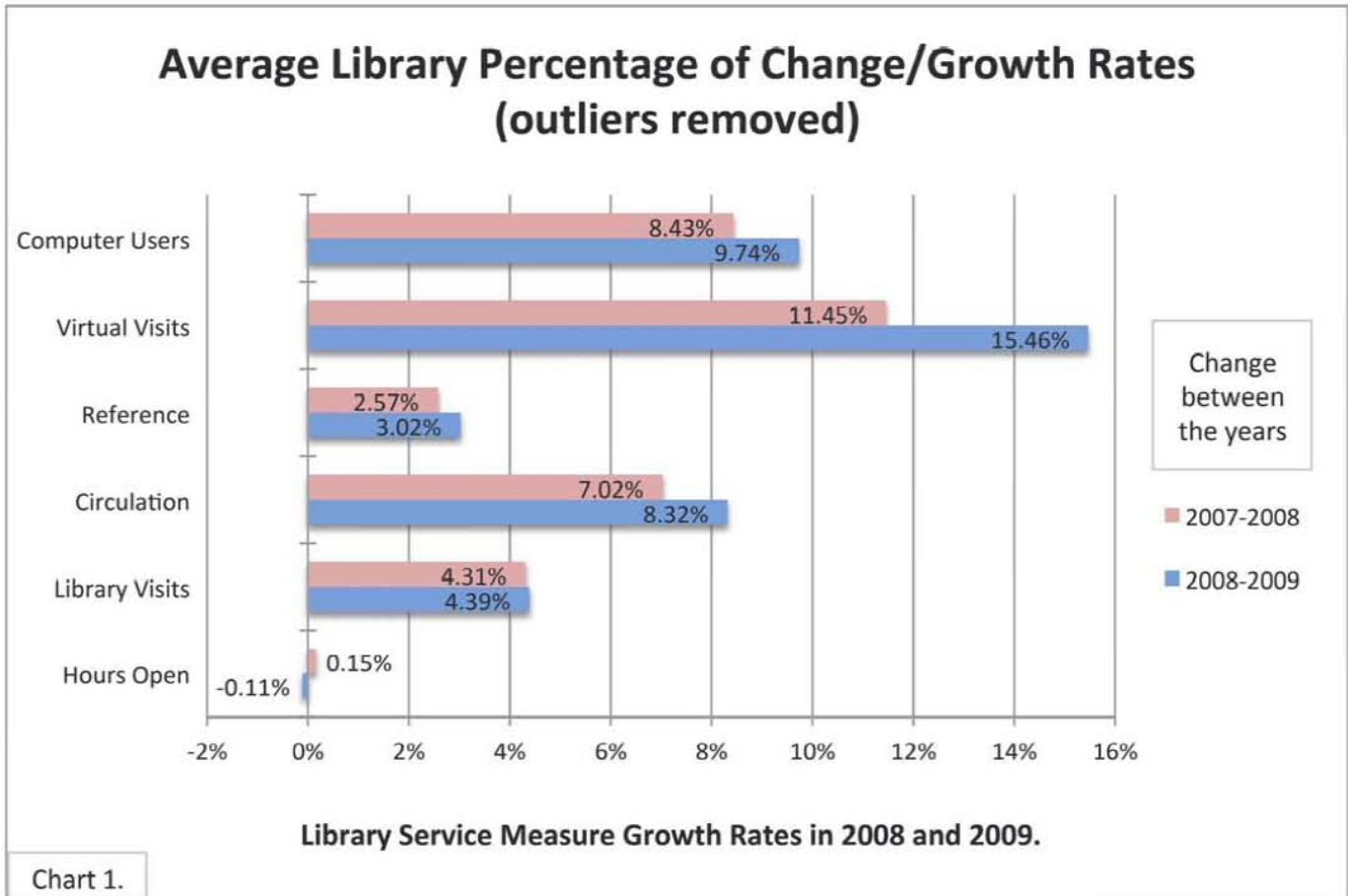**Public Library Visits, Circulation, Reference Transactions, and the Number of
Public Computer Users Grow in 2009 in the Face of Declining Library Service Hours:
A Washington State Library Usage Report**

According to data available in the Washington Public Library Statistical Reports issued by the Washington State Library, growth rates for public library visits, circulation, reference transactions (the combined total of both virtual and traditional transactions), visits to networked library services, and number of users of public internet computers increased from 2008 to 2009, while library hours of operation declined during that same period [see Chart 1].
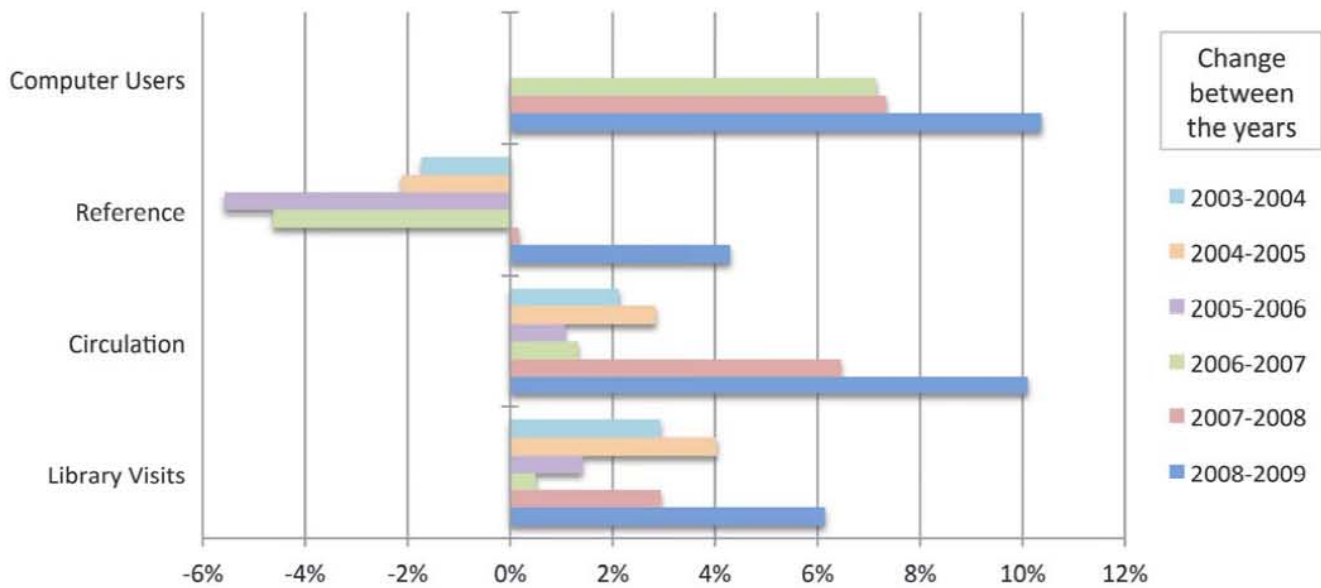
The negative growth in hours of operation experienced in 2009 was the first such decline in over five years [see Chart 4]. When factoring in hours of operation across various usage measures dating back to 2004, it becomes apparent that usage rates spiked in 2009 across the board for all usage measures considered [see Chart 2]. [For usage rates without hours of operation factored in, see Chart 3].

Note: Washington State public library statistics have been collected every year since 1925, and reports dating back to 1999 are available electronically at:
http://www.sos.wa.gov/library/libraries/libDev/publications.aspx#WAStats.

Average Library Percentage of Change/Growth Rates (outliers removed)

Measure	2007-2008	2008-2009
Computer Users	8.43%	9.74%
Virtual Visits	11.45%	15.46%
Reference	2.57%	3.02%
Circulation	7.02%	8.32%
Library Visits	4.31%	4.39%
Hours Open	0.15%	-0.11%

Change between the years

Library Service Measure Growth Rates in 2008 and 2009.

Chart 1.

Average Library Percentage of Change/Growth Rates as a Rate of Hours Open (outliers removed)

Computer Users

Reference

Circulation

Library Visits

-6% -4% -2% 0% 2% 4% 6% 8% 10% 12%

Change between the years

■ 2003-2004
■ 2004-2005
■ 2005-2006
■ 2006-2007
■ 2007-2008
■ 2008-2009

The Percentage of Change/Growth Rates in service measure counts, taking into consideration the number of hours open, between one year and the next from 2003 through 2009.
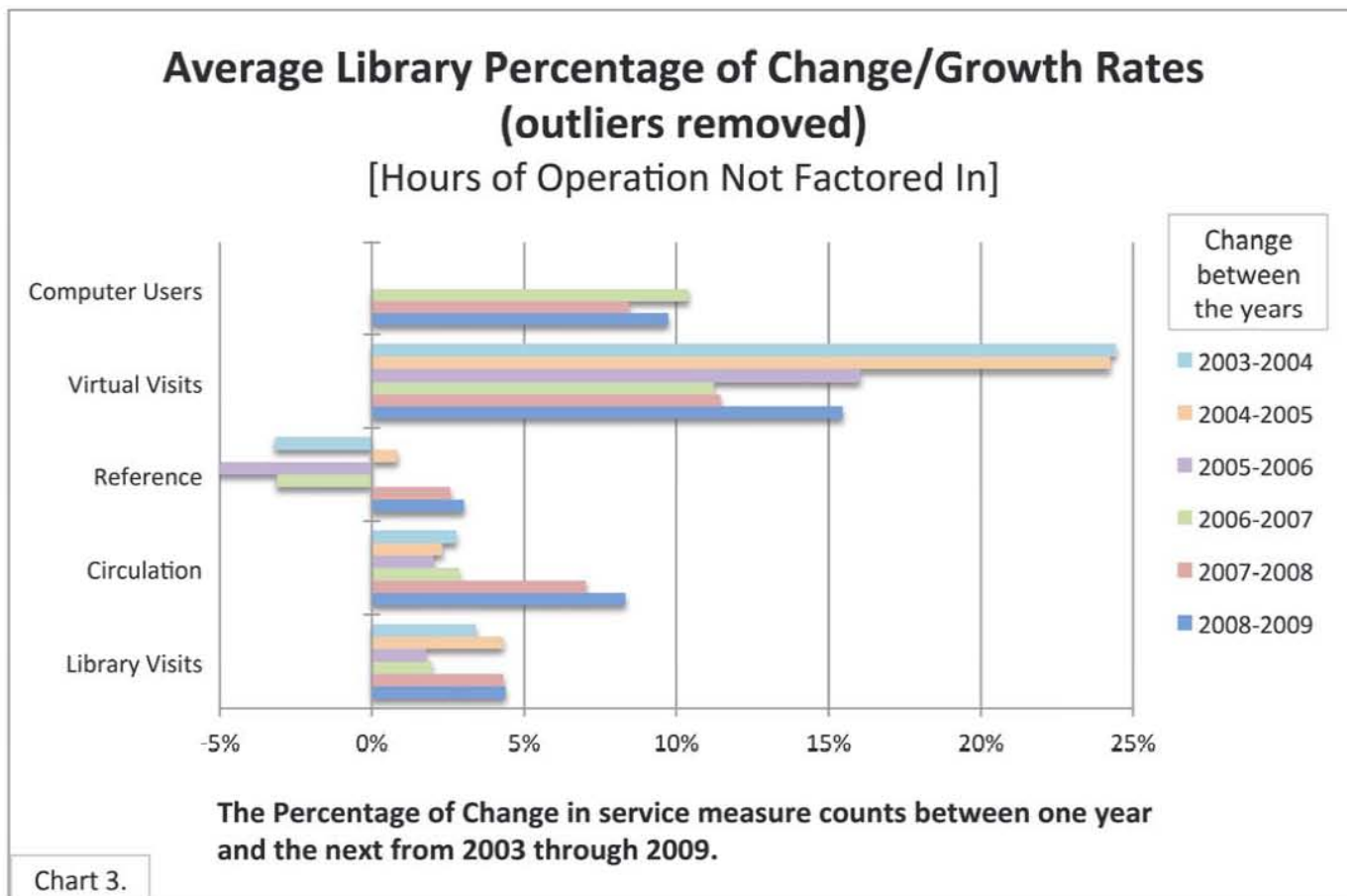
Chart 2.

Key findings include:

- The average 2009 percentage of change for Library Visits when the Numbers of Hours Open was taken into account (6.15%) exceeded the compounded rate of the previous three years combined (4.90%), and individually outpaced each of the previous five years by at least 50% [see Chart 5].

- The average 2009 percentage of change for Circulation when the Numbers of Hours Open was taken into account (10.10%) exceeded the compounded rate of the previous three years combined (9.02%), and individually outpaced each of the previous five years by at least 50% [see Chart 6].

- The average 2009 percentage of change for Reference Transactions when the Numbers of Hours Open was taken into account (4.30%) reversed the recent trend of negative to no growth to post what amounts to a 14 percentage point increase over the compounded rate of the previous three years combined (-9.79%) [see Chart 7].

- The average 2009 percentage of change for Public Computer Users when the Numbers of Hours Open was taken into account (10.37%) represents an increase of more than 40% over that of either of the two previous years (7.14% and 7.34%) [see Chart 8].

Libraries had to do more with less to keep up with demand, in other words, libraries in 2009 experienced markedly greater usage during their reduced hours of operation.

Increased usage & decreased hours,
libraries are busier, more vital, and more needed than ever!

Average Library Percentage of Change/Growth Rates
(outliers removed)
[Hours of Operation Not Factored In]

Change between the years
- 2003-2004
- 2004-2005
- 2005-2006
- 2006-2007
- 2007-2008
- 2008-2009

Categories (top to bottom): Computer Users, Virtual Visits, Reference, Circulation, Library Visits

X-axis: -5%, 0%, 5%, 10%, 15%, 20%, 25%

The Percentage of Change in service measure counts between one year and the next from 2003 through 2009.
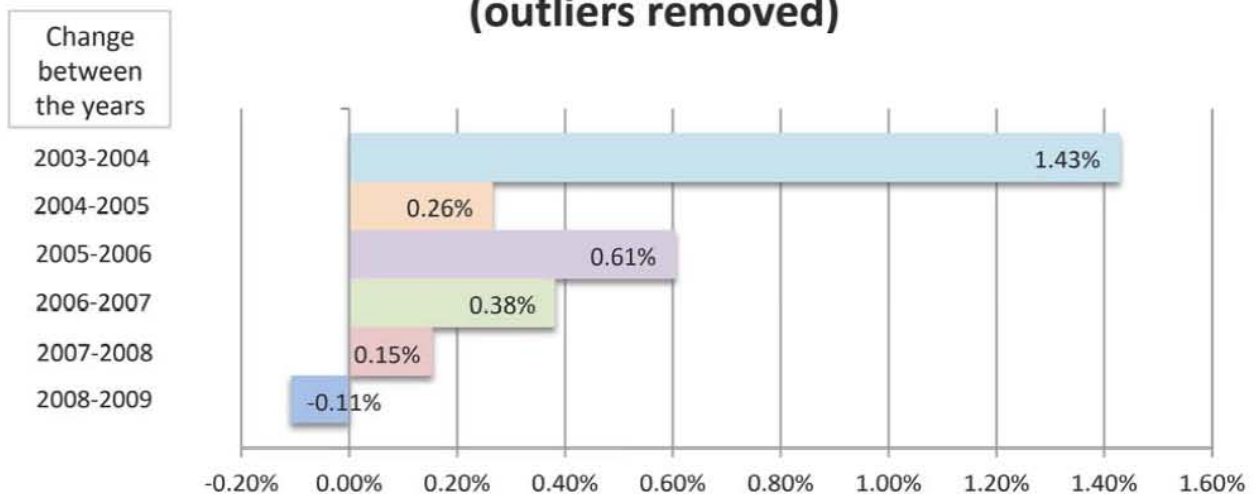
Chart 3.

Has library usage significantly increased? Anecdotally, we know this to be the case, but does the data bear this out? If we consider the bar chart of percentage of change/growth rates between the years 2003 through 2009 for the usage measures: annual library visits, circulation, virtual visits to networked library services (online web page hits), reference transactions (including both traditional and virtual) and number of users of public internet computers we notice several things: (1) reference transactions seem to be on the decline, with individual library rates of change declining three out of the last six years, for an average rate of -0.82 percent; (2) computer technology related usage measures seem to have experienced a spike during the middle of the decade, with virtual visits reaching percentage of change rates of nearly 25 percent in 2004 and 2005 before dropping back down to 16 percent levels and below, additionally, the percentage of change in the number of public internet computer users was above 10 percent in 2007, and below 10 percent since 2007; and (3) there was a more noticeable jump in library visits and circulation percentage of change rates in the years between 2007 and 2008, than there was between the years 2008 and 2009. So while the rates of change for 2009 are all higher across the board for these five service measures, indicating stronger growth, the difference between 2009 and 2008 rates really isn't very dramatic. For instance, the average percentage of change increase in library visits between 2008 and 2009, is less than a 1 percent.

What might these trends reveal? This is just speculation, but (1) while technology-related usage measures are still quite high, the rate of increase might be starting to level off as the personal computer market becomes increasingly saturated; (2) the higher usage rates seen after 2008 as compared to those seen before 2008 coincides with the arrival of the recession at the beginning of 2008.

Given that 2009 was the second year of a deepening recession, shouldn't we expect to see even greater increases in the rates of change, and why does this not appear to be the case? Something interesting occurred in 2009. For the first time in at least five years the average individual library percentage of change for annual public service hours (annual number of hours open) declined, meaning that libraries were open, on average, fewer hours in 2009 than they were in 2008. If total usage remains constant for those measures directly impacted by a library's physical hours of operation (this for instance, would not include virtual visits to networked library services), but the library is open fewer hours, it means that the library is actually experiencing heavier usage per hour of operation than it had been previously. For example, a library open 1,000 hours with exactly 8,000 visitors one year has a visitor rate of eight visitors an hour, if that same library is only open 800 hours the next year, but still manages to have 8,000 visitors, its visitor rate has increased to ten visitors an hour. When there are fewer hours of operation, in order to exceed (which was the case for library visits, circulation and reference transactions), let alone keep pace with usage levels, usage rates would need to increase, and this is exactly what happened with library usage in 2009. Libraries had to do more with less to keep up with demand. That is to say, they experienced higher usage volumes during the fewer hours they were open.

Average Library Percentage of Change/Growth Rates for Annual Public Service Hours/Hours Open (outliers removed)

Change between the years	
2003-2004	1.43%
2004-2005	0.26%
2005-2006	0.61%
2006-2007	0.38%
2007-2008	0.15%
2008-2009	-0.11%

-0.20%　0.00%　0.20%　0.40%　0.60%　0.80%　1.00%　1.20%　1.40%　1.60%

Although varied, the rates of change for Average Annual Public Service Hours since 2004 have all been in the positive range, until 2009, when the Number of Hours a Library was open, on average, actually decreased.

Chart 4.

The remaining charts show percentages of change as a rate of hours open annually. The formula for the rate is (service measure/annual public service hours).

Why not compare state totals? Those numbers might not present the most accurate measure of change over time, due in part to the fact that not every library contributes numbers to each element for every survey year. Also, we wanted to look at what was happening at the individual library level.
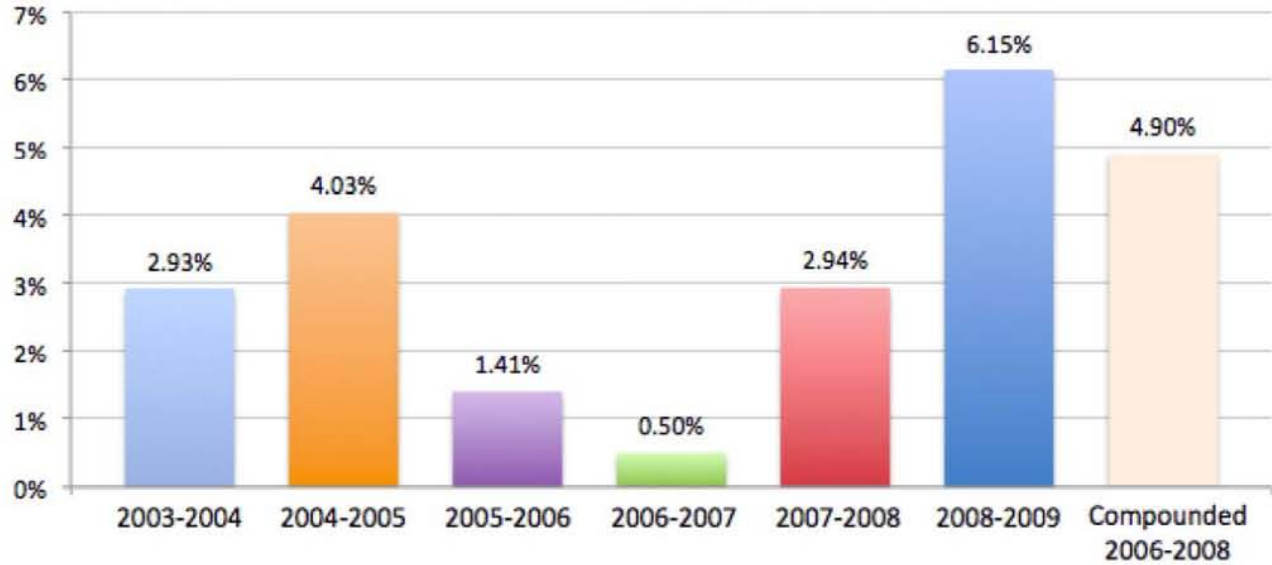
Why look at percentages of change over time? The fact that usage has increased from one year to the next, in itself isn't too revealing, because, generally speaking, usage tends to increase from year to year. This is, in part, a factor of service population. As the population increases, the number of patrons a library serves increases and accordingly, library usage counts go up. The real significance of changes in usage numbers can be seen when we compare the rates of change themselves from one year to the next. The formula for percentage of change is ([current year - previous year]/previous year).

What are outliers and why remove them? In statistics, outliers are extreme data points, a value that is either much larger or smaller than the next nearest point. It can be an indication of either errors and miscalculations or out of the ordinary circumstances (such as a library closure of significant duration). Such non-representative values will likely skew results, therefore, outliers were removed, using the Grubb's Test for Outliers, for the purpose of making this data set more accurate. For more information on the Grubb's Test for Outliers, visit: http://www.graphpad.com/quickcalcs/GrubbsHowTo.cfm.

What did we look at when considering the question of usage? We used the data collected in the Washington Public Library Statistical Reports for the years 2003 through 2009, allowing us to consider the full five-year period preceding 2009. Although somewhat of a follow up to the Usage Survey and Report conducted in 2008, this is different in two significant ways: (1) It includes data from all the libraries, whereas the earlier report involved a sample subset of libraries (36 out of a possible 64); and (2) this current report compares the change in usage from full year to full year, whereas the previous usage study compared the current 6 months, at the time June 2008 - November 2008, with that of usage from prior full years. The average percentage of change, or growth rate, for a given service measure as a rate of hours open, with outliers removed, was computed using the following steps:

(1) the **hourly rate** was calculated for a given service measure using the formula:
    (service measure/annual service hours);
(2) the **percentage of change** for each library was then calculated using the formula:
    ([current year hourly rate - previous year hourly rate]/previous year hourly rate);
(3) **Outliers** were removed one by one from a given data set using the **Grubbs Test for Outliers**, the data set in this case being all the percentages of change of every library contributing data in a given year for a certain service measure;
(4) the **average rate of change** for all libraries was computed yearly for each service measure using the formula:
    (sum of all percentages of change divided by number of libraries contributing data);
(5) On some charts there is also included the **2006-2008 compounded value**, using the formula: **((1+2006 value)*(1+2007 value)*(1+2008 value)-1)**.

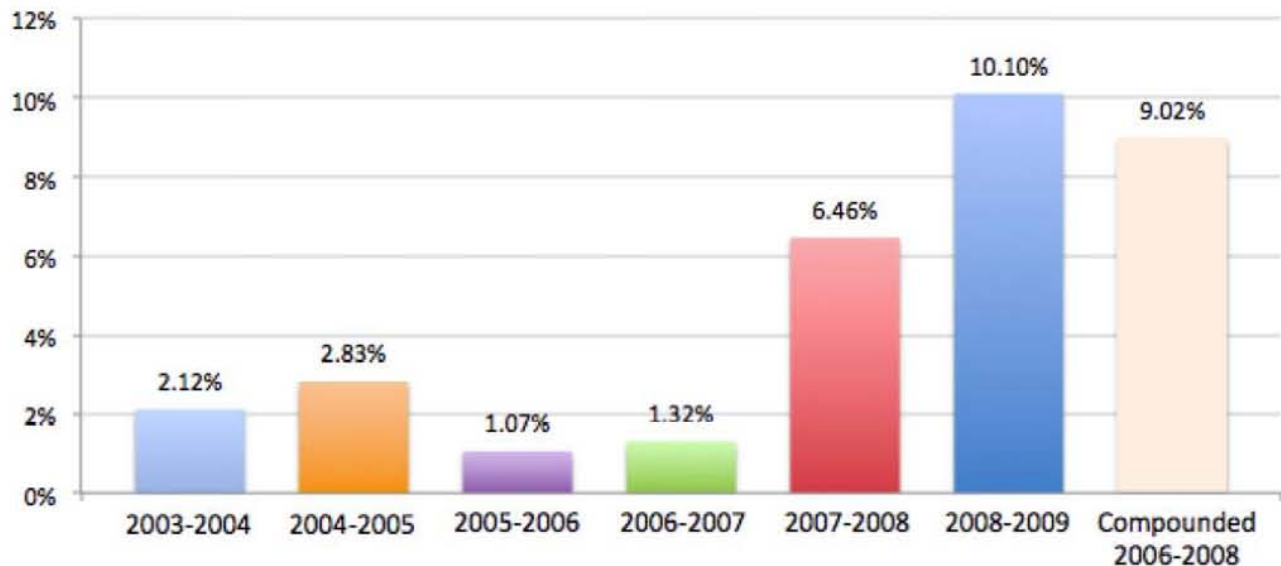# Average Library Percentages of Change for Library Visits as a Rate of Hours Open (outliers removed)

Year	Percentage
2003-2004	2.93%
2004-2005	4.03%
2005-2006	1.41%
2006-2007	0.50%
2007-2008	2.94%
2008-2009	6.15%
Compounded 2006-2008	4.90%

The average percentage of change for Library Visits as a Rate of Hours Open increased by 6.15%, a rate greater than the increase seen in the previous three years combined, and outpacing each of the previous five years by at least 50%.
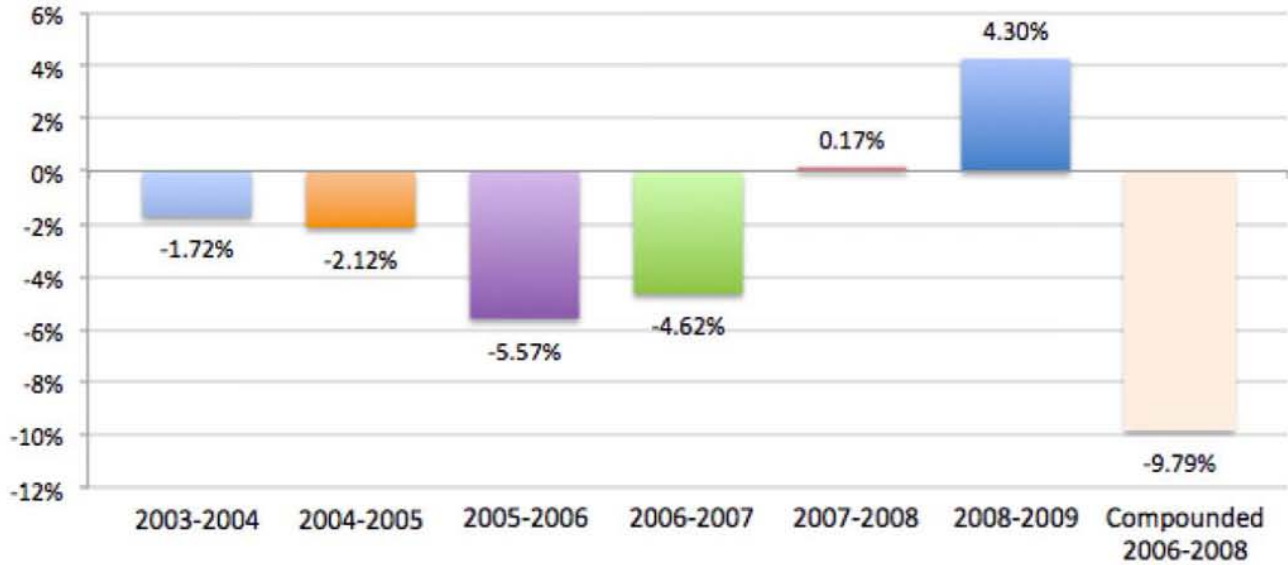
Chart 5.

Average Library Percentages of Change for Circulation as a Rate of Hours Open (outliers removed)

Year	Percentage
2003-2004	2.12%
2004-2005	2.83%
2005-2006	1.07%
2006-2007	1.32%
2007-2008	6.46%
2008-2009	10.10%
Compounded 2006-2008	9.02%

The average percentage of change for Circulation as a Rate of Hours Open increased by 10.10%, a rate greater than the increase seen in the previous three years combined, and outpacing each of the previous five years by at least 50%.
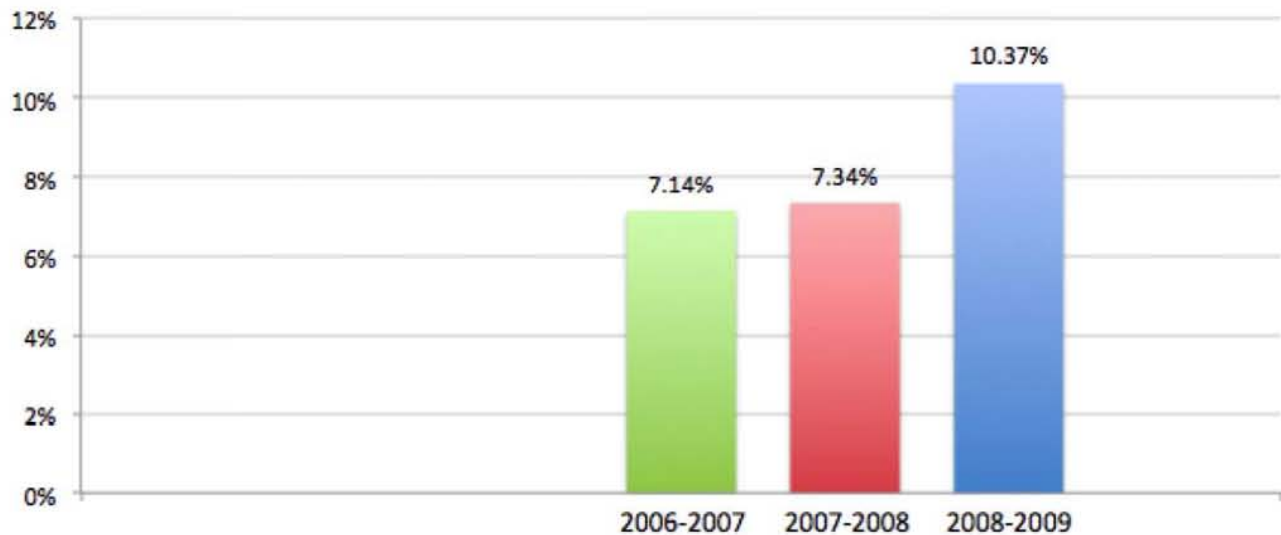
Chart 6.

Average Library Percentages of Change for Reference as a Rate of Hours Open (outliers removed)

Bar chart values:
- 2003-2004: -1.72%
- 2004-2005: -2.12%
- 2005-2006: -5.57%
- 2006-2007: -4.62%
- 2007-2008: 0.17%
- 2008-2009: 4.30%
- Compounded 2006-2008: -9.79%

In 2009, the average percentage of change for Reference Transactions reversed the recent trend of negative to no growth to post an increase of over 4% from the previous year.

Chart 7.

Average Library Percentage of Change for Computer Users as a Rate of Hours Open (outliers removed)

Bar chart values:
- 2006-2007: 7.14%
- 2007-2008: 7.34%
- 2008-2009: 10.37%

The Number of Public Access Internet Computer Users, as presently defined, has only been collected for the past four years, the 2009 increase in Computer Users still outpaced the healthy growth seen in either of the prior two years.

Chart 8.

Washington State Public Library Statistical Report Definitions

Circulation

The total annual circulation of all library materials of all types, including renewals. Note: Count all materials in all formats that are charged out for use outside of the library. Interlibrary loan transactions included are only items borrowed for users, i.e. count only those transactions where the library directly checks out the material to a patron. Do not include items checked out to another library.

Annual Library Visits

This is the total number of persons entering the library for whatever purpose during the year. Note: If an actual count of visits is unavailable, determine an annual estimate by counting visits during a typical week in October and multiplying the count by 52. A "typical week" is a time that is neither unusually busy nor unusually slow. Avoid holiday times, vacation periods for key staff, or days when unusual events are taking place in the community or the library. Choose a week in which the library is open its regular hours. Include seven consecutive calendar days, from Sunday through Saturday (or whenever the library is usually open).

Annual Number of Users of Public Internet Computers (Public Internet Computer Users)

This is the count of individuals that have used Internet computers in the library during the last year. If the computer is used for multiple purposes (Internet access, word-processing, OPAC, etc.) and Internet users cannot be isolated, report all usage. A typical week or other reliable estimate may be used to determine the annual number. Sign-up forms or Web-log tracking software also may provide a reliable count of users.

Number of Virtual Visits to Networked Library Services (Virtual Visits)

This is the count of virtual visits to networked library resources. A visit occurs when a user connects to a networked library resource for any length of time or purpose (regardless of the number of pages or elements viewed). Examples of a networked library resource include a library OPAC or a library web page. In the case of a user visit to a library web site a user who looks at 16 pages and 54 graphic images registers one visit on the web server.

Annual Public Service Hours (Hours Open)

This is the sum of annual public service hours for outlets. Note: Include the hours open for public service for centrals, branches, bookmobiles, and books-by-mail only. For each bookmobile, count only the hours during which the bookmobile is open to the public. For Administrative Entities that offer ONLY books-by-mail service, count the hours that the outlet is staffed for service. Minor variations in scheduled public service hours need not be included, however, extensive hours closed to the public due to natural disasters or other events should be excluded even if the staff is scheduled to work.

Reference Transactions

A reference transaction is an information contact which involves the knowledge, use, recommendations, interpretation, or instruction in the use of one or more information sources by a member of the library staff. It includes information and referral services. Information sources include printed and non-printed materials, machine-readable databases, catalogs and other holding records, and through communication or referral, other libraries and institutions and people inside and outside of the library. The request may come from an adult, a young adult, or a child. Do not count directional transactions or questions of rules or policies. Examples of directional transactions are "Where are the children's books?" and "I'm looking for a book with the call number 811.2G." An example of a question of rules or policies is "Are you open until 9:00 tonight?" Note: If an annual count of reference transactions is unavailable, determine an annual estimate by counting reference transactions during a typical week in October and multiply the count by 52. A "typical week" is a time that is neither unusually busy nor unusually slow. Avoid holiday times, vacation periods for key staff, or days when unusual events are taking place in the community or in the library. Choose a week in which the library is open its regular hours. Include seven consecutive calendar days, from Sunday through Saturday (or whenever the library is usually open). A reference transaction conducted in person, by phone, by fax or by mail. It can also be conducted via email, website or other networked-based medium designed to support virtual reference, including electronic reference.