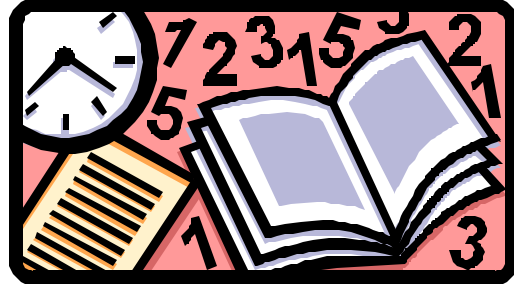


Telling Your Interlibrary Loan Story With Numbers

Two Kinds of Data: Quantitative and Qualitative

Quantitative: numeric, measures how much of something there is and how often something happens. Most library statistics are quantitative: circulation, reference questions handled, items borrowed or loaned, etc.



Qualitative: comes from observations or interviews and results in patterns or generalizations about why something occurs. Information comes from focus groups, interviews, surveys.

Deciding when to use each kind of data depends on the kinds of measures you want (or are required) to take.

	Quantitative Data	Qualitative Data
To measure number of people who use a service or program	Yes	No
To show reasons for current use	No	Yes
To show trends in the numbers of people who use a service or program	Yes	No
To show relations between trends in current use	Yes	No
To show reasons for trends in current use	No	Yes
To measure user satisfaction	No	Yes
To measure units of library service delivered	Yes	No
To show trends in units of library service delivered	Yes	No
To measure cost per unit of service delivered	Yes	No

What are your data needs?

Take a few minutes to discuss the following questions with your the person next to you. We'll discuss your answers together as a group.

1. What are the key indicators or measurements (the vital signs) of your department's/section's work?
 - For now, do not consider financial indicators.
 - Some indicators should be directly related to your organization's purpose and your customer's needs.

2. With what frequency do you monitor each indicator (daily, weekly, monthly)? How do you do this?

3. How do you know that this frequency is sufficient to give you an adequate representation of the organization's performance relative to this indicator? Ask this for each indicator.

4. How do you record the data for each indicator? How do you share this information? What do you (or someone else) do with this information?

ILL comparisons, for ILL conference - September 2002
 PLDS 2001 (FY 2000 data) and OSL statistical reports

	Population	Circulation	Holdings	Total ILLs	Borrows	Lends	ILL as % of circ	Circ per Cap	ILL per Cap
Baker Cty.	16,700	127,452	107,093	1,012	502	510	0.79%	7.63	0.06
Beaverton	106,728	1,148,745	229,050	163,677	72,535	91,142	14.25%	10.76	1.53
Deschutes	109,600	820,723	270,916	3,706	2,851	855	0.45%	7.49	0.03
Douglas Cty.	100,850	827,758	306,240	6,253	3,714	2,539	0.76%	8.21	0.06
Lake Oswego	45,539	944,263	188,004	142,860	70,860	72,000	15.13%	20.74	3.14
Multnomah	645,950	12,152,743	1,739,059	18,354	11,935	6,419	0.15%	18.81	0.03
Newport	16,758	200,203	70,442	14,297	8,171	6,126	7.14%	11.95	0.85
Sherwood	11,379	116,017	23,495	23,667	16,090	7,577	20.40%	10.20	2.08

Correlation of Holdings to ILLs: -0.13846 Low and Negative

Correlation of Circ to ILLS: -0.10662 Low and Negative

	Population	Circulation	Holdings	Total ILLs	Borrows	Lends	ILL as % of circ	Circ per Cap	ILL per Cap
Baker Cty.	16,700	127,452	107,093	1,012	502	510	0.79%	7.63	0.06
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Correlation of Holdings to ILLs: 0.983918 High and Positive

Correlation of Circ to ILLS: 0.972504 High and Positive

	Population	Circulation	Holdings	Total ILLs	Borrows	Lends	ILL as % of circ	Circ per Cap	ILL per Cap
Beaverton	106,728	1,148,745	229,050	163,677	72,535	91,142	14.25%	10.76	1.53
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Sherwood	11,379	116,017	23,495	23,667	16,090	7,577	20.40%	10.20	2.08

Correlation of Holdings to ILLs: 0.966968 High and Positive

Correlation of Circ to ILLS: 0.992034 High and Positive

This spreadsheet shows the importance of comparing comparable libraries with comparable service configurations and policies.

Creating a spreadsheet provides an opportunity to consider which measurements really are of importance.

Which ones will help you or others

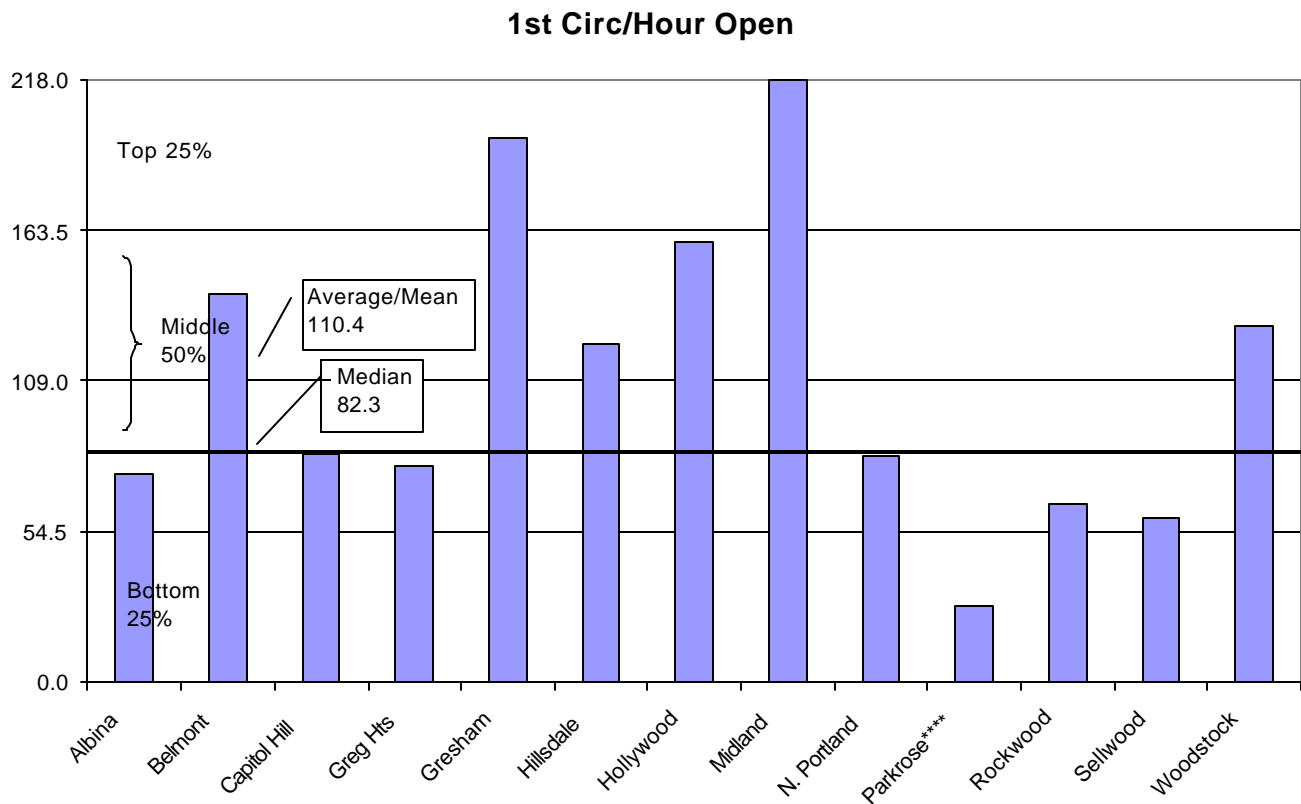
- **make a decision,**
- **understand trends,**
- **determine the impact of variables, relationships, etc.?**

Once you've created the spreadsheet, you can use the program's features to determine averages, make charts, and analyze correlations.

Data Analysis Techniques

Comparing

- Internally (branch to branch, with other units)
- Longitudinally (How have we done over time?)
- Externally (ourselves to other libraries)
- Per Capita (usually a more equal way to make comparisons)
- Ranking/Rating (variables may be missed in determining your "placement")
- Percentile/Interquartile Ranges (decile or quartile placement: top 25%, bottom half, etc.)



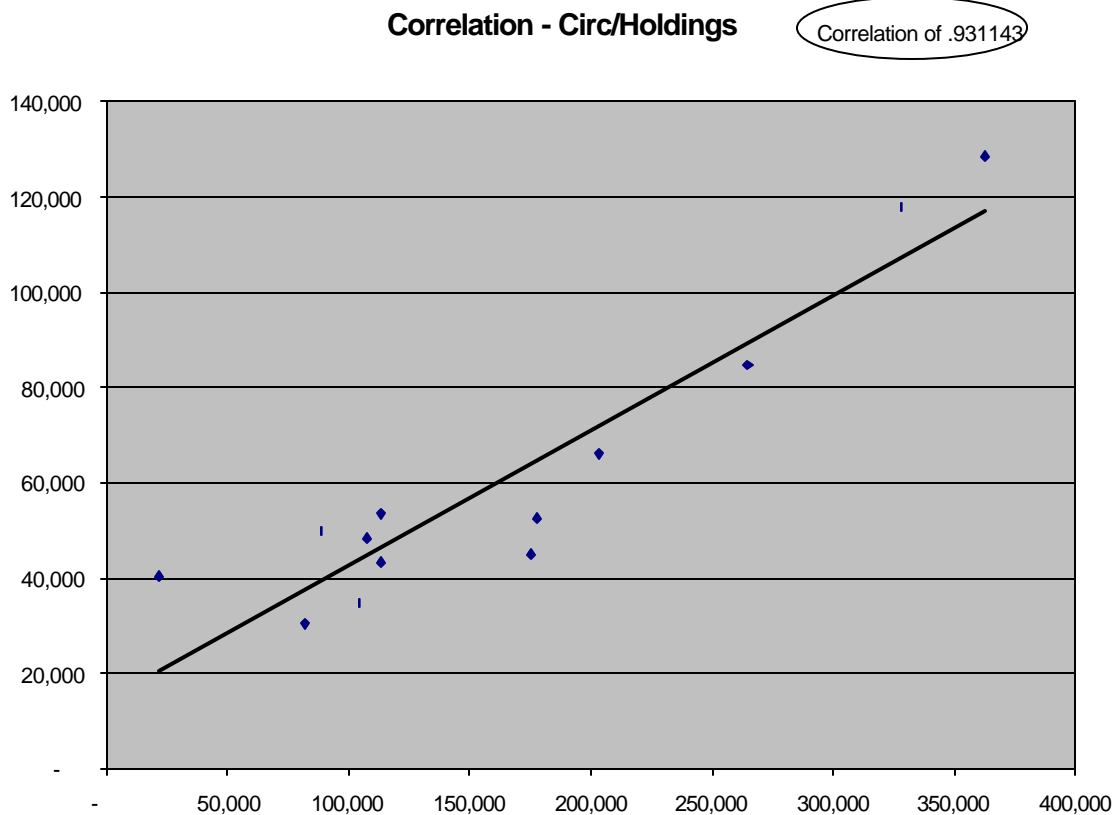
Averages - There are three kinds of averages, which people often use imprecisely.

- **Mean** is what people usually mean by the term "average". This number is the sum of all the numbers in a data series divided by the number of numbers in the series. The mean is sensitive to extreme values.
- **Median** is the number in the middle of a data series and can be more representative of a range of values, particularly if there is great variance.
- **Mode** is the value in the data series that occurs most often. This sort of average can be useful when analyzing grades, number of minutes spent on PCs, and so on.

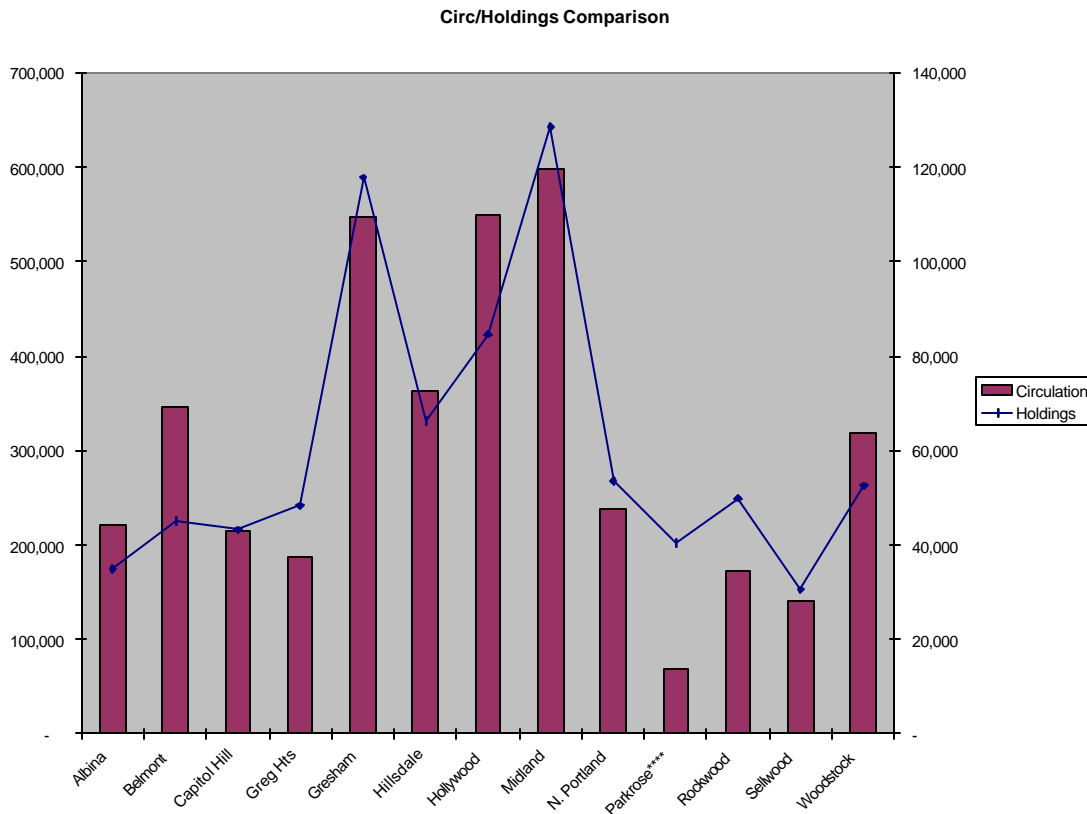
Baker Cty.	1,012
Beaverton	163,677
Deschutes	3,706
Douglas Cty.	6,253
Lake Oswego	142,860
Multnomah	18,354
Newport	14,297
Sherwood	23,667
	46,728 Mean Average
	16,326 Median

- * Highs and lows can skew the results. In the above example, if you throw out the high and the low, the mean would be 34,856. The median remains the same. The very high Lake Oswego number still has a powerful effect on the average.
- * Be sure you tell your reader which sort of average you're using.

Correlation Analysis - "Correlation" refers to the relationship between two or more series of data. You can test some of the "givens" in our field by playing around with your statistics and a software package like Excel. An important caveat: you can test hypotheses, try to predict relationships, etc., but you can't prove a causal relationship with this data alone. These values cluster much more than the examples shown on the slide. Adding the trend line is helpful.



Multi-variate and cross-tabulation analysis - You may want to show the relationship between factors. Making a chart which utilizes two Y axes allows you to show data that is much different in magnitude. For example, you might be interested in looking at both circulation (which is a high number, maybe up to six digits) and FTEs assigned to circulation (which will be a low number of one or two digits). If you didn't use two axes, the lower number would simply be a flat line and you wouldn't be able to see the comparison you want to show. The example below compares circulation to holdings:



Percentages - Percentages show the relative size of two or more numbers. Most people are familiar with percentages (a 4% wage increase, a 25% discount), but they often make mistakes in computing or analyzing percentages.

Beaver State University subscribed to 5600 serials in 2000 but had to cut the subscription list to 4725 titles in 2001. This was a decrease of 16%.

If you want to compare two numbers, you need to think of one as the base number and one as the comparison number.

New Value
- Old Value

Answer / Old Value
Answer x 100 = x%

5600 - 4725 = 875
 875 / 5600 = .15625
 .15625 x 100 = 16% rounded up

Common problems to avoid:

- Base numbers so small that the change relationships are meaningless.
- Not identifying the proper base number. Double check or practice on numbers where you can easily see the relationship. Think about how you're trying to make your argument or present your data.
- Determine whether it will be more effective to talk in terms of percentages or in terms of the numbers themselves. Be sure you know what the base numbers are that others are using.
- Understand the differences between percentages, percentage points, and the numbers they relate to:

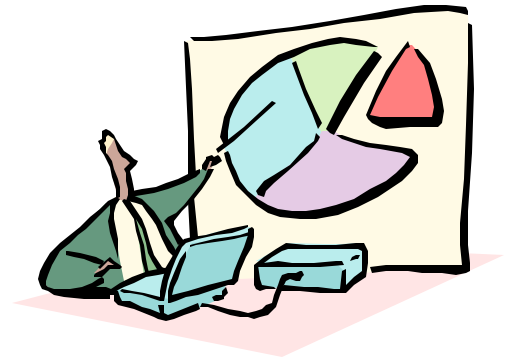
*Last year I spent 18% of my materials budget on AV materials.
This year I plan on spending 20%. What is the difference?*

Too many people say the difference is 2%. In reality, the difference is 11%. The dollar difference and absolute difference will depend, in addition, on the dollar amounts being talked about. In other words, 18% of x may be more than 20% of y .

Aggregation/Disaggregation - Look at the data you have in a variety of ways. You can't compare internally unless you find an easy way to put data together. For example, a one page matrix showing a number of service indicators provides an easy way to see ranges and differences

If you find "outliers", then a series of questions should be asked, which takes you in the disaggregation direction. What's different? What are the component pieces? What are the variables (languages spoken by users, ages of users, mix of services used, policies or procedures, problems with the facility or security incidents)?

Data Presentation



Here's where your hard work collecting and analyzing data pays off. To be sure you are effective:

- Know your audience
- Know your purpose or objective
- Focus on quality, relevance, and integrity of your content

A larger synthesis in how people communicate is occurring. A wide variety of visual and verbal representation systems are coming together. The process is occurring in much the same natural way that other Creole and pidgin languages arise: where people speaking different languages come together and invent a new language that combines their original tongues.

Robert E. Horn
Visual Language

Options For Presenting Data¹

Type	Time/Skill	Visual Appeal	Simplicity/Clarity	Depiction of Relationships
Narrative Description	Low	Low	Low to Moderate	Moderate
Tables	Low	Moderate	Moderate	Low
Graphs and Charts	High	Moderate to High	Moderate to High	High
Maps	High	Moderate to High	Moderate to High	Moderate to High
Spreadsheets	Moderate to High	Low to High	Low to High	Moderate to High
CQI diagrams	High	Moderate to High	Moderate to High	High
Project Mgt. Diagrams	High	Moderate to High	Moderate to High	High
Org. Chart	Moderate to High	Moderate to High	Moderate to High	High
Mindmaps	Low to High	Moderate to High	Moderate to High	High

¹ This table based on work done by Sandra Nelson in *The New Planning for Results: A Streamlined Approach* (Chicago: American Library Association, 2001), 271-278.

A few cautions about charts and graphs:

- Just because your spreadsheet program provides numerous graph-making bells and whistles don't think you need to use them. Avoid using three-dimensional effects, cones, etc. These features usually obscure information rather than adding clarity.
- Be sure that your chart or graph is not so clever that the relationship among the data elements is lost. Sometimes the scale is totally lost or the graphic is distracting.

Many of these options are familiar to you. Here are a few you may not know or have thought of:

Maps and GIS presentations
CQI diagrams (fishbone, cause and effect, histograms)
Project Management diagrams (PERT and Gantt charts)
Organization charts
Mindmaps

A Very Selective Resource List

Data Collection and Analysis Resources

Bertot, John Carlo, Charles R. McClure, and Joe Ryan. *Statistics and Performance Measures for Public Library Networked Services*. Chicago: American Library Association, 2001.

A first attempt to help librarians measure and assess this new form of library service. Good, clear explanations of data management and analysis techniques. Note appendix on software for statistics collection and analysis.

Hafner, Arthur W. *Descriptive Statistical Techniques for Librarians*. 2d ed. Chicago: American Library Association, 1998.

Written by a man who is both a university library director and a mathematician, this book is both a textbook and a reference manual on descriptive statistics--the basis of statistical analysis for data summary. Hafner provides library examples and real words to explain his statistical notations.

Library Research Service (<http://www.lrs.org/index.html>)

The Library Research Service (LRS), a unit of the Colorado State Library, is a market-driven public-private partnership that generates research and statistics to inform decision-making in library and information management. The LRS collaborates with clients to design and conduct research projects and supply the results and trains clients to exploit available data, to collect and report more complete and accurate statistics, and to use both types of data more effectively. The LRS web site provides a cornucopia of valuable links to information and methods.

Nelson, Sandra, Ellen Altman, Diane Mayo. *Managing for Results: Effective Resource Allocation for Public Libraries*. Chicago: American Library Association, 2000.

Implementing any sort of plan requires resources (staff, library materials, buildings, furniture and equipment, and library technology). This book provides the theoretical overview, methodology and forms to help librarians determine what resources they have and what they need. Guidance on how to interpret and use the data collected is provided.

Van House, Nancy, Beth Weil, and Charles McClure. *Measuring Academic Library Performance: A Practical Approach*. Chicago: American Library Association, 1990.

This book provides a set of practical output measures for academic and research libraries, as well as instructions for their use and sample forms.

Zweizig, Douglas, Debra Wilcox Johnson, Jane Robbins, Michele Besant. *The TELL IT! Manual: The Complete Program for Evaluating Library Performance*. Chicago: American Library Association, 1996.

Detailed explanations of a variety of evaluation methods and measurement methodologies. Designed to be used by all types of libraries.

Data Presentation Resources

Brassard, Michael and Ritter, Diane. *The Memory Jogger II*. Methuen, MA: GOAL/QPC, 1994.

A pocket guide to TQM/CQI tools. Includes handy charts to help you select the right tool for your situation: working with numbers, teams or ideas. Each tool is briefly but clearly explained. A great way to jog your memory if you can't quite remember what a tool is or what it does.

Crow, Jeff. *Applying Project Management in the Workplace*. Rev. Ed. Portland, OR: Blackbird Publishing, 1999.

Finally, a project management book for people who aren't managing huge construction or applications development projects. Local author Crow realizes that you're probably trying to do this and some other job and that you've got the assignment but no line authority. Excellent appendices: checklists, problem-solving tools and processes, and lots of forms.

Horn, Robert E. *Visual Language: Global Communication for the 21st Century*. Bainbridge Island, WA: MacroVU, Inc., 1998.

The author worked at Univac, he's worked in information design and mapping and is fascinated by language, linguistics and politics. This book is a good, and visually interesting, introduction to this new field.

Tufte, Edward R. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, 1983.

Tufte's books are phenomenal! He is both a statistician and an expert in the graphic display of information. A teacher at Yale (statistics and political science), he has studied this topic from the very beginning of visual depictions to the present. He shows how visual displays can both lie and enlighten. He's written two other books since this one, *Visual Explanations* and *Envisioning Information*.

Weaver, Marcia. *Visual Literacy: How to Read and Use Information in Graphic Form*. New York: Learning Express, 1999.

A basic introduction to all forms of graphic presentation. "Visual Literacy" is fast becoming a skill we all need to have.

Wycoff, Joyce. *Mindmapping: Your Personal Guide to Exploring Creativity and Problem-Solving*. New York: Berkley Books, 1991.

A clear introduction to this powerful technique. Lots of information about both techniques and applications.

Zelazny, Gene. *Say it With Charts: The Executive's Guide to Visual Communication*. Chicago: Irwin Professional Publishing, 1996.

Meat and potatoes introduction to the topic.