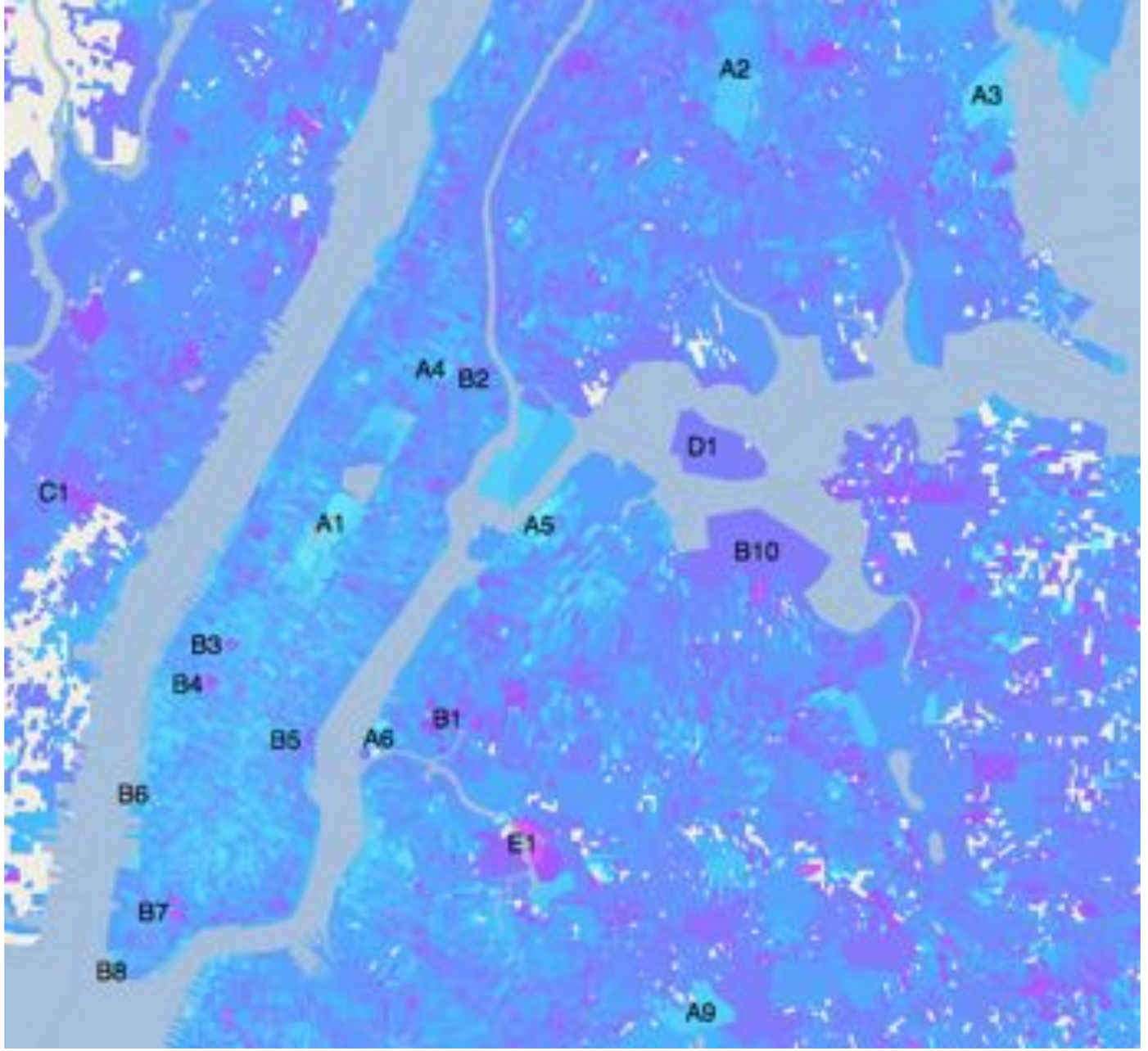
The blue wedges measured from the centre of the circle represent, area for area, the deaths from Preventible or Mitigable Zymotic diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes.

The black line across the red triangle in Nov.r 1854 marks the boundary of the deaths from all other causes during the month.

In October 1854, & April 1855, the black area coincides with the red, in January & February 1856, the blue coincides with the black.

The entire areas may be compared by following the blue, the red & the black lines enclosing them.


Surging Seas
See level rise analysis by CLIMATE CENTRAL
SUBMERGENCE RISK MAP
FORECAST
ANALYSIS
COMPARISON
FAST LOOK
See sea level and flood projections over time for: New York, New Jersey, Kings County, Queens County, Nassau County
10
WATER LEVEL
Show SOCIAL VULNERABILITY
Show POPULATION
Show ETHNICITY
Show INCOME
Show PROPERTY
Embed This Map
About & Terms
Layer
Isolated Areas
Show FEATURES



Public sentiment map of the Manhattan and surrounding areas according to analysis of over 600,000 tweets, organized by census block. Cyan represents the most positive sentiment and magenta the most negative. White represents areas with insufficient tweet density for analysis. Areas of strong sentiment are labeled by A – F as follows: A: Parks; B: Transportation Hubs; C: Cemeteries; D: Riker's Island ; E: Maspeth Creek; F: Medical Centers.

http://www.necsi.edu/research/social/newyork/

agenda

part one: data visualization as a process

part two: prototype visual representations of Austin Open Data
a. frame the issue
b. sketch visual representations

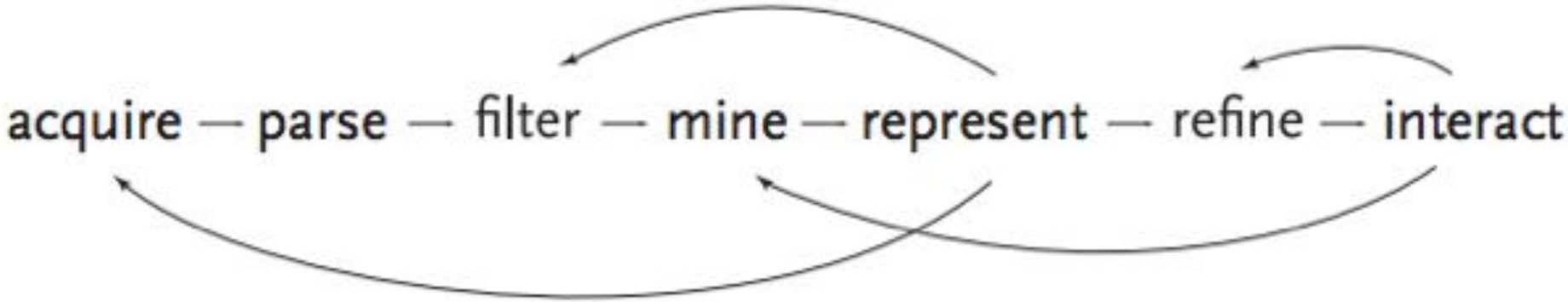
these slides available at http://tinyurl.com/sxgood

part one: process

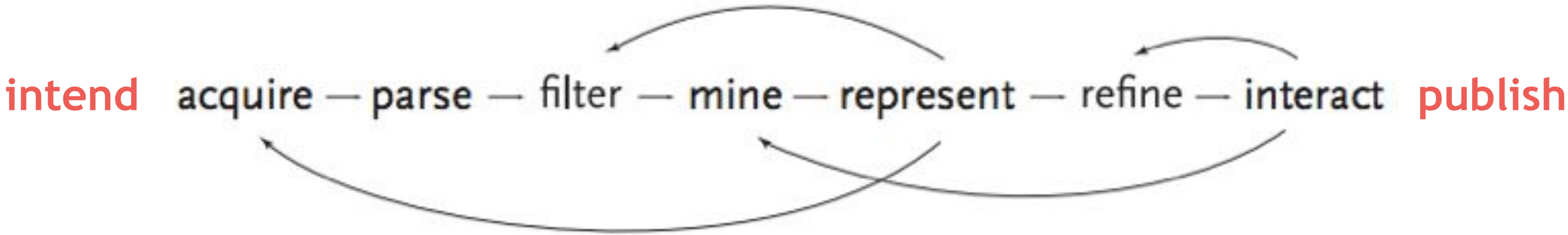
http://lostcatbook.com/

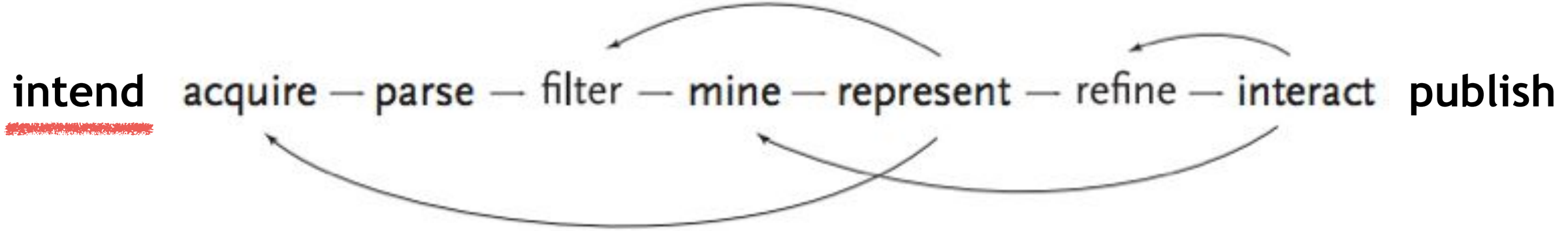
http://www.carolinepaul.com/lost-cat.htm

http://www.carolinepaul.com/lost-cat.htm

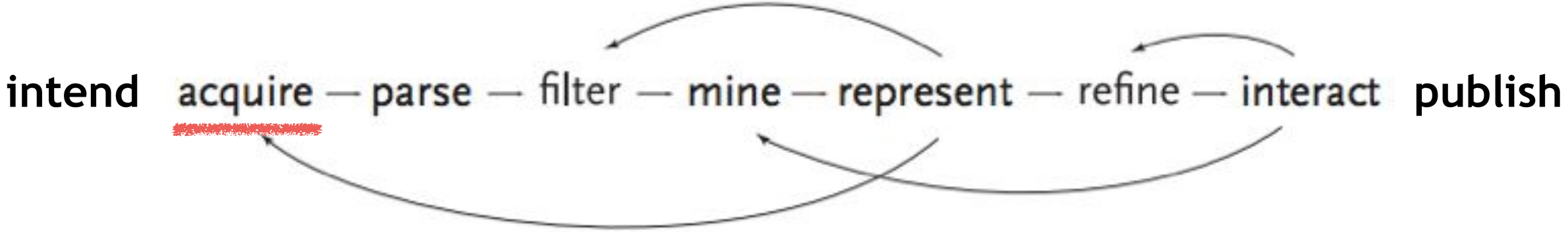


Ben Fry | http://benfry.com/phd/dissertation-110323c.pdf


intend
acquire — parse — filter — mine — represent — refine — interact
publish


intend
acquire — parse — filter — mine — represent — refine — interact
publish

?



open data repositories

APIs

web scraping

sensors

data exhaust

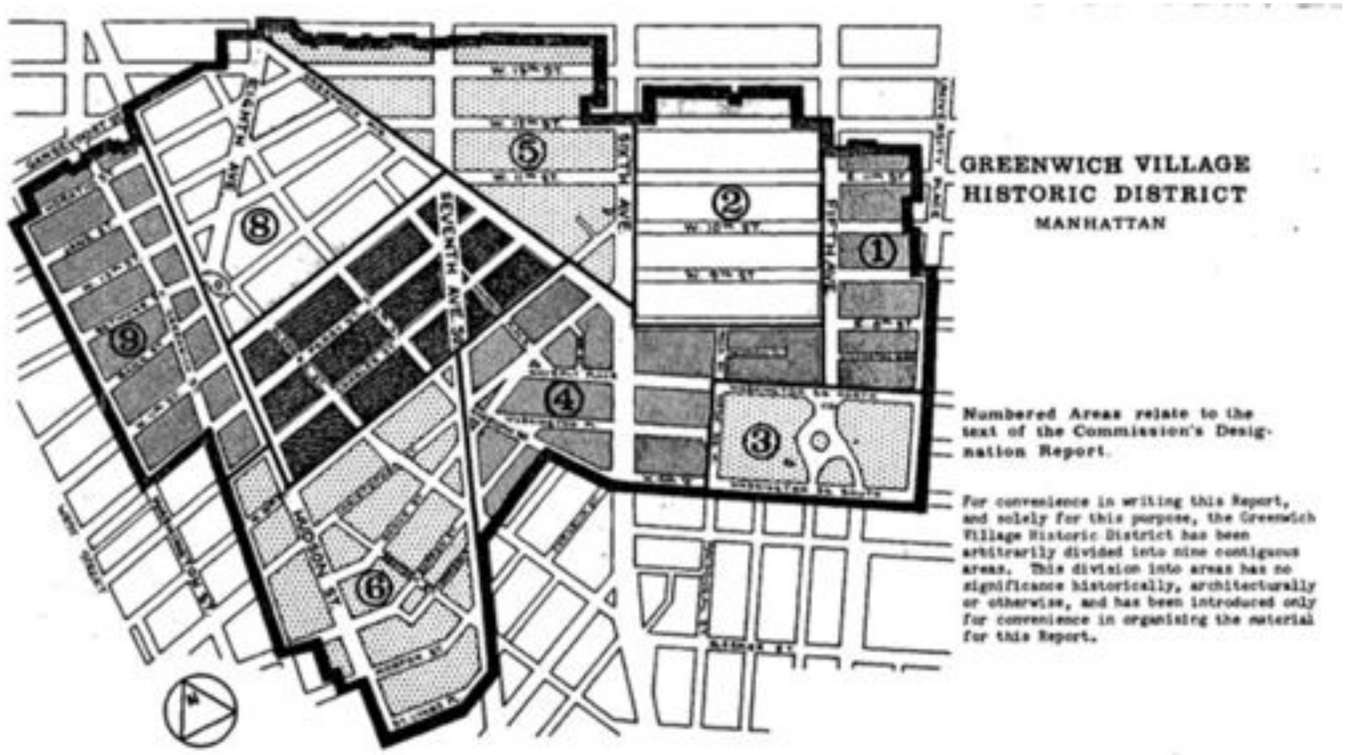
intend acquire — parse — filter — mine — represent — refine — interact publish

What software should I use?

~~What software should I use?~~

How should the data map to the visual representation?

intend acquire — parse — filter — mine — represent — refine — interact publish



intend acquire — parse — filter — mine — represent — refine — interact publish

intend acquire — parse — filter — mine — represent — refine — interact publish

part two: prototyping

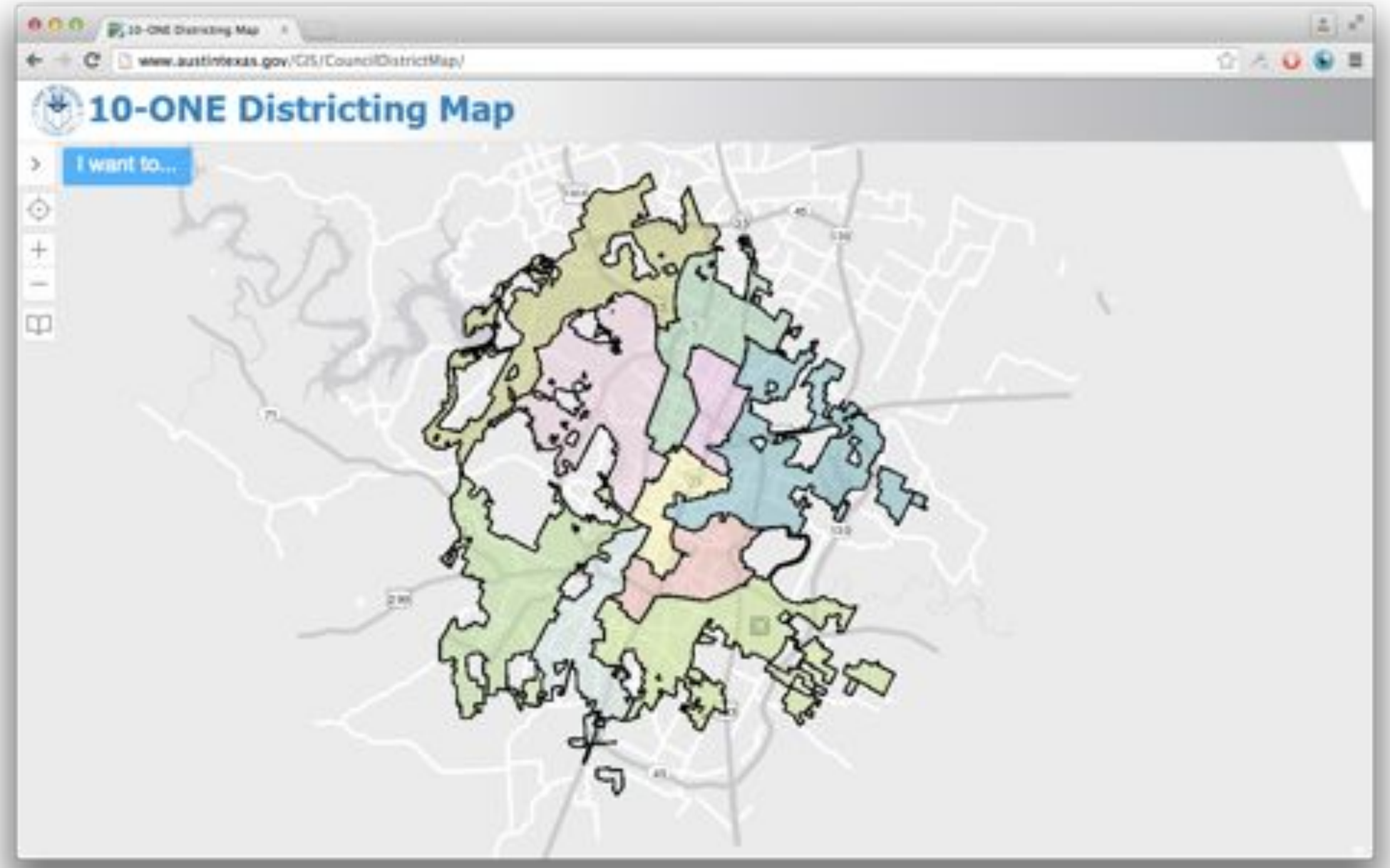

data.austintexas.gov
How to Use the Data Portal
Our user-generated wiki offers tips on how to create maps, charts, filtered views and more!
How
use the city data po
How-To Wiki
Data Portal How-To Wiki
Suggest Data
Suggest a Data Set
About Data
About Open Data
Data of the Month
CIVIC - Number of Projects by Department
Search & Browse Datasets and Views
View Types
Name
Popularity
Type
Single Member Council Districts
Map of Declared Dangerous Dogs
911 ADDRESSING - ADDRESS CHANGES

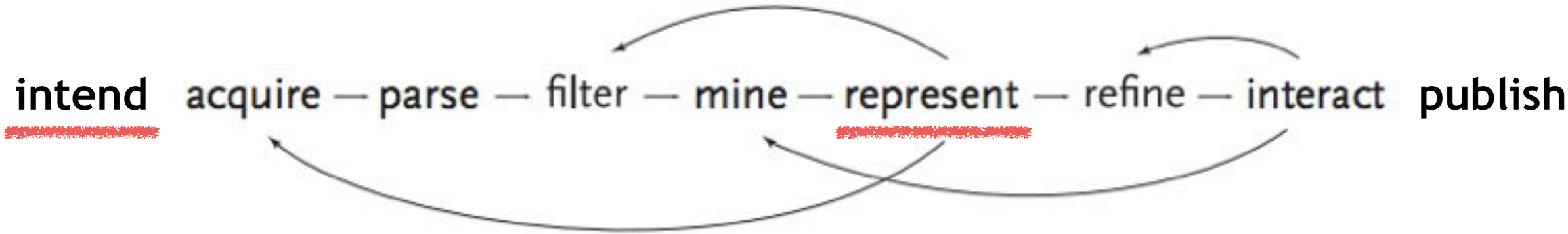
City of Austin

Doug Matthews
Chief Communications Director

Ted Lehr, Ph.D.
IT Data Architect, Business Application Services

issue: equity (by district)


10-ONE Districting Map
www.austintexas.gov/GIS/CouncilDistrictMap/
10-ONE Districting Map
I want to...


intend
acquire — parse — filter — mine — represent — refine — interact
publish

exercise 1: framing the issue

these slides available at http://tinyurl.com/sxgood


aaronhill.nyc/historicdistrict/
visualize: building height / building age / both
filter: show all / show only those built after 1969
% of buildings, by # floors
< 4 62%
5 - 6 28%
7 - 9 7%
10+ 3%
HUDSON STREET
GREENWICH STREET
WASHINGTON STREET
WEST STREET
BARROW STREET
N

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.

They may be able to learn _____.

This will help them _____.

If a journalist wrote about this, they would say _____.

When this work is finished, Austin will understand _____.

This work matters because _____.

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: bicycle rack requests

http://tinyurl.com/sxgood1

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: Austin public art collection

http://tinyurl.com/sxgood2

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: affordable housing inventory

http://tinyurl.com/sxgood3

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: civic projects list

http://tinyurl.com/sxgood4

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: animal intake report

http://tinyurl.com/sxgood5

exercise 1: framing the issue

When people interact with this visual representation, they will be able to explore _____.
They may be able to learn _____.
This will help them _____.
If a journalist wrote about this, they would say _____.
When this work is finished, Austin will understand _____.
This work matters because _____.

data: restaurant inspection scores

http://tinyurl.com/sxgood6

exercise 2: sketching

exercise 2: sketching

visual representation

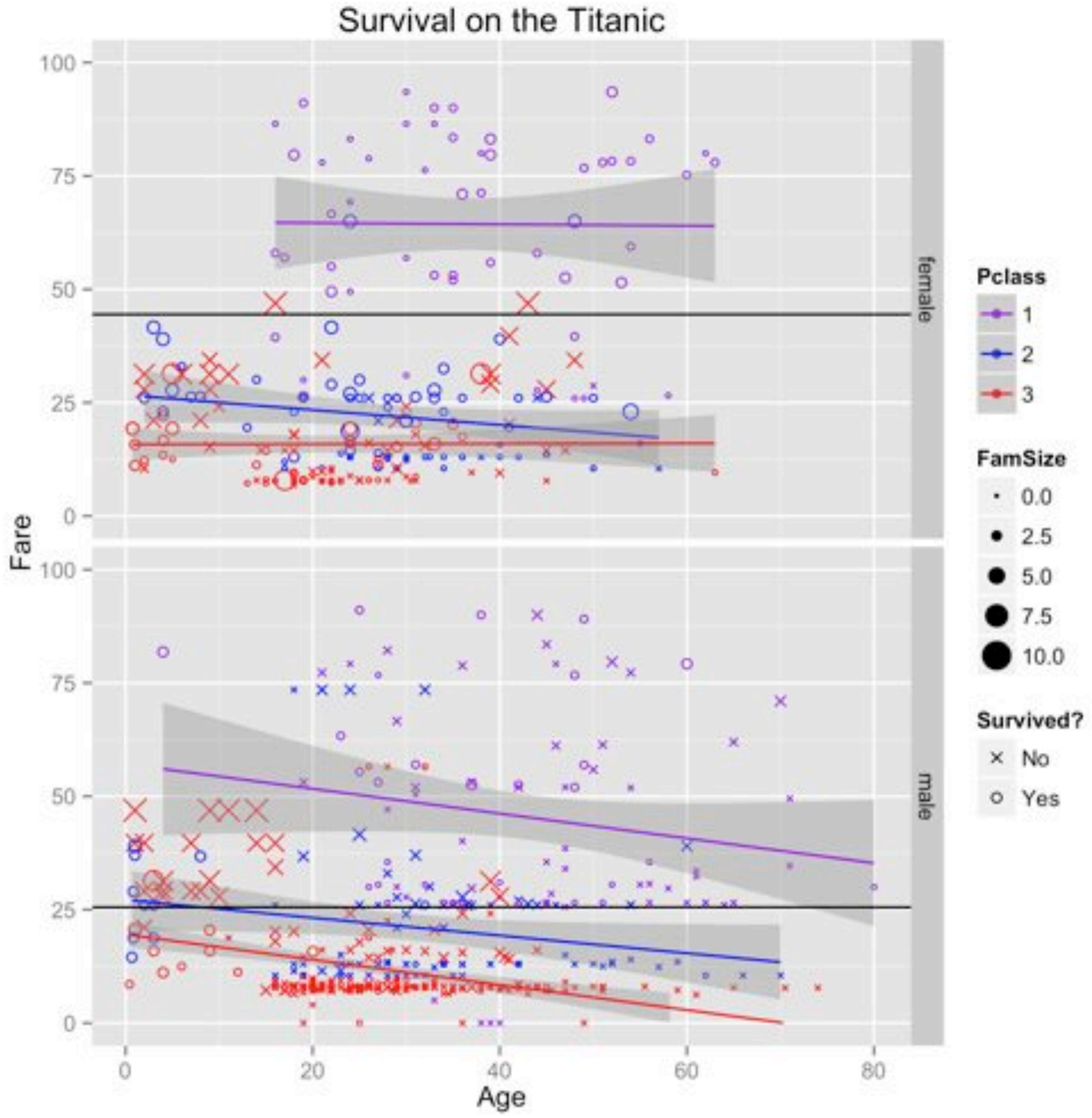
graph grammar
layering and separation
graphical perception

these slides available at http://tinyurl.com/sxgood

graph grammar

data | aesthetic mapping | geom | stat | scale | coord | facet

Hadley Wickham

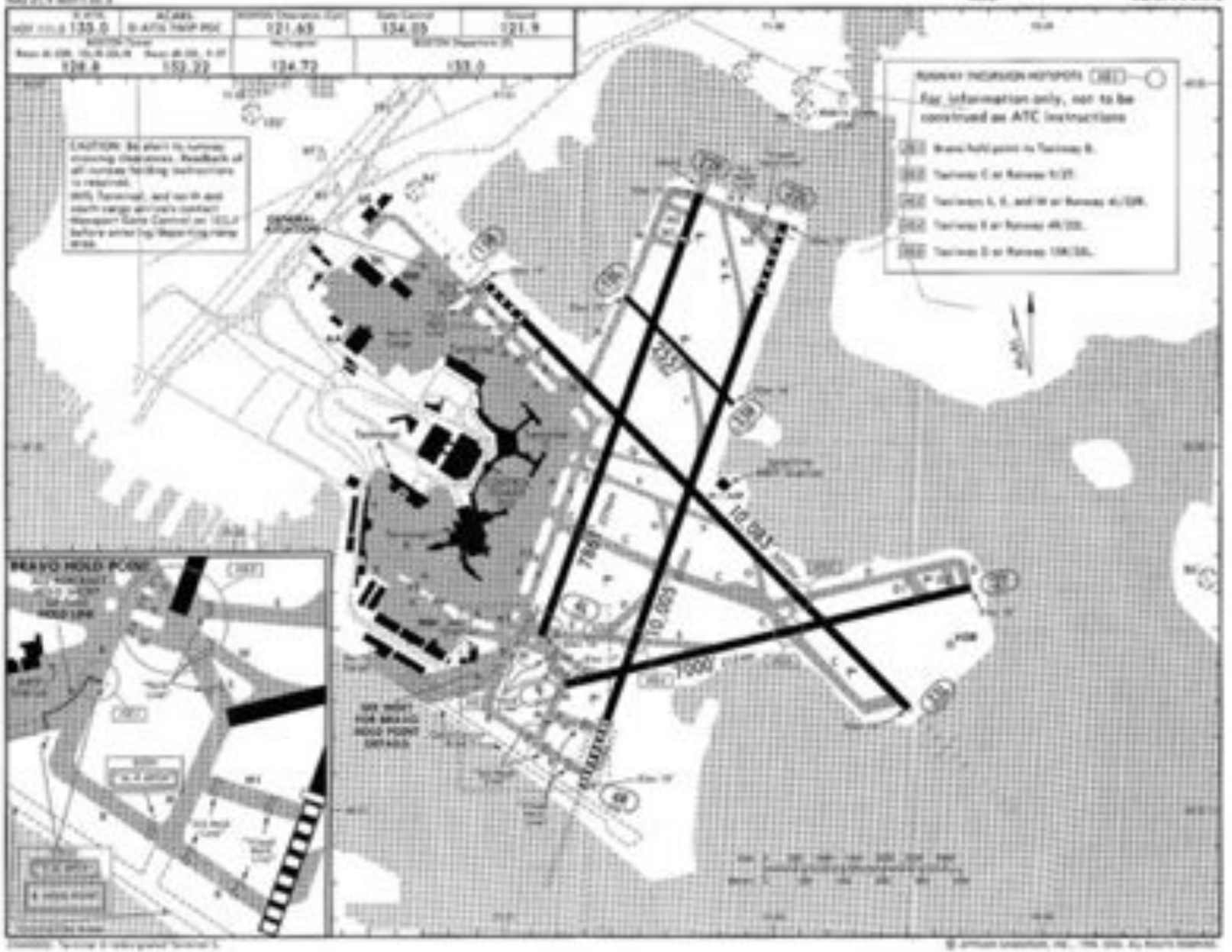

Survival on the Titanic
Fare
Age
female
male
0
25
50
75
100
0
20
40
60
80
Pclass
1
2
3
FamSize
0.0
2.5
5.0
7.5
10.0
Survived?
No
Yes

layering and separation

KBOS/BOS

BOSTON, MASS

LOGAN INTL



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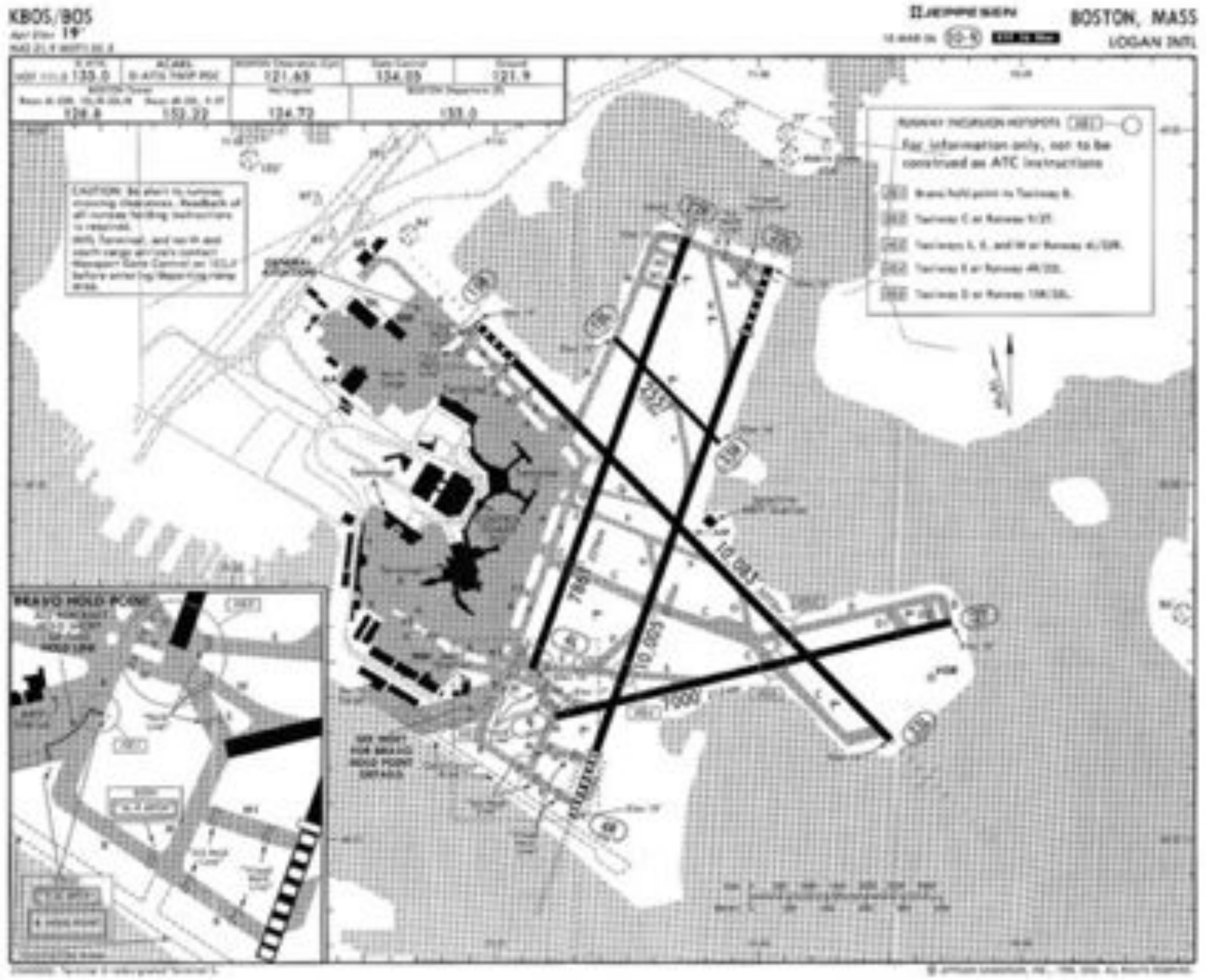
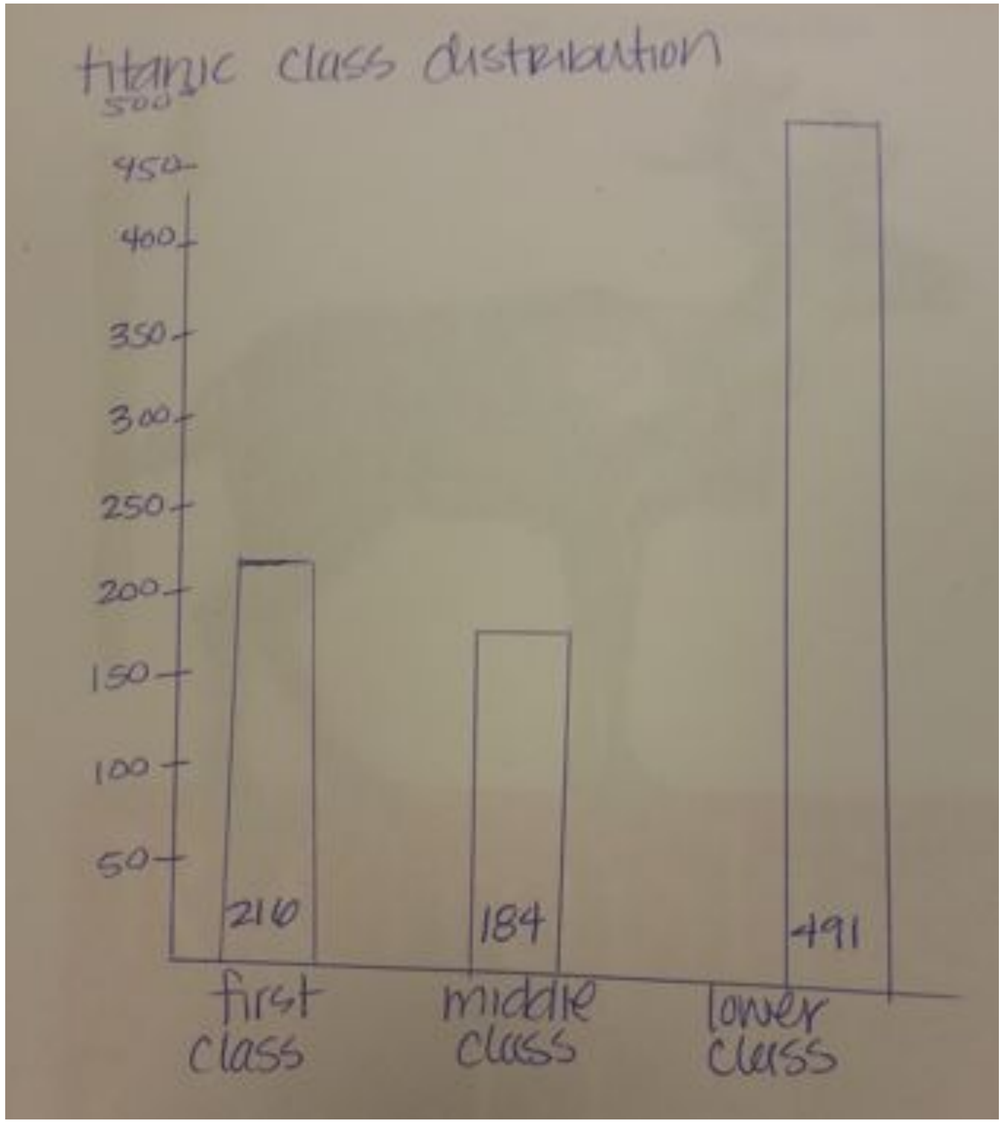
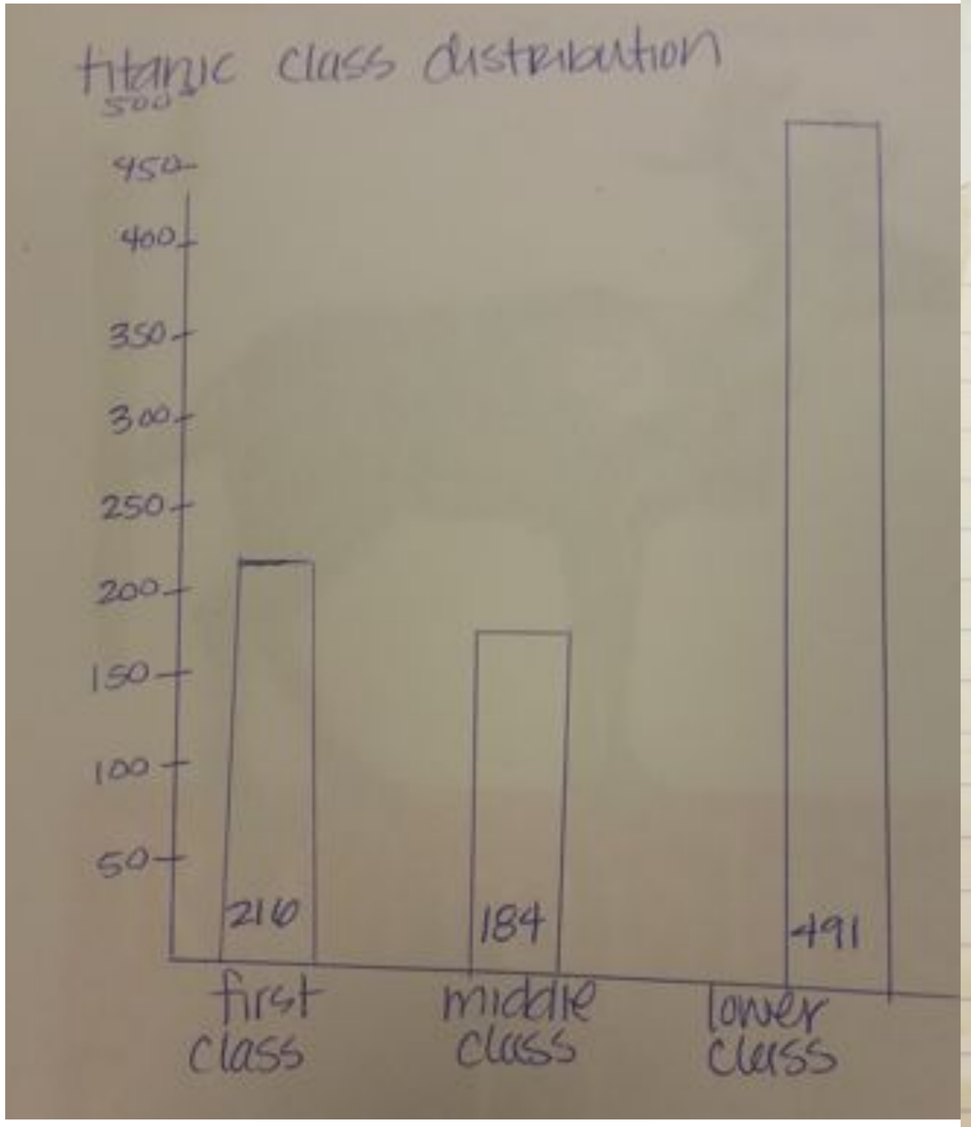
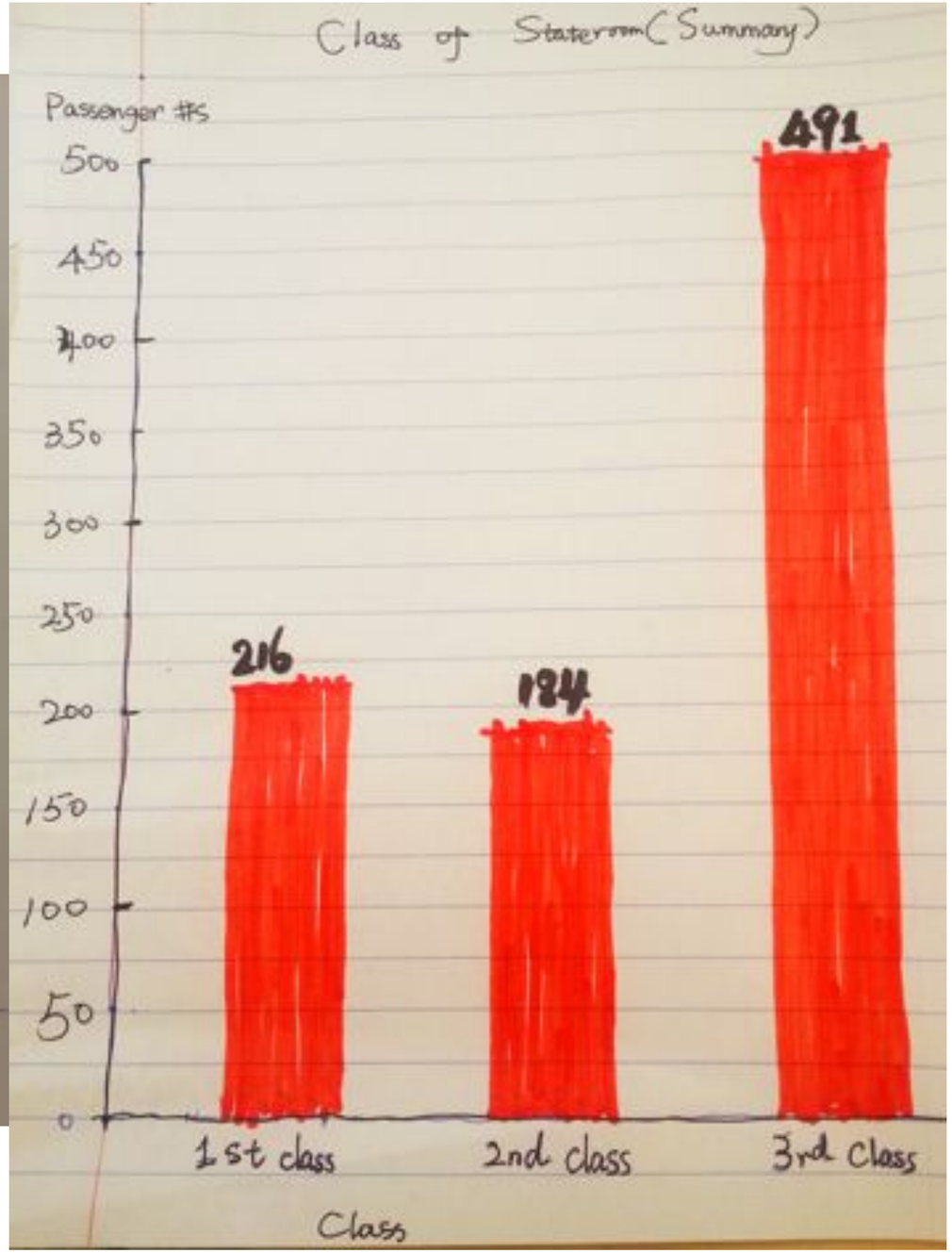

KBOS/BOS
BOSTON, MASS
LOGAN INTL

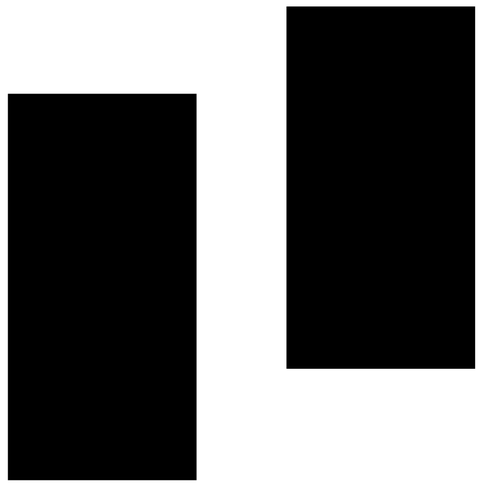

AIRPORT DIAGRAM
BOSTON / GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)
BOSTON, MASSACHUSETTS
CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLDING INSTRUCTIONS IS REQUIRED.
JANUARY 2010 ANNUAL RATE OF CHANGE 0.1° E
SATELLITE FIRE STATION
MAIN FIRE STATION
NORTH CARGO
INTERNATIONAL TERMINAL
GENERAL AVIATION RAMP
ALL AIRCRAFT HOLD HERE (4L APCH)
NE-1, 19 SEP 2013 to 17 OCT 2013
AIRPORT DIAGRAM
BOSTON, MASSACHUSETTS
BOSTON / GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)


titanic class distribution
500
450
400
350
300
250
200
150
100
50
216
184
491
first class
middle class
lower class


titanic class distribution
500
450
400
350
300
250
200
150
100
50
216
184
491
first class
middle class
lower class


Class of Stateroom (Summary)
Passenger #s
500
450
400
350
300
250
200
150
100
50
0
216
184
491
1st class
2nd class
3rd class
Class

graphical perception



graphical perception

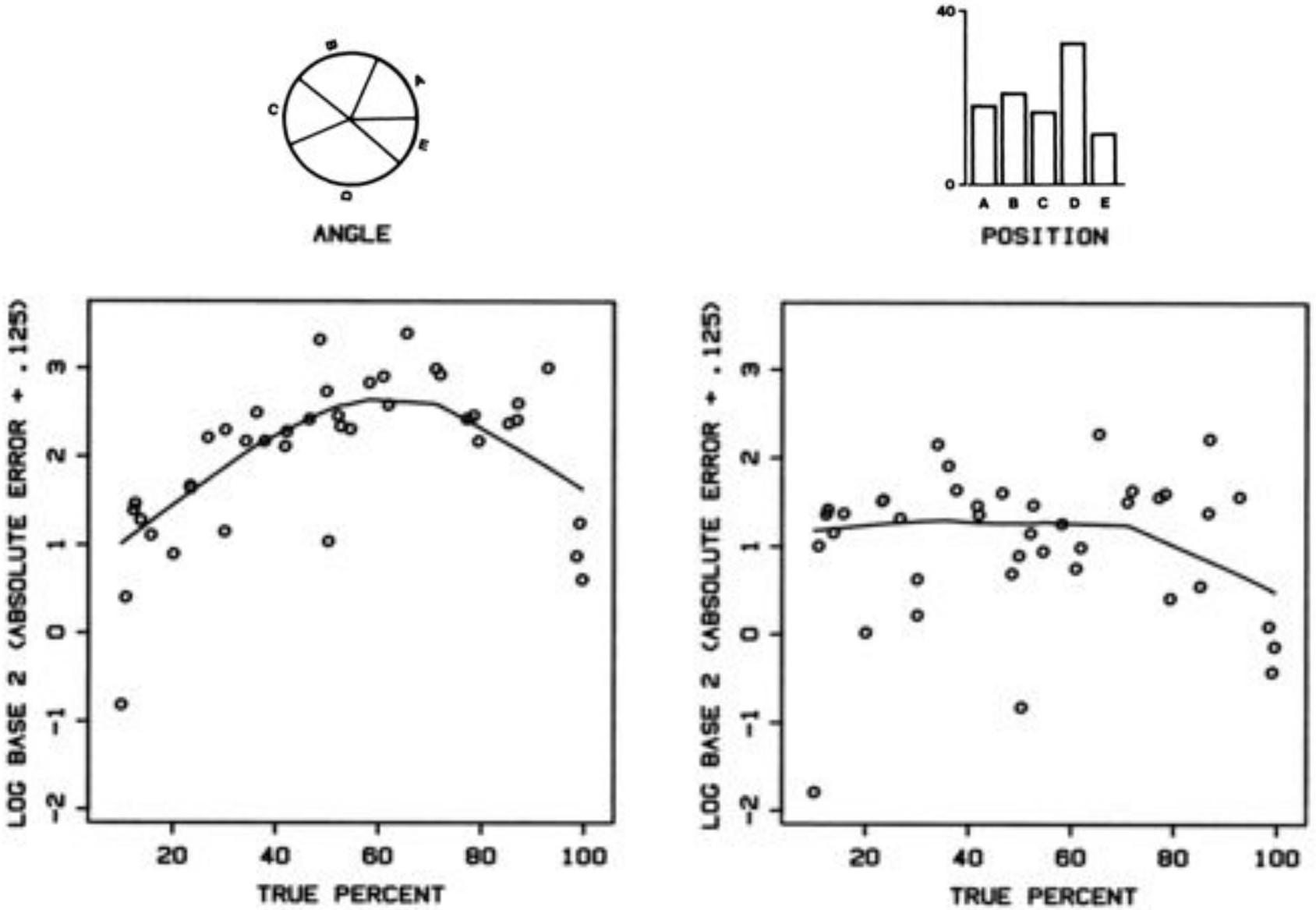


Figure 14. Position–angle experiment: Midmeans of log absolute errors against true percentages for two judgment types.

Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods, *Journal of the American Statistical Association*, Vol. 79, No. 387.

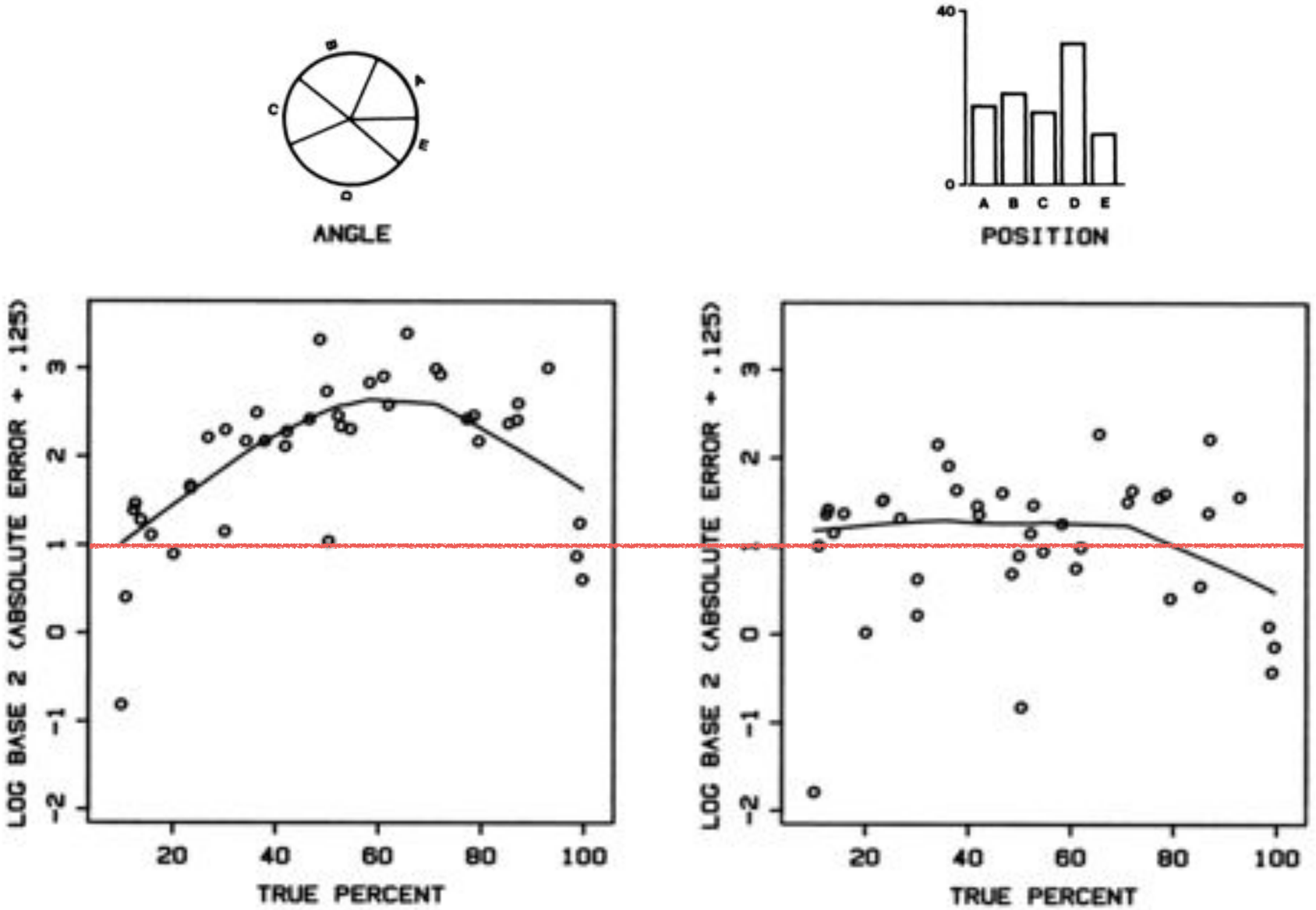


Figure 14. Position–angle experiment: Midmeans of log absolute errors against true percentages for two judgment types.

Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods, *Journal of the American Statistical Association*, Vol. 79, No. 387.

exercise 2: sketching

visual representation

graph grammar: how can points, lines, and shapes best represent the data?
layering & separation: how can we emphasize the layers that directly map to data?
graphical perception: does the representation support accurate interpretations?

tweet sketches #sxgooddataviz

data visualization **for social good**

Aaron Hill | @aaronxhill
Parsons | The New School

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