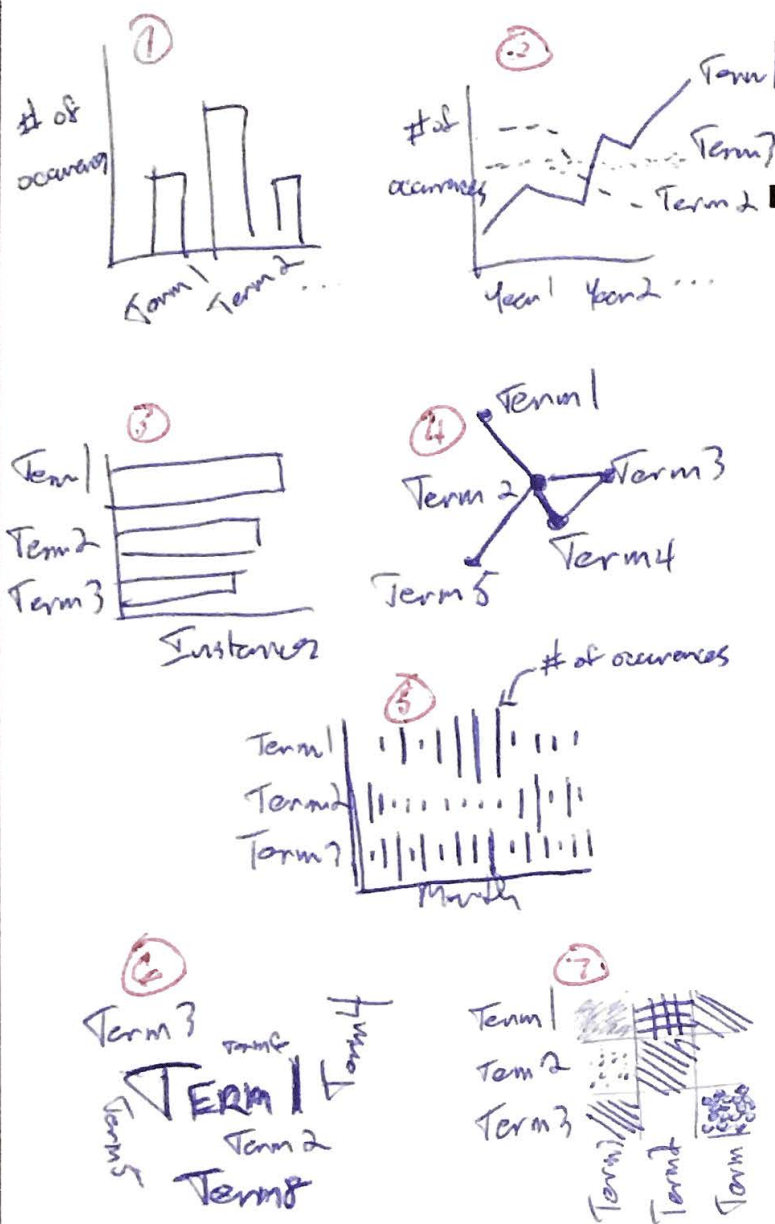
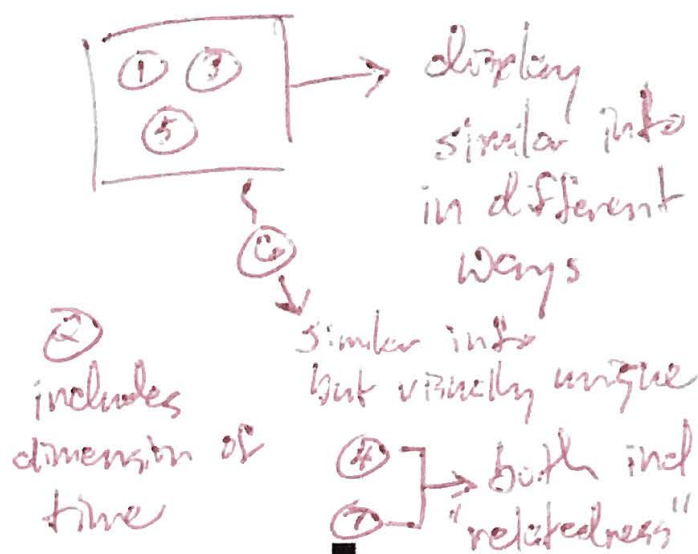


#1

1. Ideas



2. Filter



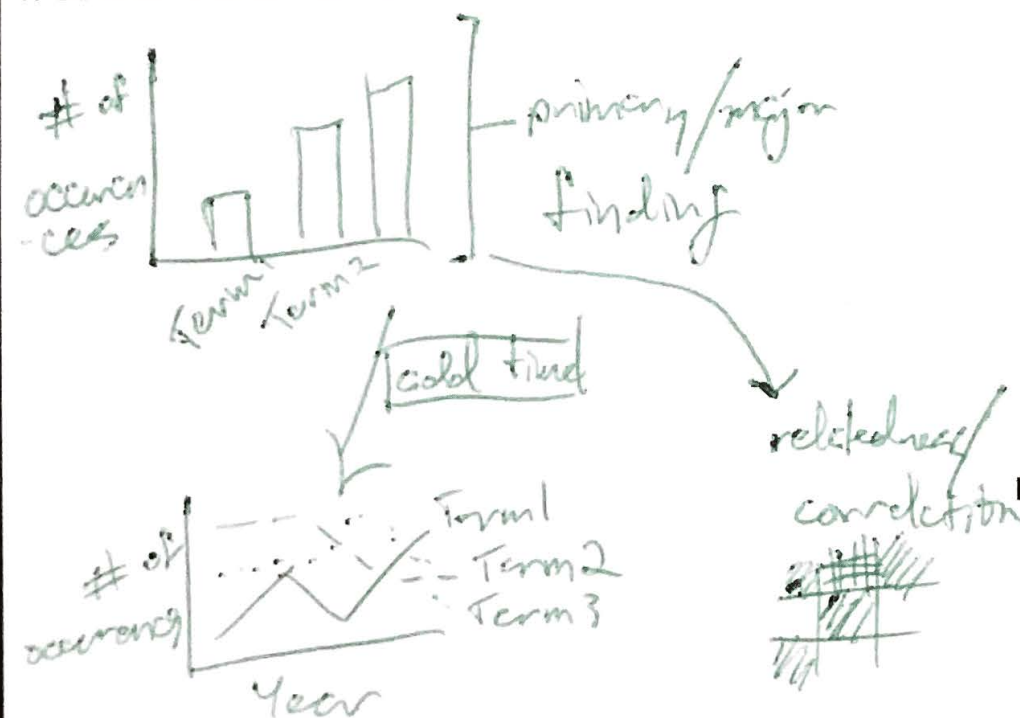
3. Categorize

① ③ ⑤ ⑥ = displays # of terms

② = # of terms over time

④ ⑦ = how terms (# of instances) relate to each other

4. Combine and Refine

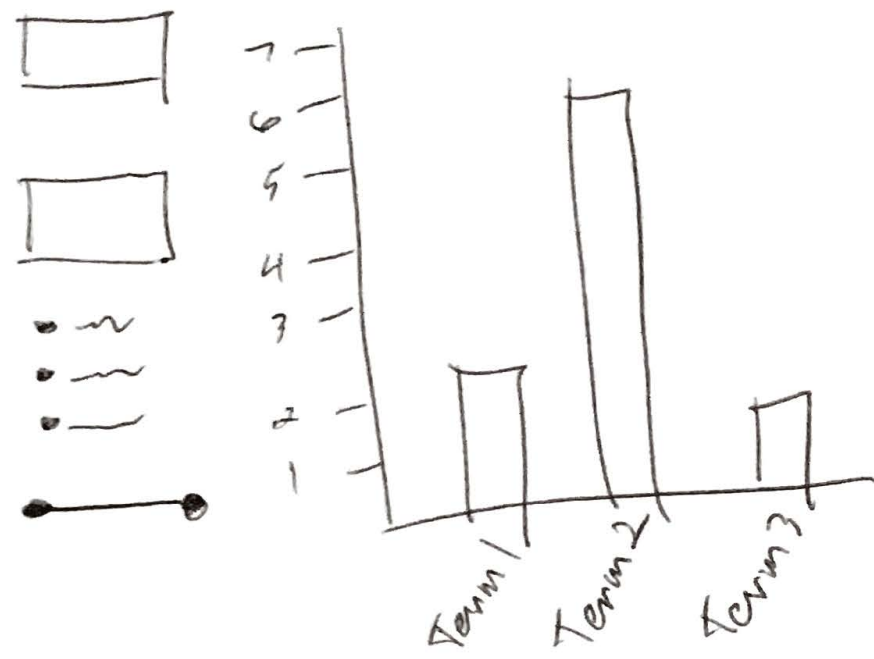


5. Question

Does this capture what terms frequently occur in MMWRs?
Can we show how it changes over time?

2

Layout



Title:

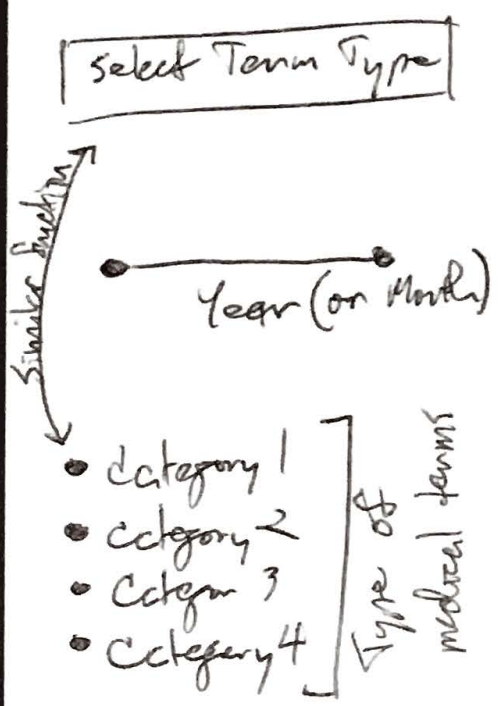
Author:

Date:

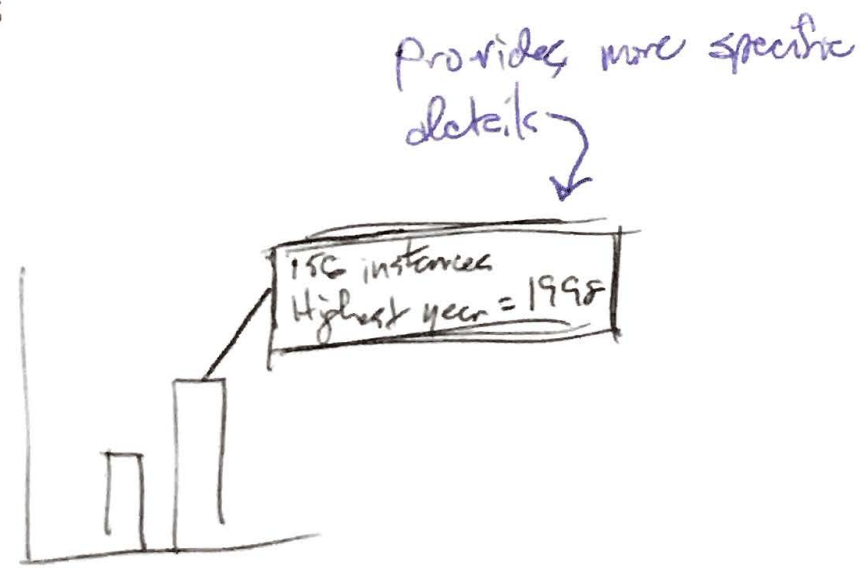
Sheet:

Task:

Operations



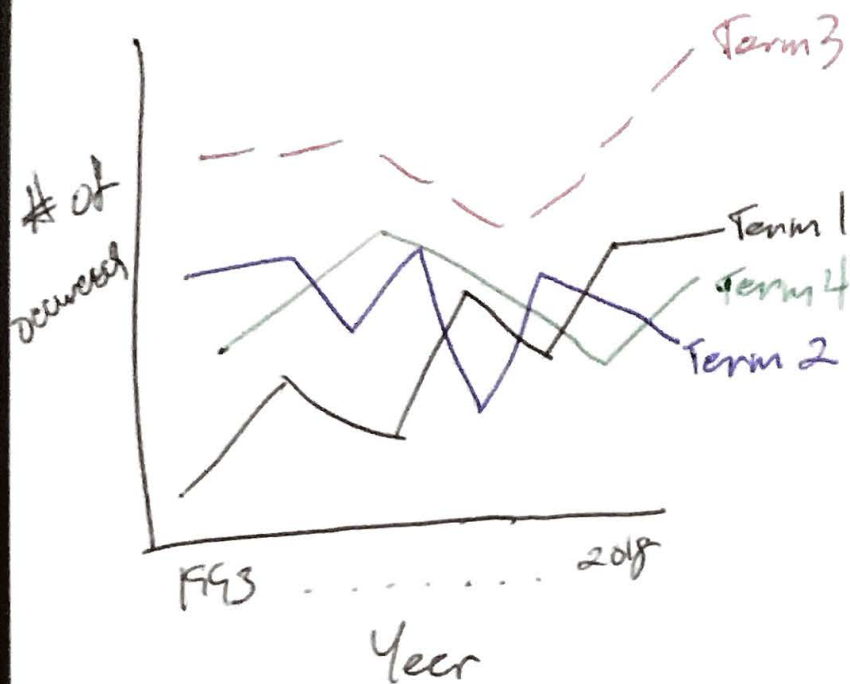
Focus



Discussion

- ⊕ easily highlights most frequent terms
- ⊕ interaction/selection tools can drill down to specific time periods or categories
- ⊖ doesn't display changes over time

Layout



Title:

Author:

Date:

Sheet:

Task:

Operations

- select minimum frequency of term occurrence (to limit size of graph)
- filter on category
- narrow "year" range

Focus



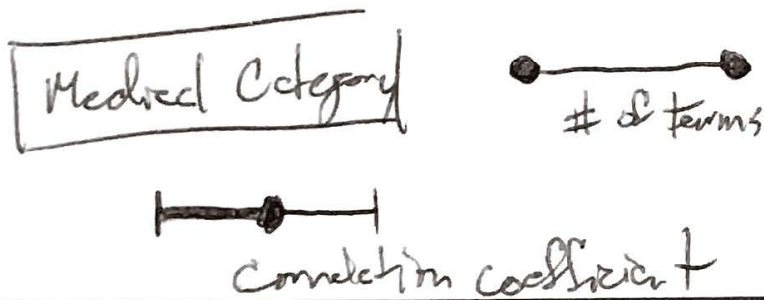
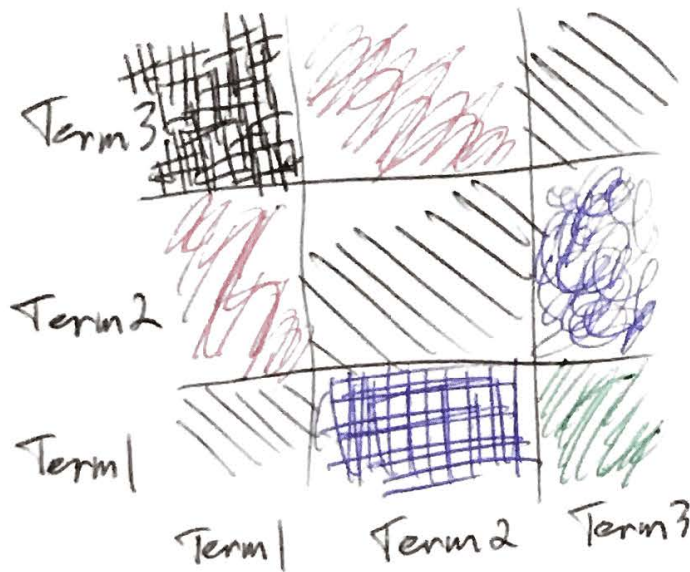
Can use slider to select specific range of years

Discussion

- ⊕ shows changes over time → what new diseases/medical problems have occurred
- ⊕ can easily focus on a specific time period (ie - an epidemic occur)
- ⊖ must limit # of terms or figure quickly become unreadable

#4

Layout



Title:

Author:

Date:

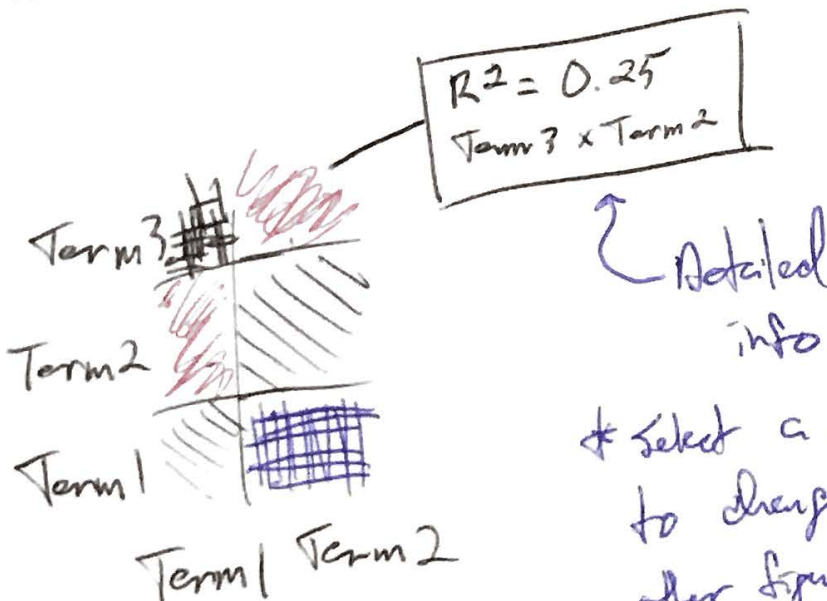
Sheet:

Task:

Operations

- Select medical category
- Limit # of terms
- set a limit for the correlation coefficient

Focus



$$R^2 = 0.25$$

Term 3 x Term 2

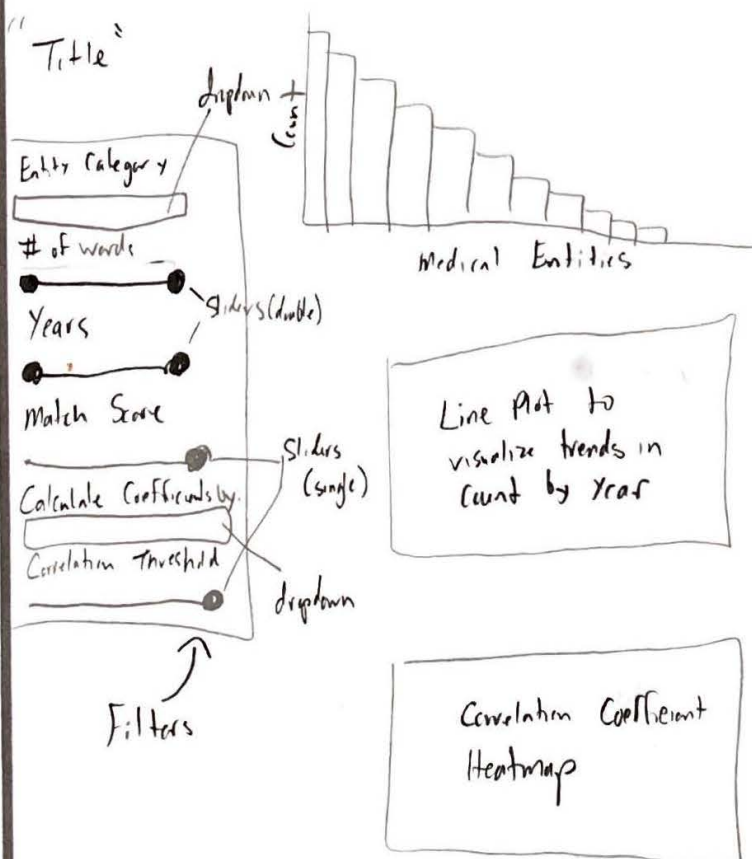
↑ Detailed info

* Select a square to change other figures or display new figure w/ only those 2 terms

Discussion

- ⊕ helps to identify related terms
- ⊕ large # of terms could be displayed
- ⊖ no encoding of time dimension

Layout



Title: Medical Entity Analysis of MMR

Author: Josh Harrison & Colby Updegraff

Date: 25 Apr 2019

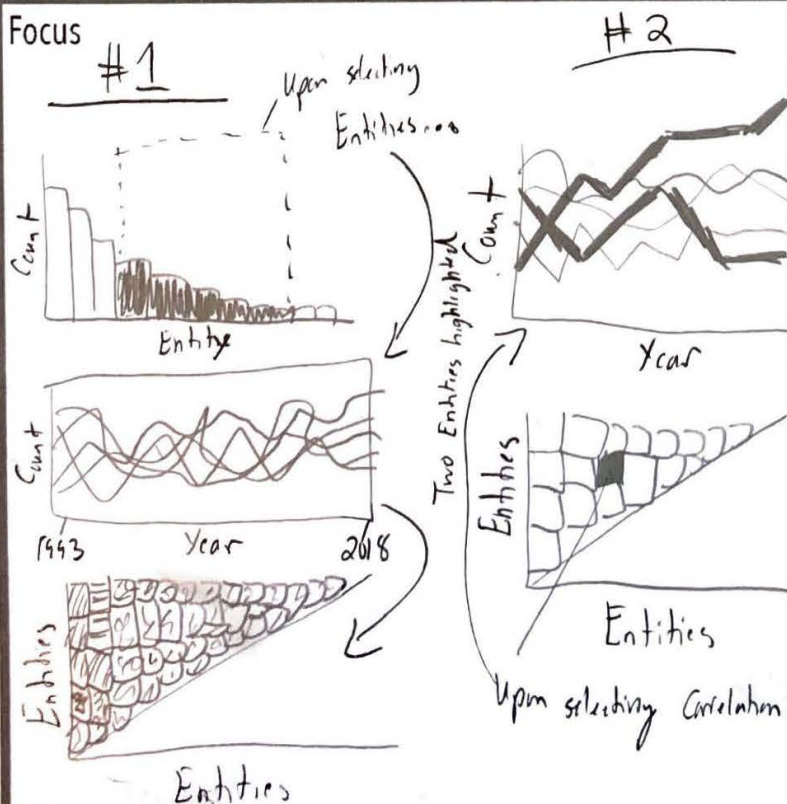
Sheet: 5

Task:

Operations

- Filter by Entry category, Rank # of entities, years, Match Score & Correlation Threshold
- Calculate correlation coefficient by year, quarter, month, or issue →
- Select which medical entities in which to show line plots by year & correlation heatmap
- Highlight respective lines when selecting heatmap entity pairs

Focus



Detail

Algorithms

- default correlation algorithms within `stats::cor` in R.

Dependencies

- plotly
 - shiny
 - tidyverse
 - haven
 - tools
- } R packages for visualization
- mmmr issues from CDC
 - Rweka R package for NLP
 - AWS Comprehend medical for entity recognition
 - Python Boto3 package for python SDK
- Cost/Time
- 40 man hours; AWS 'Free Tier'