Nutritional **U**nderstanding **T**ool

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533C Update Presentation

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Problem

- How to help people make healthy choices about what to eat?

- Previous visualizations and tools:
  - examine nutritional information on a nutrient by nutrient basis

- How to give high level understanding of food as a whole?
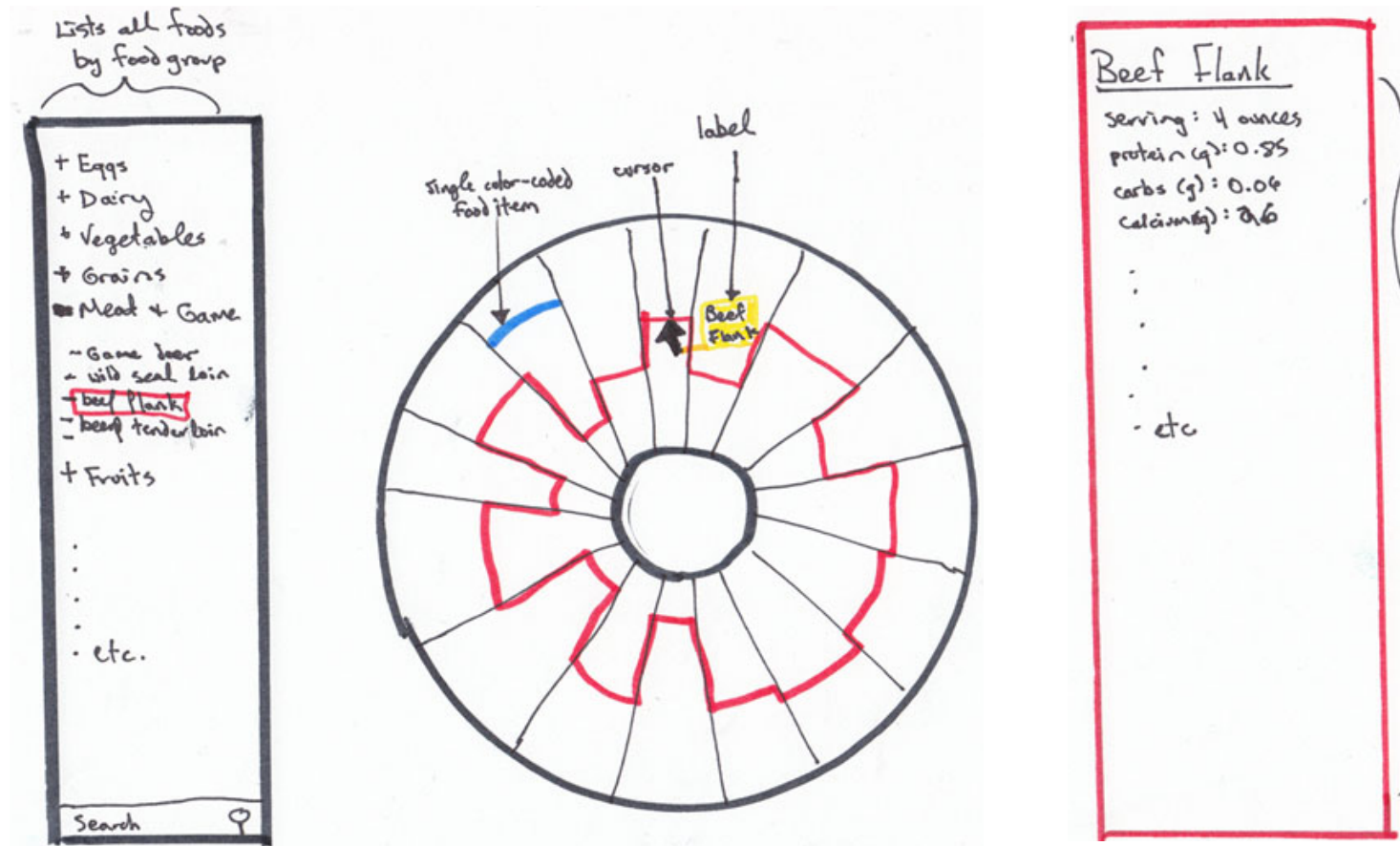
Proposed Solution

- **N**utritional **U**nderstanding **T**ool (NUT)
  - a tool for understanding *nutrients in combination* and *in context of the whole food*

- Domain*:* nutritional information

- Users: everyday consumers
  - . . . leaning towards *food nerds*

- Data: USDA National Nutrient Database for Standard Reference, Release 24.
  - 47 dimensions
  - 7906 foods
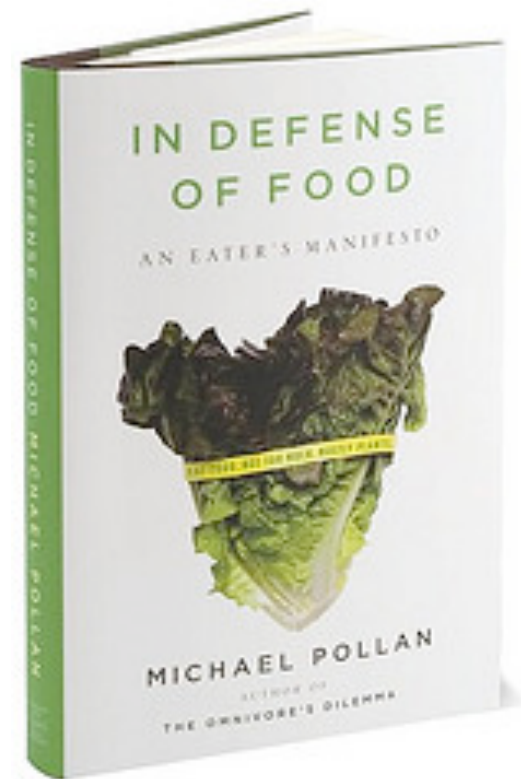
Project Type

- Has morphed since my proposal

- Part *design study* + part *analysis*
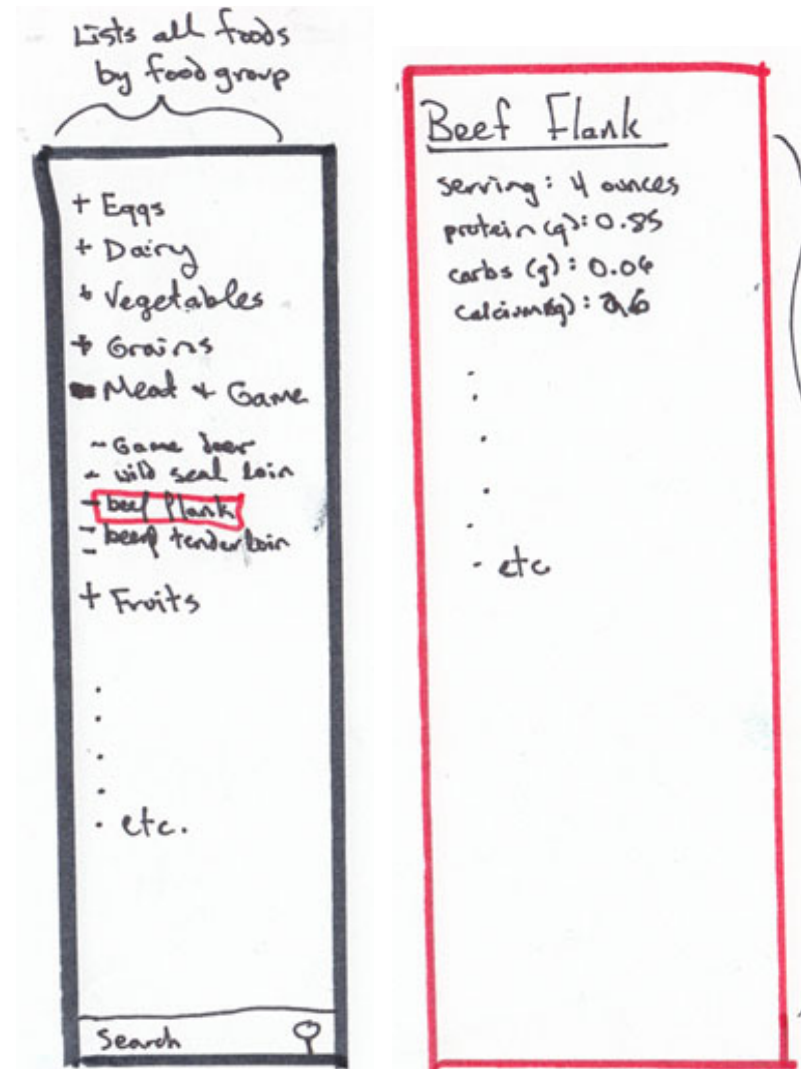 - Using rapid prototyping and simple analysis to inform final design

Proposed Solution

- Proposed (but will change):
 - Linked views: List view, overview, detail view

Proposed Solution

- List View
  - Searchable list of foods
    - Arranged by food group
    - Selection updates other views

- Detail View
 - Detailed information of selected food

Proposed Solution: Overview

- Basic components:
  - Segments encode nutrients
  - Foods encoded with lines/pixels
  - Within segments, foods are stacked from *least to most*
  - Color of food encodes food group

- Interaction
  - Brushing between segments
  - Selection linked between views
  - Additional selection for comparison
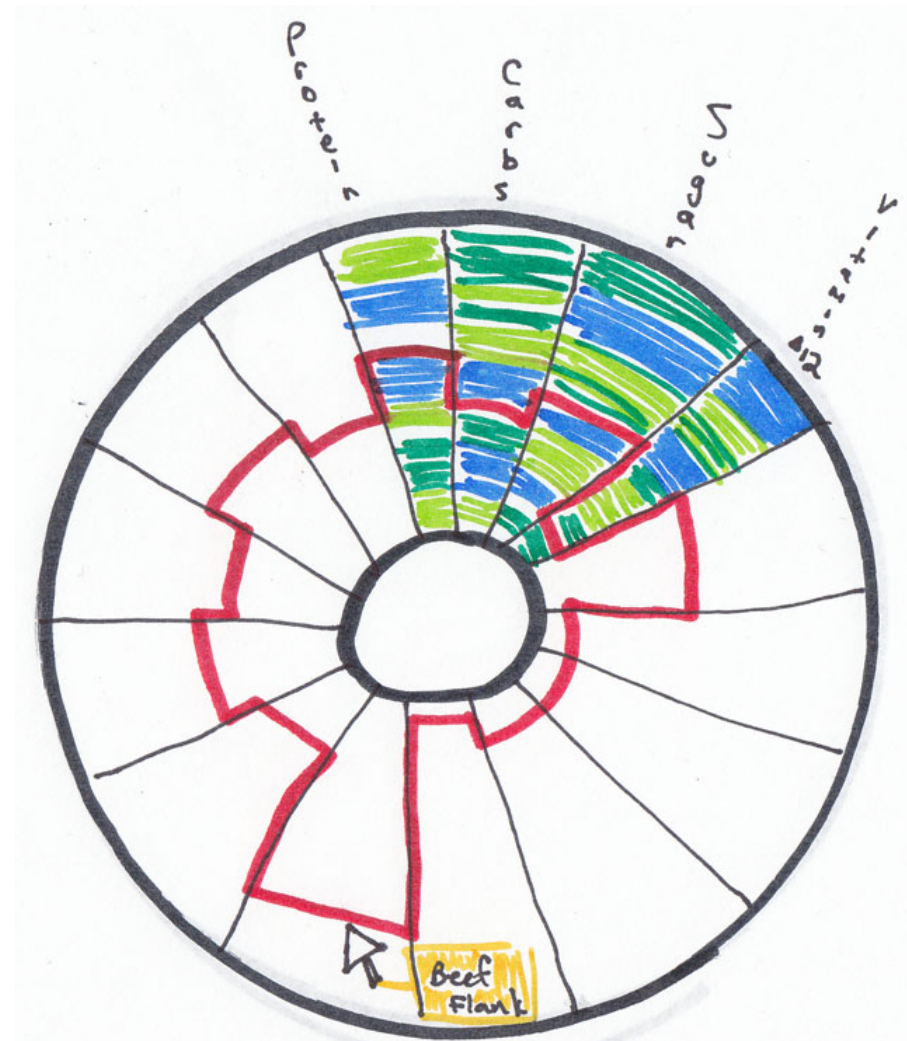
Proposed Solution: Overview

- Challenges
  - Too much information to show all at once
  - And it's not all interesting anyways . . .

- Possible solutions
  - Filtering of foods
  - Reduction/filtering of dimensions
  - Addition of nutrient view for details
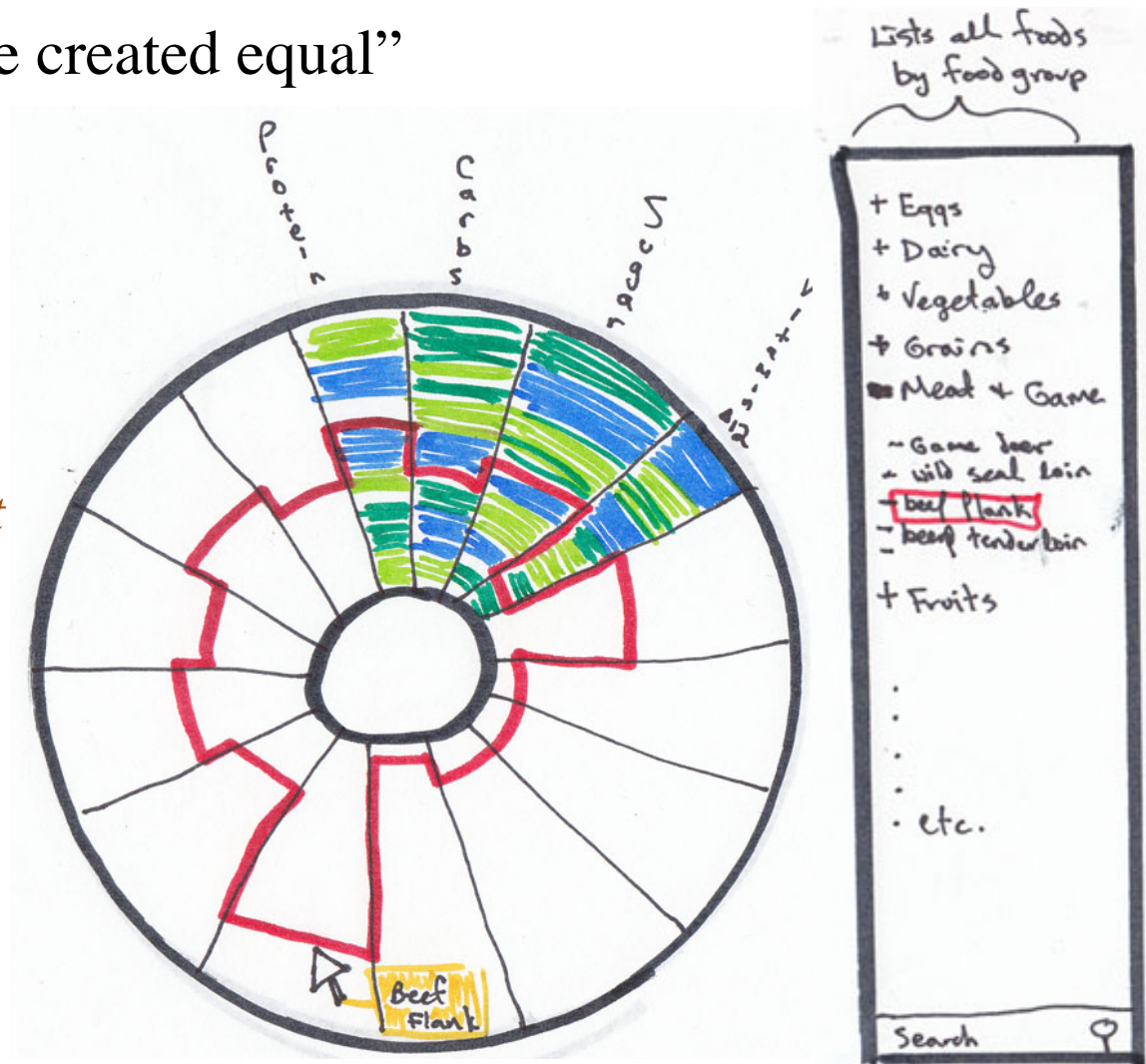
- Analysis will inform final design
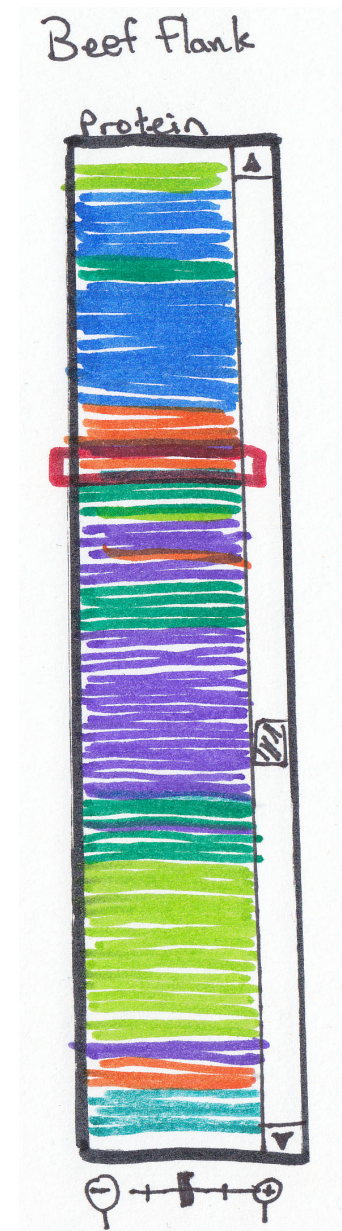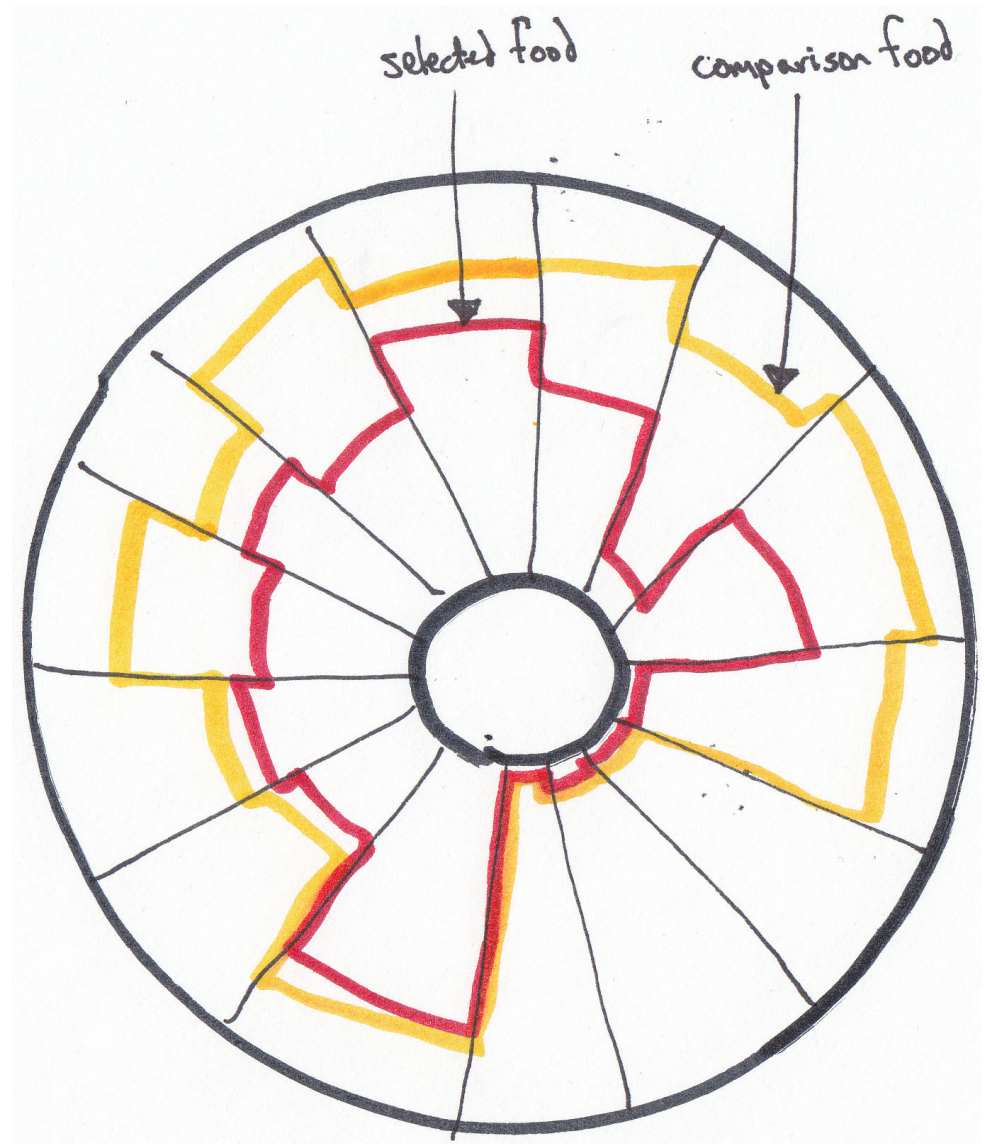
Scenarios

- "Not all vegetables are created equal"

Understand the *nutrient profile* of a food

Scenarios

- Food replacement

Compare profiles of *two foods*

selected food   comparison food

Implementation

- So far:
  - using Processing for analysis, prototyping

- Eventually:
 - Processing.js to create the final user interface, with web deployment

Progress: Analysis Challenges

- Tried some different high-dimensional visualization and dimension reduction tools. . .
  - Ggobi, Xmdv tool, Dimstiller
  - *Wasting too much* time learning tools and changing data formats

- Solution:
  - Rapid prototyping with Processing for my own analysis

Progress: Prototyping & Analysis

- Prototyping completed so far:
  - implementation of pixel-based prototype overview
  - In progress of implementing basic brushing and tooltips

- Focus of current analysis:
  - Which nutrients are actually interesting?
  - How to deal with missing values and 0s?
  - How could the data be reduced?
    - Which dimensions can I filter or collapse?
    - How should I reduce the number of foods shown?

Progress: Prototyping & Analysis

EGG ROLLS-PORK-REFR-HTD 40.4, (Choline_Tot_ (mg))
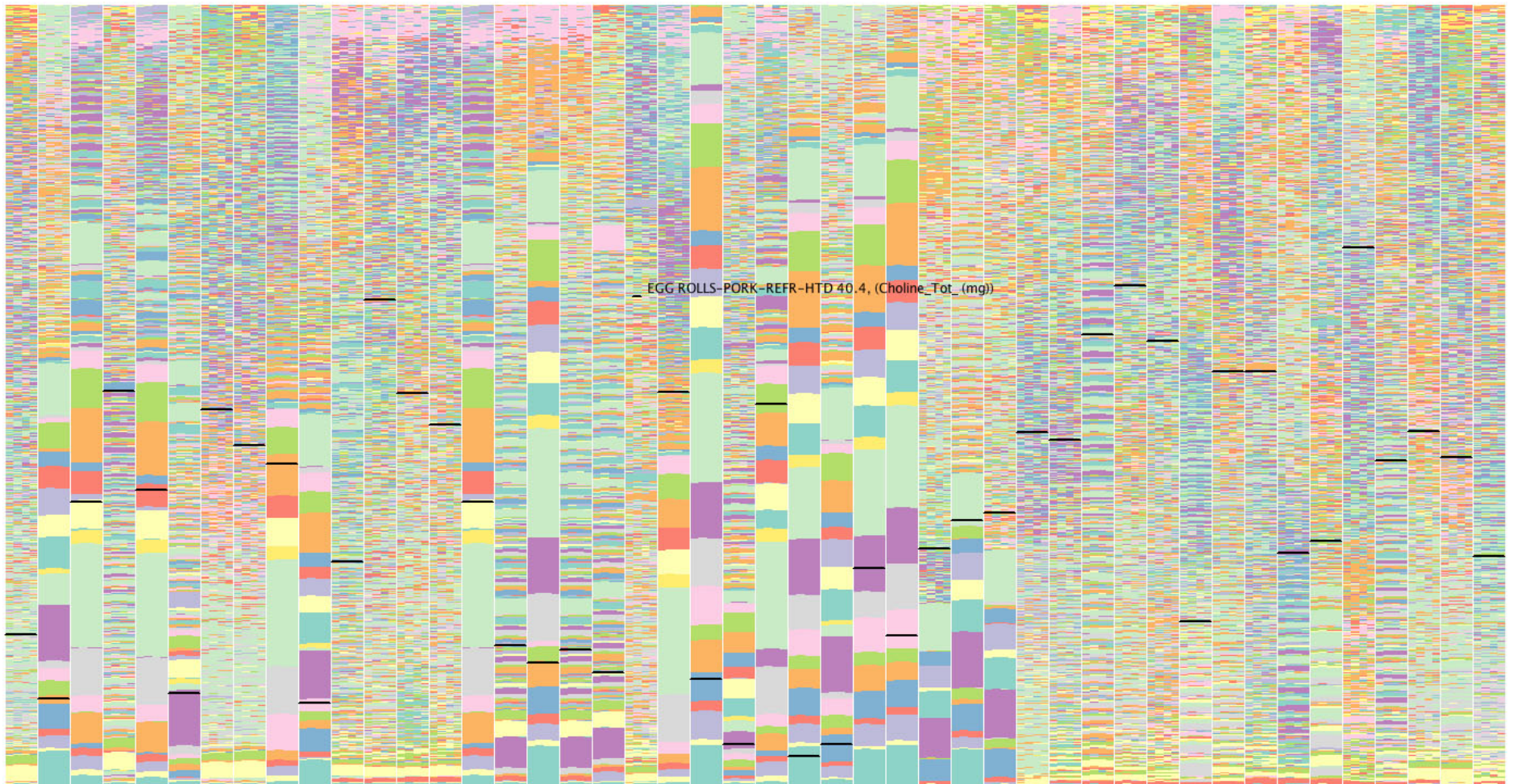
My Next Steps

- Keep prototyping:
  - Refine and develop different overviews based on decisions from analysis

- Steps toward final implementation:
  - Within the next week: Implement simple list and detail views

Questions?