

# Offering Infographic Short Courses to Meet Student's Interest



Jane Zhao, Digital Media Commons (DMC), Fondren Library, Rice University



# Some background information about offering infographic workshops



# Student survey, Spring 2015

## Undergraduate

### 9. Would you be interested in taking a library short course on:

#	Answer	Response	%
1	Zotero	162	21%
2	Mendeley	82	10%
3	EndNote	145	18%
4	GIS	223	28%
5	Visualizing data	270	34%
6	Creating infographics	292	37%
7	Digital storytelling	181	23%
8	Library research methods	232	29%
9	Navigating the library website	115	15%
10	Specific database(s) - (please specify)	16	2%
11	Other (please specify)	19	2%

## Graduate

### 9. Would you be interested in taking a library short course on:

#	Answer	Response	%
1	Zotero	178	24%
2	Mendeley	168	23%
3	EndNote	245	34%
4	GIS	166	23%
5	Visualizing data	302	41%
6	Creating infographics	183	25%
7	Digital storytelling	132	18%
8	Library research methods	166	23%
9	Navigating the library website	85	12%
10	Specific database(s) - (please specify)	11	2%
11	Other (please specify)	21	3%

# Objectives

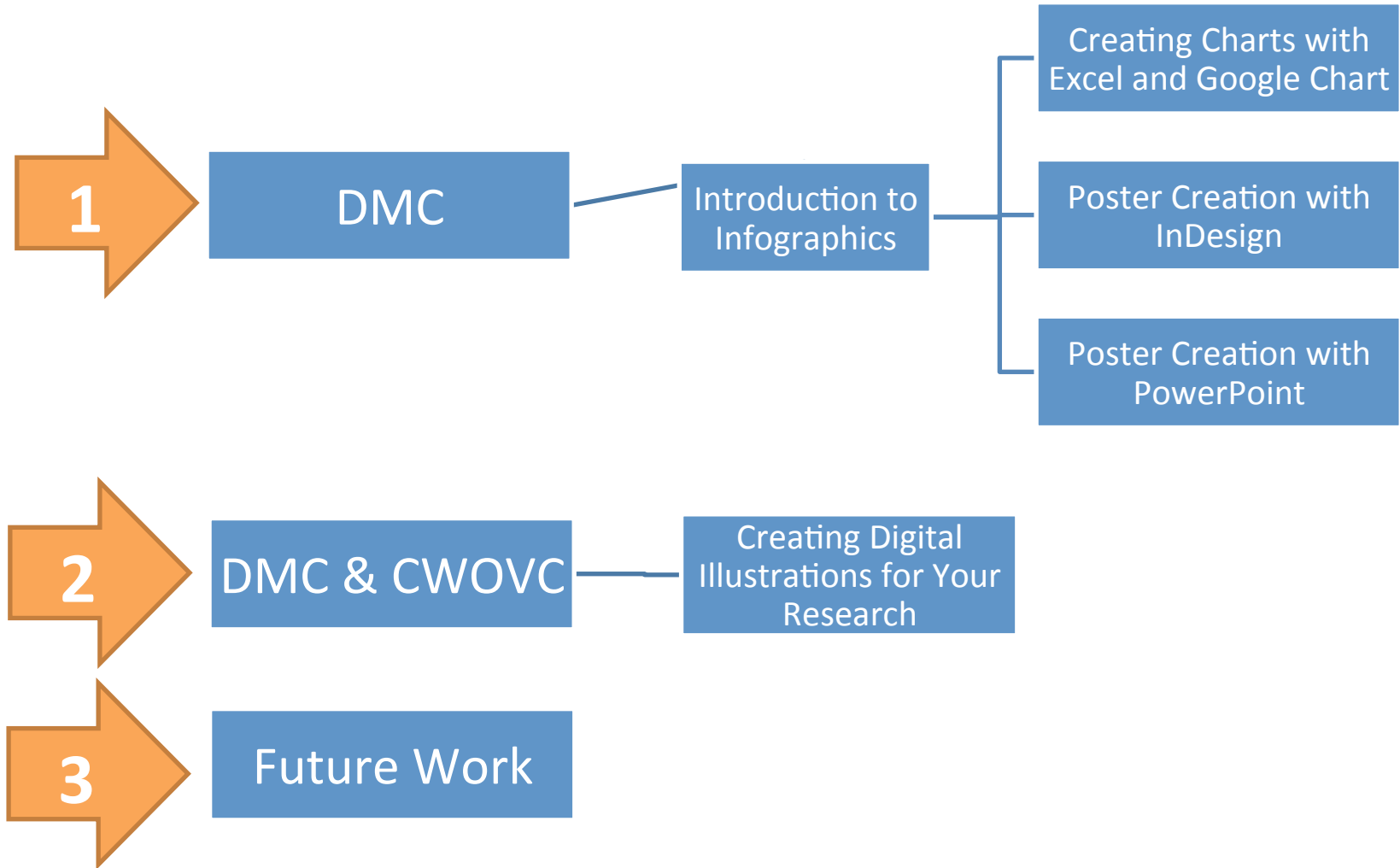
1

- **Share our experiences** of offering infographics/data visualization workshops

2

- **Share findings** on tools and resources for creating infographics

# Outline



# Objectives for “Infographics, Communicate Information with Graphics”

1

- Develop staff expertise

2

- Learn the best practices of information design

3

- Be aware the handy tools for creating Infographics and Data Visualization

# Outline

1

What is Infographic? What is Data Visualization?

2

Why Infographics work?

3

What makes a good Infographic?

4

Information design best practices.

5

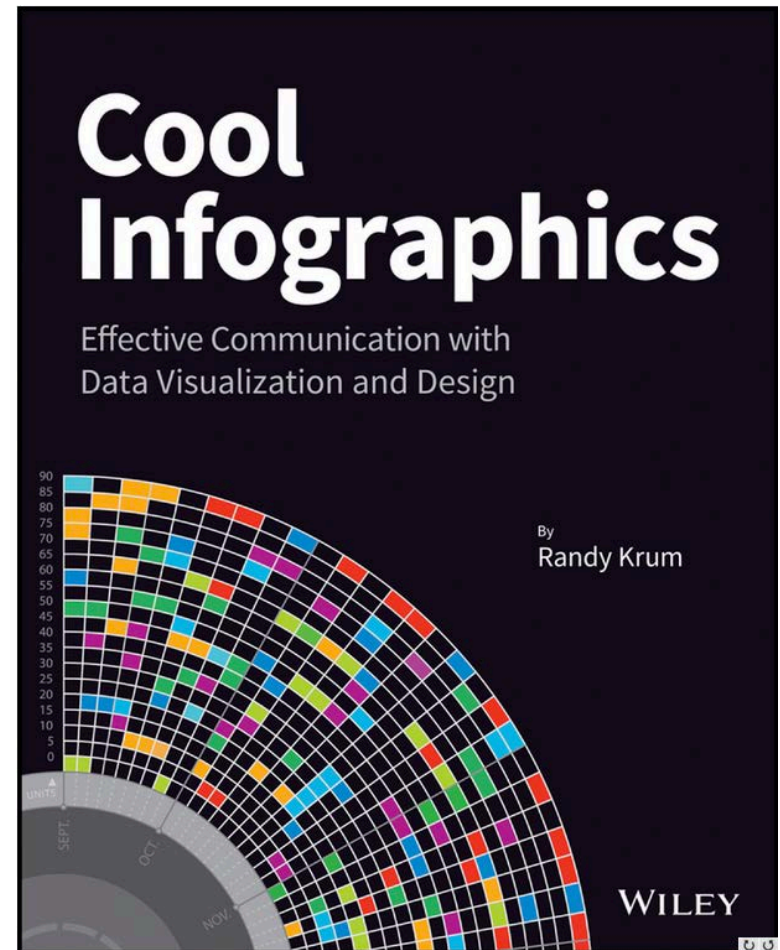
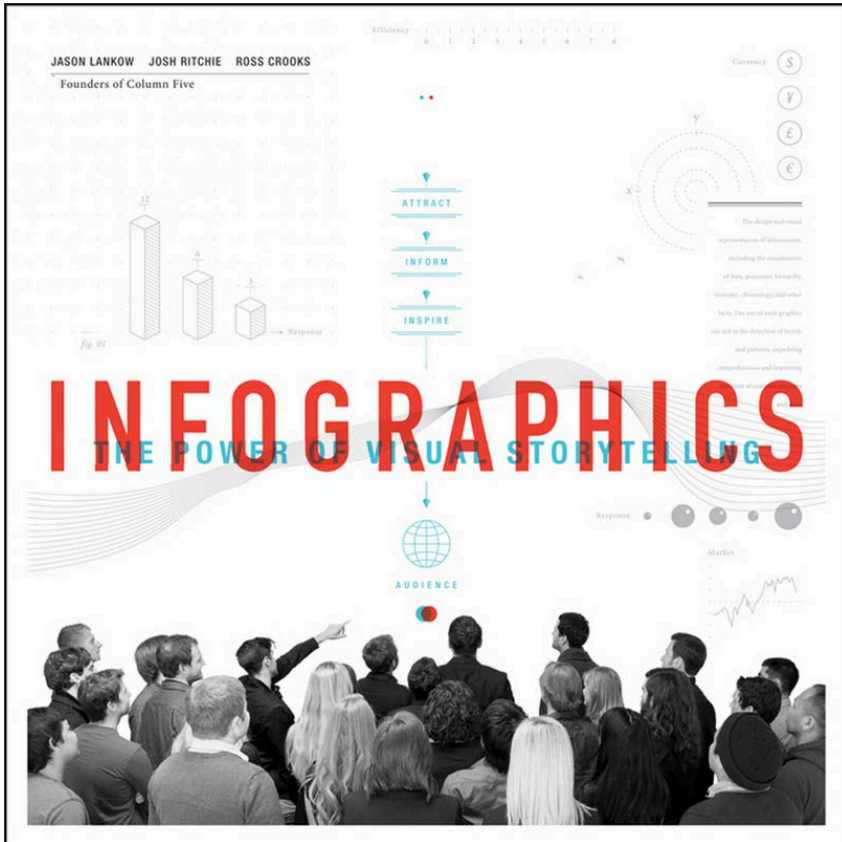
Tools for creating Infographics and Data Visualization.

6

Data sources.

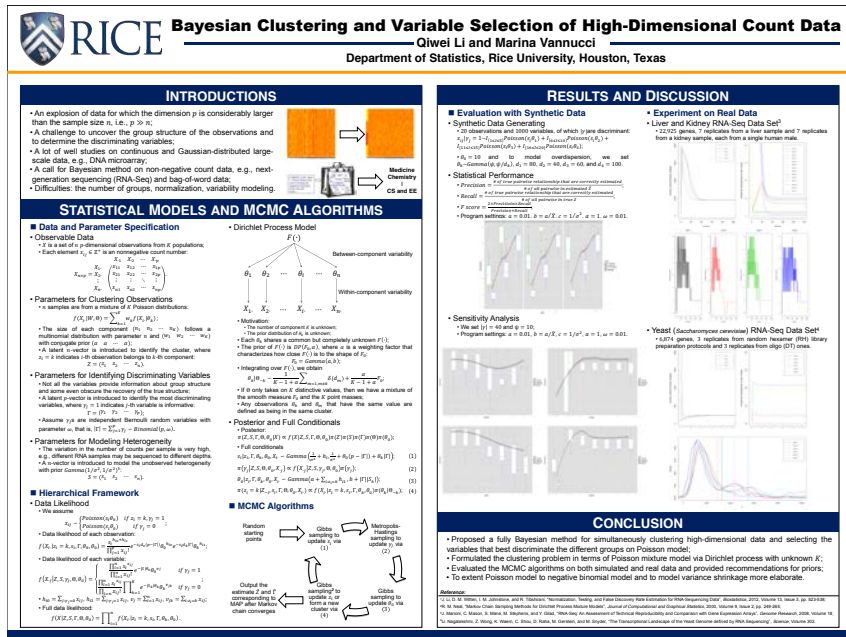


# Books used

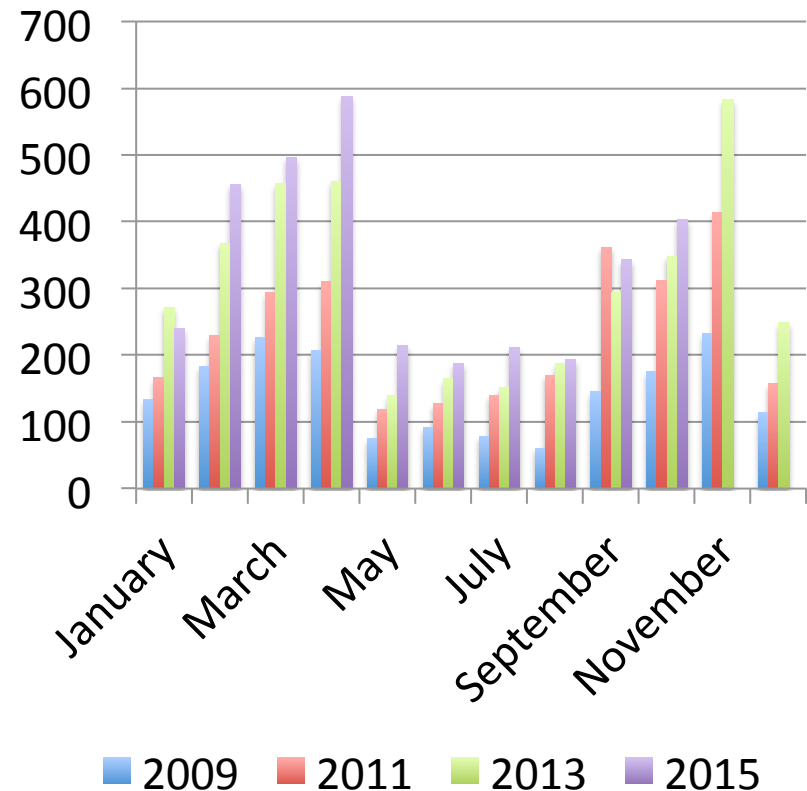




# What is Infographic? What is Data Visualization?



## DMC Equipment Circulation



# Why Infographics work?

- Between 50-80% of the human brain is dedicated to visual processing.
- The human brain is a pattern recognition machine.
- People remember pictures better than words, especially over longer periods of time.

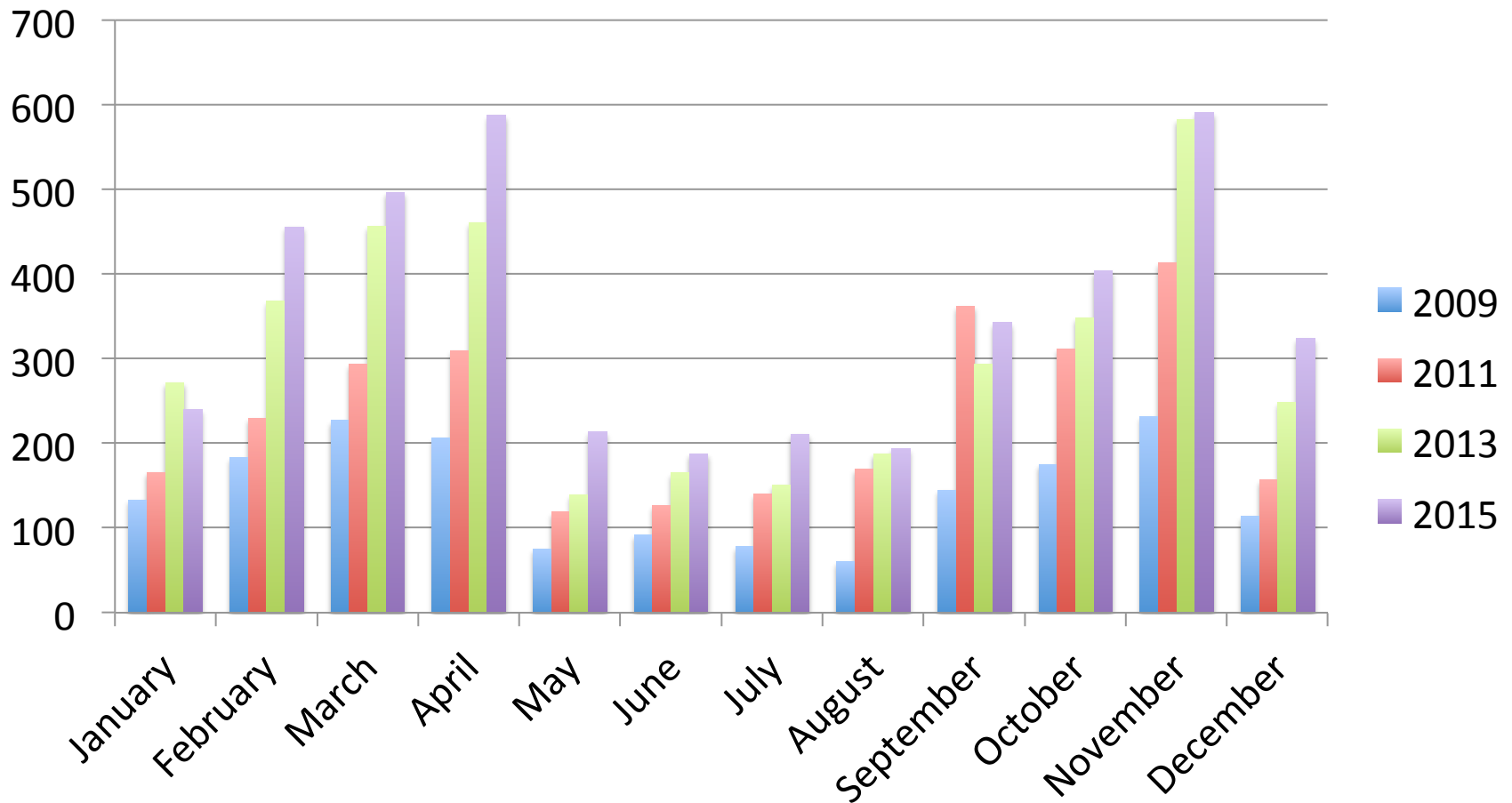
# A Table of Data, Hard to See its Pattern and Trend.

## DMC Equipment Circulation Statistics

Month	2009	2011	2013	2015
January	133	166	272	240
February	183	230	368	456
March	227	294	457	497
April	207	310	461	588
May	75	119	139	214
June	92	127	165	188
July	78	140	151	211
August	60	170	188	194
September	145	362	294	343
October	175	312	348	404
November	232	414	583	591
December	114	157	249	324

Convert the Data to a Bar Chart, Easy to See the Pattern.

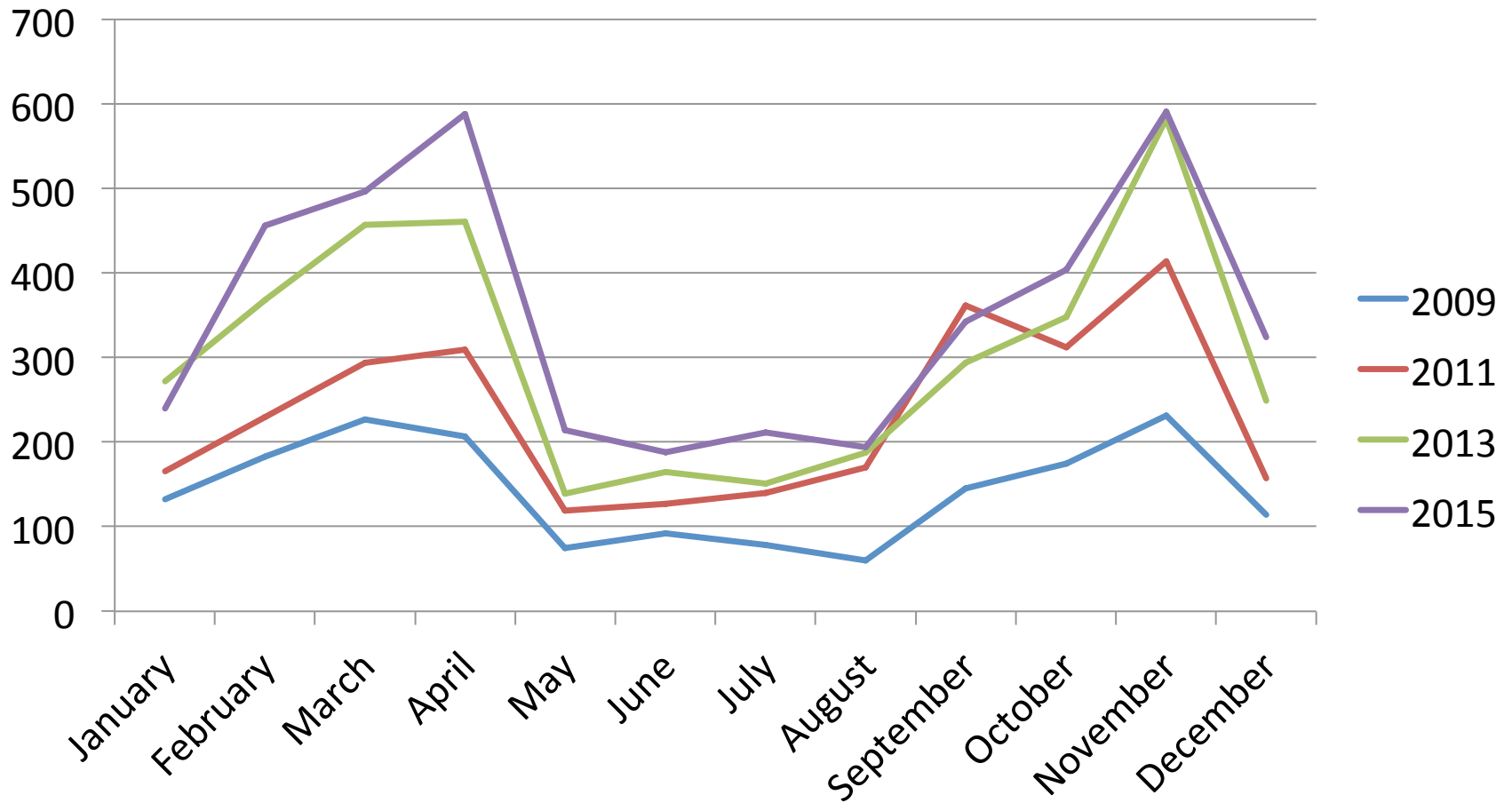
## DMC Equipment Circulation Statistics



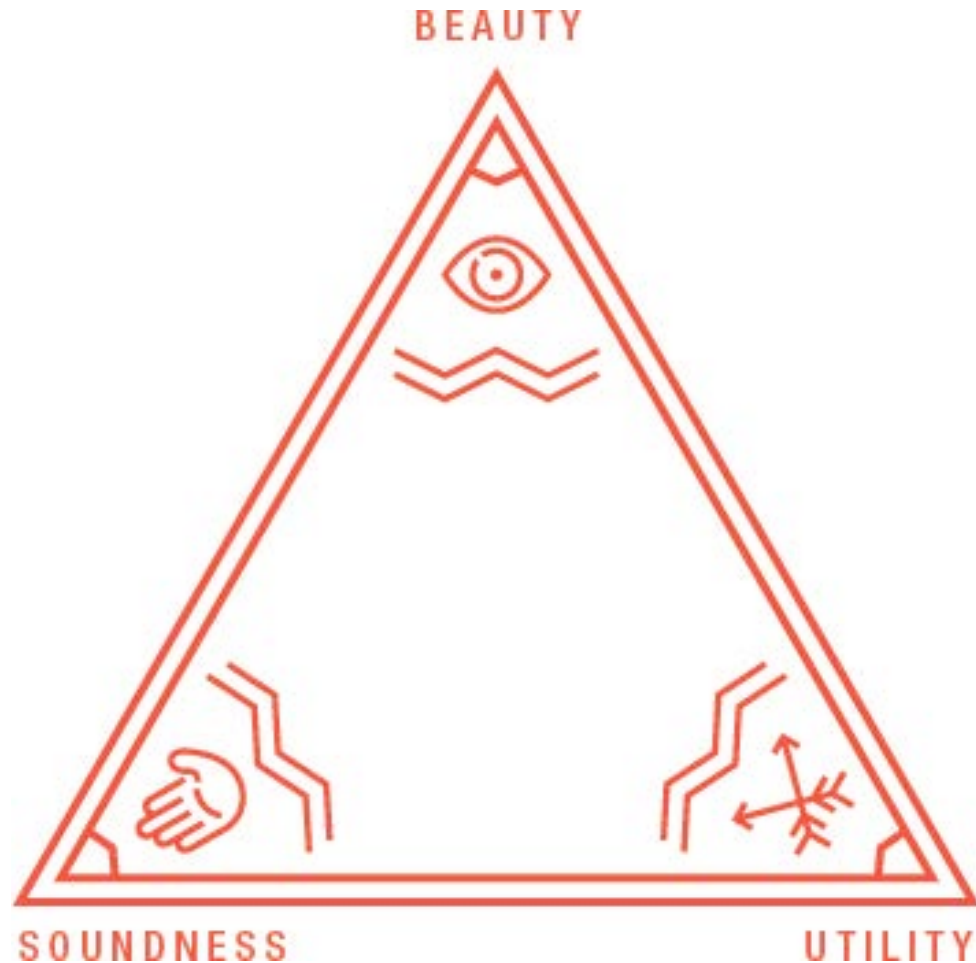


# Convert the Data to a Line Chart, Easy to See the Trend.

## DMC Equipment Circulation Statistics



# What makes a good infographic?



Lankow, J., Ritchie, J., & Crooks, R. (2012). *Infographics [electronic resource]: the power of visual storytelling*. ©2012. P198

# Information Design Best Practices

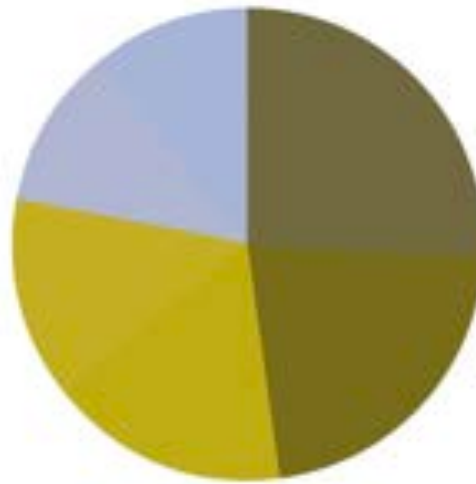
- Focus on the key message and keep it simple
- Visualize when possible
- Use a simple text message combined with a relevant image
- Use color schemes that are color-blind friendly

# Adjust hue or color brightness

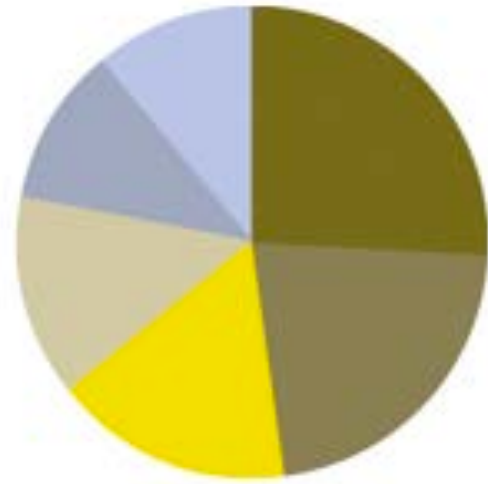
to make color-blind friendly color schemes



A



B



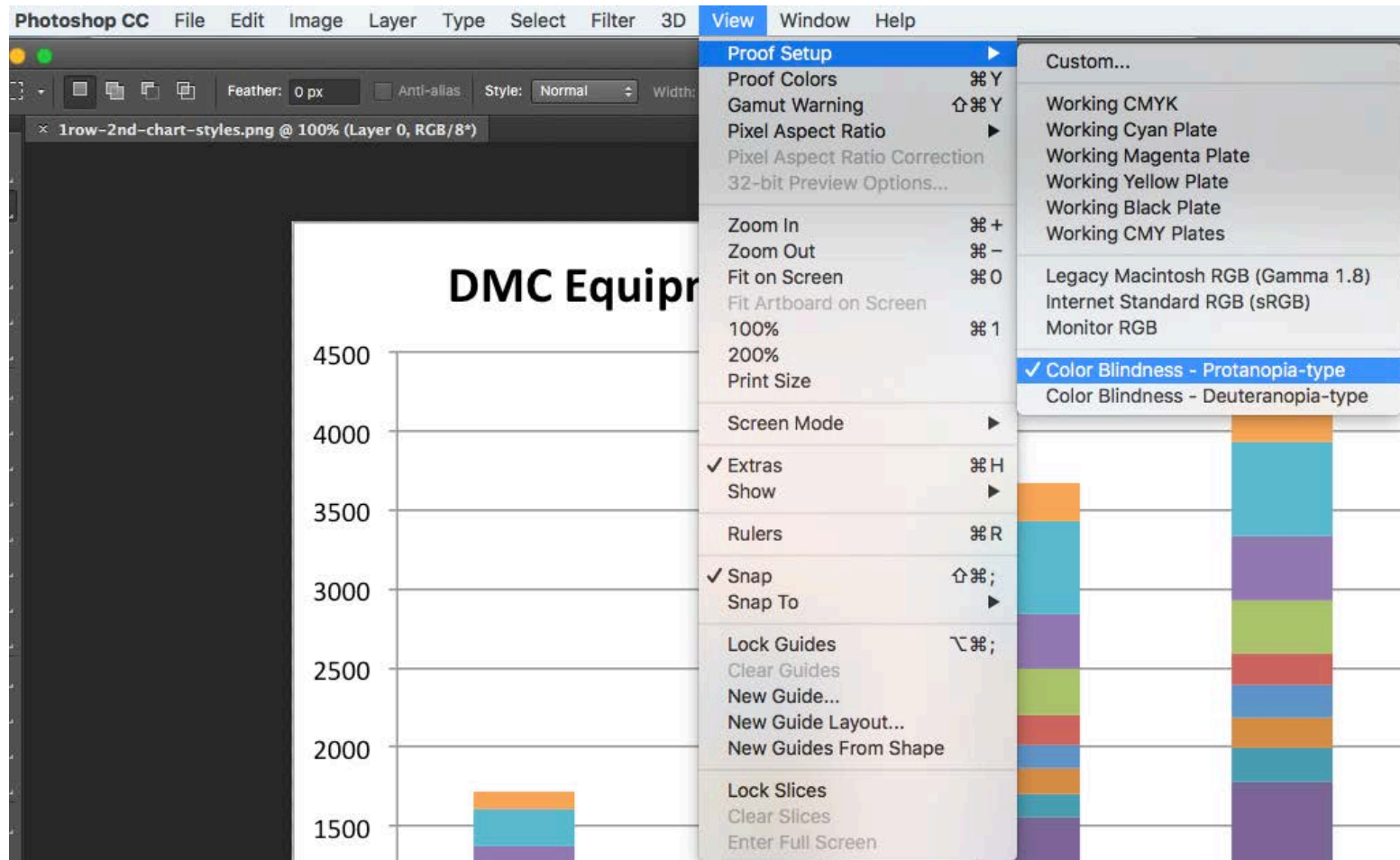
C

*Adjusting design for color blindness*

*A. Original image B. Color-blind proof C. Optimized design*



# Use Photoshop/Illustrator to Proof Colors



# Choice of colors for color-blind readers

## - Tips from Edward Tufte website

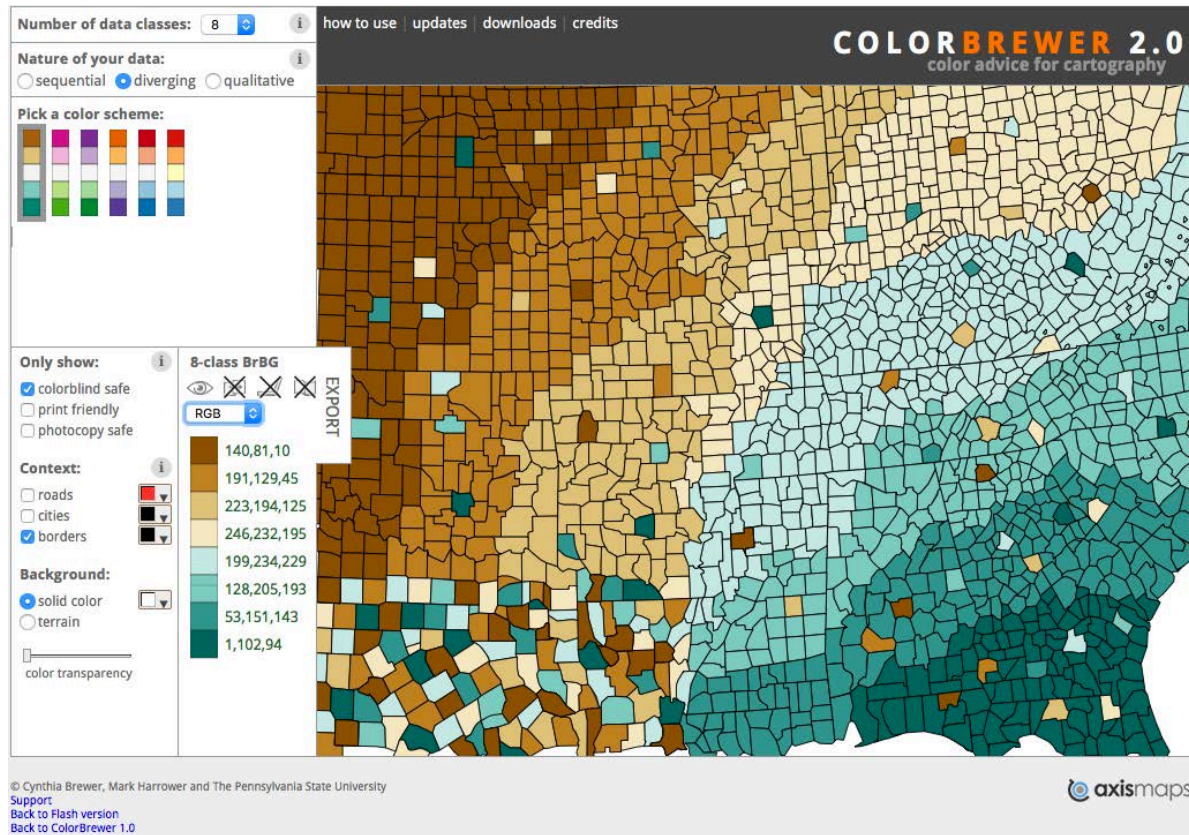
[http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg\\_id=0000HT](http://www.edwardtufte.com/bboard/q-and-a-fetch-msg?msg_id=0000HT)

### Set of colors that is unambiguous both to colorblinds and non-colorblinds

Original	Simulation				Hue	for Photoshop, Illustrator, Freehand, etc.		for Word, Power Point, Canvas, etc.
	Protan	Deutan	Tritan			C,M,Y,K (%)	R,G,B (0-255)	R,G,B (%)
1				Black	—°	(0,0,0,100)	(0,0,0)	(0,0,0)
2				Orange	41°	(0,50,100,0)	(230,159,0)	(90,60,0)
3				Sky Blue	202°	(80,0,0,0)	(86,180,233)	(35,70,90)
4				bluish Green	164°	(97,0,75,0)	(0,158,115)	(0,60,50)
5				Yellow	56°	(10,5,90,0)	(240,228,66)	(95,90,25)
6				Blue	202°	(100,50,0,0)	(0,114,178)	(0,45,70)
7				Vermilion	27°	(0,80,100,0)	(213,94,0)	(80,40,0)
8				reddish Purple	326°	(10,70,0,0)	(204,121,167)	(80,60,70)

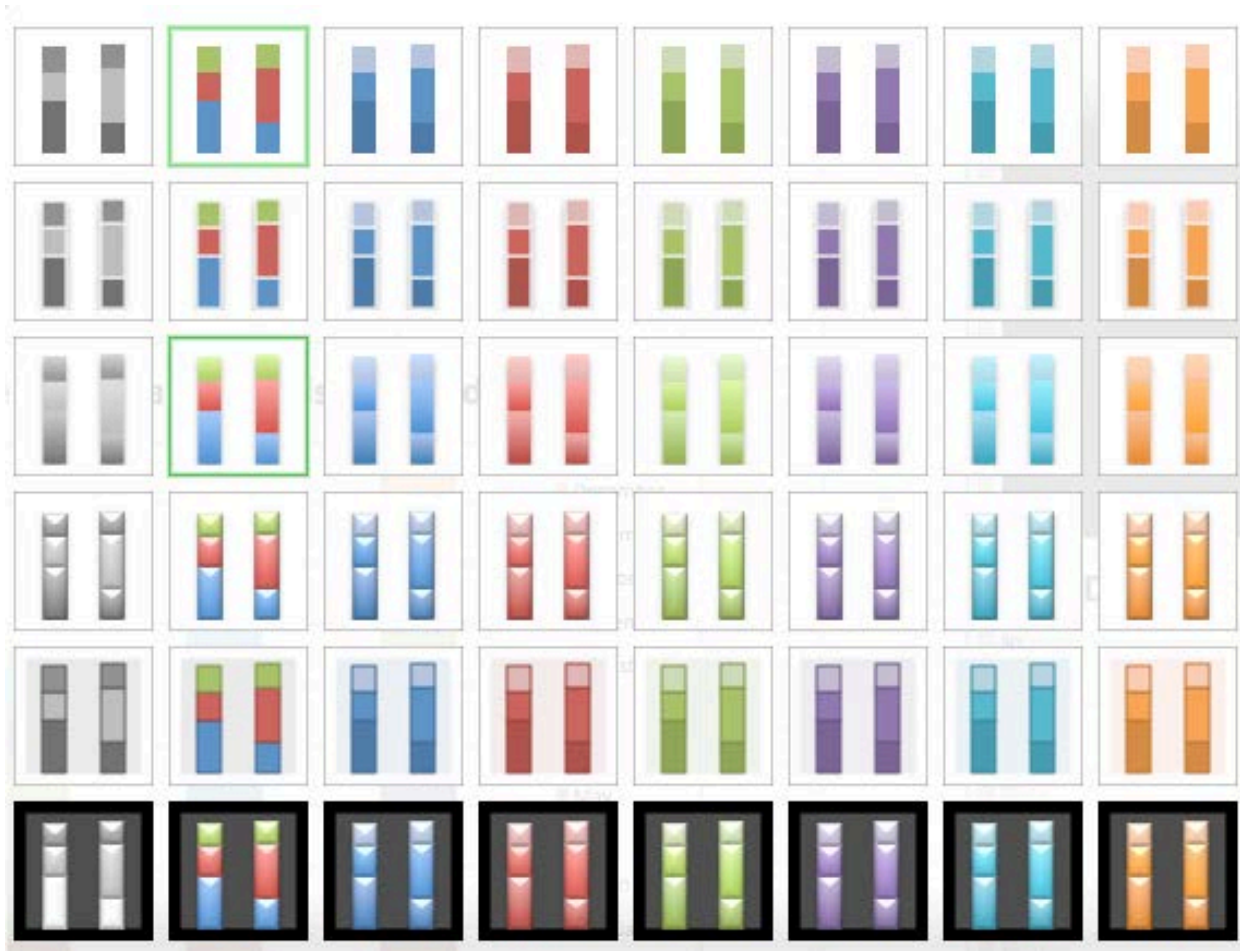
Fig. 16 Colorblind barrier-free color pallet

# Use Color Brewer as a Reference to Create Color-blind Friendly Color Scheme



<http://colorbrewer2.org/> – Color Advice for Cartography

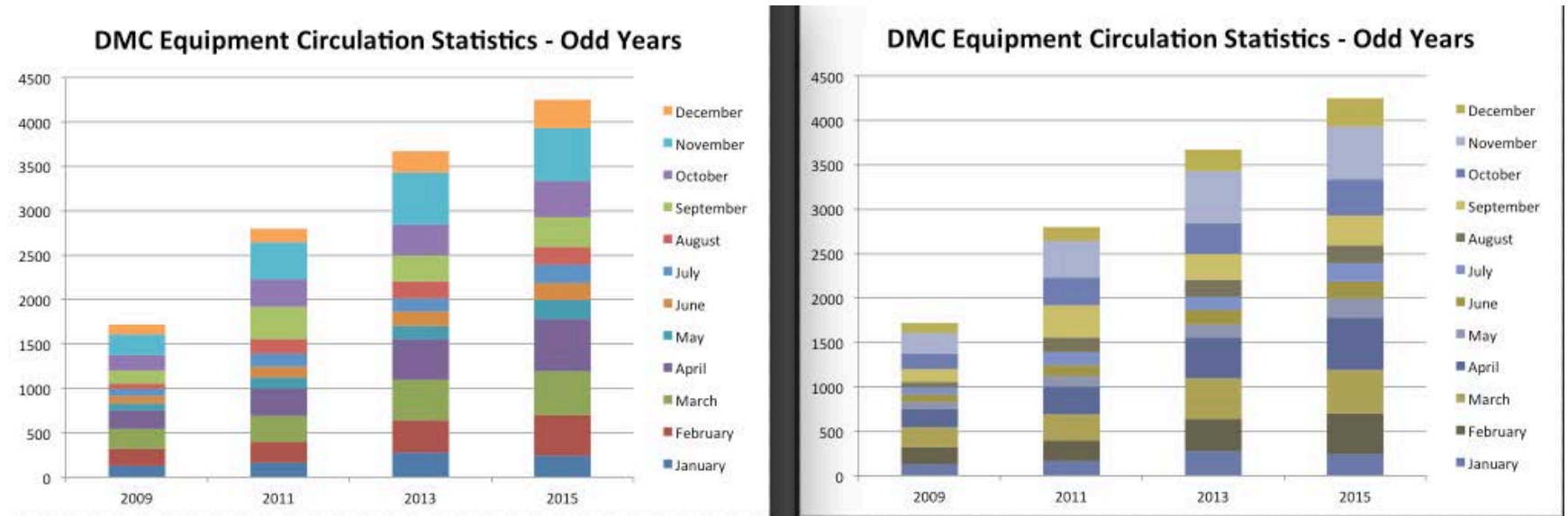
# Will Excel's built-in chart styles pass color-blind test?





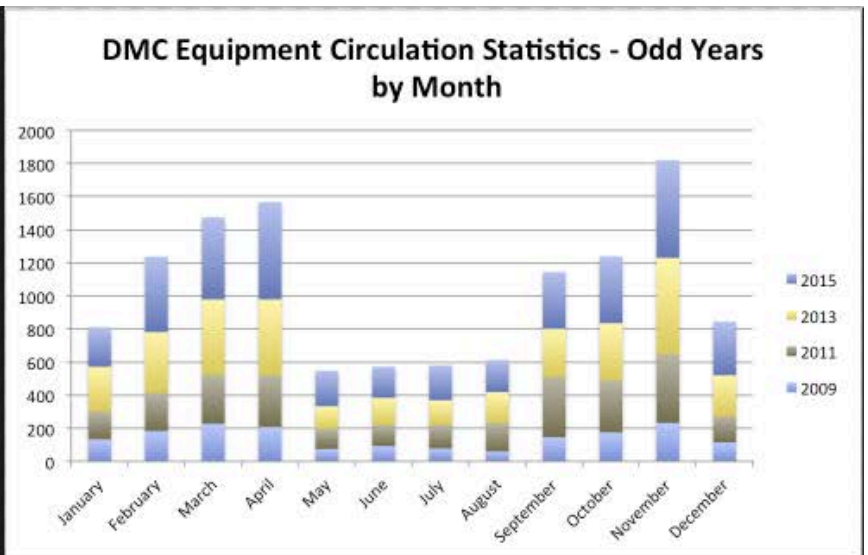
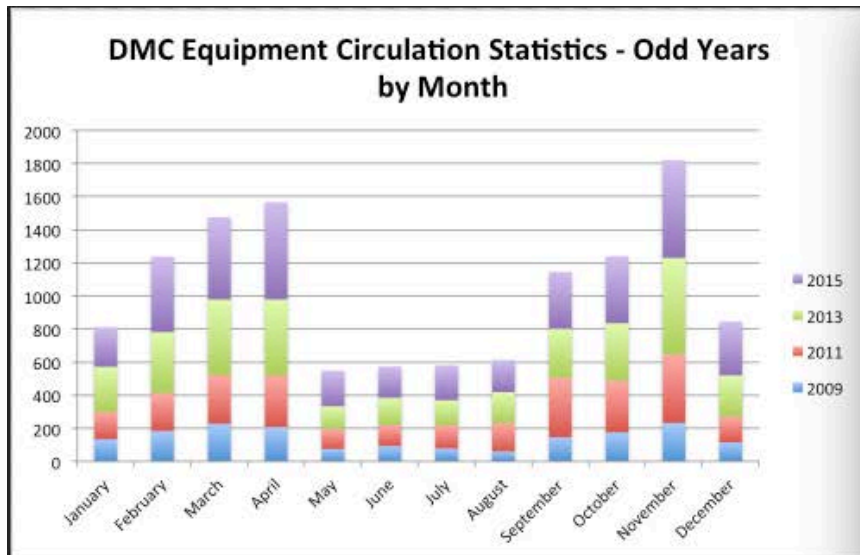
Left: Excel chart style  
– 1<sup>st</sup> row 2<sup>nd</sup> one

Right: after turning on color-blindness tool in Photoshop



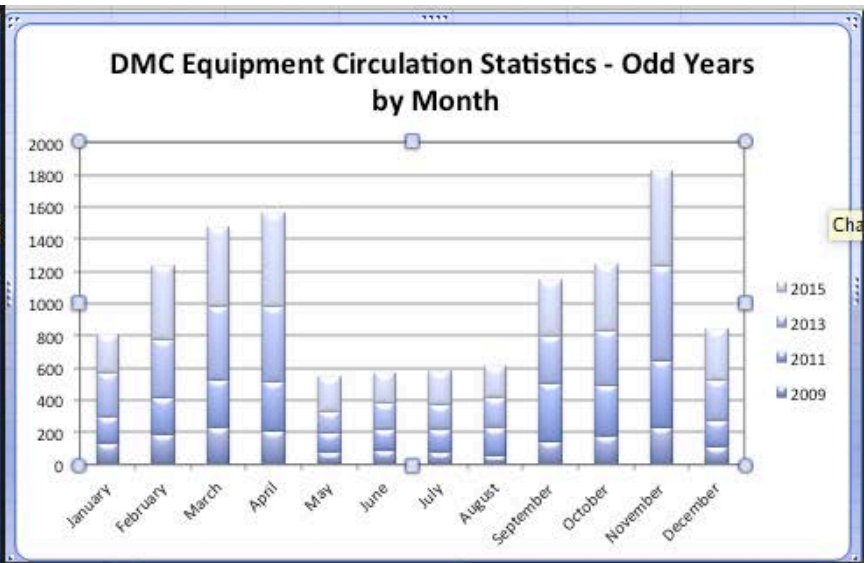
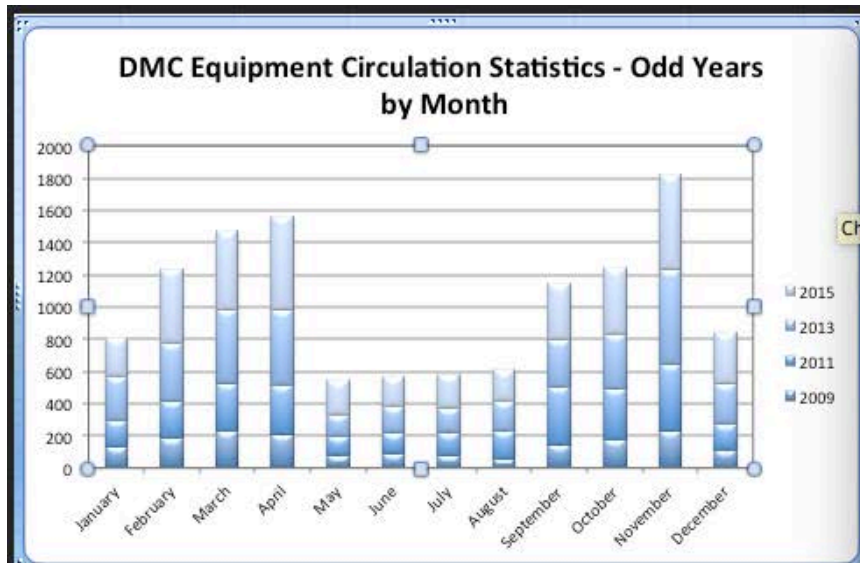
Left: Excel chart style  
– 3<sup>rd</sup> row 2<sup>nd</sup> one

Right: after turning on color-  
blindness tool in Photoshop



Left: Excel chart style  
– 4th row 3rd one

Right: after turning on color-  
blindness tool in Photoshop






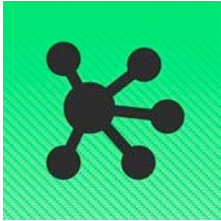



A large orange rectangular graphic with rounded corners, featuring a scroll-like design on the left side with a vertical bar and a small circular element at the top. The text is centered within the orange area.

It is safe to use Excel's built-in chart styles to create color-blind friendly color schemes!







# Desktop Tools – Vector Graphics

PowerPoint	Excel	Adobe Illustrator	Adobe InDesign
			
<b>Gephi(free, PC and Mac)</b>	OmniGraffle (Mac only)	InkScape(free, PC and Mac)	
			

Note: Tools in orange shaded cells are supported at the DMC.

# Desktop Tools – Image Editing

Adobe Photoshop	Gimp(free, PC and Mac)
	
Pixelmator (Mac only)	Acorn (Mac only)
	

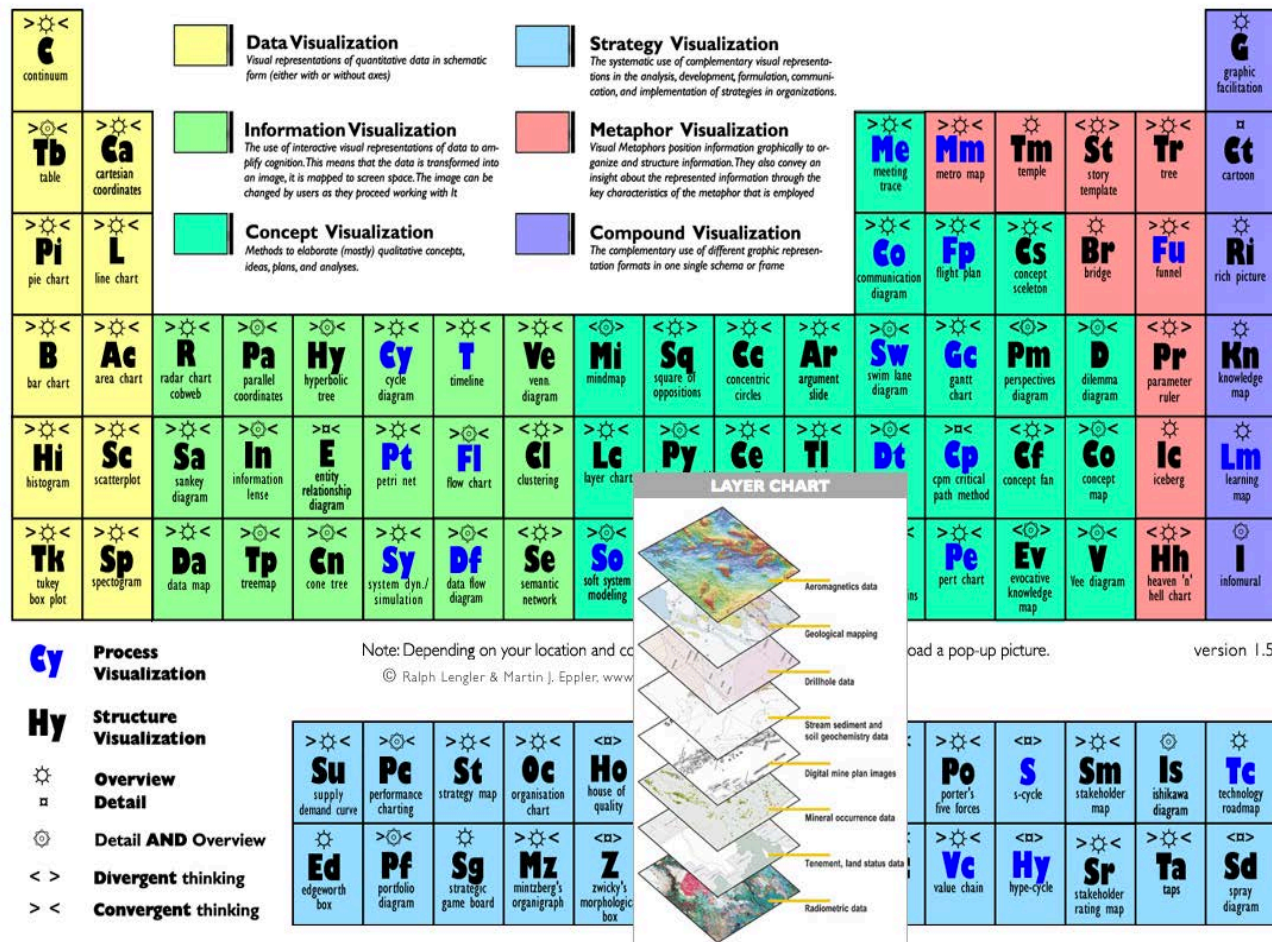
Note: Tools in orange shaded cells are supported at the DMC.

# Online Tools

- Wordle.net <http://www.wordle.net/>
- Google Chart <https://developers.google.com/chart/>
- Tableau Public <https://public.tableau.com/s>

# Online Infographics Resources

# Periodic Table of Visualization Methods



# Online Infographics Resources

# The Noun Project



# Online Infographics Resources

- [Periodic Table of Visualization Methods](#)
- [The Noun Project](#)
- [22 free tools for data visualization and analysis](#)
- [infographics world](#)

# More Sample Infographics

- Cool infographics

<http://www.coolinfographics.com/>

- Edward Tufte

<http://www.edwardtufte.com/tufte/posters>

- Information is beautiful

<http://www.informationisbeautiful.net/>

by David McCandless, an author and designer.



# Data Sources

- data.gov  
<http://www.data.gov/>.
- FactBrowser  
<http://www.factbrowser.com/>
- Google Public Data  
<http://www.google.com/publicdata/directory>
- Wolfram Alpha  
<http://www.wolframalpha.com/>
- Wikipedia  
[https://en.wikipedia.org/wiki/Main\\_Page](https://en.wikipedia.org/wiki/Main_Page)

# On Campus Resources

- [Data Visualization Center](#)
- [Kelly Center for Government Information, Data, and Geospatial Services](#)
- [GIS Data Center](#)

# Objectives for “Visualizing Small Data Sets with Excel and Google Chart”

1

- Data visualization best practices.

2

- Use Excel’s built-in color schemes.
- How to pick up color-blind friendly color schemes.
- How to proof color with Photoshop or Illustrator.

3

- How to save the chart to the file format specified by the publisher such as PDF, EPS or TIFF.

4

- Use Google Chart to embed an interactive chart into a webpage.

# Two hands-on projects

- Creating a chart for publication

example

<http://online.liebertpub.com/doi/full/10.1089/jpm.2015.0341>

- Creating a chart to embed on a website

example

<http://libguides.rice.edu/c.php%3Fg=376896%26p=2603479>

# Objectives for “Creating a Poster with PowerPoint or InDesign”

1

- Compare PowerPoint with InDesign

2

- Learn the pros and cons of PowerPoint

3

- Learn the pros and cons of InDesign

## Our Mission

The DMC supports the creation and use of multimedia in education, scholarship, and creative expression. Working toward this end,

we provide services that include hands-on training, assistance with digital projects, and access to the essential tools for creating digital resources such as digital video and audio, images and animations, infographics, PowerPoint presentations, web pages, and more.

## DMC Offers Hands-on Training on Media Editing and Assistance with Various Digital Projects

1. Help with using DMC equipment
2. Demonstration of DMC equipment
3. Assistance on video/audio editing, and graphics creation
4. Consultation on patron's project
5. Short courses for using digital tools



## DMC Provides Access to the Essential Tools and Facilities for Creating Digital Media

1. Poster printing
  2. Skype/Podcasting
  3. Equipment available for checking out
  4. Lecture/interview recording
  5. Photo taking
6. iMovie, Final Cut Pro, Photoshop, Illustrator, InDesign, and more





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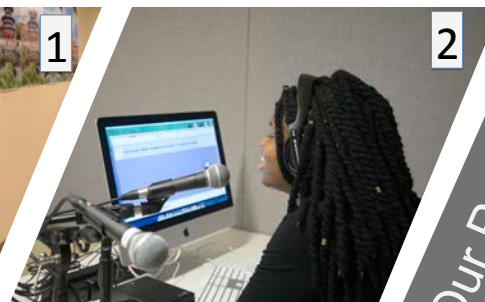
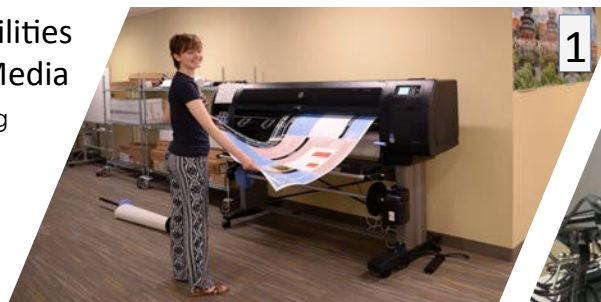
1. Help with using DMC equipment
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## DMC Provides Access to the Essential Tools and Facilities for Creating Digital Media

1. Poster printing
2. Skyping/Podcasting
3. Equipment available for checking out
4. Lecture/interview recording
5. Photo taking

6. iMovie, Final Cut Pro, Photoshop, Illustrator, InDesign, and more



Your Projects, Our Passion!



# Findings

## InDesign

- Gets work done precisely and nicely
- Good at text wrapping
- There is a learning curve
- Not readily available

## PowerPoint

- Get work done
- No text wrapping
- Little learning curve
- Almost everybody has it

# A Poster Done in PowerPoint, ANTH 201, Spring 2016

**Skateboards**  
Emma Satterfield & Elizabeth Myong  
Rice University

**Social History**

- First a part of surfer culture but became identified with rebellion, punk movement
- As skateboarding gained popularity and publicity, its reputation has changed
  - Pro skateboarders like Tony Hawk and the development of 'extreme sports'
- Still associated with individuality and nonconformity
- **Is this the case at Rice?**

**Social Processes**

- Manufacturing involves specialized factory labor to separately make the three main components
- Strong element of customer choice – they usually assemble the board, and often choose deck designs
- Companies like Made in Mars, DIYSkate emphasize direct involvement in the manufacturing process
- **Do skateboarders at Rice put their own skateboards together?**
  - Shows personal investment in the skateboard - assembly requires precision and effort

How are skateboards  
significant in Rice culture?

## Findings

- **Transportation**
  - Efficient and compact means to travel for crucial transition periods: meal and class times
  - Used on sidewalks, main roads, concrete, and brick pathways
  - Navigate to avoid barriers like gravel and grass
- **Personal Expression**
  - Decorations and type of skateboard: for example colored wheels, stickers, and elaborate designs
  - Specifically stickers conveyed owner's interests and preferences
  - Identity as a type of person who rides a skateboard: counter-culture, modern, edgy
- **Social**
  - Traverse indoors and outdoor worlds seamlessly
  - Community among skateboarders
  - Leisure: freestyling, tricks, games, teaching others

# A Poster Done in PowerPoint, ANTH 201, Spring 2016



## Apple EarPods: Manufactured Isolation

By: Allison Burns, Angie Iyinbor, & Sierra Jenkins  
*Rice University, Spring 2016*



### The History: Operators to Apple Inc.

- Apple first introduced its iconic white earbuds in 2001, at the turn of the 21st century.
- However, Apple did not pioneer the portable ear speakers. This was the work of Utah native Nathaniel Baldwin who worked upon the designs of the ten pound earpieces used by telephone operators in the 1880s and the electrophone system used by wealthy citizens to listen to the opera in the 1890s.
- By 1910, the Navy took notice and quickly adopted Baldwin's newest model for use in their Radio Division.
- Almost 50 years later, John C. Koss created the first stereo headphones specifically designed for music<sup>1</sup>. Their circumaural design engulfed the entire ear, canceling outside noise and making them ideal for listening to the latest Beatles songs.
- Overtime, as portable music players evolved, so did headphones, until the earbud was introduced.
- In 2001, Apple grabbed hold of this emerging trend of small earbuds, making them into the most commonly used personal, portable speakers.
- Afterwards, a remote and mic was added to the right cord to allow users to pause, play, fast-forward, rewind, etc, and to make calls and use voice control while wearing the earbuds.



### Isolation : Connection Paradox

Telephone  
Operators



Wealthy  
Opera Lovers



College  
Students

### Forms, Materials, and Types: Improving on the Earbud

- Apple produces several different apparatuses for listening, commonly referred to as "headphones".
- There are 2 general types of headphones: in-ear and over-ear.
- Apple EarPods are a type of in-ear headphones released in 2012 which are composed of: **copper wire, white rubber coating, plastic outer shells, copper coils, and paper based speaker cones**
- EarPods differ from other in-ear headphones by the shape of the plastic earpieces – they are created to project sound toward the pinna of the ear, causing it to bounce back into the ear canal. Small grooves are carved into these plastic pieces, allowing air to pass through and improve the acoustics of the music played.

### How it's made: Production Foreshadows Consumer Use

- Apple EarPods are produced in factories in China, then shipped all over the world for sale.
- The production process is complex and involves:
  - Winding copper into spindles, forming the thin wire that conducts the signal inside the headphones.
  - Insulating and coating the wires with white rubber PVC to form the cables. Crimping the headphone jack onto the end of the cable
  - Assembling and inserting the speakers
  - And testing the EarPods to ensure a full spectrum of relevant frequencies can be transmitted
- Headphones are made using a semi-automatic production line—partially assembled by machines, and partially assembled by people.
- Interestingly, the environment in which headphones are made mirrors the environment they create. Employees in headphone factories work independently and quietly, not making eye contact or conversation with one another. The work requires focus and constant monitoring, and the employees do not have the luxury of interaction. Ironically, the very products they make end up facilitating barriers to social interaction in the lives of consumers.

### In Practice: How Rice University Students Use Headphones

#### Where

- Headphones are used in both loud and quite, public and private areas
- Also, they are used in motion (walking outside, working out) more often with mobile devices and when stationary (studying in the library or Rec Center) more often on less-mobile devices such as laptops

#### How

- Headphones are used by students to isolate the wearer from the environment around him/her – EX: Studying in a loud coffee shop
- Similarly, they are used to isolate the environment from the individual students activity – EX: Watching a movie without disturbing one's roommate
- However, headphones are also used to make virtual or long distance connections – EX: acquire the sensation of attending a concert that was given years in the past; talk to a boyfriend stationed overseas
- Also, headphones are used as a social place holder so that students wearing headphones are treated as though they are in a conversation – EX: Person takes out one or both headphones when 'interrupted' by a friend talking to them
  - Social interaction and headphone use do not generally occur simultaneously
- Headphones (with mics) are used to free hands for multitasking – EX: An individual typing on her laptop while talking on the phone

### References:

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- Images:
  - <https://www.ifixit.com/Teardown/Apple+EarPods+Teardown/10501>
  - <http://pinterest.com>
  - <https://pack28blog.wordpress.com/2015/09/18/pack-communications-someone-tell-me-whats-going-on/>

# A Poster Done in PowerPoint, UNIV 501, Spring 2016

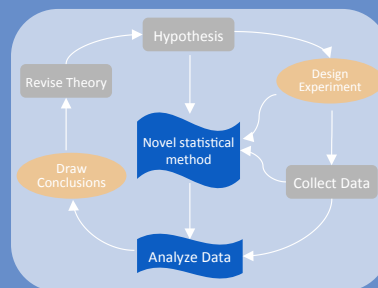


## Interdisciplinary Teaching in Statistics: A History and Next Steps

Julia Schedler

### Motivation

Statistics plays a key role in advancement of other disciplines. What have we done to incorporate this interdisciplinary aspect into our teaching?



Flowchart of how **statistics** plays a role in research of other **disciplines** and where **collaboration** occurs.

### Timeline

1839

American Statistical Association Founded

1911

First statistics Departments formed

1971

...The object of the new course is not to teach statistics as a separate discipline with a well-defined area of study like physics, chemistry or biology, but to introduce it as a body of techniques for application in research problems of various disciplines— C.R. Rao

1994

Modern Interdisciplinary University Statistics Education Symposium

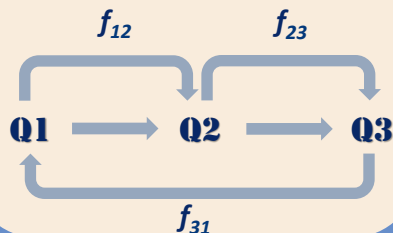
2013

Rylands et al. study the collaboration between mathematicians and scientists to build quantitative skills in their students

2015

### Quantitative Qualitative Quantitative Approach

Leman et al. develop a framework which motivates statistical methods through examples, rather than the other way around



### Next Steps

- Widespread adoption of a QQQ – like approach
- Interdisciplinary statistics as a possible solution to computer science overlap
- Implement a organization-wide initiative for interdisciplinary focus
- Not just for statistics majors

# A Poster Done in PowerPoint Using a DMC Poster Template, UNIV 501, Spring 2016

## Research Question

“What are the most effective ways to sustain students' attention during lecture?”

## My Approach

Drawing on attention studies from the scholarship on teaching and learning literature, psychology of attention, and philosophy of attention, I attempt to summarize what I have found to be the most salient features of attention for the classroom setting, say why I take these to be important for lecturing, and explain how we should think about implementing these findings. A primary conclusion that has shaped my project is that the question of how to sustain attention during lecture is not independent of the more general question of how students' attention is affected by their environment both inside and outside the classroom.

## Raising Attention to Lecture

*Don Oxtoby, Univ 501, Spring 2016*



## Decreasing “Distraction”

In my findings, the most effective factors pushing students toward optimal attention to lecture cluster around a few themes: familiarity with content (Concepcion, 2004, Thorne et al, 2005, Rudisill, 2011), breaks from lecture (Thorne et al, 2005; Davies 1983), and motivation/attitude towards content (Thorne et al, 2005; Yantis, 1993). Other factors like the professor's personality and the classroom environment are also said to be important, but I set these aside in this project because these elements are understudied in the literature, and are not issues for managing attention that are raised specifically by lecturing.



## Conclusion: Pessimism

While we would like specific, effective practices for our own individual classrooms, student-dependent effects tend to block this route, leaving us with helpful but less effective general policies that can accommodate for the variation in the attentional patterns of students from classroom to classroom:

- (1) student-independent effects: attention fluctuates in ways natural for everyone
- (2) student-dependent effects: attention fluctuates in ways peculiar to each student
- \* (2) blocks many helpful policies!

## (Partial) Bibliography

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- Thorne, G. Thomas, A. and Lawson, C. “15 Strategies for



# Fading images to a solid color





# Adding text to PDF/image files



# PowerPoint Tips

- Pages can be up to 56” for either side.
- Built-in color schemes are very helpful and color-blind friendly.
- PowerPoint poster templates are available online or can be created easily.
- PowerPoint allows users to create floating text blocks, insert vector object shapes, and import images to arrange in an infographic design.



PowerPoint is indeed your friend!

# **A SHORT COURSE SERIES BY DMC AND CWOVC**

# Creating Digital Illustrations for Your Research

1

- Function – presentation

2

- Design – presentation

3

- Execution – hands-on

4

- Style – hands-on

# Reflection and future Work

- How to effectively bring the workshops to the students?
- Just hands-on workshops?
- In addition to static infographics, cover motion infographics such as illustrative animations?
- A workshop on creative use of PowerPoint?



# Takeaways

1

- PowerPoint is a great vector based graphics tool for information design.

2

- Excel is good for visualizing small sets of data for basic needs.

3

- Proof and pick up colors
  - Proof colors with Photoshop or Illustrator.
  - Getting tips on choosing color-blind friendly colors from Edward Tufte's website.
  - The built-in color schemes of Excel and PowerPoint are color-blind friendly.

# For more information

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DMC website:

<http://library.rice.edu/dmc>

DMC guides:

<https://wiki.rice.edu/confluence/display/DMCGUIDES/DMC+Guides+Home>

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