

## The Development And Use Of Dashboards In VR Programs:

### Communicating Performance Management Outcomes

Darlene Grooms, Ph.D., CRC, LPC  
 Steve Collins, Ph.D.  
 Thomas A. Jones, M.S.W.  
 HarrietAnn Litwin, M.Ed., CRC  
 Michael Shoemaker, M.A., CRC, LVRC, CPM  
 Michael Quinn, M.H.S.

## OVERVIEW OF PROJECT

- **Purpose of the Summit Reading Groups**
  - Community of practice that puts into action the provision of self-led professional development
  
- **Third Summit Reading Group**
  - Few, S. (2006). Information dashboard design: The effective visual communication of data. Sebastopol, CA: O'Reilly Media.

## SEE A NEED, FILL A NEED

- VR programs upgrading approach to performance management
  
- Stakeholders asking for VR data
  
- Applicable in the Information Age

## WHY BOTHER TO USE A DASHBOARD?

- Key goal for using dashboard is communication of performance
  
- Most organizations have tons of data and multiple reports to overwhelm and confuse
  
- Executives/managers/employees must understand current performance/trends/comparisons in order to make sound business decisions
  
- Dashboards can draw information from multiple sources; present it in easily understandable way
  
- The most important factor for dashboards is **DESIGN over FLASH**

### ***DASHBOARDS - QUICK HISTORY***

- 1980's – Executive Information Systems
- 1990's – Online Analytical Processing (OLAP)
- 1990's – Balanced Scorecards (Kaplan and Norton)
- 2000's – Enron scandal resulted in increased need to transparently display performance
- Now organizations are dealing with DESIGN over FLASH issues

### ***HOW VR LEADERS THINK ABOUT COMMUNICATING KEY MEASURES***

- Council Of State Administrators Of Vocational Rehabilitation (CSAVR)
- January 2012
- CSAVR's Listserv- Rehab Net
- 80 State Vocational Rehabilitation Directors
- 19 Professionals (24%) Responded
- 16 States
- Special Thanks To Steve Wooderson, Chief Executive Officer at CSAVR

### ***MAIN PURPOSES OF SURVEY***

- Find Out What Reports Agencies Create
- See What Agencies View As Key Measures
- Discover What Factors Lead Agencies To Use Dashboards
- Solicit Comments, Ideas Or Suggestions

### ***MOST COMMON REPORTS CREATED***

- Quarterly Customer Satisfaction
- Annual Needs Assessment
- Monthly VR Services Performance
- Annual Economic Impact
- Monthly Financial

### ***MOST IMPORTANT KEY MEASURES***

- *The First 5 In Rank Order Were All Financial*
  - *Average Cost Of Case*
  - *Annual Expenditures*
  - *Percent Of Budget Expended*
  - *Planned Expenditures*
  - *Annual ROI Comparison*

### ***REASONS AGENCIES MAY CHOOSE TO USE A DASHBOARD***

- Compare Performance across Different Measurement Areas
- Review Program Data And Statistics
- Quickly Review Organizational Performance
- Make Organizational Performance More Transparent and Available to Employees and Stakeholders

### ***DASHBOARD DEVELOPMENT PROJECT VISUAL PERCEPTION***

*“Only in quiet waters things mirror themselves undistorted. Only in a quiet mind is adequate perception of the world.”*


*Hans Margolius*

### ***MINIMALISM IS A KEY TO PERCEPTION***

- Dashboards present a lot of information on a single screen; real estate is precious!
- Everything on the screen should add to the “story” that is being presented
- Graphical representation aids in understanding
- Select graphic elements that minimize distractions and ambiguity

### WAYS TO INCREASE COMPREHENSION ON A DASHBOARD

- Vary color intensity

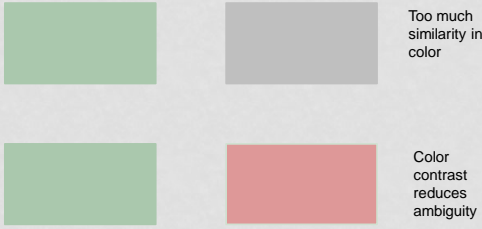


Insufficient variation of intensity

Better variation of intensity

### WAYS TO INCREASE COMPREHENSION ON A DASHBOARD

- Use of color contrast




Too much similarity in color

Color contrast reduces ambiguity

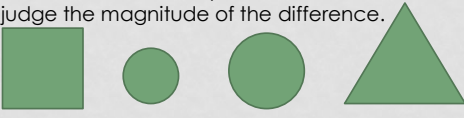
### WAYS TO INCREASE COMPREHENSION ON A DASHBOARD

Use of shapes on a dashboard

1. Difference in shape is evident.

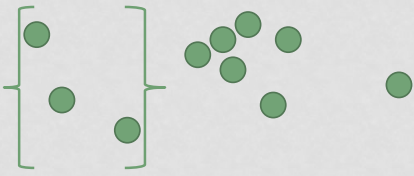


2. While relative size may be evident, it is difficult to judge the magnitude of the difference.



### WAYS TO INCREASE COMPREHENSION ON A DASHBOARD

- Position and Physical Grouping of Items



### WAYS TO INCREASE COMPREHENSION ON A DASHBOARD

- It is usually easier to judge relative size on a bar chart than on a pie chart

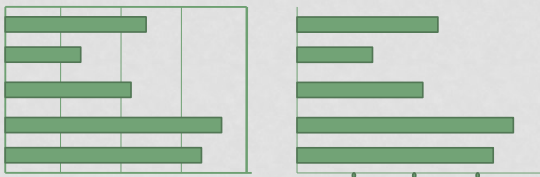


### ALTHOUGH SOME PIE CHARTS ARE VERY ACCURATE

#### World's Most Accurate Pie Chart

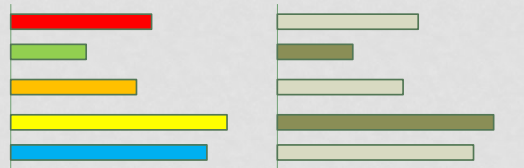


### CONSIDER THE DIFFERENCES



In designing a dashboard, less is more.

### ON A PAGE FULL OF GRAPHICS, SOFTER COLORS ARE EASIER ON THE EYES



## COMMON MISTAKES IN DASHBOARD DEVELOPMENT



## GOING BEYOND THE BOUNDARIES OF ONE SCREEN.

- Goal is to present one unified "big picture"
- Ease of use (no scrolling)
- Limitations of short-term memory
- Tendency to skip over parts of the information that are not immediately seen; to pre-judge what is not seen as of lesser importance.



## LACK OF CONTEXT IN THE DATA

- How close is the data presented to the goal?
- How does the data compare to previous results?
  - a) What is the current data?
  - b) What should the current data look like (what is the goal)?
  - c) How are we doing compared to the forecast?
  - d) How does the current data compare to yesterday, last week, last month, last year, 5-year trend, etc
- Use of color (e.g. green, red, yellow) to delineate good, cautionary, and poor results.
- Use of comparison data to show trends

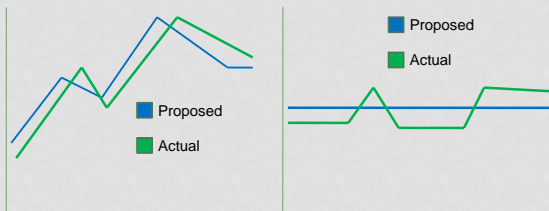


## TOO MUCH DETAIL (OR TOO LITTLE)

- Too much detail: \$3, 432, 926.86
- Essential detail: \$3, 433, 000
- Not enough detail: \$3, 000, 000



## CHOOSING DEFICIENT WAYS OF EXPRESSING MEASURES



## USING THE INCORRECT GRAPHICAL DISPLAY FOR THE INTENDED MEASURE

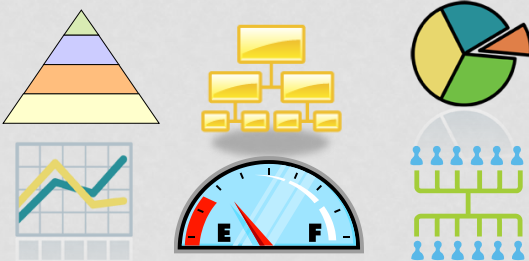
Use:

- Pie charts only to show parts of a whole
- Line graphs to show change over time
- Bar charts to show comparisons across categories



## INTRODUCING MEANINGLESS VARIETY

Use of too many different kinds of graphic displays on a dashboard slows down the rate at which the information is understood.

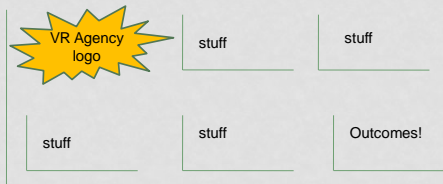


## POORLY DESIGNED MEDIA

- Using graphs that start at values other than zero gives a false impression of relative value
- Using meter with the values on the inside so that the needle obscures the numbers
- Using 3-D bars on a bar chart adds nothing to the presentation and may obscure some columns
- Using bright/neon colors that make viewing difficult

## OBSCURING IMPORTANT INFORMATION

- Placing an organizational logo on top (especially in that upper left-hand corner)
- Poor organization; not grouping related concepts together
- Not highlighting important information



## DETERMINING TIMING ON A DASHBOARD

Many ways to consider timing

- Annually
- Monthly
- Weekly
- Hourly
- Dashboard connected to live data:



## FEW'S CONCEPT: ENRICHMENT THROUGH COMPARISON

In the context of Vocational Rehabilitation here are some comparisons to consider:

- Comparison to the same date/month in previous fiscal years
- Comparison to goals (weekly, monthly, quarterly, annual, etc) that the agency determines.
- Comparisons to goals and priorities determined in the State Plan development process.

## MORE VR COMPARISONS

- Comparison to established Standards and Indicators as established by the Rehabilitation Services Administration.
- Comparisons with goals developed through the on-site monitoring process.
- Comparisons with states with similar demographic profiles.





### *ROLES OF DASHBOARDS*

Strategic  
 Analytical  
 Operational  
 Accountability  
 Public Information and Education

### *STRATEGIC ROLE OF DASHBOARDS*

- Provide instant overview of the big picture
- Keep track of key federal performance indicators
- Monitor service complaints and other variables

### *ANALYTICAL ROLE OF DASHBOARDS*

- Display snapshots of static data for given intervals of time
- Allow interaction with data
- Enable comparisons to gain perspective and amplify meaning
- Display comprehensive information on events and trends

### *OPERATIONAL ROLE OF DASHBOARDS*

- Data is more detailed, specific and fluid than strategic and analytical
- Provide real time or near-real time data on situations demanding immediate attention and rapid response
- Track activities and events that constantly change

### **MULTIPLE ROLES OF A DASHBOARD**

- Dashboards can involve all three roles
- Social Security claims monitored quarterly and yearly by management
- Compared claim activity over time, across units and against other states
- Monitored daily by claims staff for operational purposes

### **ACCOUNTABILITY, PUBLIC INFORMATION AND EDUCATION**

- Public agencies maintain dashboards
- Promote transparency and accountability
- Inform and educate

### **DASHBOARD DEVELOPMENT PROJECT**

#### **Evolution of Types of Visualization**

- "At a glance"
- Simple charts and graphs = drab, static information
- Modern displays = work faster and smarter
- *Helpful paper to review on the evolution of data display:*
  - <http://www.information-management.com/specialreports/20040921/1010516-1.html>

### **DATA VISUALIZATION TOOLS**

#### **Simple Tools**

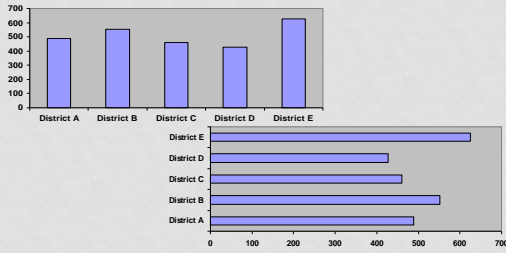
Bar Graph  
Line Graph  
Scatter Plot

#### **Modern Tools**

Box Plot  
Bullet Graph  
Treemap  
Launch Pad

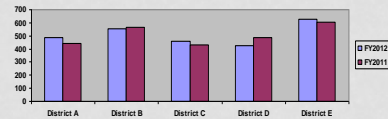
### BAR GRAPH

- Individual measures
- Nominal and ordinal scales

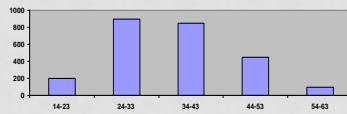


### BAR GRAPH

- Adjacent values within categories

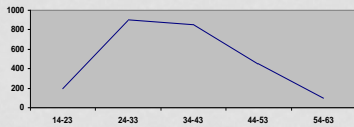


- Interval scale

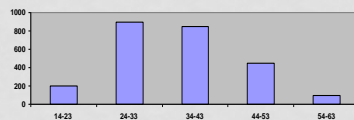


### LINE GRAPH

- Patterns or trends; interval data only

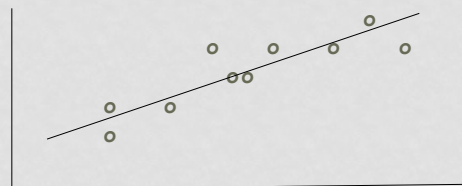


- Compare:



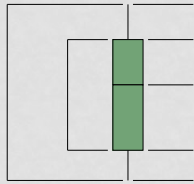
### SCATTER PLOT

- Displays whether or not, direction and degree two paired sets of quantitative values are correlated

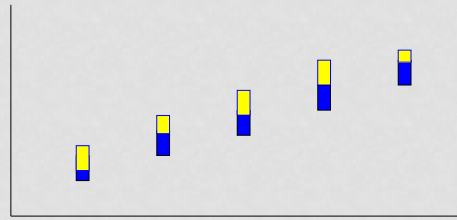


### BOX PLOT

- Displays distribution of values across range
- Range bars and data points mark median

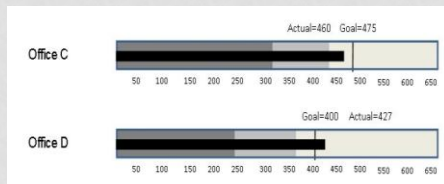


### BOX PLOT



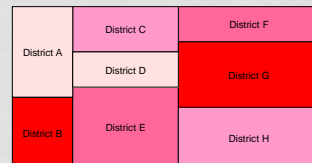
### BULLET GRAPH

- Displays key measure, comparative measure, qualitative ranges to judge good/bad/other



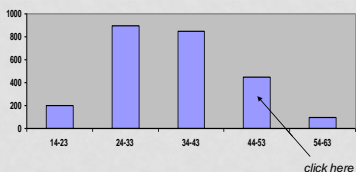
### TREEMAP

- Displays sets of hierarchically/categorically structured data in highly efficient manner
- Red = trouble Pink = better White = great



## LAUNCH PAD

- Dashboard can launch to added information
- Users can drill down to examine details, or
- Data can be sliced to reduce field of focus



## THE ALABAMA DASHBOARD

### Origin and Development of Business Intelligence at the Alabama Department of Rehabilitation Services

1999- 2007 2009 2010 2011 FY 2012

2007 RSA 107 Review  
VR Admin & IT Staff  
begin to look at Business  
Intelligence options

- further increasing the outcomes; and
- increase the strategic use of data.

In the IL program, ADRS, SILC, CILs and IL  
strengthen the capacity of the SILC to  
envisioned by Title VII of the  
S policies and



### Origin and Development of Business Intelligence at the Alabama Department of Rehabilitation Services (cont.)

1999- 2007 2009 2010 2011 FY 2012

client satisfaction process."  
Data-driven decision-making: "We want to improve our ability to use data to make decisions. We've got a ton of data, and we need to find ways to display that data graphically so that staff can use it at their desktops. I want to see that local direct service staff – whether it's a counselor, a CRS care coordinator, or whoever – utilize data at their desktops to help them make decisions about services being provided to the consumers that they serve."

New Commissioner

Redefined Program Evaluation  
Position to include the  
Coordination of Business  
Intelligence

Staffed this Position

### How does the Dashboard **Arrive** at the User's Desktop ?



**Medium**



**Message**

### **THE ADRS TAKE ON BUSINESS INTELLIGENCE**

1. BI is a **shared resource** to support decisions.
2. **Transparency** is a key element: Eliminates "silos," fosters collaborative problem solving.
3. BI should provide "**self-service**" access to the agency's knowledge resources.
4. BI should have the ability to answer **structured and unstructured questions**.
5. BI provides a resource to better answer the question: "**How do you know what you know?**"

### The **Organization** of our site is Deliberate and Important



### Help for the Weary Program Evaluator

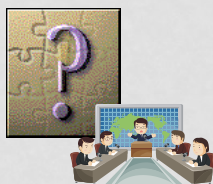
BI helps catch up with demand...

...eventually



## TIME FOR DISCUSSION

**What questions might you have for the panel?**



## CONTINUED EDUCATION IN THE AREA OF EFFECTIVE COMMUNICATION OF VR DATA AND OUTCOMES

- **The Summit Group - a community of practice**
- **The Rehabilitation Program Evaluation Network of NRA**  
To join:  
<https://www.wjinc24.com/nationalrehabvaassoc/cwt/External/WCPages/Membership/Join.aspx>
- **TACE Centers**
- **Chandoo**  
<https://chandoo.org/wp/2012/07/30/excel-salary-survey-contest-results/>
- **The Dashboard Spy (Hubert Lee) at:**  
<http://dashboardspy.com/>

## QUESTIONS?

### Contact Information:

**Darlene Groomes, Ph.D., CRC, LPC**  
[groomes@oakland.edu](mailto:groomes@oakland.edu)  
248-370-4237

**Steve Collins, PhD**  
[Steven.Collins@vr.fldoe.org](mailto:Steven.Collins@vr.fldoe.org)  
850-245-3429

**Thomas A. Jones, M.S.W.**  
[tonest@michigan.gov](mailto:tonest@michigan.gov)  
517-373-8297

**HarrietAnn Litwin, M.Ed., CRC**  
[HarrietAnn.Litwin@state.de.us](mailto:HarrietAnn.Litwin@state.de.us)  
302-761-8275

**Michael Shoemaker, M.A., CRC, LVRC, CPM**  
[mshoemaker@utah.gov](mailto:mshoemaker@utah.gov)  
801-538-7746

**Michael Quinn, M.H.S.**  
[michael.quinn@rehab.alabama.gov](mailto:michael.quinn@rehab.alabama.gov)  
334-467-3512