

# Data Visualization in VR: Applications of InstantAtlas in Human Resources

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# Outline

- Objectives
- Human resources and VR
- Visual analytics in VR
  - Benefits
  - Applications, Goals, Outcomes
- Visual analytics
  - Brief history
- Technologies
  - InstantAtlas
- WVDRS' HR Report

# Objectives

- Learn about visual analytics technologies.
- Learn how to enhance accessibility of HR and other programmatic data.
- Gain insight in the development and implementation of visual analytics tools in the context of vocational rehabilitation.
- Learn how visual analytics can enhance human resources planning and management.
- Learn how to identify human resource factors that are critical in VR service provision and management of human resources.



# Human Resources



## ■ Challenges:

- Given recent economic conditions (e.g., Great Recession, Baby Boomers retiring), many VR agencies are experiencing high levels of turnover and great fluctuation in employee skill levels. During these conditions, appropriate allocation of human resources becomes even more critical for agency performance management.
- VR administrators oversee dozens of office locations with hundreds of agency personnel at the state, region/district, and local/branch office levels.
- Incredible amounts of VR program and performance data are collected daily and VR administrators must routinely comb through this information.

## ■ Solution:

- Visual analytics software gives VR administrators the capacity to visualize and explore human capital resources and deficits across multiple agency levels and time periods.



# Visual Analytics?

- **Definition**: “Visual analytics is the science of analytical reasoning facilitated by interactive visual interfaces” (Thomas and Cook, 2005).
- “Visual analytics is the emerging science of making sense of large data sets, that through the use of interactive visualization and query through semantic extraction and data fusion technologies, supports the analytic reasoning process.” (Institute for Security Science and Technology, Imperial College, London)



# Visual Analytics in VR

## Benefits

- **Accountability**
  - Workforce Opportunity and Innovation Act programs
- **Data accessibility**
  - Report size and format
  - Easily disseminated, portable
  - Increase the number of individuals reviewing programmatic performance data
- **Data visualization**
  - Increase comprehension (reduce cognitive load)
  - Confirm expectations
  - Make new discoveries
- Effectively and efficiently communicate performance to stakeholders

## Applications

- **Performance management**
  - Planning
  - Monitoring
  - Evaluating

## Goals

- **Inform decision-making**
  - Improve programs
  - Organizational learning
  - Investigate value
  - Innovation

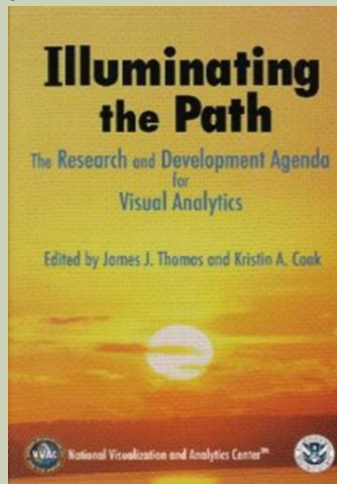
## Outcomes

- **Improve service delivery**

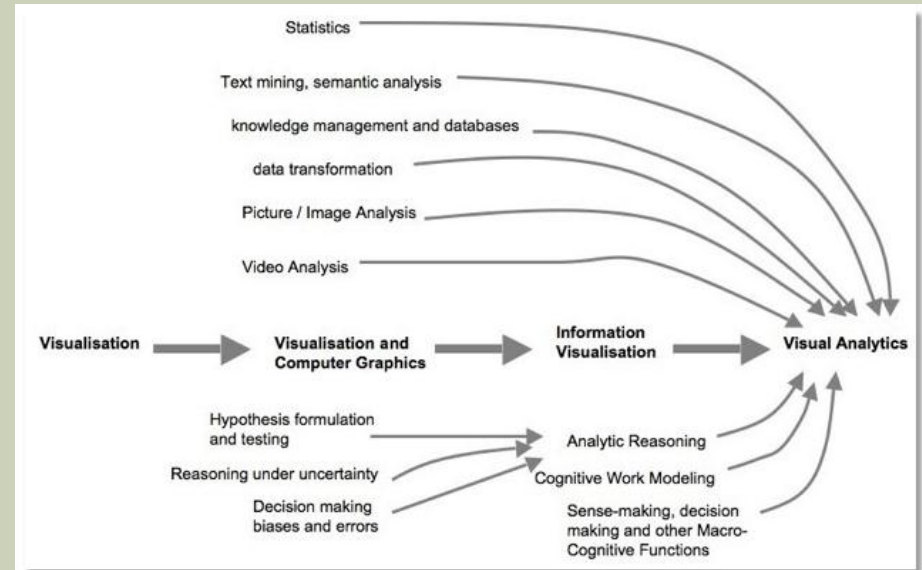
# Visual Analytics

## Origins

- U.S. Department of Homeland Security's National Visualization and Analytics Center (NVAC)



- Proposed interdisciplinary effort in designing, developing, and evaluating computational technologies
- Optimize analytical reasoning and decision making (Fisher et al., 2011)

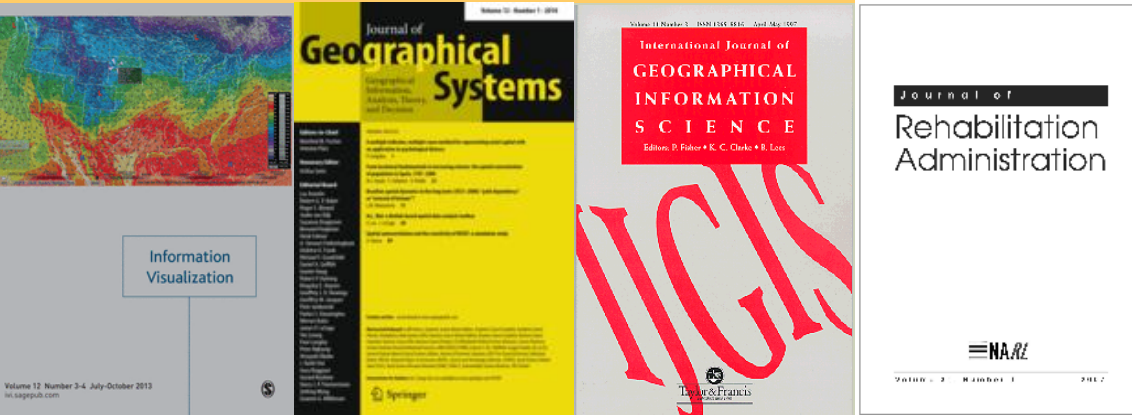


Source: Imperial College, London

[http://www3.imperial.ac.uk/securityinstitute/vaw2010/about\\_va](http://www3.imperial.ac.uk/securityinstitute/vaw2010/about_va)



# Research



# Vocational Rehabilitation



# Commercial Products



# Conferences

Information Visualisation Society Conference



17<sup>th</sup> International Conference

**Information Visualisation**

15, 16, 17 and 18 July 2013

SOAS, University of London • London • UK •

The 7th Annual Summit  
September 8-9, 2014 • Louisville, Kentucky



# Professional Organizations



International Cartographic Association

Commission on GeoVisualization

# Government Products

**OnTheMap**



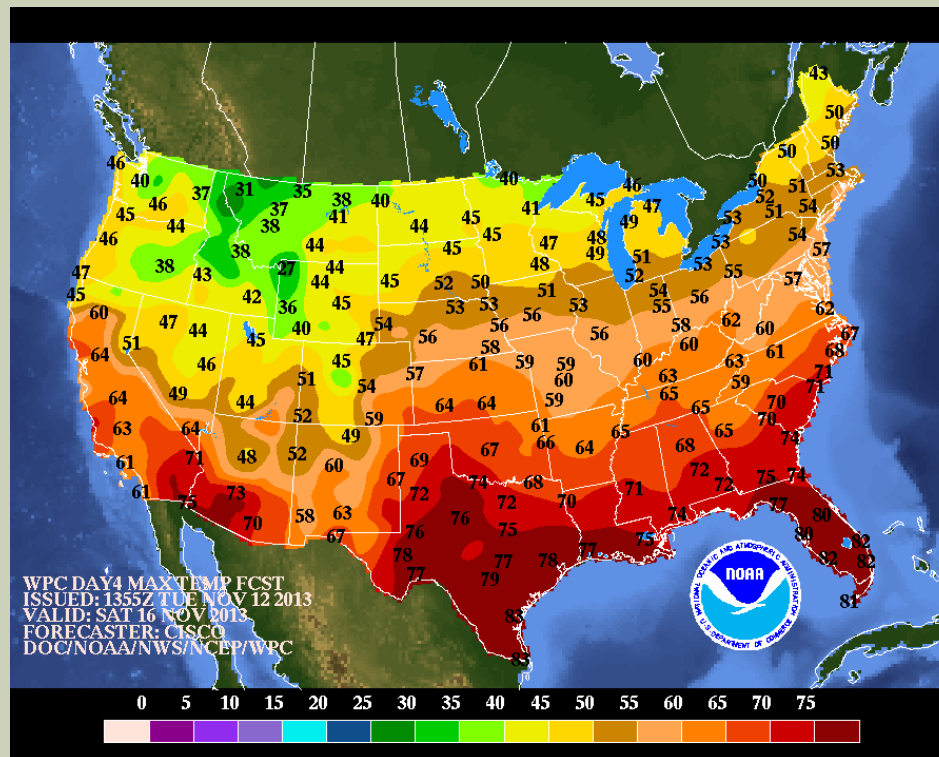
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# Visual Analytics

- A commonly used data visualization
  - Temperature maps quickly and effectively provide large amounts of data in an easily understood layout



# Visual Analytics





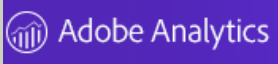

- VR example:

The logo for Explore VR, featuring the text "Explore VR" in a yellow, pixelated font on a black rectangular background.

- <http://explorevr.org/>

# Technologies

## Commercial Software

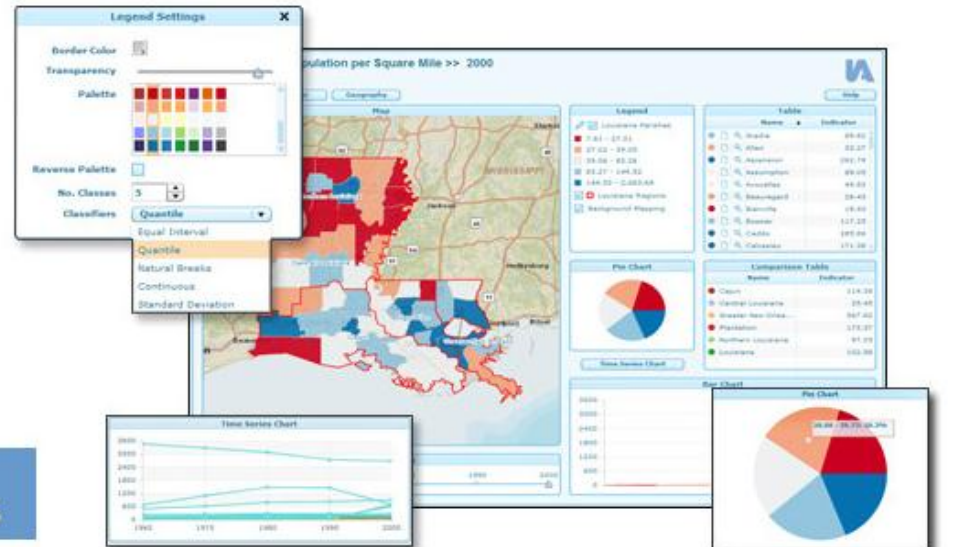
- SAS  THE POWER TO KNOW.
- Tableau 
- Adaptive Discovery 
- Datapine 
- Adobe 
- InstantAtlas  visualize | communicate | ENGAGE
- Others
  - <http://www.kdnuggets.com/software/visualization.html>

# InstantAtlas

## Interactive map & reporting software

FOR DATA PROFESSIONALS

Create interactive maps, charts and tables with InstantAtlas



CLICK HERE AND  
TRY FOR FREE

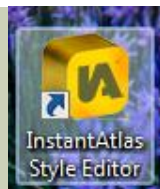
SEE  
DEMO REPORTS



InstantAtlas Desktop



InstantAtlas Server



Standalone web page

Live-streaming

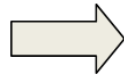
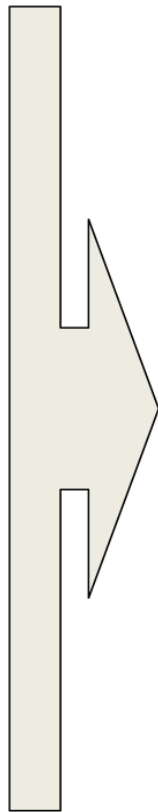
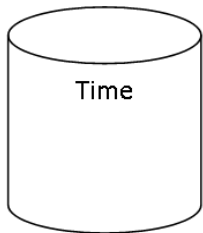
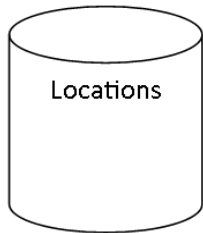
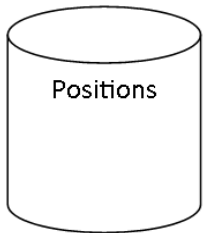


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# InstantAtlas



## Data



## Patterns



## Knowledge



## Decision



# Data: DRS Human Resources

- The InstantAtlas HR report includes information for each month on the number of filled and vacant positions by location and/or unit (e.g., field services, fiscal unit, IT unit) for the entire agency
- Data displays
  - branch office
  - service district
  - unit
  - state levels



# Demonstration



# Special Thanks

- Marijane Waldron, Assistant Director of Field Services, WVDRS
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- Basil White, Jr., Programmer Analyst, WVDRS State Plan and Program Evaluation Unit



# References

- Thomas, J. J., and Cook, K.A. 2005. *Illuminating the path: The research and development agenda for visual analytics*. Los Alamitos, CA: IEEE Computer Society Press.
- Fisher, B., Green, T.M., and Hernandez, R.A. 2011. Visual Analytics as a Translational Cognitive Science, *Topics in Cognitive Science*, 3(3), 609-625.



# Questions?

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