

Introduction to Dashboards in Excel 2007

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Course Objectives

1. Learn how to layout various types of dashboards in Excel
2. Learn how to create high quality graphs for use in a dashboard
3. Learn when and how to change graph scaling, gridlines and data labels
4. Learn how to use colors to emphasize and highlight data series and data points

Topics Covered

- Theory and Examples
- Creating and formatting charts for time-series, ranking, distribution, and nominal comparison relationships
- Resizing columns and rows to define spaces
- Filling cells, setting borders, formatting axes
- Time saving tricks and tips

Suggested Book

- Information Dashboard Design
by Stephen Few
- Excel 2007 Charts
by John Walkenbach

Data, Information and Knowledge

- **Data** are raw. They are symbols or isolated and non-interpreted facts.
- **Information** is data that has been given meaning through interpretation by way of relational connection and pragmatic context.
- **Knowledge** is information, which has been cognitively processed and integrated into an existing human knowledge structure.

Tables vs. Graphs

Table (Data)	Graph (Information)
Data are expressed in the form of text (that is, words and numbers rather than graphically)	Data are express graphically (that is, as a picture)
Data are arranged in columns and rows	Data are displayed in relation to one or more axes along which run scales that assign meaning to the values
Work best when the display will be used to look up individual values or the quantitative values must be precise.	Work best when the message you wish to communicate resides in the shape of the data (that is, in patterns, trends and exceptions)

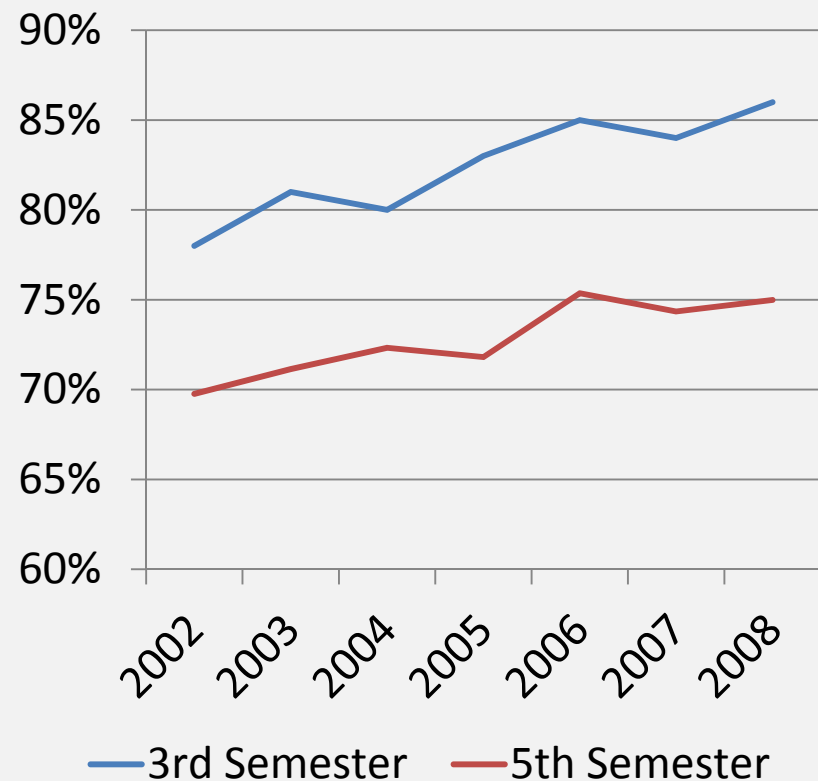
Source: "Effectively Communicating Numbers" by Stephen Few, November 2005, p. 4.

Table vs. Graph Example

Table Shows Actual Values

First-time, Full-Time Retention							
Semester	2002	2003	2004	2005	2006	2007	2008
2 nd	81.9%	83.4%	83.5%	86.1%	87.6%	87.6%	89.3%
3 rd	78.0%	81.0%	80.0%	83.0%	85.0%	84.0%	86.0%
4 th	71.8%	73.7%	74.4%	73.9%	79.9%	77.0%	77.1%
5 th	69.8%	71.1%	72.3%	71.8%	75.4%	74.3%	75.0%
6 th	65.8%	69.2%	68.2%	67.7%	72.7%	72.3%	70.7%
7 th	64.0%	66.8%	66.3%	65.8%	68.6%	69.8%	68.8%
8 th	61.7%	64.9%	64.5%	63.6%	66.2%	67.8%	66.1%

Graphs Show Trend



Data Table versus...

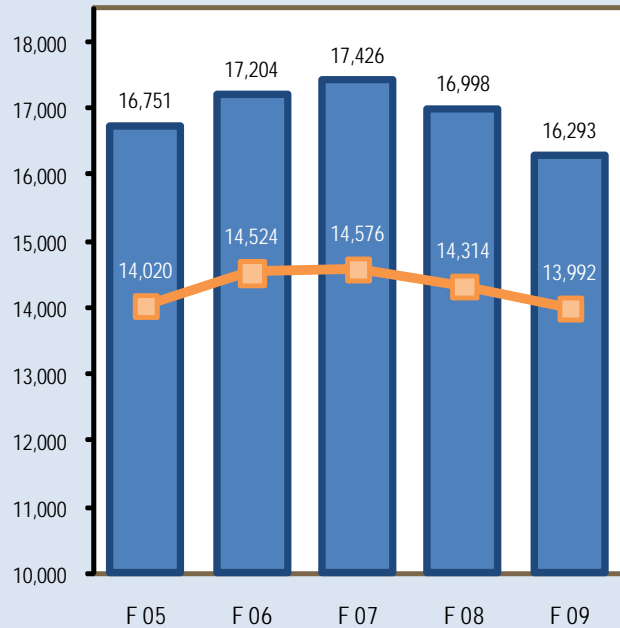
Inner Harbor University							November 09		
Chart #	Enrollment and Outcomes	F 05	F 06	F 07	F 08	F 09			
1	Headcount Total	16,751	17,204	17,426	16,998	16,293			
	Undergraduate	11,780	11,884	11,953	11,796	11,388			
	Graduate	4,971	5,320	5,473	5,202	4,905			
1	Full-time Equivalent Students (FTE)	14,020	14,524	14,576	14,314	13,992			
2	New Students (Total Full-Time)	3,347	3,312	3,469	3,259	3,097			
	First-Time, Full-Time	2,218	2,221	2,282	2,158	2,013			
	Transfer, Full-Time	1,129	1,091	1,187	1,101	1,084			
	Freshman Quality								
3	Mean SAT	1161	1159	1153	1168	1165			
3	Mean HS GPA	88.4	89.2	89.5	90.0	90.7			
4	Applicants	19,947	20,673	21,170	20,843	20,669			
	Freshman	16,394	16,934	17,534	17,194	17,078			
	Transfer	3,553	3,739	3,636	3,649	3,591			
	Residency of New Students								
6	% MD Res.	86.5%	85.4%	84.5%	83.9%	83.5%			
6	% Non-MD, US	8.7%	9.4%	10.2%	11.3%	11.3%			
6	% Int'l	4.7%	5.2%	5.3%	4.8%	5.2%			
		800 - 900	900 - 1000	1000 - 1100	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600
5	SAT Score Distribution	17	140	488	1022	970	349	101	10
		Poli Sci	Chemistry	Biology	English	History			
7	Intended Major of New Students	204	150	131	98	48			

Dashboard

Dashboard

1

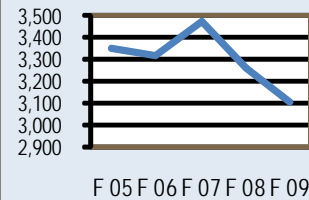
Headcount and FTE



Full- and Part-time Students (Bars), Full-time Equivalent Students (Line)

2

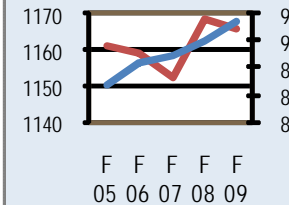
New Students



Full-Time Freshmen and Transfers

3

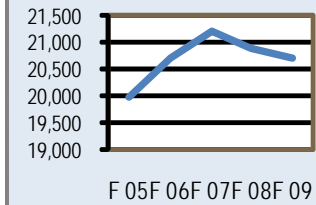
Freshman Quality



SAT in Red, HS GPA in Blue

4

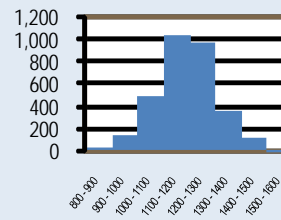
Applicants



Freshmen and Transfers

5

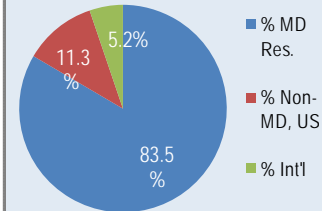
SAT Distribution



First-time, Full-Time Entering Cohort

6

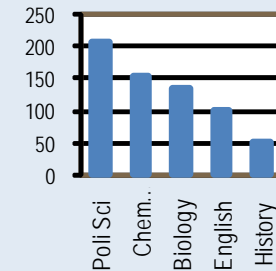
Residency



Residency of New Students

7

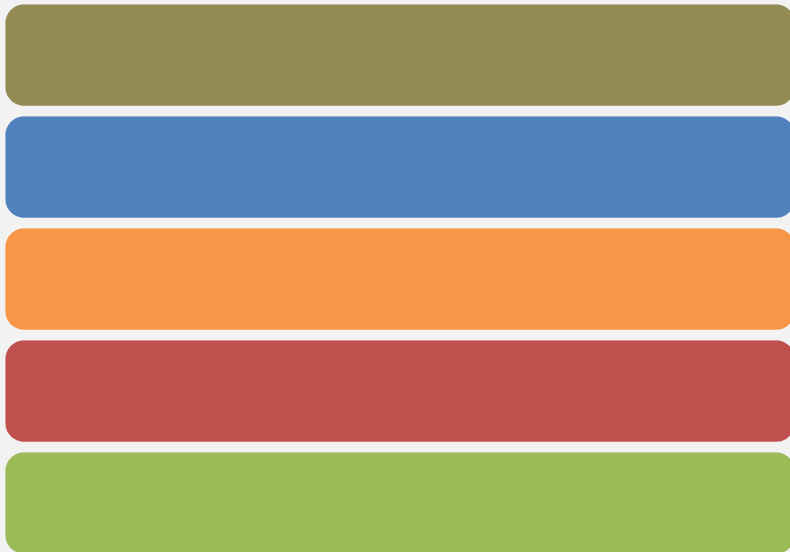
Intended Major



The Use of Color

- Saturated Colors Should be Used for **Emphasis**
- Choose Common Colors

Standard Colors



Emphasis Colors

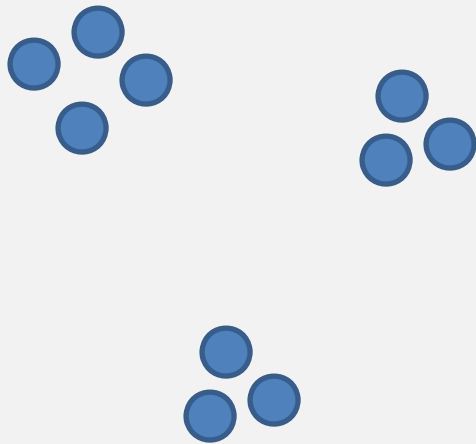


Gestalt Principles of Visual Perception

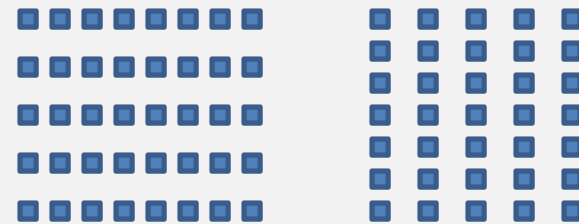
- Proximity
- Closure
- Similarity
- Continuity
- Enclosure
- Connection

Proximity

3 Groups or 10 Dots?

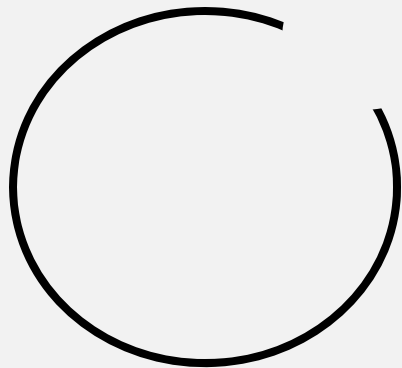


Rows and Columns

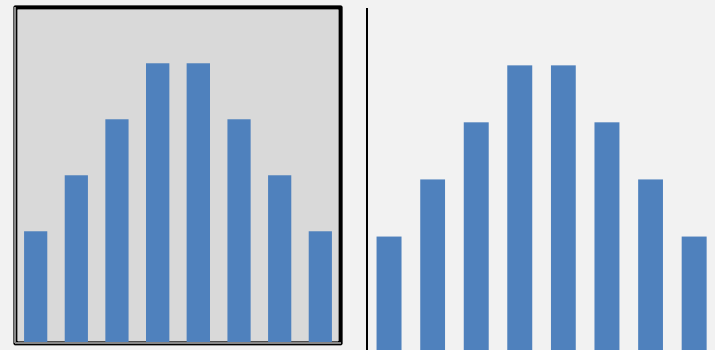


Closure

See the Shape?

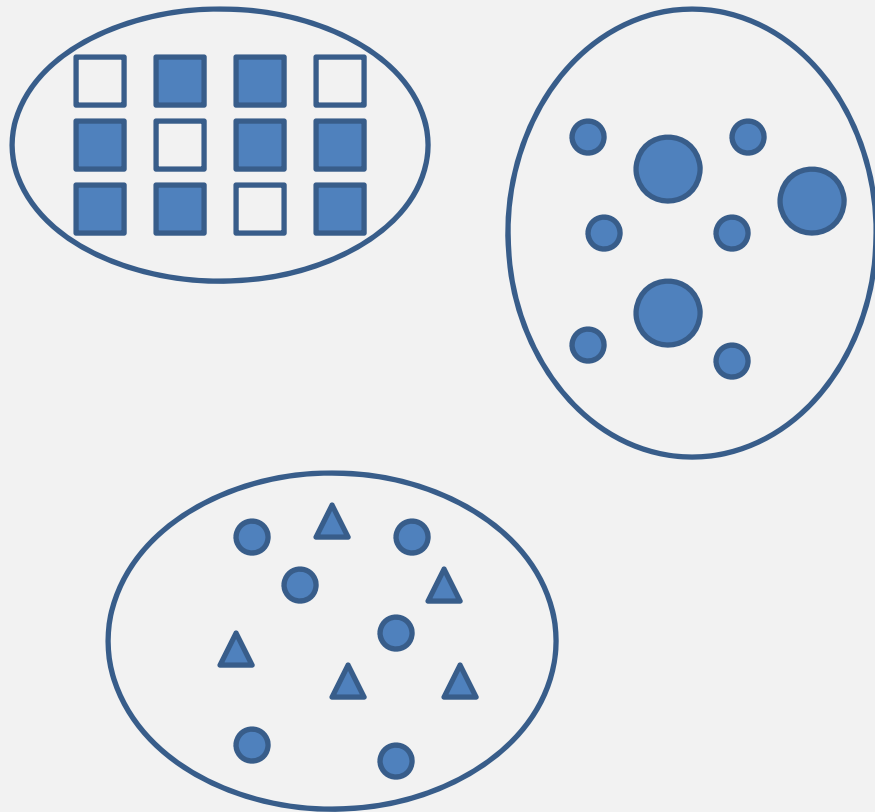


Only Need Two Axis

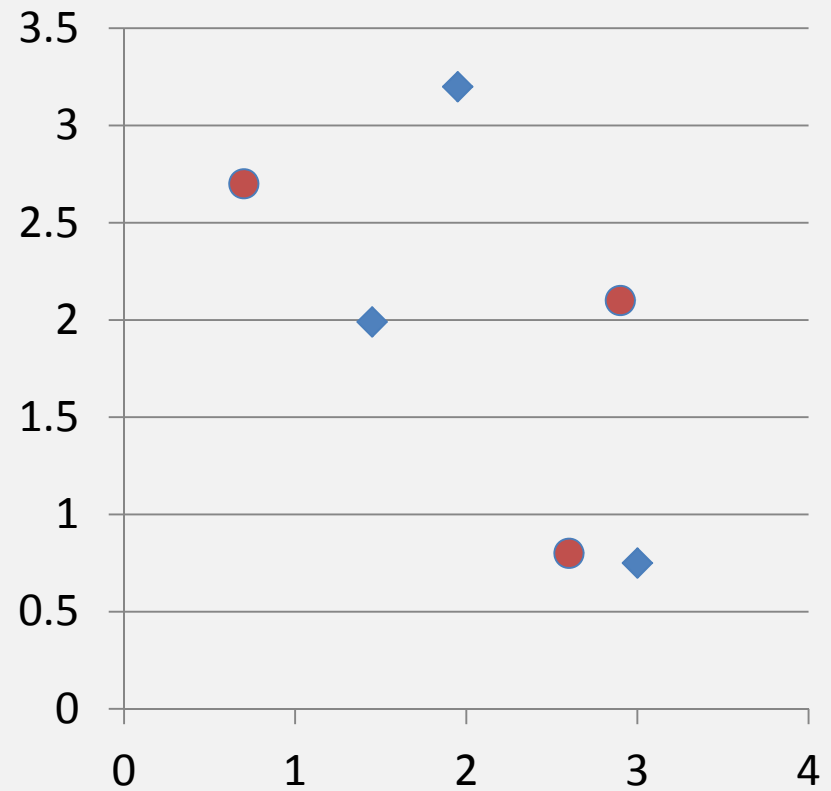


Similarity

Group by Color, Size, Shape

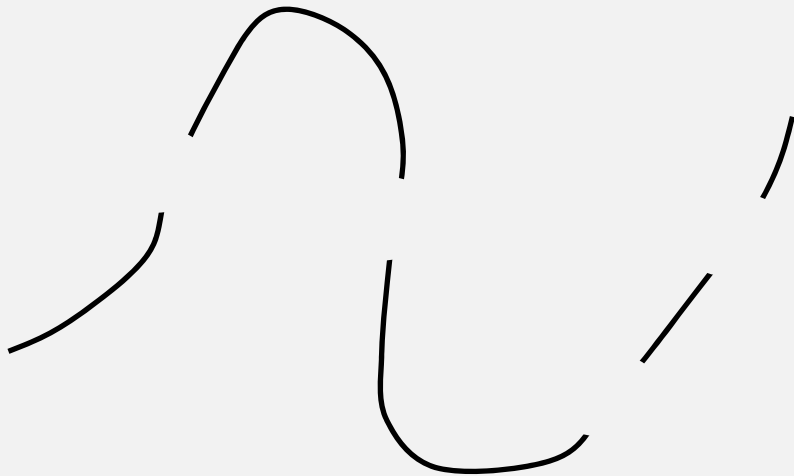


In a Graph



Continuity

How many lines?



Indentation

Headcount

Full-time

4,302

Part-time

1,293

Degrees

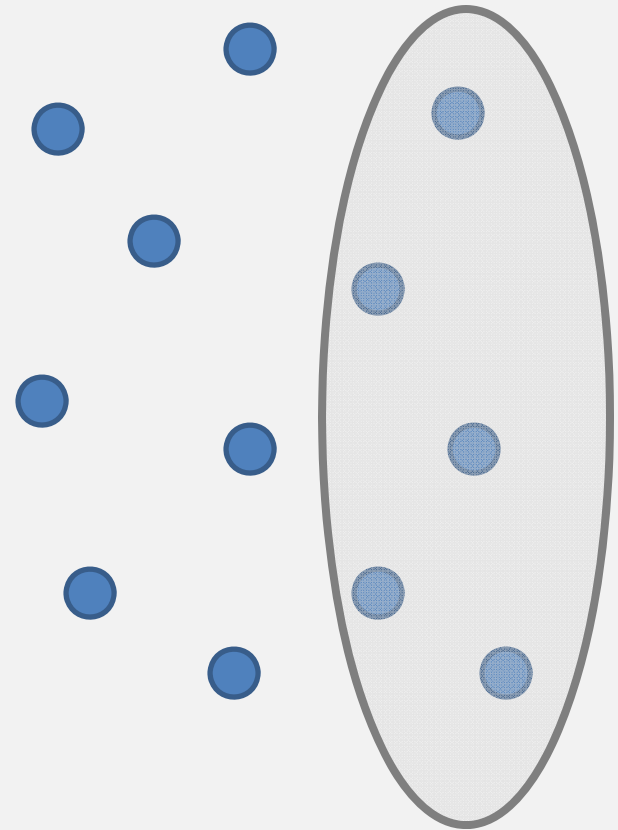
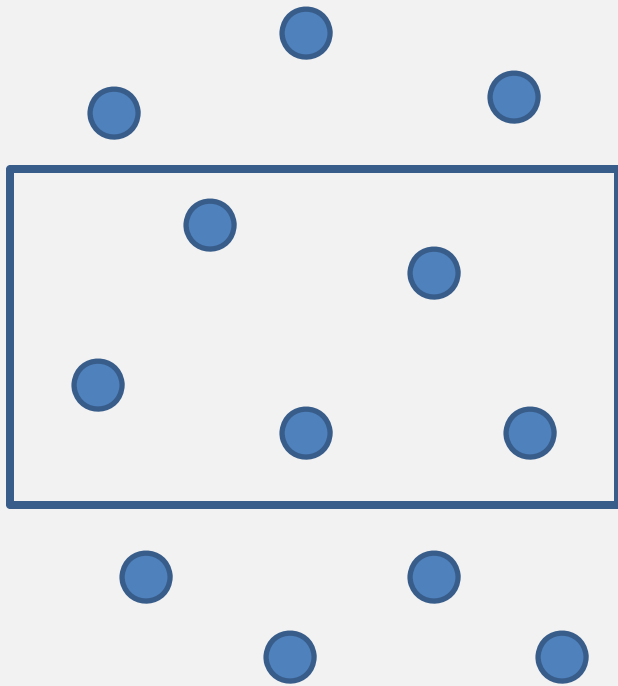
Associates

1,007

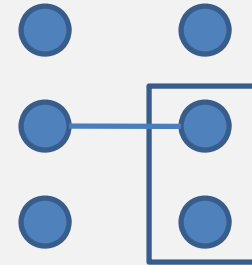
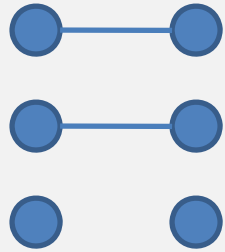
Bachelors

2,982

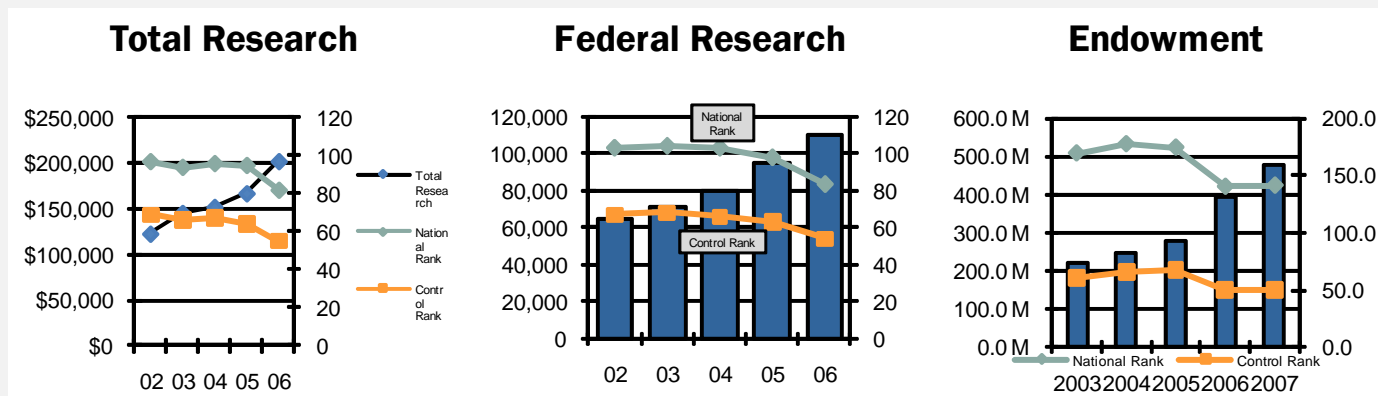
Enclosure



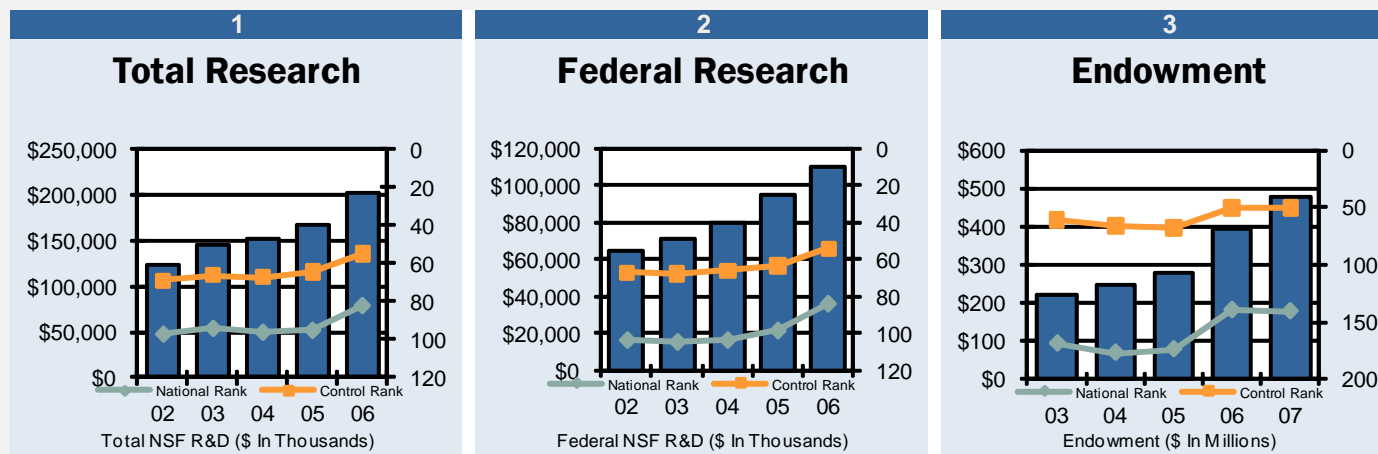
Connection



Design is Important!

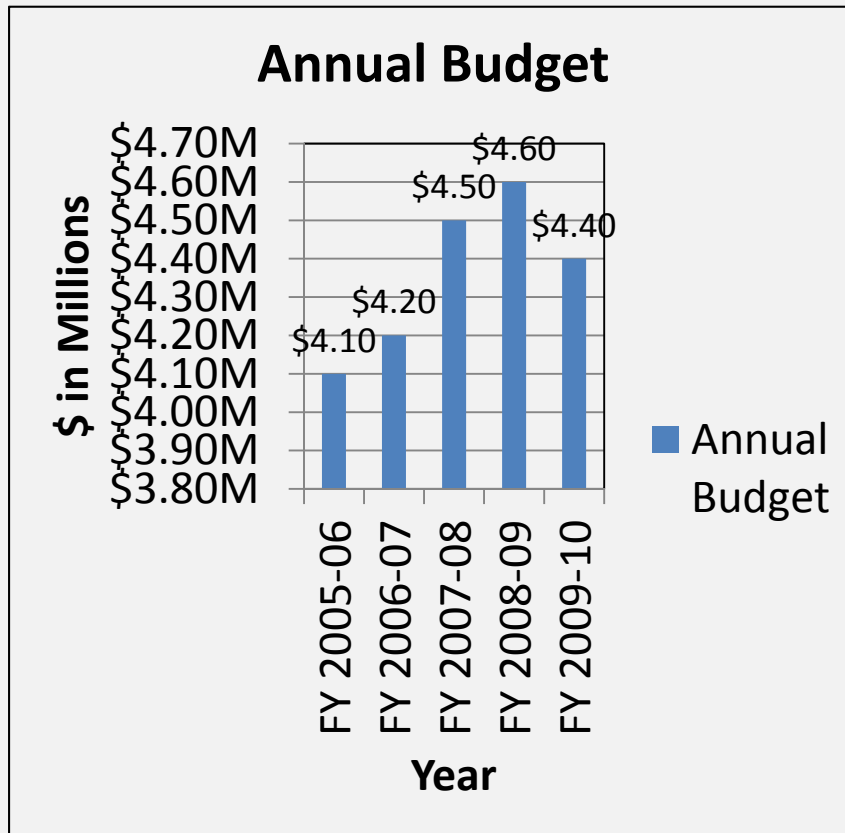


versus



Keep it Simple

Extraneous Features



Less is Better

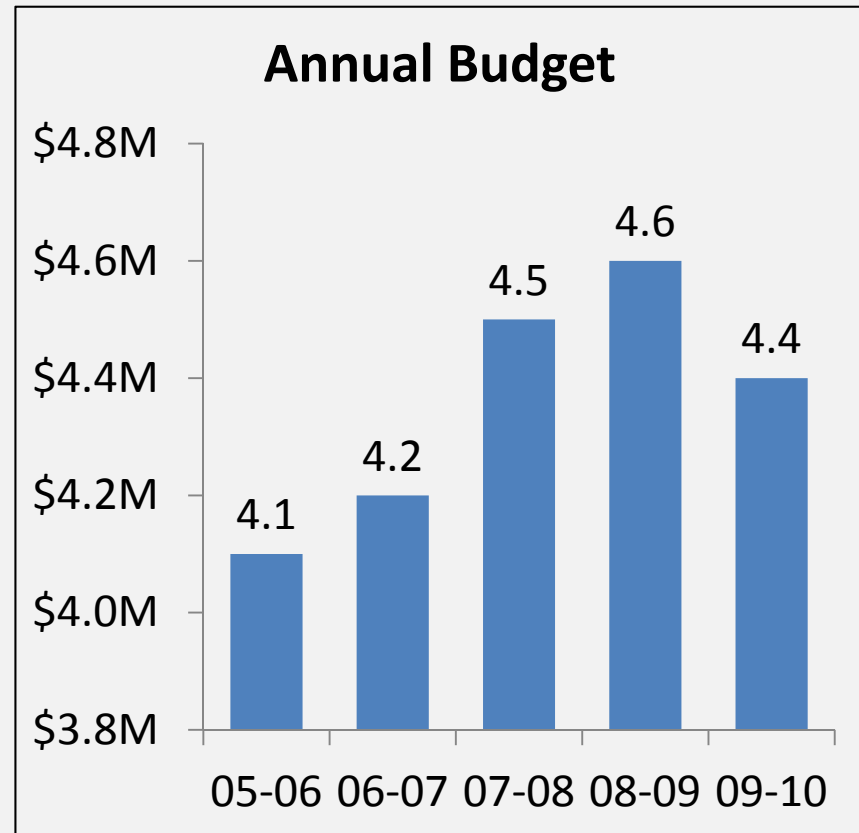
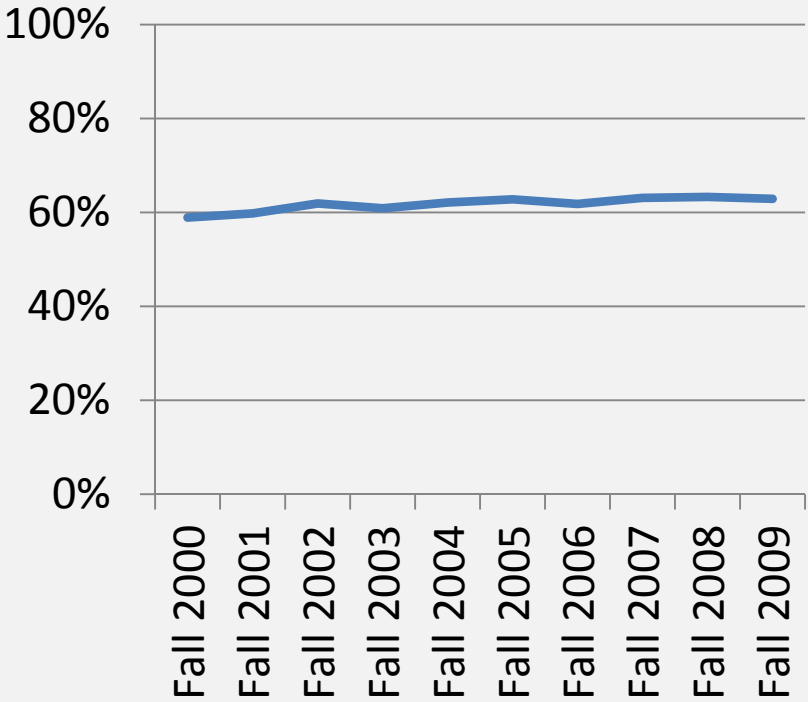


Chart Scaling

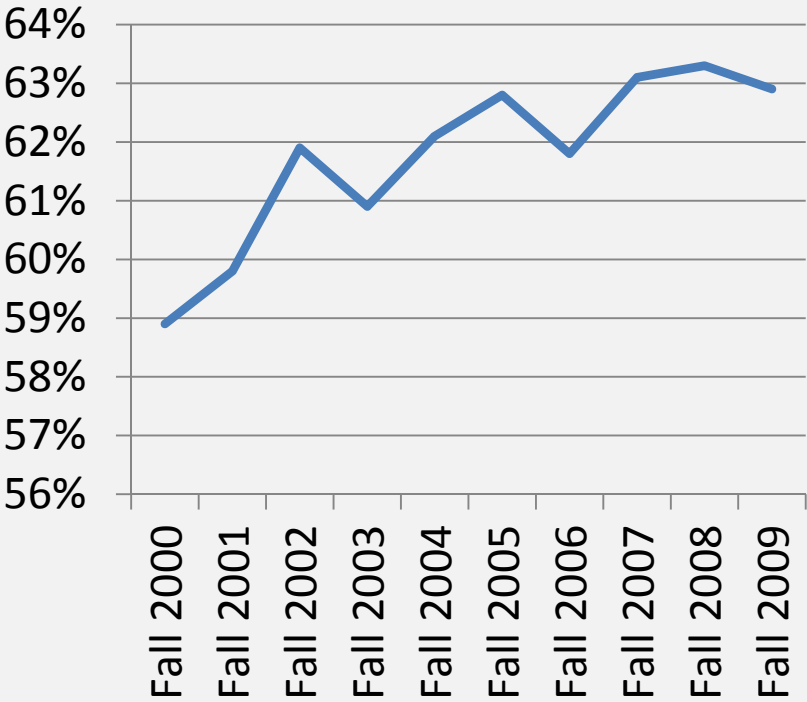
Start at Zero

Graduation Rate



Scale to Show Change

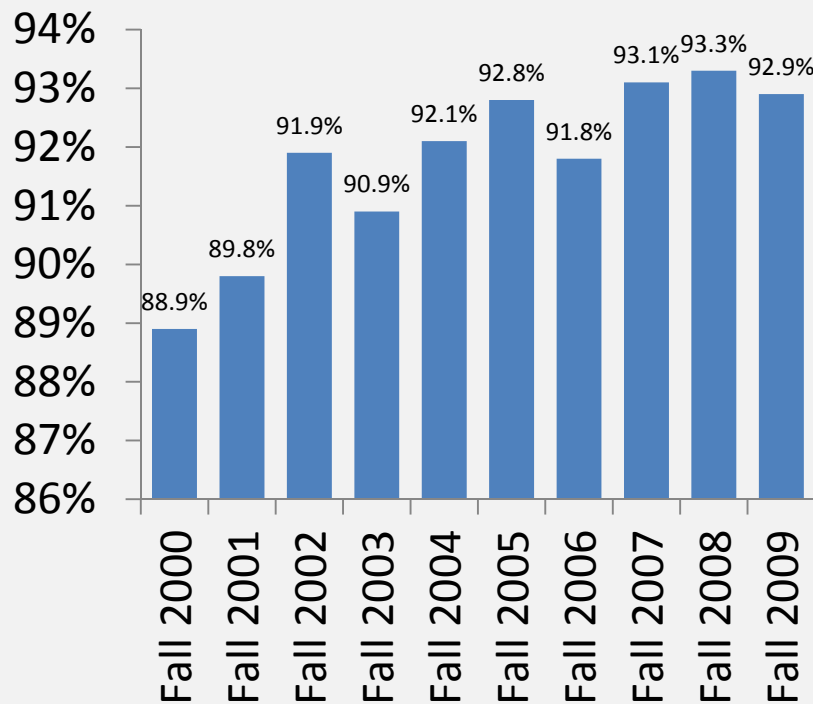
Graduation Rate



Times Series - Level versus Trend

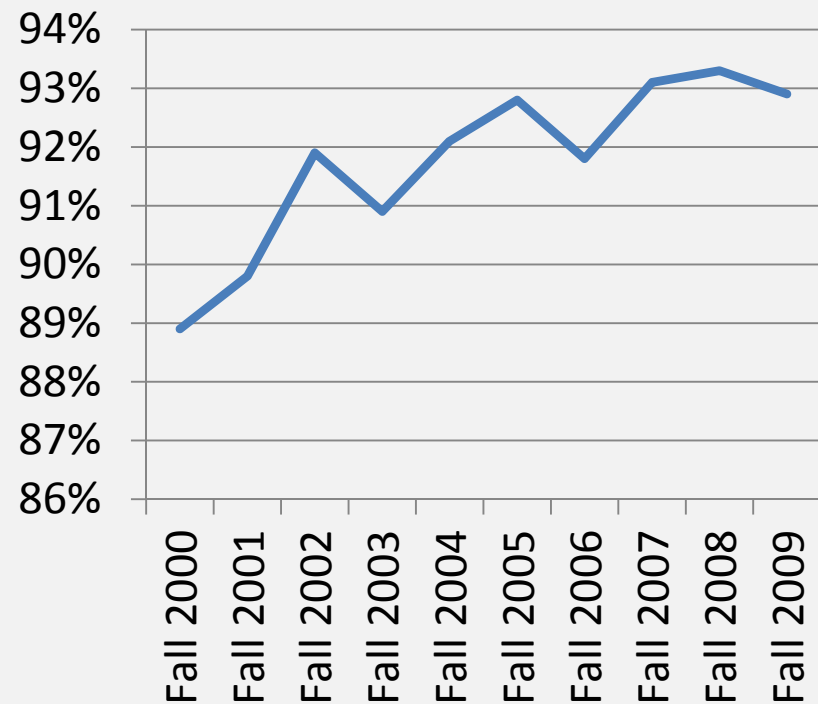
Level

1st Year Retention



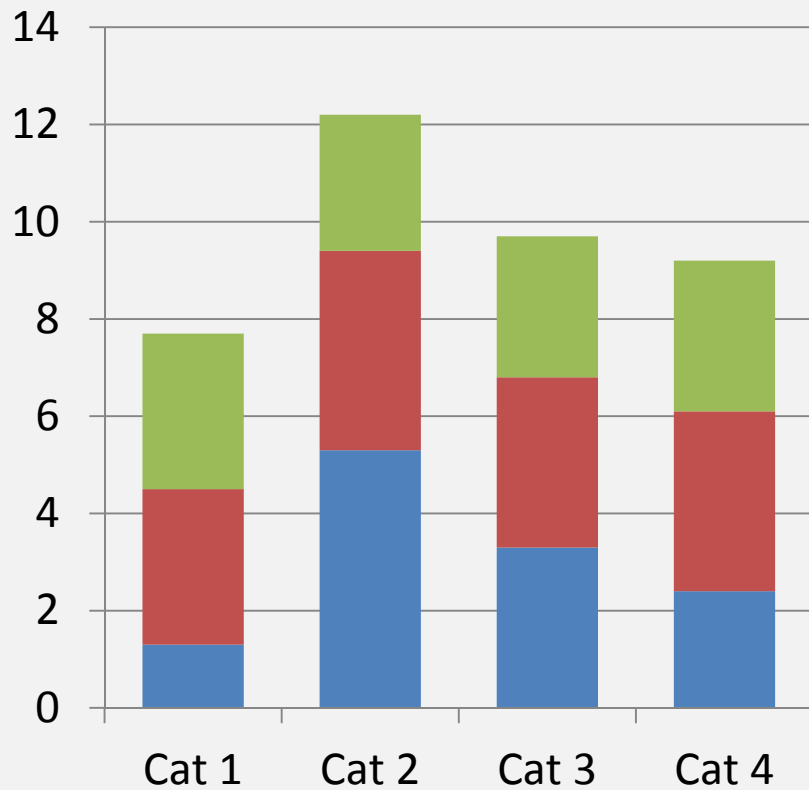
Trend

1st Year Retention

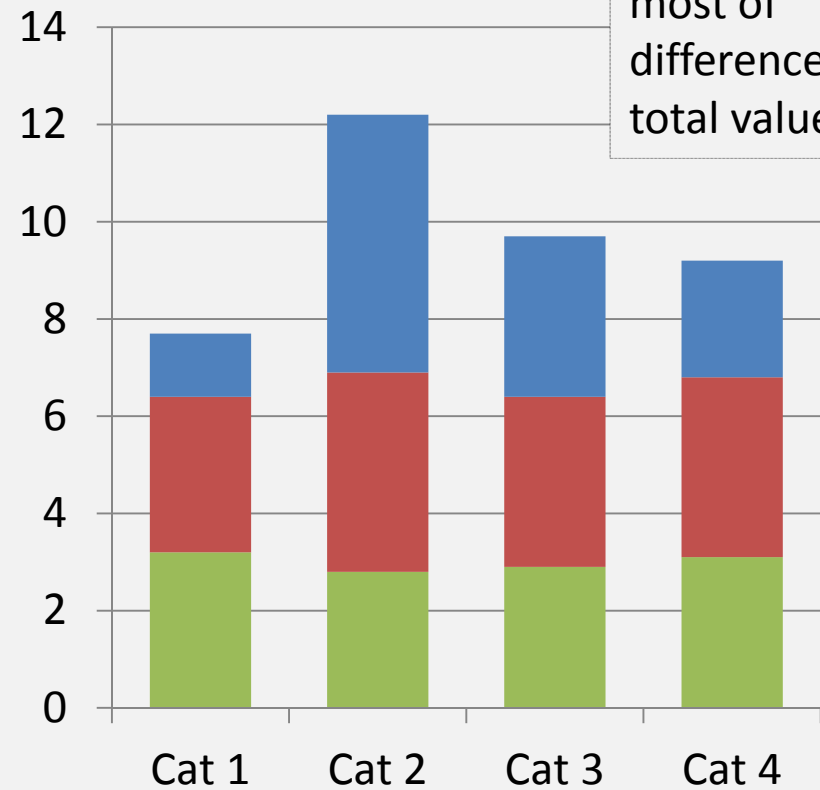


Stacked Bar Charts

What's Important?



Better View

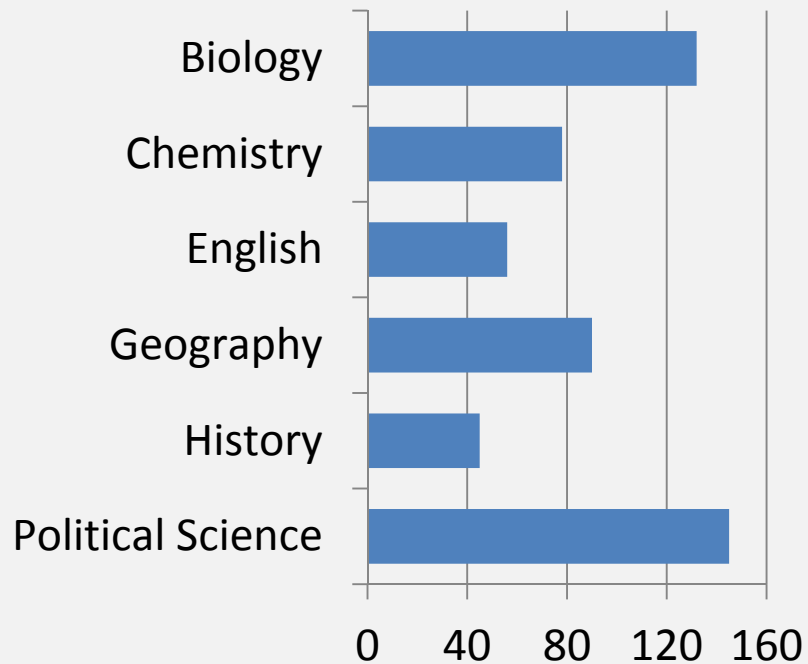


Blue series accounts for most of difference in total value

Ranking Relationships

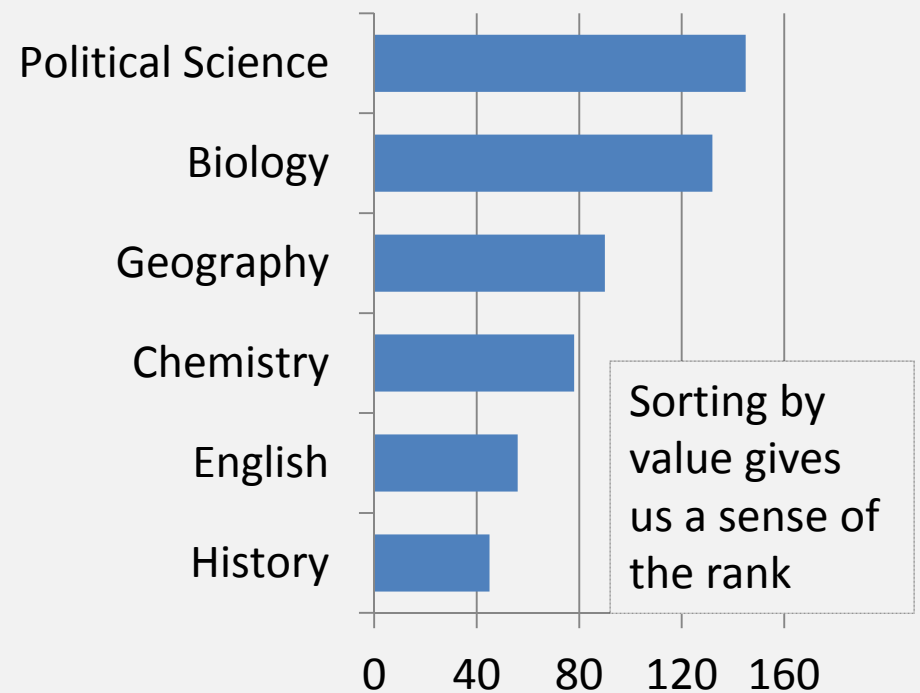
Sort by Category

Degrees Awarded



Sort by Value

Degrees Awarded

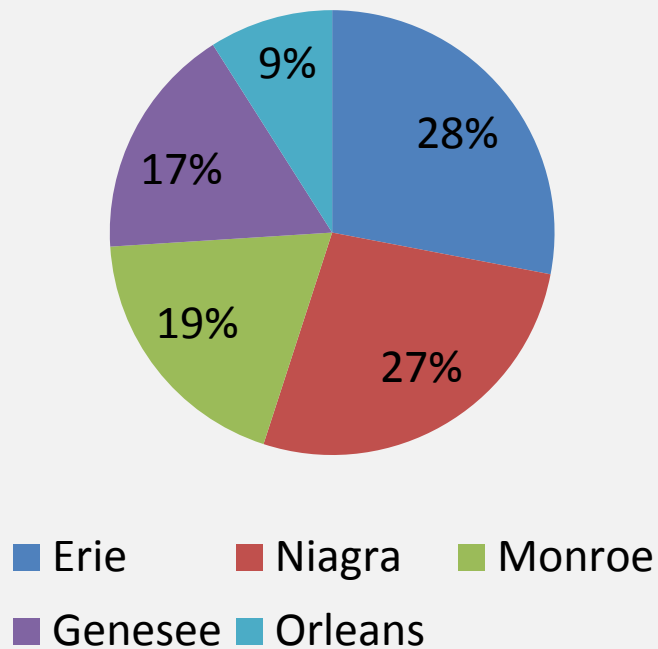


Sorting by value gives us a sense of the rank

Part to Whole Relationship

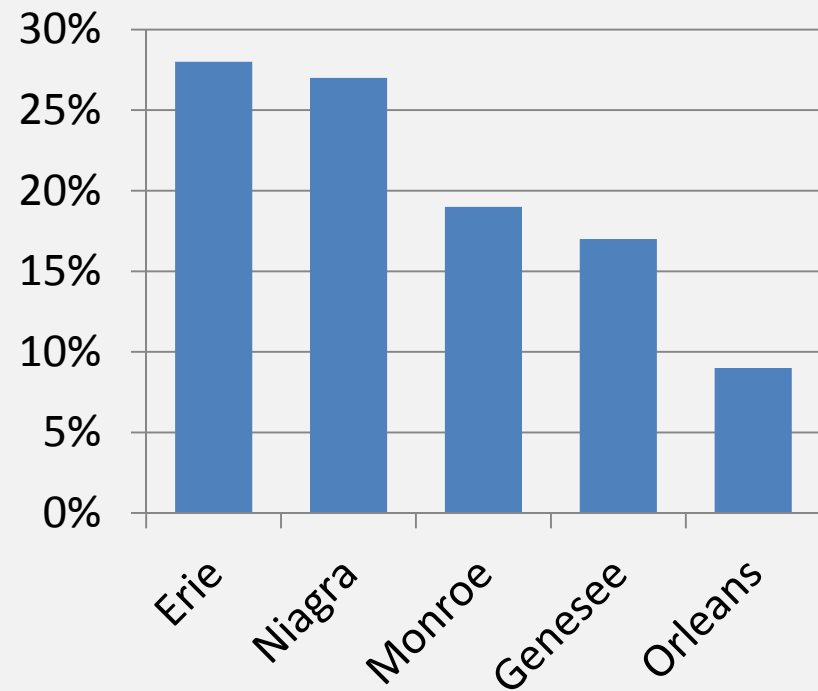
Pie Chart

Enrollment by County



Bar Chart

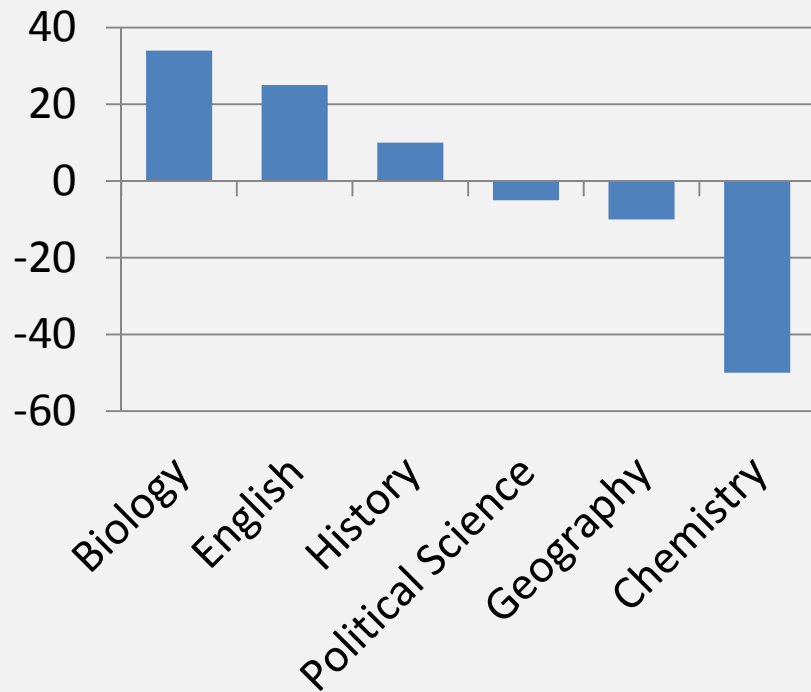
Enrollment by County



Deviation Relationship

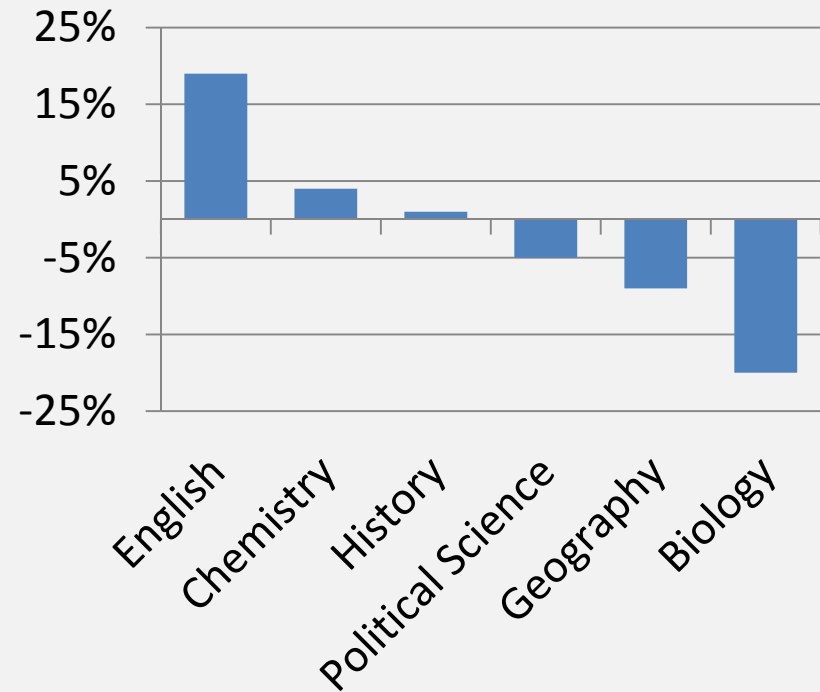
Number

Actual less Goal



Percentage

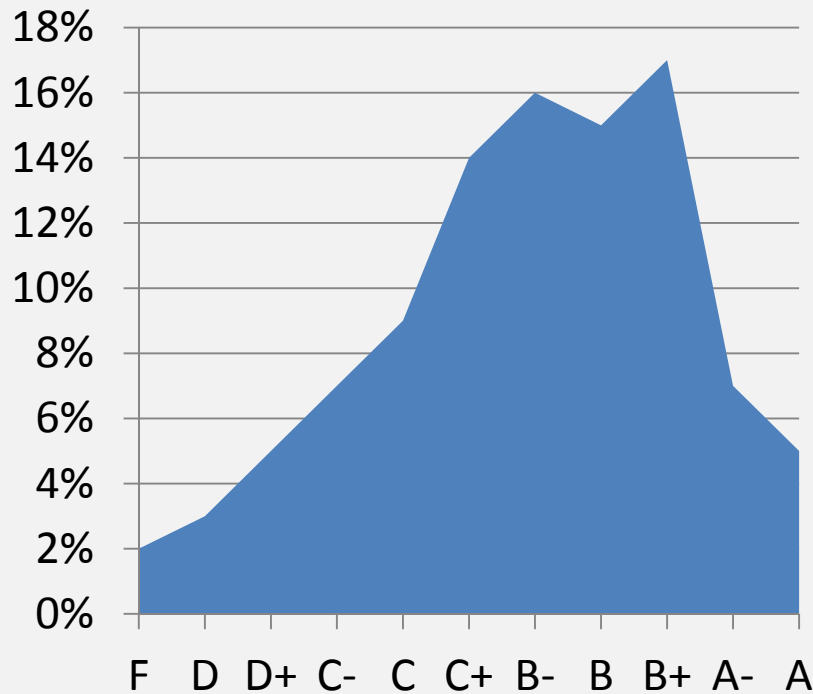
Actual less Goal



Distribution Relationship

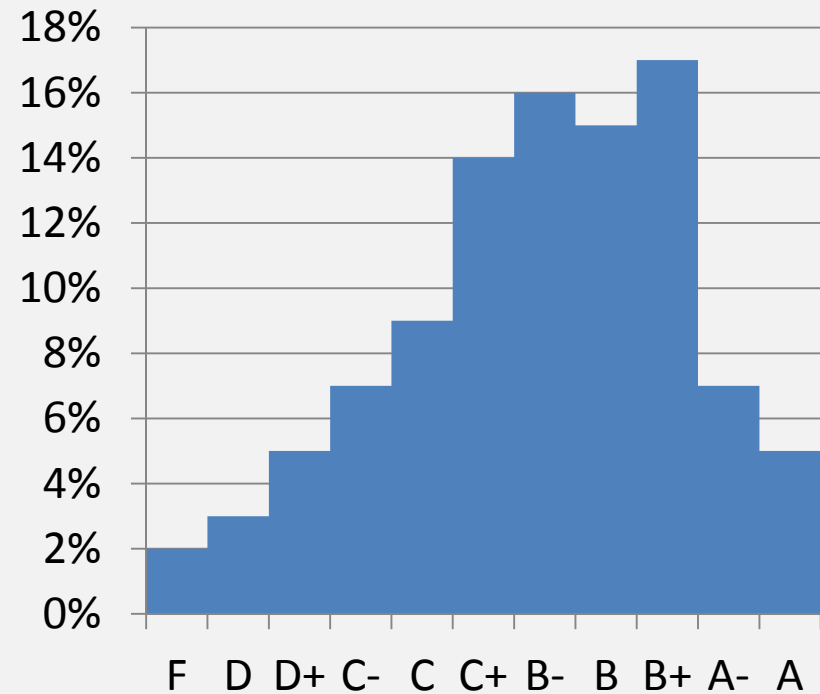
Area Chart

CHEM 101 Grades



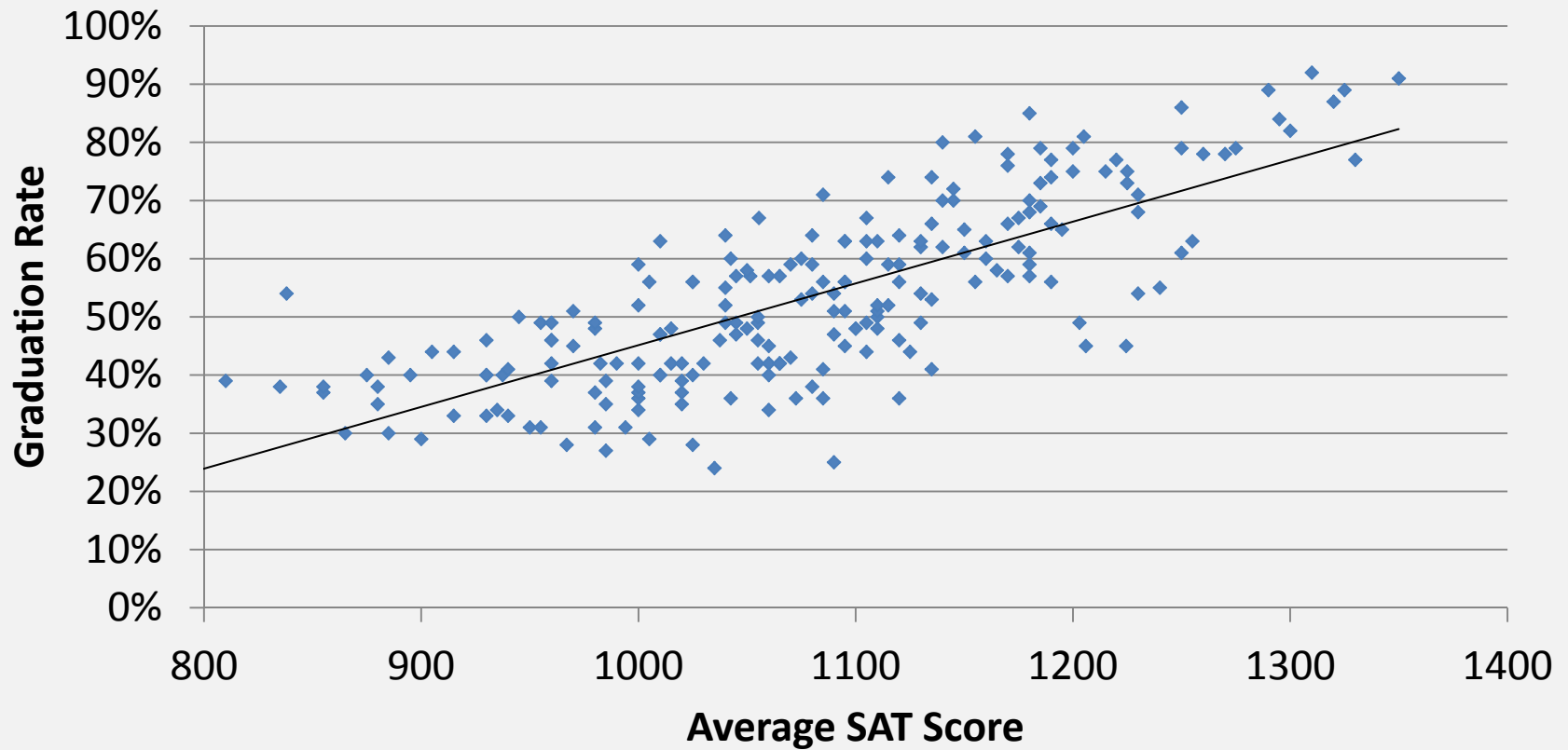
Overlapping Bar Chart

CHEM 101 Grades



Correlation Relationship

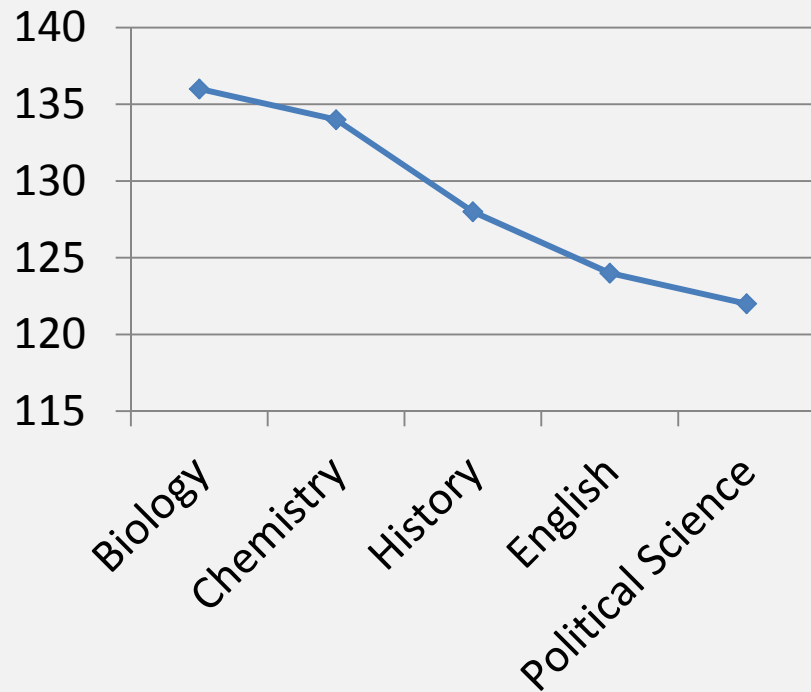
Graduation Rates and SAT



Nominal Relationships

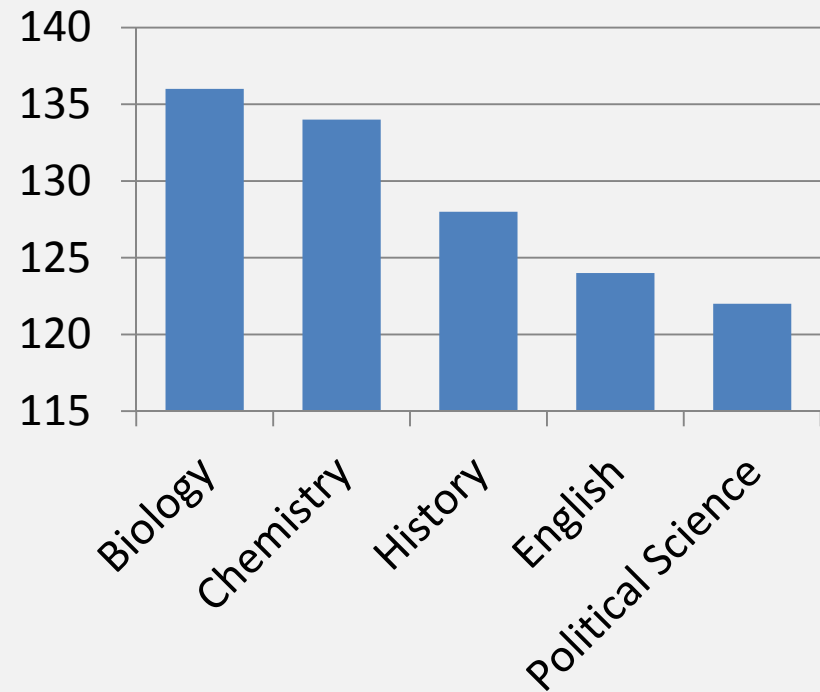
Wrong

Program Credit Hours

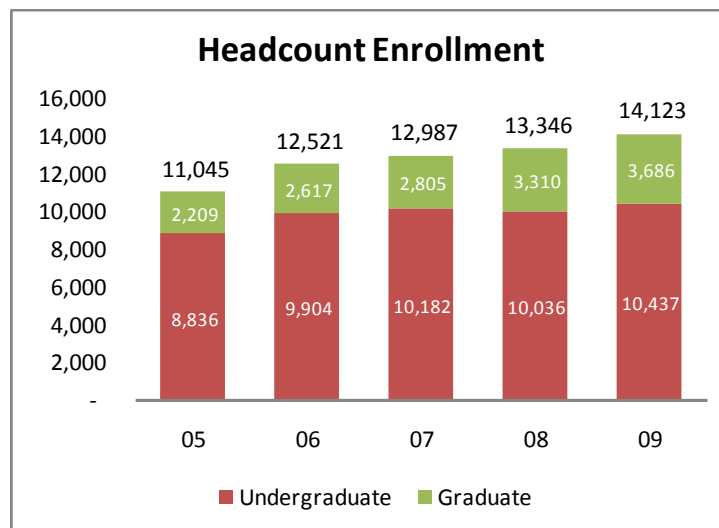
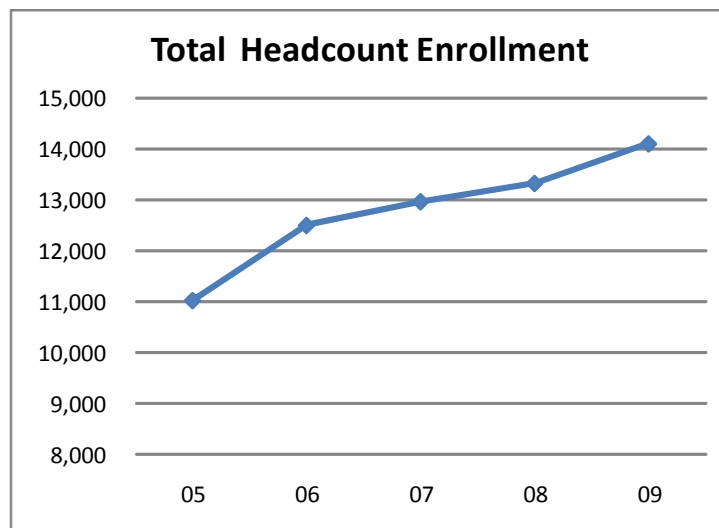


Right

Program Credit Hours



Exercise 1 – Time Series Charts



Exercise 1 – Time Series Charts Steps

Line Chart - Trend

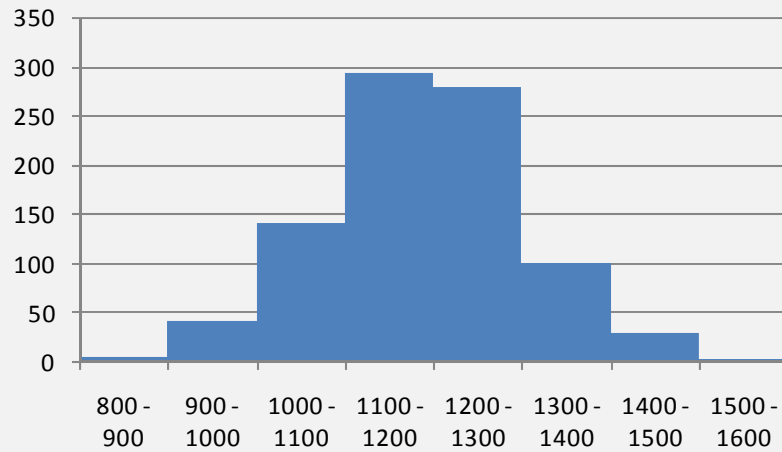
1. Open Exercise 1 Workbook
2. Select A3:F4
3. Choose Insert, Line with Markers Chart (Under Charts)
4. Delete the Legend
5. Re-title the Chart Total Headcount Enrollment
6. Select the Y-axis, Format it So it Ranges from 8,000 to 16,000

Stacked Bar - Values

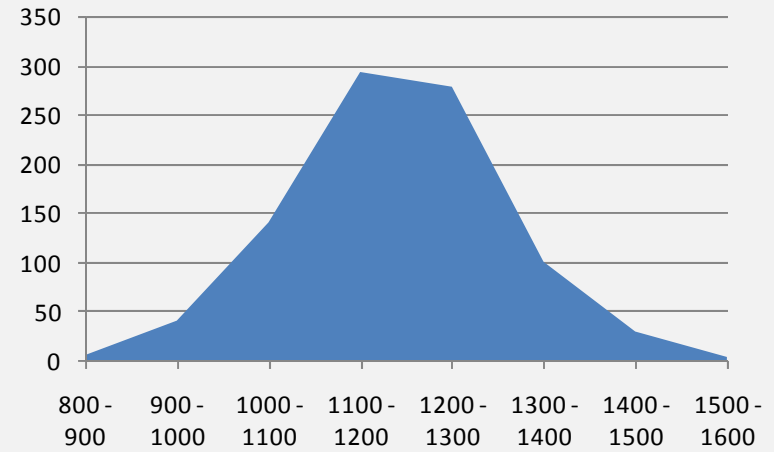
1. Select A3:F6
2. Choose Insert, Stacked Column (Under Charts)
3. Select “Total” on the Legend and Press Delete
4. Format the Legend so It’s on the Bottom
5. Select Each Data Series, Right Click and Select Add Data Lables
6. Over the Plot Area, Right Click and Choose Select Data, Using the Arrows, Move the “Total” series to last in the list, Click Ok
7. Select a Data Series, Choose Format Data Series, Set the Gap Width to 50
8. Select the Lables for Undergraduate, Change Font Color to White, Repeat for Graduate
9. Select the Labels for Total, Right Click, Select Format Data Labels, Change the Label Position to Inside Base
10. Select the Total Data Series (Blue), Right Click, Select Format Data Series, Set Fill to “No Fill”, Set Border Color to “No Line”.
11. Select the Y-axis, Format it So it Ranges from 0 to 16,000
12. Under Chart Tools, Layout on Ribbon Bar, add a Title and Turn-off the Gridlines

Exercise 2 – Distribution Charts

SAT Scores



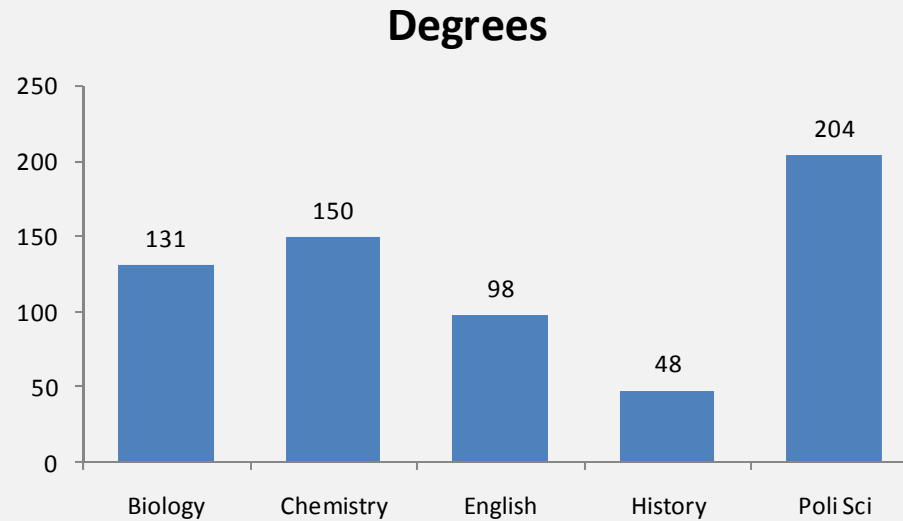
SAT Scores



Exercise 2 – Distribution Charts

1. Open Exercise 2 Workbook
 2. Select A3:I4
 3. Select Insert, Clustered Column under Charts Area
 4. Select the Legend , Press Delete
 5. Select the Data Series, Right Click, Select Format, Change Gap Width to 0, Select Close
 6. For an Area Chart, Select the Plot Area, Right Click, Select Change Chart Type, Select Area Chart, Click Ok
- TIP**: Use Copy and Paste to Save Time. Select the Chart, Copy and Paste. Change the Chart Type Back to Clustered Column. Now You Have Both Styles.

Exercise 3 – Nominal / Categorical Charts

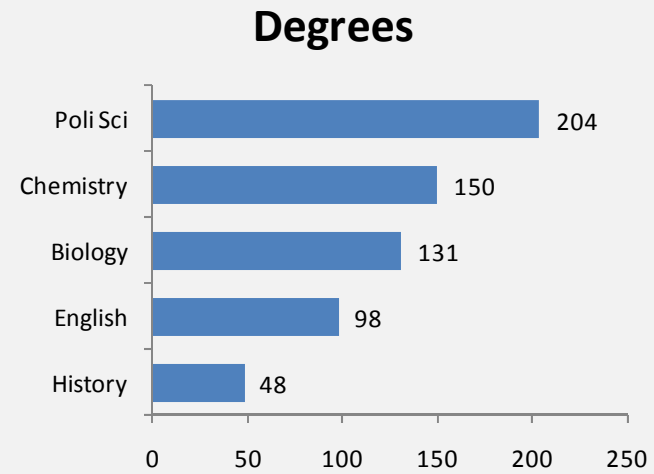
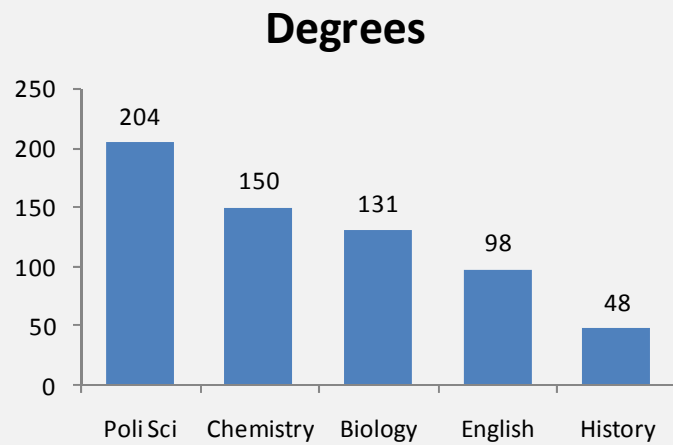


Exercise 3 – Nominal / Categorical Charts

1. Open Exercise 3 Workbook
2. Select A3:F4
3. Choose Insert, Clustered Column under Charts Area
4. Select the Legend, Press Delete
5. With the Chart Selected, Select Layout, Gridlines under Axes, Select Primary Horizontal Gridlines, Select None
6. Select the Data Series, Right Click, Select Format Data Series, Set Gap Width to 75, Select Close
7. Select the Data Series, Right Click, Select Add Data Labels

TIP: Select the Data Label for History (a single data label can be selected by selecting the data labels and then clicking again), Right Click, Select Format Data Label, Select Fill and the Solid Fill, Under Color, Select the Fill Color of Your Choice to Emphasize, Select Close.

Exercise 4 – Ranking Charts

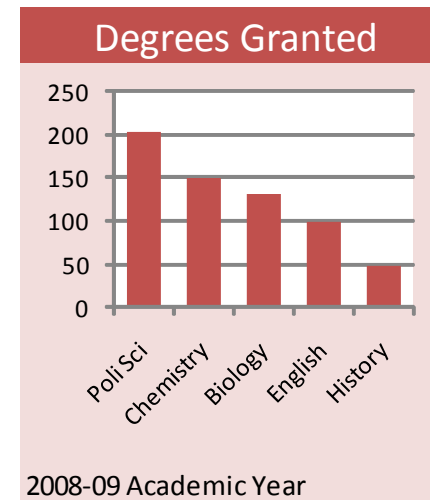
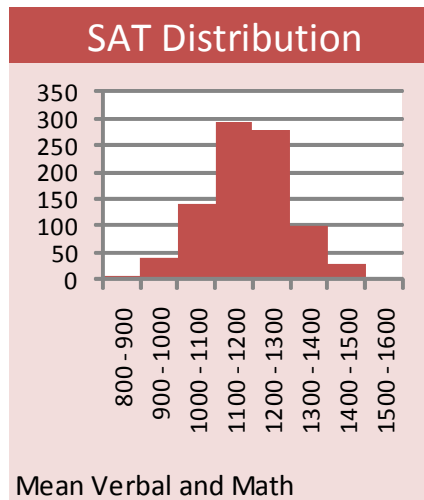
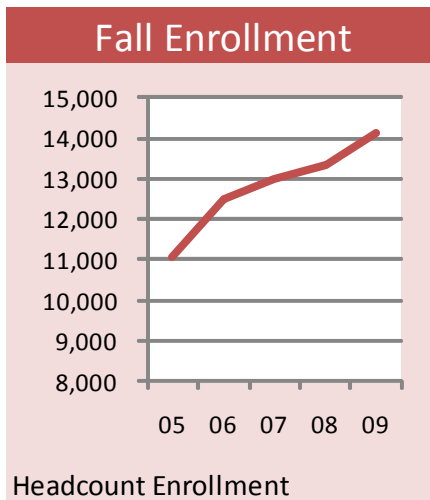


Exercise 4 – Ranking Charts

1. Open Exercise 4 Workbook
2. Select B3:F4
3. Select Sort & Filter, Custom Sort under Editing Area of Home Ribbon
4. Select Options..., Sort Left to Right, Click OK
5. Set Sort by to Row 4, Set Order to Largest to Smallest
6. Select the Chart, Copy, Select A21 and Paste
7. Select the 2nd Column Chart, Right Click, Select Change Chart Type, Select Clustered Bar
8. Select the Y-axis, Right Click, Select Format Axis
9. Check the Categories in Reverse Order Box
10. Select the At Maximum Category Radio Button

Exercise 5 – Create a Simple Dashboard

A Very Simple Dashboard

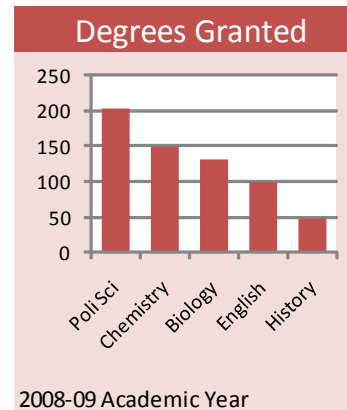
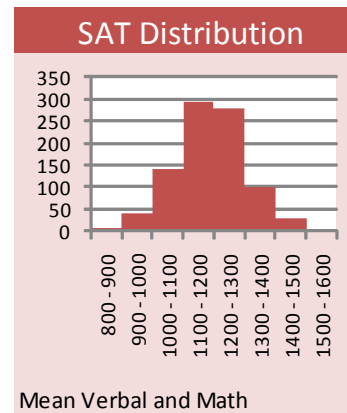
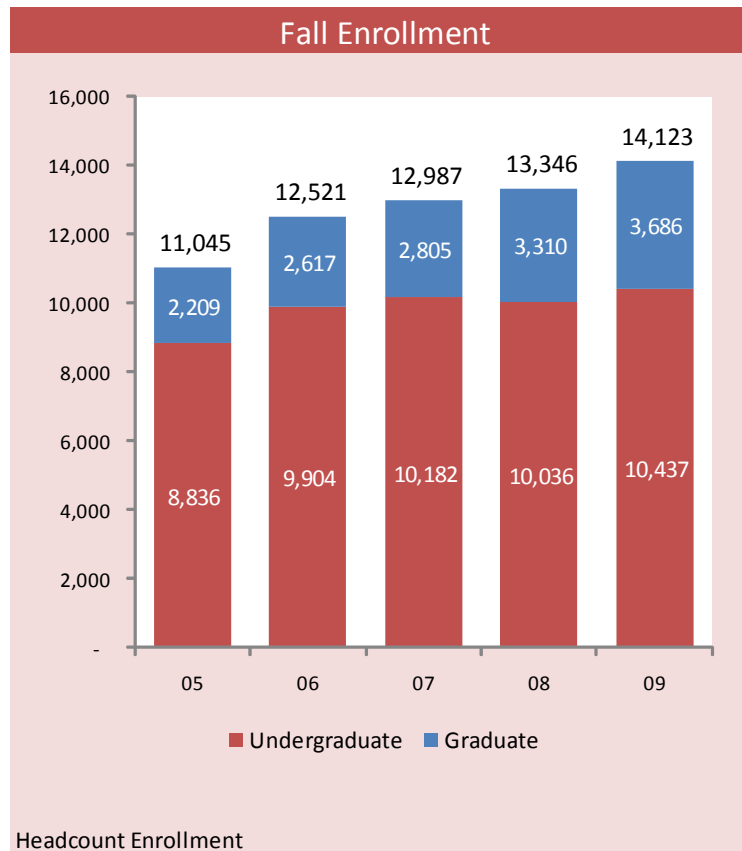


Exercise 5 – Create a Simple Dashboard Steps

1. Open Exercise 5 Workbook
2. Resize Columns A, C, E, G to 3 Wide
3. Resize Columns B, D, F to 30 Wide
4. Resize Row 4 to 150 Height
5. Fill A1 through G6 with White
6. Merge A1 through G1 and Fill with Color of Your Choice
7. Fill B3, D3, F3 with Color of Your Choice, Change Text Color to White
8. Fill B4:B5, D4:D5, F4:F5 with a Lighter Shade
9. Create Graphs using Data Worksheet Data
10. Be sure to Enter Titles in Row 3 Headers and a Title on Row 1. Enter data notes in B5, D5 and F5.

Exercise 6 – Create a Fancier Dashboard

A Fancier Dashboard



Exercise 6 – Create a Fancier Dashboard Steps

1. Open Exercise 6 Workbook
2. Select and Copy A3:G6. Paste then in A7.
3. Copy the Format of Rows 3:6 to Rows 7:10.
4. Delete contents of F3:F5. You'll need to Select the Chart and Delete It Separately. Repeat for D7:D9.
5. Cut D3:D5 and Paste it in F3.
6. Select B3:D3. Merge and Center.
7. Select B4:D8. Merge and Center.
8. Select B9:D9. Merge and Center.
9. Create a Stack Bar Chart from A3:F6 on the Data Worksheet. Resize it to fit in B4:D8 of your Dashboard.
10. Set the Chart's Border Color and Fill Color to "No Line" and "No Fill"
11. Change the Position of the Legend to the Bottom. Select the "Fall Enrollment" on the Legend and Delete it.
12. Use Select Data to Change the Data Series Order. Move "Total Enrollment" to the Bottom of the List.
13. Add Data Labels to All Data Series. Format as Desired.
14. Format the "Total Enrollment" Data Labels, Setting the Label Position to Inside Base.
15. Format the "Total Enrollment" Data Series, Setting Border Color and Fill Color to "No Line" and "No Fill"
16. Format the Y-axis to Range from 0 to 16,000.

Sample Dashboard

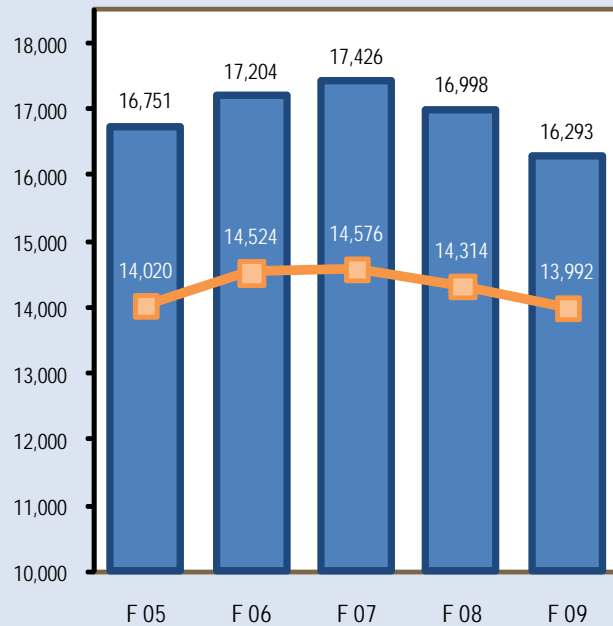
Inner Harbor University

November 2009

Dashboard

1

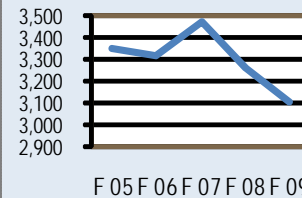
Headcount and FTE



Full- and Part-time Students (Bars), Full-time Equivalent Students (Line)

2

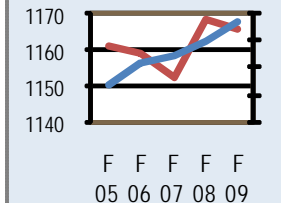
New Students



Full-Time Freshmen and Transfers

3

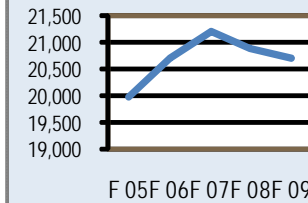
Freshman Quality



SAT in Red, HS GPA in Blue

4

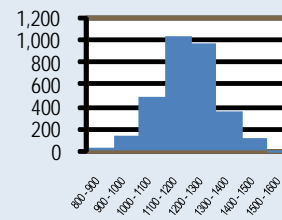
Applicants



Freshmen and Transfers

5

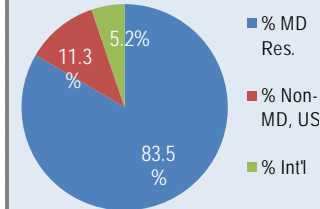
SAT Distribution



First-time, Full-Time Entering Cohort

6

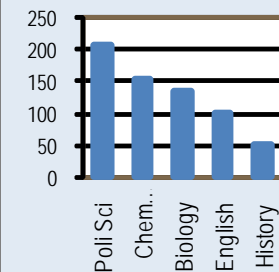
Residency



Residency of New Students

7

Intended Major



Summary Advice, Tricks and Tips

- Think About the Point You are Trying to Make before You Graph
- Design Matters and Can Help You Communicate Information
- Data that Doesn't Show Anything Can still Tell a Story
- Resize or Merge Cells so Graphs Fit Inside Single Cells
- Copy and Paste Graphs to Save Time
- Limited Color Palette Often Better

That's All Folks!

Contact Information:

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