Frontiers of Visualization

National Coordination Office (NCO) for the
Networking and Information Technology R&D (NITRD) Program
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HCIL

Interdisciplinary research community

- Computer Science & Info Studies
- Psych, Socio, EDUC, JOUR & MITH

www.cs.umd.edu/hcil
vimeo.com/72440805

Four Questions

- *Who are you?*
  & what are you doing with visualization?
- *What are you passionate about?*
- *What are your current challenges in your work?*
- *What is on your wish list?*

Four Answers

- Call me “Trimtab”,
  Temporal Event Sequences
- Promoting Interactive Info Visualization
- Case Study Evaluation, Dissemination
- Increased recognition for Info Visualization

Integrating Statistics & Visualization

"…exaggerated reports appear of the secrets that can be uncovered by setting learning algorithms loose on oceans of data"

-- *Witten & Frank (2000, 2005, 2011)*

"…attempting to bring statistical principles to bear on massive data…may yield results that are not useful, at best, or harmful at worst."

--*Frontiers in Massive Data Analysis (2013)*

Integrating Statistics & Visualization

"As yet I know of no person or group that is taking nearly adequate, advantage of the **graphical potentialities of the computer**... In exploration they are going to be the data analyst's greatest single resource."

-- John Tukey (1965)

"visualization and (interactive) exploration of complex and vast data constitute a crucial component of an analytics infrastructure."

--Frontiers in Massive Data Analysis (2013)

Spotfire: Retinol's role in embryos & vision

Cell Cycle siRNA Plate 1 - Spotfire GE Healthcare DecisionSite

File Edit View Visualization Data Tools Guides Window Help

Guides

Contents > Simple Plate Map Visualisation

Copyright GE Healthcare 2006

GE Healthcare Plate Map Visualisation Guide

Plate Map Visualisation

This guide will create plate views from IN Cell data that have been transferred using the Spotfire Connect utility. The guide is based on individual object data and assumes that two columns called WellR and WellC exist to describe the plate position.

Each plate map can be configured further using the Properties dialogue.

Open demonstration data and Display table

Opens the demonstration data saved with the Guide and displays a table. Displaying the table is an optional step showing that the above action link does actually load the data. Alternatively, you can use the Spotfire Connect utility to transfer data from IN Cell Investigator.

Next

5D Data

Nuclear Texture

G1 Cells

Cells

Nuclear Texture

Plate Map

Morphology

CCND2, CCNB2, CCNB1, CCND1, CCNE2, ORC1L, CDC25C, SKP1A, SKP2, CDKN2D, RBP1, RBL2, CDKN1B, TP73L, CDC6, CCNG1, PCNA, CCNB3, TP73, CDK9, CCND3, CCNI, CDC20, E2F3, CCNG2, RB1, CDK6, CENPC1, CDK7, RAD17, ORC5L, CCNA1, E2F2, MCM4, CDC45L

Cells, G1 Cells, Nuclear Area, Micronuclei, Nuclear Texture

Query Devices

Row: H, G, F, E, D, C, B, A

Column 1 – 12

siRNA Blank – TP73L

Cells 0 – 1.322

G1 Cells 1.0387596... – 1.78666666...

Nuclear Area 0 – 1.971544

Micronuclei 0 – 4.9425

Nuclear Texture

Details-on-Demand

Column	Value
Row	F
Column	10
siRNA	RBP1
Cells	0.916
G1 Cells	1.653333333...
Nuclear Area	0.98185
Micronuclei	2.3025
Nuclear Texture	1.015828947...

Legend

Plate Map

Color by G1 Cells: 0 – 1.78666666...

Size by Cells 0 – 1.322

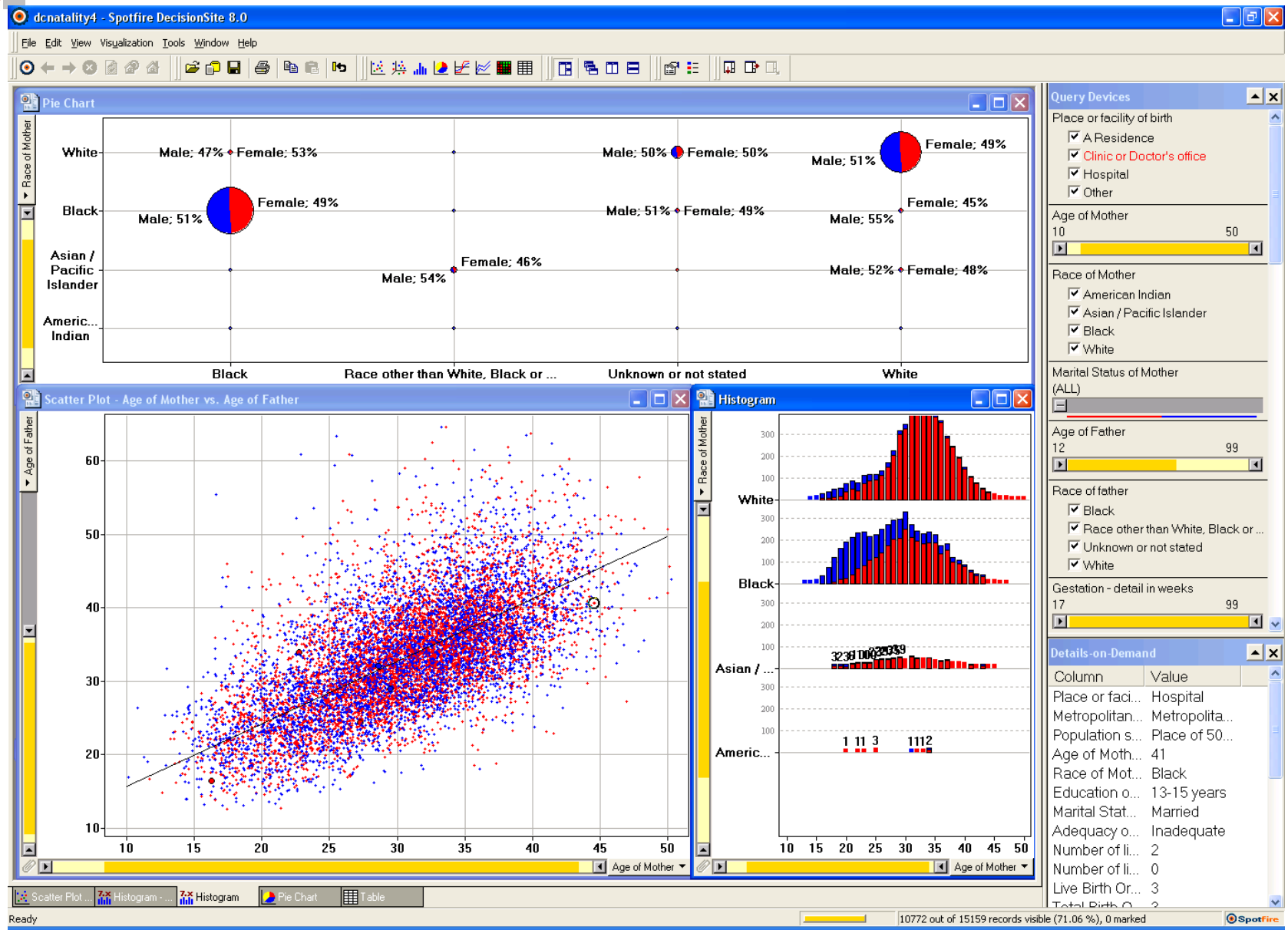
Connected to 199.244.143.138

Plate Map | Morphology | 5D Data

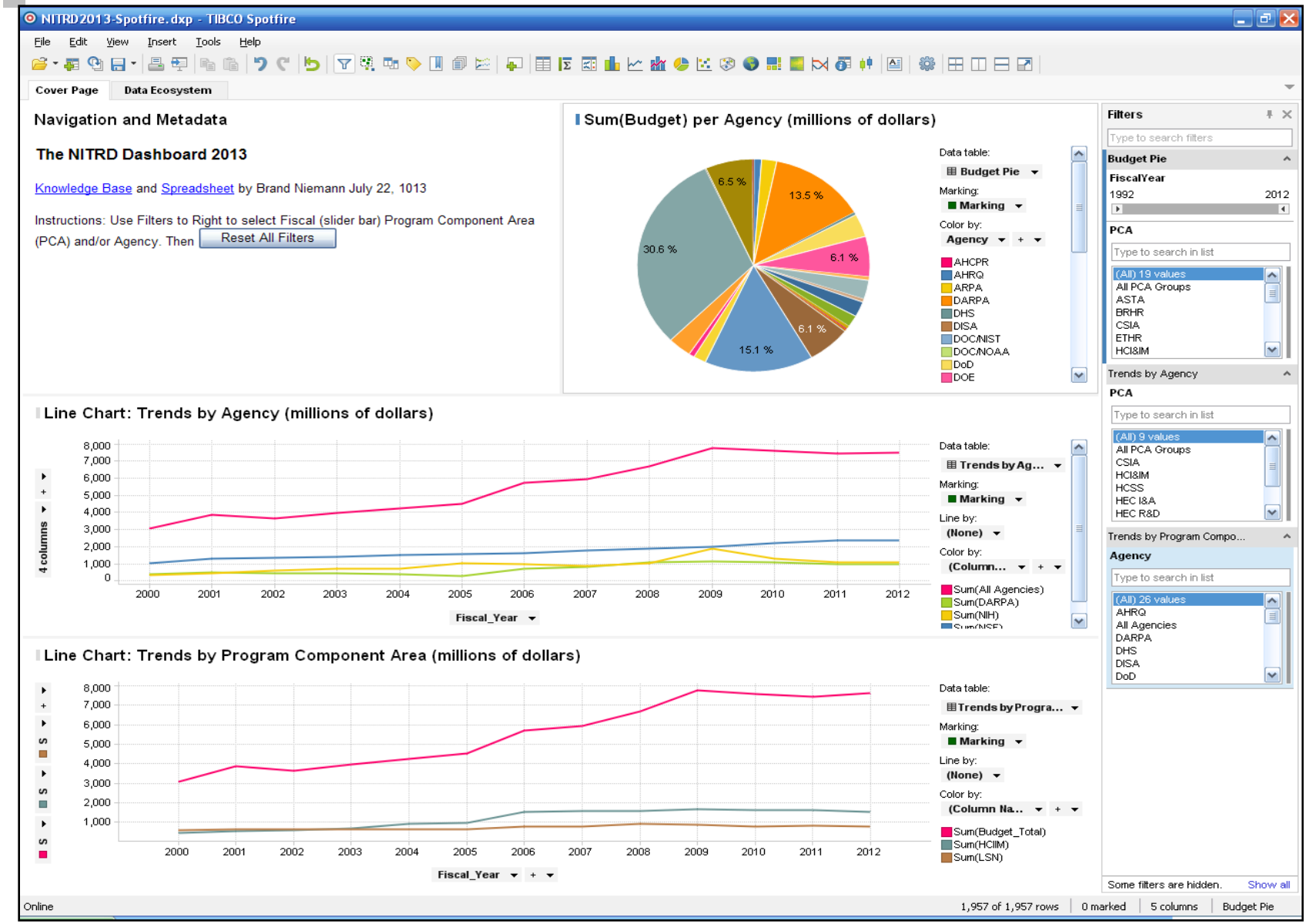
Ready

59 out of 96 records visible (61.46 %), 0 marked

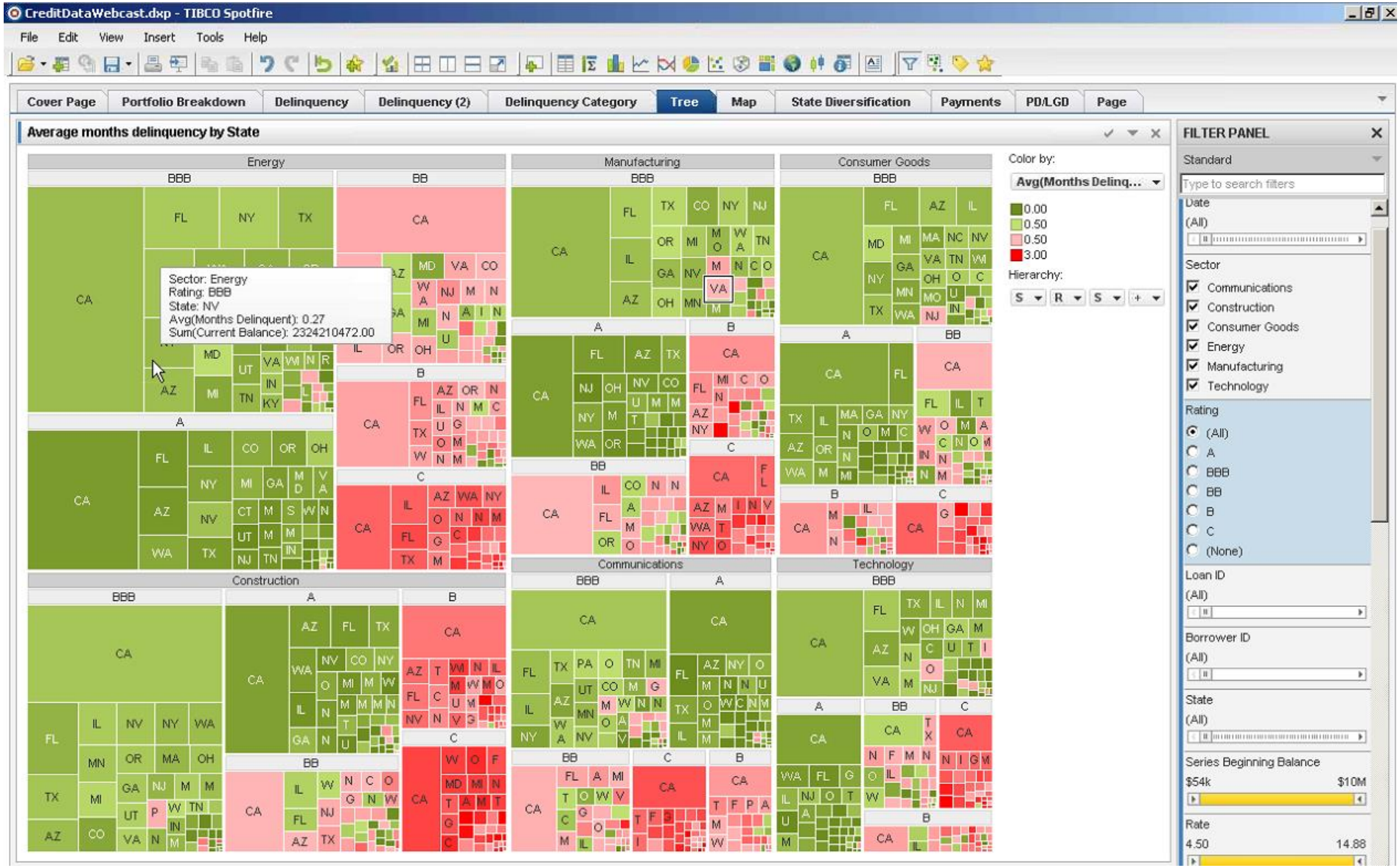
Spotfire: DC natality data



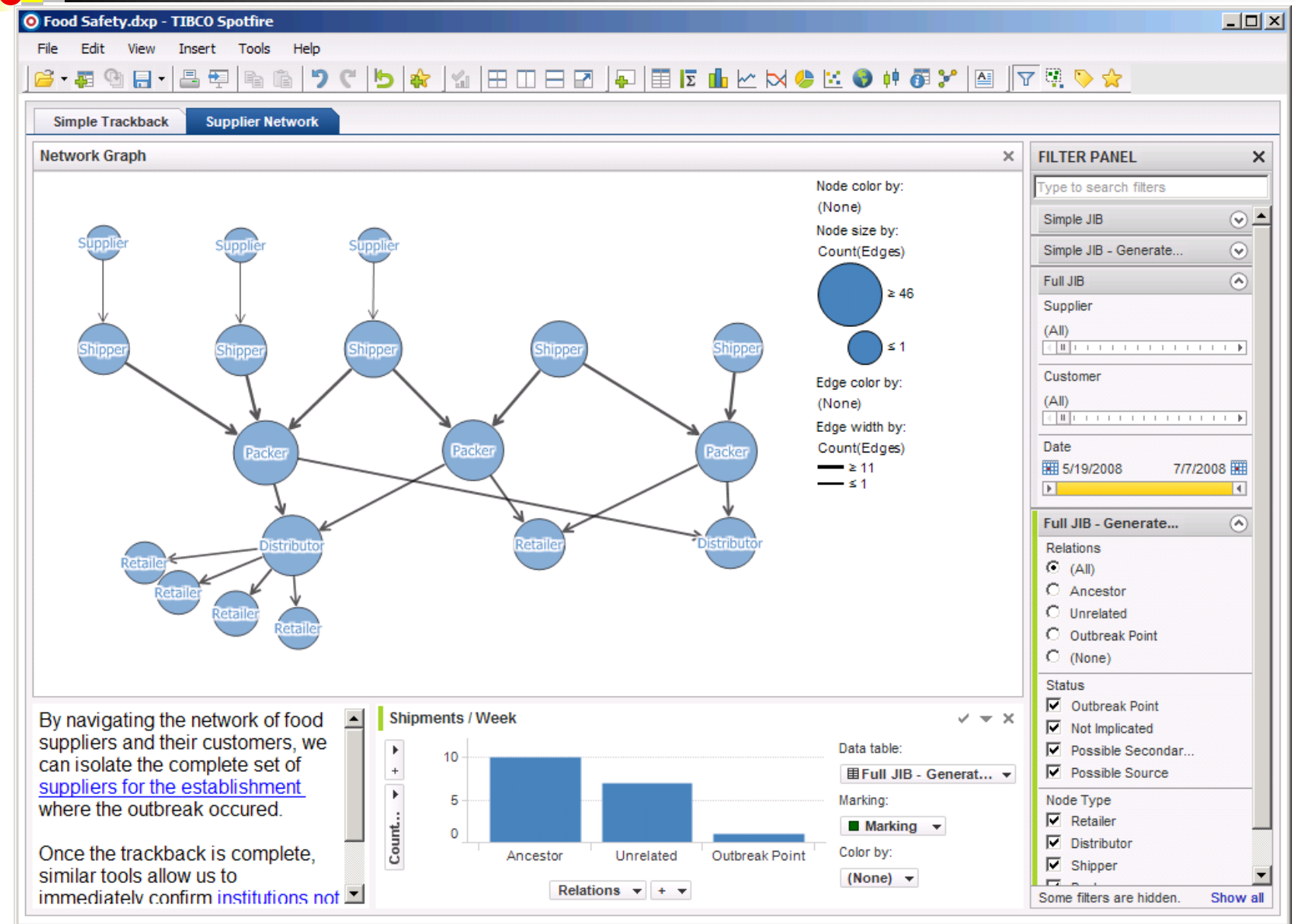
Spotfire Time Series: Budget data



Spotfire Treemap: Bond Portfolio Analysis



Spotfire Networks: Supply Chain Analysis



Spotfire

www.spotfire.com

HCIL

Information Visualization: Mantra

- **Overview, zoom & filter, details-on-demand**
- **Overview, zoom & filter, details-on-demand**
- **Overview, zoom & filter, details-on-demand**
- **Overview, zoom & filter, details-on-demand**
- **Overview, zoom & filter, details-on-demand**
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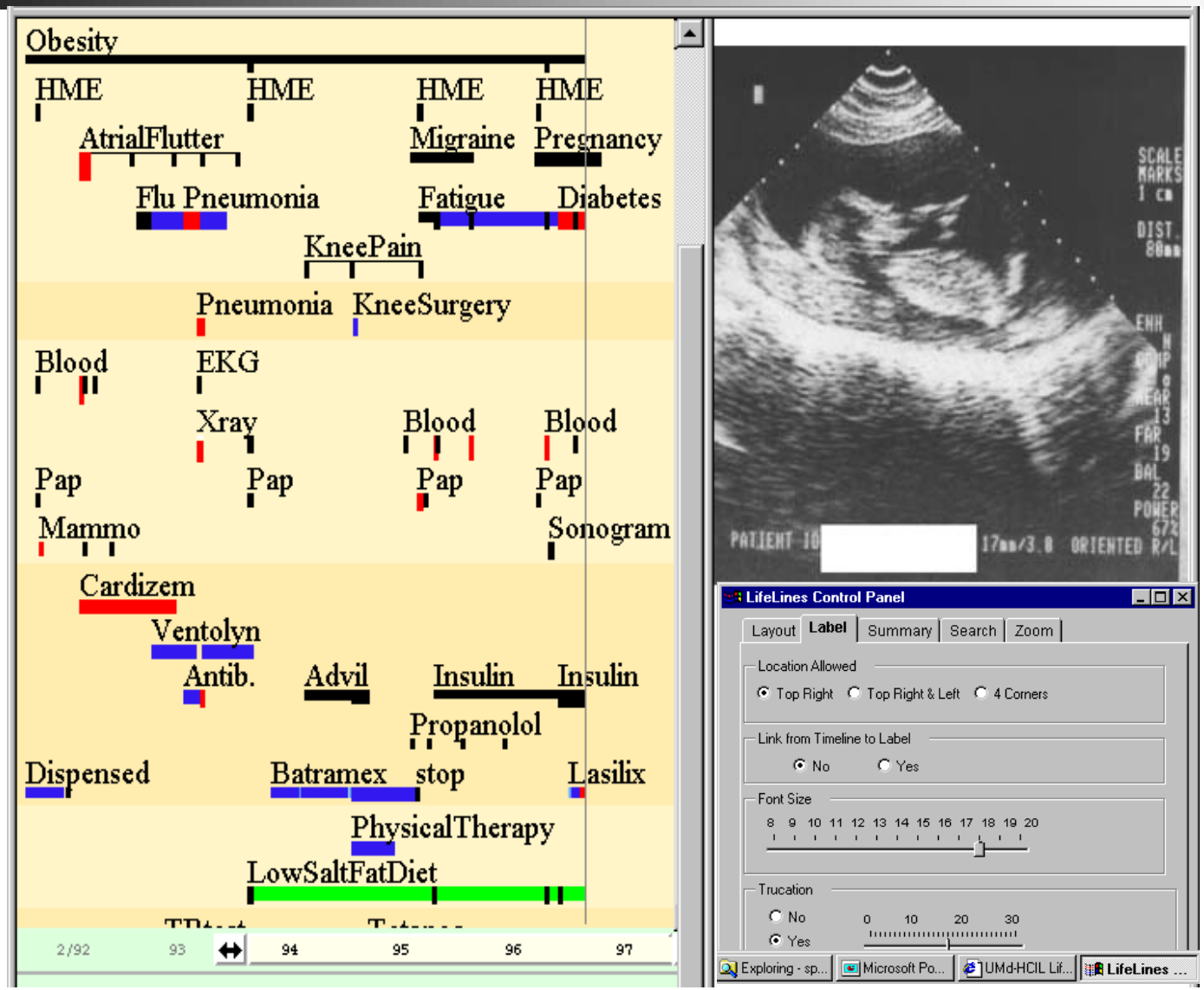
- **Overview, zoom & filter, details-on-demand**
- **Overview, zoom & filter, details-on-demand**

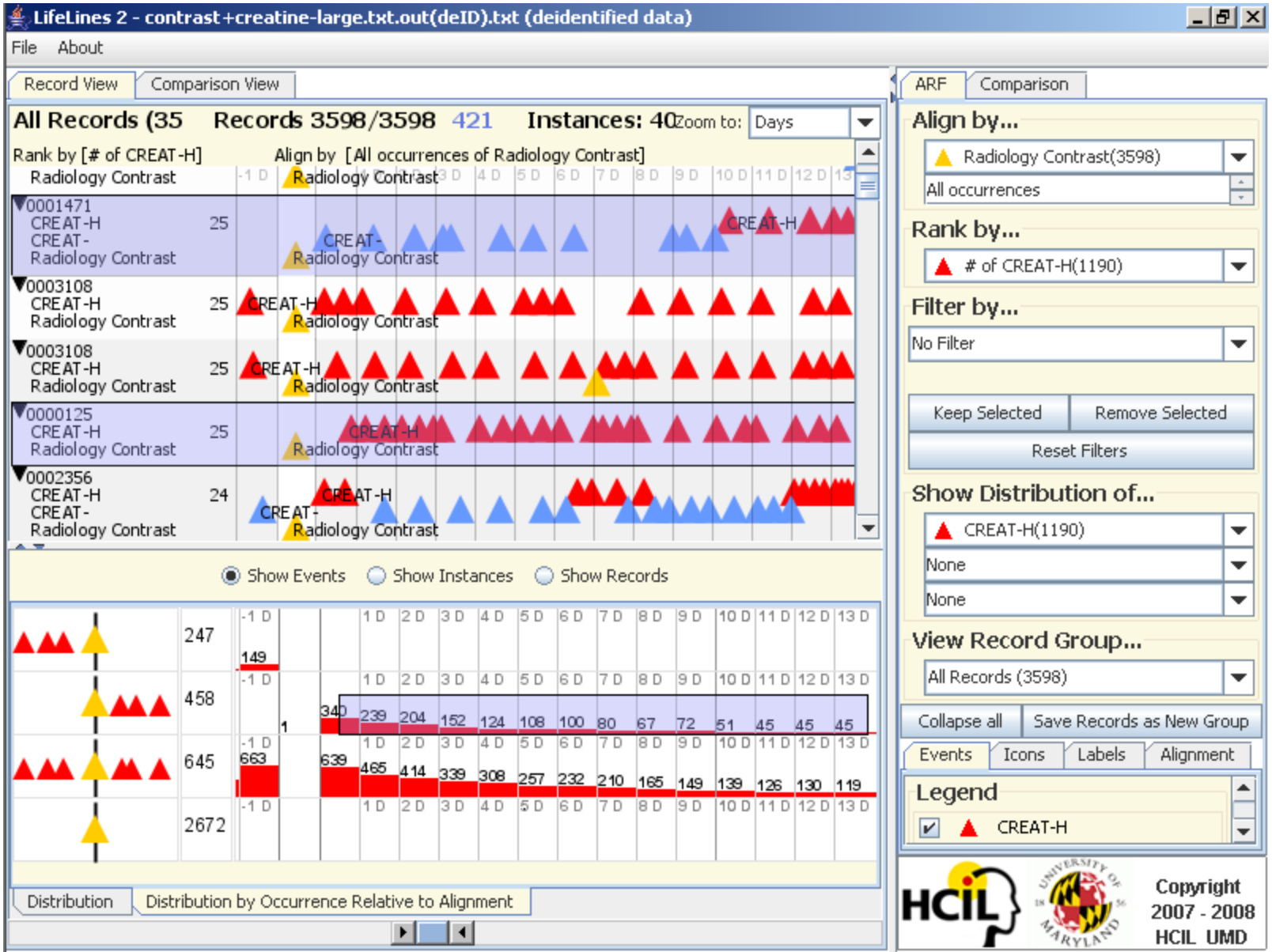
(The Eyes Have It, *IEEE VL, 1996*)

LifeLines: Patient Histories

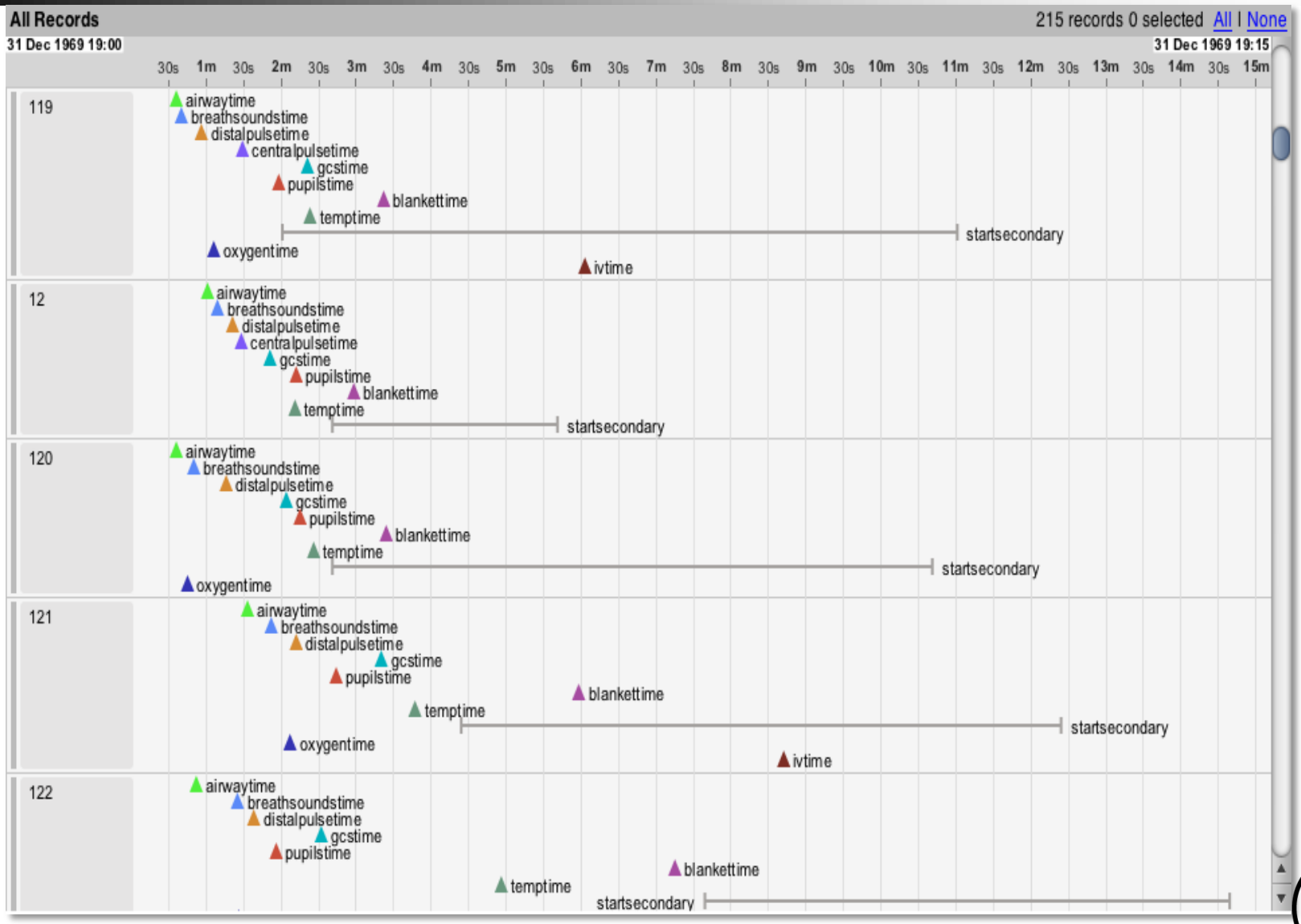


www.cs.umd.edu/hcil/lifelines

LifeLines2: Align-Rank-Filter & Summarize

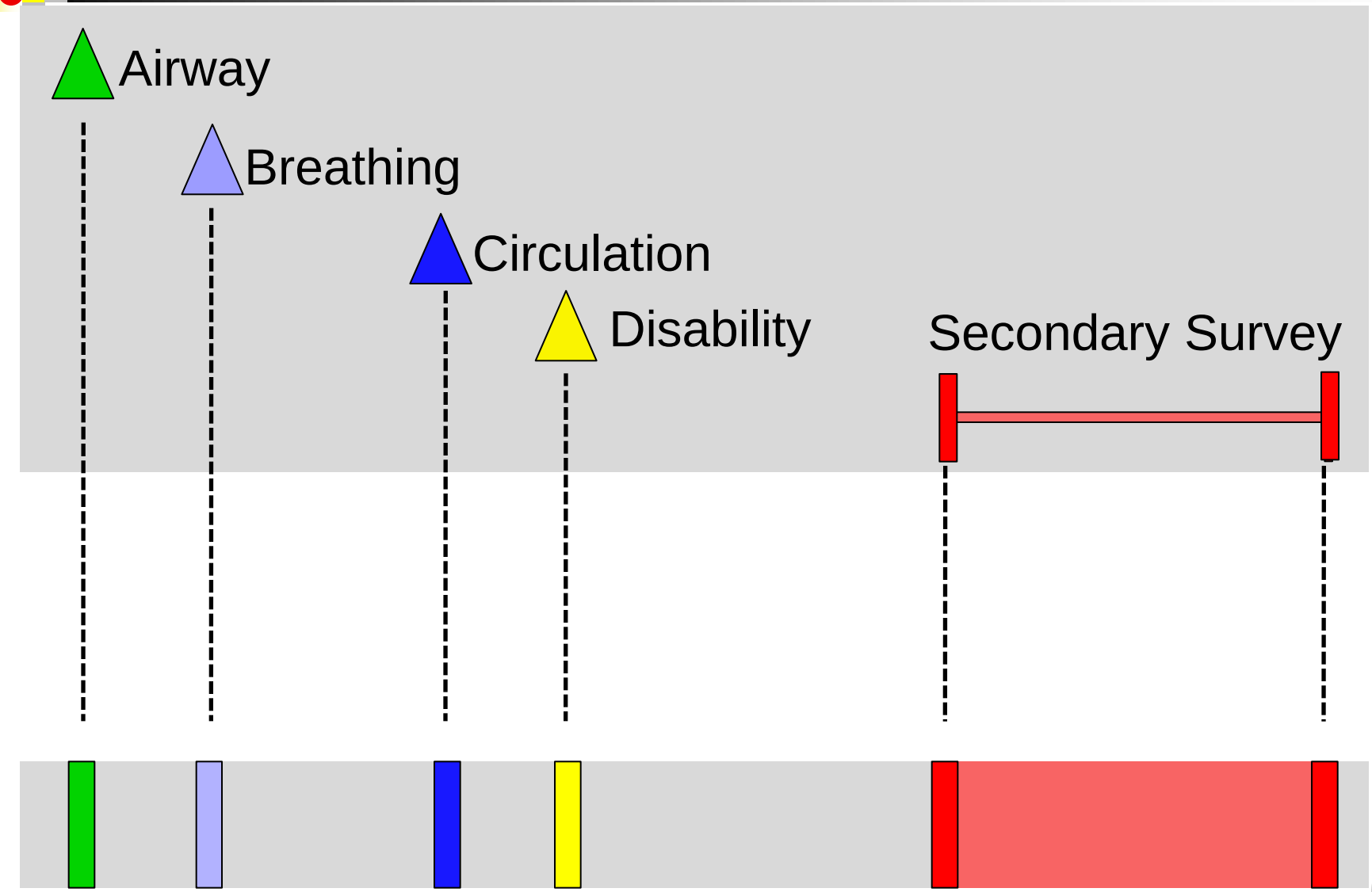


EventFlow: Temporal Events



www.cs.umd.edu/hcil/eventflow

EventFlow: Temporal Events



http://youtu.be/dz86_nSXt-M

Children's Hospital Trauma Data

EventFlow 2.023 - CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt (CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt)

File Dataset Selection View Help

Data Manager | Control

CONVERTED_DataforMegan...
Showing: 215/215 records

Selected: 0 record

All | Remove them
None | Remove others

Align | Filter | Merge | Window

Please specify how to align:

No alignment

(no advanced option selected)

Advanced Options...

automatic update | Align

Legend | Attribute | Pattern

- airwaytime
- breathsoundstime
- gcstime
- pupilstime
- blankettime
- temptime
- startsecondary
- logrolltime
- oxygentime
- ivtime
- clothestime
- xraytime
- heartratetime
- PULSE

Measurement Tool

Zoom: 50 Minutes

0
100
200

Timeline | Search

Time

Clear | Reset All | Replace As... | Search

Matching Records 37 records 16 selected All | None

31 Dec 1969 19:00 31 Dec 1969 19:37

3m 6m 9m

1 Match: 1
airwaytime
breathsoundstime
gcstime
pupilstime
blankettime
temptime
startsecondary
logrolltime
PULSE

10 Match: 1
airwaytime
breathsoundstime
gcstime
pupilstime
blankettime
temptime
startsecondary
logrolltime
oxygentime
ivtime
clothestime
xraytime
PULSE

104
airwaytime

Non-Matching Records 178 records 88 selected All | None

31 Dec 1969 19:00 31 Dec 1969 19:37

3m 6m 9m

100 Match: 0
airwaytime
breathsoundstime
gcstime
pupilstime
blankettime
temptime
startsecondary
logrolltime
clothestime
xraytime
PULSE

101 Match: 0
airwaytime
breathsoundstime
gcstime
pupilstime
blankettime

Children's Hospital Trauma Data

EventFlow 2.023 - CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt (CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt)

File Dataset Selection View Help

Data Manager | Control

CONVERTED_DataforMegan...
Showing: 215/215 records

Selected: 0 record

All | Remove them
None | Remove others

Align | Filter | Merge | Window

Please specify how to align:

No alignment
(no advanced option selected)
Advanced Options...

automatic update | Align

Legend | Attribute | Pattern

- airwaytime
- breathsoundstime
- gcstime
- pupilstime
- blankettime
- temptime
- startsecondary
- logrolltime
- oxygentime
- ivtime
- clothestime
- xraytime
- heartratetime
- PULSE

Measurement Tool

Zoom: 36 Minutes

0
100
200

Timeline | Search

Time

Clear | Reset All | Replace As... | Search

Matching Records 37 records 0 selected All | None

31 Dec 1969 19:00 — 31 Dec 1969 19:37

3m 6m 9m

1 — Match: 1
airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, PULSE

10 — Match: 1
airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, oxygentime, ivtime, clothestime, xraytime, PULSE

104
airwaytime

Non-Matching Records 178 records 0 selected All | None

31 Dec 1969 19:00 — 31 Dec 1969 19:37

3m 6m 9m

100 — Match: 0
airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, clothestime, xraytime, PULSE

101 — Match: 0
airwaytime, breathsoundstime, gcstime, pupilstime, blankettime

Children's Hospital Trauma Data

EventFlow 2.023 - CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt (CONVERTED_DataforMegan_03-22-2013_2013-06-18.txt)

File Dataset Selection View Help

Data Manager | Control

CONVERTED_DataforMegan...
Showing: 111/215 records

Selected: 0 record

All | Remove them
None | Remove others

Align | Filter | Merge | Window

Please specify how to align:

No alignment
(no advanced option selected)
Advanced Options...

automatic update | Align

Legend | Attribute | Pattern

- airwaytime
- breathsoundstime
- gcstime
- pupilstime
- blankettime
- temptime
- startsecondary
- logrolltime
- oxygentime
- ivtime
- clothestime
- xraytime
- heartratetime
- PULSE

Measurement Tool

Zoom: 36 Minutes

Timeline | Search

Time

Clear | Reset All | Replace As... | Search

Matching Records 37 records 16 selected All | None

31 Dec 1969 19:00 — 31 Dec 1969 19:37

3m 6m 9m

1 Match: 1: airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, PULSE

10 Match: 1: airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, oxygentime, ivtime, clothestime, xraytime, PULSE

104 airwaytime

Non-Matching Records 178 records 88 selected All | None

31 Dec 1969 19:00 — 31 Dec 1969 19:37

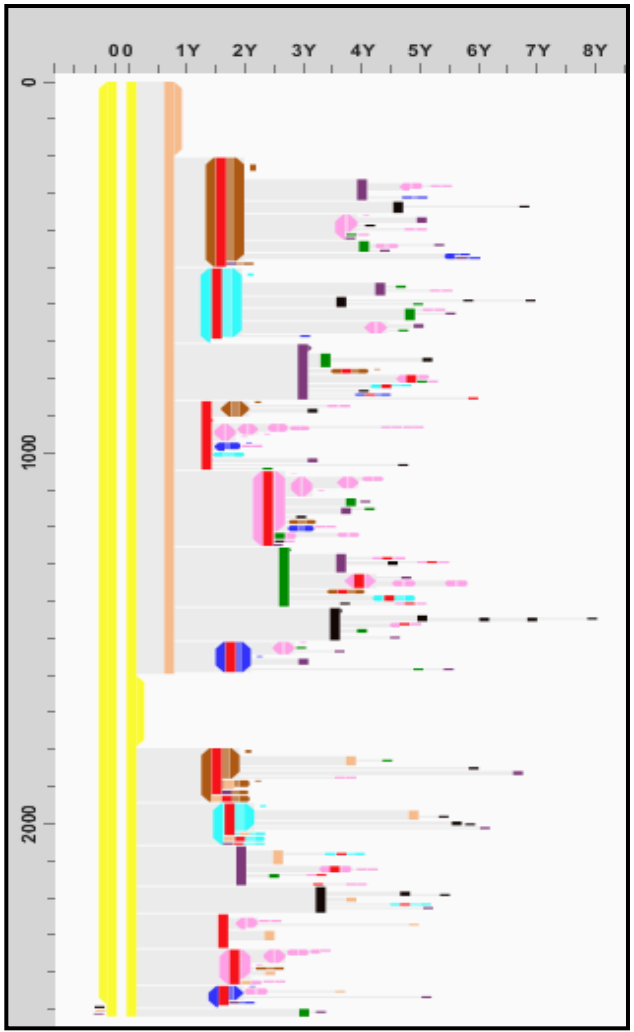
3m 6m 9m

100 Match: 0: airwaytime, breathsoundstime, gcstime, pupilstime, blankettime, temptime, startsecondary, logrolltime, clothestime, xraytime, PULSE

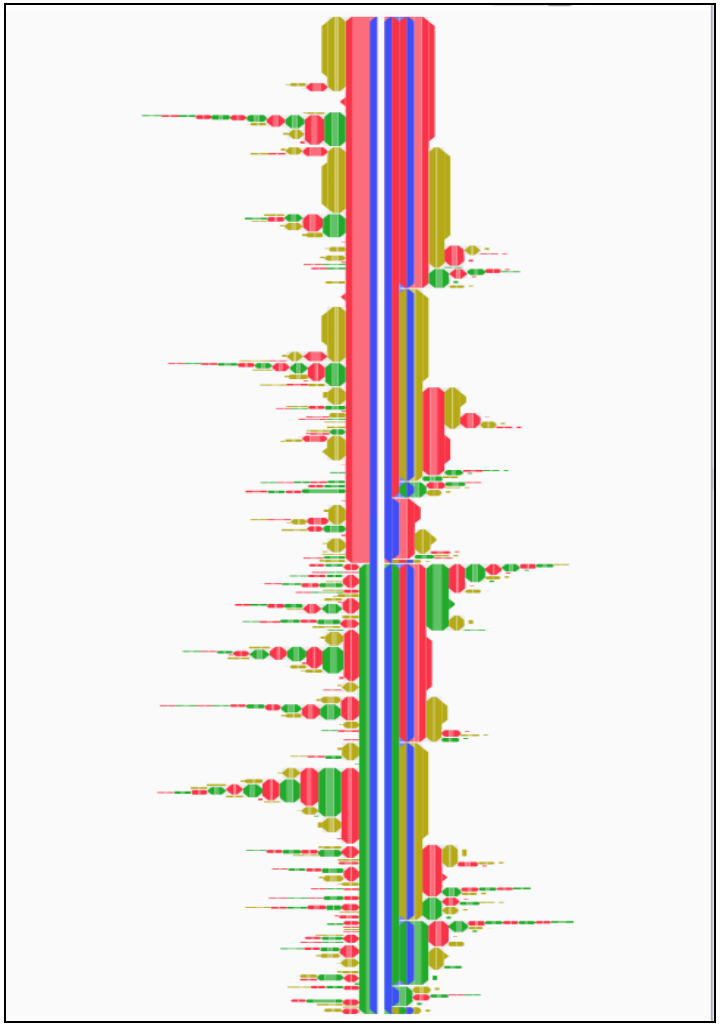
101 Match: 0: airwaytime, breathsoundstime, gcstime, pupilstime, blankettime

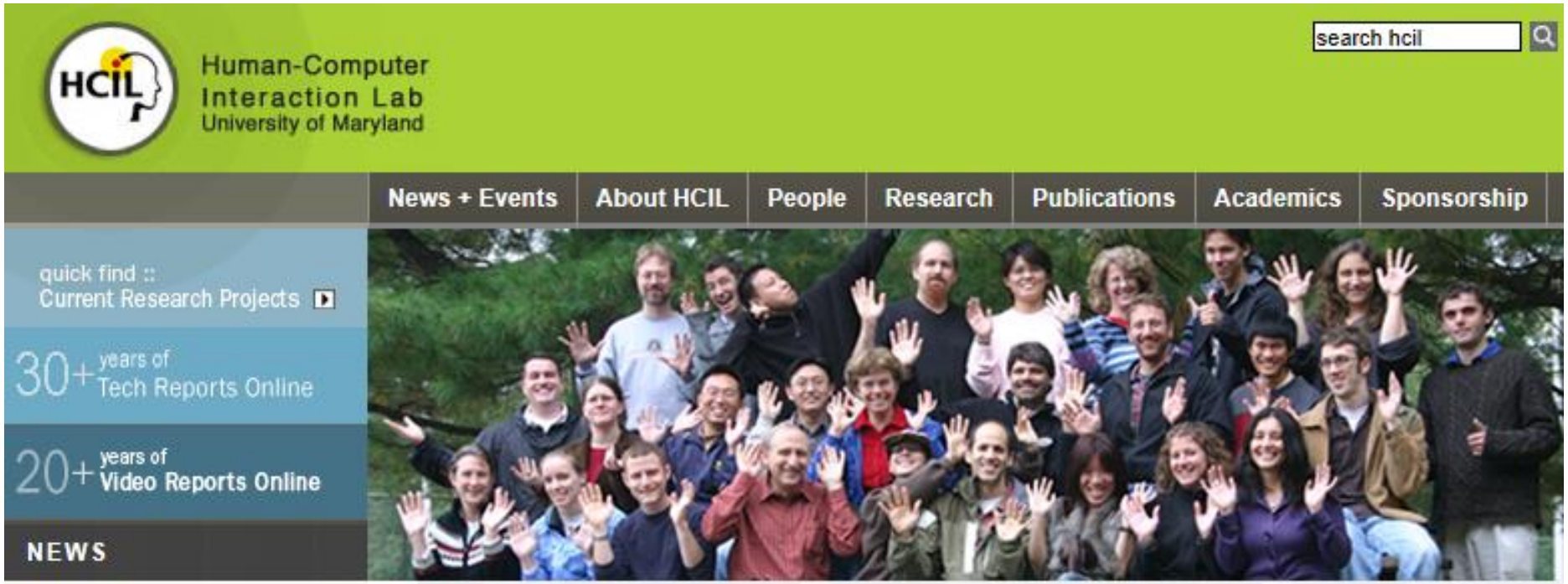
UM-Baltimore: CHIB Projects

Radiation Therapy: Metastatic Prostate Cancer



Warfarin Usage in Patients with Traumatic Brain Injury





31st Annual Symposium, May 29, 2014

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