

IDEAS

OCCUPATION

AGE

METADATA

ID

STATUS

sick
exposed but well

HOSPITAL

WARD



other given data:

- map of hospital wards
- phylogenetic tree of IDs

→ how does metadata cluster?

TIMING

DATE OF EXPOSURE START

DATE OF EXPOSURE END

2017-09-21

exposure

INCUBATION

7 Days

DATE OF ONSET

NA

2017-10-22

→ distribution of exposure?

MODE OF TRANSMISSION

FECES EXPOSURE

SEX EXPOSURE

DROPLET EXPOSURE

SHARED MEAL EXPOSURE

SOURCE

HOUSEHOLD EXPOSURE

1 → 2 → 3
1 → 4
1 → 5

FILTER

↳ relevance of metadata

- ID
- STATUS
- AGE → vulnerability?
- OCCUPATION → transmitters?
- HOSPITAL WARD

↳ phylogenetic tree has no branch lengths → cladogram

↳ status "exposed but well" has no "date of onset"

↳ "incubation" is hard to fit with exposure dates/onset date

↳ some patients have more than one mode of exposure

↳ map of hospital wards shows six wards but only 4 wards are present in the dataset (A, B, C, D)

CATEGORIZE

↳ transmission maps

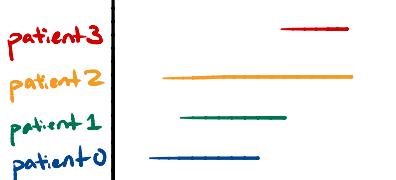
Source



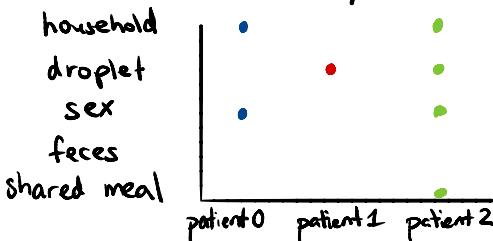
hospital wards

A → B

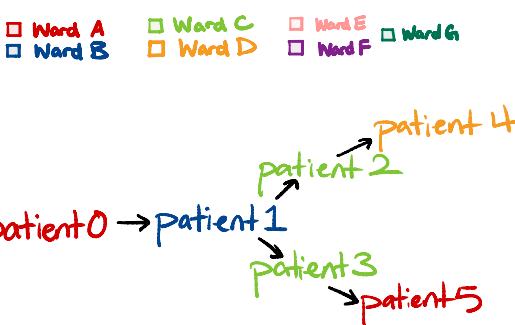
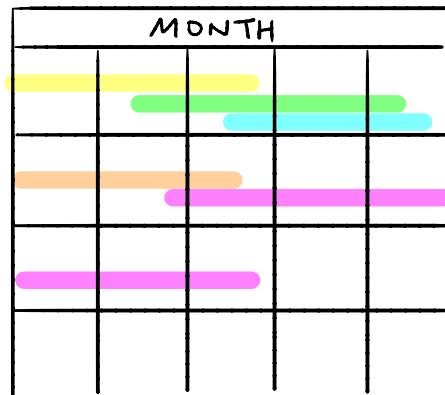
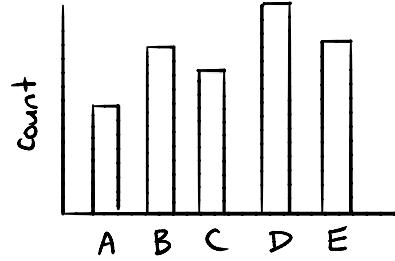
↳ timelines



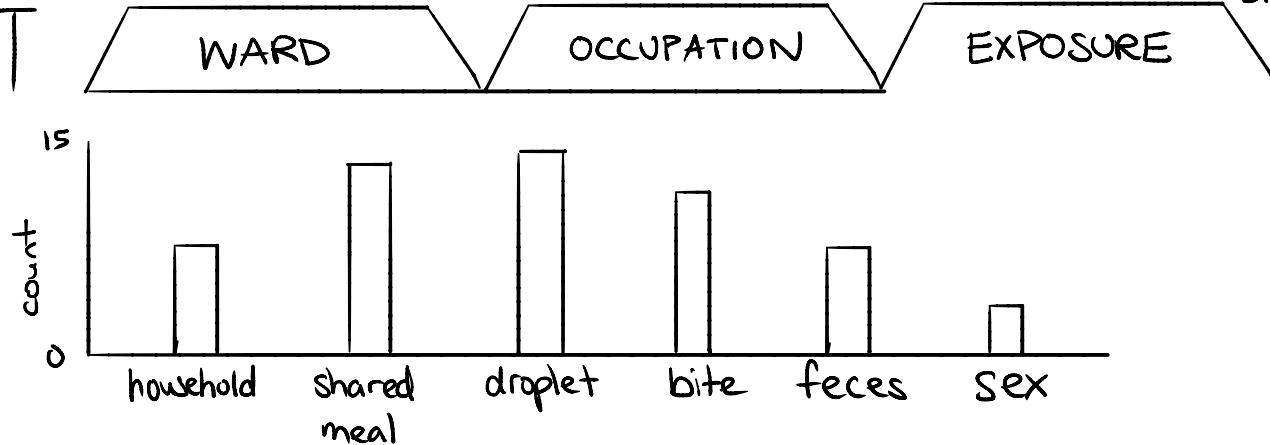
↳ exposure summary



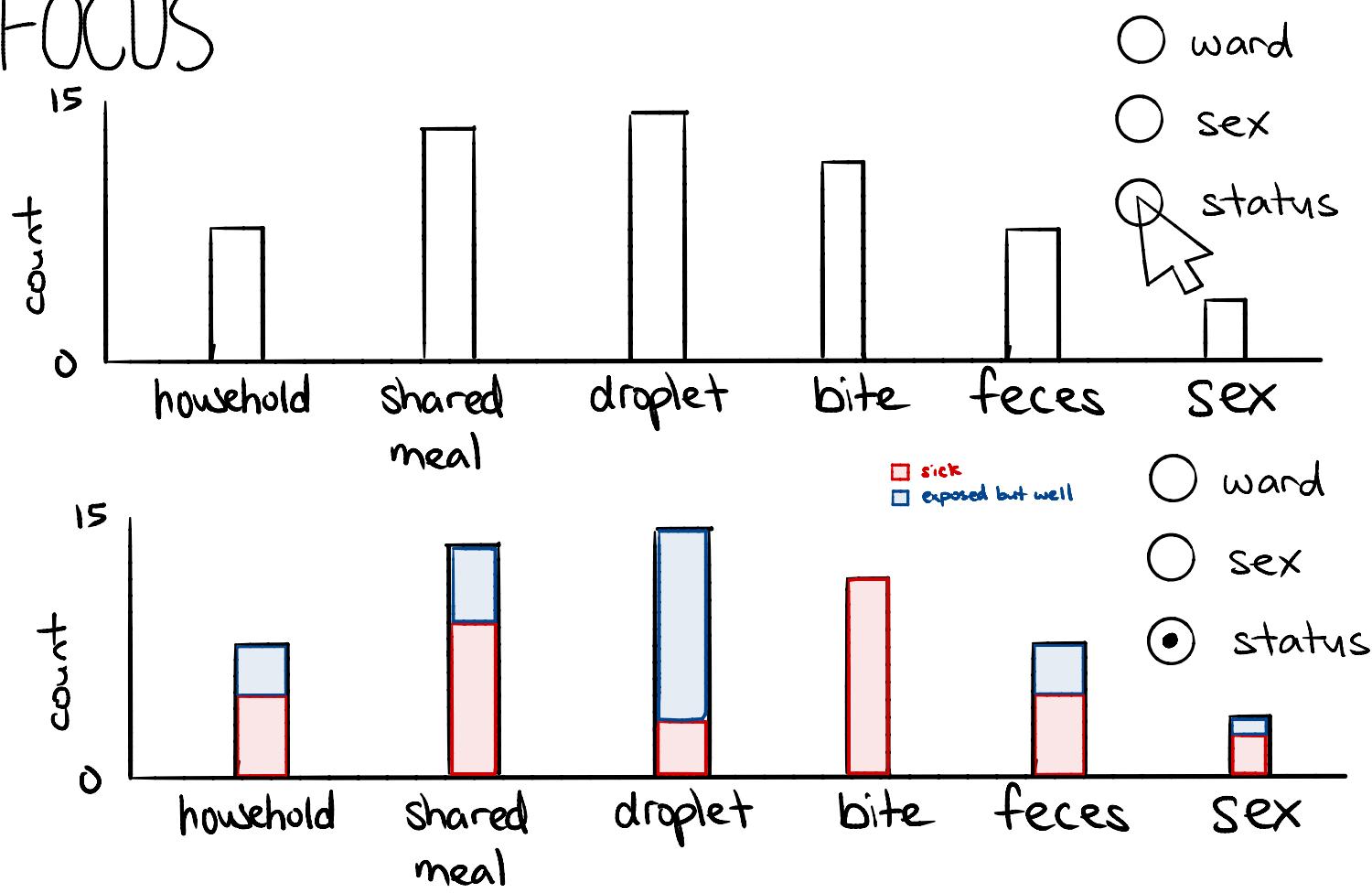
COMBINE & REFINED



LAYOUT



FOCUS



OPERATIONS

- each tab corresponds to a categorical attribute
- under each tab, another categorical attribute can be chosen by click
- there will be a more specific breakdown

DISCUSSION

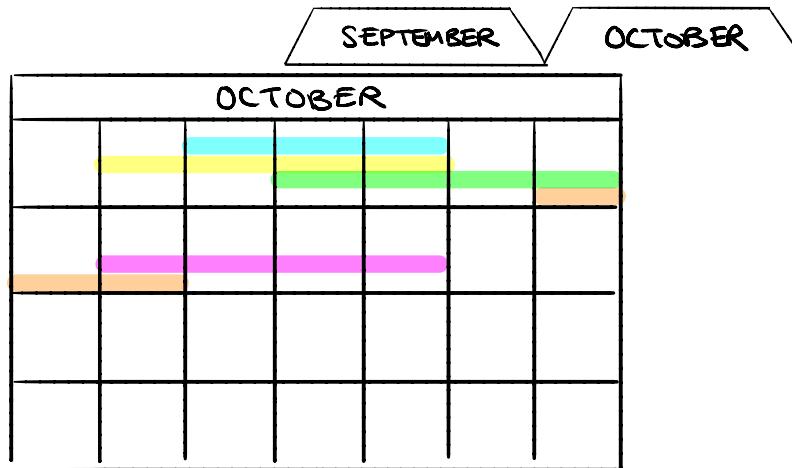
Advantages:

- overview of counts for each attribute, with further breakdown
- see most common/rare values for each attribute

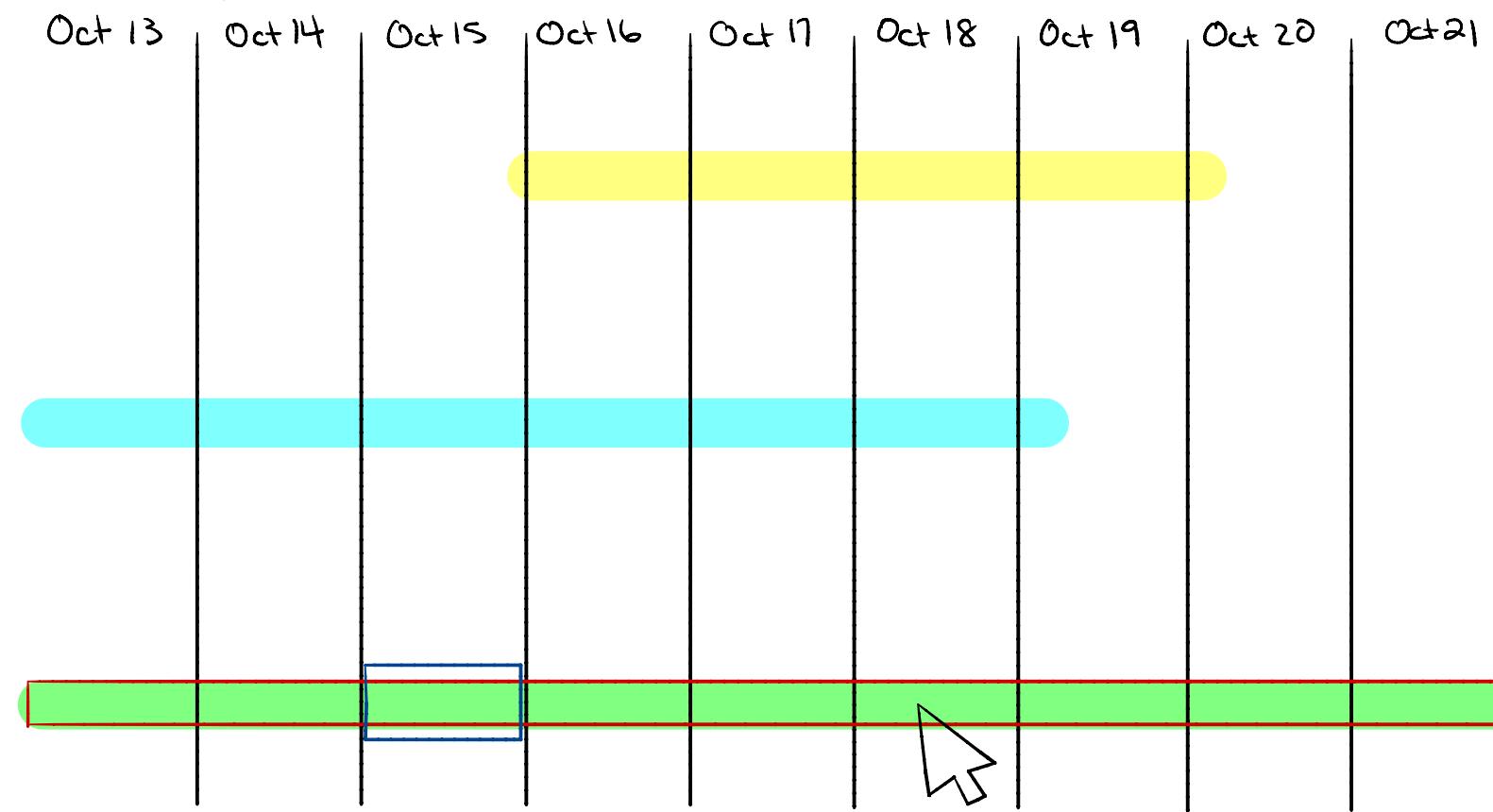
Disadvantages:

- cannot see all tabs at once (can't facet since x-axis differs)

LAYOUT



FOCUS



OPERATIONS

- clicking on each exposure duration will highlight the incubation period in the red box if applicable
- clicking again will highlight the date of onset in the blue box if applicable

DISCUSSION

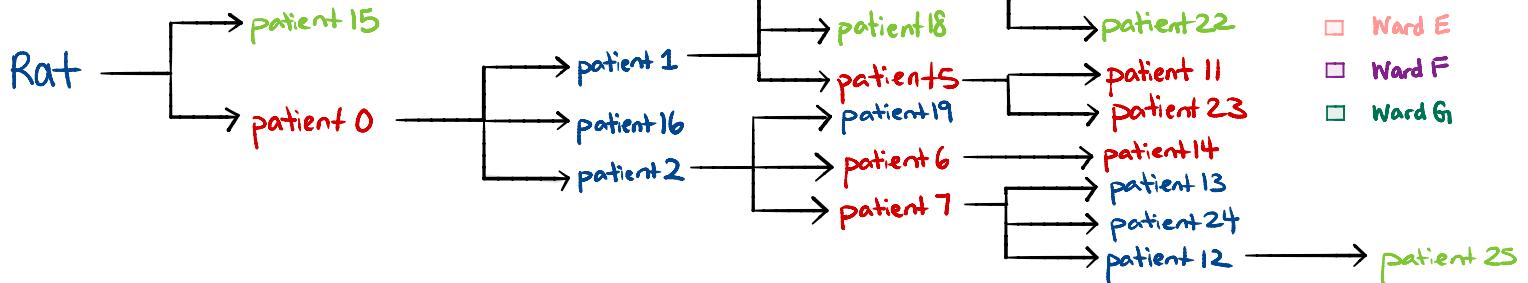
Advantages:

- clear visualization of the dates and any overlapping dates
- duration shows exposure and boxes indicate incubation and onset

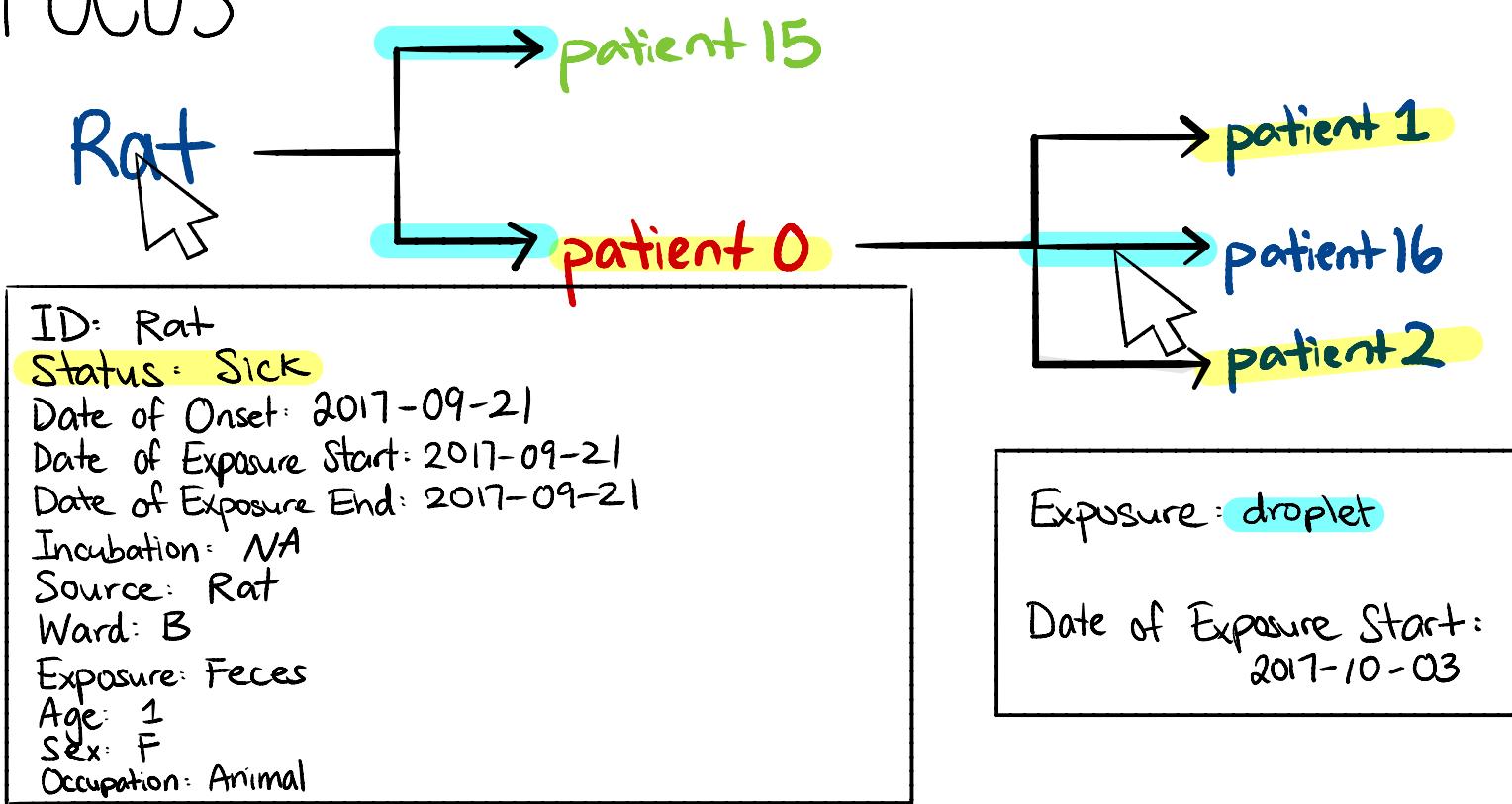
Disadvantages:

- shows all patients at once, no filtering by other attributes

LAYOUT



FOCUS



OPERATIONS

- hovering over each "arrow" of the transmission map reveals the mode of transmission/exposure
- hovering over each "tip" of the transmission map reveals all the metadata for that patient ID
- selecting an attribute from the pop-up window will highlight other "tips" with that same value for that attribute

DISCUSSION

Advantages:

- can see the ward-to-ward transmission at a glance
- only "relevant" metadata is shown unless hovering

Disadvantages:

- cannot see all exposure at once for whole map or just one mode

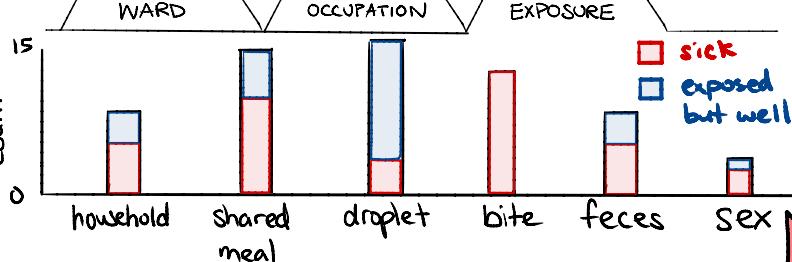
LAYOUT

OPERATIONS

DATA

BREAKDOWN

EXPOS



BREAKDOWN		
Ward	Sex	Status
Household	Male	Healthy
Shared meal	Female	Infected
Droplet	Male	Infected
Bite	Female	Infected
Feces	Male	Infected
Sex	Female	Infected

DATA BREAKDOWN:

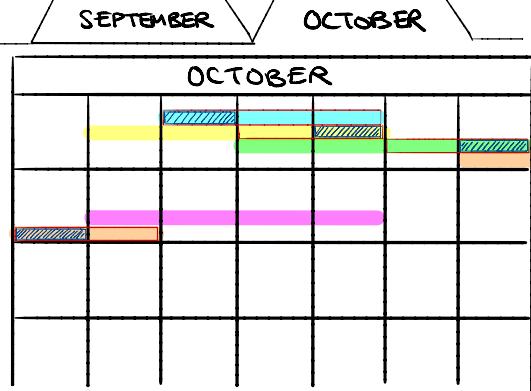
- there are sub tabs for each attribute
- under each subtab you can breakdown into one other attribute

EXPOSURE DURATIONS:

- subtabs are months in "calendar view"
- you can select multiple patients to view at once, and show incubation period or date of onset if applicable

OWN EXPOSURE DURATIONS

TRAN



Patients

- patient 0
- patient 1
- patient 2
- patient 3
- patient 4
- patient 5
- patient 6
- patient 7
- patient 8
- patient 9
- patient 10
- patient 11
- patient 12
- patient 13
- patient 14
- patient 15
- patient 16
- patient 17
- patient 18
- patient 19
- patient 20
- patient 21
- patient 22
- patient 23
- patient 24
- patient 25

- incubation period
- date of onset

DETAILS

IMPLEMENTATION:

- an R shiny app dashboard with multiple tabs, allowing for user interaction
- html rendering so it can be viewed and interacted with in any browser
- each tab contains a different visualization aspect of the data
- subtabs under main tabs allow for visualization of individual attributes
- further breakdown of each subtab allows for simultaneous viewing of two attributes

MAIN TABS:

- Since this will be a webpage, main tabs can also be refreshed and have all three visualizations on one page

SUB TABS:

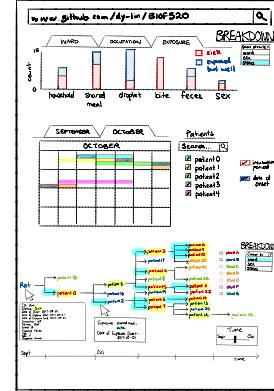
- Sub tabs can be converted to a dropdown menu if there are too many tabs (e.g. too many attributes)

SINGLE SELECTION BOXES

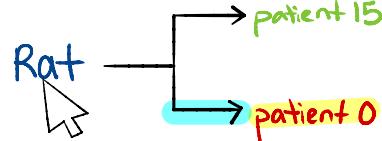
- single selection boxes can be converted to a dropdown menu as well in the case of too many options/attributes

MULTIPLE SELECTION CHECKBOXES

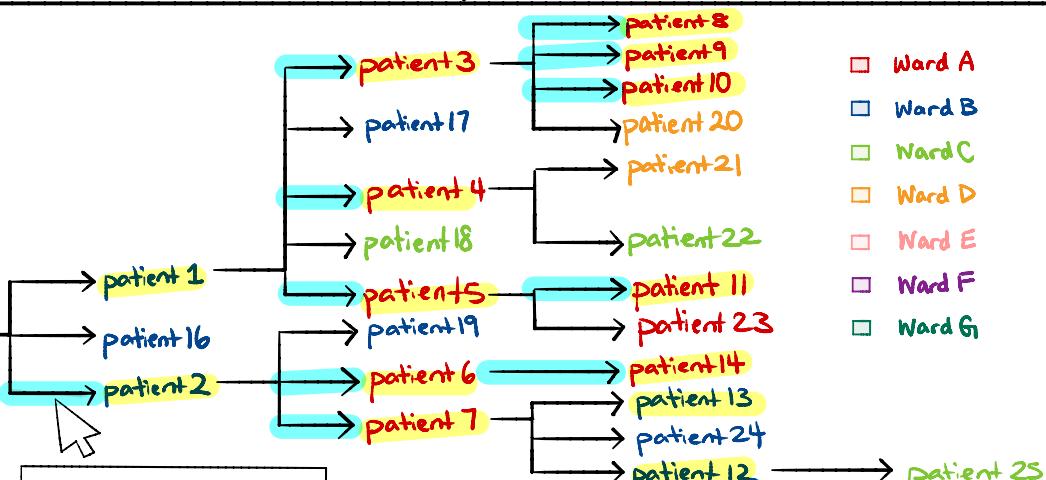
- a search bar will be added to search for options to select
- a "select all" checkbox will be added
- unselected attributes hidden in legend



FOCUS



ID: Rat
Status: Sick
Date of Onset: 2017-09-21
Date of Exposure Start: 2017-09-21
Date of Exposure End: 2017-09-21
Incubation: NA
Source: Rat
Ward: B
Exposure: Feces
Age: 1
Sex: F
Occupation: Animal



- Ward A
- Ward B
- Ward C
- Ward D
- Ward E
- Ward F
- Ward G

- ward
- occupation
- status

Time
Sept Oct

Sept + Oct