

A Confirmatory Factor Analysis of Library Use

Emily Knox
Rutgers University
School of Communication and Information
Department of Library and Information Science
Poster #187

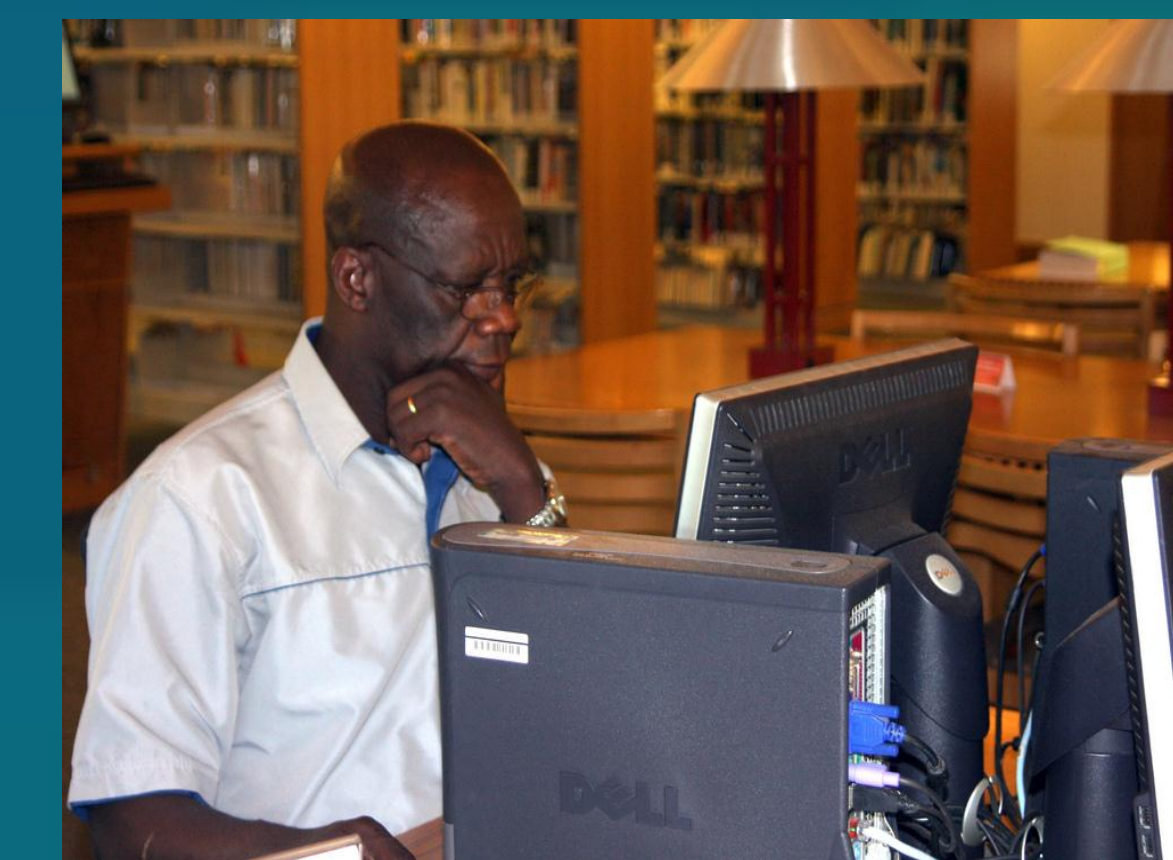
What is "Library Use"?

The quantitative measurement of "library use" has long been difficult proposition for public library administrators. Before the proliferation of the computer, measurements of library use were primarily based on physical transactions: circulation statistics, in-person reference transactions, visits to the library, etc.

In 1999, *American Libraries* published the first edition of Hennen's American Public Library Ratings (HALPR) based on the following 15 measurements:^[1]

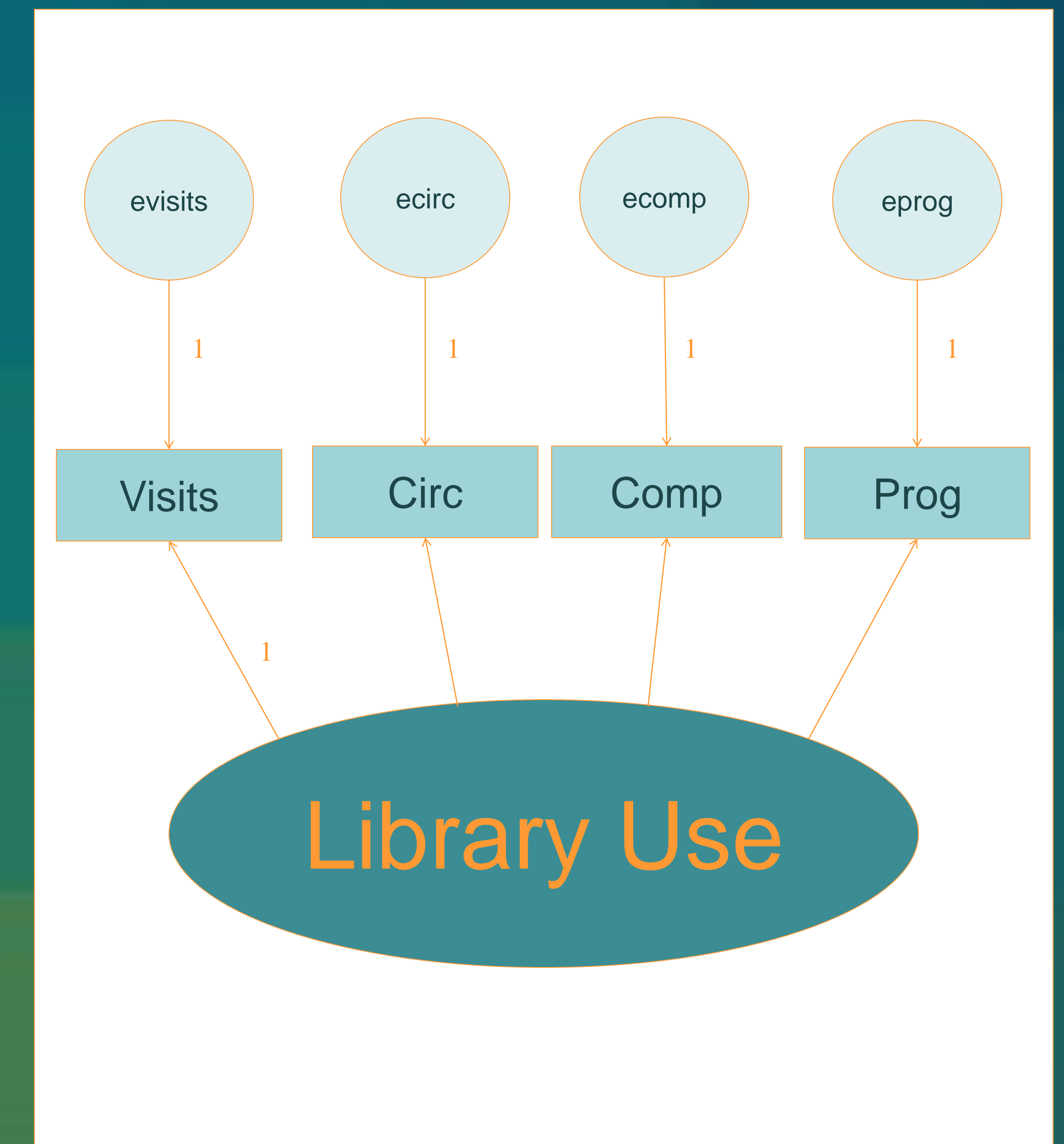
Measurement Category	HALPR Weight	Measurement Category	HALPR Weight
Expenditure per capita	3	Collection turnover	2
Percent Budget to materials	2	Circulation per FTE Staff Hour	2
Materials Expend. Per capita	2	Circulation per Capita	2
FTE staff per 1,000 population	2	Reference per capita	2
Periodicals per 1000 residents	1	Circulation per hour	2
Volumes per Capita	1	Visits per hour	1
Cost per circulation (low to high)	3	Circulation per visit	1
Visits per capita	3		

HALPR has been the premier ranking system for public libraries for past 10 years. But does it still make sense to use "physical" statistics to measure library use in the digital age?



What Can Public Library Administrators Do with the Library Use Score?

The Library Use Score provides a single measure that can be used to compare individual public libraries with peer institutions.



Does the LJ Index Make Sense?

This poster presents a confirmatory factor analysis of the **Library Journal Index of Public Library Service** using New Jersey public library statistics for 2008 ^[4].

The initial data consisted of three hundred three (N=303) New Jersey public libraries. 23 libraries did not respond to the state library survey, leaving a total of two hundred eighty libraries in the data set (n=280). An additional 38 libraries were removed because their scores fell more than three standard deviations beyond the mean on any one of the variables that were tested. Eight libraries were removed because they were multivariate outliers. This resulted in a sample size of two hundred thirty-four public libraries in New Jersey (n=234).

These indicators were transformed into per-capita data by dividing each reported amount by the population of the library's municipality as indicated in the 2000 Census. Each number was then transformed into a z-score.

Confirmatory Factor Analysis

A confirmatory factor analysis, using Amos, was conducted to assess the fit between the NJPL data and the factor structure for the Library Use Index proposed in *Library Journal*. The chi-square value for the overall model fit was **not significant** ($\chi^2 = .720$, $df = 2$, $p > .001$) indicating that there is an **adequate fit** between the factor structure of the Library Use Index and the data.

The Library Use Score

A "library use" score was then computed using the sum of the four standardized indicators. In accordance with the procedure given in *Library Journal* [3], since this preliminary score included scores with negative values (with a minimum value of -4.99), a correction factor of 5 was added to each score so that the variable Library Use Score would not include negative values.

The Library Use Score for New Jersey public libraries was $M = 4.97$, $SD = 3.26$ with a range of .007 to 15.981.

How Should We Measure Library Use in the Digital Age?

Unhappy with HALPR, *Library Journal* commissioned its own ratings called the Index of Public Library Service in 2009 ^[2]. The creators of the new index argue that it measures public service. It is based on the following measurements (all per capita) ^[3]:

- Circulation** – Total number of "check outs" including renewals
- Visits to the Library** – Total number of people who enter the library for any purpose
- Program Attendance** – Number of people at all programs sponsored or hosted by the library
- Public Internet Terminal Uses** – Number of people who used public access terminal

References

- [1] HALPR FAQ, 2010, Retrieved February 2, 2011, from Hennen's American Public Library Ratings: <http://www.haplr-index.com/faq.html>
- [2] Fialkoff, F. 2008. Better than Hennen. *Libr J*. Retrieved February, 2, 2010 from <http://www.libraryjournal.com>
- [3] Lyons, R. 2009. LJ index of public library service fact sheet. *Libr J*. Retrieved February 2, 2011 from <http://www.libraryjournal.com>
- [4] New Jersey State Library. 2008. *New Jersey Public Library Statistics*. Trenton, NJ: New Jersey State Library.

Pictures from New Jersey Library Association and The Healthcare City