

QUANTITATIVE DATA

Using Numbers to Tell a Story



Agenda

- General tips on reporting quantitative findings
- Basic descriptive statistics
- Using visuals to show trends or patterns
 - Pie charts
 - Bar charts
 - Line charts
 - Other formats



Who We Are

Youth Development Executives of King County (YDEKC) is a coalition of youth-serving organizations working to advance the youth development field in order to improve outcomes for young people.

Representing the executive leadership of King County based youth serving organizations, YDEKC is uniquely positioned to **advocate for its members** with the systems (school districts, governments, the public) that they intersect with; to **develop field level knowledge** about best practices in youth development; and to **build leadership strength** in the non-profit youth serving sector.



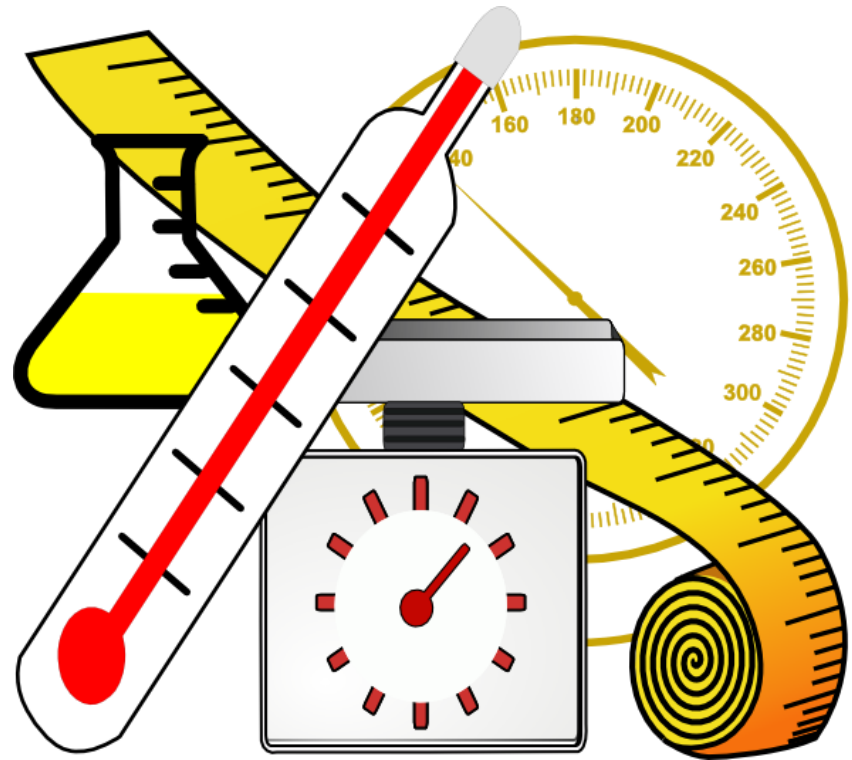
Plan

Collect

Reflect

About Quantitative Data

- Any kind of information that is numeric
- Typical sources:
 - Survey responses
 - Assessments
 - Administrative records



General Reporting and Analysis Tips

- **Balance narrative with evidence.** The numbers provide details, but they are not the story itself.
- **Be careful about claims.** Focus on honesty and accuracy in reporting.
- **Use tables, graphs, and charts appropriately.** Visuals can clarify or emphasize a point when used effectively.

Making Accurate Claims

- Be clear and specific about data sources
 - ✗ “Program participants find program activities challenging”
 - ✓ “85% of survey respondents report that they find program activities challenging”
- Avoid claiming causation
 - ✗ “Program X improves math scores”
 - ✓ “Youth who attend program X more than 80% of the time showed stronger gains on math assessments than youth who attended less than 20% of the time”



Basic Descriptive Statistics

Measure	Definition	Excel Command(s)
Frequency	How often a value occurs in a dataset	=COUNT(range), =COUNTIF(range, criteria)
Mean	The average of a set of numbers	=AVERAGE(range)
Median	The middle value in a dataset	=MEDIAN(range)
Standard Deviation	Shows how tightly data is clustered around the mean	=STDEV.S(range), =STDEV.A,(range), =STDEV.P(range)
Minimum	The minimum value in a dataset	=MIN(range)
Maximum	The maximum value in a dataset	=MAX(range)



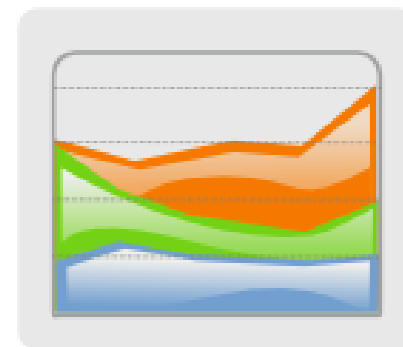
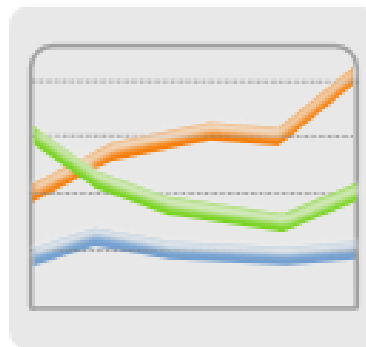
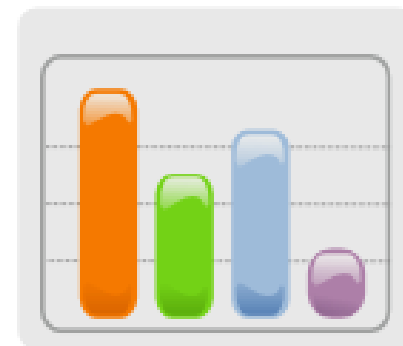
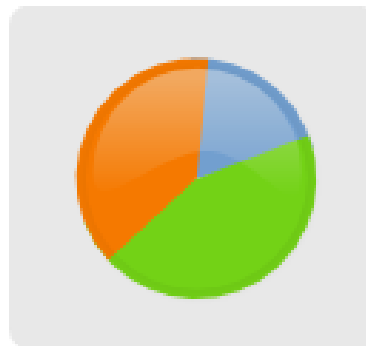
Using Visuals

Good visuals should:

- Capture Attention
- Aid understanding
- Assist memory
- See Stephanie Evergreen's *Presenting Data Effectively* for more

Tables, charts, and graphs

- Supplement storytelling
- Should not supplant storytelling

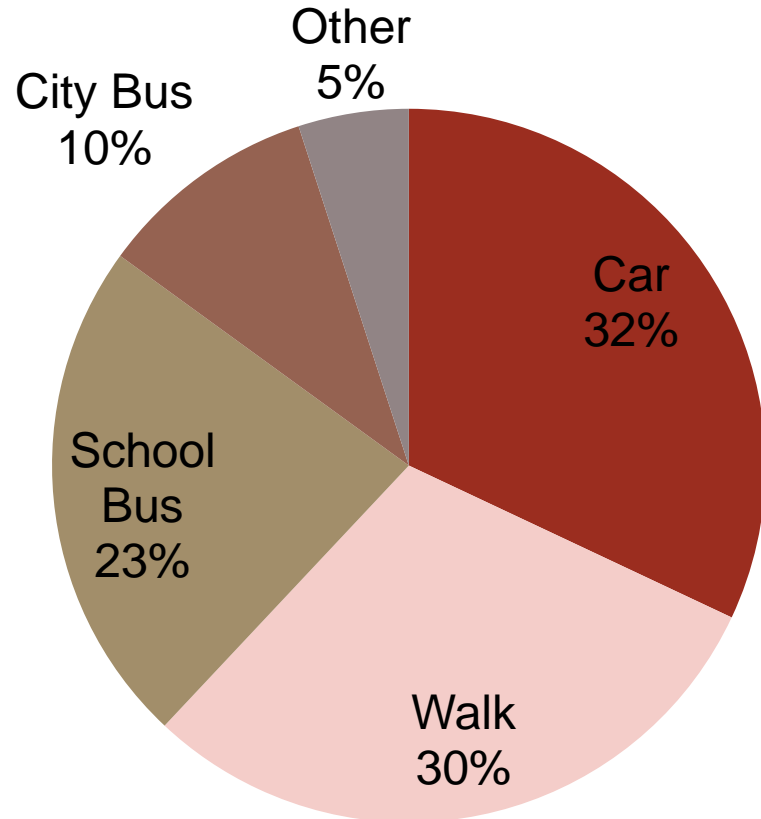


Pie Charts

- Show parts of a whole
- Can be good for categorical (not ordered) data
- Best for five or fewer categories
- Use sparingly

Typical After-School Transportation, School X

Most student walk or ride in a car

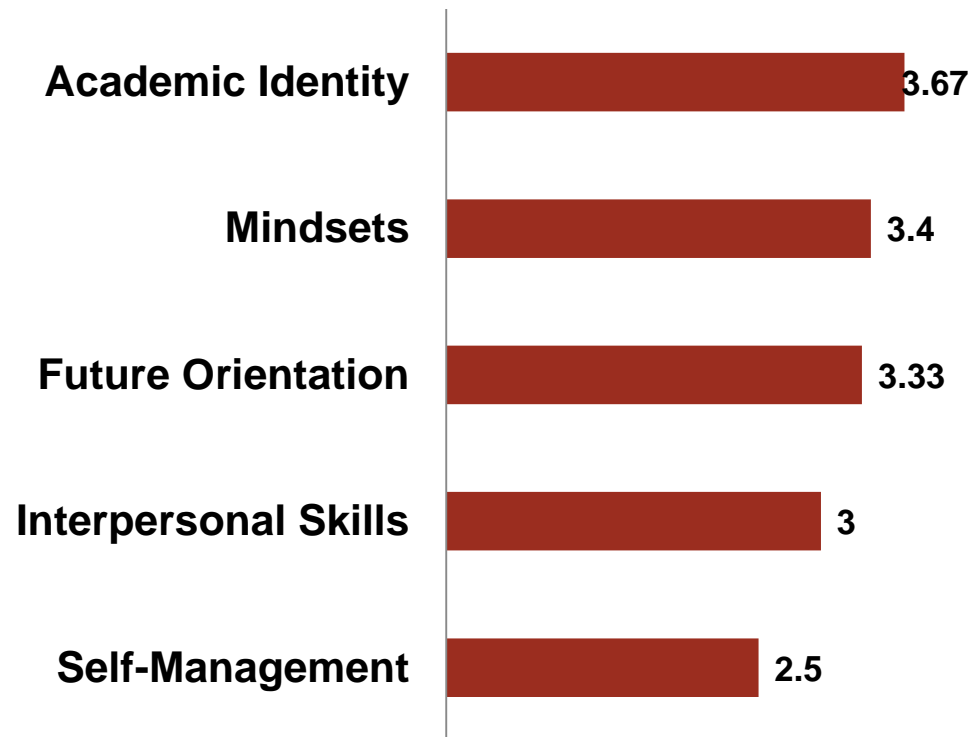


Based on an online survey of 160 School X parents, conducted September 2016

Bar Charts

- Used to compare values of categorical data
- Can be used to show time series data
- Can be oriented vertically or horizontally

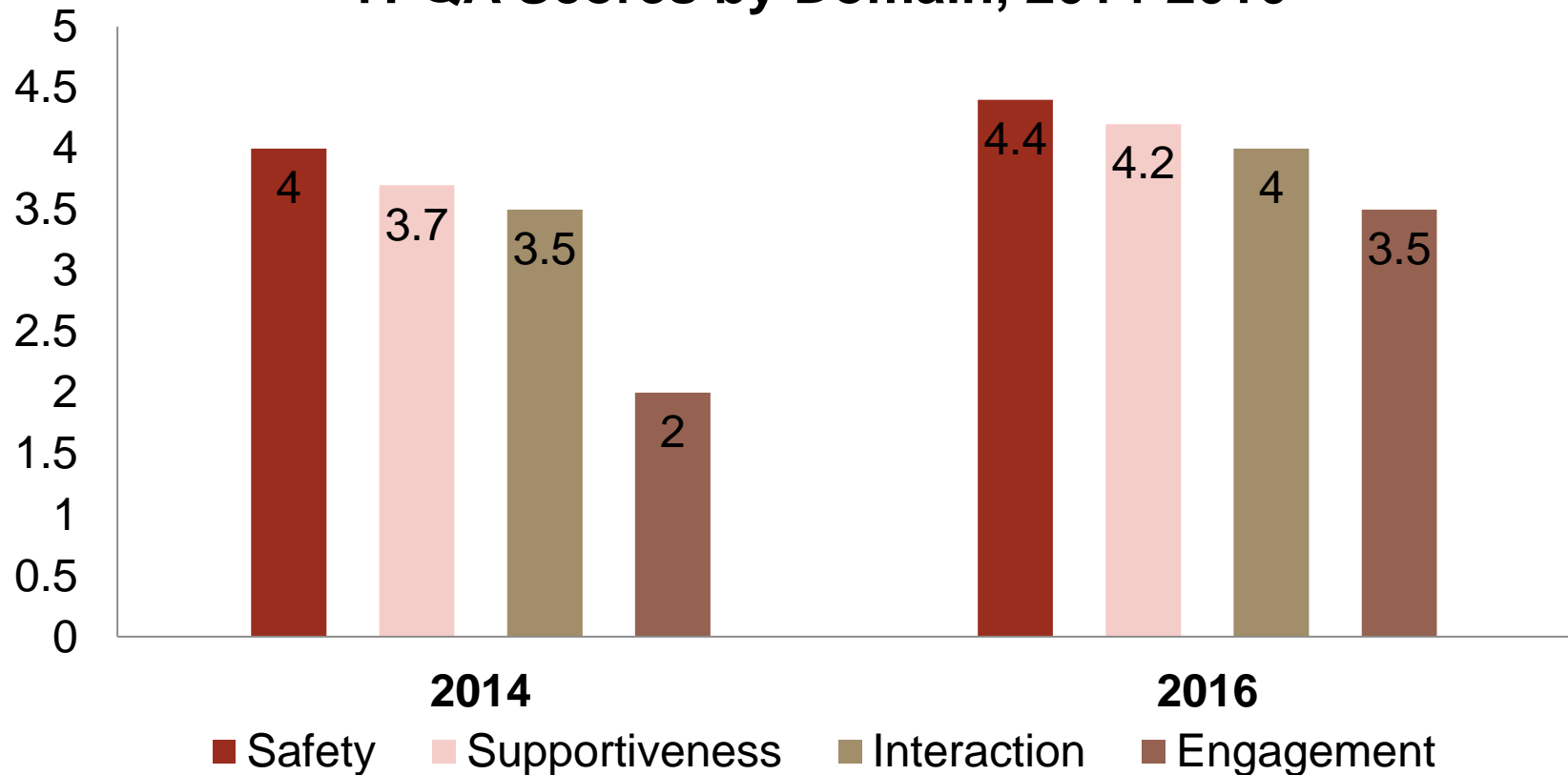
Mean Scale Scores on Youth Skills and Beliefs Survey, Program X



Based on a survey of 245 6th-12th grade students, Spring 2016; Responses ranged from 1 (Not at all True) to 4 (Completely True)

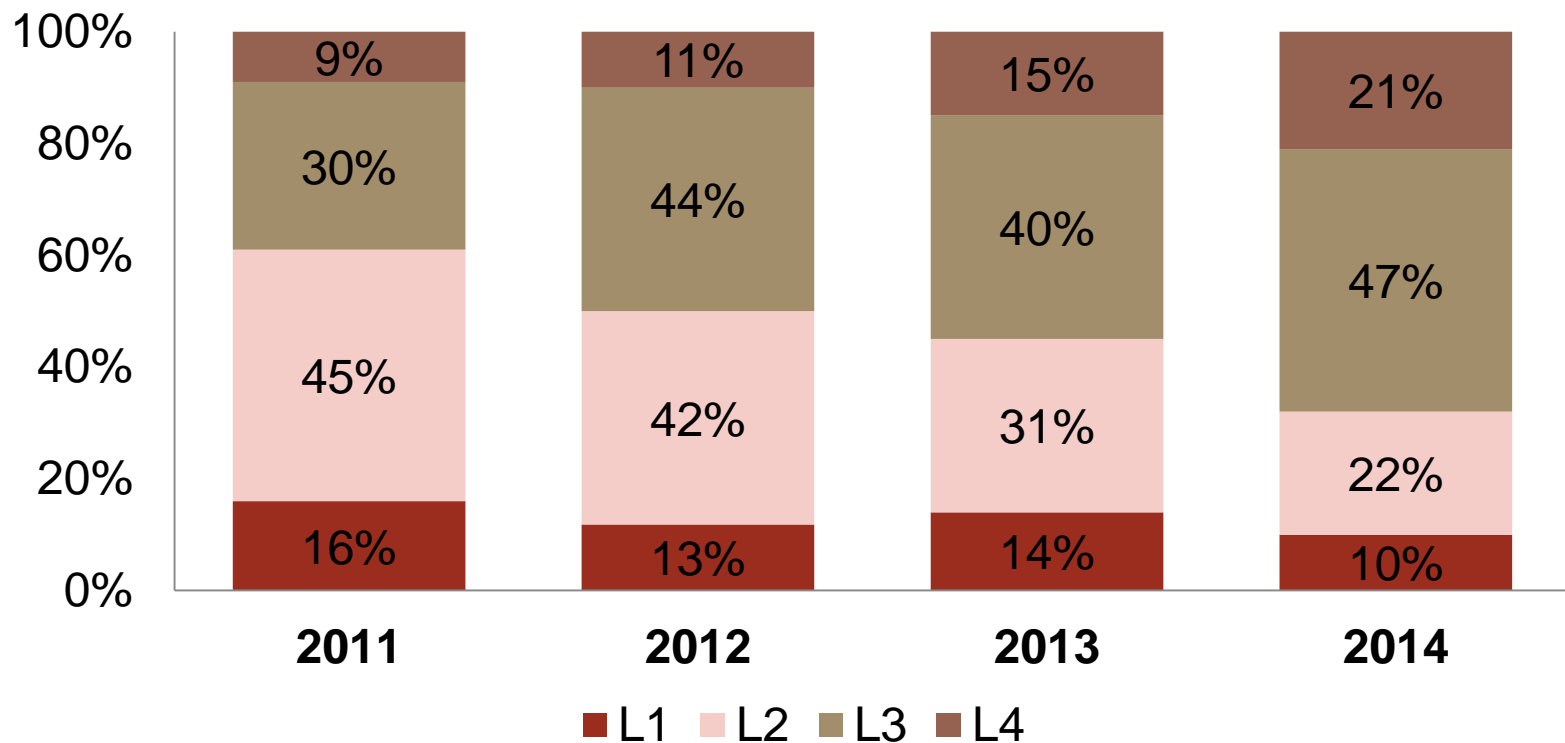
Example: Clustered Bar Chart

YPQA Scores by Domain, 2014-2016



Example: Stacked Bar Chart

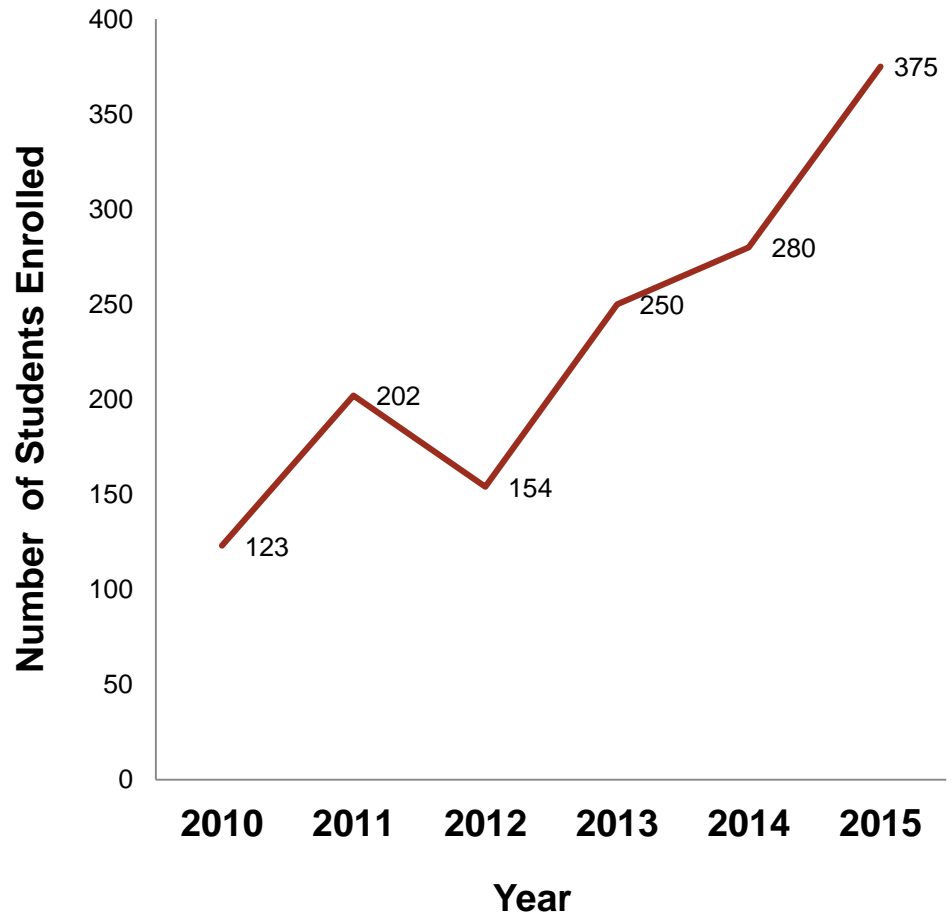
Distribution of Spring Reading Assessment Levels, Grade 5



Line Graphs

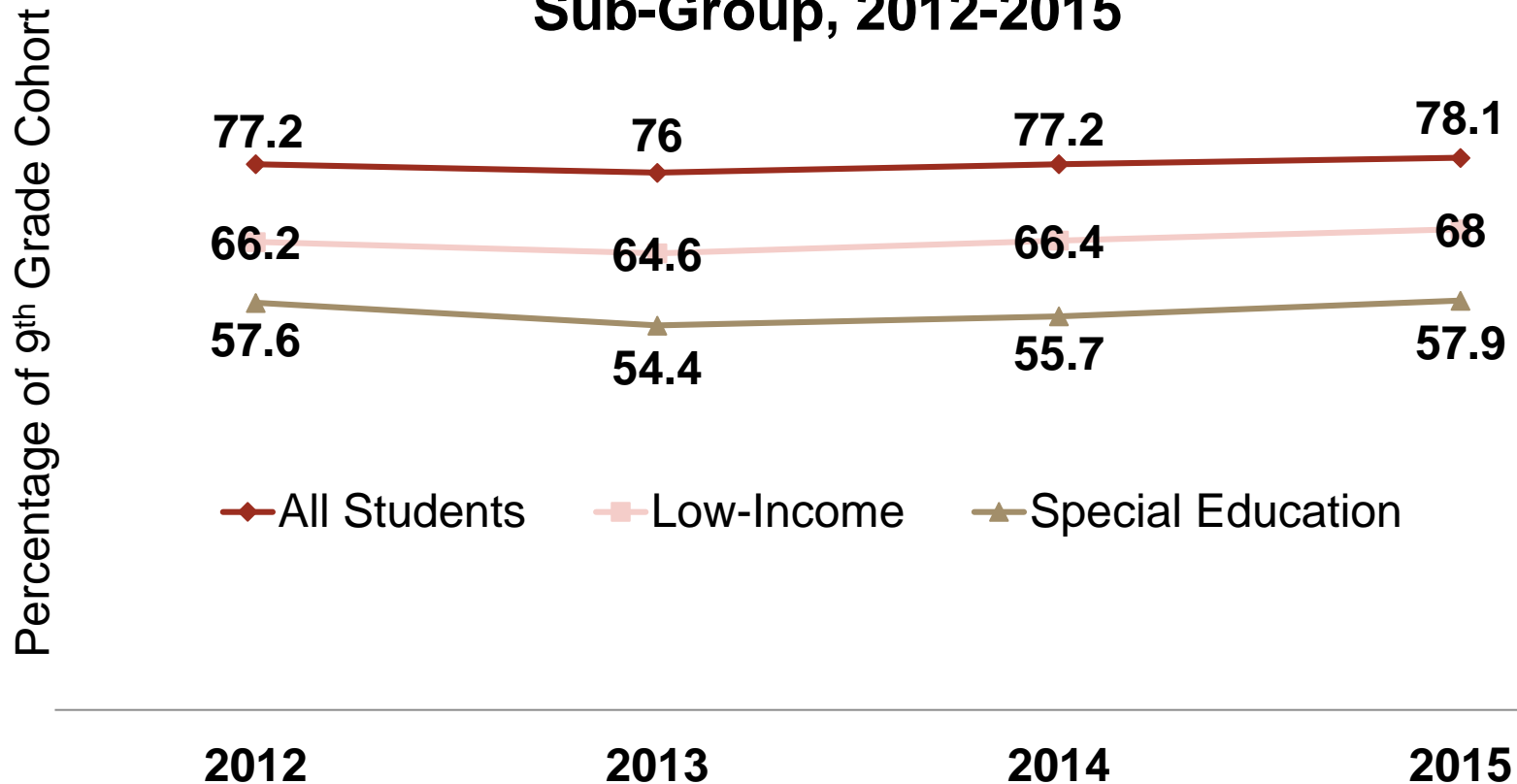
- Used to show trends
- Show how one or more variable(s) changes over time
- Time series are usually presented along the horizontal (X) axis

**Total Program Enrollment,
2010-2015**



Example: Multiple Groups

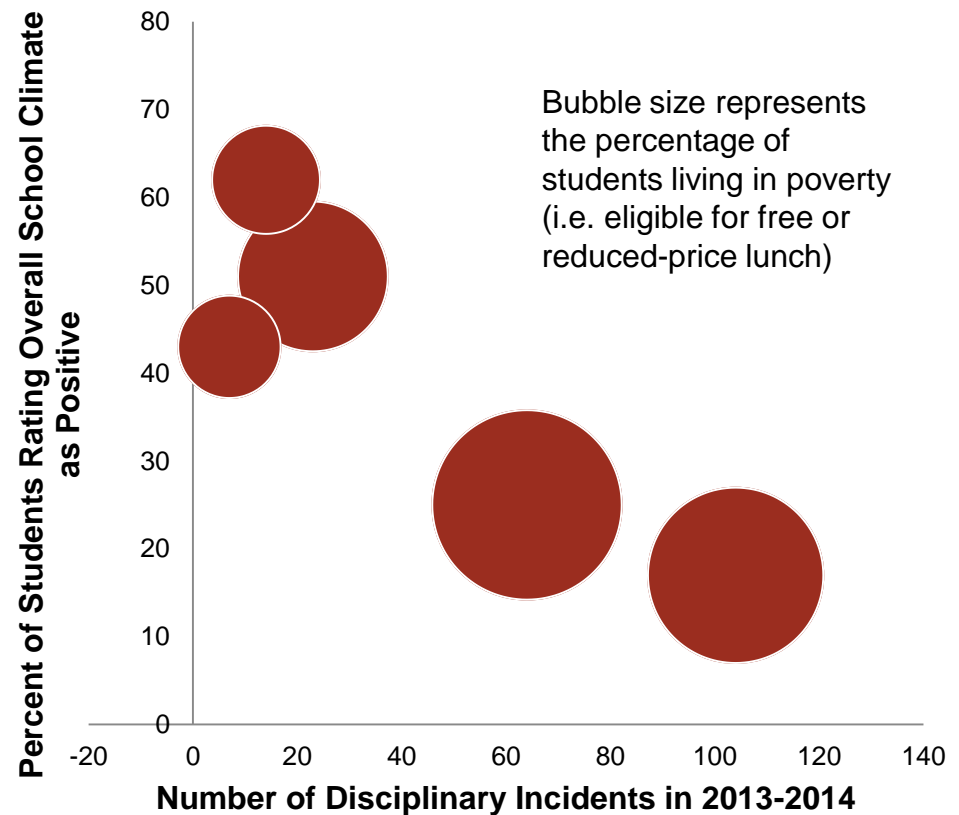
Adjusted 4-Year High School Graduation Rate by Sub-Group, 2012-2015



Other Formats: Bubble Charts

- Useful when you have data in 3 series
- The third series is shown by the *size* of a bubble plotted on an axis

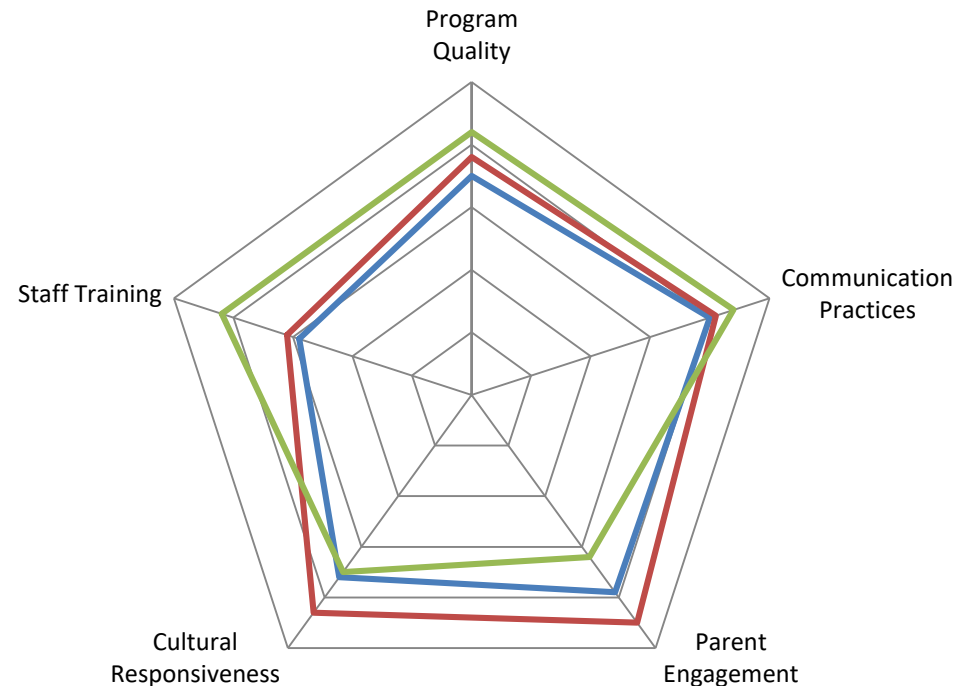
Student Poverty, School Climate and Student Discipline, 2013-2014



Other Formats: Radar Charts

- Can be used to show multiple dimensions
- Useful when dimensions are not directly comparable
- Scales should be equivalent

Program Site Comparison, Network A



Five dimensions are rated on a 1-5 scale; 1 is the lowest rating, and 5 is the highest

— Site A
— Site B
— Site C