

Interactive Visualization for Computational Linguistics

ESSLII 2009

2

Interaction and animation

References

3

- Slides in this section are based on:

Yi et al., Toward a Deeper Understanding of the Role of Interaction in Information Visualization, Proceedings of IEEE Conference on Information Visualization, 2007.

- and were designed by Petra Isenberg.

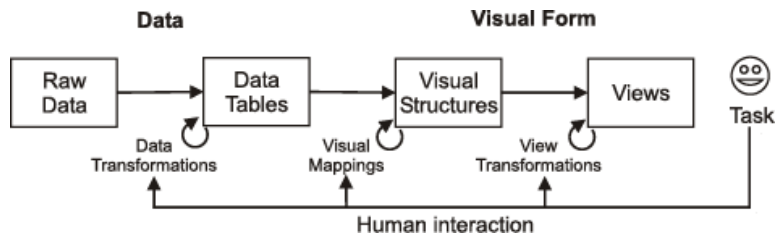
Why Interaction?

4

- Datasets are too large to:
 - ▣ display in one view
 - ▣ comprehend in entirety
- Interest in only subset of the data
- Interest in different views of the data
- Extract relevant information & transform
- ...

Sense-making Cycle

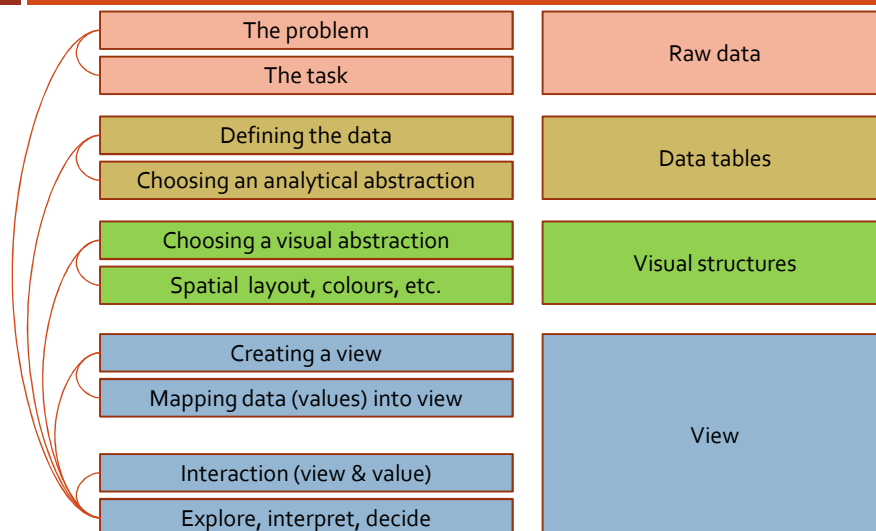
5



Card et al., 1999

Sense-making Cycle

6



- ❑ Select – *mark something as interesting*
- ❑ Explore – *show me something else*
- ❑ Reconfigure – *show me a different arrangement*
- ❑ Encode – *show me a different representation*
- ❑ Abstract/Elaborate – *more or less detail*
- ❑ Filter – *show me something conditionally*
- ❑ Connect – *show me related items*

8

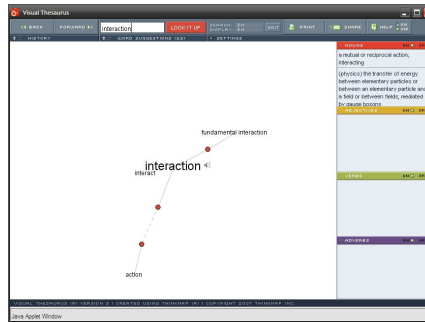
- ❑ Mark something as interesting
- ❑ Often combined with other techniques



Explore

9

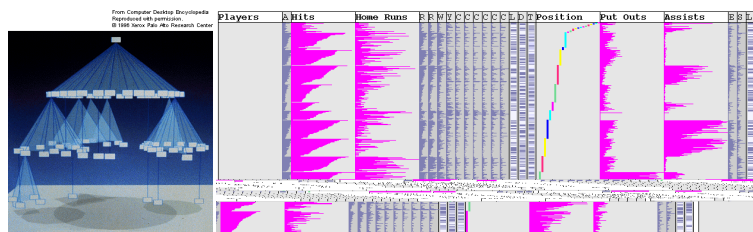
- Show me something else
- Examine subset of data cases (view-based)
 - E.g. Panning (move viewpoint across representation)
 - E.g. Direct Walk (move viewing focus through clicks)



Reconfigure

10

- Show a different arrangement
 - Move data items to
 - Enable better comparison
 - Avoid occlusion
 - Correspond to some mental model of the data



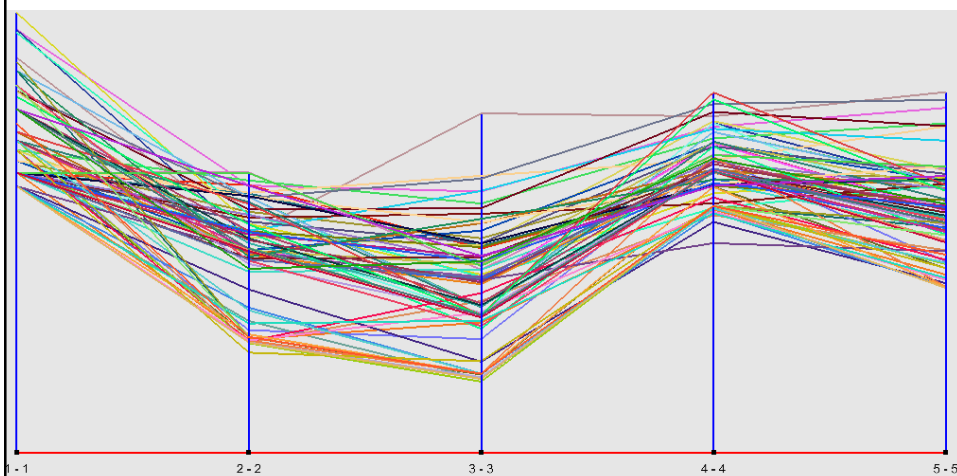
Cone Trees
(Robertson et al., 1991)

Table Lens
(Rao & Card, 1995)

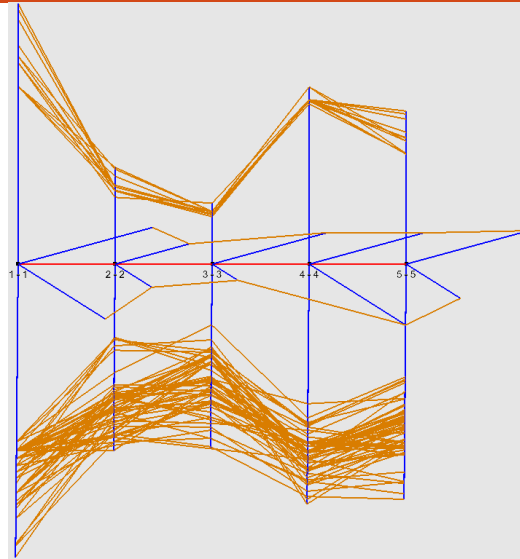
Star Glyphs



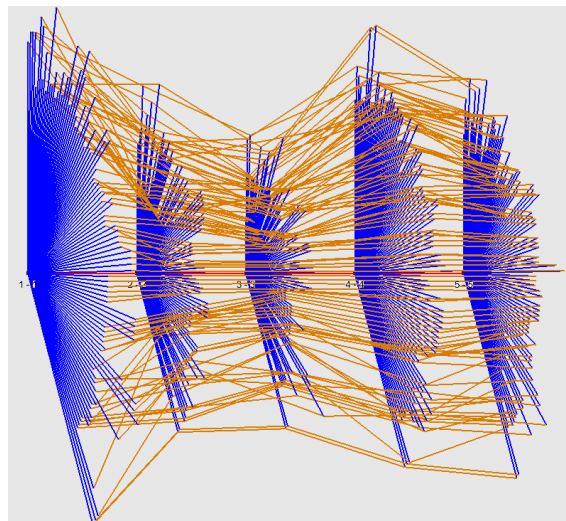
Parallel Coordinates



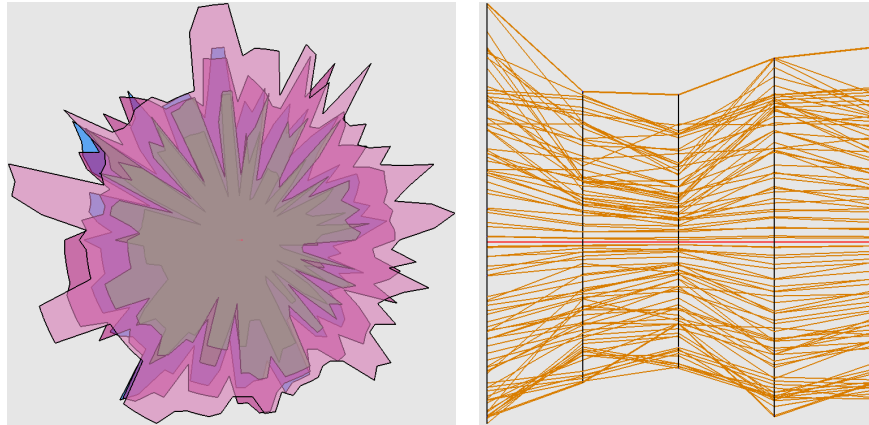
Rearrangement of Selected Data Items



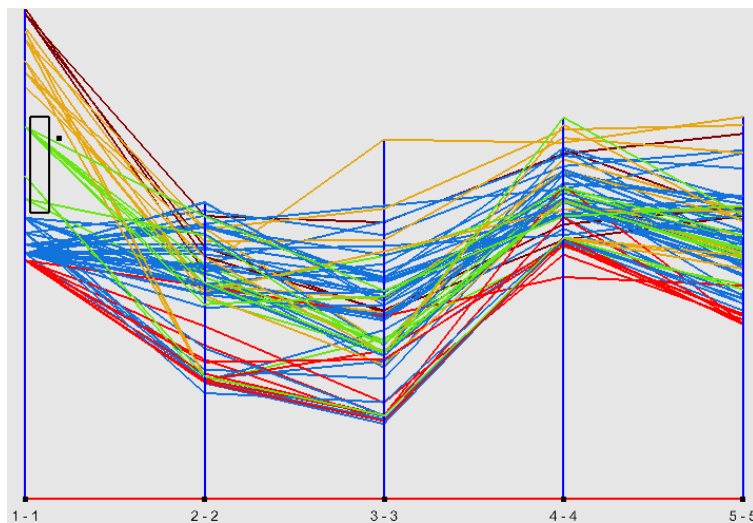
2D Parallel Coordinates to 3D Parallel Glyphs



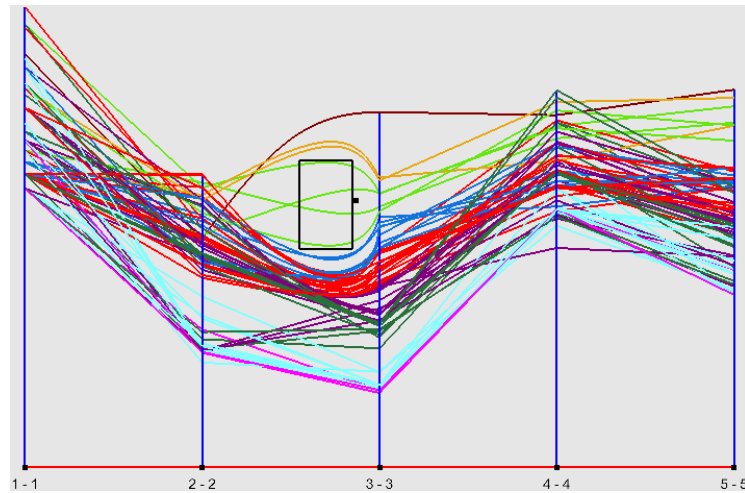
Star Glyphs aligned to coordinate axes



EPS Lens



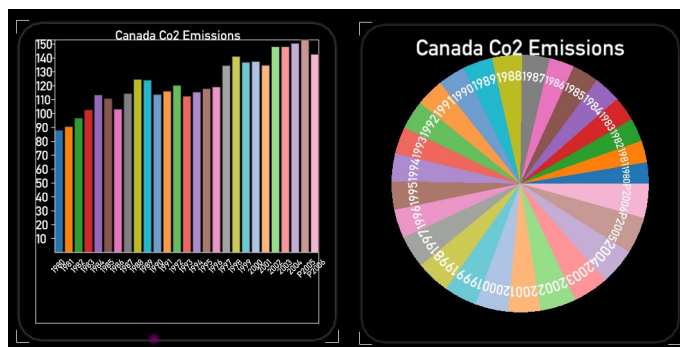
EdgeLens



Encode

18

- Show a different:
 - ▣ Representation Type
 - ▣ Visual appearance: Colour, Size, Shape,...

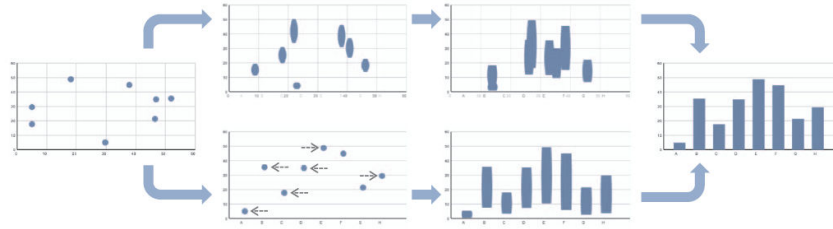


Isenberg and Carpendale, InfoVis, 2007

Encode

19

- Animation can aid encoding changes

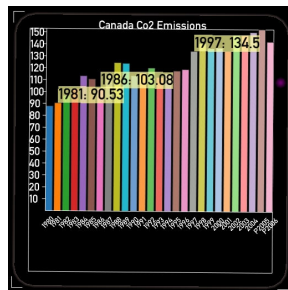


DynaVis - Heer & Robertson, 2007

Abstract/Elaborate

20

- Show me more or less detail
 - ▣ Adjust level of abstraction
 - ▣ Detail-on-demand
 - ▣ Zooming (as long as representation isn't fundamentally altered)



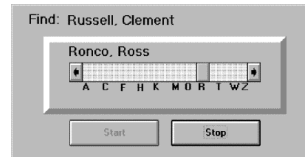
Isenberg and Carpendale, InfoVis, 2007

Warning: Not every technique belongs to just one category.

Filter

21

- Show subset of data based on condition
 - ▣ e.g., by selecting a data range



- ▣ or filtering based on distance from focus

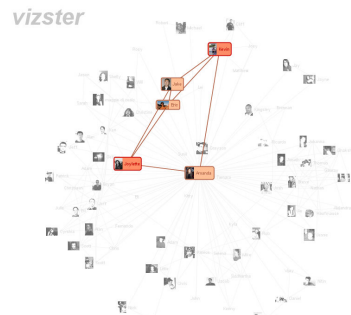


AlphaSlider, Ahlberg & Shneiderman, 1993; DocuBurst, Collins, 2007

Connect

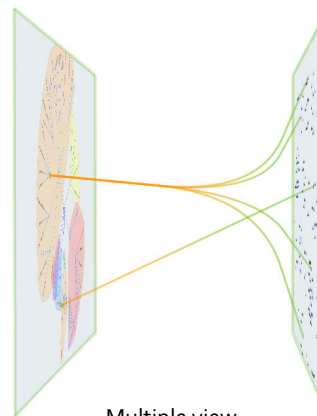
22

- Show related items
 - ▣ e.g. brushing



Single view

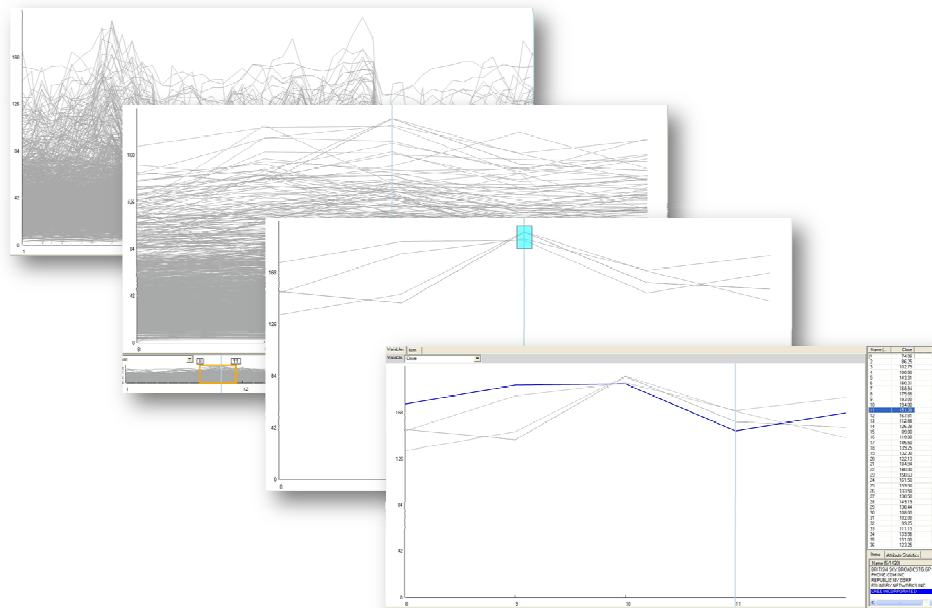
Heer & boyd, InfoVis 2005

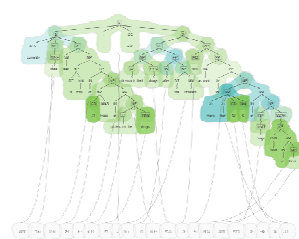
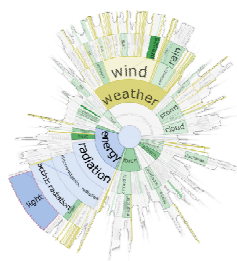
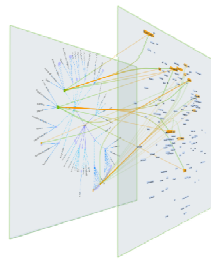


Multiple view

Collins & Carpendale, InfoVis 2007

*"Overview first, zoom and filter,
then details-on-demand"*





CHRISTOPHER COLLINS
CCOLLINS@CS.UTORONTO.CA

GERALD PENN
GPENN@CS.UTORONTO.CA

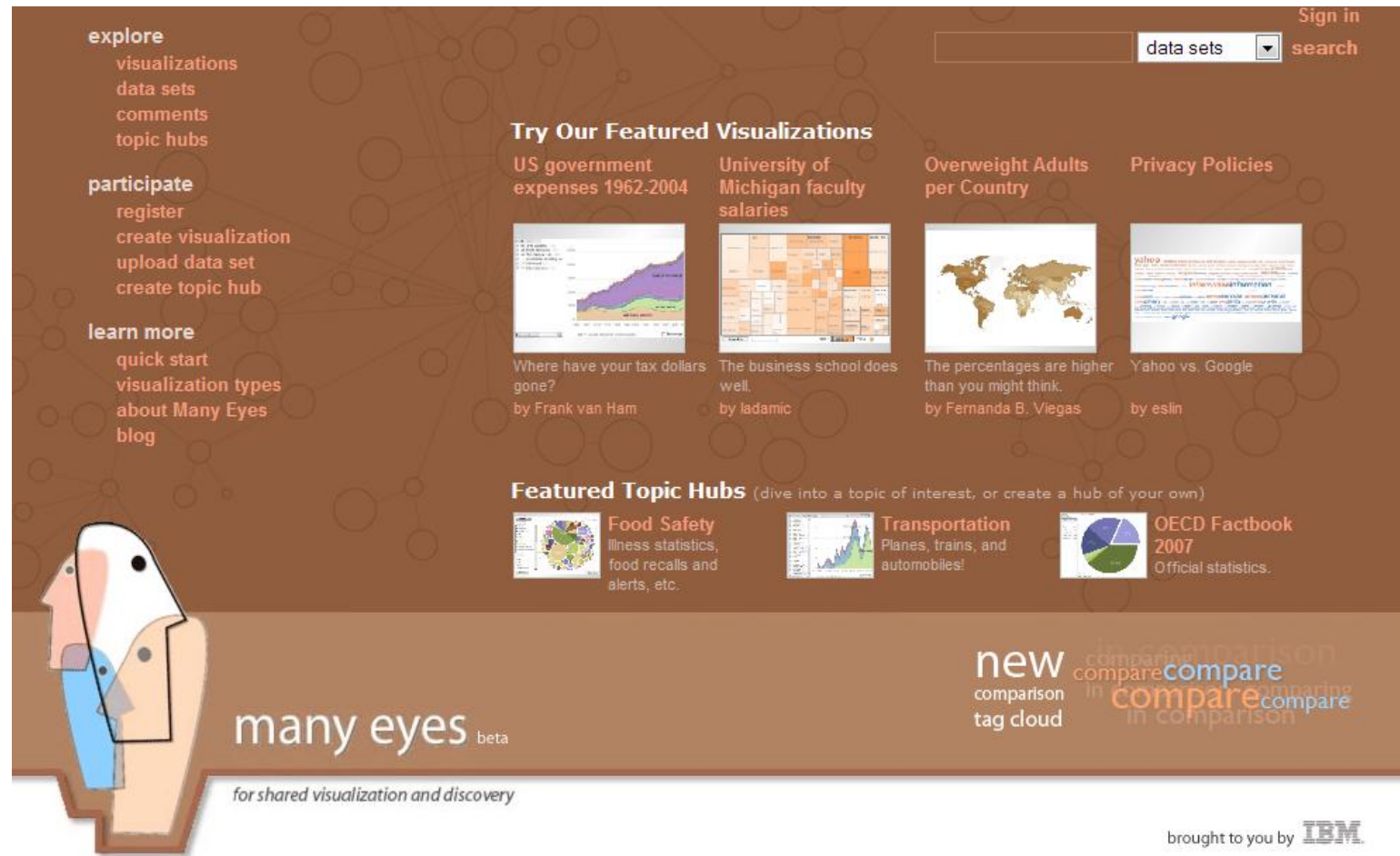
SHEELAGH CARPENDALE
SHEELAGH@UCALGARY.CA



Visualization Websites

Many Eyes

161



The image shows the Many Eyes beta web application interface. It features a dark brown background with a network of circles and lines. On the left, there are three vertical navigation menus: 'explore' (visualizations, data sets, comments, topic hubs), 'participate' (register, create visualization, upload data set, create topic hub), and 'learn more' (quick start, visualization types, about Many Eyes, blog). At the top right, there is a search bar, a 'data sets' dropdown menu, and 'Sign in' and 'search' links. The main content area is divided into two sections. The top section, 'Try Our Featured Visualizations', displays four featured visualizations: 'US government expenses 1962-2004' (a line chart), 'University of Michigan faculty salaries' (a treemap), 'Overweight Adults per Country' (a world map), and 'Privacy Policies' (a text visualization). Each visualization has a title, a brief description, and the author's name. The bottom section, 'Featured Topic Hubs', displays three topic hubs: 'Food Safety' (a circular diagram), 'Transportation' (a line chart), and 'OECD Factbook 2007' (a pie chart). Each hub has a title, a brief description, and a 'new comparison tag cloud' button. At the bottom left, there is a stylized logo of two overlapping faces. At the bottom right, there is a 'new comparison tag cloud' button and the text 'brought to you by IBM'.

explore
visualizations
data sets
comments
topic hubs

participate
register
create visualization
upload data set
create topic hub

learn more
quick start
visualization types
about Many Eyes
blog

Sign in
search

data sets

Try Our Featured Visualizations

US government expenses 1962-2004
Where have your tax dollars gone?
by Frank van Ham

University of Michigan faculty salaries
The business school does well.
by ladamic

Overweight Adults per Country
The percentages are higher than you might think.
by Fernanda B. Viegas

Privacy Policies
Yahoo vs. Google
by eslin

Featured Topic Hubs

(dive into a topic of interest, or create a hub of your own)

Food Safety
Illness statistics, food recalls and alerts, etc.

Transportation
Planes, trains, and automobiles!

OECD Factbook 2007
Official statistics.

new comparison tag cloud

many eyes beta

for shared visualization and discovery

brought to you by IBM

Many Eyes

162

- 16 visualization types
- Upload plain text, comma or tab delimited
- Discuss and share visualizations with colleagues
- 2 language-specific visualizations (tag cloud and word tree)
- Comparison views, e.g. change treemap
- Interactive, save any state of view in threaded discussion
- www.many-eyes.com

explore
 visualizations
 data sets
 comments
 topic hubs

participate
 register
 create visualization
 upload data set
 create topic hub

learn more
 quick start
 visualization types
 data format & style
 about Many Eyes
 FAQ
 blog

contact
 contact us
 report a bug

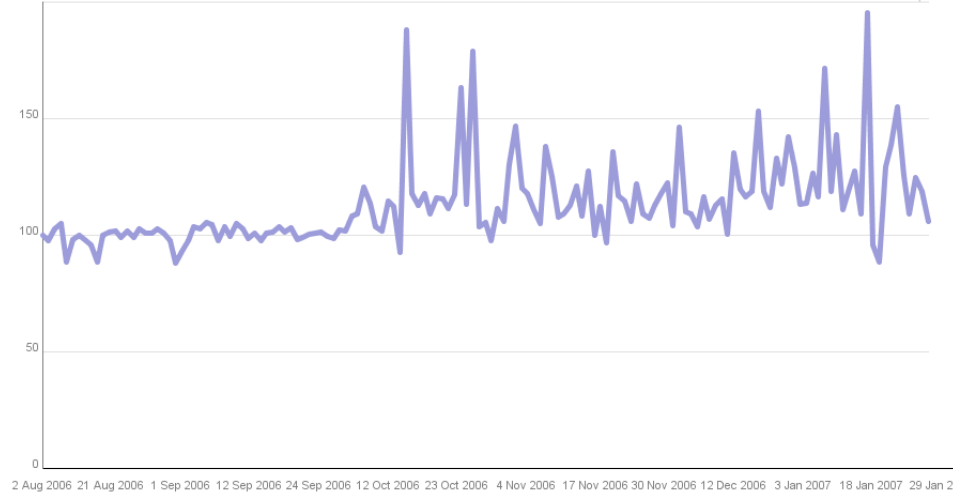
legal
 terms of use

Visualizations : Line Graph of F-Score of posts in Robert Scoble's blog (fixed)

Can't see the visualization? Download the latest Java plugin [here](#). On Macs: best viewed in Safari.

Created by: **Cornelius Puschmann** Created on: Thursday February 01, 3:50 PM

Legend
 Graph shows
 f-score



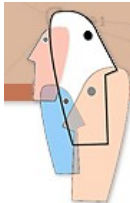
Click or ctrl-click to highlight points on graph.

☒ Relative: Set Start = 100

Aggregate items with same label: **Average** Sort: **labels**
 Data file: **F-Score of posts in Robert Scoble's blog (fixed)** Data source: **Corporate Blogging Corpus**

$$F = 0.5 * ((\text{NOUNS} + \text{ADJECTIVES} + \text{PREPOSITIONS} + \text{DETERMINERS}) - (\text{PRONOUNS} + \text{VERBS} + \text{ADVERBS} + \text{INTERJECTIONS}) + 100)$$

"If you have a look at those posts, you'll probably notice that they aren't really in any way more *formal* than Scoble's other writing. The difference is that they tend to be more *informational*, i.e. have more and more condensed information crammed into to them than most entries."



explore

visualizations
data sets
comments
topic hubs

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upload data set
create topic hub

learn more

quick start
visualization types
data format & style
about Many Eyes
FAQ
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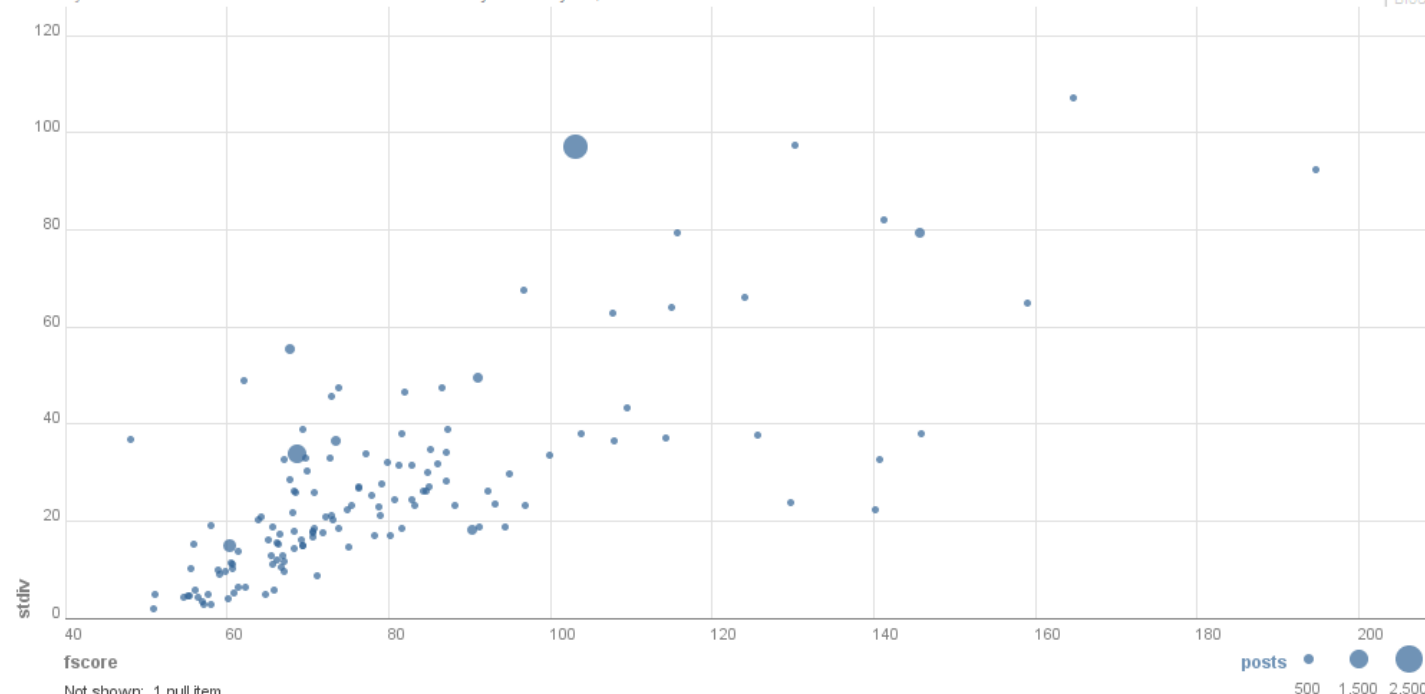
terms of use

Visualizations : Scatterplot of F-score, standard deviation and post frequency in web logs (4)

Can't see the visualization? Download the latest Java plugin [here](#). On Macs: best viewed in Safari.

Created by: [Cornelius Puschmann](#) Created on: Thursday February 08, 11:41 AM

Block



Not shown: 1 null item

X Axis: [fscore](#)

Y Axis: [stdiv](#)

Dot Size: [posts](#)

Data file: [F-score, standard deviation and post frequency in web logs \(4\)](#)

Data source: [Corporate Blogging Corpus](#)

This data set has not yet been rated.



share this



watch this




add to topic hub



rate this

User Profile Link



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[Data](#)
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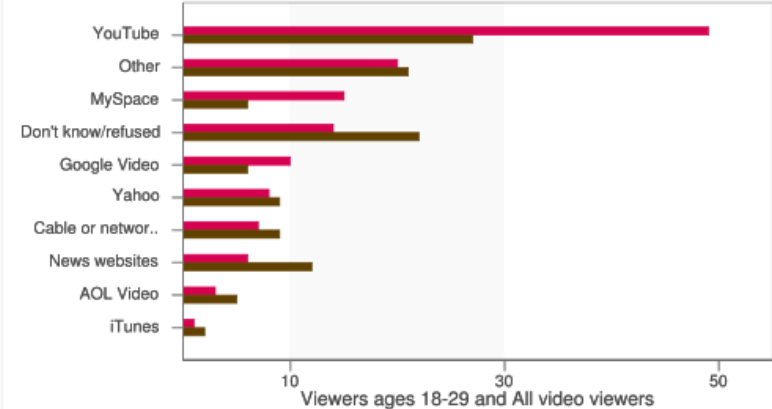
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 [Official Source](#)

Upload and explore data.

As a preview it's rough around the edges, may your love for data guide you.

Spotlight [YouTube Generation](#)



Venue	Viewers ages 18-29 (%)	All video viewers (%)
YouTube	49	27
Other	15	15
MySpace	12	12
Don't know/refused	12	12
Google Video	10	10
Yahoo	10	10
Cable or network	10	10
News websites	10	10
AOL Video	5	5
iTunes	2	2

Source: [PEW](#)

According to a recent report from PEW, young adults are almost twice as likely to point to YouTube as a source for online video; 49 percent of viewers ages 18-29 say they watch YouTube, compared to 27 percent of viewers of all ages. This graph shows the percentage of **young adults** compared to **viewers of all ages** by different venues of

Swivel Business

Have you tried [Swivel Business](#)?

Swivelicious Bloggers

people blogging swivel data

[Correlation does not equal causation!](#)

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12157 Data Sets



[Webster County MS](#)
[Demographics: Population, Crime Rate](#)

Contributed by [American Polls](#) 2 minutes ago

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Swivel

166

- ❑ Excel-type charts only
- ❑ Discussion forum
- ❑ Comma, tab delimited data upload

Programming Libraries

prefuse

168

prefuse

INFORMATION VISUALIZATION TOOLKIT

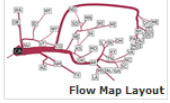
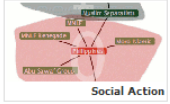
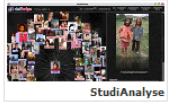
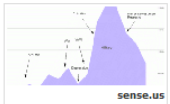
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Search

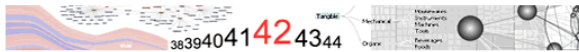
Download

prefuse beta
release 2007.10.21
source zip (.zip) 4.1mb

Gallery



Feeds (Atom | RSS)



the prefuse visualization toolkit

Prefuse is a set of software tools for creating rich interactive data visualizations. The original **prefuse** toolkit provides a visualization framework for the Java programming language. The **prefuse flare** toolkit provides visualization and animation tools for ActionScript and the Adobe Flash Player.

Prefuse supports a rich set of features for data modeling, visualization, and interaction. It provides optimized data structures for tables, graphs, and trees, a host of layout and visual encoding techniques, and support for animation, dynamic queries, integrated search, and database connectivity. Prefuse is written in Java, using the Java 2D graphics library, and is easily integrated into Java Swing applications or web applets. Prefuse is licensed under the terms of a **BSD license**, and can be freely used for both commercial and non-commercial purposes.

The **visualization gallery** and **demonstration video** provide numerous examples of the types of applications that can be built with the prefuse toolkit.

To learn more about prefuse, take a look at the **user's manual** or the **frequently asked questions**. For users of the alpha version of the toolkit, there is also a **porting guide** for migrating to the beta version.

Need help? Visit the **Help Forum on SourceForge.net** (You'll need a SourceForge login to post). Please be sure to include detailed information (e.g., stack traces, source code, etc) if you need debugging help.

If you are interested in tools for ActionScript and Flash, see the **prefuse flare** project instead.

announcements

2008.04.02: Our friends at the **IBM Visual Communication Lab** are using **prefuse flare** to create visualizations for the **Many-Eyes** visualization service. Check out their new **Comparison Tag Clouds**, made with Flare!

2007.10.22: We're happy to announce the first alpha release of **prefuse flare**, a new prefuse-based visualization library written in ActionScript 3! Flare brings the visualization capabilities of prefuse to the web and runs in the Adobe Flash Player.

2007.06.11: The Toronto Star, Canada's most highly circulated daily, just ran a **story on the prefuse-based DocuBurst visualization**! Congrats to Chris, the author of DocuBurst! Check out the prefuse gallery for DocuBurst and other great visualization projects.

2007.02.11: A number of new projects have been added to the **prefuse gallery**. Check them out!

2006.05.18: The prefuse.org website has moved to a new server, with better performance and new features. For example, you can now add comments to pages of the user manual. Apologies to any visitors who have encountered 404 errors by using outdated prefuse.sourceforge.net URLs.

2006.04.16: Prefuse has now surpassed 10,000 downloads! Thanks to everyone who has contributed to the toolkit along the way.

2006.03.03: The prefuse-based Vizster visualization appeared on the CBS crime drama **Numb3rs**! Watch the video clip (**WMV, 4.7M**).

releases

2007.10.21: **prefuse-beta** 2007.10.21 released. See the **release notes** for more.

2008.04.02: **flare-alpha** 2008.04.02 released. See the **release notes** for more.

Prefuse.org
Jeffrey Heer

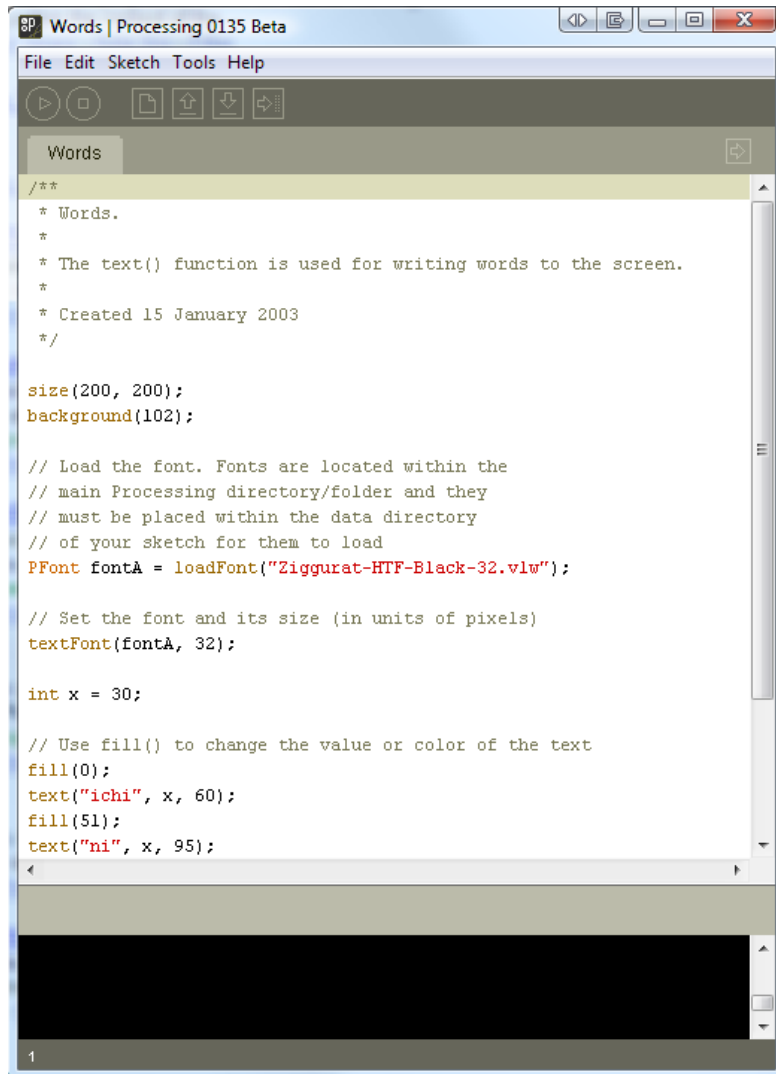
prefuse

169

- ❑ Open source Java programming library
- ❑ BSD license
- ❑ Software architecture follows sense-making cycle
 - ▣ Standard data formats supported (I/O)
 - ▣ Interaction out-of-the-box
 - ▣ Supplied collection of layouts and renderers
- ❑ Active user support forums
- ❑ Relatively fast prototyping
- ❑ Easily link with java NLP code libraries
- ❑ Our tool of choice!

Processing

171

A screenshot of the Processing IDE window titled "Words | Processing 0135 Beta". The window has a menu bar with "File", "Edit", "Sketch", "Tools", and "Help". Below the menu bar is a toolbar with icons for running, saving, opening, and other functions. The main text area contains the following code:

```
/**
 * Words.
 *
 * The text() function is used for writing words to the screen.
 *
 * Created 15 January 2003
 */

size(200, 200);
background(102);

// Load the font. Fonts are located within the
// main Processing directory/folder and they
// must be placed within the data directory
// of your sketch for them to load
PFont fontA = loadFont("Ziggurat-HTF-Black-32.vlw");

// Set the font and its size (in units of pixels)
textFont(fontA, 32);

int x = 30;

// Use fill() to change the value or color of the text
fill(0);
text("ichi", x, 60);
fill(51);
text("ni", x, 95);
```

The bottom of the window shows a preview area with a black background and a small white number "1" in the bottom left corner.

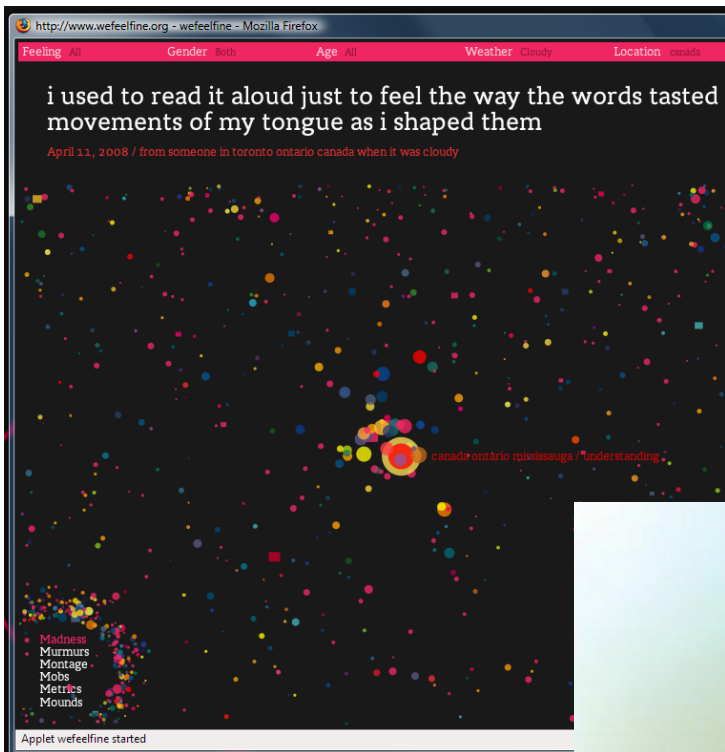
Processing.org

Ben Fry and Casey Reas

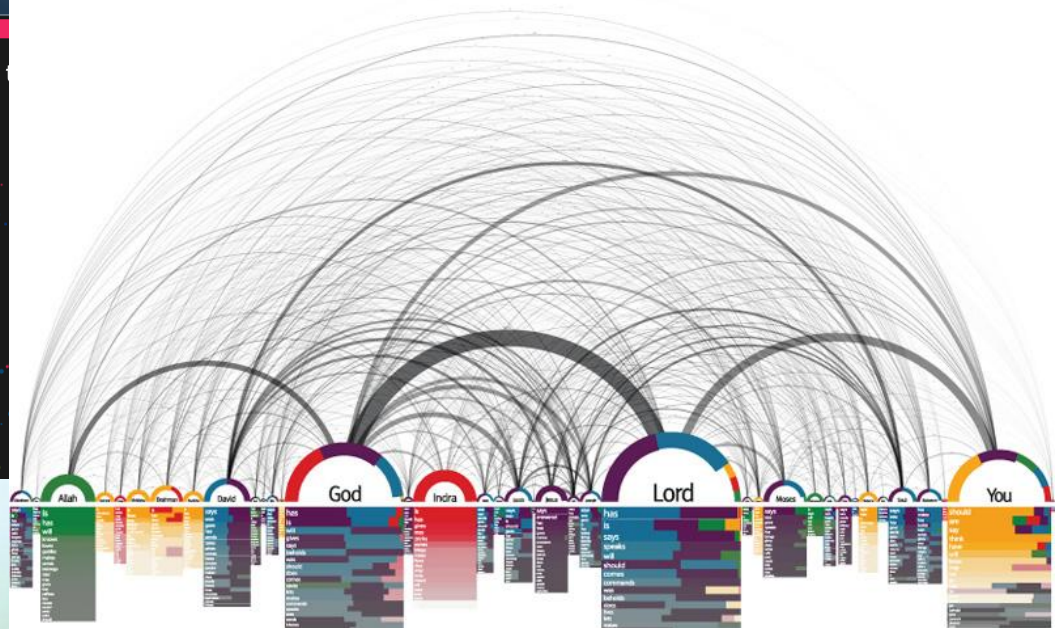
Processing

172

- ❑ Open source programming language and IDE
- ❑ Simplified graphics and interaction (2D & 3D)
- ❑ Based on Java, can import Java packages
- ❑ Easy to learn
- ❑ Many help resources (online and print)
- ❑ Very wide programmer base
 - mostly designers, artists, students



Jonathan Harris,
www.wefeelfine.org

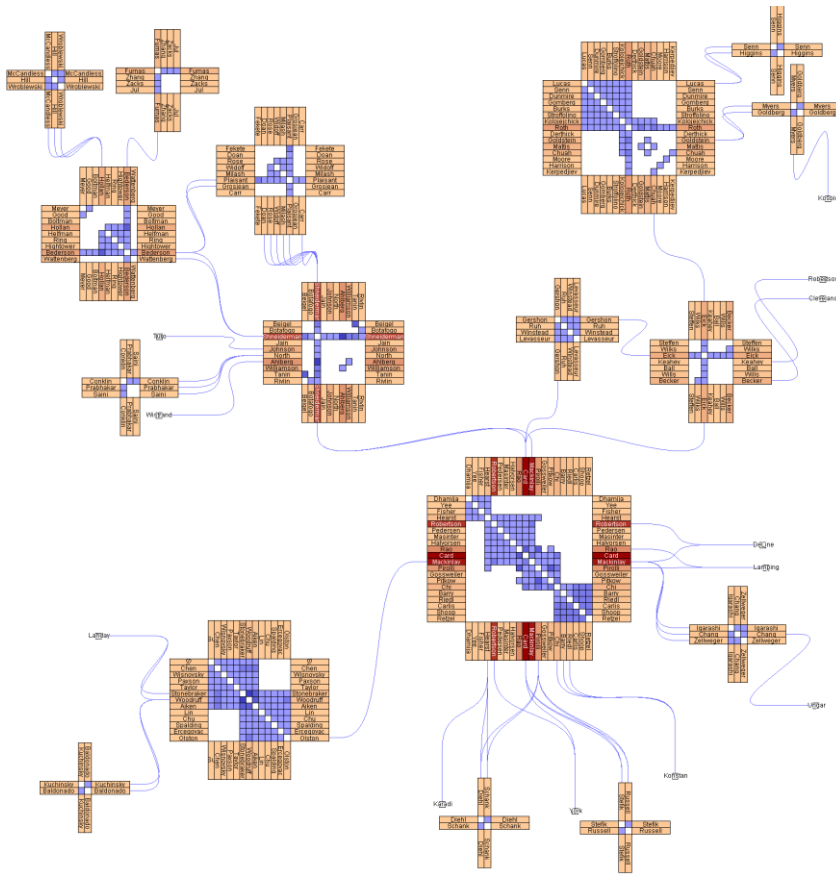


Steinweber & Koller, similardiversity.net, 2008



Neumann et al., KeyStrokes, EuroVis 2007

174



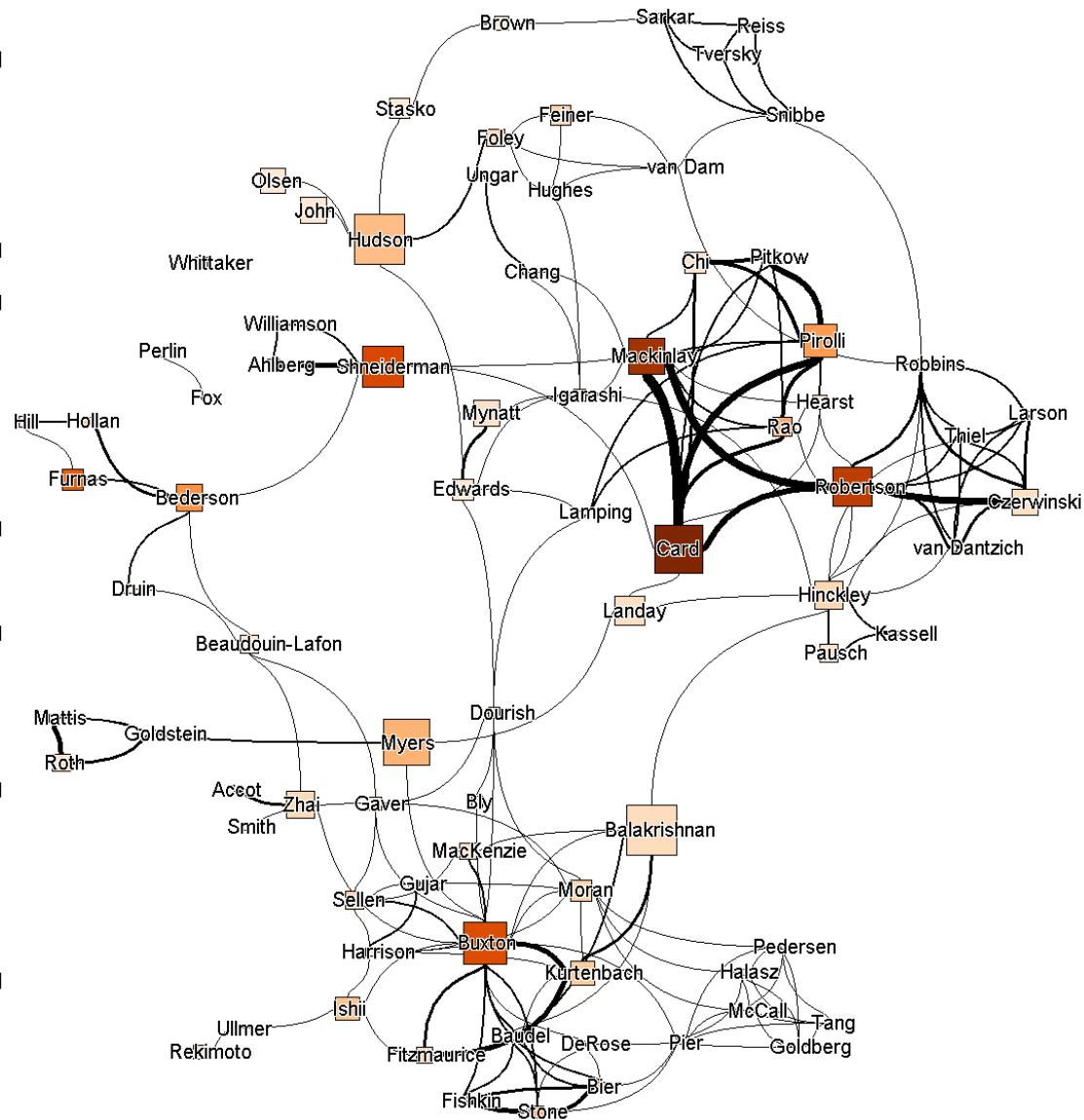
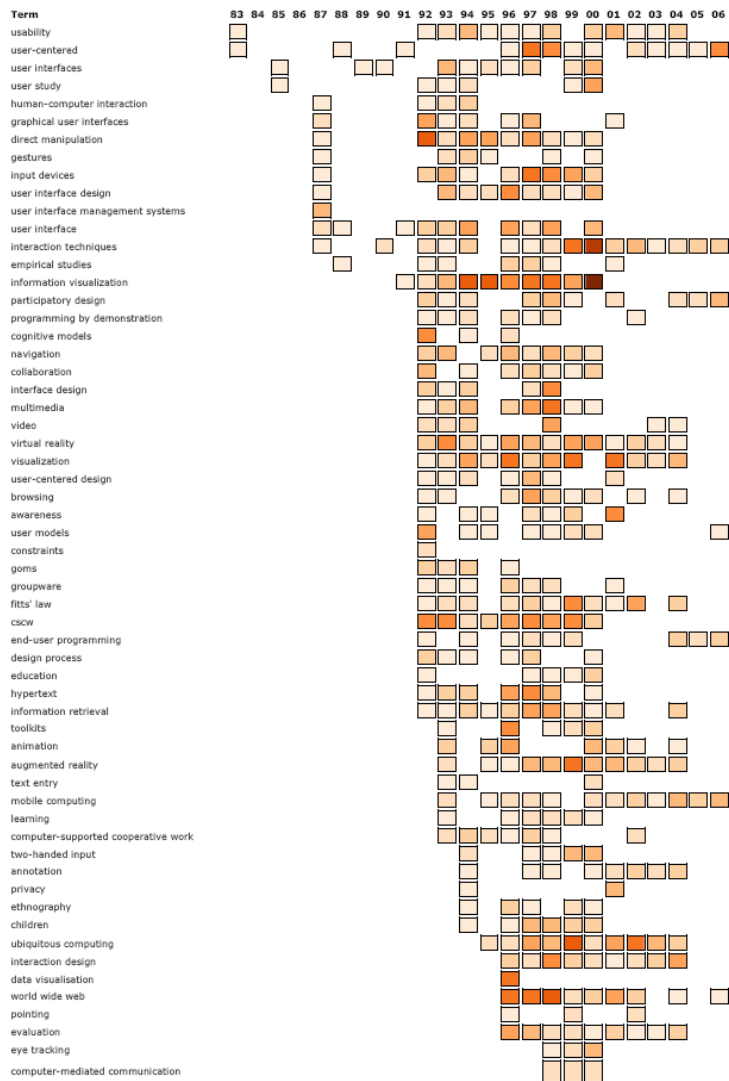
ivtk.sourceforge.net

Jean-Daniel Fekete

InfoVis Toolkit

175

- Graphics toolkit for Java
- Software architecture follows sense-making cycle
 - ▣ Standard data formats supported (I/O)
 - ▣ Supplied collection of layouts and renderers
- Matrix and parallel coordinates visualizations maybe especially useful for NLP
- Fast, small memory footprint



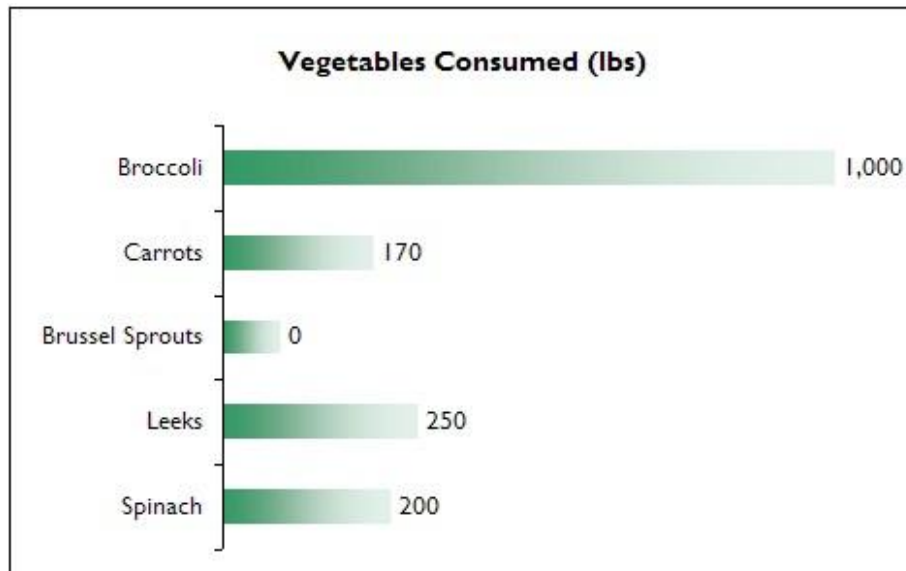
Henry et al., 20 years of 4 HCI Conferences, Int. Journal of HCI, 2008

Visualization Software

Microsoft Excel

178

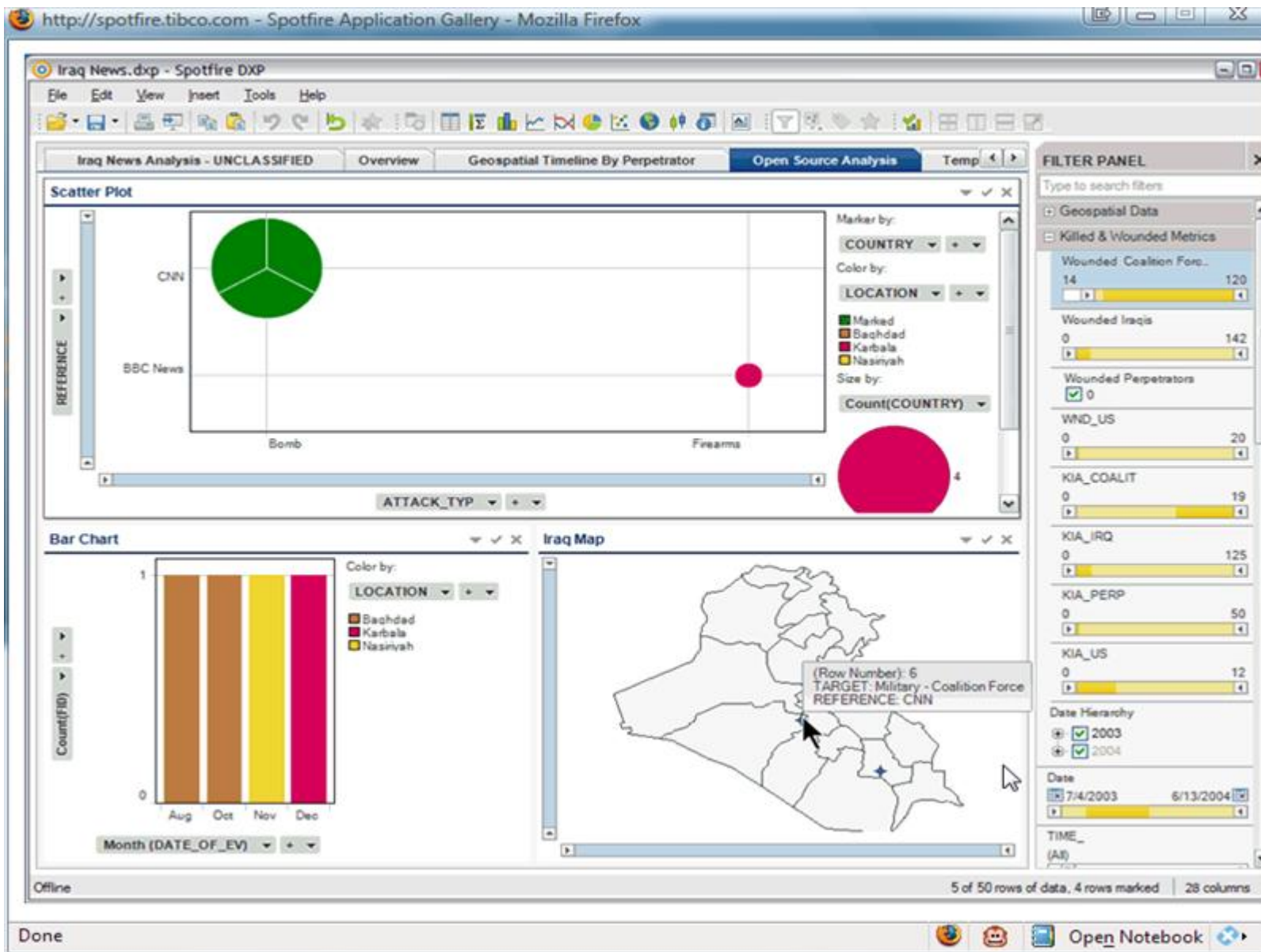
- Can do more than you think!
- ... But be careful, new features can be misleading!
- www.juiceanalytics.com has great tips



SpotFire

179

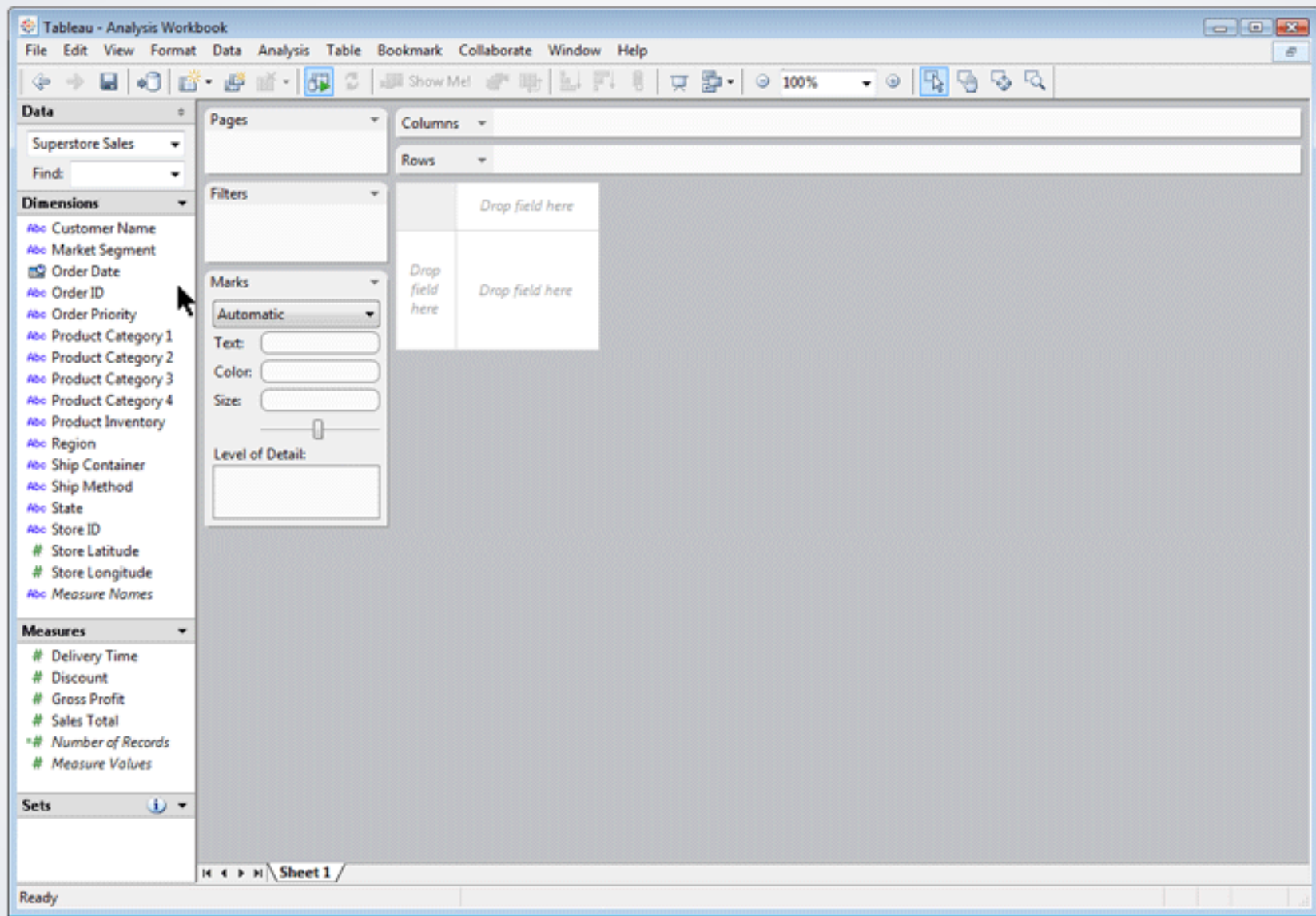
- Coordinated views
- Multi-dimensional data
- Customized for business intelligence, but applicable to quantitative research
- spotfire.tibco.com



Tableau

181

- Easily compose visualizations with “VizQL” language
- Drag and drop data columns into a library of visualizations
- Create “dashboards” of always-up-to-date data graphics
- tableausoftware.com



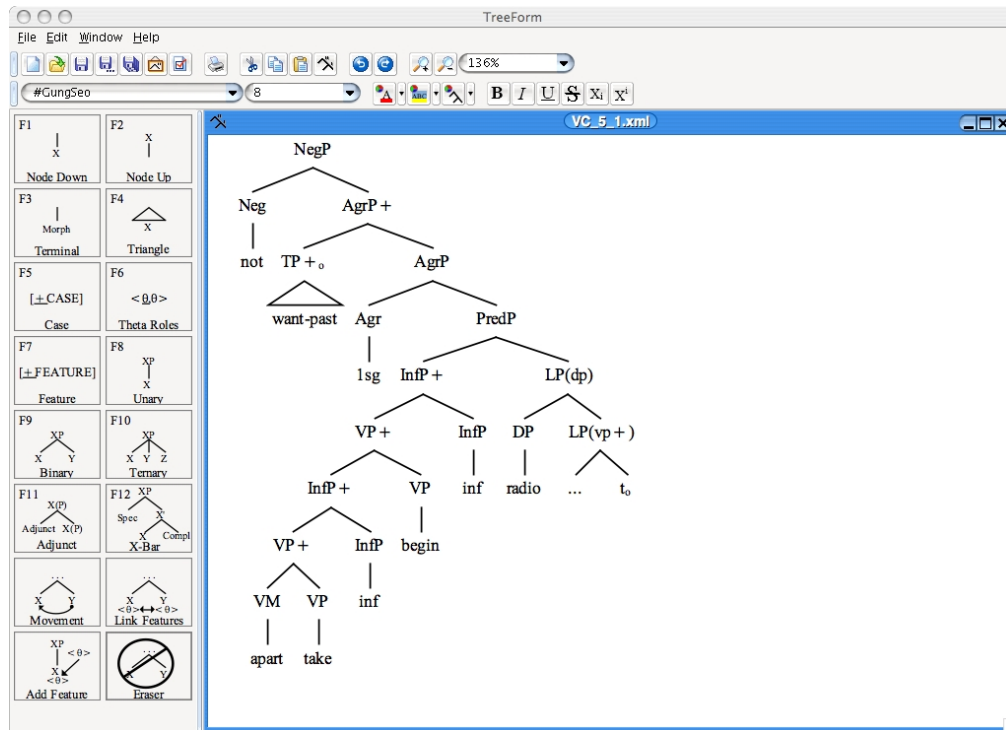
try i



Database

TreeForm

183

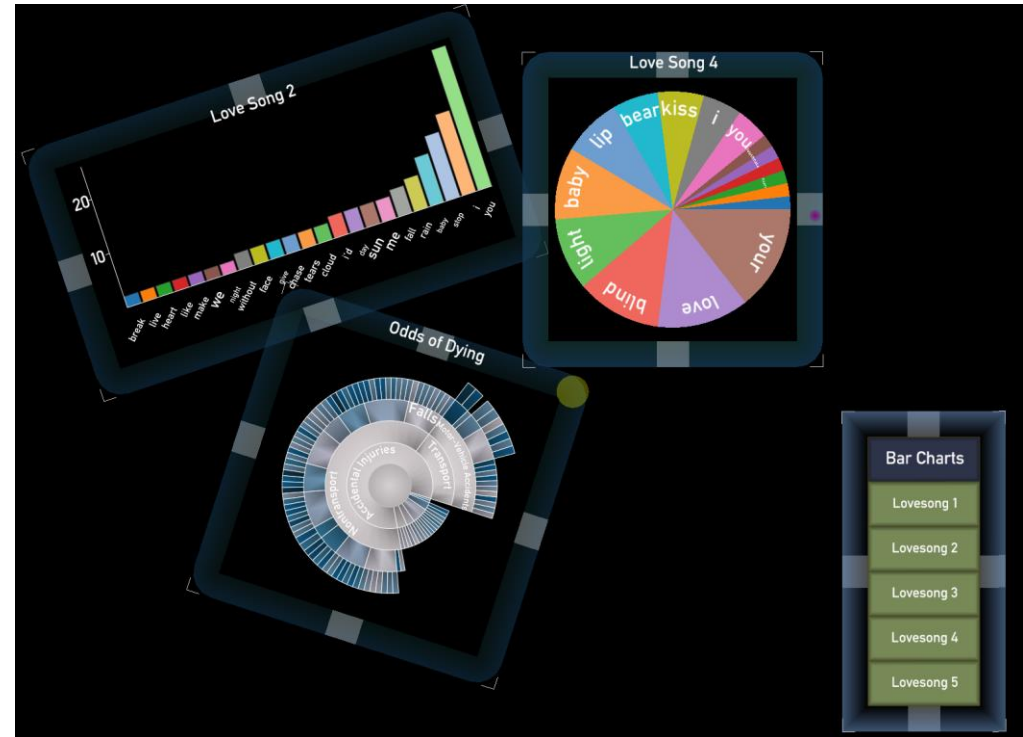


- ❑ Customized software for syntax tree drawing
- ❑ Open source initiative lead by Donald Derrick and Daniel Archambault
- ❑ Lots of alternative packages, most of them not very good

Emerging Research

Collaborative Visualization

185



Toolkits for Visualization on the Web

186

flare

VISUALIZATION ON THE WEB

Home | Tutorial | API Documentation

Download

flare alpha
release 2008.04.02
source zip (.zip)
1.1mb

Demos



flare demos

Tools

Flex SDK
free actionscript
compiler
from adobe systems,
inc.

Flex Builder
AS3 devel.
environment
from adobe systems,
inc.



38394041424344

the flare visualization toolkit

ActionScript 3 libraries for interactive visualizations on the web.

Flare is a collection of ActionScript 3 classes for building a wide variety of interactive visualizations. For example, flare can be used to build basic charts, complex animations, network diagrams, treemaps, and more. Flare is written in the ActionScript 3 programming language and can be used to build visualizations that run on the web in the Adobe Flash Player. Flare applications can be built using the free Adobe Flex SDK or Adobe's Flex Builder IDE. Flare is based on **prefuse**, a full-featured visualization toolkit written in Java. Flare is open source software licensed under the terms of the **BSD license**, and can be freely used for both commercial and non-commercial purposes.

Take a look at our initial **flare demo reel** to see some of the visualizations that flare makes it easy to build.

To get up and running with flare, take a look at the **Flare Tutorial** and the **API documentation**.

Need help? Visit the **Flare Help Forum on SourceForge.net** (You'll need a SourceForge login to post). Please be sure to include detailed information (e.g., stack traces, source code, etc) if you need debugging help.

Flare is just getting up and running, so please excuse any rough edges you may encounter, and look for more changes in the near future!

announcements

2008.04.02: Our friends at the **IBM Visual Communication Lab** are using Flare to create visualizations for the **Many-Eyes visualization service**. Check out their new **Comparison Tag Clouds**, made with Flare!

2008.02.19: A new flare release is now available.

2007.10.22: The first alpha release for prefuse flare and the launch of flare.prefuse.org!

releases

2008.04.02: flare-alpha 2008.04.02 released.

Many Eyes: parliamentary text - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://maneyeyes.alphaworks.ibm.com/maneyeyes/datasets/parliamentary-text/ Google

Data Sets : parliamentary text [Edit | Delete]

Uploaded by: gerald Created at: Wednesday July 29, 4:23 AM

Data Source: Brown corpus

Description:

[view as text](#) [edit data set](#)

THE STV DISSECTED

A reminder first of all of the way in which the STV would work in parliamentary constituencies .

Each constituency would return from three to nine members , five being generally regarded as the optimum number .

Every elector would have one vote .

It would not be cast by marking the familiar X opposite the name of a single candidate .

Instead it would be an expression of preferences , indicated by putting the figure 1 opposite the name of the first-preferred candidate , the figure 2 opposite the name of the second-preferred and so on .

The preferences could include as many or as few of the candidates as the voter wished .

A candidate would be elected not by securing a plurality of votes but by securing a quota of votes .

A quota is established by dividing the total number of valid votes by the number of members to be elected plus one , and rounding up or adding one to the quotient .

In the framework of the STV this apparently strange formula is rational .

In a typical United Kingdom five-member constituency 250,000 votes might be cast .

The quota would then be 250,000 divided by five-plus-one , i .

e .

41,667 .

No more than five candidates could be credited with more than 41,667 votes each .

...

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Done

sensemak My Home/ user@asu Many Ey Adobe Re *scratch* user@asu EN 04:31

Upload text or tabular data

Many Eyes: Create Visualization - Mozilla Firefox

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http://manyeyes.alphaworks.ibm.com/manyeyes/visualize/parliamentary-text

Google

Choosing a visualization type for parliamentary text

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Analyze a text


Tag Cloud



How are you using your words? This enhanced tag cloud will show you the words popularity in the given set of text.

[Learn more](#)


Wordle



Wordle is a toy for generating "word clouds" from text that you provide. The clouds give greater prominence to words that appear more frequently in the source text.

[Learn more](#)

Word Tree

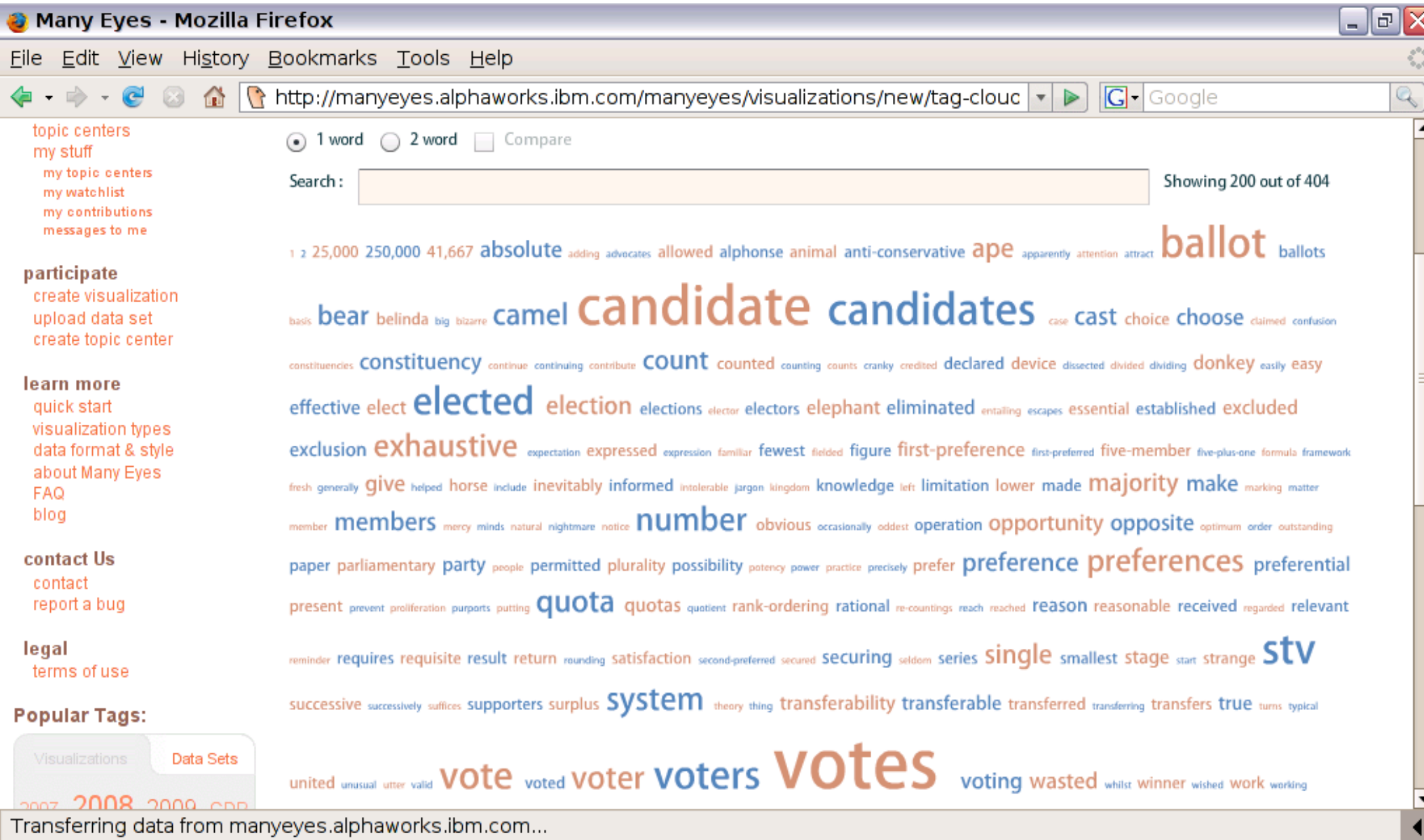


See a branching view of how a word or phrase is used in a text. Navigate the text by zooming and clicking.

http://manyeyes.alphaworks.ibm.com/manyeyes/visualizations/new/tag-cloud/parliamentary-text

sensemak My Home/ user@asu Many Ey Adobe Re *scratch* user@asu EN 04:31

Choose visualization type



Tag clouds – alpha order, size by TF

Many Eyes - Mozilla Firefox

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Showing 200 out of 404

1 word 2 word Compare

Search:

25,000 250,000 41,667 absolute adding advocates allowed alphonse animal anti-conservative ape apparently attention attract ballot ballots

basis bear belinda big bizarre camel candidate candidates case cast choice choose claimed confusion

constituencies constituency continue continuing contribute count counted counting counts cranky credited declared device dissected divided dividing donkey easily easy

effective elect elected election elections elector electors elephant eliminated entailing escapes essential established excluded

exclusion exhaustive expectation expressed expression familiar fewest fielded figure first-preference first-preferred five-member five-plus-one formula framework

votes

Showing 6 of 41 occurrences

...by securing a plurality of VOTES but by securing a quota...

...by securing a quota of VOTES . A quota is established by...

...the total number of valid VOTES by the number of members...

...Kingdom five-member constituency 250,000 VOTES might be cast . The quota...

...with more than 41,667 VOTES each . The quota is the...

...is the smallest number of VOTES to allow five candidates to...

edge left limitation lower made majority make marking matter

oddest operation opportunity opposite optimum order outstanding

precisely prefer preference preferences preferential

nal re-countings reach reached reason reasonable received regarded relevant

ng seldom series single smallest stage start strange stv

ity transferable transferred transferring transfers true turns typical

united unusual utter valid vote voted voter voters votes voting wasted whilst winner wished work working

Transferring data from manyeyes.alphaworks.ibm.com...

Mouse over for concordance

Many Eyes - Mozilla Firefox

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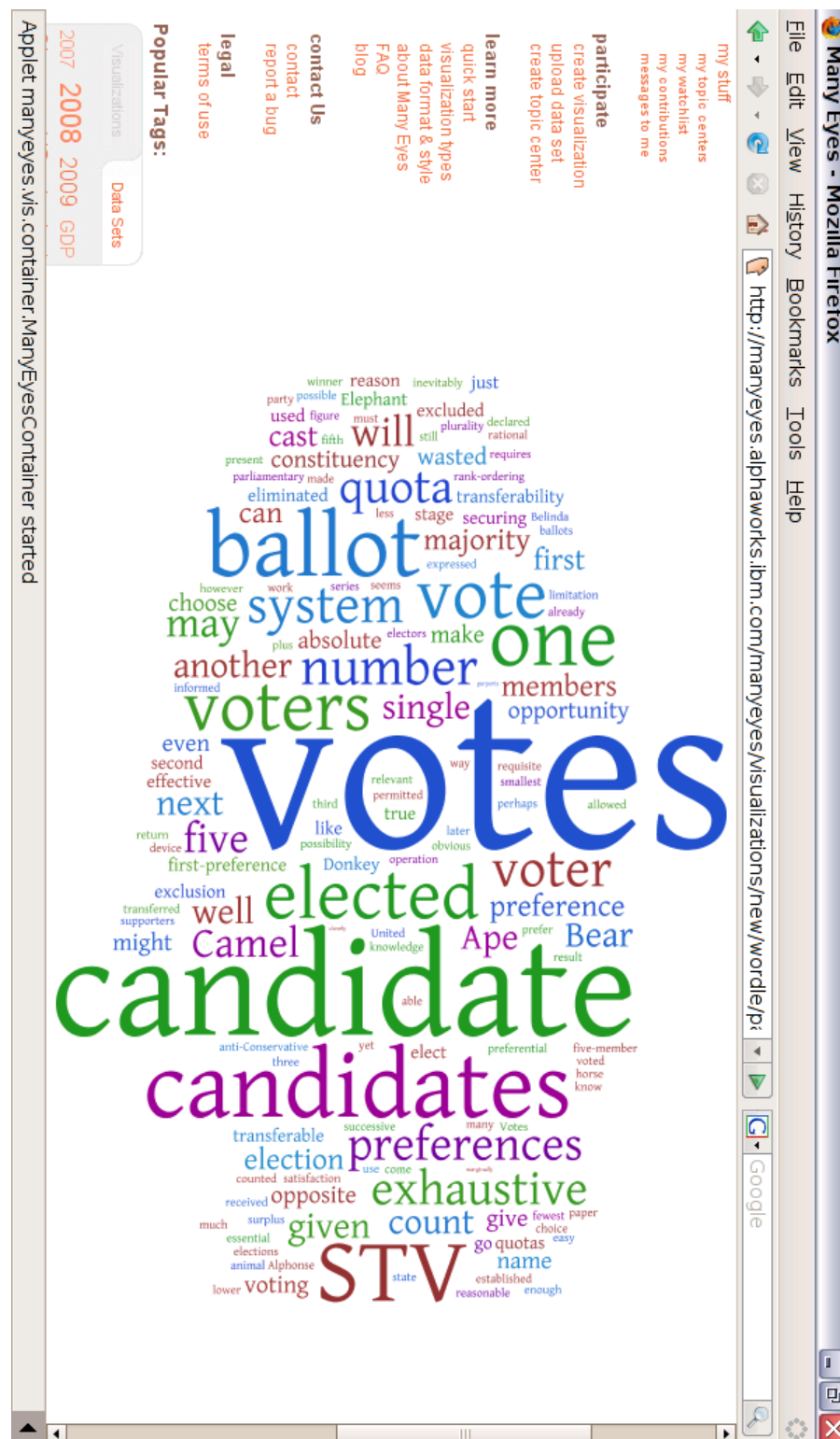
1 word 2 word Compare

Search: Showing 172 out of 172

1 opposite 115 votes 2 opposite 20 votes 25,000 votes 250,000 divided 250,000 votes 41,667 votes 5,6,7,8 opposite 72 votes **absolute majority**
accept ape additional votes advantageously give advocates votes alphabetical sequence animal election animal representative anti-conservative candidates
anti-conservative voter ape 65 ape bear apparently strange appetizing hotchpotch argued effective automatic exclusions average voter ballot enables
ballot paper bear camel bizarre limitation blind choice camel donkey candidate doomed candidates excluded candidates fielded candidates surnames
chief rival chosen camel closely interrelated closest competitor constituency 250,000 continuing candidate control lower-preference count provision count votes
counts votes **declared elected** defeat belinda defeated candidates denied knowledge device essential effective roughly elected voters election elephant
exhaustive ballot enables voters entailing fresh escapes attention excluded candidate exercise inevitably expedient reason
fair elections **fewest votes** figure 1 figure 2 first-preference candidate **first-preference votes** first-preferred candidate
five-member constituency fourth-preference votes fresh counts fundamental principle generally regarded genuine absolute give voters
giving preferences higher-preference votes highly artificial imaginary animal inevitably based inevitably denied informed choice interrelated separated
intolerable proliferation kingdom five-member labour party large majority leading contenders limitation essential logical reason lower preference
lower-preference votes major devices majority exists make sense make-believe absolute marginally smaller means giving mentioned preferential
natural expectation number received obvious reason oddest thing operation entailing optimum number outstanding votes parliamentary constituencies
parliamentary elections places tomorrow **prefer camel** preferences suppose **preferential voting** preferred party present context present system
presidential candidate proved surplus questionable preferential rank candidates rank-ordering means rank-ordering permitted rational justification relative merit
relevant count republican conventions **requisite number** rival bear roughly five-sixths satisfaction derived second-or third-or single ballot
single candidate single transferable **single vote** smallest number strange formula stv dissected stv jargon stv obliges stv requires stv terms
subjective assessments successful candidate successive count successive exclusion successively transferred **supporters prefer** system 25,000 system admits
system resorts theory continue third-or fourth-preference transferable votes true wishes typical united united kingdom united states unusual potency
utter confusion valid votes vote knowledgeable vote strange vote unusual vote wasted voter wished votes suffices votes utter votes wasted voting make
voting transferability wasted votes

Bigram tag cloud

Wordle – like
tag clouds
but arranged
using energy
minimization



Many Eyes - Mozilla Firefox

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http://manyyeyes.alphaworks.ibm.com/manyyeyes/visualizations/new/word-tree

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41 hits

votes

- but by securing a quota of votes .
 - a quota is established by dividing the total number of valid votes by the number of members to be elected plus one , and rounding up
 - not so : you are given only one – transferable , it 's true (and of that much more later) – but still just
 - it 's as if you had been given not one vote , but a fifth of a vote .
 - the rest are second – or third – or fourth – preference votes that have been allowed in the end to decide the issue between him
 - this seems reasonable enough if they are very weak : in our imaginary animal election elephant with his 20 votes in the first ballot and donkey
- by the number of members to be elected plus one , and rounding up or adding one to the quotient .
- might be cast .
- each
 - all of them transferable , would result in an intolerable proliferation of candidates fielded to attract those votes , utter confusion in the minds of
 - to allow five candidates to be elected and is just big enough to prevent the election of more than five .
- are
 - counted
 - any candidate who has secured a quota is declared elected .
 - successively transferred from candidates who have a surplus of votes over and above the quota and from candidates excluded as having the smaller
 - transferred to the candidate next in the voter 's order of preference who has neither been already elected or excluded , i .
 - wasted if they do not contribute to a candidate 's election or are superfluous .
 - it is argued , effective : roughly five – sixths in a five – member constituency .
 - a not particularly appetizing hotchpotch .
- over and above the quota and from candidates excluded as having the smallest number of votes in the relevant count .
- in
 - the
 - relevant count .
 - second ballot in the light of that knowledge , and will be similarly well informed before they cast them in the third and fourth .
 - first ballot and donkey with his 18 do n't at all look like possible winners .
 - each successive count .
- should in theory continue until the requisite number of members have been elected , all with a quota .
- suffices for a candidate (or occasionally more than one candidate) to be declared elected .
- and
 - used votes nothing escapes attention so easily as the obvious .
 - election by quotas .
- nothing escapes attention so easily as the obvious .
- utter confusion in the minds of electors and a nightmare of transferring and of counting .
- go to
 - alphonse and 15 , 000 to belinda and 10 , 000 to cuthbert , the votes wasted are the 25 , 000 given to the two
 - ape , 65 to bear and 63 to camel ?
- wasted are the 25 , 000 given to the two defeated candidates plus 9 , 999 of the votes given to alphonse who needed only 15
- given to alphonse who needed only 15 , 001 to defeat belinda , his closest competitor .
- that
 - have been allowed in the end to decide the issue between him and his chief rival , bear .
 - is substantial and only marginally smaller than the number received by the candidate next above him in the relevant count .
- a majority of voters would have chosen camel .
- as electors might wish to give him .
- is likewise a device essential to the operation of the system and devoid of any rational justification .
- of second or lower preference and some are not .
- come into play only if higher – preference votes have proved surplus to the quotas of candidates who have been elected or have become useless to
- have proved surplus to the quotas of candidates who have been elected or have become useless to candidates who have been eliminated .

Applet manyeyes.vis.container.ManyEyesContainer started

sens My H user Man Adobe Z30. user Re: y Dow S gera S 17:0 05:35

Word tree – kind of like a suffix graph

Many Eyes - Mozilla Firefox

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Select a phrase

word1 and word2

word1 's word2

word1 of the word2

word1 the word2

word1 a word2

word1 at word2

word1 is word2

word1 [space] word2

or enter your own
* and * Submit

Filters
Show top: 50
Hide common words ☒

Zoom
In Out Reset

Showing 26 of 26 terms

votes → election

easy → reasonable democratic → republican

transferability → quotas 63

superficial → subjective

prejudice → irrationality

ape → bear

system → devoid

merit → aptitude

alphonse → 15

belinda → 10 ballot → donkey

elephant

Applet manyeyes.vis.container.ManyEyesContainer started

Phrase net: * and *

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Select a phrase

word1 and word2
word1 's word2
word1 of the word2
word1 the word2
word1 a word2
word1 at word2
word1 is word2
word1 [space] word2

or enter your own
* is * Submit

Filters
Show top: 50
Hide common words ☒

Zoom
In Out Reset

voter → required
provision → made
series → prolonged
candidate → left
formula → rational
stv → inevitably
precisely
votes → likewise
quota → declared
established
potency → claimed
system → cranky

Applet manyeyes.vis.container.ManyEyesContainer started

Phrase net: * is *

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Select a phrase

word1 and word2
word1 's word2
word1 of the word2
word1 the word2
word1 a word2
word1 at word2
word1 is word2
word1 [space] word2

or enter your own
* of the * Submit

Filters
Show top: 50
Hide common words ☒

Zoom
In Out Reset

Showing 15 of 15 terms

999 votes
top poll
stage count
user framework stv
working operation system
exclusion candidates candidate

Applet manyeyes.vis.container.ManyEyesContainer started

Phrase net: * of the *

Many Eyes: Upload Data - Mozilla Firefox

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http://manyeyes.alphaworks.ibm.com/manyeyes/datasets/new

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eharmony election
energy expectancy
facebook food health
internet life lyrics
music network obama
people politics
population
president science social
south speech
state states statistics
twitter unemployment
US west world

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3] Check that we understood.

After Step 2, the rectangle below will show a preview of your data, along with a guess about whether it is a table or free text. You can fix a bad guess with the radio buttons.

If your data is tabular, you'll see a few rows of your table. The first row should hold the column labels. The computer guesses whether columns hold text or numbers. If incorrect, you can use the comboboxes below to make the correct selection yourself.

If you see a problem, check the format guidelines.

	1	2	3	4	5	6	7
1	Doc	1st per	2nd per	3rd per	pastv	sayingv	nouns
2	0	1.37	2.73	34.64	50.14	3.19	205.10
3	1	0.89	9.83	16.09	34.87	0.00	216.36
4	2	4.86	0.88	13.26	45.96	2.21	269.11
5	3	0.88	0.00	22.81	64.04	7.02	289.04
6	4	10.23	0.89	26.68	63.58	7.11	306.36
	:	:	:	:	:	:	:
7	16.98	19.40	59.42	77.61	8.49	200.08	

Text Number Number Number Number Number Number

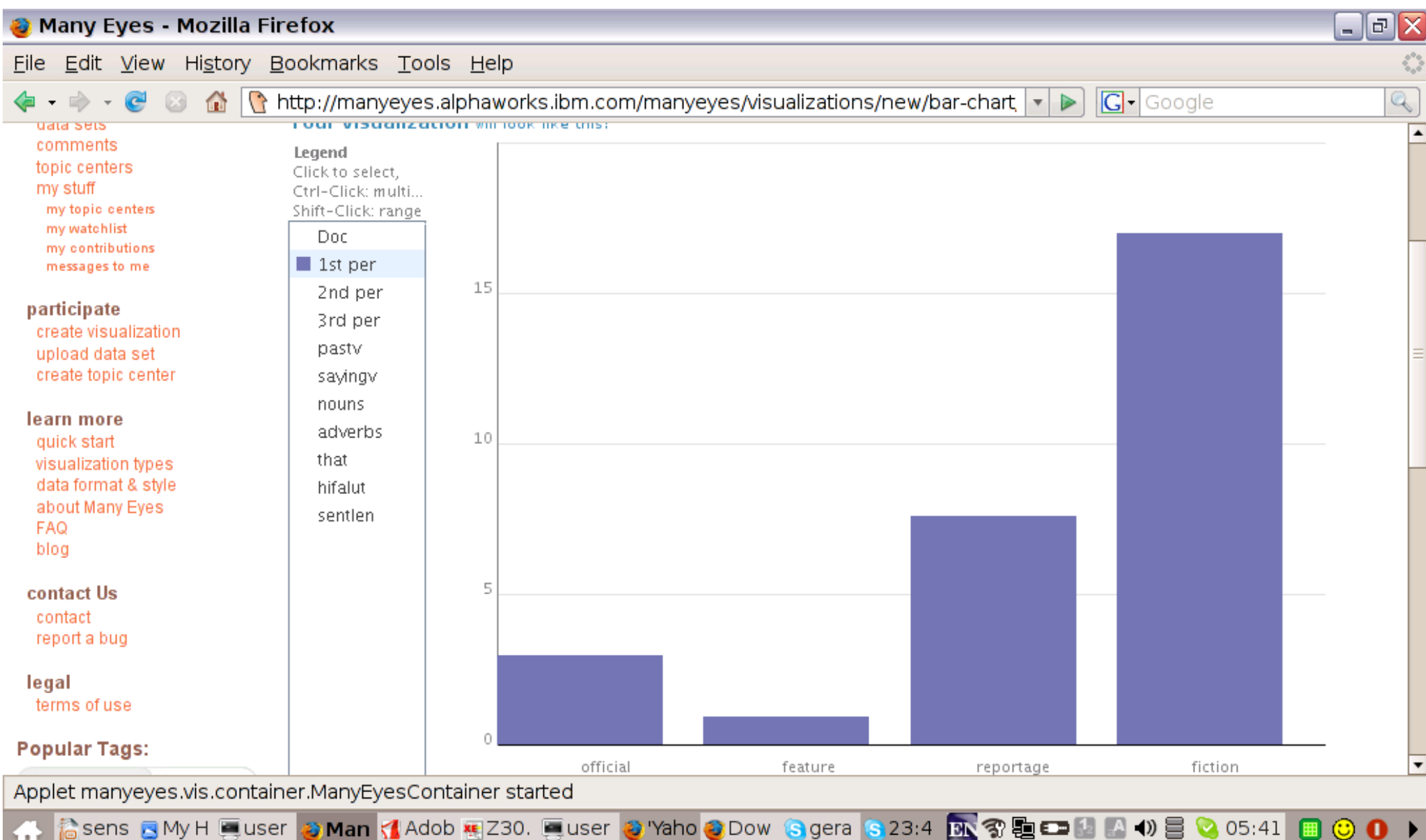
4] Tell us about your data.

Title (example: "Salary (\$1000s) by Occupation") [required]
Include units of measure, if not in column headers

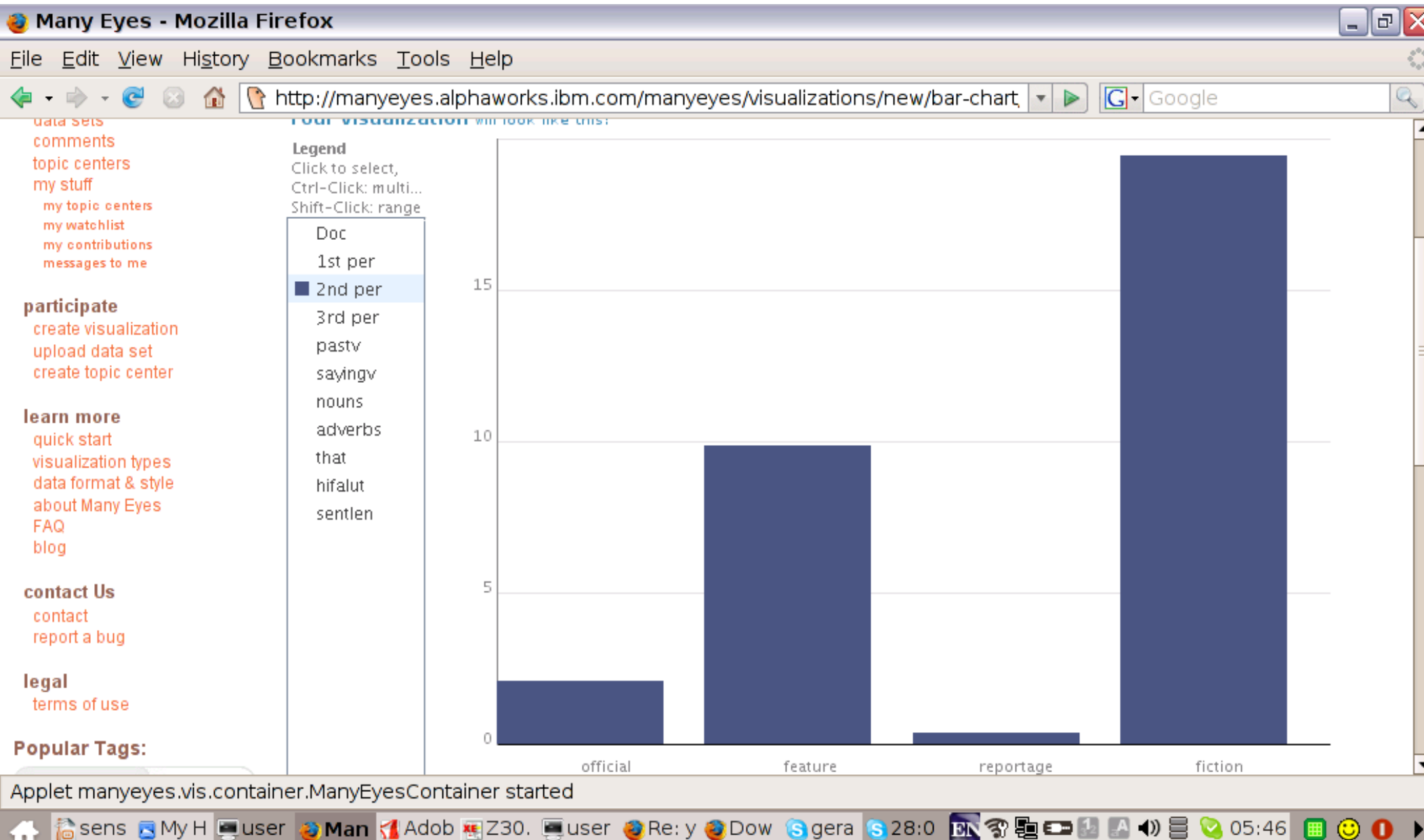
Done

sensemak My Home/ user@asu Many Ey Adobe Re alldocsma user@asu EN 04:44

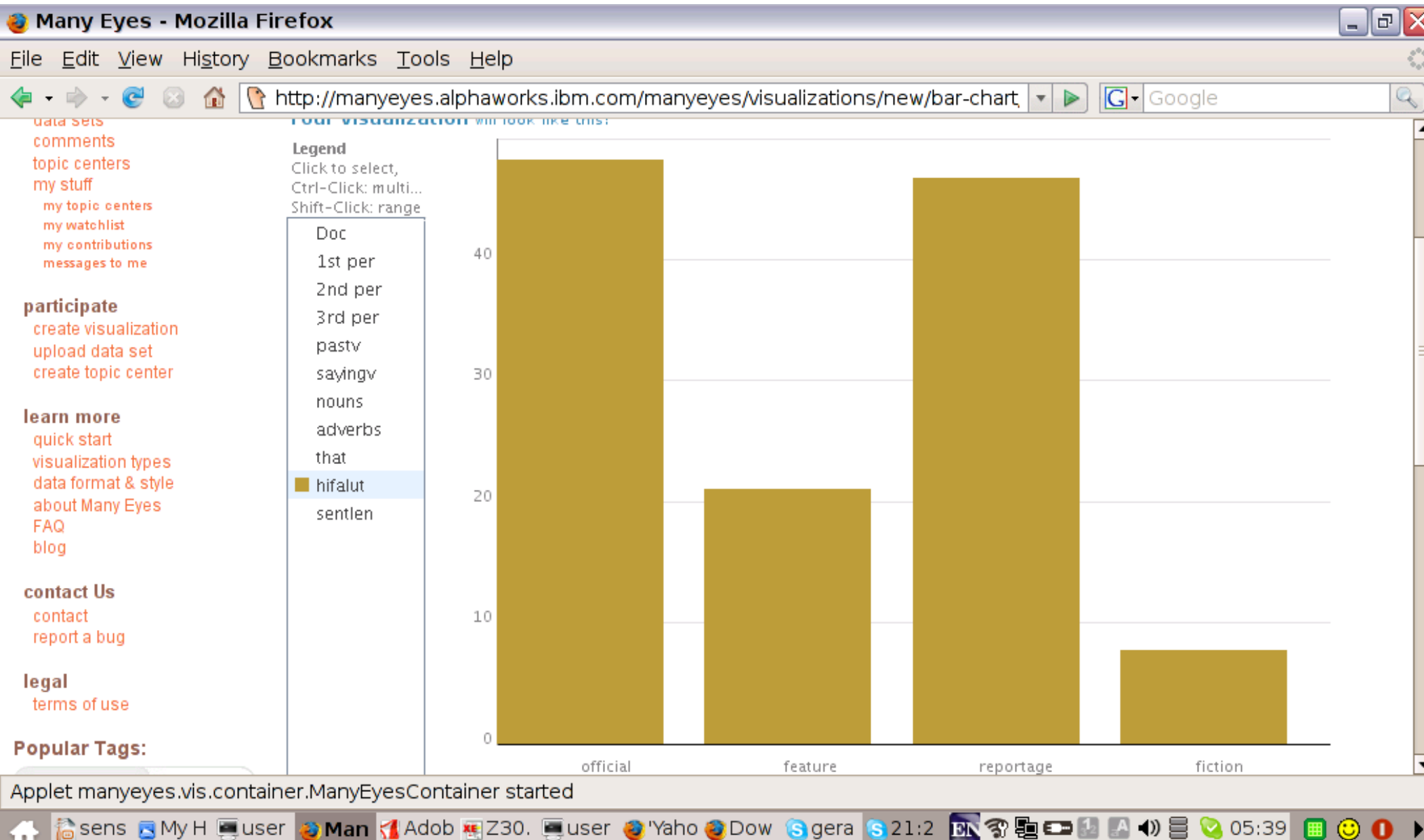
Now we add the statistics from all the texts



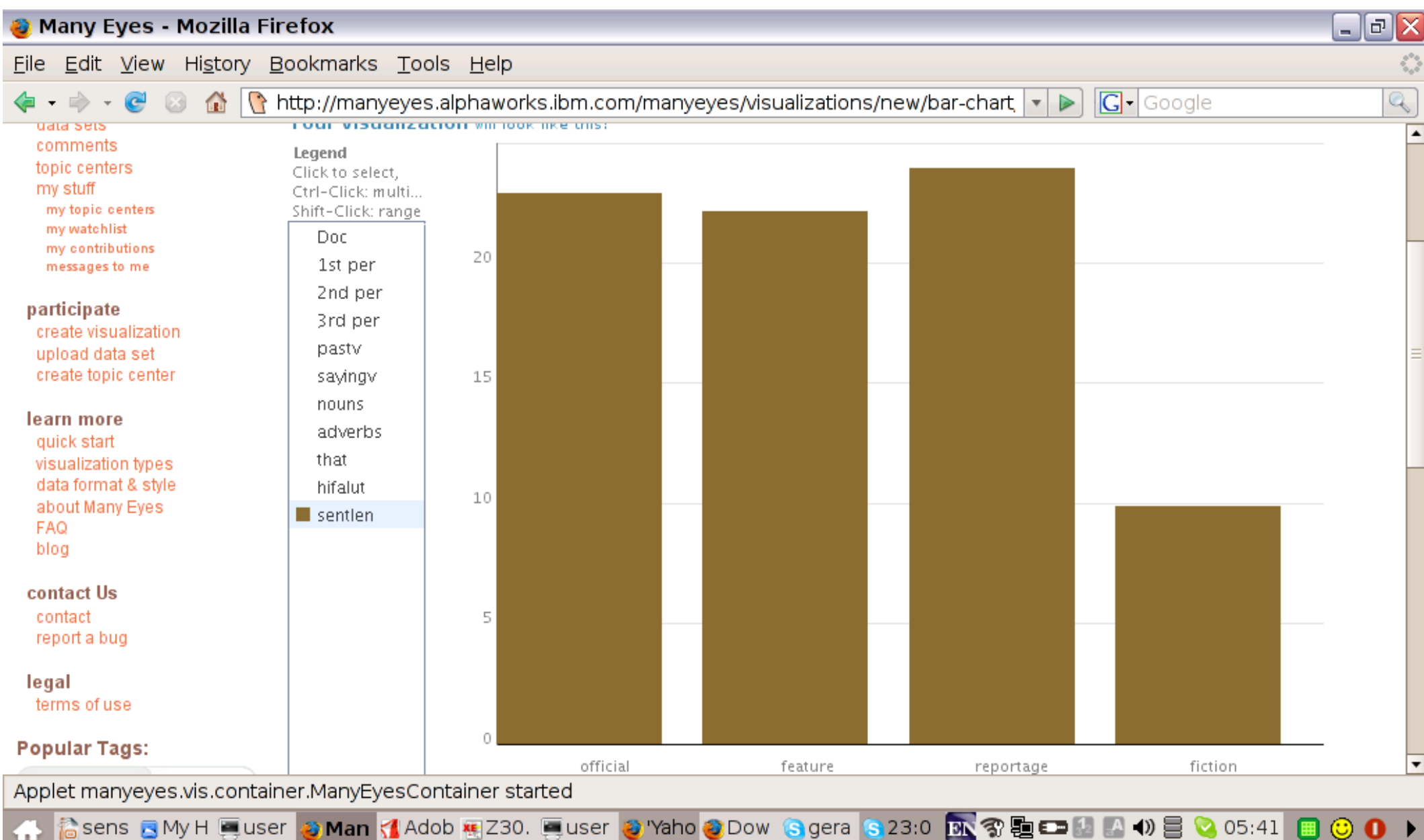
Bar graph – first person pronoun ratio



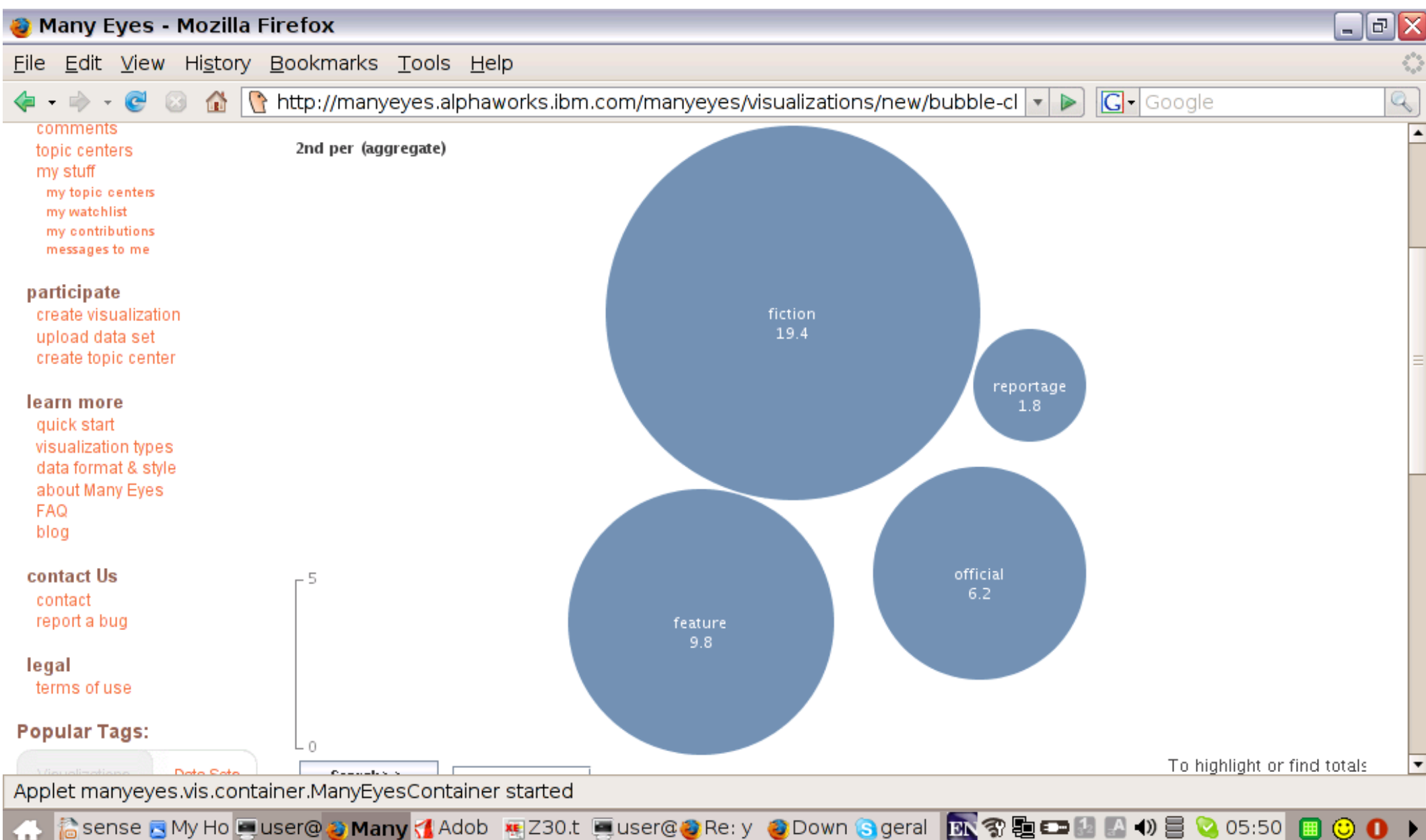
Bar graph - 2nd person pronoun ratio



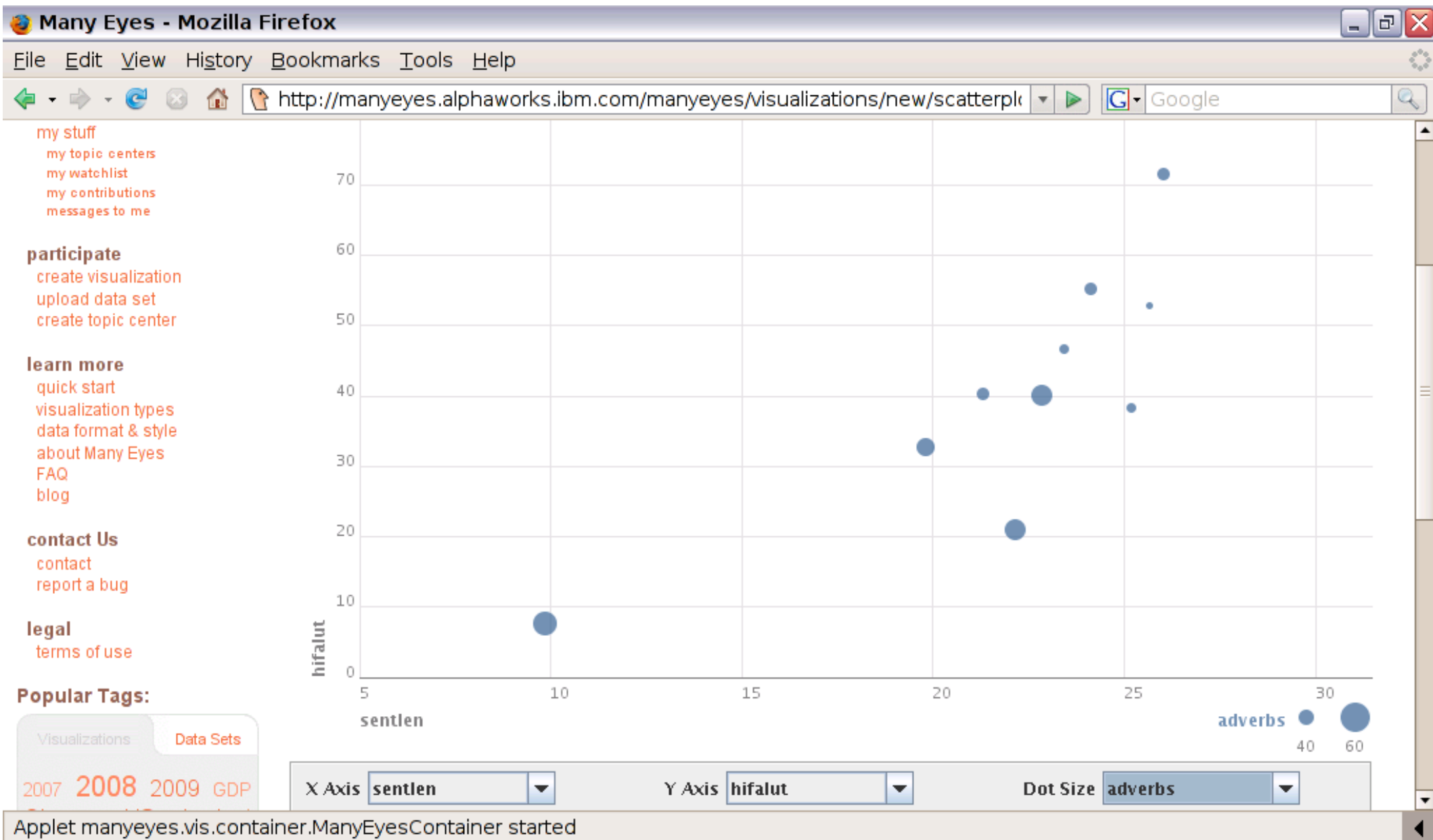
Bar graph – hifalutin token ratio



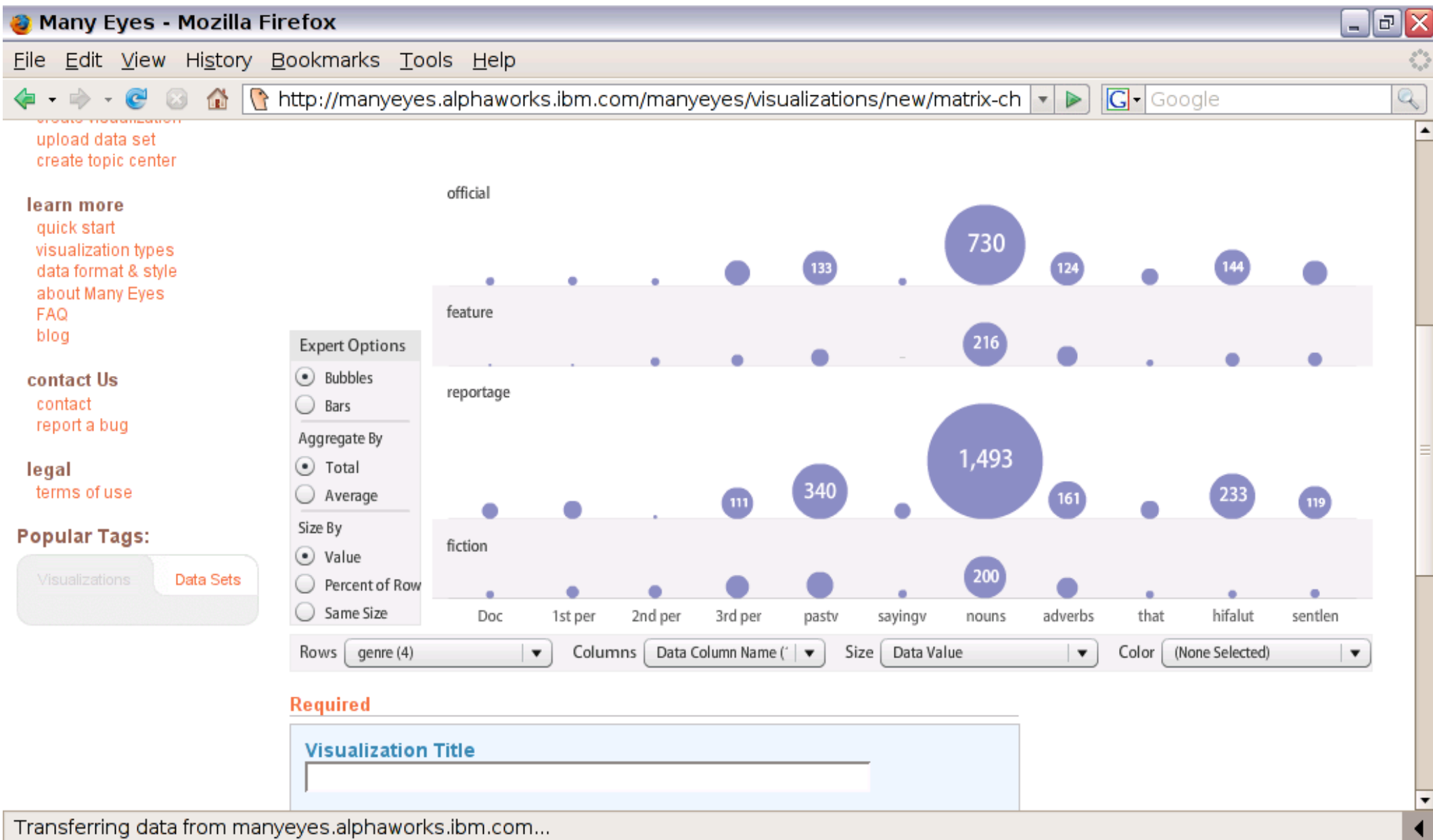
Bar graph – average sentence length (tokens)



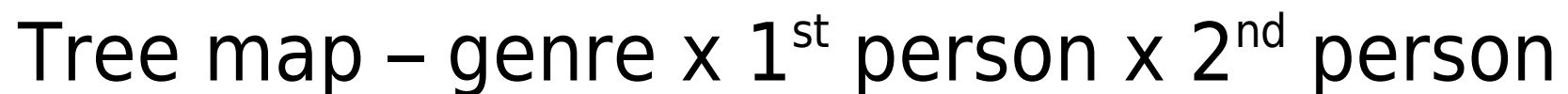
Bubble chart - 2nd person pronoun ratio



Scatter plot – sent len x hifalutin x adverbs



Matrix chart – almost like parallel coordinates



Tree map – genre x 1st person x 2nd person