Guidelines for Effective Reports and Graphs

Prepared for Student Affairs Professional Development Series
April 2013
Today’s Agenda – How can I prepare more effective assessment reports?

• What is “effective?”

• A review of report structure

• Creating good graphics

• Maybe a quiz?

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Annual Assessment Report Template
Academic Year: 2012-2013

Name of Department:
Name of Contact Person:
Name of Person(s) completing report or contributing to the project:

The suggested length of the assessment reports should be between 5 and 15 pages (You may produce a larger report for other constituents, but for the purposes of this report we ask you keep to the suggested length). Reports should follow this format in a narrative form. Please write the report as though you writing for an external audience.

A. Abstract
B. Introduction and context for this year’s report
C. Methodology
D. Findings/Results and Discussion
E. Implications
I remember seeing the assessment report

I wonder if we will get out by 3?

I read that report didn’t I?

Is that report on my desk somewhere?

I have to call Ellen...

I should have opened the attachment
Information is often used indirectly in decision-making, to orient to problems, think about issues, gain new ideas and perspectives, formulate problems, set the agenda for future policy actions.

Use is a result of long-term percolation of concepts, theories and findings in the climate of informed opinion.

The Value of the Executive Summary or Abstract

• Distills the whole report into the top most important findings

• For the reader
  • Entices your readers to the full report
  • Limits the amount of information people need to remember (Rule of 4!)

• For you
  • Helps with structure, illuminating missing pieces
  • Provides you with the ‘elevator pitch’ for the provost or president
(This list of elements is adapted with permission from Phil Koopman, “How to Write an Abstract,” http://www.ece.cmu.edu/~koopman/essays/abstract.html.)

**All abstracts include:**

1. A full citation of the source, preceding the abstract.
2. The most important information first.
3. The same type and style of language found in the original, including technical language.
4. Key words and phrases that quickly identify the content and focus of the work.
5. Clear, concise, and powerful language.

**Abstracts may include:**

1. The thesis of the work, usually in the first sentence.
2. Background information that places the work in the larger body of literature.
3. The same chronological structure as the original work.

**How not to write a abstract:**

1. Do not refer extensively to other works.
2. Do not add information not contained in the original work.
3. Do not define terms.

http://writingcenter.unc.edu/handouts/abstracts/
Telling your data story with tables and graphs

D. Findings/Results and Discussion
   1. Describe the results
      - Participant response rate (actual vs. invited)
      - Relevant participant demographic data (gender, race/ethnicity, year in school, etc.)
      - Share aggregate data or qualitative data (quotes, themes, etc.)
   2. What did you learn from the assessment?
      - Based on your analysis, what were the key findings? (Please provide in a bullet point format)
        - For qualitative data, share the top 3-5 themes that emerged
        - For quantitative data, share the 5-10 most important and useful findings
      - How, if at all, did the results surprise you?
      - What does this project contribute to the field or the Division of Student Affairs?
      - Were there specific challenges or limitations to the project (sample selection, response rate, data collection, etc.) that may have affected the results or use of the results?
“Often, to see a pattern is to understand the solution to a problem.”

- C. Ware

“It is a psychological, not a moral fact that people are unwilling to expend energy, particularly if the outcome is unknown.”

- S. Kosslyn
Table or Graph?

### LAS New Program Development Schedule 02/22/2013 DRAFT

<table>
<thead>
<tr>
<th>No.</th>
<th>College</th>
<th>New Program Name</th>
<th>Degree</th>
<th>Level</th>
<th>Status and notes</th>
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<tbody>
<tr>
<td>1</td>
<td>LAS</td>
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<td>MS</td>
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<td>Approved</td>
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<td>sent to CCP 1/14/13. 7 separate programs</td>
</tr>
</tbody>
</table>
“Tables make it easy to look up values.”
Few, 2004

When to use tables (if any of these are true)

- The document you produce will be used to look up individual values.
- It will be used to compare individual values.
- Precise values are required.
- The quantitative information to be communicated involves more than one unit of measure (can be put in multiple columns easily)
- Consider tables also when you have a small number of values to show the reader.
<table>
<thead>
<tr>
<th>Adult UG Enrl</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>American InterContinental University Online</td>
<td>16,062</td>
</tr>
<tr>
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<td>Total of Top Ten Institutions</td>
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</tbody>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td>Maintain base new student enrollment activities</td>
<td>• Does the college have the staff in place to implement new marketing and recruiting initiatives next year?</td>
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<td>• Does the college have the resources (staff and dollars) to do more follow-up with on campus and online prospects?</td>
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| Increase new student enrollment from the top five community college and city college feeders | • Is the current the college model (advisors and recruiter) for recruiting at the community colleges working?  
  • Do we need to develop a new model? (i.e. student ambassadors, targeted written communication, new events etc.) |
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Telling your data story with pictures
The 6 Design Principles for Graphical Excellence (Tufte)

The purpose of an evidence presentation is to assist thinking. The principles of analytical design are derived from the principles of analytical thinking. These principles relate to both producing presentations and consuming presentations—at all, we’re all in this together.

Show **comparisons**, contrasts, differences

Show **causality**, mechanism, structure, explanation

Show **multivariate** data—more than 1 or 2 variables

Completely **integrate** words, numbers, images, diagrams.

**Documentation**—take responsibility for the analysis, demonstrate credibility; give credit.

**Content** – in the end, it is about the data - Analytical presentations ultimately stand or fall depending on the quality, relevance, and integrity of their outcomes.

*Taken from E. Tufte, Beautiful Evidence, pp. 120-139.*
Don’t settle for the default settings

![Bar chart showing ratings for Slides, Presentation, and Commentary]

- Very Useful
- Somewhat Useful
- Not useful

Don’t settle for the default settings.
Minimize chart junk
No 3D Graphs!!

Looks Smaller!

Looks Bigger!
Consider saving the pie for dessert!
No 3D Graphs!!
Orientation in 2D space communicates relative size best for categorical variables.
Size communicates relative quantitative information.

**Change in Undergraduate Enrollment**

- Liberal Arts, 34% of all enrollment
- Health Sciences, 4%
- Law, 8%
- Computer Science, 33%
- Education, 16%

**Change in Graduate Enrollment**

- Bubble size is a relative attribute – for example, the size of school of 10,000 is not twice as large as one of 5,000.
We are particularly aware of differences and color.
We see things in **context**.
We process **one attribute** at a time.
Any good graphic should allow you to (Kosslyn)

1) Connect with your audience

2) Direct the readers attention through the display

3) Promote understanding and memory

Source: Kosslyn, 2006
Connect with your audience

Principle of Relevance
Communication is most effective when neither too much nor too little information is presented

Principle of Appropriate Knowledge
Communication requires prior knowledge of relevant concepts, jargon, and symbols.
DePaul has the 9th largest undergraduate chemistry enrollment in Illinois.

Total Enrollment in Undergraduate General Chemistry 1995-2004

DePaul has the 9th largest undergraduate chemistry enrollment in Illinois.

Total Enrollment in Undergraduate General Chemistry 2004

Principle of Relevance
Freshman ACT Composite Scores Over Time

ACT Composite Scores


25th percentile

75th percentile

Average ACT

Principle of Appropriate Knowledge
### 2008 Estimated Undergraduate Discounts

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<tr>
<th>NDRK</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<td>High need</td>
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<td>6%</td>
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<td>17%</td>
<td>18%</td>
<td>27%</td>
<td>35%</td>
<td>38%</td>
<td>47%</td>
<td>27%</td>
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<tr>
<td>Low need</td>
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<td>17%</td>
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<td>18%</td>
<td>23%</td>
<td>35%</td>
<td>46%</td>
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**2008 Discount**

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<th>Academic Level</th>
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<tr>
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<td>56%</td>
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</table>

**Principle of Appropriate Knowledge**
A **tag cloud** or **word cloud** (or **weighted list** in visual design) is a visual depiction of user-generated **tags**, or simply the word content of a site, typically used to describe the content of web sites. Tags are usually single words and are normally listed alphabetically, and the importance of a tag is shown with font size or color.[1] Thus, it is possible to find a tag alphabetically and by popularity. The tags are usually hyperlinks that lead to a collection of items that are associated with a tag.
Direct and Hold Attention

Principle of Salience
Attention is drawn to large perceptible differences.

Principle of Discriminability
Two properties must differ by a large enough proportion or they will not be distinguished.

Principle of Perceptual Organization
People automatically group elements into units which they then attend to and remember.
**Principle of Salience**

**Greatest Number of Undergraduate Degrees Awarded in 2005**

<table>
<thead>
<tr>
<th>Field</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Systems (CTI)</td>
<td>74</td>
</tr>
<tr>
<td>Art and Art History (LA&amp;S)</td>
<td>56</td>
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<tr>
<td>Network Technologies (CTI)</td>
<td>44</td>
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<tr>
<td>E-Commerce Technology (CTI)</td>
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<tr>
<td>Computer Graphics and Animation (CTI)</td>
<td>28</td>
</tr>
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<td>Human-Computer Interaction (CTI)</td>
<td>17</td>
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</table>

Remember to start the scale at 0 – don’t use default scale.
Hispanic students made up 14% of the freshman class in 2006, compared to 15% in 2002.

Graphs with 2 axes may be difficult for the reader to understand – try multi-panel charts.
Although the number of freshmen has grown over the past five years, Asian students made up about 14% of the freshman class in 1997 and in 2006.
The color version

The black and white version
What did you hope to accomplish at the Information Session?

- Gather info about program: 55%
- Speak to adm rep: 18%
- Speak to professor: 3%
- Decide to apply: 21%
- Other: 3%

Order pie from smallest to largest slice, unless other order is more meaningful to reader.
Principle of Perceptual Organization

Use color to group items

Transfer Application Proportion by Decision Type: 2009 & 2010

Accept
Not Accept
Incomplete
Pending
Cancelled
Deny

Admitted
Incomplete
Deny

Transfer Application Proportion by Decision Type: 2009 & 2010

Accept
Not Accept
Incomplete
Pending
Cancelled
Deny

2011 AIR Forum – Ten Practical Presentation Tips

Slide 31
What is the focus of this hypothetical institution?

- Developing a strong work ethic
- Contributing to a larger community
- Understanding the perspectives of others
- Raising position in national rankings

Is the focus

Should be the focus

Strongly Agree

Strongly Disagree
Enrolled CPS Freshmen by Mission Student Factors
Fall 2004 - Fall 2008

Pell Eligible
- 2004: 162
- 2005: 160

First Generation
- 2004: 108
- 2005: 126

Underrepresented Minority
- 2004: 154
- 2005: 124
2004-2008 Enrolled Freshmen 
(n=12,331)

First Generation 
3,580 (29%)

Underrepresented Minority 
2,444 (20%)

Pell 
3,350 (27%)

Chicago 
2,367 (19%)

Meet at least 1 criteria = 6,592 (53%)
Meet only 1 = 3,327 (27%)
Meet only 2 = 1,816 (15%)
Meet only 3 = 1,014 (8%)
Meet all 4 = 435 (4%)

Under-represented minority = American Indian, Black & Hispanic
Promote Understanding and Memory

**Principle of Compatibility**
A message is easiest to understand if its form is compatible with its meaning.

**Principle of Informative Changes**
People expect changes in properties to carry information.

**Principle of Capacity Limitations**
People have a limited capacity to retain and process information and will not understand a message if too much information must be retained or processed.
Like national trends for the mid- to late 1990’s, Illinois adult enrollment has declined, -12% from 1993 to 2001.
In Illinois, market share for adult learners has dropped from 39% to 34% from 1993 to 2001.
Retention/Graduation Rate Comparisons by Race:
DePaul and Selected Peer Group

First Year Retention

DePaul Rate
- African American: 86.9%
- Hispanic/Latino: 84.0%
- Caucasian: 82.5%
- Asian/Pacific Islander: 85.2%

Peer Group Rate
- African American: 76.3%
- Hispanic/Latino: 79.7%
- Caucasian: 79.7%
- Asian/Pacific Islander: 82.5%

Sixth Year Graduation

DePaul Rate
- African American: 66.0%
- Hispanic/Latino: 62.2%
- Caucasian: 58.2%
- Asian/Pacific Islander: 68.7%

Peer Group Rate
- African American: 59.1%
- Hispanic/Latino: 57.7%
- Caucasian: 55.1%
- Asian/Pacific Islander: 62.7%

Fourth Year Graduation

DePaul Rate
- African American: 48.3%
- Hispanic/Latino: 47.1%
- Caucasian: 38.1%
- Asian/Pacific Islander: 32.5%

Peer Group Rate
- African American: 43.6%
- Hispanic/Latino: 47.1%
- Caucasian: 34.1%
- Asian/Pacific Islander: 29.2%

Source: CSRDE Peer Group Report; OIPR Retention Database

Student Affairs Professional Development – IRMA, 2013
Don’t rely on the default settings to make the best graphic!
Principle of Capacity Limitations

Hispanic and African American Freshman Enrollment

- **Hispanic Freshmen**
  - 1998: 179
  - 2000: 242
  - 2002: 344
  - 2004: 344
  - 2006:

- **African American Freshmen**
  - 1998: 132
  - 2000: 160
  - 2002:
  - 2004:
  - 2006:

Hispanic and African American Freshman Enrollment

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  - 2004: 344
  - 2006:

- **African American Freshmen**
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  - 2006:
Principle of Capacity Limitations

Very Important Reasons at least 30% of Freshmen Gave for Going to College
CIRP Survey Results

- Learn more about things
- Get Better Job
- Gain General Education
- Make More Money
- Become More Cultured Person
- Improve Study Skills
- Parents Wanted Me to Go

Very Important Reasons at least 30% of Freshmen Gave for Going to College
CIRP Survey Results

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- Become More Cultured Person
- Improve Study Skills
- Parents Wanted Me to Go

1996 vs. 2003
Percent of 1996 & 2003 Freshman Reasons For Attending College (CIRP)

Blue points:
More 2003 freshmen rated this as important vs. 1996 freshmen

Parents

Red points:
 Fewer 2003 freshmen rated this as important vs. 1996 freshmen

Percent in 2003 Rating self above average

Percent in 1996 Rating self above average
## Change in Community College Enrollments & Applications

### Percent Change Fall 2003 to 2005

<table>
<thead>
<tr>
<th>College</th>
<th>Enrollment</th>
<th>Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triton</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>Moraine Valley</td>
<td>1%</td>
<td>-7%</td>
</tr>
<tr>
<td>Harper</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>CLC</td>
<td>-1%</td>
<td>-24%</td>
</tr>
<tr>
<td>Elgin</td>
<td>-1%</td>
<td>17%</td>
</tr>
<tr>
<td>Harold Washington</td>
<td>-7%</td>
<td>-18%</td>
</tr>
<tr>
<td>Oakton</td>
<td>-7%</td>
<td>18%</td>
</tr>
<tr>
<td>Wright</td>
<td>-10%</td>
<td>-12%</td>
</tr>
<tr>
<td>COD</td>
<td>-11%</td>
<td>8%</td>
</tr>
<tr>
<td>Truman</td>
<td>-19%</td>
<td>-14%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4%</strong></td>
<td><strong>12%</strong></td>
</tr>
</tbody>
</table>

![Bar chart showing change in community college enrollments & applications](chart.png)
Top 10 Community College Feeders by Enrollment and Application Change

- COD
- Oakton
- Elgin
- Harper
- Triton
- CLC
- Harold Washington
- Truman
- Moraine Valley
- Wright

Despite enrollment decreases at these 3 schools, DPU received more applications in 05/06 than 03/04.

Apps & Enrollment decreased in these 4 schools, 3 of the 4 are City Colleges of Chicago.
African American Enrollment at Illinois NFP Private Institutions

- De Paul University
- Columbia College
- Roosevelt University
- Robert Morris College
- National-Louis University
Percent of students meeting learning outcome over time

Program 1
75%

Program 2
80%

Program 3
55%
## Largest Master’s Degree Programs in 2009

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance (MS and MBA programs)</td>
<td>198</td>
<td>283</td>
<td>-30%</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Teaching and Learning: Elementary Education</td>
<td>181</td>
<td>20</td>
<td>805%</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Information Systems</td>
<td>122</td>
<td>31</td>
<td>294%</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>119</td>
<td>77</td>
<td>55%</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Business Information Technology</td>
<td>102</td>
<td>0</td>
<td>N/A</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Public Service Management</td>
<td>81</td>
<td>36</td>
<td>125%</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Language, Literacy &amp; Specialized Instruction</td>
<td>70</td>
<td>0</td>
<td>N/A</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Software Engineering</td>
<td>68</td>
<td>0</td>
<td>N/A</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Human Services Counseling</td>
<td>67</td>
<td>22</td>
<td>205%</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Generalist Nursing</td>
<td>62</td>
<td>0</td>
<td>N/A</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
Education awarded more than five times as many graduate degrees in 2009 than in 1995, but awarded fewer graduate degrees.

The number of undergraduate and graduate degrees awarded by LA&S more than doubled from 1995 to 2009.

Number of graduate degrees awarded by CDM quadrupled from 1995 to 2009; number of undergraduate degrees more than tripled.

The number of undergraduate degrees awarded by Communication increased from 115 in 1995 to 310 in 2009.

The number of undergraduate and graduate degrees awarded by SNL more than doubled from 1995 to 2009.

Undergraduate degrees - blue
Graduate degrees - purple
### 8 Principles

<table>
<thead>
<tr>
<th>Connect with audience</th>
<th>Direct and hold attention</th>
<th>Promote understanding and memory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principle of Relevance</strong>&lt;br&gt;Communication is most effective when neither too much nor too little information is presented</td>
<td><strong>Principle of Salience</strong>&lt;br&gt;Attention is drawn to large perceptible differences.</td>
<td><strong>Principle of Compatibility</strong>&lt;br&gt;A message is easiest to understand if its form is compatible with its meaning.</td>
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<tr>
<td><strong>Principle of Appropriate Knowledge</strong>&lt;br&gt;Communication requires prior knowledge of relevant concepts, jargon, and symbols.</td>
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<td><strong>Principle of Informative Changes</strong>&lt;br&gt;People expect changes in properties to carry information.</td>
</tr>
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<td><strong>Principle of Perceptual Organization</strong>&lt;br&gt;People automatically group elements into units which they then attend to and remember.</td>
<td></td>
<td><strong>Principle of Capacity Limitations</strong>&lt;br&gt;People have a limited capacity to retain and process information and will not understand a message if too much information must be retained or processed.</td>
</tr>
</tbody>
</table>
The Quiz!
<table>
<thead>
<tr>
<th>% completing pgm assmt by Ethnic1</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaskan Native</td>
<td>43</td>
<td>33</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td>NA</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Black</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Hispanic</td>
<td>44</td>
<td>62</td>
</tr>
<tr>
<td>White</td>
<td>72</td>
<td>79</td>
</tr>
<tr>
<td>Grand Total</td>
<td>65</td>
<td>68</td>
</tr>
</tbody>
</table>

**Question 1:** Name 4 things that can be changed to make this a better table.
<table>
<thead>
<tr>
<th>% completing pgm assmt by Ethnicity</th>
<th>2011</th>
<th>2012</th>
</tr>
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<table>
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<tr>
<th>Percent Completing Program Assessment by Race/Ethnicity</th>
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<th>2012</th>
</tr>
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<tbody>
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<td>White</td>
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<td>79</td>
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<td>62</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>55</td>
<td>58</td>
</tr>
<tr>
<td>Unreported</td>
<td>60</td>
<td>50</td>
</tr>
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<td>43</td>
<td>33</td>
</tr>
<tr>
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<td>31</td>
</tr>
<tr>
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<td>68</td>
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</table>
Question 2: When do you choose a table over a graph?
“Tables make it easy to look up values.”
Few, 2004

When to use tables (if any of these are true)

- The document you produce will be used to look up individual values.
- It will be used to compare individual values.
- Precise values are required.
- The quantitative information to be communicated involves more than one unit of measure (can be put in multiple columns easily).
- Consider tables also when you have a small number of values to show the reader.
Question 3: Who is this man and why is he important?
The 6 Design Principles for Graphical Excellence (Tufte)

The purpose of an evidence presentation is to assist thinking. The principles of analytical design are derived from the principles of analytical thinking. These principles relate to both producing presentations and consuming presentations—after all, we’re all in this together.

Show **comparisons**, contrasts, differences

Show **causality**, mechanism, structure, explanation

Show **multivariate** data—more than 1 or 2 variables

Completely **integrate** words, numbers, images, diagrams.

**Documentation**—take responsibility for the analysis, demonstrate credibility; give credit.

**Content** – in the end, it is about the data - Analytical presentations ultimately stand or fall depending on the quality, relevance, and integrity of their outcomes.

*Taken from E. Tufte, Beautiful Evidence, pp. 120-139.*
Question 4: What are 3 ways to improve this graph?
Student Perceptions

What should be a focus – **Strongly Agree**
What is a focus – **Strongly Agree**

- Cultivating personal and academic integrity
- Striving for excellence
- Taking seriously the perspectives of others
- Contributing to a larger community
- Refining ethical and moral reasoning
Question 5: Complete this sentence:

“Consider saving the _____ for dessert.”
“Consider saving the apple pie for dessert.”

200 Annual Program Participants

- Fall: 49%
- Winter: 20%
- Spring: 23%
- Summer: 8%

Car Park Survey

- Black: 36.92%
- White: 10.46%
- Blue: 9.23%
- Red: 12.31%
- Silver: 23.08%
Question 6: What are Stephen Kosslyn’s 3 overarching principles?

Sometimes I get sick of theory. It’s hard to know whether the stories we spin should be taken seriously. One way to do a reality check is to see whether a theory leads to specific applications. The fact that science leads to technology is one of its major strengths, and if a theory is correct, I believe that something applied should follow from it.

This book explores some applications that follow from cognitive neuroscience, particularly in the domains of perception and memory. The book presents a set of principles, based on empirical findings, for presenting information effectively in graphs. I not only make use of information about the number of elements that can be held in mind at once, the size labels must be in order to be read easily, and so forth, but also exploit implications of some relatively subtle effects arising from the range of spatial frequency channels in vision, the separation of the "what" and "where" visual pathways, and the like.

The first edition, *Elements of Graph Design*, was published by W. H. Freeman & Co. in 1994, but when it went out of print in 2004, I decided to use it as the foundation for the present book, which differs from that one in five ways: The principles underlying my recommendations have been revised and reorganized; I have updated the review of research on graphic communication; I have integrated the relevant science of perception and cognition into the text (rather than relegating it to endnotes); I have corrected errors that were present in the earlier edition; and, finally, the book has been redesigned visually for easier reading.

[http://isites.harvard.edu/icb/icb.do?keyword=kosslynlab&pageid=icb.page250941](http://isites.harvard.edu/icb/icb.do?keyword=kosslynlab&pageid=icb.page250941)
## Kosslyn’s 8 Principles

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**Good design principles are linked to the way the brain attends to, processes and remembers information.**
Bonus Round: Match the quotes with the authors!

1. Steven Kosslyn
   Use is a result of long-term percolation of concepts, theories and findings in the climate of informed opinion (paraphrase)

2. Colin Ware
   “Tables make it easy to look up values.”

3. Stephen Few
   “It is a psychological, not a moral fact that people are unwilling to expend energy, particularly if the outcome is unknown.”

4. Edward Tufte
   “Often, to see a pattern is to understand the solution to a problem.”

5. Carol Weiss
   Graphical excellence is substance, statistics, and design.
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Things to consider when constructing the final assessment report

- I have a good abstract which includes
  - A full citation
  - Answers to all the relevant questions
  - The most important information
  - The same type and style of language as my full report
  - Key words and phrases that identify important ideas
  - Powerful concise language
  - No jargon or acronyms

- I had a peer review/proof it
- I could share this with the President’s Office

- For tables – look-up values are required/preferred
  - I sorted numbers in logical order
  - I removed all unnecessary lines and grids
  - I followed design guidelines for good tables

- For graphs
  - I chose 2D graphs, no matter what my friends at Microsoft said
  - I used order, color, placement effectively to help readers know what’s important
  - I tried to follow Kosslyn’s 8 principles
    - connected with the reader,
    - directed them through the graph,
    - and helped them understand and remember the information
Useful References

Theories of Using Information


Effective Reporting and Graphical Displays


Dashboards


