

CourseRatings

CSE 512 Final Project

The problem

- UW's course evaluation catalog has an unintuitive interface
- Only data for the past 2 - 3 quarters is available
- Difficult to compare classes

Course Evaluation Catalog GAMEDES - GWSS

Information on this site is intended for use by members of the UW academic community. Publication or redistribution of this information to any individual without a current UW NetId is prohibited.

[UW Bothell GAMEDES 110 Lee Hammock Instructor AU14](#)

[UW Bothell GAMEDES 210 Jay Schneider Instructor WI15](#)

[UW Bothell GAMEDES 220 A Daniel Smith Instructor SP14](#)

[Executive Master Bus Admin Group GEMBA 514 G Patrick Bettin Lecturer SP14](#)

[Genome Sciences GENOME 351 A Leo Pallanck Professor SP14](#)

[Genome Sciences GENOME 351 A Evan Eichler Professor SP14](#)

[Genome Sciences GENOME 361 A Joshua Akey Professor WI15](#)

[Genome Sciences GENOME 361 A Colin Manoil Professor WI15](#)

[Genome Sciences GENOME 361 A Frances Cheong Lecturer SU14](#)

[Genome Sciences GENOME 361 A Keisha Carlson Lecturer AU14](#)

[Genome Sciences GENOME 361 A Frances Cheong Lecturer AU14](#)

[Genome Sciences GENOME 361 A Willie Swanson Professor SP14](#)

[Genome Sciences GENOME 361 A Maitreya Dunham Assistant Professor SP14](#)

[Genome Sciences GENOME 371 A M Raghuraman Associate Professor AU14](#)

[Genome Sciences GENOME 372 A John Stamatoyannopoulos Associate Professor AU14](#)

Genome Sciences GENOME 351 A

Leo Pallanck Professor SP14

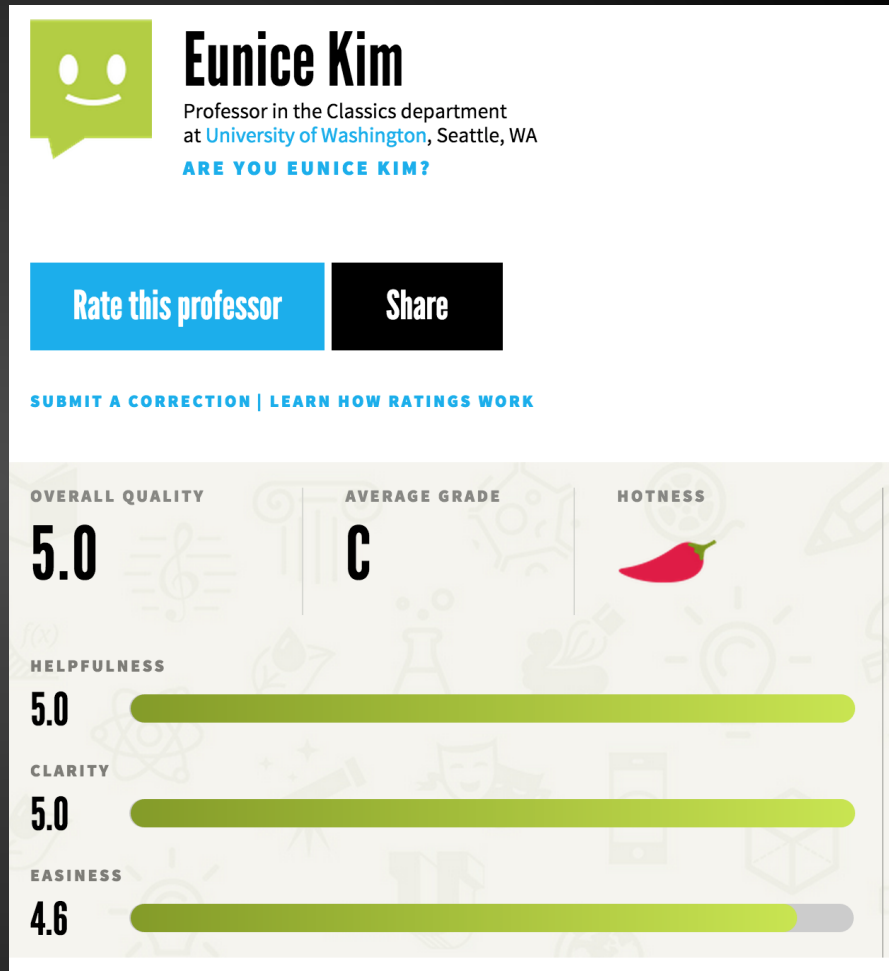
Form B: Large Lecture "40" surveyed "56" enrolled

Question	Excellent	Very Good	Good	Fair	Poor	Very Poor	Median
The course as a whole:	15%	32%	32%	15%	5%	0%	3.42
The course content:	18%	32%	35%	15%	0%	0%	3.50
Instructor's contribution:	28%	22%	30%	20%	0%	0%	3.50
Instructor's effectiveness:	25%	22%	25%	20%	8%	0%	3.40
Instuctor's interest:	30%	30%	22%	12%	2%	2%	3.83
Amount learned:	18%	30%	28%	18%	8%	0%	3.41
Grading techniques:	15%	33%	41%	8%	0%	3%	3.47

For median calculation: 5 = Excellent 4 = Very Good 3 = Good 2 = Fair 1 = Poor 0 = Very Poor

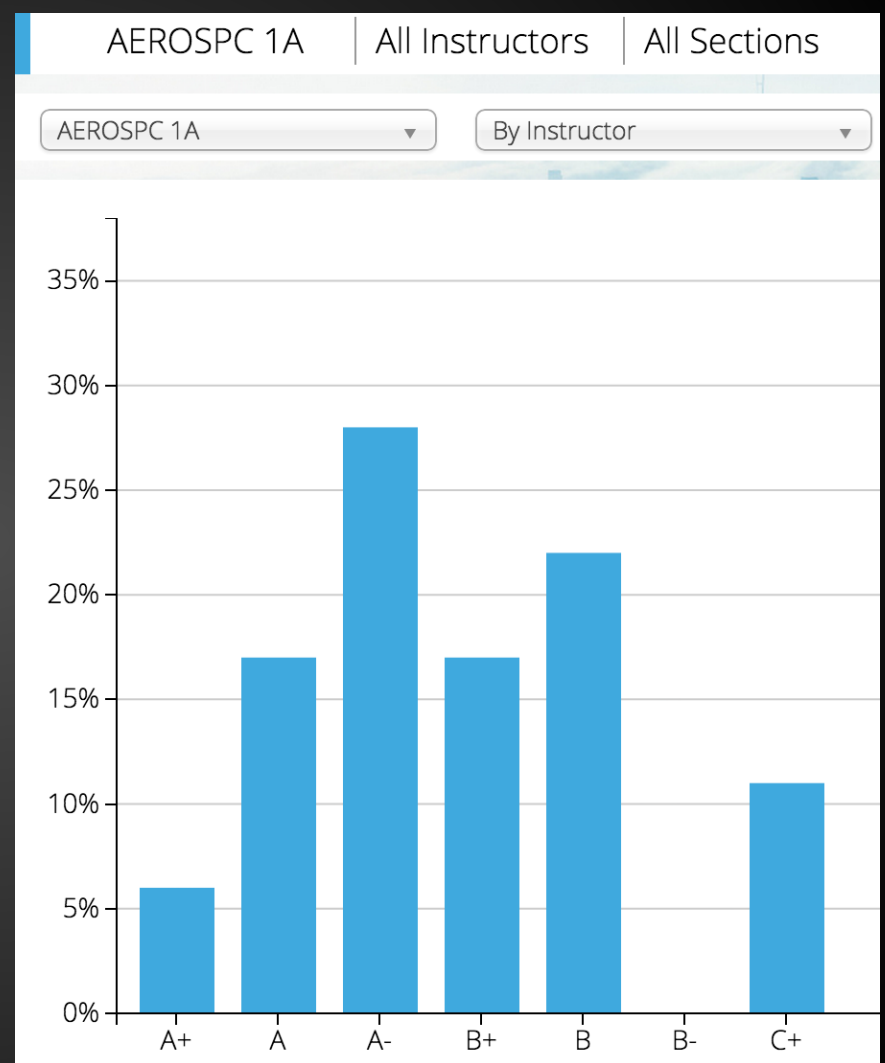
Prior work

- RateMyProfessors
 - Website where students can rate professors
 - Selection bias leads to unreliable ratings
 - Few entries per professor



Prior work

- BerkeleyTime
 - Website that allows students to view grade distributions for classes
 - Allows comparison between classes



How we're different

- We display evaluations of all students, not just students who wanted to leave a review
- We do not display grade distributions

Recap

- Website that allows students to search through and sort information on courses
- Two years worth of data

http://students.washington.edu/drapeau/course_ratings

COURSE RATINGS

CSE142: Computer Programming I

Score: 4.29

Instructor ↓	Overall	Content	Amount Learned	Teaching	Grading
Allison Obourm	3.97	4.16	4.21	3.73	4
Allison Obourm	4.3	4.4	4.45	4.26	4.06
Benson Limketkai	3.95	3.99	4.18	4.16	3.75
Helene Martin	4.66	4.62	4.67	4.72	4.28
Helene Martin	4.66	4.66	4.81	4.84	4.68
Helene Martin	4.84	4.84	4.85	4.85	4.67
Scott Petersen	3	3.33	3.25	3	2.13
Stuart Reges	4.63	4.56	4.64	4.74	4.17
Stuart Reges	4.7	4.71	4.76	4.84	4.45
Tyler Rigsby	4.3	4.37	4.64	4.66	4.01
Whitaker Brand	4.16	4.27	4.35	4.32	3.84
William Paul Osborne	4.28	4.21	4.59	4.25	4.2
Zorah Fung	4.29	4.31	4.61	4.59	4.06

New features

- A column indicating % of students in class who filled out the survey
- Course descriptions on each course page
- Collapsing identical courses
- Search redesign
- Department visualizations

COURSERATINGS

Department ▾

Course code ▾

Instructor ▾

CSE 142 : Computer Programming 1

Basic programming abilities and concepts including procedural programming, basic control structures, arrays, and objects. Intended for students without prior programming experience. Offered AWSps.

	Instructor ▾	Overall	Content	Amount Learned	Grading	Teaching	% filled out
⊕	Allison Obourn	~	~	~	~	~	~
	Benson Limketkai	~	~	~	~	~	~
⊕	Helene Martin	~	~	~	~	~	~
	Scott Peterson	~	~	~	~	~	~
⊕	Shuart Reges	~	~	~	~	~	~
	Tyler Rigby	~	~	~	~	~	~
	Winfaker Brand	~	~	~	~	~	~
	William Osbourne	~	~	~	~	~	~

Feedback

- What kind of visualizations would you like to see for each department?
- What other features would you like to see?

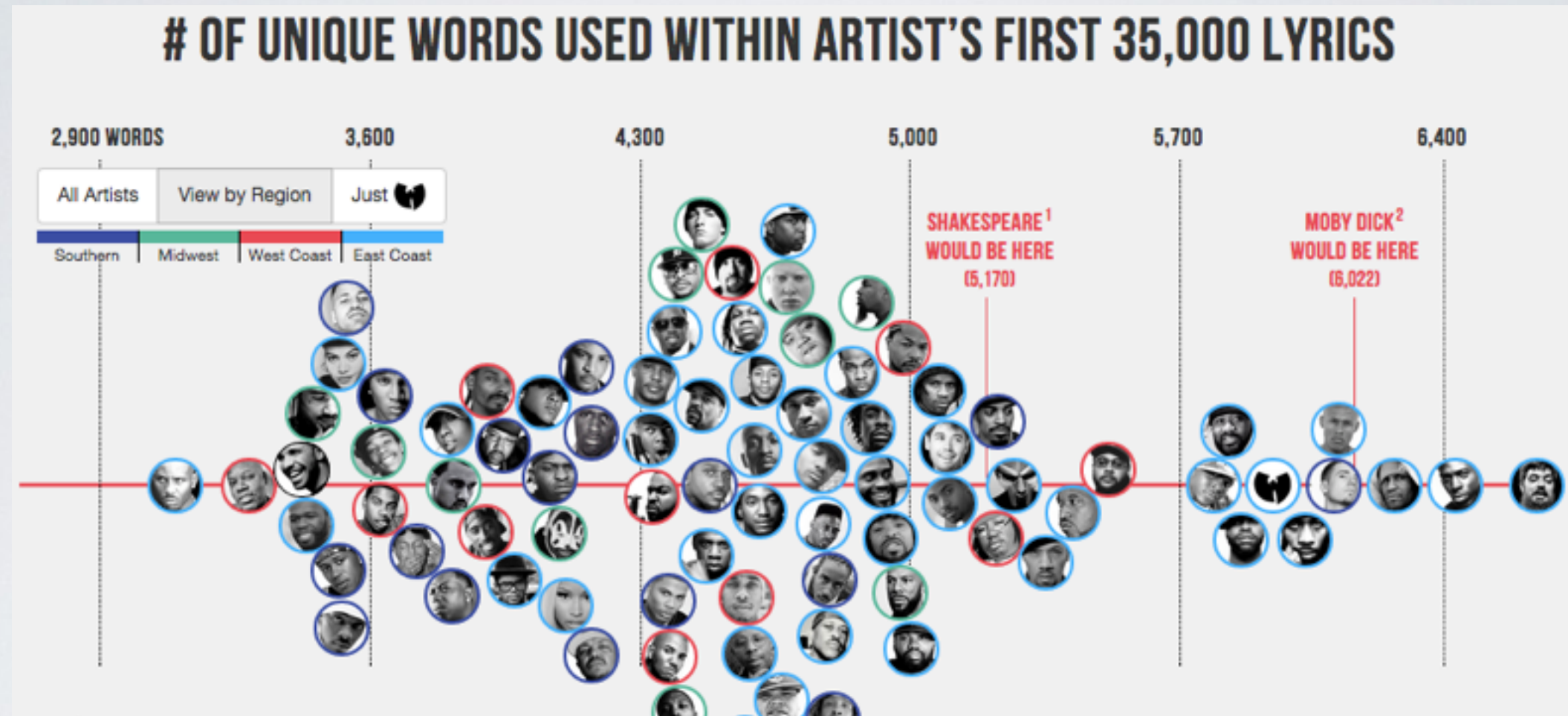
HIP HOP COLLABORATION IN THE UNITED STATES

Kevin Quinn, Vinod Rathnam, Sonja Khan, and Riley Porter

OUR QUESTION

How can we show interesting regional and temporal patterns in collaborations between Hip Hop artists in the United States?

INSPIRATION: HIP HOP VOCABULARIES



[LINK](#)

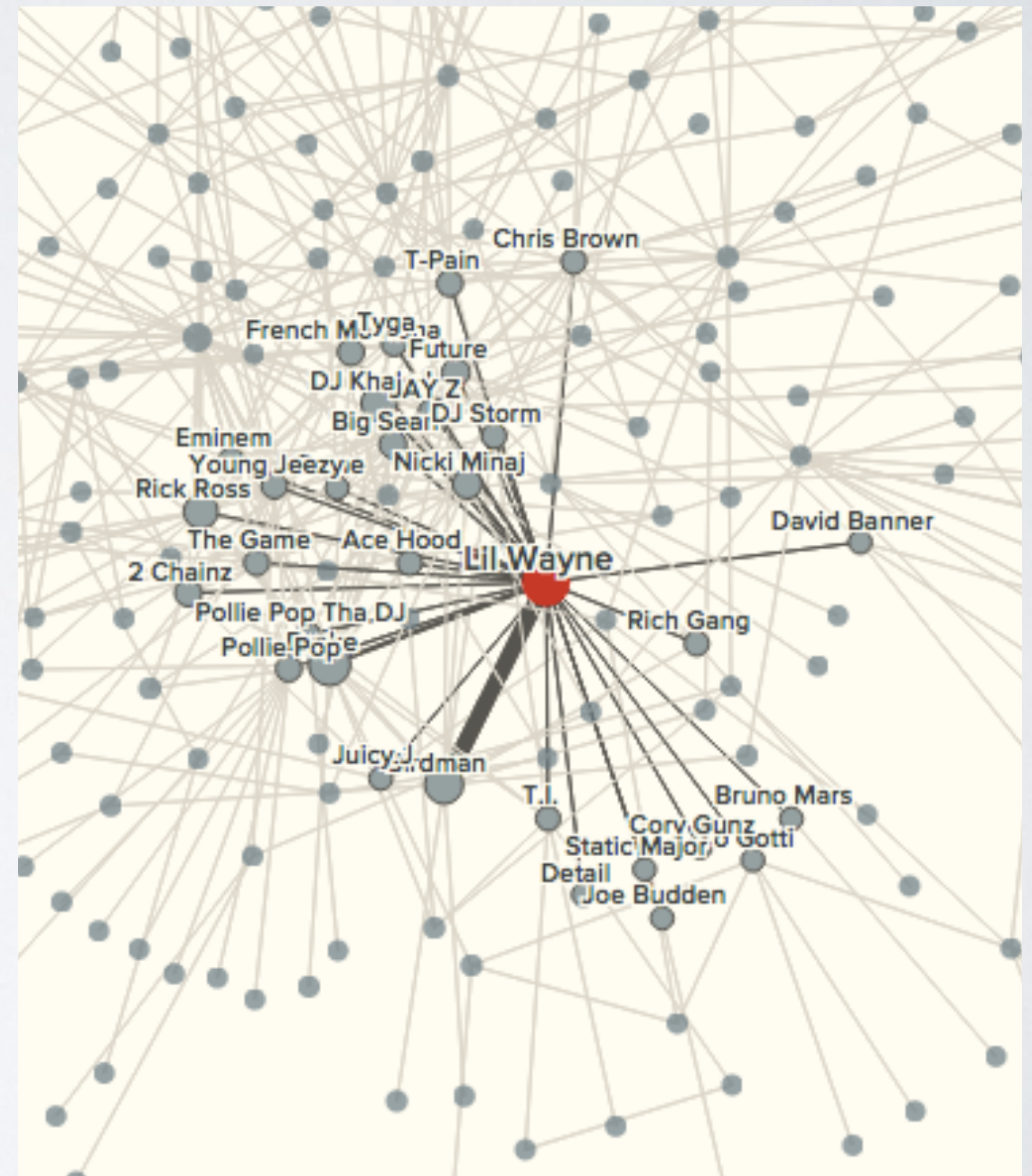
- showed size of vocabulary for various artists and groups
- incorporated regional data for artists, but displayed with no geographical context

RELATED WORK:

COLLABORATION NETWORK

[LINK](#)

- interactive network of collaborations
- limited data: 2002-2014
- based on Billboard top 40 artists, not all hip hop
- no regional or time data

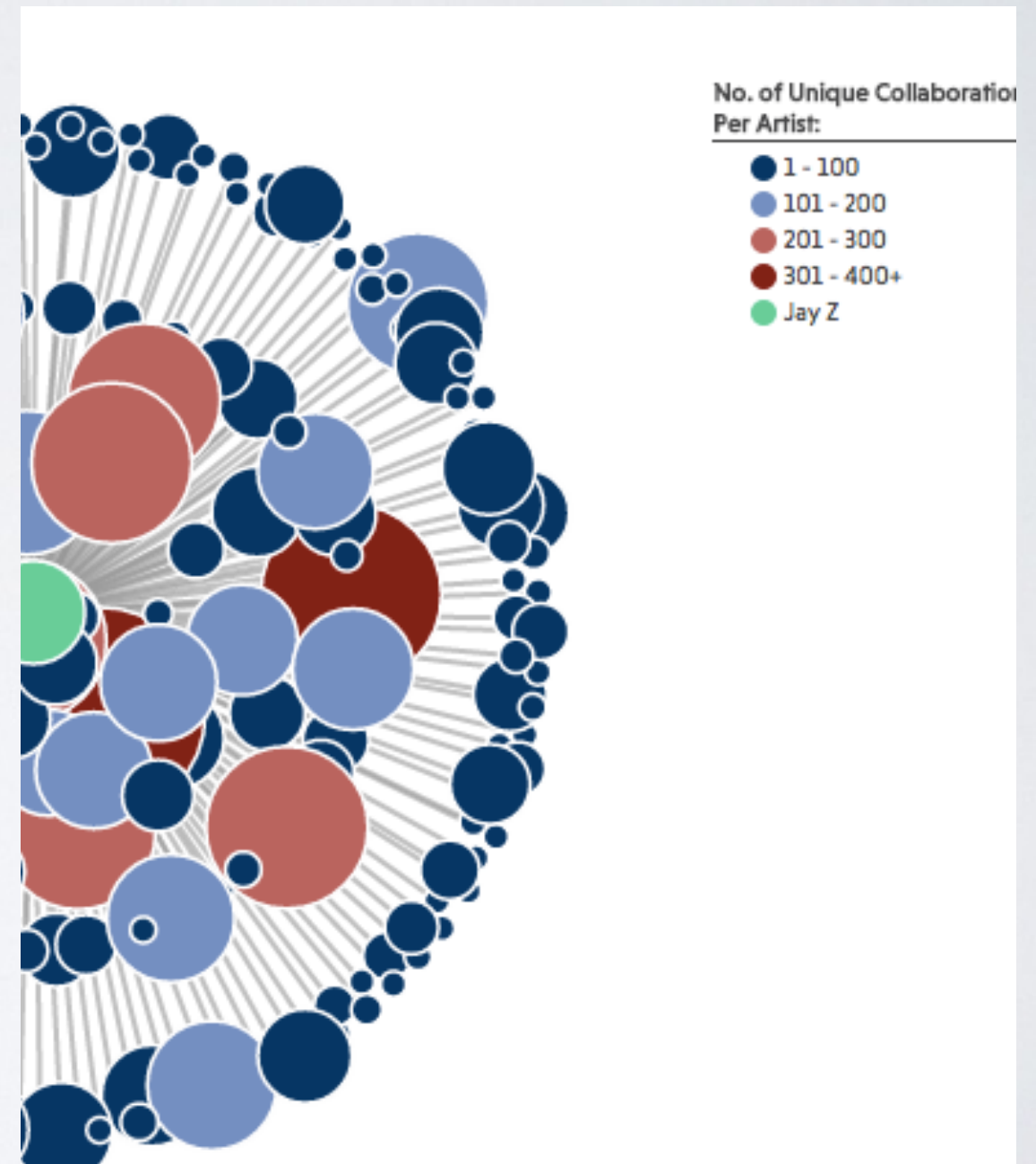


RELATED WORK:

COLLABORATION NETWORK FOR A SINGLE ARTIST

[LINK](#)

- more detailed information for the given network
- hard to interact with and gain more data from
- still no regional data



OUR IDEA

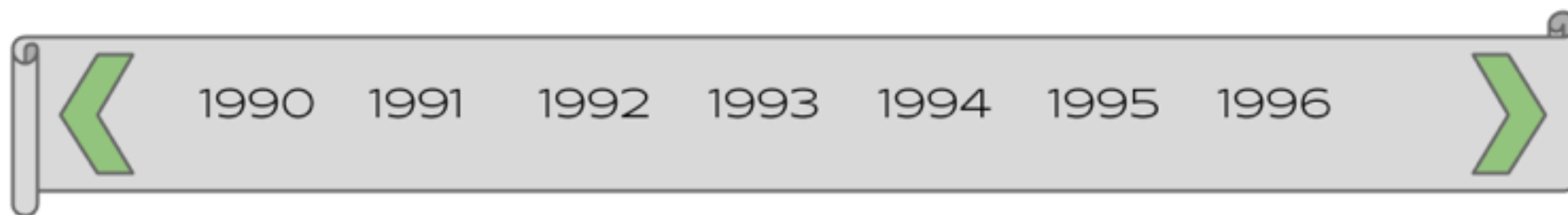
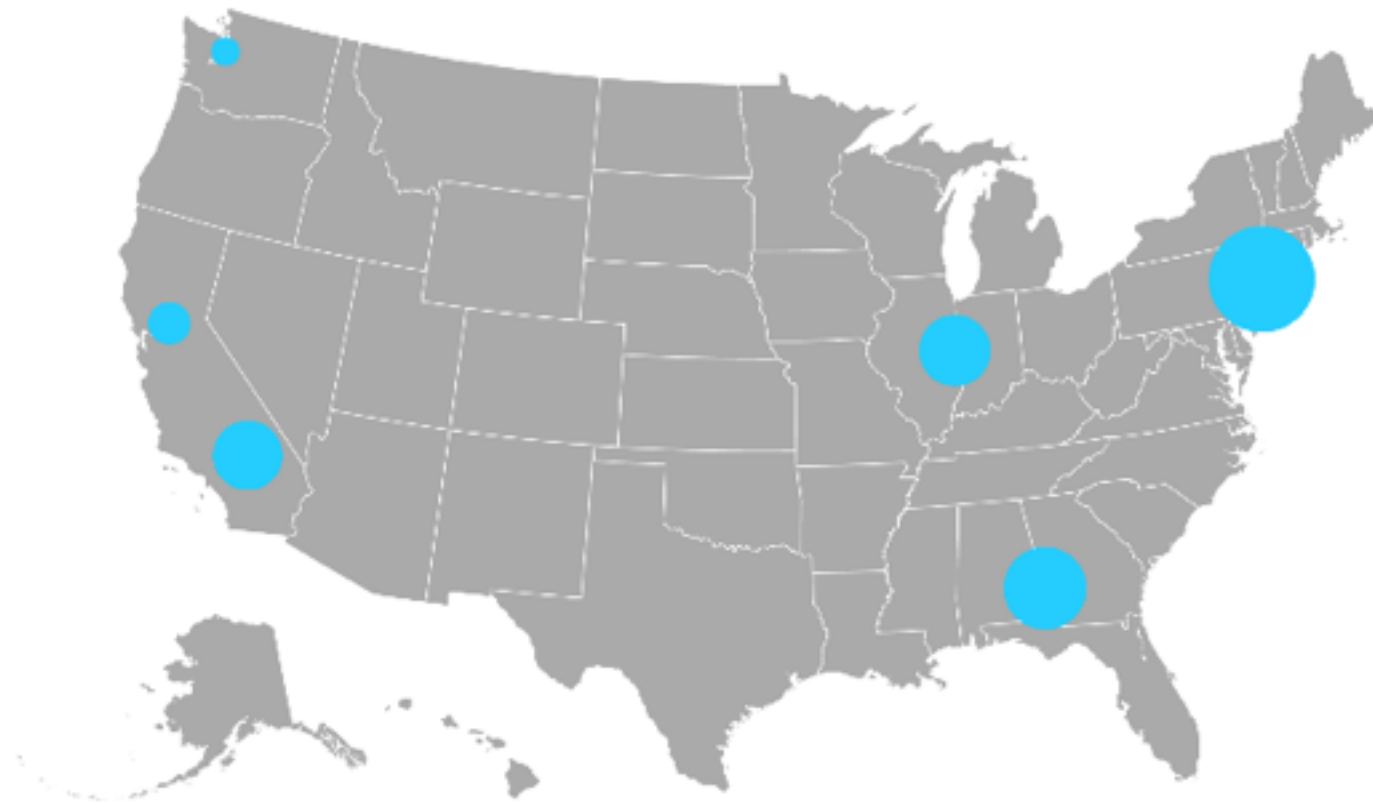
- incorporate regional and temporal data to collaboration data
- have more extensive data (1970s - present)

OUR DATA

- Compiled a list of 134 popular artists and metadata spanning 1972 - present day
- Queried Musicbrainz API to gather collaboration song data for the artists

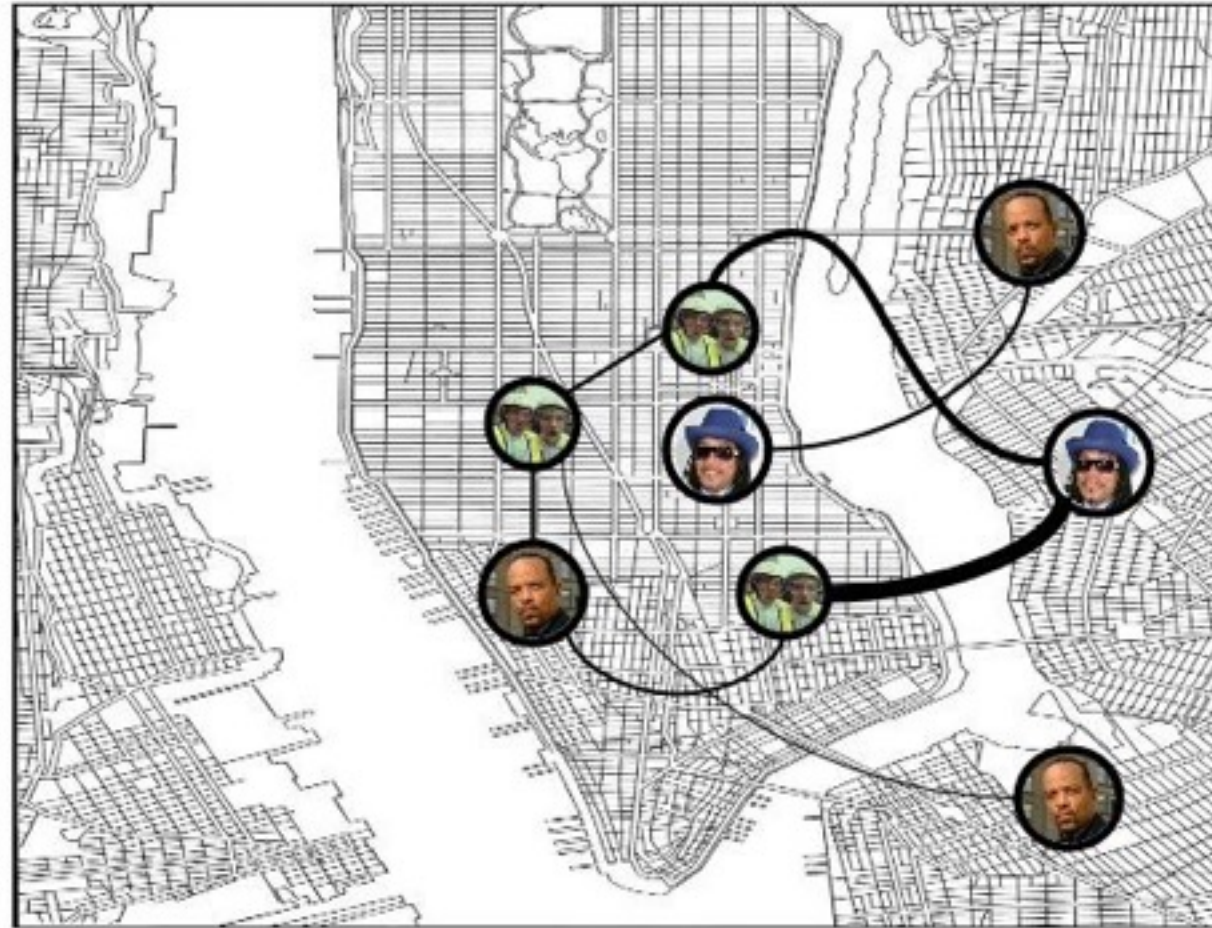
Storyboard: overall view

1996



Storyboard: regional view

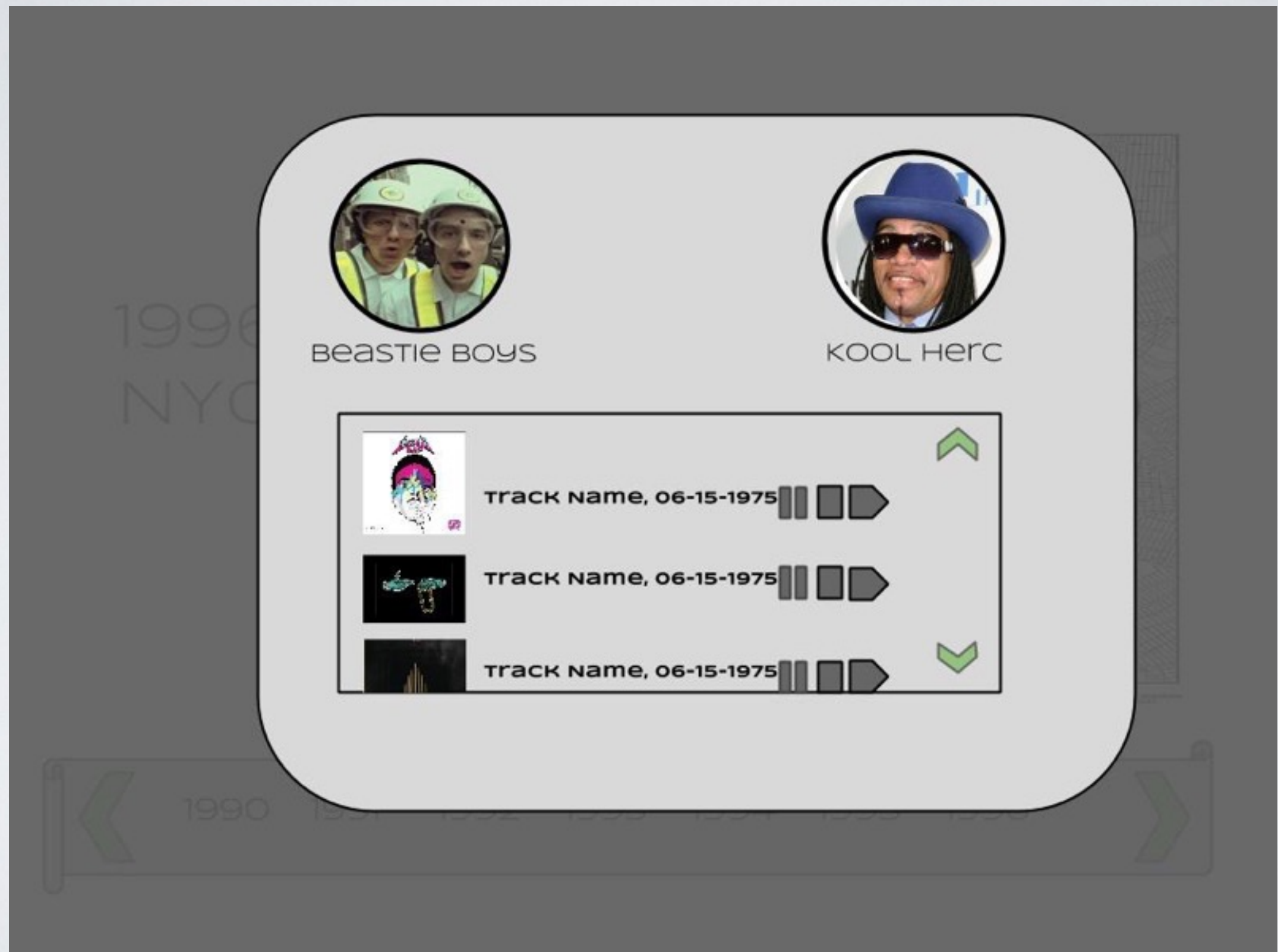
1996
NYC



MAP OF LOWER MANHATTAN, AN ISLAND IN NEW YORK CITY BOUNDED BY THE HUDSON RIVER TO THE WEST, AND EAST RIVER, AND COMPREHENSIVE THE BUREAU OF MANHATTAN OF GREATER NEW YORK. NEW YORK IS THE MOST IMPORTANT CITY IN THE ATLANTIC SEABOARD, AND IS BOUNDED BY GREAT RIVERS.



Storyboard: collaboration view



QUESTIONS

- What views of this data are we not considering?
- What potential interaction problems does this design have?
- What other interesting questions could we be answering with this data?
- Anything else?

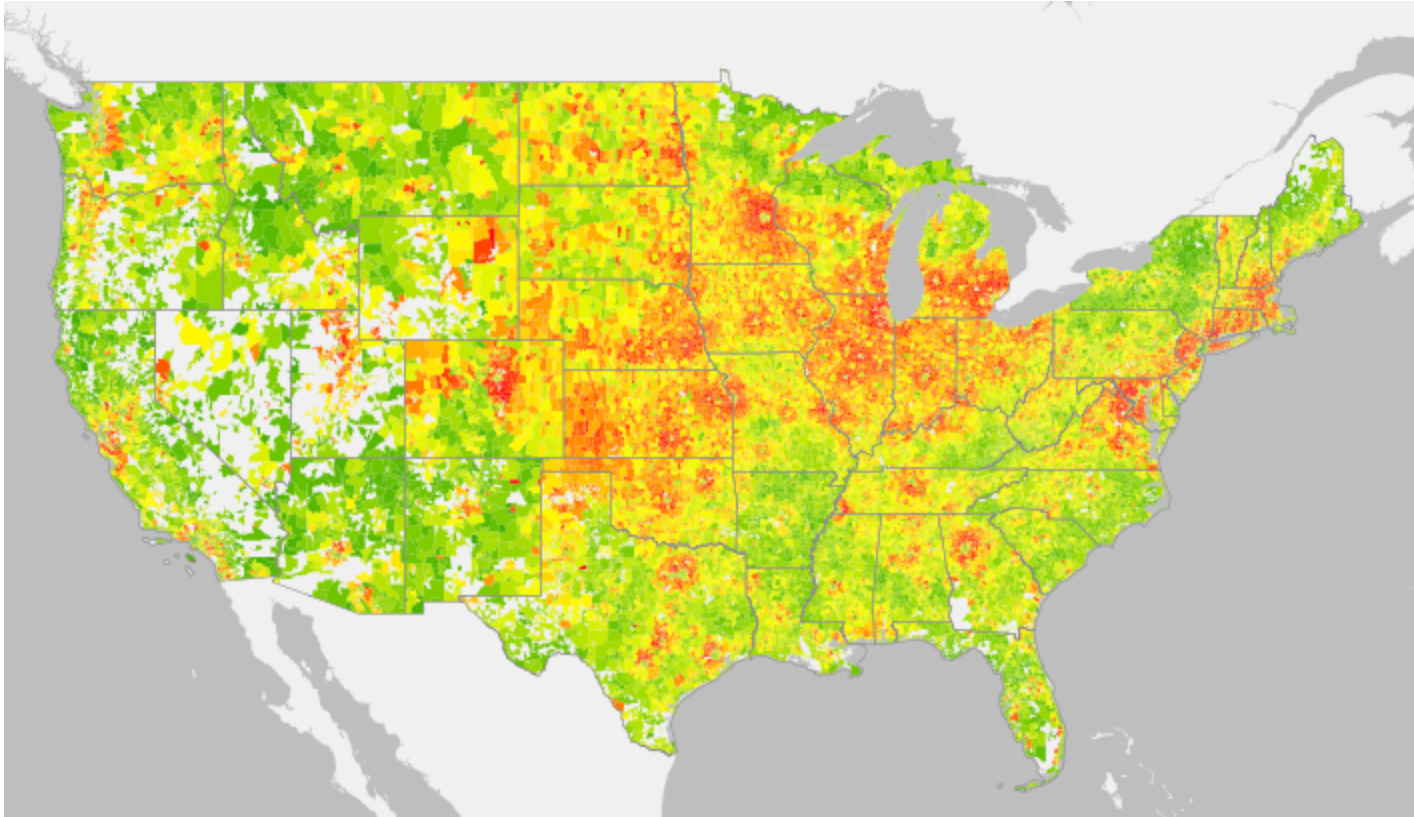
Visualizing the Statewide Impact of a Carbon Tax

Justin Bare, Aditya Kaul, Nandita Anand, Richard Li

Problem

- Revenue-neutral carbon tax in Washington
 - Added tax on fossil fuels
 - Added low income tax rebate
 - Reduced sales tax, business taxes
- How can we visualize the statewide impacts of this policy?
 - High-dimensional
 - Lots of uncertainty
 - Several partially complete, disparate datasets

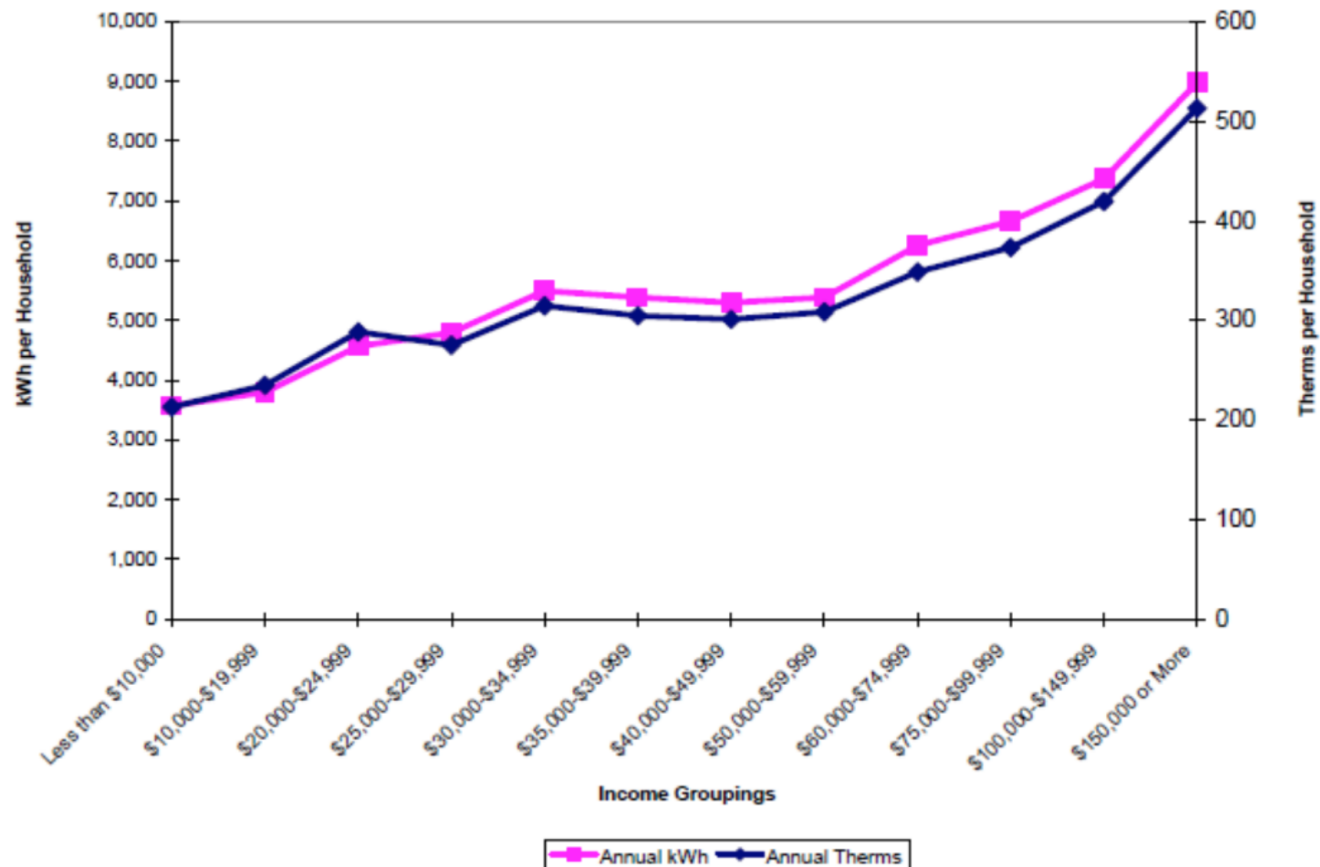
Prior Work



<http://coolclimate.berkeley.edu/maps>

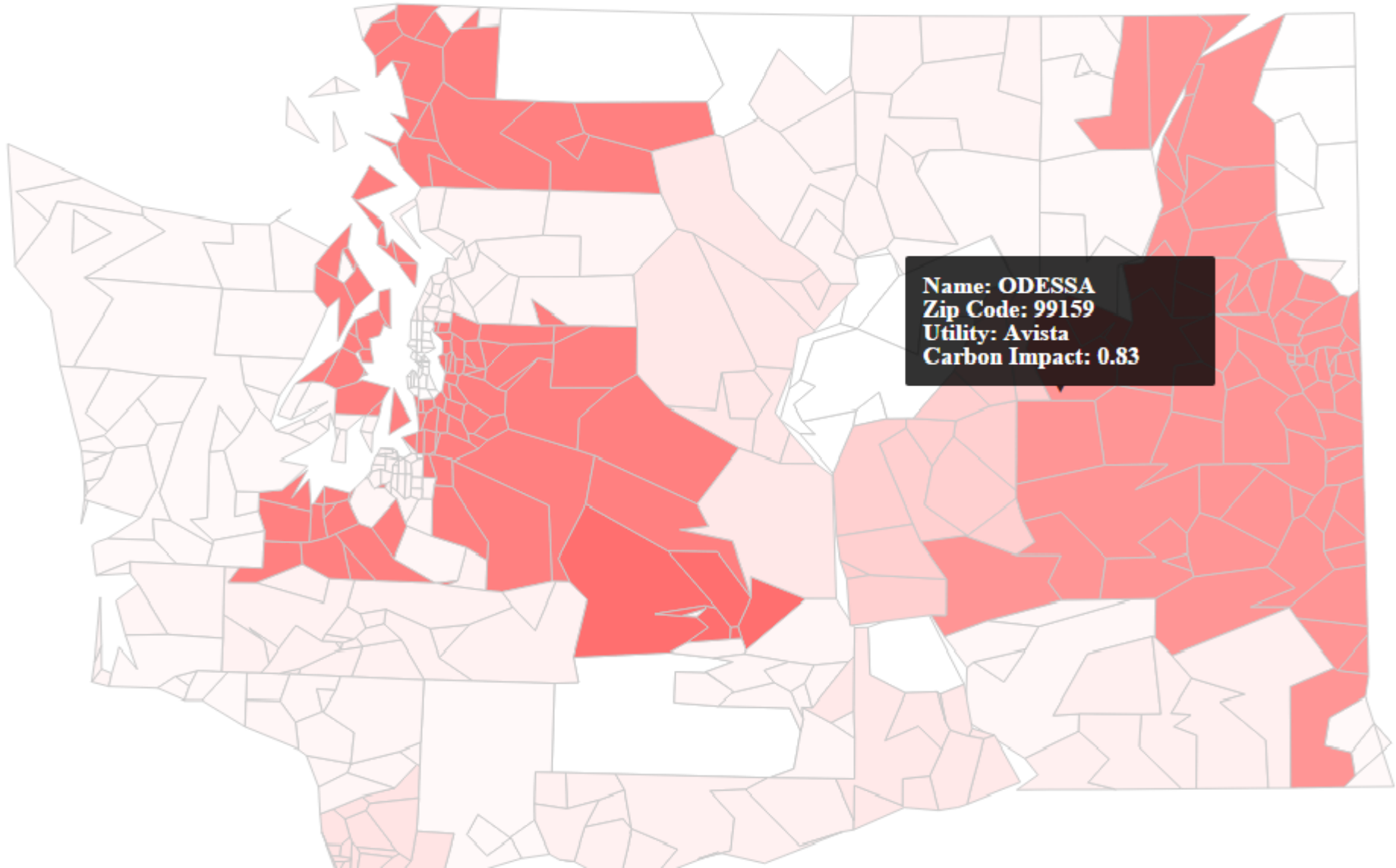
Prior Work

Figure I. Average Electricity and Natural Gas Consumption by Income



Source: KEMA (2010), p. 32.

Current Progress



Current Progress

The Overall Picture The View by Income

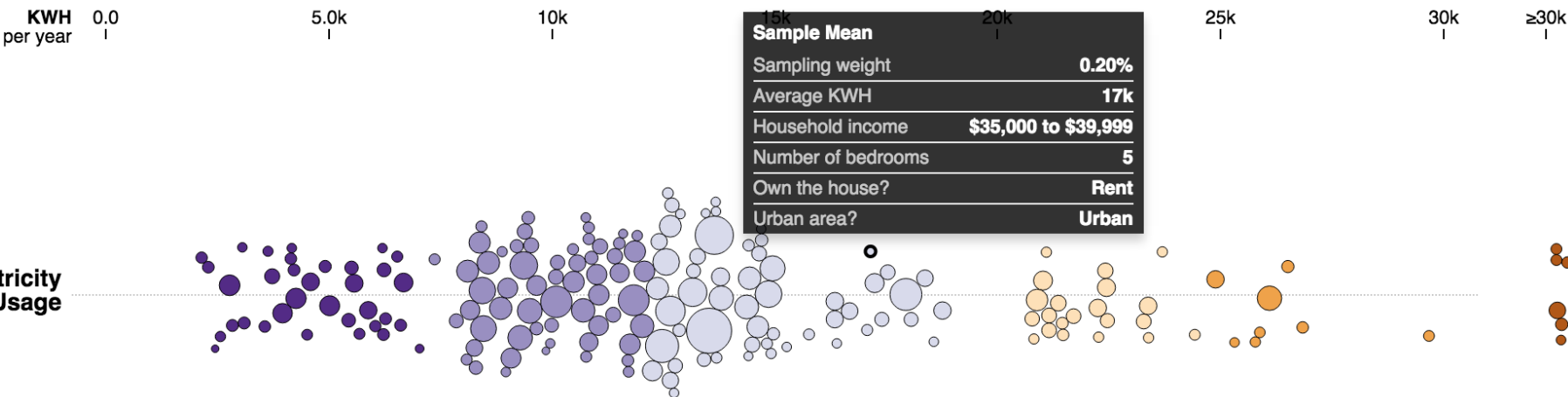


CHART KEY Color shows electricity usage

7.0k 12k 20k 24k 30k

Size shows sampling weight 0.50% 1.00% 2.00% 3.00%

Next Steps

- Filters
- Zoom feature on map
 - More details on zoom: consumption based on utilities in that zipcode, household details, etc.
- Interactive bar/bubble charts to appear when hovering on map
- Animated transitions between views of different datasets
- Polishing the encodings according to the latest perceptual theories of color, graphics, space, etc.

Displaying CO₂ Emissions Worldwide

Alec Zimmer (azimmer8)

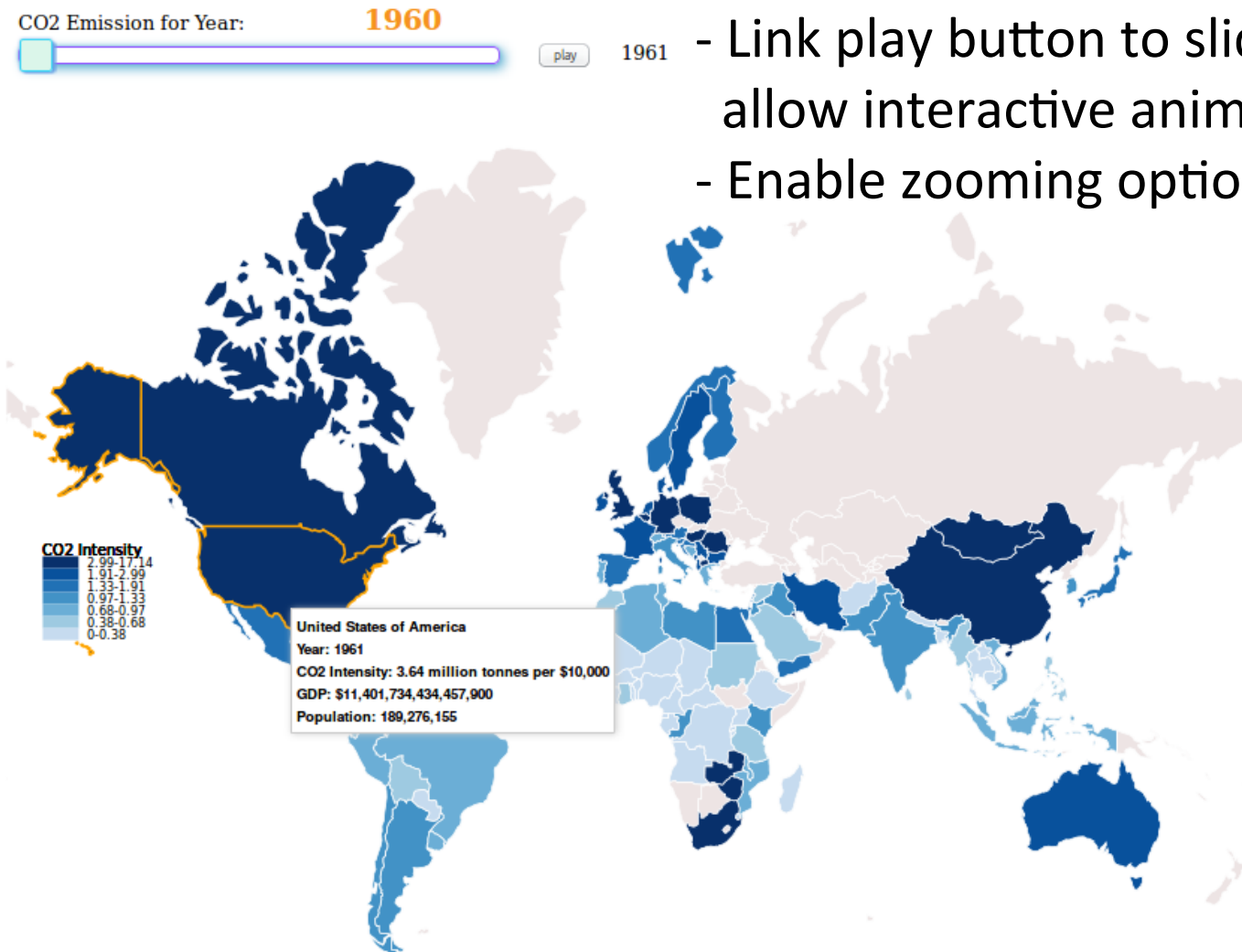
Hoiyi Ng (hoiyi)

Problem

- Display CO₂ emissions by country and year
- Enable analysis and exploration
- Compare with relevant variables (population, GDP, etc.)
- Motivated by work with Adrian Raftery (UW, statistics) and Dargan Frierson (UW, atmospheric sciences)

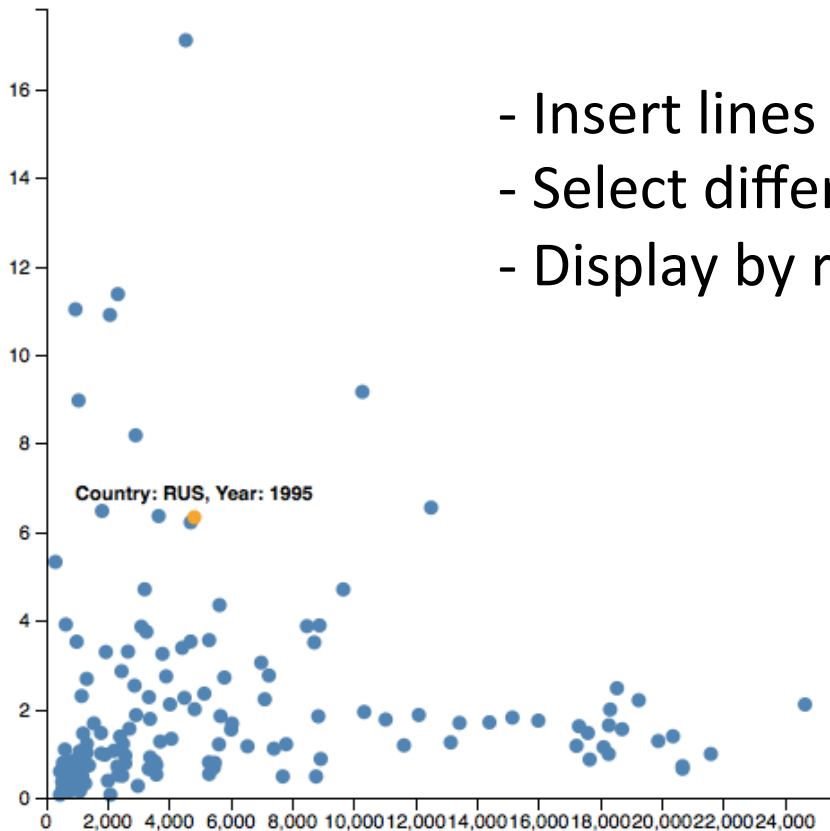
Interactive map

- Scatter plot in pop-up frame
- Link play button to slider to allow interactive animation
- Enable zooming options



Scatterplots/Trendlines

CO2 Emission across Countries from 1960 to 2008



- Insert lines displaying country data by year
- Select different variables
- Display by region

Questions

- How to make the two approaches interact?
- What would be useful information to display when clicking and hovering?
- Should we allow zooming for the map? Would it be more helpful or more distracting?
- Any creative additions?

Feedback?

1. Suggestions for other visualizations?
2. Any experience in combining information from different surveys?
3. What features are more interesting in describing a household?

Exploration of a Multi-Dimensional Astronomy Dataset

CSE 512 Project Feedback

Nicole Atherly, Mahir Kothary, Grace Telford

Motivation

Dataset: ~tens of properties for ~100,000 galaxies

Issues:

- Parameters derived from modeling light distribution
- Basically all galaxy parameters are correlated with each other → Potential biases!

Goal: Interactive, deep search for anomalous correlations

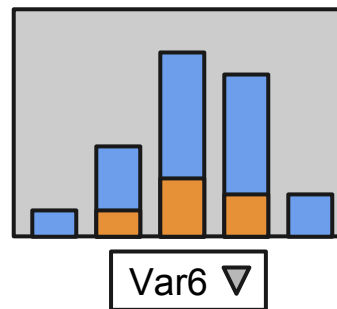
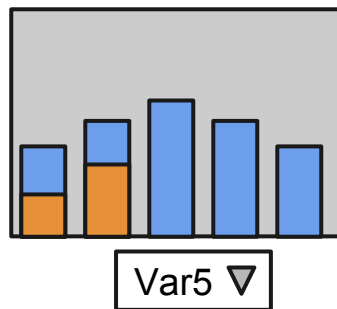
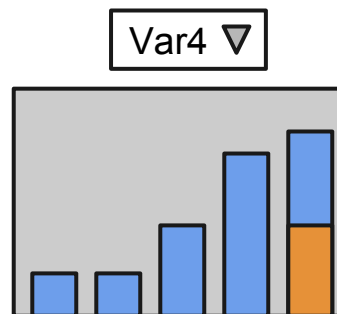
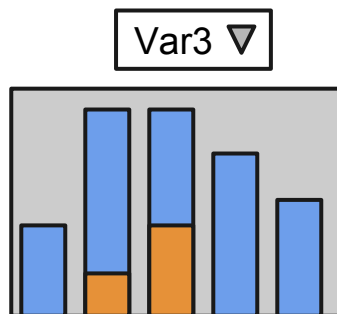
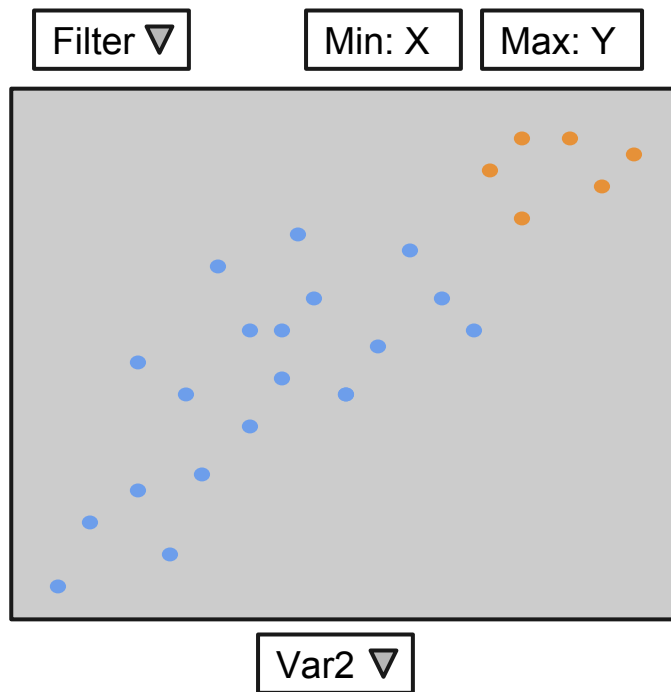
Relevant Prior Work

- Ggobi
- Parallel coordinates

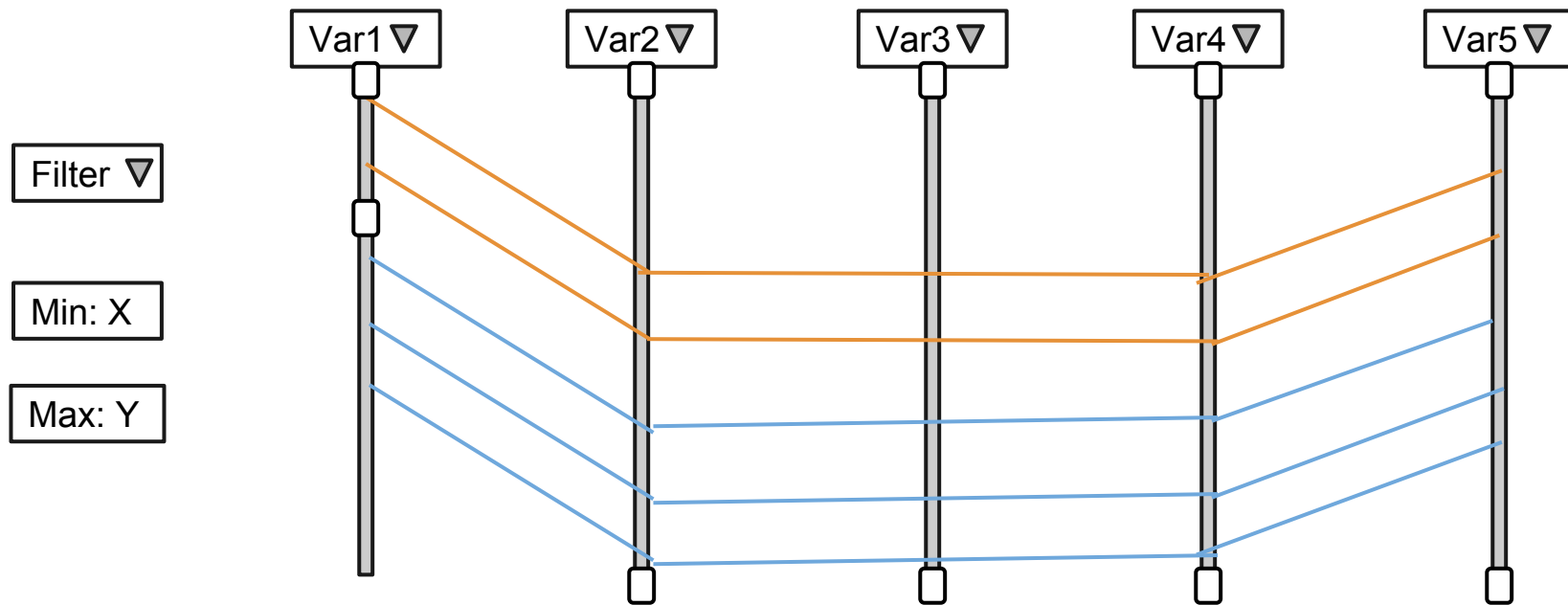
Our project will be tailored to this galaxy dataset and will cater to users who want to drill down into the details

- Dynamically filter data and change variables displayed
- Inspect distributions of subsamples vs. whole

Storyboard



Storyboard



Feedback Questions

- Are there other capabilities you would want if you had to look for biases in a complex, high-dimensional dataset?
- Thoughts on customizability vs. clutter?
 - E.g., ability to change type of plot, number of bins in histograms, axis ranges, ...

S.I.E.V.E.

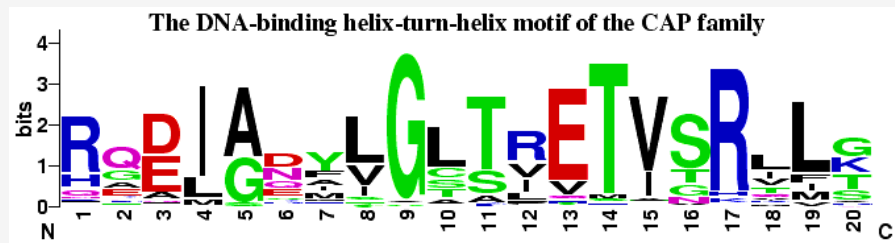
Statistical Interactive Explorer of Vaccine Efficacy

SIEVE ANALYSIS

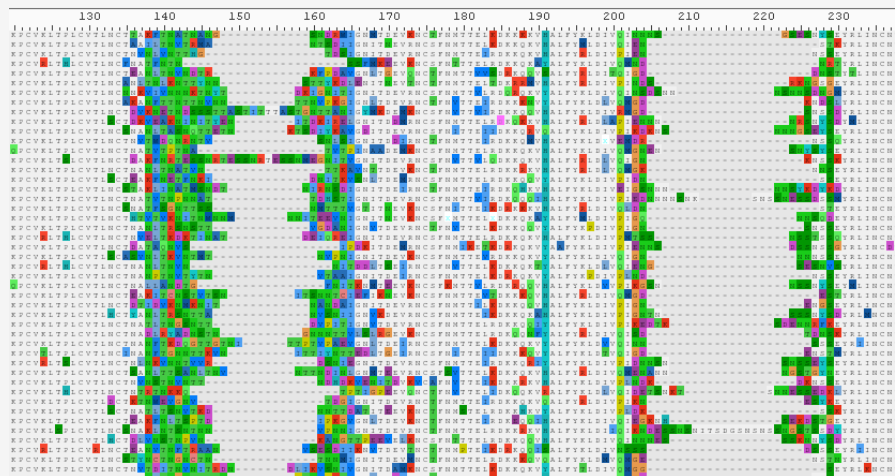
- Vaccines as a whole are ineffective for HIV.
- However, new techniques show they can be effective on certain strains
 - Which ones???
- Sieve analysis studies the similarities of the genomes the HIV in patients to the vaccine administered.
- OUR TASK: create an interactive visualization to aid in exploring this data.
- Working with Andrew Gartland and Allan DeCamp at Fred Hutch

PRIOR WORK

GENERAL SEQUENCE VIEWERS

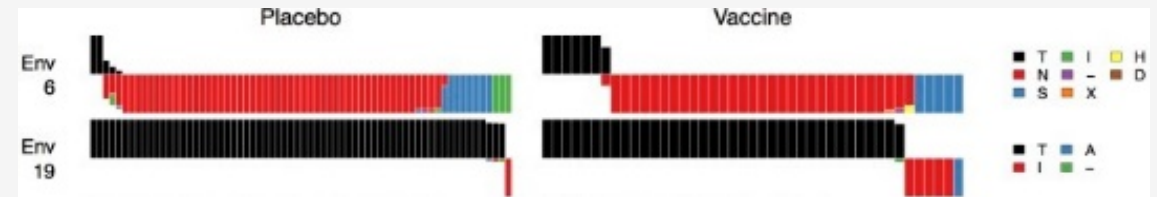
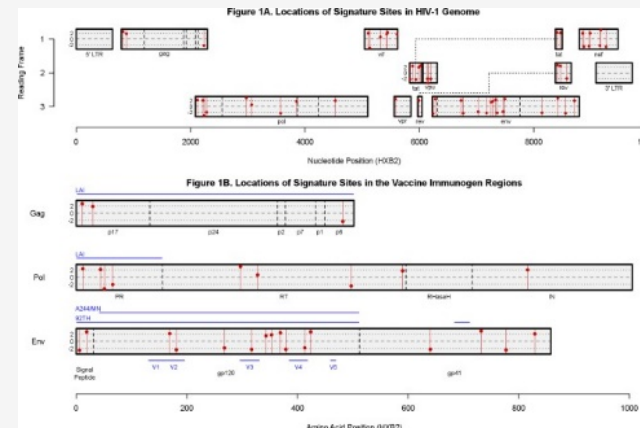


WebLogo



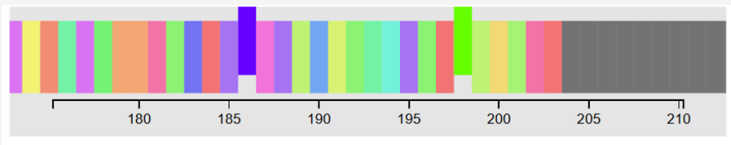
Alignment Viewers

SIEVE ANALYSIS GRAPHICS

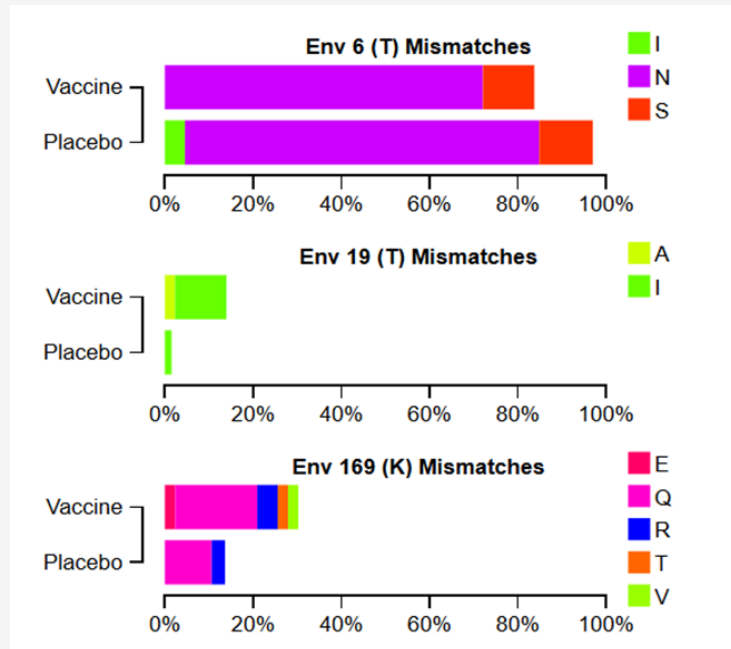


S.I.E.V.E.: THREE PARTS SO FAR

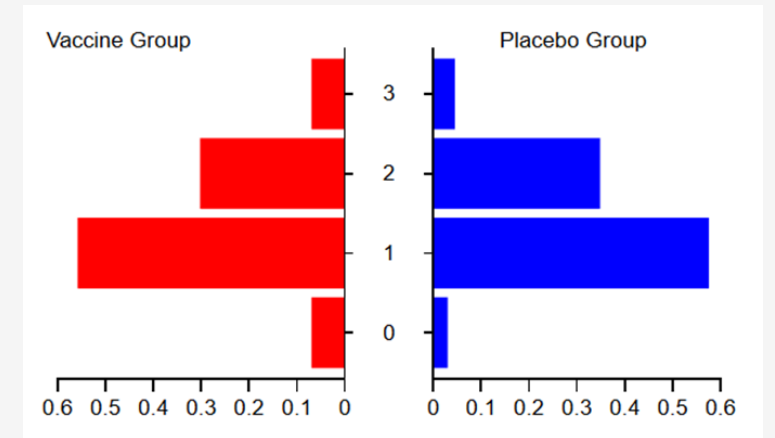
OVERVIEW GRAPHIC /
SITE SELECTION



INDIVIDUAL SITE CHARTS



GROUP STATISTICS



WORKS IN PROGRESS

- Better selection
- More statistics shown: visually encode statistically interesting sites to view
- Allow researchers to upload their own data for other vaccine studies
- Implement customization of colors, annotation of graphics, and export of images for use in sieve analysis papers

FEEDBACK SOLICITATION

What selection mechanism would work best for this type of data?

- Data is in a very long sequence, but researchers need fine grained control
- Ideally easily select multiple disconnected sequences across the genome, with ability to quickly select sequences of a specified length

Best way to export a D3 graphic to PDF format for inclusion in papers?

- SVG is inconvenient for the researchers

Visualizing HIV Mutation

Introduction

A F R T O P R

----->

A F R A O P R

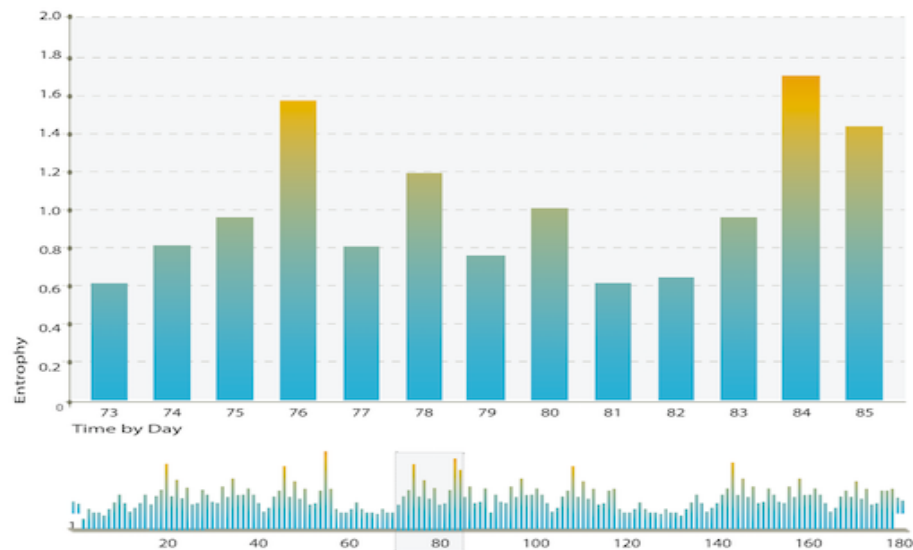
Mutation!

Challenge

DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	T	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L	N	E	S	V	V	I	N	C	T	R	P	S	N	N	T	R	R	S	A	V	G	P	G	R	A	F	Y	A	T	D	X	I	G	D	I	R	K	A	H	C	N	L	S	R	A	A	W	N	N	T	L	R	A	Q	I	V	E	K	L	R	E	O	F	G	-	N	K	T	V	F	N	R	S	S	G	G	D	P	E	I	V	M	H	S	F	N	C	G	G	E	F	F	Y	C	N	T	T	Q	L	F	N	S	T	W	N	T	S	A	L
DNA	X	I	V	L																																																																																																													

Design

Subtitle of this Chart for Enthophy Analysis



Detail of Selected AA

DAY	AA
7	-
	T
	T
	T
13	-
	-
	-
	-
	-
21	T
	T
	T
	T
	T
	T
	T
	T
	T
40	-
	-
	-
	-
	-
46	T
	-

More details to be designed
based on further requirement

* Dataset: HIV protein sequence from infected individuals; Known T-cell HIV epitopes mapping

Questions / Feedback

1. We have tight space, how to make good use of it?

Visualizing joint taxonomic and functional data from microbial communities

Cecilia Noecker

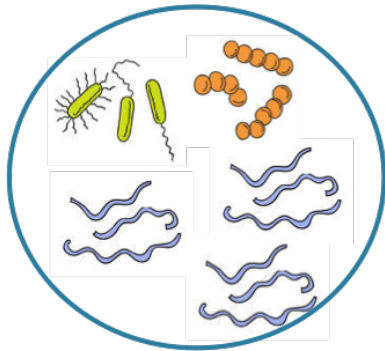
Alex Eng

Colin McNally

Will Gagne-Maynard

Motivation: Characterizing microbial communities

Species Composition

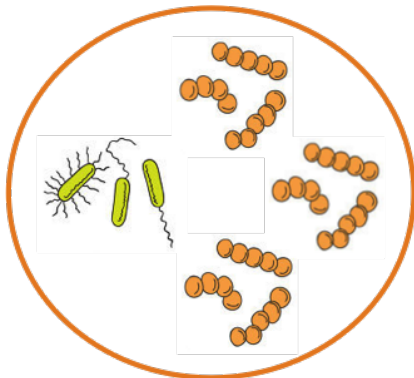


Sample 1

A	B	C	
A		C	D
	B	C	D
	B	C	D
	B	C	D

Gene Composition

2A 4B 5C 4D

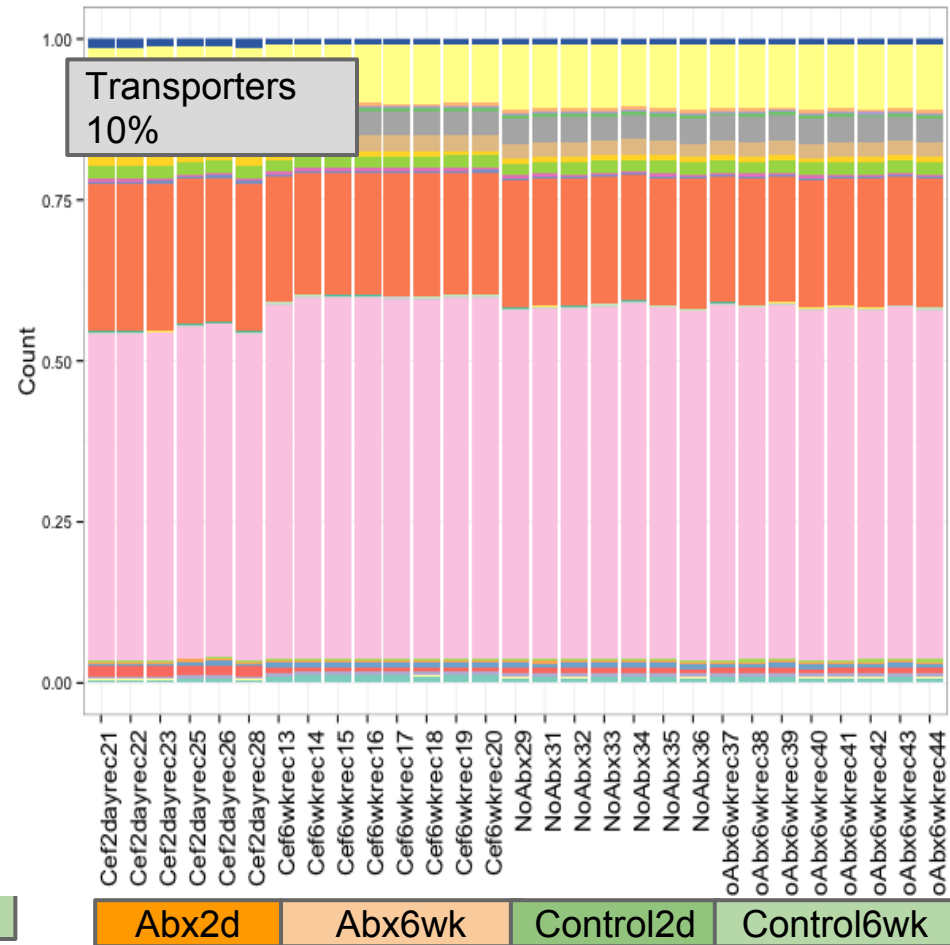
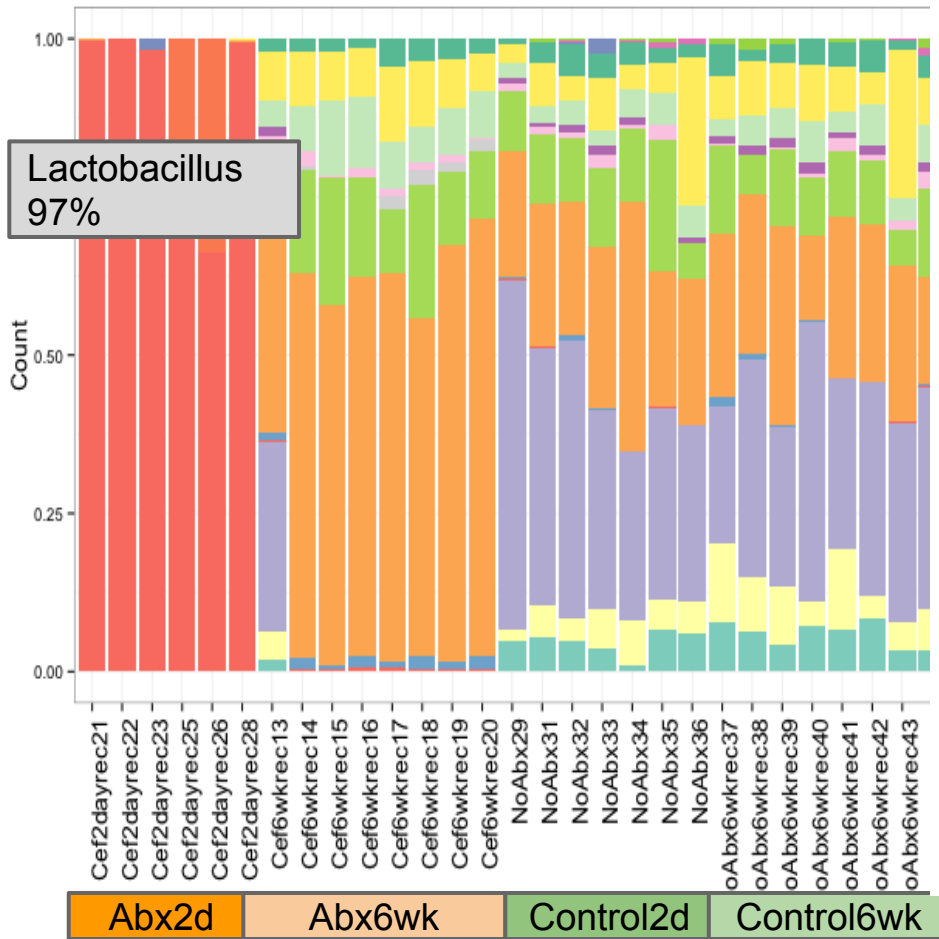


Sample 2

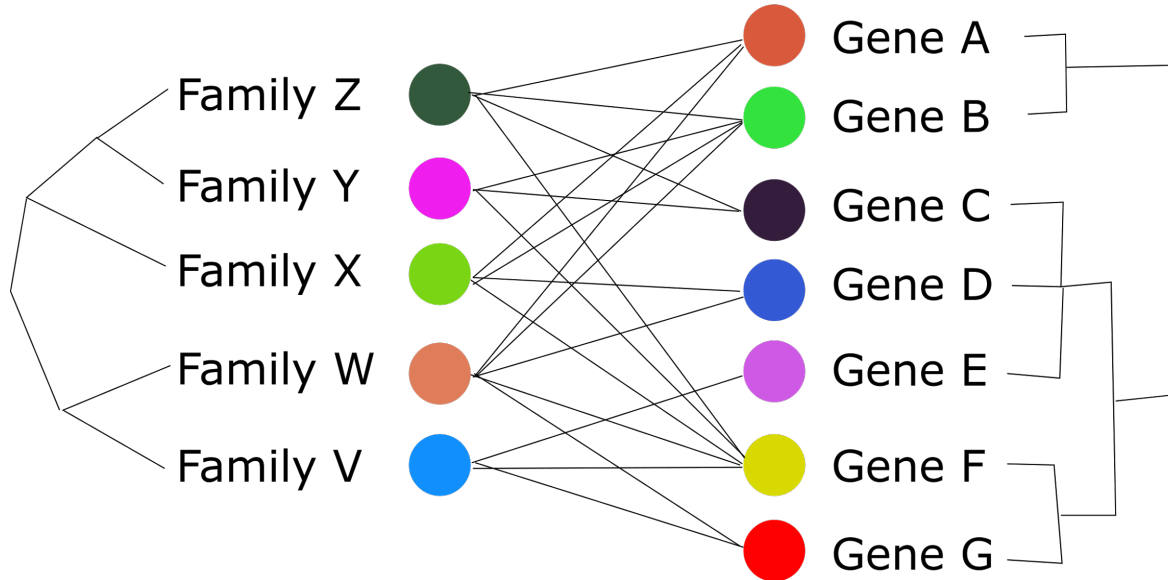
A	B	C	
A	B	C	
A	B	C	
A	B	C	
A		C	D

4A 3B 4C 1D

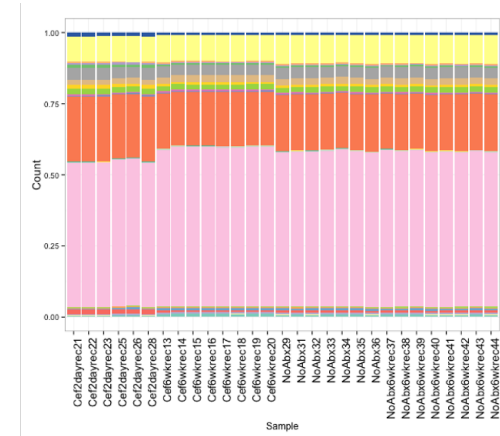
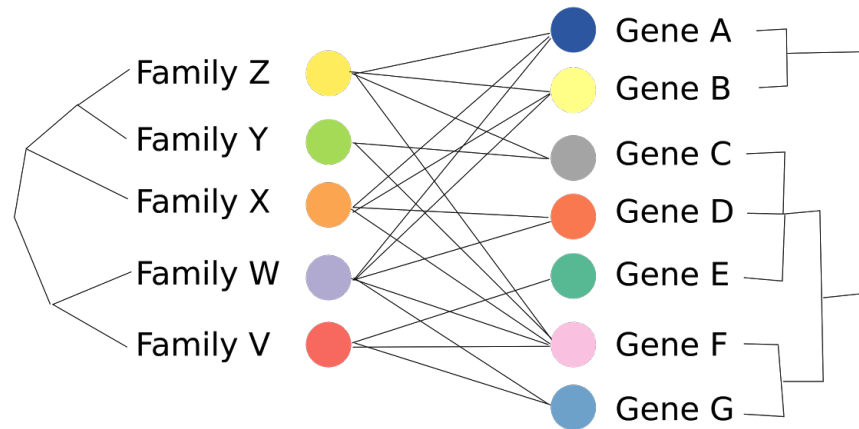
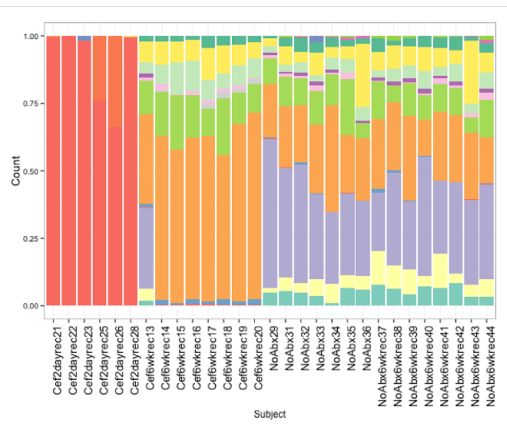
Design plan: Start with traditional visualizations of these data



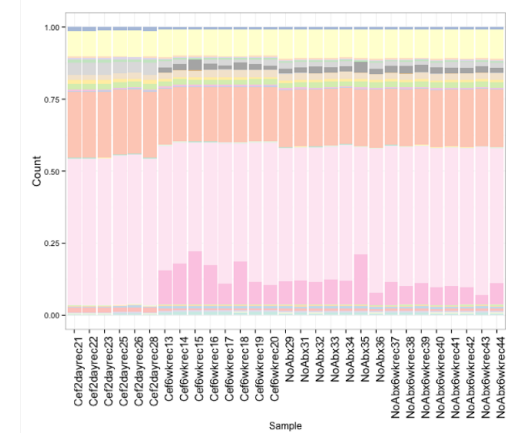
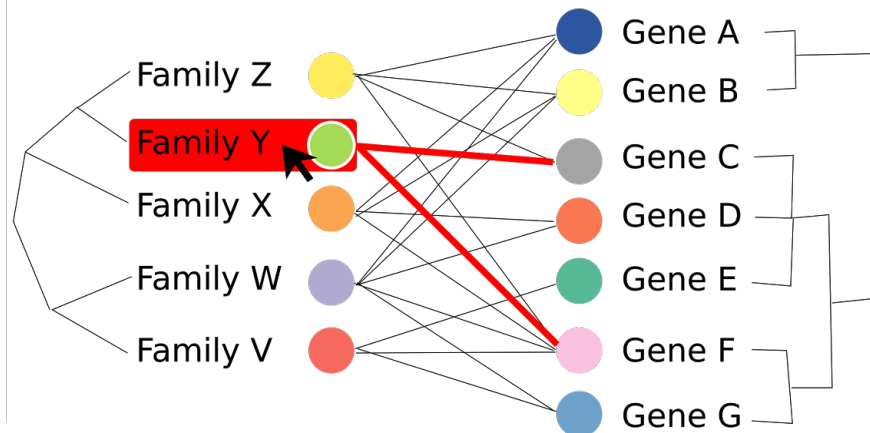
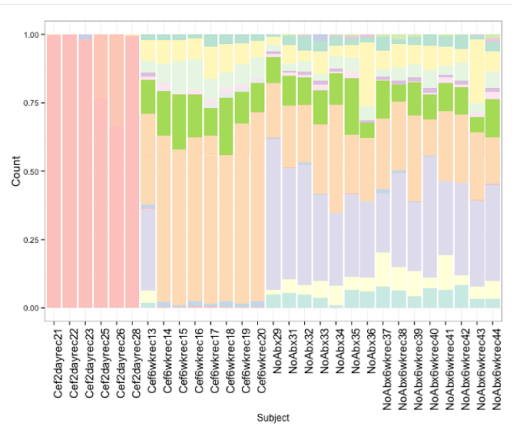
Design plan: Visualize links between taxa and functions



Overall Interface



Overall Interface



Questions

- Should we consider an adjacency matrix heatmap instead of bipartite graph?
- Should the graph visualization include variable edge widths encoding relative contributions or just show binary links for clarity?
- Any point in visualizing all (100k+) links between genes and species at once, or should we constrain to higher-level categories except when viewing specific subsets?
- Is this the right approach for comparing separate but linked data?

The background of the slide is a circular, golden-yellow field filled with numerous microscopic images of C. elegans embryos at various stages of development. The embryos appear as small, translucent, worm-like structures with distinct internal patterns, some showing clear cell divisions. They are scattered across the field, with a few larger, more detailed ones visible in the foreground and background.

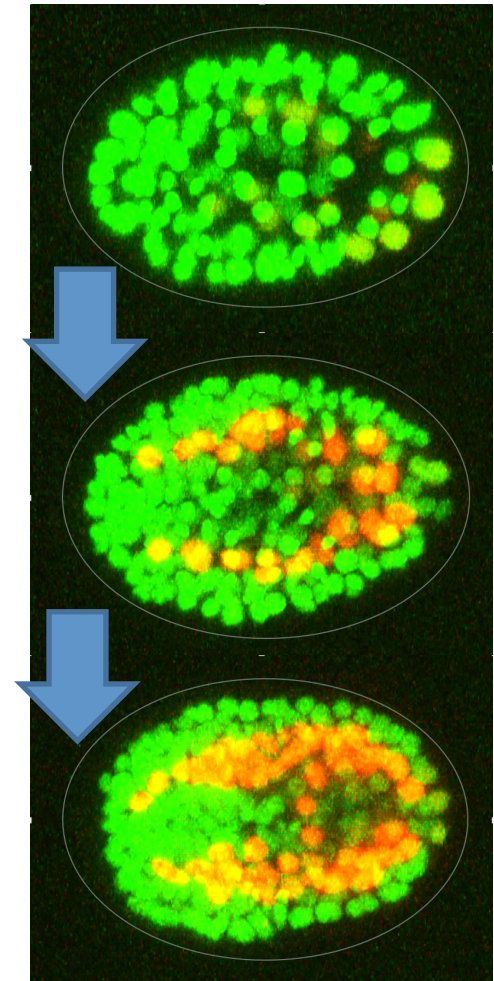
An interactive visualization for *C. elegans* embryogenesis

Melissa Chiasson, Timothy Durham, Andrew Hill,
and Ning Li

Department of Genome Sciences
Department of Statistics

What gene regulatory relationships exist in *C. elegans* embryogenesis?

- *C. elegans* is a round worm used widely as a model organism in the genetics community.
- Currently no tool exists to interactively visualize embryo development through time and interrogate how gene expression patterns change with time, lineage, or cell type.

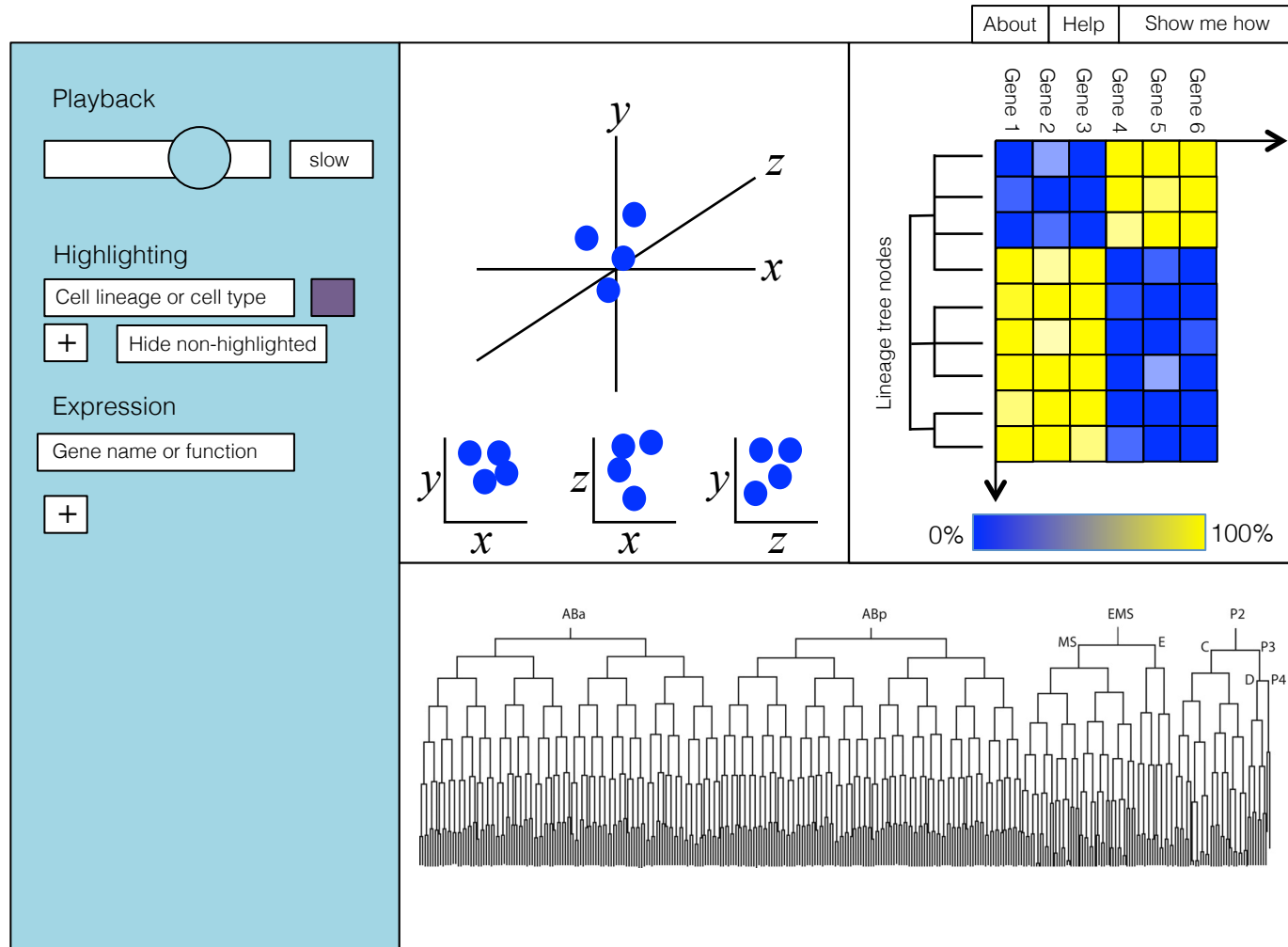


What gene regulatory relationships exist in *C. elegans* embryogenesis?

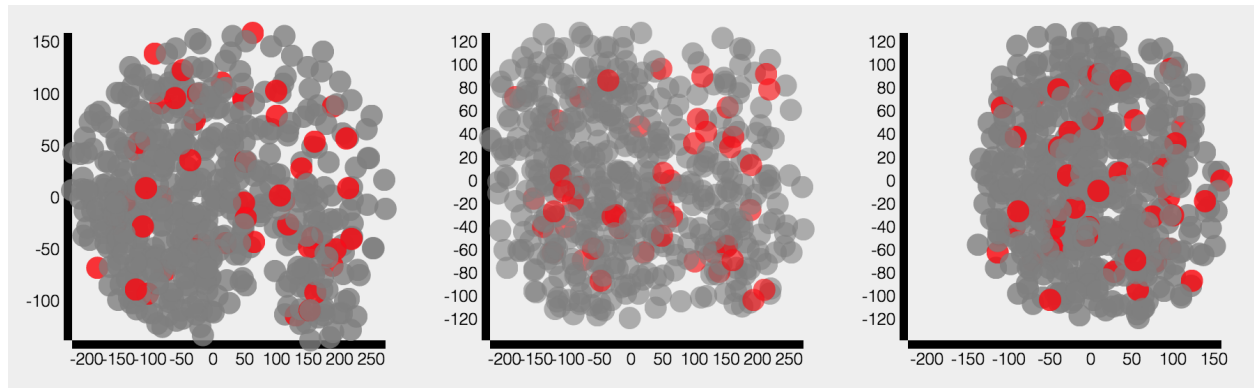
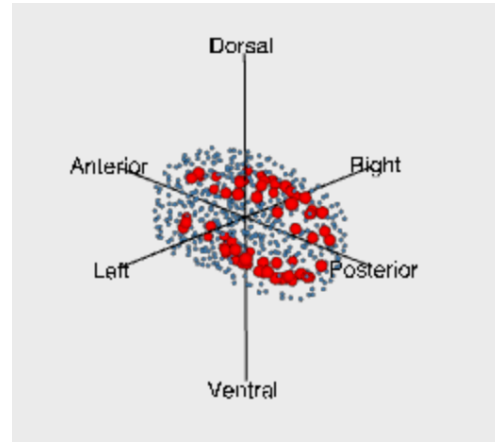
- *C. elegans* is a round worm used widely as a model organism in the genetics community.
- Currently no tool exists to interactively visualize embryo development through time and interrogate how gene expression patterns change with time, lineage, or cell type.

Types of data
Spatial orientation and diameter of cells
Cell types and lineages
Gene expression for ~250 genes in each cell

General layout of visualization



3D plot vs. small multiples



Questions for feedback

- Would it be useful to have the plots on different tabs? Or to select which two plots you prioritize?
- Should we include 2D projections of the 3D plot?
- What would be the most useful visualization for zooming in on gene expression?

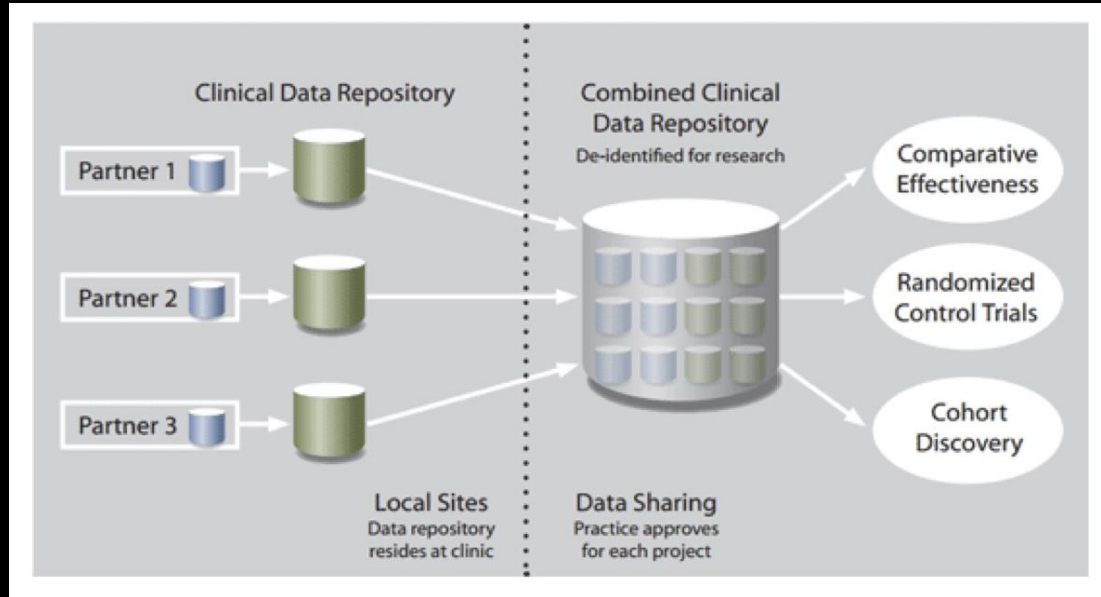
Visualizing Electronic Health Record Data to Aid Exploration

Ahmad Aljadaan, Ross London, Jacob Olsufka

Problem

- Data QUEST
 - Supported by ITHS at UW
 - Promotes translation of scientific discovery to practice by fostering innovative research
 - An electronic health data-sharing architecture across community-based primary care practices in Washington and Idaho.

Problem



- Types of data
 - Patient demographics
 - Medications
 - Vital Signs
 - Procedures
 - Immunizations
 - Diagnoses
 - Lab Tests

Problem

Browse Data Types

Explore counts of patient lives by different categories of data found in Data QUEST partners' electronic health record systems.

Browse By Diagnosis

Explore counts of patient lives by different diagnosis categories, driven by ICD-9 Codes.

ICD-9 codes (no text) go

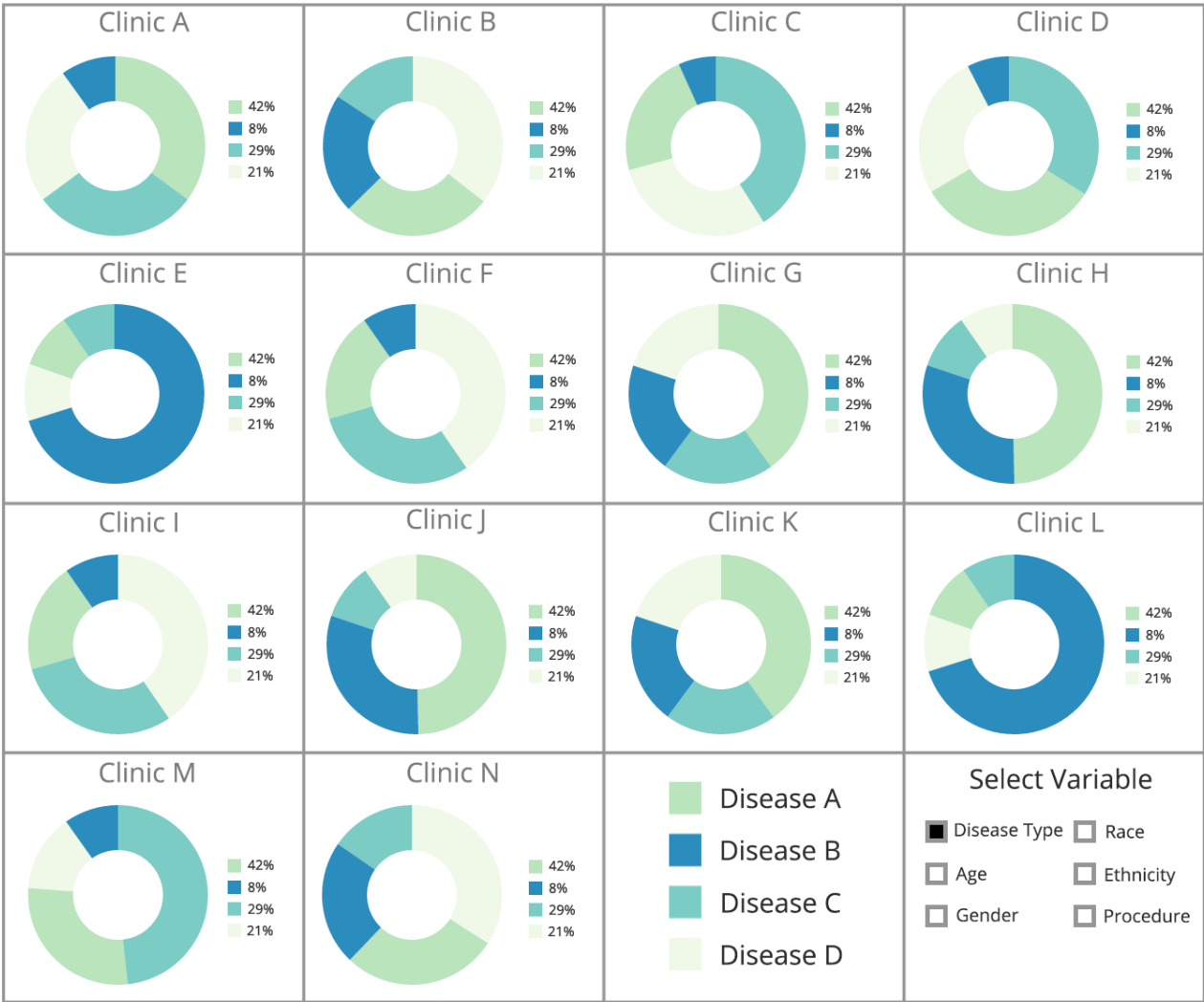
Data Dictionary

Explore our data dictionary.

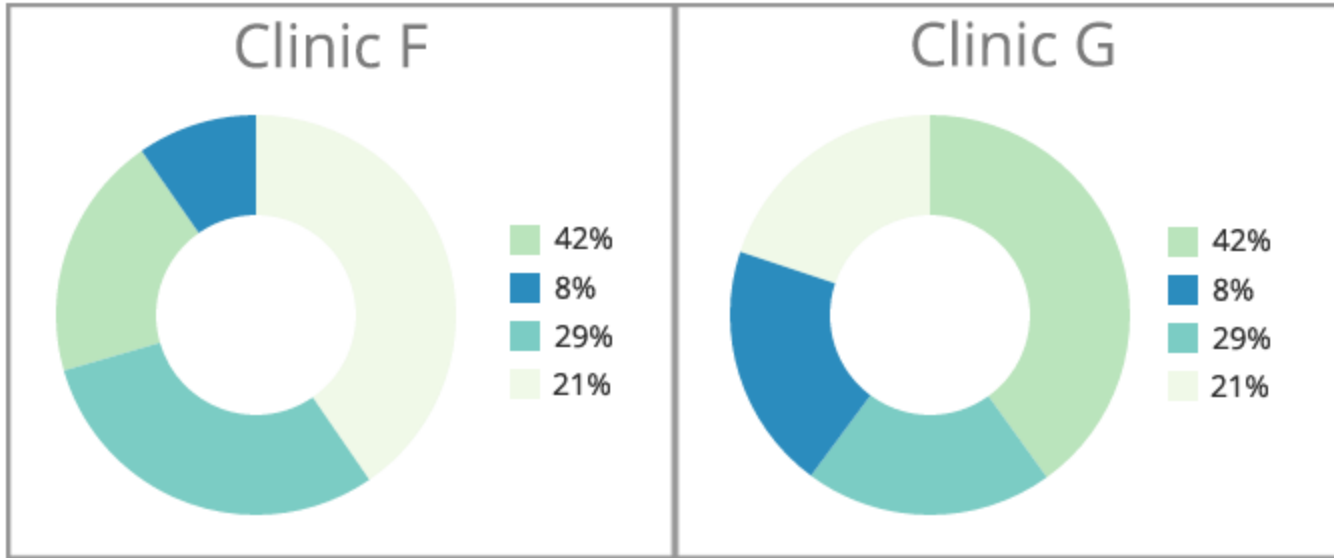
Patient Demographics

Patient Addr / Phone

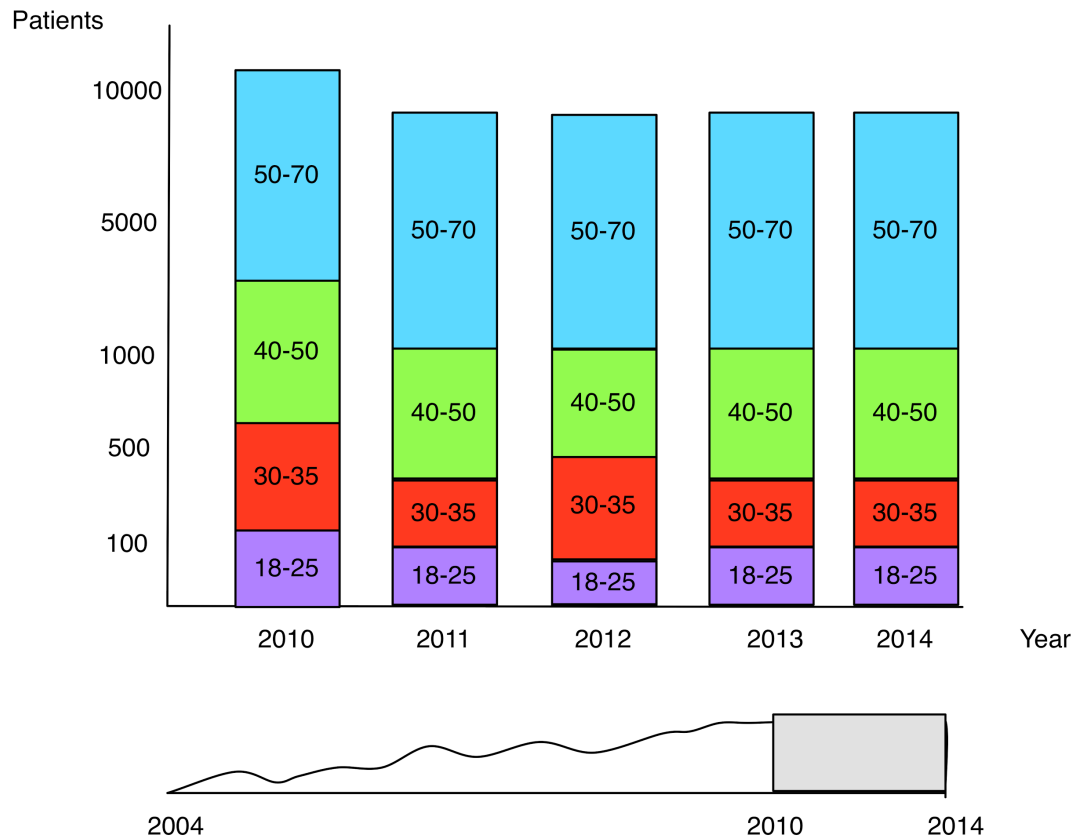
Patient Demographics	Gender	Gender By Age		Gender By Year					
Medications	Race	Gender	Ages 0-12	Ages 13-18	Ages 19-25	Ages 26-45	Ages 46-64	Ages 65 plus	Total
Vital Signs	Ethnicity	Female	5,330 (8.88%)	2,346 (3.91%)	4,969 (8.28%)	9,916 (16.52%)	7,615 (12.68%)	4,570 (7.61%)	34,746 (57.88%)
Procedures	Language	Male	5,693 (9.48%)	2,151 (3.58%)	2,230 (3.71%)	6,412 (10.68%)	5,675 (9.45%)	3,119 (5.20%)	25,280 (42.11%)
Immunizations		Unknown	2	1	0	4 (0.01%)	1	0	8 (0.01%)
Contact Us for More Information									



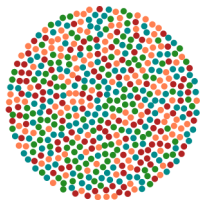
Comparison



Disease:	Non Seasonal Influenza	▼	
Gender	Age	Race	Clinic

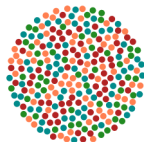


All By Disease Type By Gender By Age By Race By Year

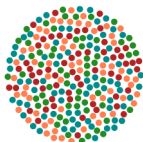


All By Disease Type **By Gender** By Age By Race By Year

Male

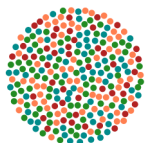


Female



All By Disease Type By Gender By **By Age** By Race By Year

<10 yrs



10-20



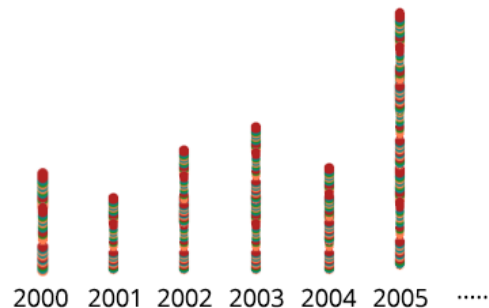
20-30



30-40



Force Bubble Charts with transitions



Timeline

5/19 - Data Request Sent

5/21 - Present ideas to class and refine

5/22 - Present ideas to ITHS team and refine

5/29 - Basic prototypes coded

6/5 - Finalize visualizations

6/7 - Finish Poster

6/8 - Poster Presentation

6/10 - GitHub Repo finalized

Questions for the class

- *What do you think the best comparison technique (bar chart, donut chart, etc) would be best for the small multiples?*
- *Would it be beneficial to offer the viewer more than one small multiple comparison techniques as opposed to only one?*
- *Can anyone think of additional methodologies to demonstrate both the breadth and depth of this data available to researchers?*
- *Which method would be more powerful to allow researchers in this domain to have narrative story about the data?*

DECAFDData / Foodprint

Christina Chung, Rick Huang

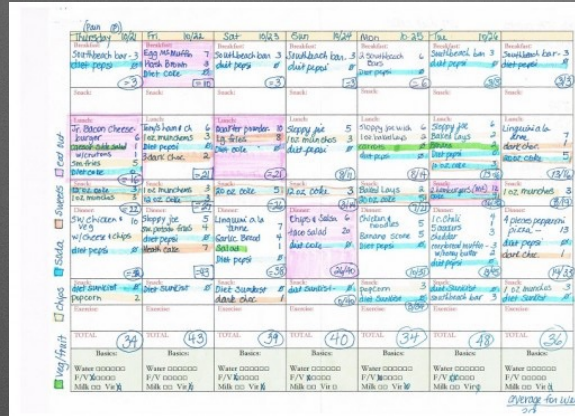
If you type Food Diary into Google image search

Food Diary







	Breakfast	What was consumed	Notes
Monday	Apple		
	Oranges		
	Corn		
	Carrots		
	Broccoli		
Tuesday	Apple	What was consumed	Notes
	Oranges		
	Corn		
	Carrots		
	Broccoli		
Wednesday	Apple	What was consumed	Notes
	Oranges		
	Corn		
	Carrots		
	Broccoli		
Thursday	Apple	What was consumed	Notes
	Oranges		
	Corn		
	Carrots		
	Broccoli		
Friday	Apple	What was consumed	Notes
	Egg 12oz		
	Oranges		
	Corn		
	Broccoli		
Saturday	Apple	What was consumed	Notes
	Broccoli		
	Corn		
	Carrots		
	Broccoli		
Sunday	Apple	What was consumed	Notes
	Broccoli		
	Corn		
	Carrots		
	Broccoli		

© 2018 FarmVital LLC

[Terms](#)
[Privacy Policy](#)
[Feedback](#)



If you type Food Diary into app store

Budget	Food	Exercise	Net	Under
1,533	1,300	—	1,300	233
Breakfast: 428 >				(+)
	Egg, Scrambled 3 Each		306 >	
	Peppers, Bell 2 Tablespoons		6 >	
	Coffee, w/ Cream 8 Fluid ounces		22 >	
	Apple, Medium 1 Each		95 >	
Lunch: 228 >				(+)
	Salad, Field Greens 3 Cups		67 >	
	Chicken, Breast 4 Ounces		123 >	



1,700	-	1,109	+	273	=	864
GOAL		FOOD		EXERCISE		REMAINING

Breakfast	144 cal
Strawberries - Raw 1 cup, halves	49
1 Scrambled Egg White 1 egg white	17
Bread - Whole-wheat, toasted 1 oz	78
+ Add Food	... More



Prior Work

Providers and patients have various goals when reviewing and sharing self-tracking data

Providers (Chung et. al, under review)

- Supporting Diagnosis
- Personalizing treatment
- Learning about patients
- Increasing motivation and accountability
- Facilitating discussion and managing visits

Patients (Chung et. al, under review)

- Making sense of data
- Showing a Complete picture of daily life
- Personalized and actionable care plan
- Support motivation and accountability
- Seeking recognition and emotional support

People can not estimate calories correctly (Cordeiro et. al, 2015)

Why we are different

Support goal-oriented
visualization and summary

Find the anomalies

Two screenshots of a mobile application interface for food tracking. The left screenshot shows a form for adding a meal on Saturday, February 08 at 01:57 PM. It includes a photo placeholder, a description field, and two 5-point scales for "How did you feel before you ate?" (Negative to Positive) and "How did you feel after you ate?" (Hungry to Stuffed). The right screenshot shows a completed entry for Sunday, December 29th, 2013, at 3:45:00 PM. It features a photo of a bowl of bibimbap, a caption "Bibimbap", and a detailed form with questions about the meal type (Breakfast, Lunch, Dinner, Snack, Beverage, Other), enjoyment (5 stars), location (Home, Work, Restaurant, Other), who they ate with (Spouse, Friends, Family, Co-workers, Other boyfriend), number of people (0, 1-3, 4-6, 7+), and post-meal feelings (Hungry to Stuffed, Tired to Energetic). A description field at the bottom contains text about the meal: "soft tofu house by little thai bibimbap (beef, sprouts, carrots, egg, rice) korean appetizers (potato, fish cake, bean sprouts, kim chi)".

Cordeiro et. al, 2015

Potential Flow

What is the purpose of this review?

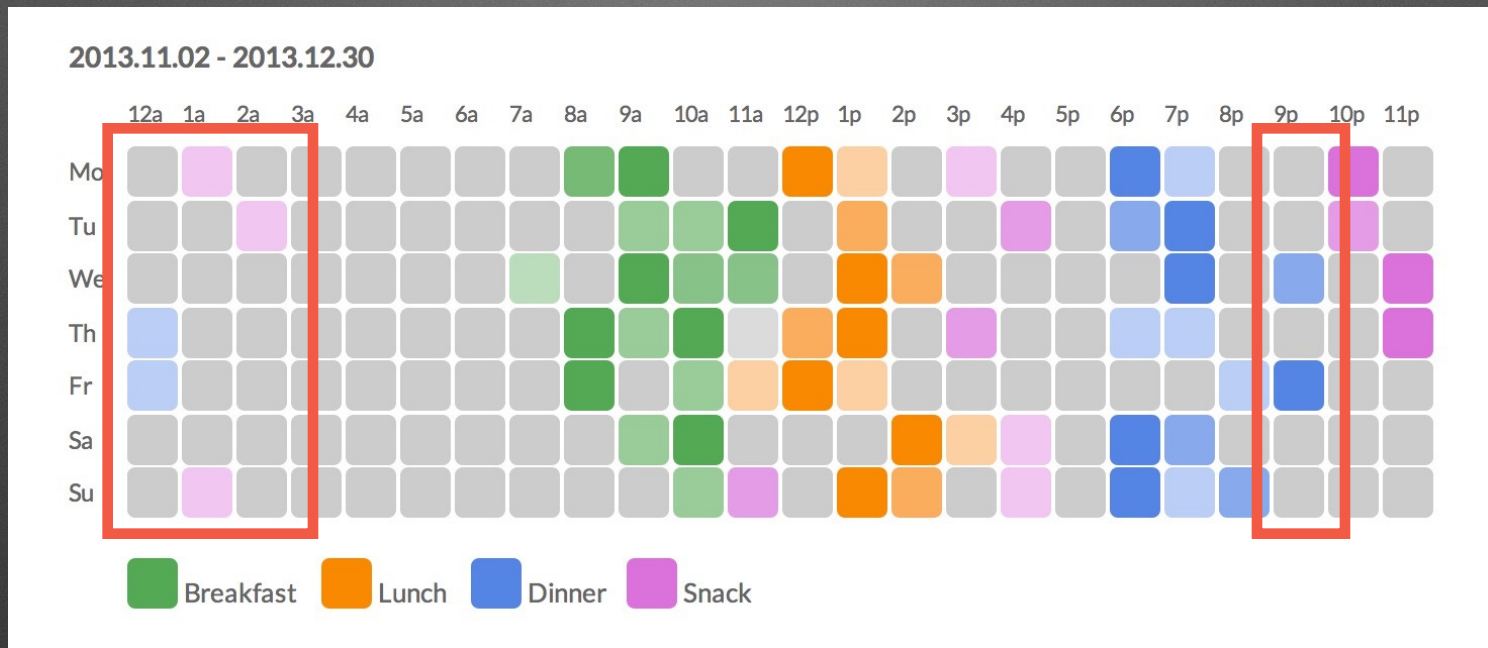
- Ensure regular eating time
- Suggest possible diet plan based on location or social setting
- Help with emotional eating

Overview based on goals

Interaction to support detail

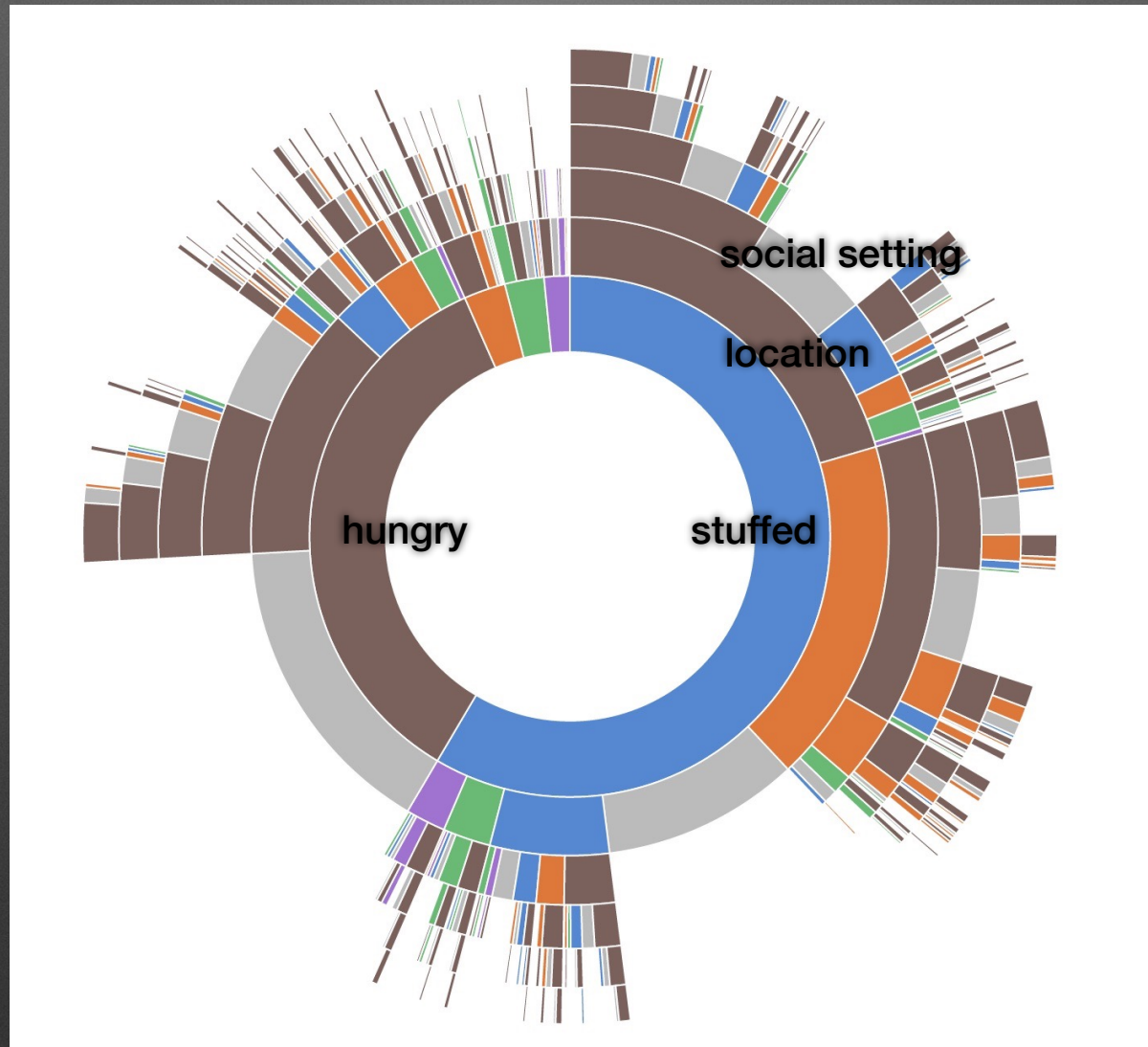
Potential ideas for variables related to time

Observe abnormal meal time



How to show overlapping meals?

Potential ideas for other contextual variables



Dynamically change tiers according to user's preference

Thank You

Mapping the social networks of global health organizations

Katie Doroschak and Jessica Schroeder



<http://www.grofoundation.org>

Organisation Type:

Community-based Organisation, Local NGO

Target Group:

Care-givers, Elderly, Orphans and Vulnerable Children, People living with HIV, Women

Domain:

Training and Skills

Sector:

Agriculture, Education, Environment, Food, Healthcare, HIV/AIDS, Home-based Care, Livelihoods, Power Supplies, Training

District:

Leribe

Core Activities:

Family Scholarship Program: comprehensive scholarship program for OVC focusing on academic tutorials, life skills, career guidance, and post secondary support.

Grandmothers Support Group: OVC community care through Grannies poultry project initiative and home-based care program.

G.R.O. Artisans Collective: Fashion jewelry collective for HIV positive mothers with an emphasis on health care, business training, and skills development.

Future Plans:

- To establish an eco-sustainable demonstrational poultry housing model for Lesotho.
-
- To expand G.R.O. Artisans and develop similar collectives in Lesotho.
-
- To establish a career center, career curriculum, and a post secondary education resource booklet.
-
- To support community care facilities for OVCs.

Funding:

The G.R.O. Foundation Canada/USA

Contact Details:

James White, Chairperson

t: +266 5914 7445

e: director@grofoundation.org

The GRO Foundation Canada

Jean Margaritis, Co-director/program manager

t: +266 5943 3797

e: jmargaritis@grofoundation.org

Postal Address:

Postal Address:

Private Bag C0020

Leribe 300

Lesotho

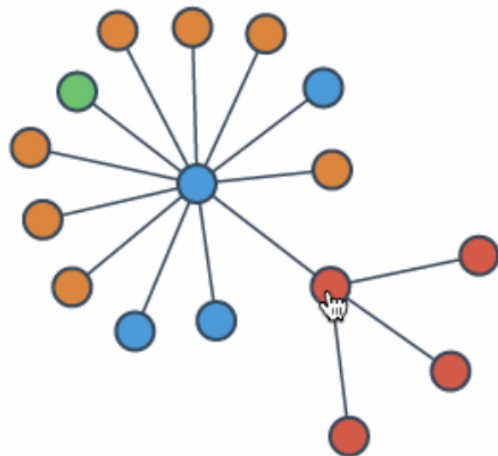
Physical Address:

Physical Address:

Motebang, Leribe

Our Focus

- What are the funding hierarchies of NGO's in the HIV/AIDS response of 2010-2011?
- How peripheral or well connected are smaller community-based organizations?



View Funding Sources and Sinks for Selected Organization

Selected Organization Name

Organization Type: International NGO
Aid Focus: Care
Other Aid Given: Education, Food and Nutrition

Home District: Berea
Districts Served: Berea, Butha-Buthe, Maseru

Organization Type

- ☒ Community-based Organization
☐ International NGO
☐ Local NGO

Types of Aid Provided 

- ☒ Care
- ☐ Education
- ☐ Food and Nutrition
- ☐ Infrastructure Services
- ☐ Training and Skills

☐ Select none☒ HIV-focused

- ☐ Religious ?
- ☐ Advocacy ?
- ☐ Service ?

☐ Select all☐ Select none

Feedback

- What should we show initially?
 - The full network is too overwhelming
 - OK to start with pre-selected filters to view something interesting?
- We hoped to reduce clutter by having names as mouseovers; however, this means we sacrifice the ability to see multiple names at a time.
 - Do you have any suggestions on how/when/if we should include labels?
- Any general suggestions on how to keep it from being overwhelming?

Visualizing Rumor Spread on Twitter

Cynthia Andrews

Graeme Britz

Rama Gokhale

Zeno Koller

Goal

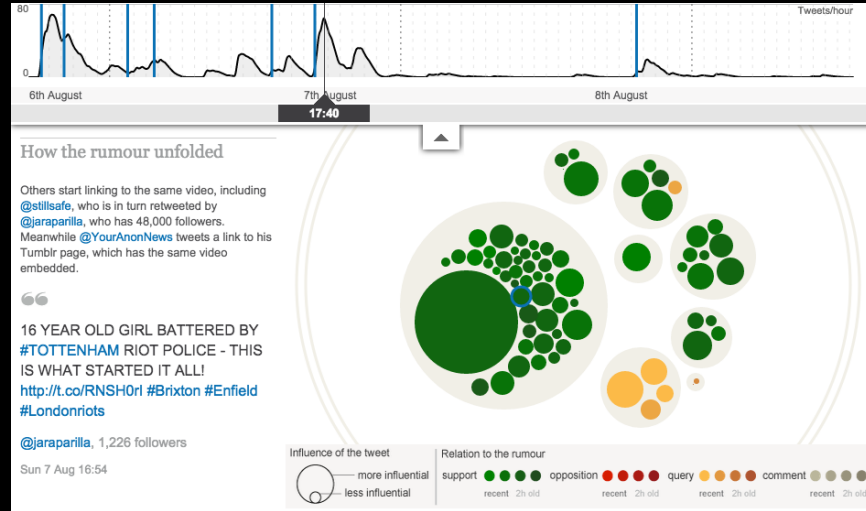
To visualize the effects of major players in the communication landscape of disaster events on Twitter

In Collaboration With...



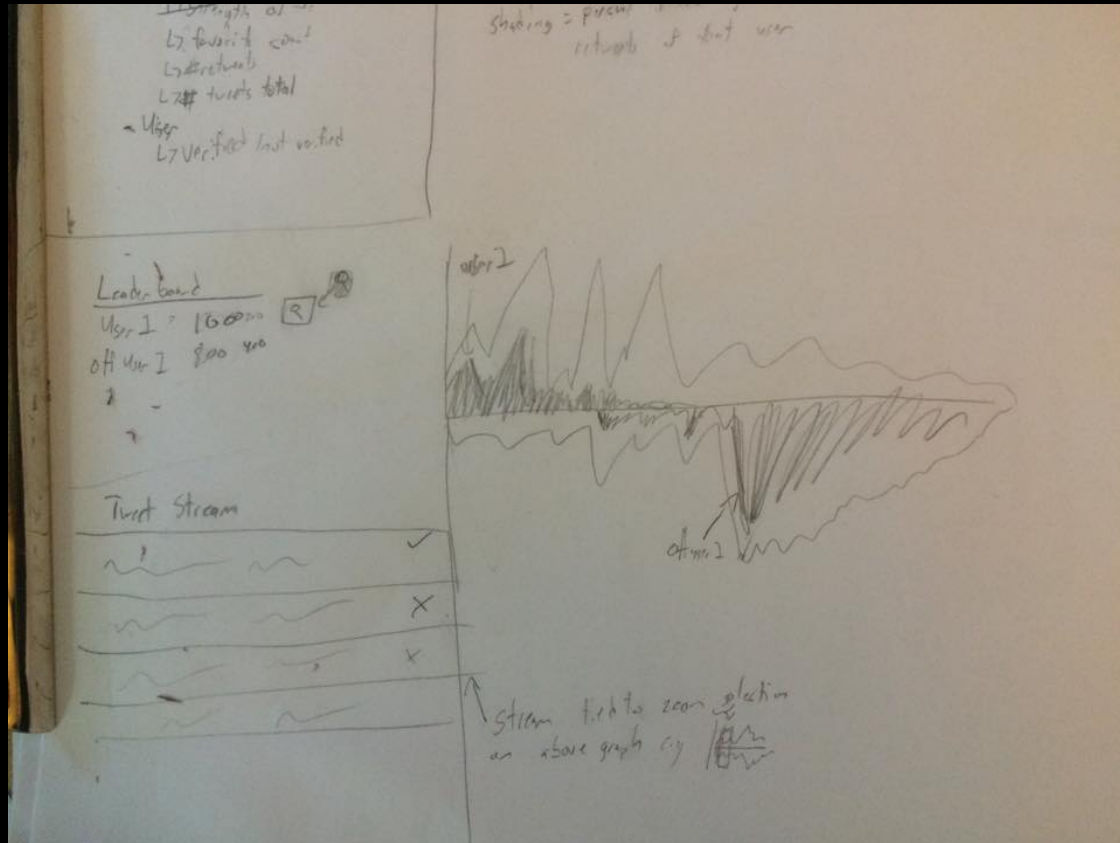
Research on the spread of misinformation
through Twitter networks

Relevant Work



We are focusing more on major players and their influence on popular belief

Idea #1: Stream



Time Share

-7 0 0 0

2)

A horizontal number line with several tick marks. A circle is drawn around the tick mark representing the number 0.

Leader board

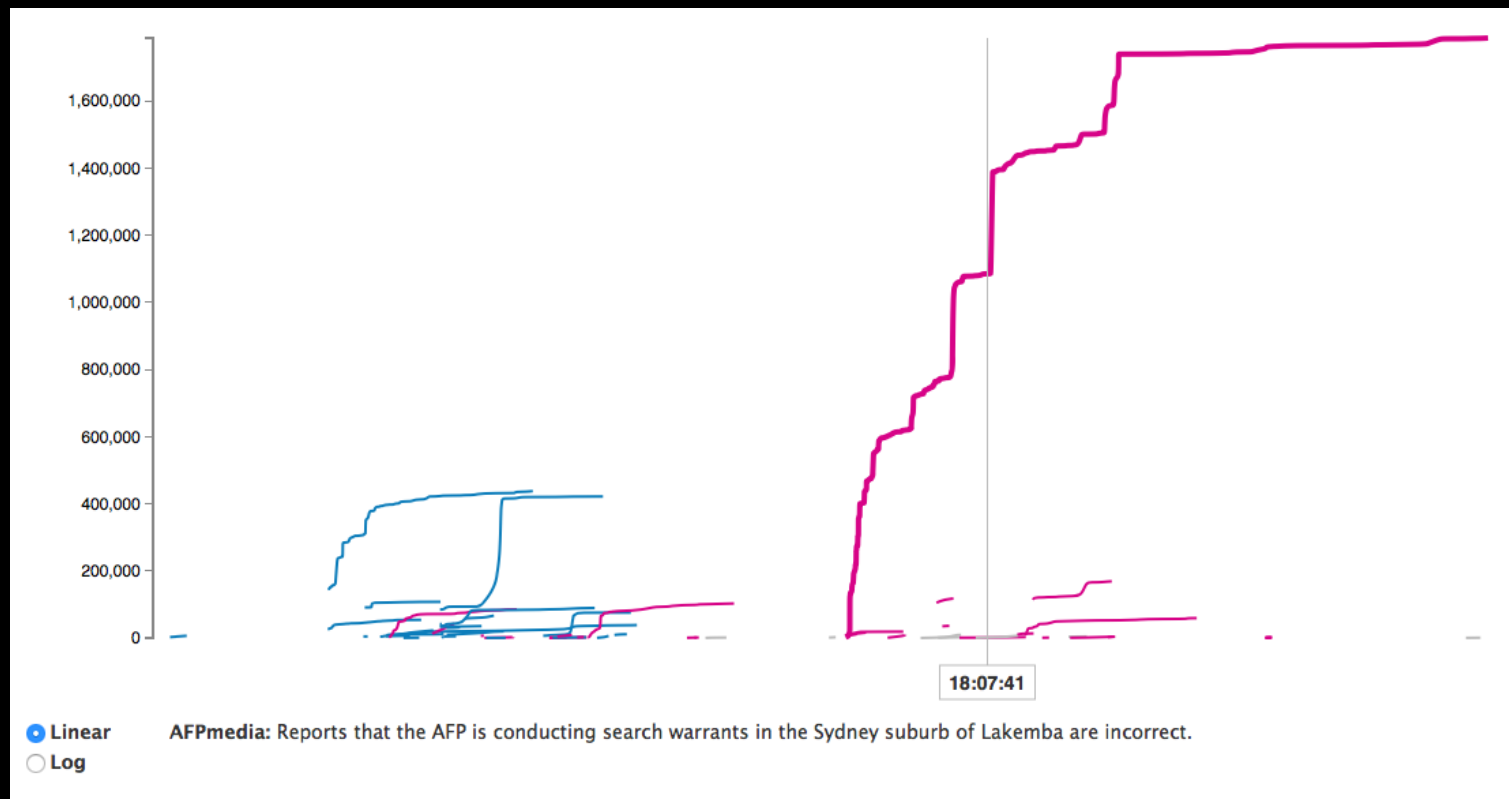
Usage type	Total Price	Current Price
blab		
Official		
Students		Time

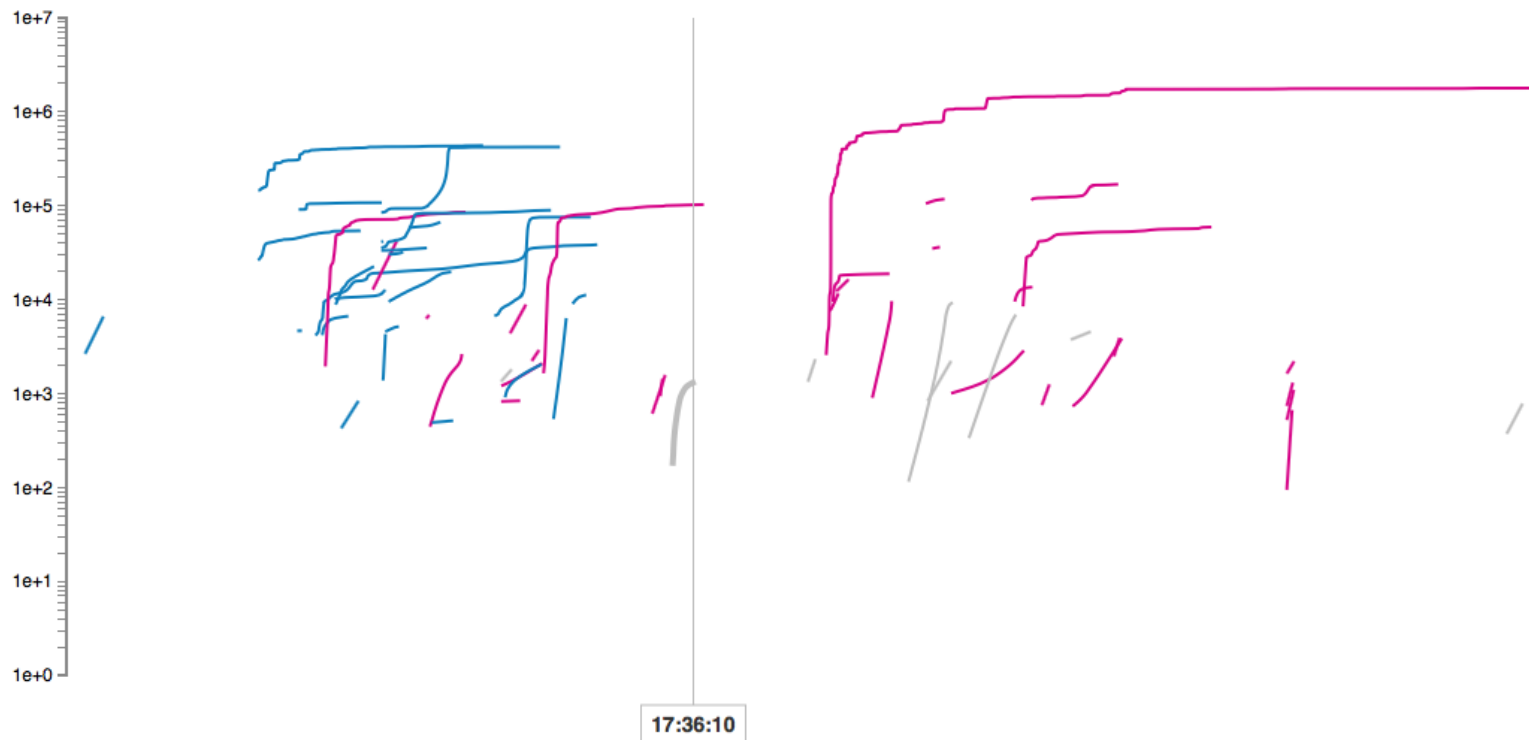
Time
flows
left "

Affirm

Deny

Idea #2: Spaghetti



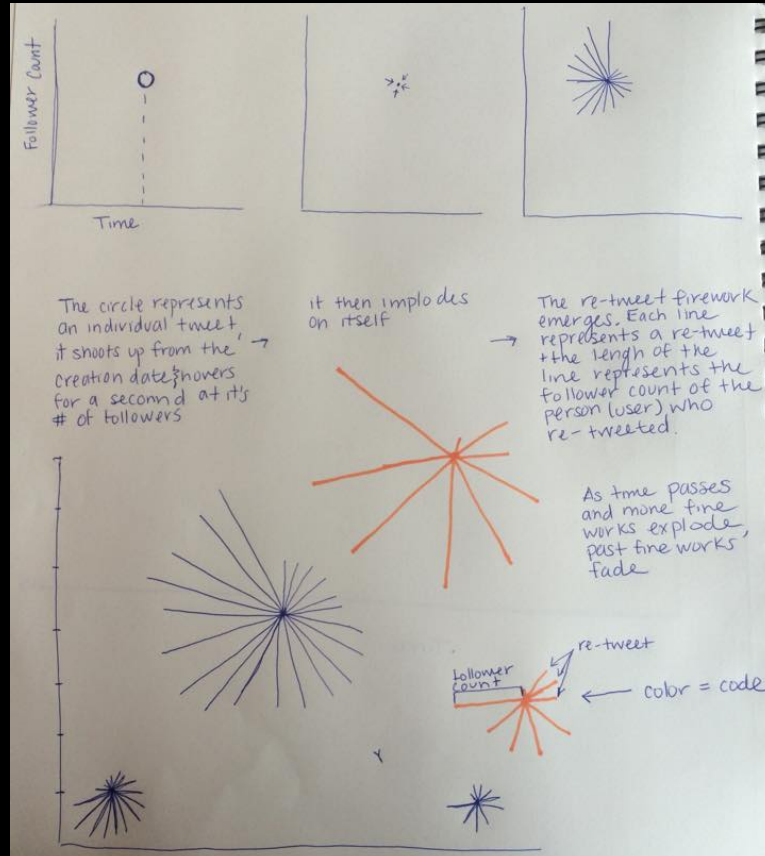


17:36:10

○ Linear
● Log

Lina_Martinez: So apparently similar attacks are happening in Lakemba and possibly other parts of Sydney, channel 7 idk if it's true but I'm shit scared

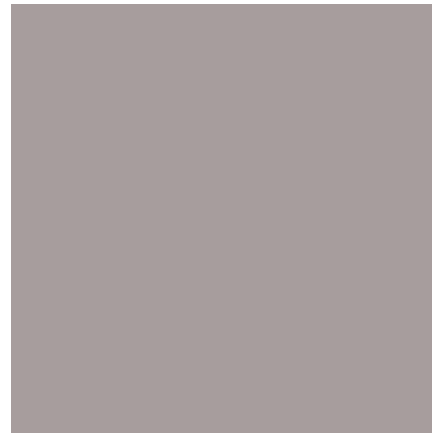
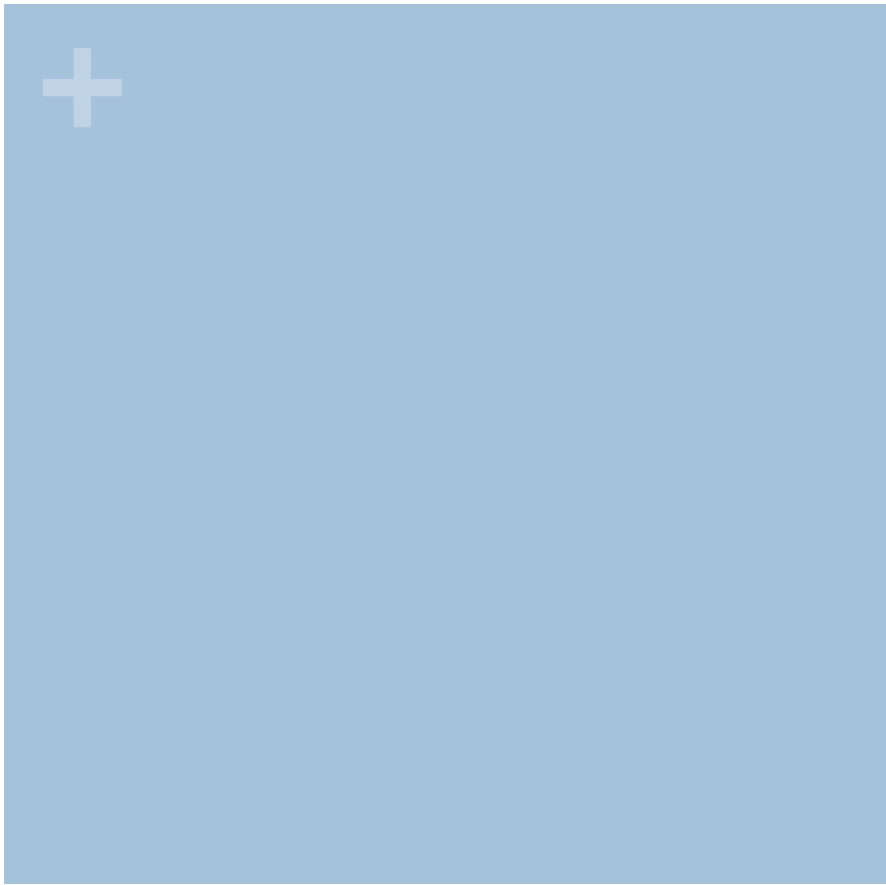
Idea #3: Fireworks



Help!

How can we more effectively highlight the most influential individuals?

How can we best present overall tweet volume alongside with tweet influence?



Best Filter?

Instagram Data Analysis

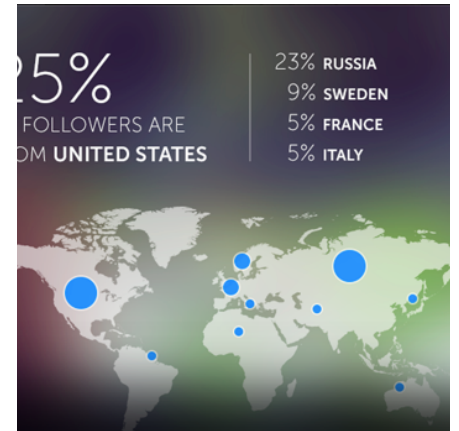
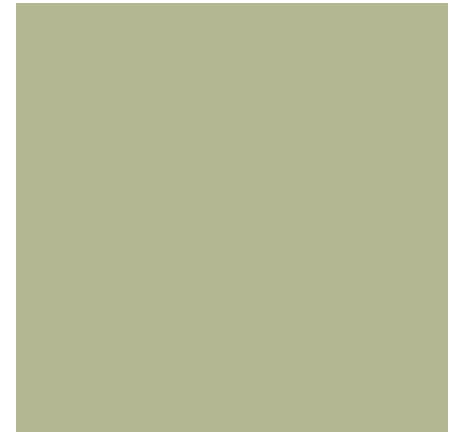
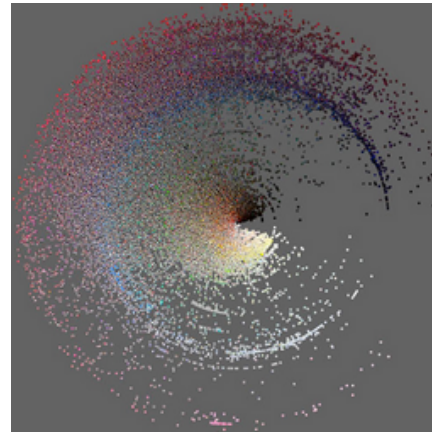
-Yanling He -Xiaoyi Zhang -Xin Yang

 Instagram





Prior Work



Prior Analysis Work on Instagram Data

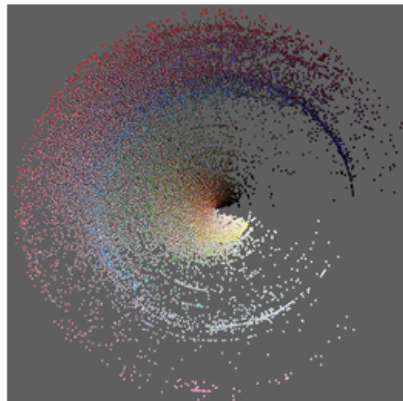
Phototrails
Iconosquare

+ Phototrails

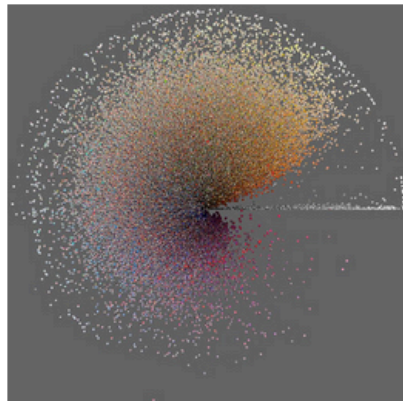
■ Instagram Data V.S. Cities

- Culture differences and social science
- Show how visual social media can be analyzed at multiple spatial and temporal scales.
- Analysis social and cultural dynamics in specific places and times

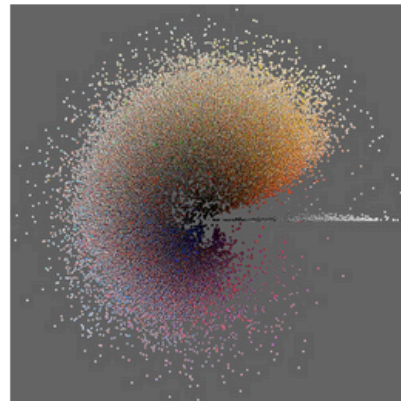
New York



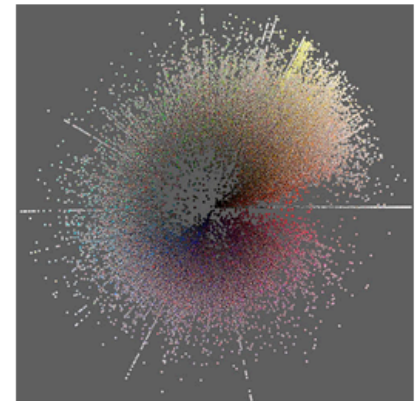
San Francisco



Tokyo

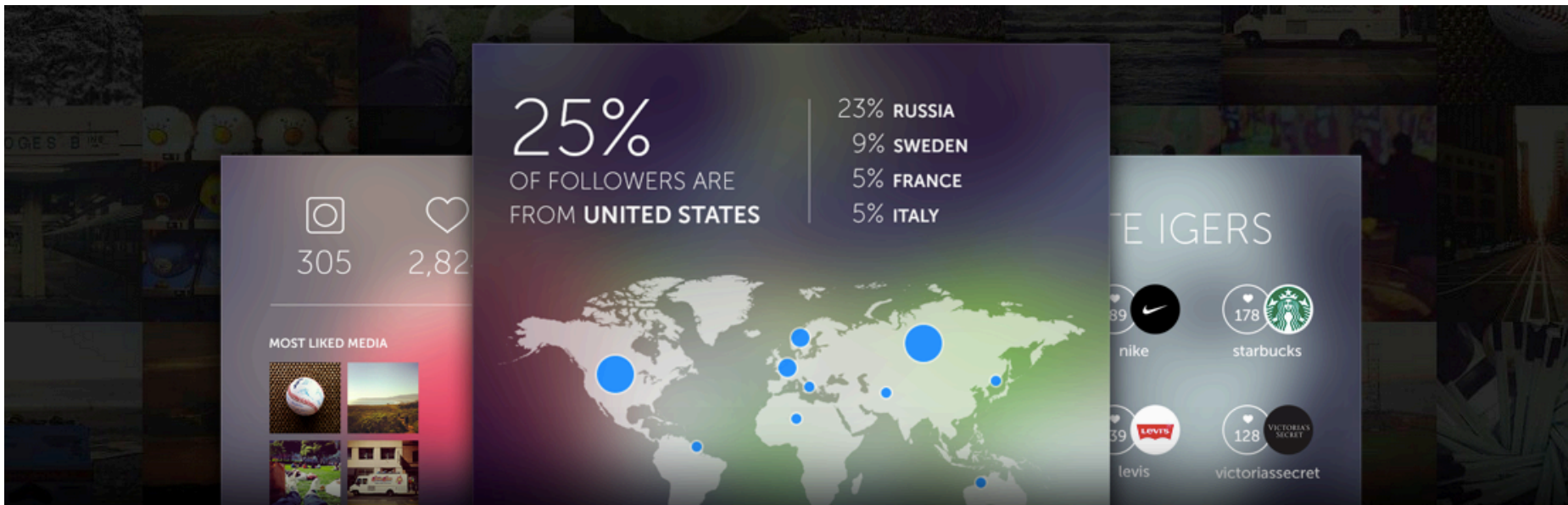


Bangkok



+ Iconosquare

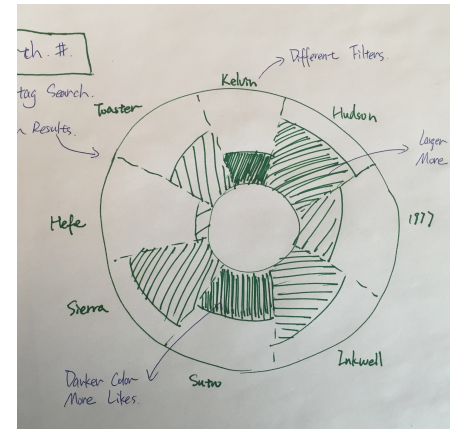
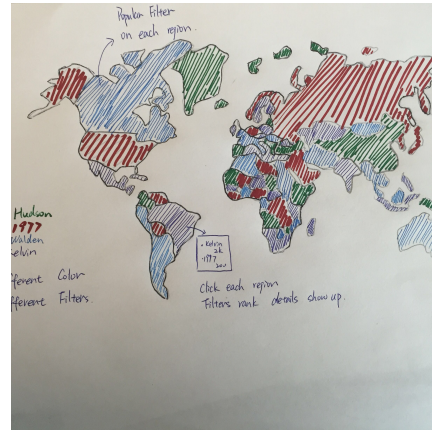
- Statistics about Instagram
 - Likes and comments
 - Followers growing chart
 - Hashtags
 - Promote Instagram account





Our Work

What's Best Filter



Visualize Filter Relationship

Locations
Likes
Tags



Data Resource

■ Instagram API:

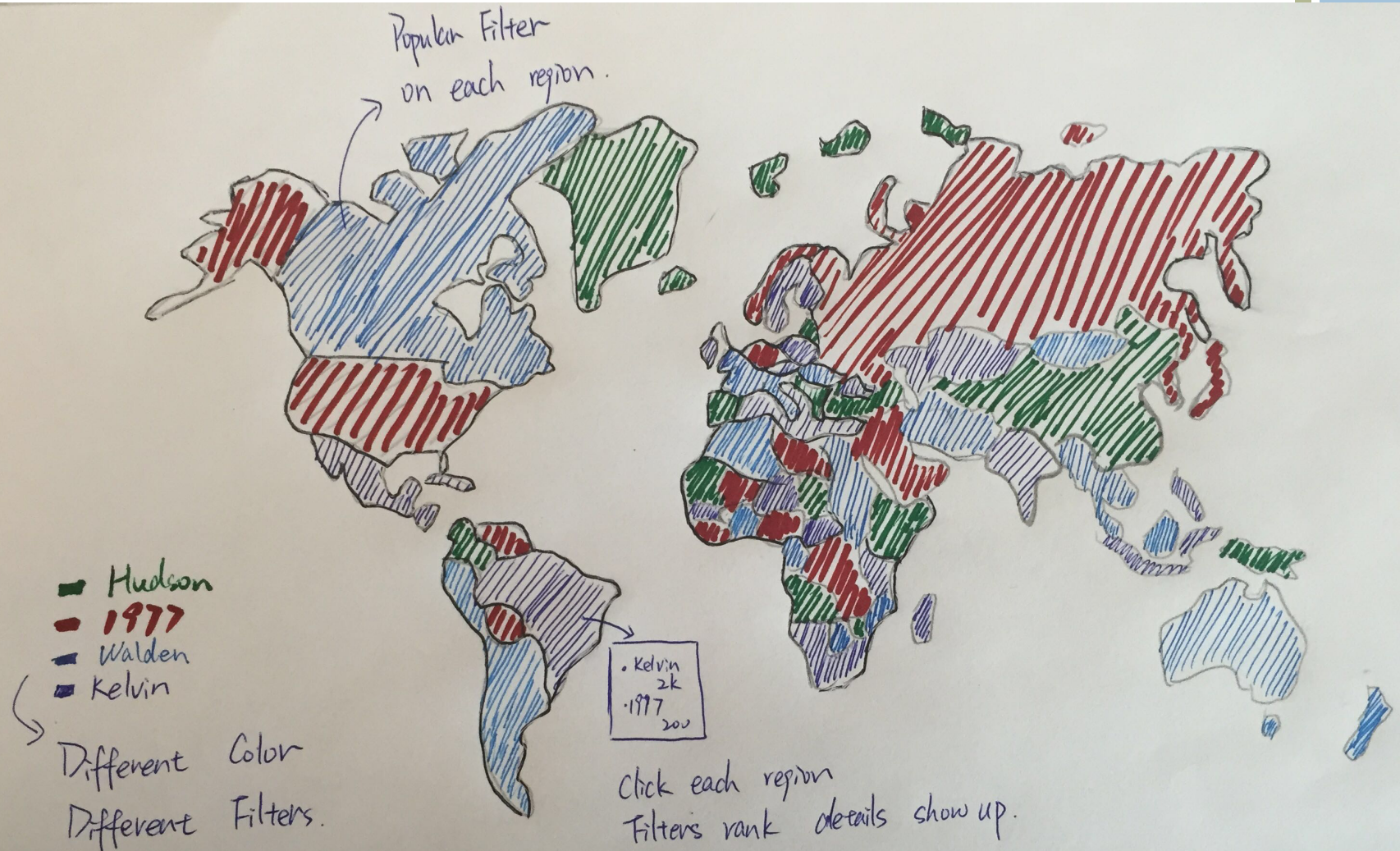
- <https://instagram.com/developer/endpoints/>

```
"data": [{
  "type": "image",
  "users_in_photo": [],
  "filter": "Earlybird",
  "tags": ["expobar"],
  "comments": {
    data: [],
    count: 0
  },
  "caption": {
    "created_time": "1296532028",
    "text": "@mikeyk pulls a shot on our #Expobar",
    "from": {
      "username": "josh",
      "full_name": "Josh Riedel",
      "type": "user",
      "id": "33"
    },
    "id": "25663923"
  },
  "likes": {
    "count": 35,
```

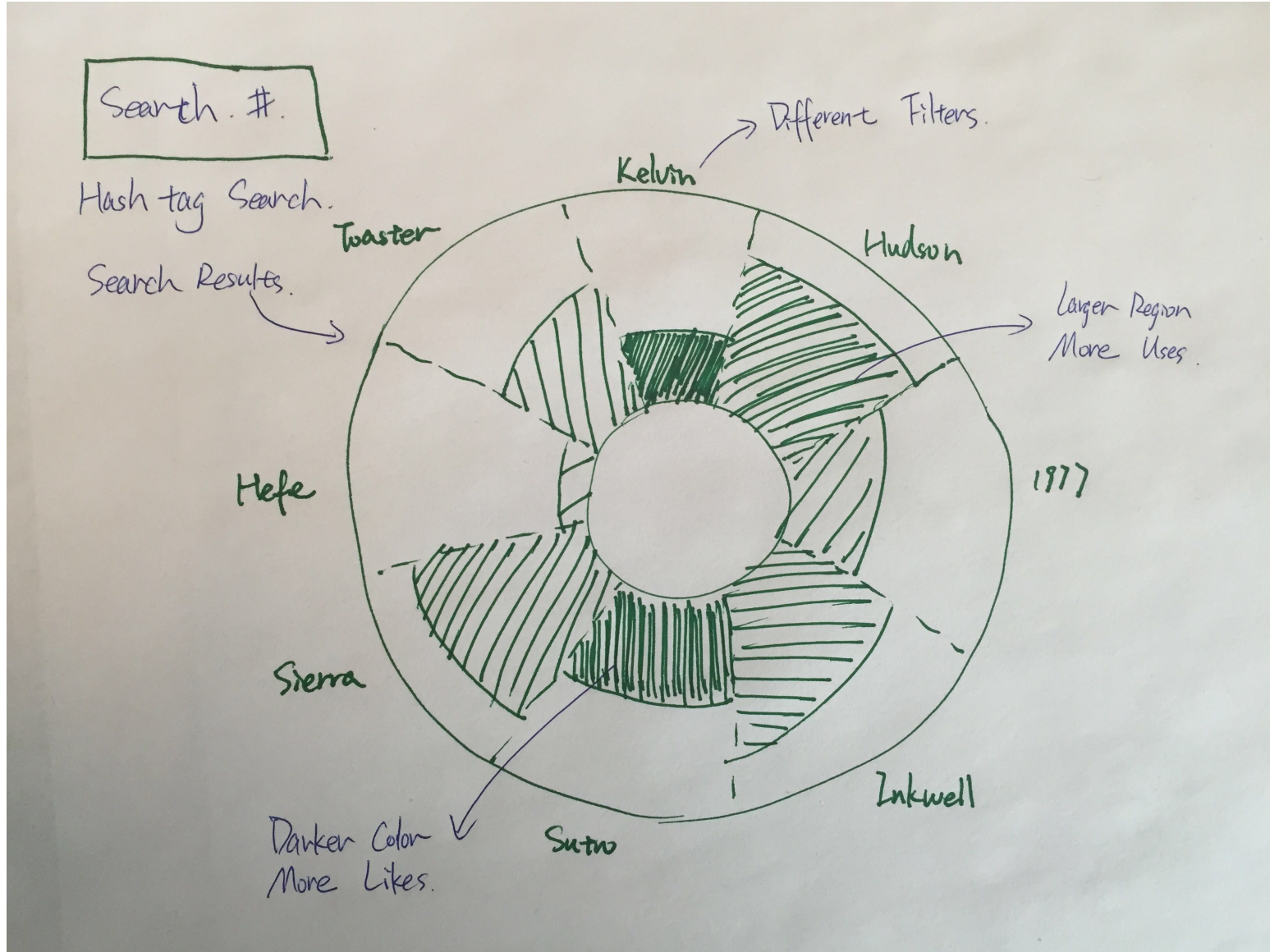
■ Scripting Data:

- <http://www.rldw.de/2015/04/using-the-instagram-api-with-python/>
- <https://github.com/rldw/instastats/>

+ Filters - Locations



+ Filters – Tags and Likes



+ Open Questions



- How to put different features into one visualization instead of three different ones?
- Major purpose of this visualization?
 - filter suggestions?
 - Promotion?
 - Social or culture analysis?

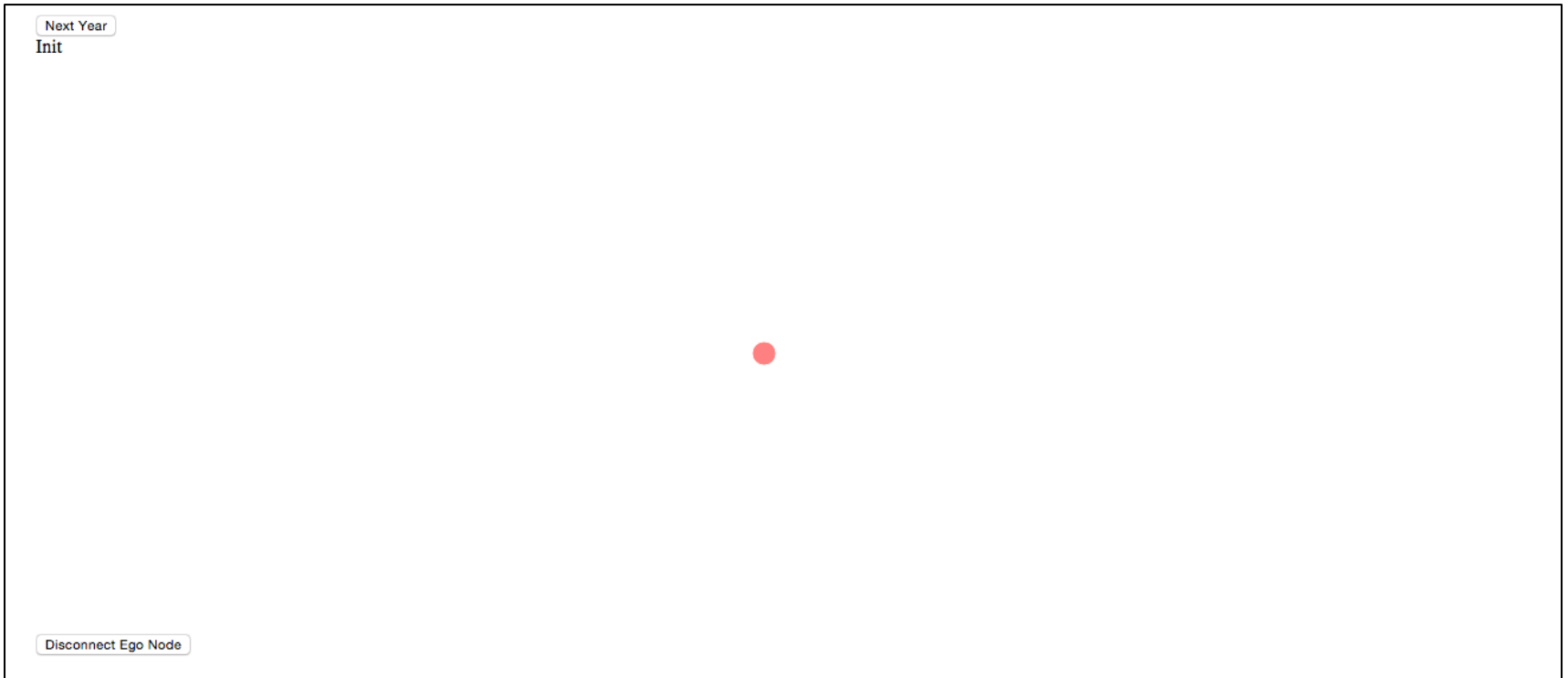
Visualizing Scholarly Impact over Time

Jason Portenoy and Muhammad Raza Khan

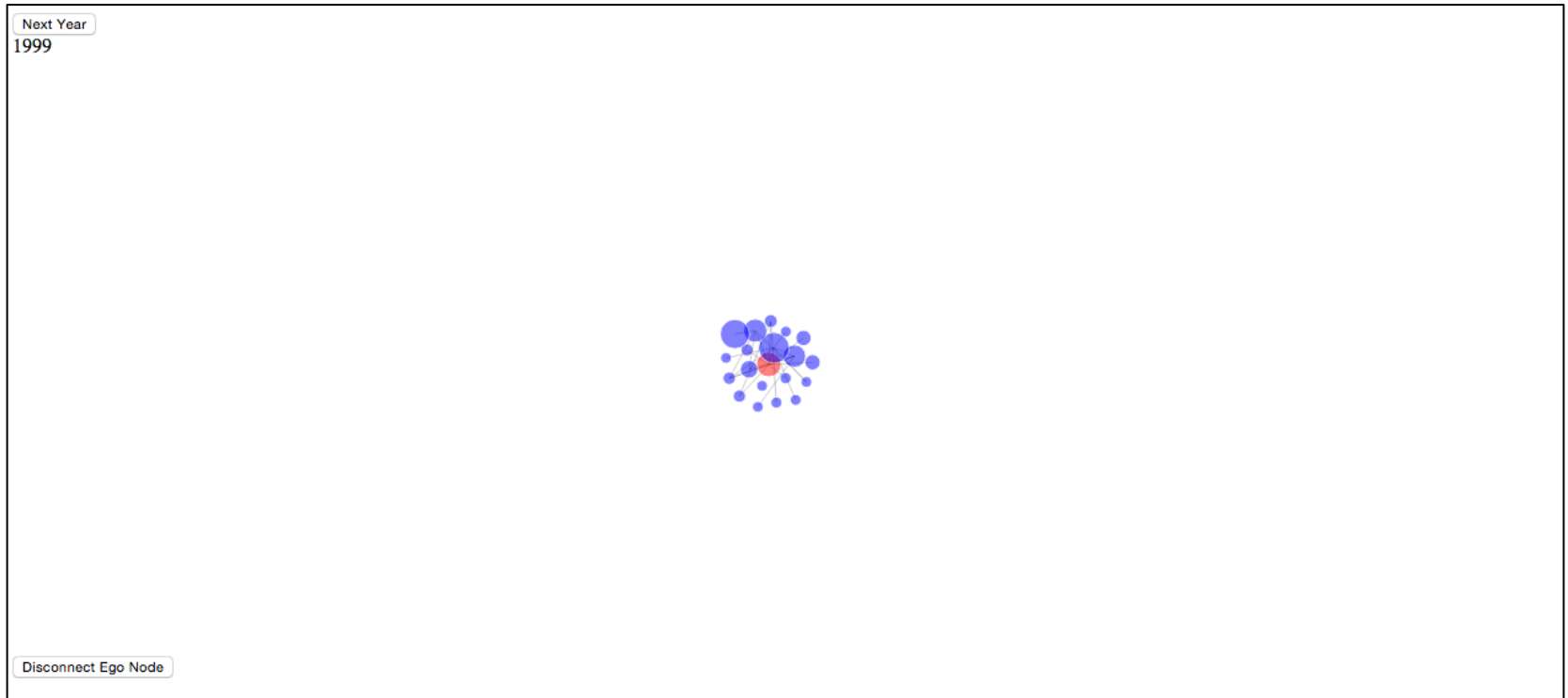
Goal

- Create a compelling narrative showing the influence that a particular researcher or research paper has had in scholarship.
- Use a node-link diagram:
 - Nodes = papers
 - Edges = citations between papers
- Watch the network develop over time.

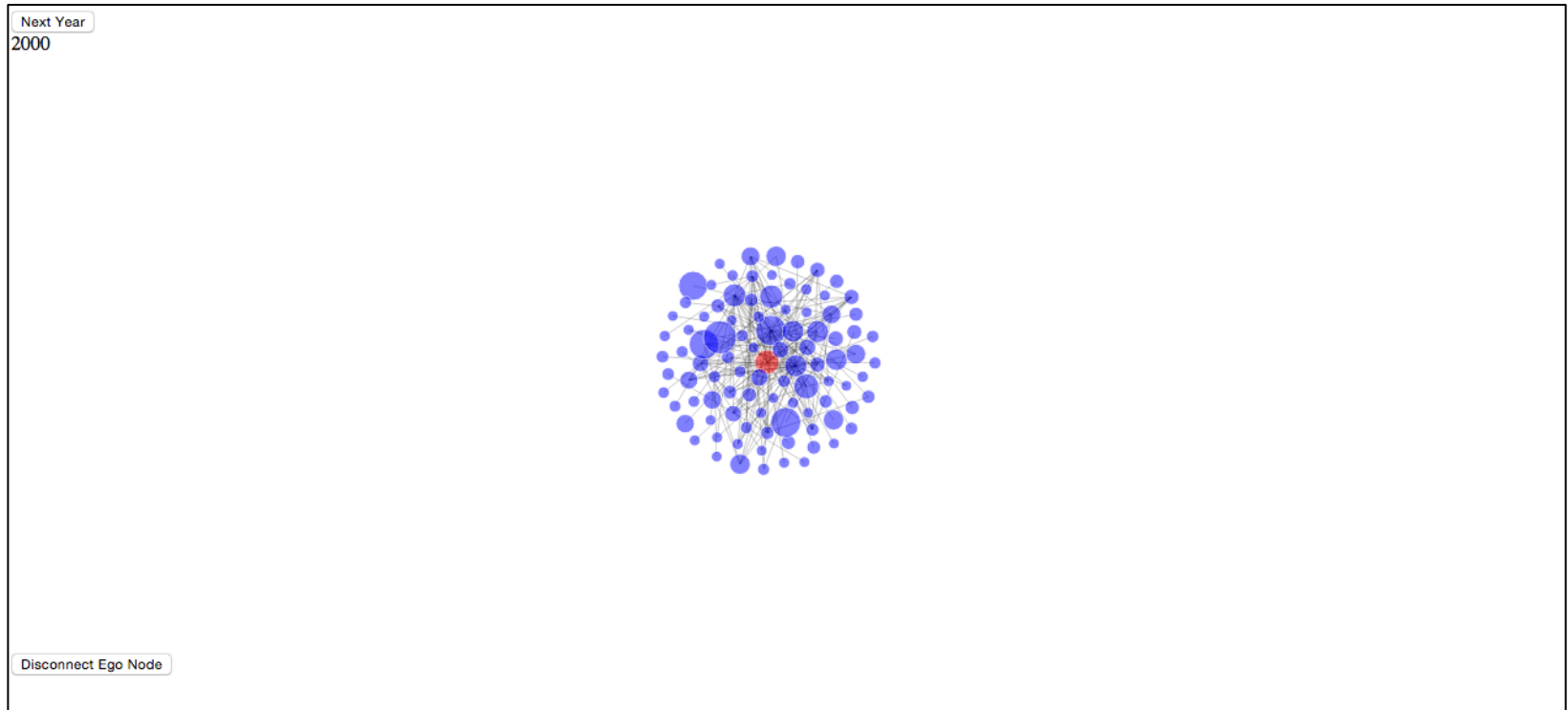
Initial Progress



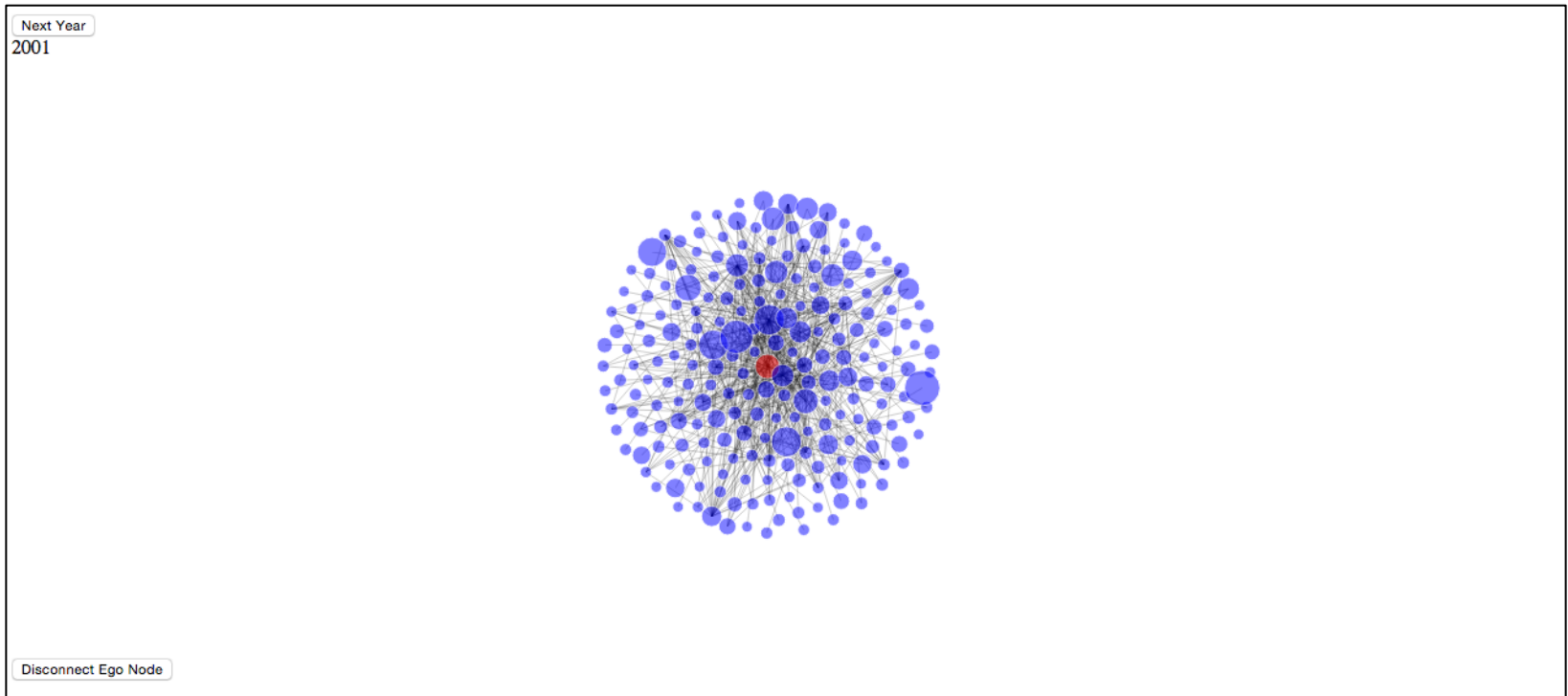
Initial Progress



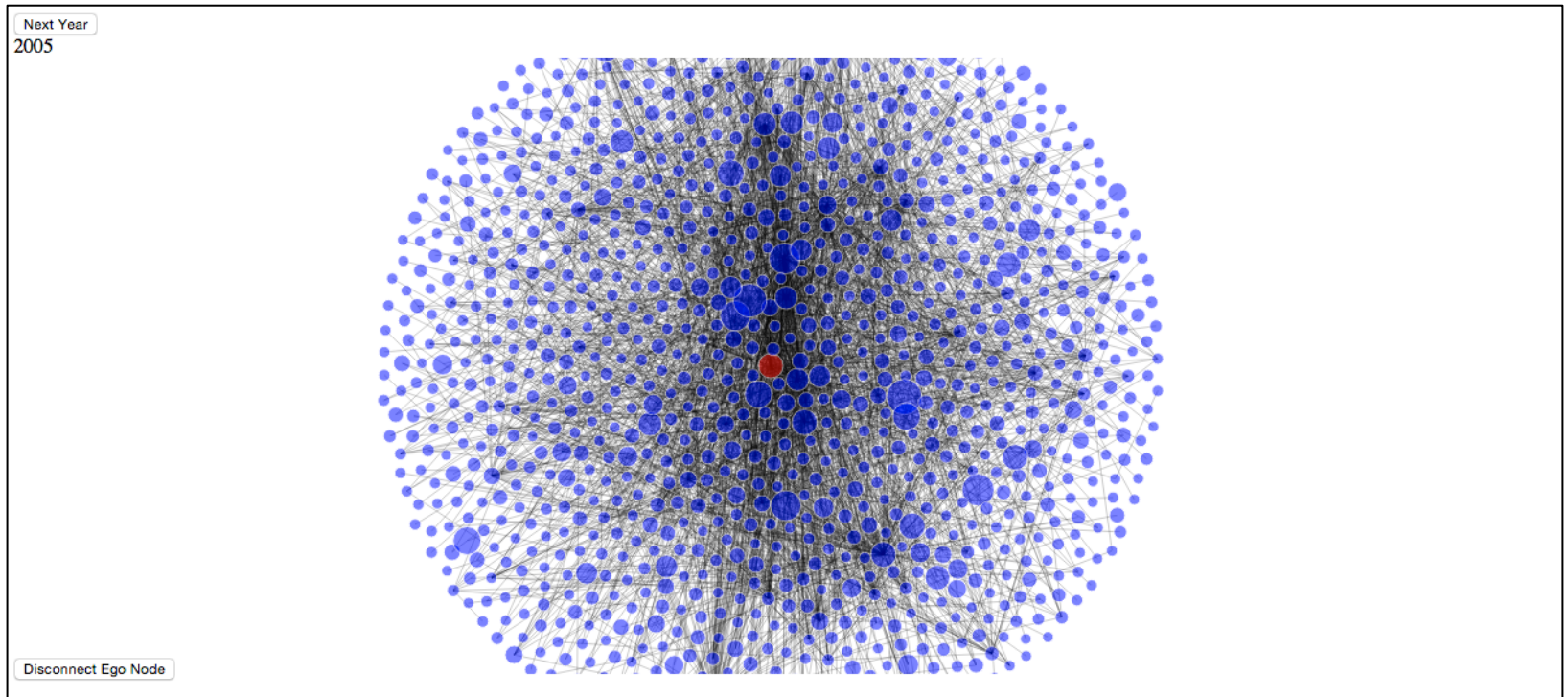
Initial Progress



Initial Progress

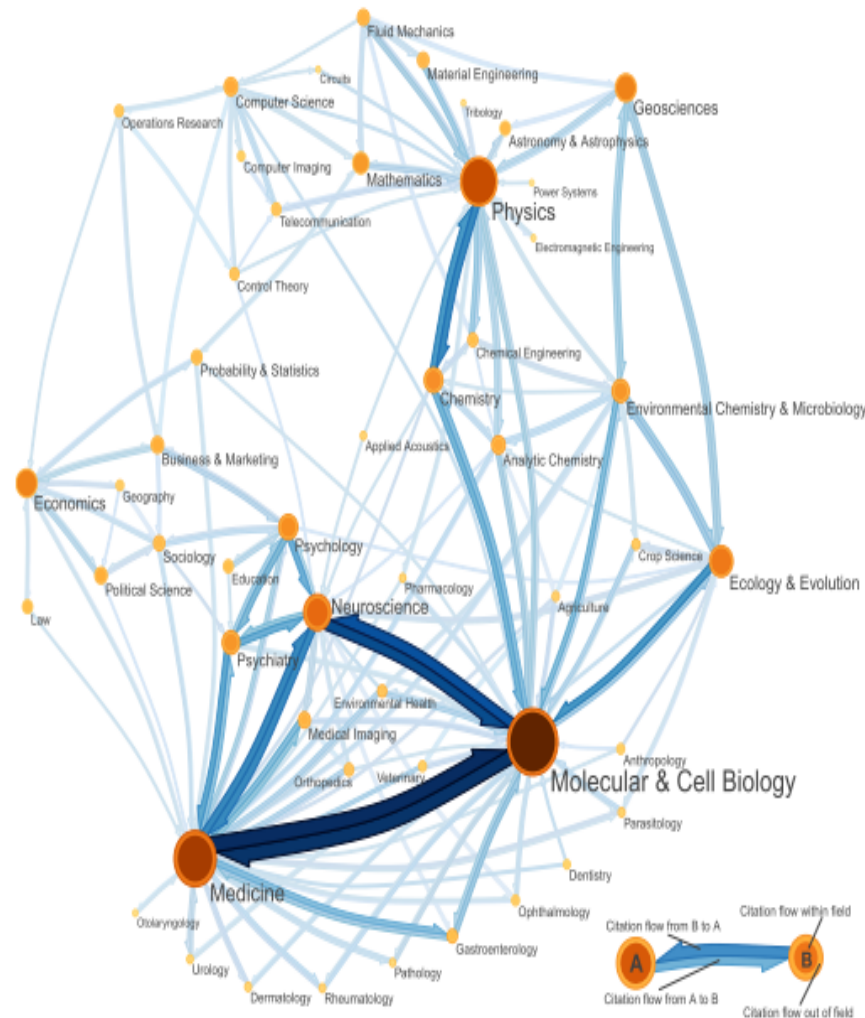


Initial Progress



Related Work:

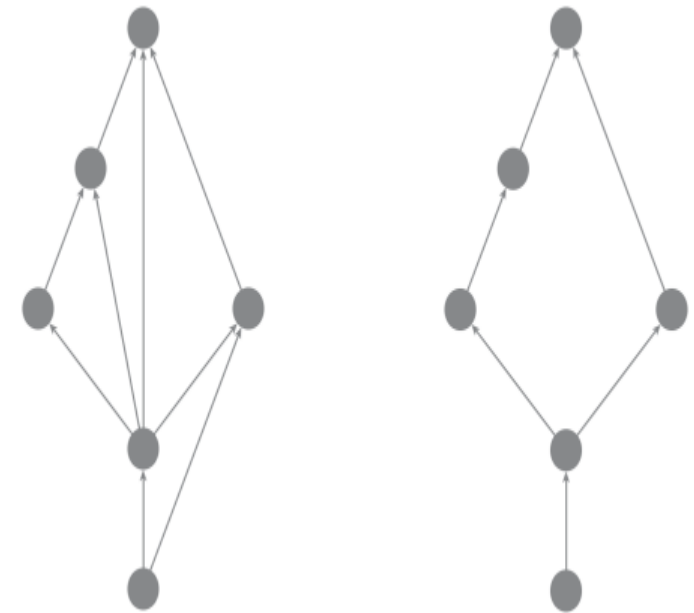
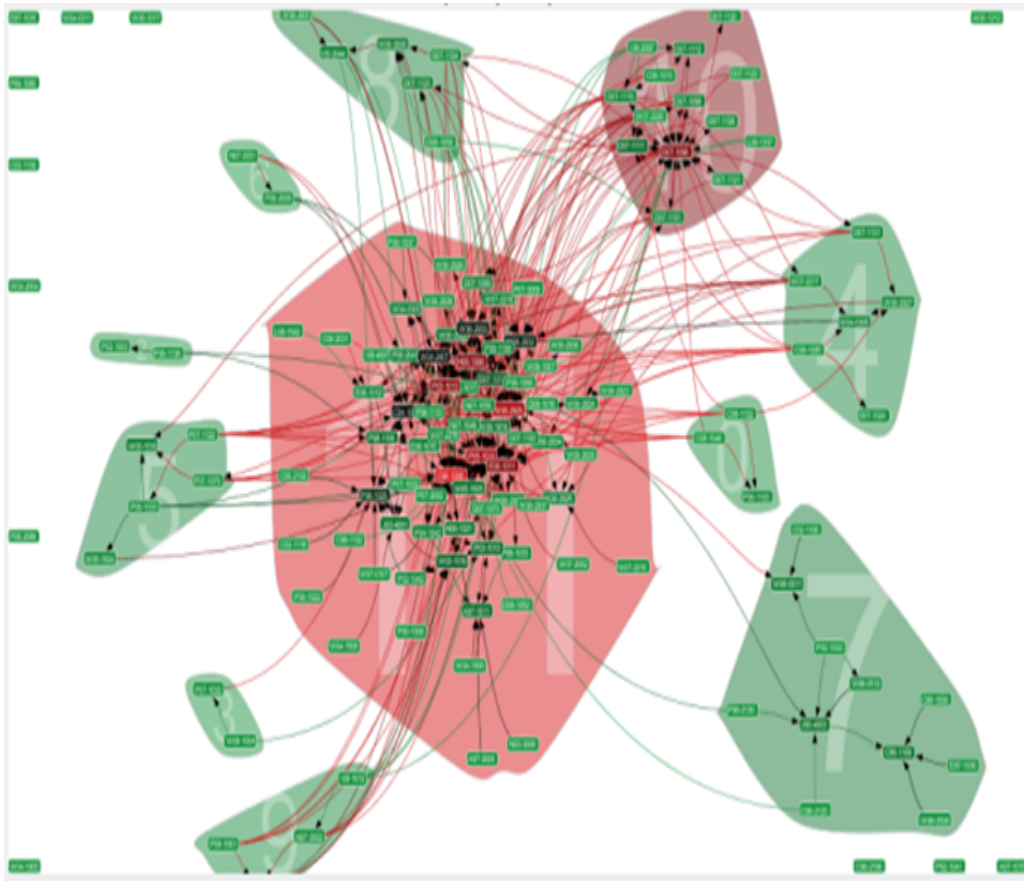
Fields Level Citation Networks



M. Rosvall and C. T. Bergstrom, "Maps of random walks on complex networks reveal community structure," *Proceedings of the National Academy of Sciences*, vol. 105, no. 4, pp. 1118–1123, Jan. 2008.

Related Work:

Paper-Level Citation Networks



Transitive Reduction in
Networks

N. J. van Eck and L. Waltman, "CitNetExplorer: A new software tool for analyzing and visualizing citation networks," arXiv:1404.5322 [physics], Apr. 2014.

Questions for You

- How to best deal with the hairball problem?
 - We have data on clusters (research fields) and influence (based on network structure).
- Most effective ways to provide context?
- Alternatives to building the network by year?



Wikitree

<https://wikitree.website>

Wikipedia articles contain links to many other Wikipedia articles

A screenshot of a web browser displaying the Wikipedia article titled "Origin of language". The browser's address bar shows the URL "en.wikipedia.org/wiki/Origin_of_language". The page features the Wikipedia logo on the left and a navigation menu with links like "Main page", "Contents", and "Tools". The article text begins with a redirect notice: "Hmmm" redirects here. For the sound, see Hum (sound). This is followed by a paragraph about the origin of natural languages, with several terms circled in red: "Hmmm", "Hum (sound)", "History of programming languages", "human species", "fossil record", "archaeological evidence", "contemporary language diversity", "studies of language acquisition", "human language", "systems of communication existing among other animals", "other primates", "origins of language", "origins of modern human behavior", "implications and directionality", "shortage of empirical evidence", "Linguistic Society of Paris", "theory of evolution", "natural selection", "professional linguists", "archaeologists", "psychologists", and "anthropologists". The article also includes a "Contents" section with links to "Approaches", "Language origin hypothesis", and "Early speculations".

Wikipedia
The Free Encyclopedia

Main page
Contents
Featured content
Current events
Random article
Donate to Wikipedia
Wikipedia store

Interaction
Help
About Wikipedia
Community portal
Recent changes
Contact page

Tools
What links here
Related changes
Upload file
Special pages
Permanent link
Page information
Wikidata item
Cite this page

Print/export
Create a book
Download as PDF
Printable version

Origin of language

From Wikipedia, the free encyclopedia

"Hmmm" redirects here. For the sound, see Hum (sound).
This article is about the origin of natural languages. For the origin of programming languages, see History of programming languages.

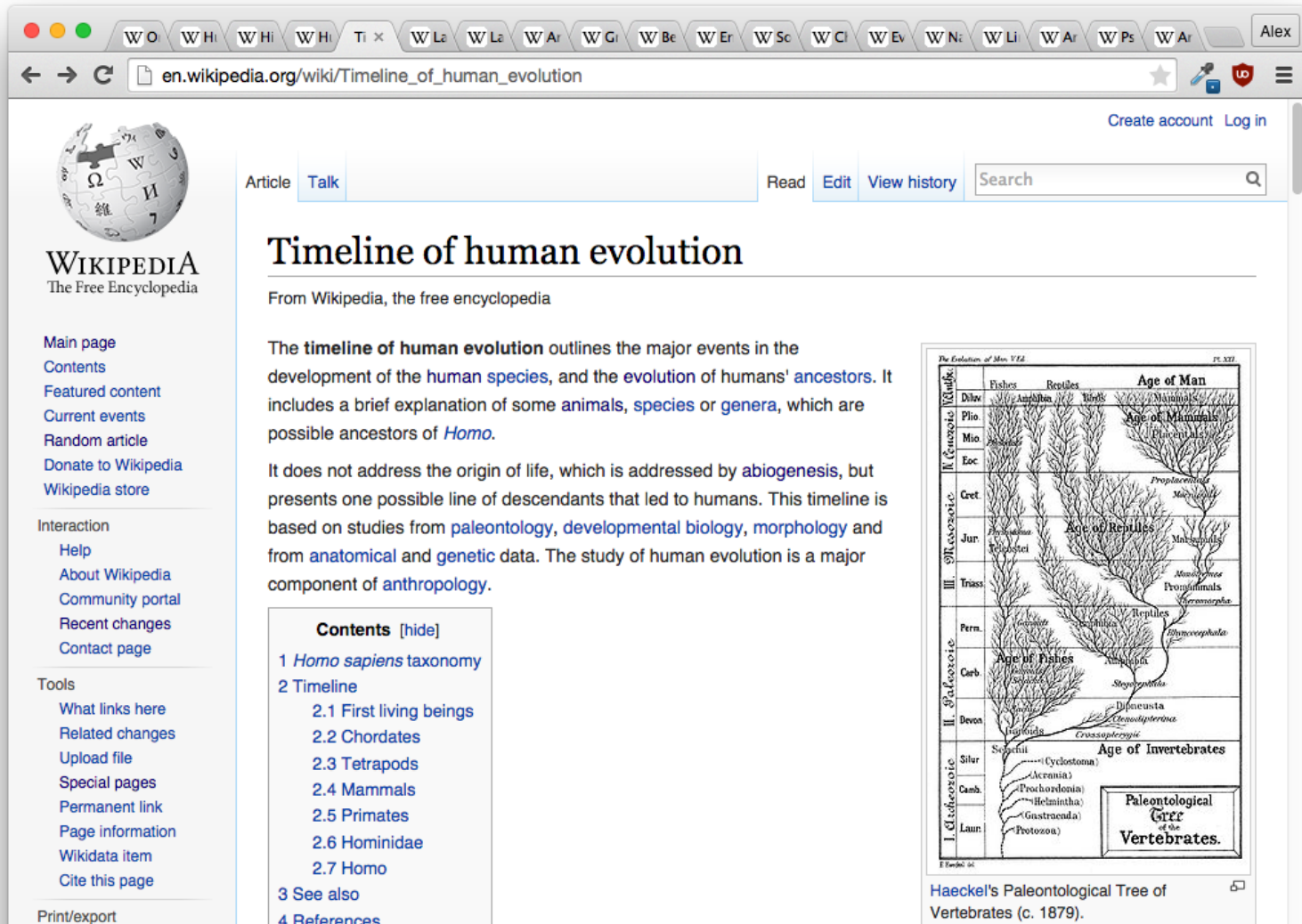
The **origin of language** in the **human species** has been the topic of scholarly discussions for several centuries. In spite of this, there is no consensus on the ultimate origin or age of human language. One problem makes the topic difficult to study: the lack of direct evidence. Consequently, scholars wishing to study the origins of language must draw inferences from other kinds of evidence such as the **fossil record**, **archaeological evidence**, contemporary language diversity, studies of **language acquisition**, and comparisons between **human language** and systems of communication existing **among other animals** (especially **other primates**). Many argue that the origins of language probably relate closely to the origins of **modern human behavior**, but there is little agreement about the implications and directionality of this connection.

This **shortage of empirical evidence** has led many scholars to regard the entire topic as unsuitable for serious study. In 1866, the **Linguistic Society of Paris** banned any existing or future debates on the subject, a prohibition which remained influential across much of the western world until late in the twentieth century.^[1] Today, there are numerous hypotheses about how, why, when, and where language might have emerged.^[2] There is scarcely more agreement today than a hundred years ago, when **Charles Darwin's theory of evolution by natural selection** provoked a rash of armchair speculations on the topic.^[3] Since the early 1990s, however, a growing number of professional **linguists**, **archaeologists**, **psychologists**, **anthropologists**, and others have attempted to address with new methods what some consider "the hardest problem in science."^[4]

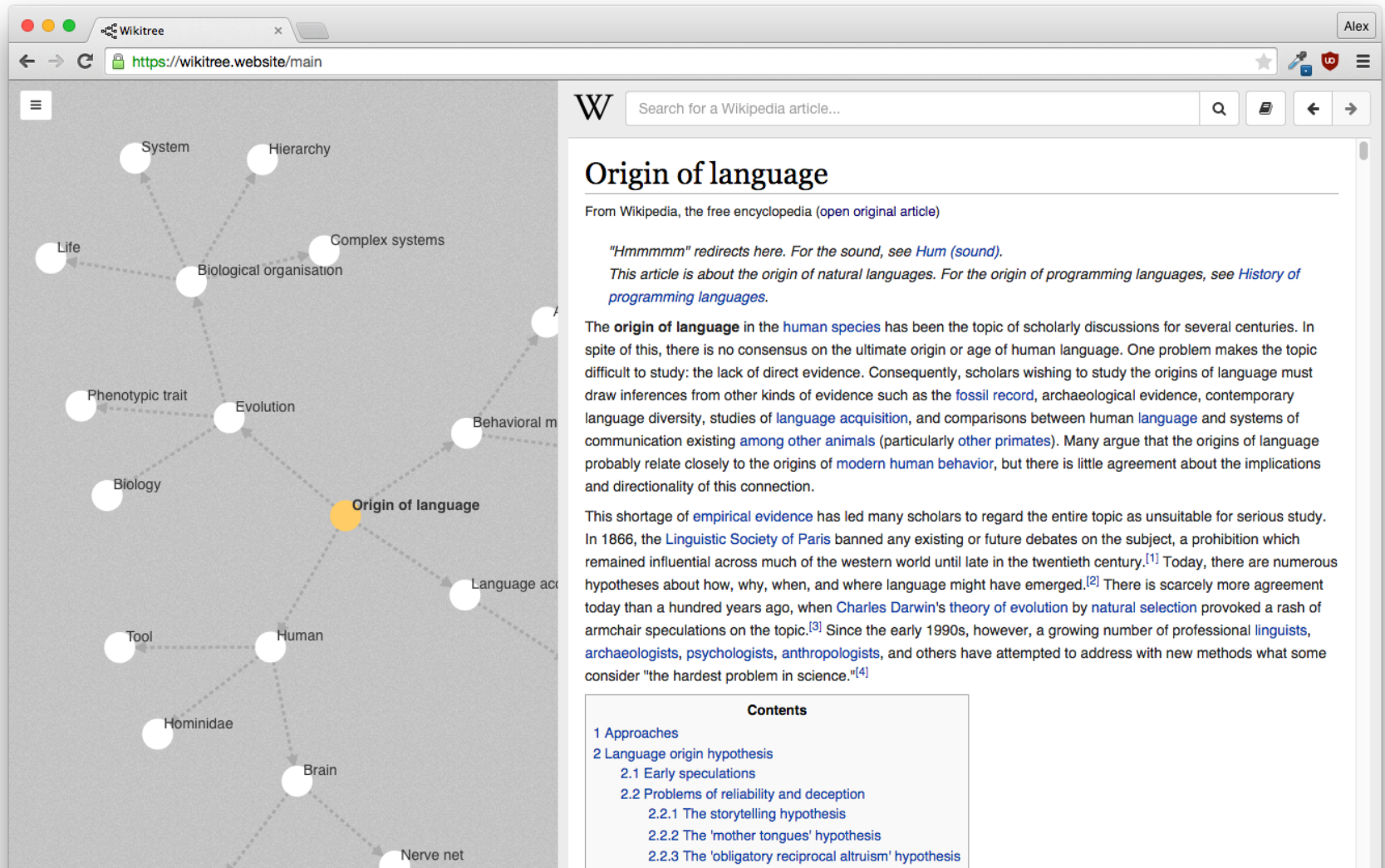
Contents [hide]

- 1 Approaches
- 2 Language origin hypothesis
 - 2.1 Early speculations
 - 2.2 Problems of reliability and deception

Browser window tabs and navigation histories are serial / linear paradigms



Wikitree represents a user's navigation paths using the D3 force-directed graph layout



The directed graph can allow a user's navigation trail to loop back on itself

The screenshot shows a web browser window with two tabs. The active tab is Wikitree, displaying a directed graph with nodes: Heredity, Biology, Organism, DNA (highlighted in orange), Genetics, and Gene. Dashed arrows connect the nodes in a cycle: Heredity to Biology, Biology to Organism, Organism to DNA, DNA to Genetics, Genetics to Gene, and Gene back to Heredity. The second tab is Wikipedia, displaying the article for DNA. The article includes a search bar, a section header 'DNA', a link to the original article, a non-technical introduction, a definition of Deoxyribonucleic acid (DNA), a detailed description of its structure and function, and a diagram of the DNA double helix. The diagram shows the major and minor grooves, the sugar-phosphate backbone, and the base pairing rules (A with T, C with G). A legend identifies the atoms: Hydrogen (white), Oxygen (red), Nitrogen (blue), Carbon (grey), and Phosphorus (yellow). A detailed view of two base pairs (Thymine-Adenine and Cytosine-Guanine) is shown at the bottom right of the diagram. The caption below the diagram states: 'The structure of the DNA double helix. The atoms in the structure are colour-coded by element and the detailed structure of two base pairs are shown in the bottom right.'

Wikitree

https://wikitree.website/main

Search for a Wikipedia article...

DNA

From Wikipedia, the free encyclopedia (open original article)

For a non-technical introduction to the topic, see [Introduction to genetics](#). For other uses, see [DNA \(disambiguation\)](#).

Deoxyribonucleic acid (/di ˈɒksi raɪboʊnjuː kleɪ.ɪk ˈæstɪd/[ⓘ]; **DNA**) is a molecule that encodes the [genetic](#) instructions used in the development and functioning of all known living [organisms](#) and many [viruses](#). DNA is a [nucleic acid](#); alongside [proteins](#) and [carbohydrates](#), nucleic acids compose the three major [macromolecules](#) essential for all known forms of [life](#). Most DNA molecules consist of two [biopolymer](#) strands coiled around each other to form a [double helix](#). The two DNA strands are known as [polynucleotides](#) since they are composed of [simpler units](#) called [nucleotides](#). Each nucleotide is composed of a [nitrogen-containing nucleobase](#)—either [guanine](#) (G), [adenine](#) (A), [thymine](#) (T), or [cytosine](#) (C)—as well as a [monosaccharide](#) sugar called [deoxyribose](#) and a [phosphate group](#). The nucleotides are joined to one another in a chain by [covalent bonds](#) between the sugar of one nucleotide and the phosphate of the next, resulting in an alternating [sugar-phosphate backbone](#). According to [base pairing rules](#) (A with T and C with G), [hydrogen bonds](#) bind the nitrogenous bases of the two separate polynucleotide strands to make double-stranded DNA.

DNA is well-suited for biological [information storage](#). The DNA backbone is resistant to cleavage, and both strands of the double-stranded structure store the same biological information. Biological information is replicated as the two strands are separated. A significant portion of DNA (more than 98% for humans) is [non-](#)

The diagram illustrates the DNA double helix structure. It shows two strands coiled around each other, forming a helix. The strands are connected by horizontal rungs representing base pairs. A legend identifies the atoms: Hydrogen (white), Oxygen (red), Nitrogen (blue), Carbon (grey), and Phosphorus (yellow). The diagram also shows the major and minor grooves of the helix. A detailed view of two base pairs (Thymine-Adenine and Cytosine-Guanine) is shown at the bottom right of the diagram. The caption below the diagram states: 'The structure of the DNA double helix. The atoms in the structure are colour-coded by element and the detailed structure of two base pairs are shown in the bottom right.'

Articles may also share links to each other

Wikitree

https://wikitree.website/main

Search for a Wikipedia article...

Gene

From Wikipedia, the free encyclopedia (open original article)

This article is about the heritable unit for transmission of biological traits. For the name, see [Eugene \(given name\)](#) and [Eugene \(disambiguation\)](#).

A **gene** is the molecular unit of [heredity](#) of a living [organism](#). The word is used extensively by the scientific community for stretches of [deoxyribonucleic acids](#) (DNA) and [ribonucleic acids](#) (RNA) that code for a [polypeptide](#) or for an RNA chain that has a function in the organism.^[1]:Glossary Living beings depend on genes, as they specify all proteins and functional RNA chains. Genes hold the information to build and maintain an organism's [cells](#) and pass genetic [traits](#) to offspring. All organisms have genes corresponding to various biological traits, some of which are instantly visible, such as [eye color](#) or number of limbs, and some of which are not, such as [blood type](#), increased risk for specific diseases, or the thousands of basic [biochemical](#) processes that comprise [life](#). The word *gene* was coined by [Wilhelm Johannsen](#) in 1909 and is indirectly derived (via *[pangene](#)*) from the [Ancient Greek](#) word γένος (*génos*) meaning "race, offspring".^[2]

A modern working definition of a gene is "*a [locatable region](#) of [genomic sequence](#), corresponding to a unit of inheritance, which is associated with regulatory regions, transcribed regions, and/or other functional sequence regions*".^{[3][4]}

Colloquial usage of the term *gene* (e.g., "good genes", "hair color gene") may actually refer to an [allele](#): a *gene* is the basic instruction— a sequence of nucleic acids (DNA or, in the case of certain [viruses](#) RNA), while an *allele* is one variant of that gene. Thus, when the mainstream press refers to "having a gene" for a specific trait, this is customarily inaccurate. In most cases, all people would have a gene for the trait in question, although certain people will have a specific allele of that gene, which results in the trait variant. Further, genes code for proteins, which might result in

Chromosome

Nucleosome

DNA

Exon

Intron

Gene

This stylistic diagram shows a gene in relation to the [double helix](#) structure of DNA and to a [chromosome](#) (right). The chromosome is X-shaped because it is dividing. [Introns](#) are regions often found in [eukaryote](#) genes that are removed in the [splicing](#) process (after the DNA is transcribed into RNA): Only the [exons](#) encode the [protein](#). The diagram labels a region of only 55 or so bases as a gene. In reality, most genes are hundreds of times longer.

Users can rearrange nodes and “pin” them, fixing nodes to a (x, y) location

The screenshot displays the Wikitree website interface. On the left, a conceptual map is visible, featuring a central node labeled "Human" (highlighted in orange) connected to various other nodes such as "Origin of language", "Hominini", "Anatomically modern humans", "Behavioral modernity", "Evolution", "Complex systems", "Biological organisation", "Hierarchy", "System", "Life", "Phenotypic trait", "Tool", "Brain", "Nerve net", "Nervous system", "Language acquisition", "Sentence (linguistics)", and "Hominidae". The nodes are interconnected by dashed lines, forming a network. On the right, the Wikipedia article for "Human" is displayed. The article includes a search bar, a title "Human", and a brief introduction: "From Wikipedia, the free encyclopedia (open original article)". It also features a notice: "This article is about humans as a species. For other uses, see [Human \(disambiguation\)](#), [Humanity \(virtue\)](#), [Human nature](#), or [Human condition](#)." Below this, a red arrow points to a box stating: "It has been suggested that *Homo sapiens* be merged into this article. ([Discuss](#)) Proposed since April 2015." The main text of the article discusses modern humans (*Homo sapiens*) and their evolutionary history. A timeline at the top right indicates the temporal range of humans from 0.195 Ma to the present. A photograph of an adult human male and female from Thailand is shown at the bottom right.

Wikitree

https://wikitree.website/main

Alex

Search for a Wikipedia article...

Human

From Wikipedia, the free encyclopedia (open original article)

This article is about humans as a species. For other uses, see [Human \(disambiguation\)](#), [Humanity \(virtue\)](#), [Human nature](#), or [Human condition](#).

It has been suggested that *Homo sapiens* be merged into this article. ([Discuss](#)) Proposed since April 2015.

Modern **humans** (*Homo sapiens* primarily ssp. *Homo sapiens sapiens*) are the only extant members of the **hominin** clade, a branch of **great apes** characterized by **erect posture** and **bipedal locomotion**, **manual dexterity** and increased **tool use**, and a general trend toward larger, more complex **brains** and **societies**.^{[3][4]} Early hominids, such as the **australopithecines** whose brains and anatomy are in many ways more similar to non-human apes, are less often thought of or referred to as "human" than hominids of the **genus** *Homo*.^[5] Some of the latter **used fire**, occupied much of **Eurasia**, and gave rise to ^{[6][7]} **anatomically modern** *Homo sapiens* in **Africa** about 200,000 years ago. They began to exhibit evidence of **behavioral modernity** around 50,000 years ago, and migrated in successive waves to occupy^[8] all but the smallest, driest, and coldest lands. In the last 100 years, this has extended to permanently manned bases in **Antarctica**, on **offshore platforms**, and **orbiting the Earth**. The spread of humans and **their large and increasing population** has had a profound **impact** on large areas of the environment and millions of native species worldwide. Advantages that explain this

Human^[1]
Temporal range: 0.195–0Ma

PreC C P S D C P T J K Pg N
Middle Pleistocene – Recent

An Adult human male (left) and female (right) from Thailand

Next steps

- Use **text analysis** to determine the relevancy of a current article's links against all articles in the graph, and offer the user “**suggested**” **nodes**
- Add more “appy” features such as server-side **user accounts** and **full Wikipedia search**
- With server-side user data we could **gather usage patterns** and use it to build **suggestion paths**

Questions

- Would you use Wikitree as part of your normal routine?
 - Do you already make average (or extensive) use of Wikipedia?
- What would help bring Wikitree into your life?
 - Other data sets, missing features?
- What features would you like to see in Wikitree?
 - Ex: Article text highlights & annotations
 - Ex: Drag-to-select multiple nodes (move, un/pin, delete)
- What information encodings could be useful?
 - Ex: Size of node proportional to length of article
 - Ex: Cluster nodes by topic/category/keywords
 - Ex: Set node value/opacity by relevancy