The Relationship between Community Religious Beliefs and Community Level of Public Library Development in the United States: An Empirical Analysis

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Abstract:

This paper examines the relationship between the characteristics of the religious community in an area served by a public library in the United States and the level of development of that public library. Specifically, it tests the hypothesis that as the degree of religious orthodoxy increases in a community the level of public library development in that community decreases. To test this hypothesis, two indexes are constructed: (1) the index of “religious orthodoxy,” and (2) the public library development index. Data for the index of religious orthodoxy comes from a 2000 study by the Association of Statisticians of American Religious Bodies. The public library development index is based on 1974 and 2008 data collected by the U.S. federal government on all public libraries. Both data sets cover the entire U.S. The findings from this 2011 study are compared to the findings from a 1978 study by Williams (1978) that used similar measures. Tentative results from both studies indicate that while there is a definite negative relationship between the index of public library development in the most orthodox communities that relationship is not uniform for all levels of community orthodoxy and that changes do take place over time.

Introduction:

Many explanations have been offered by researchers for the easily observable differences in the level and extent of the development of public libraries in the United States. Almost all writers agree that the level and extent of the development of a library in a particular community has been and is mostly shaped by the history and nature of the community it serves. However, when these same writers have attempted to identify the most important characteristics of the community that have impacted the library the explanations have differed considerably. The library historians (Shera, 1949; Jackson, 1974; Ditzion, 1949; Lee, 1966) have all advanced a variety of explanations: economic ability, education, population density, occupational development, local and national pride, extent of development of mass media, and many others. These historians sometimes identify specific variables as more important than others but generally stay rather vague on this issue.

One causal variable that gets frequent mention by the historians is community religious affiliation. Some of these writers argue that this variable taps into an important element of information seeking not reflected in the other variables mentioned above. The reasoning is that those individuals in a community who belong to the more fundamentalist (or orthodox) churches will tend to rely on revealed or accepted authority (e.g., the church or the Bible) instead of seeking information about their faith and role in the world from non-authoritarian sources, such as books and libraries. Thus, level of public library development should be positively associated with communities where the least orthodox, or non-fundamentalist churches, predominate and negatively associated in communities where the most orthodox churches are strong. Exploring this theme is the central purpose of this report.
Public Library Development Index: Definitions and Data Collection:

Defining level and extent of public library development has also been troublesome, not only for the historians but also for other writers on the topic. Many years ago Childers (1975) explored this issue and came to the conclusion that there was no common agreement of a single measure or a set of measures of the existing “quality” of a library. A closely related measure, and one that has been more frequently researched, is library effectiveness. However, effectiveness is only meaningful when considered in light of a library’s objectives; thus it is not relevant in this study. (American Library Association, LAMA, 1980.)

Effectiveness is often compared with (or substituted for) performance, or output, measures and is also very close conceptually to user satisfaction measures. These kinds of measures, whether referring to a single overall measure for the library or for an individual service offered by the library, are also more evaluative of a library’s objectives and are not descriptive of the current status, or level of development, of the library.

What is desired is a measure that reflects the complexity of the library and sufficiently describes both inputs and outputs, the holdings of the library, and the potential for service. Childers (1975) initially listed 14 candidate measures but a 1978 study (Williams, 1978) and subsequent analysis (Williams, 1980) showed that many of these measures were highly correlated with each other and thus contained redundant information. Nevertheless, a factor analysis of seven of the non-redundant measures was performed (Williams, 1978) and showed that four separate measures expressed about 75% of the variability in the seven measures. These were selected to form an index that was termed the “public library development index”. The index was formed by simply adding the per capita or similar scores for each variable for each library. Thus each library has a library development index score. The variables included are:

- Library staff per 1,000 population served
- Library expenditures (excluding capital expenditures) per capita
- Books in the collection per capita
- Circulation per capita

Per capita (or similar) expressions of the measures were used to eliminate any bias reflected by the size of the library. The data used for the 1980 study consisted of the 1974 national sample of public libraries in the U.S. (n=1441) conducted by the National Center for Education Statistics for the U.S. Office of Education. (Eckard, 1978)

These same four variables (using per capita or similar expressions) were again examined for this study to determine whether they also had similar explanatory power of the complexity of public library development. For this study, the data consisted of the 2008 national survey of public libraries in the U.S. conducted by the Institute of Museum and Library Services (IMLS). This is a population study of all public libraries in the U.S. and has a response rate of approximately 98% (Institute of Museum and Library Services, 2008), N=9,219. IMLS reports all public library data at the level of the individual library, which
can vary considerably in geographical coverage, including city/incorporated area, county, multi-county regional library, or other political configuration. The data for these four variables were downloaded to a statistics package, converted to per capita or similar measures, and the correlations and factor analysis conducted. Analysis of the 2008 data showed similar correlations and factor loading as in the 1978 and 1980 studies.

While no single measure taken at one point in time can completely capture the history and complexity of a public library, the library development index described here does appear to have both reliability and validity. It contains information on four of the vital characteristics of the status and capabilities of the library and it has empirical support based on previous studies.

**Community Religious Orthodoxy: Definition and Data Collection:**

As noted above, this study examines the theoretical rationale that as the percentage of the community served by a public library increases in the number of persons who hold orthodox (or fundamentalist) religious views the level of public library development will decline. Conversely, as the percentage of the community holding more moderate religious views increases the level of public library development will increase. The reasoning is that the non-orthodox individuals will have a greater need for seeking religious information in books and libraries and provide support for and use the community’s public libraries. Individuals with orthodox, or fundamentalist, views will tend to rely on Biblical or church authority and not consult or depend on public libraries for their religious information.

Religious orthodoxy has been of considerable interest to scholars for a number of years. Work by Glock and Stark (1968) established the “Orthodoxy Index,” which classified people according to the degree to which their religious commitment was reflected in belief. Some of the belief items they selected to measure respondents on the index were: the existence of a personal god, the divinity of Christ, the authenticity of Biblical miracles, and the existence of the Devil. Glock and Stark then ranked Christian denominations according to the degree of orthodoxy of belief. The orthodoxy index developed by Glock and Stark has not been without controversy in the sociology of religion literature. Objections include theological considerations as well as the adequacy of the term to describe modern religious denominations. Later studies (Stark and Foster, 1970; Sheehy, 1975) have added considerable validity to the index and the procedures used for ranking denominations.

Glock and Stark initially ranked 15 denominations and this was then expanded by Williams (1978) to 49 Christian denominations using the same ranking system and additional reliance on the denominational statements appearing the annual editions of the *Yearbook of Churches* and the *Handbook of Denominations*. Both of these sources continue to be published regularly (now the *Yearbook of American and Canadian Churches* and *Handbook of Denominations in the United States*) and were used in this study to allocate Christian denominations on the Orthodoxy Index described below. Information about denominations not included in the 1978 study, but considered in this study, was also drawn from Internet sites associated with them to assist with their ranking. Generally, in these cases, as previously described, orthodoxy was determined by evaluating the denomination’s stance on the inerrancy of Scripture, the real existence of Satan, the divinity of Jesus Christ, Biblical miracles, and the nature of the
individual member’s understood relationship to God. For example, in addition to the previously stated factors, denominations which required a “personal relationship with Jesus” as necessary for salvation would likely be considered more or “most” orthodox as explained further below. To a much lesser extent, the denomination’s history and position on social and moral issues was also taken into consideration in cases where appropriate classification required additional analysis.

The data used in the construction of the Orthodoxy Index employed in this study were initially collected by the Association of Statisticians of American Religious Bodies (ASARB) in 2000. (Jones, et.al., 2002.) The ASARB researchers invited all religious bodies that could be identified as having congregations in the U.S. to participate. A total of 149 religious bodies participated, including 139 Christian denominations, associations or communions, representing 268,254 congregations. ASARB researchers estimate that 50.2% of the U.S. population was included in the study. The major missing Christian religious bodies were the historically African-American denominations, which declined to participate. After publication of the data they were deposited with the Association of Religion Data Archives (ARDA) and are available free of charge to interested researchers. Full details on the study, including methodology, documentation, and code book, are available from ARDA (ARDA, 2011). Data are available at both county and state levels but this study used only the county level data.

This study examined only data for the 139 Christian denominations, though the larger file does contain data on an additional ten religious, non-Christian, bodies. Using the collected data, ASARB researchers estimated the number of adherents for each denomination in each of the counties in the U.S. (An extended discussion and explanation of the definition of “adherents” appears in Jones, et.al., (2002)). The data were checked and cross-checked with previous similar surveys, denominational contacts, and with U.S. Census data.

Using the procedures described above in the discussion of how religious orthodoxy is defined, all 139 Christian religious bodies were then allocated to one of three categories of orthodoxy: least orthodox, medium orthodox, most orthodox. This resulted in 9 denominations categorized as least orthodox, 41 categorized as medium orthodox, and 89 denominations as most orthodox. Totals number of adherents for each category of orthodoxy, by county, were then calculated and used in the analysis reported below.

Data Collection Problems and Measurement Error:

The library data collected by IMLS consists of at least 100 separate variables on a variety of aspects about each public library. These data are reported by state, name of library, and corresponding Federal Information Processing Standards (FIPS) code. The FIPS code is reported at a geographical level that exactly matches the library service area, which may be a village, incorporated or unincorporated area, city, school district, county, or multicounty area for libraries that serve more than one county (such as regional libraries). The religious denominations data collected by ASARB are only reported at the county level, using the associated FIPS county code. What this means is that when one tries to match the library data to the religious denominations data, using the FIPS county code, there is not an exact match between the two geographical areas being compared. This sometimes results in the FIPS county codes
being used more than once for the religion data and sometimes not used at all for the religion data. It also means that in a couple of states in the library data there is not a corresponding FIPS county code (it having been reported as a regional, or multi-county, library). This was a particularly severe problem with the Arkansas data resulting in the elimination of 42 libraries. There were also minor problems with Alaska (2 libraries), California (1 library) and Colorado (1 library).

This “mismatch” between geographical codes for areas in the library data and the geographical codes in the religion data results in an unknown amount of measurement error. It is unknown because there is no statistical process for measuring the error caused by this problem. However, to obtain some understanding of the amount of error, we extracted all county-only library records (n=907) and ran the same kinds of correlations reported below. The result is that the correlations for this subset of libraries, measured exactly at the appropriate geographical level for the library data and the religion data, are approximately the same. Thus, while there is still some measurement error it is apparently not severe.

**Study Hypotheses:**

(1) As the library development index for communities increases it will be **positively** associated with:

--increases in the percentage of the population in the library service area belonging to the least orthodox denominations

--increases in the percentage of the population in the library service area belonging to the medium orthodox denominations

(2) As the library development index for communities increases it will be **negatively** associated with:

--increases in the percentage of the population in the library service area belonging to the most orthodox denominations

(3) As the library development index for communities increases it will be **positively** associated with:

--increases in the percentage of the population in the library service area that are adherents to a Christian denomination

(4) As the library development index for communities increases it will be **negatively** associated with:

--increases in the percentage of the population in the library service area that are **not** adherents to a Christian denomination

**A Note on Correlation and Causation:**
The Pearson Product Moment correlation test measures the degree of association between two variables measured at the ordinal or ratio levels. A correlation, negative or positive, does not imply causation. However, if one variable does cause, or affect, in whole or part another variable it must be correlated with the other variable. The hypotheses above do not imply causation but instead simply state whether the two variables are positively or negative associated with each other.

Study Results:

The 1978 Study Results:

The 1978 study (Williams, 1978) used national sample data (n=1,441) collected by the NCES on public libraries in the U.S. The library development index was constructed in a manner similar to that reported above. The 1978 study used 1971 national sample data on 49 Christian denominations representing approximately 80% of the Christian church membership. The study was initially conducted by the National Councils of Churches of Christ in the United States and made available via the Inter-University Consortium for Political and Social Research (1978). Procedures for allocating each denomination along the least orthodox to most orthodox scale is the same as reported for the 2011 study.

Table 1. Pearson Product Moment correlations between the library development index and the three categories of orthodoxy and the Christian/not Christian dichotomy: 1978 study

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent in least orthodox churches</td>
<td>.496*</td>
</tr>
<tr>
<td>Percent in medium orthodox churches</td>
<td>.592*</td>
</tr>
<tr>
<td>Percent in most orthodox churches</td>
<td>.003**</td>
</tr>
<tr>
<td>Percent in all 49 Christian denominations</td>
<td>.532*</td>
</tr>
<tr>
<td>Percent not in any of the 49 Christian denominations</td>
<td>-.532*</td>
</tr>
</tbody>
</table>

*significant at .05; **not significant at .05

Brief Discussion of the 1978 study results:

The theoretical rationale tested in the 1978 study was that as strength of religious orthodoxy (measured here at three levels from least to most) increased in communities the level of library development would decrease. The results show that this is not a straightforward relationship. As the percentage of adherents in the least orthodox Christian churches increases level of library development does increase. However, that relationship is not as strong as the one for the medium level orthodox churches and there is no relationship between the most orthodox category and library development. An alternative measure, percent in the community that are Christian or not Christian shows strong relationships: a positive association with library development as the percent of Christians in the community increases and a negative relationship as the percentage of non-Christians in the community increases.

The 2011 Study Results:

Table 2. Pearson Product Moment correlations between the library development index and the three categories of orthodoxy and the Christian/not Christian dichotomy: 2011 study
<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent in least orthodox Christian churches</td>
<td>-.092**</td>
</tr>
<tr>
<td>Percent in medium orthodox Christian churches</td>
<td>-.014**</td>
</tr>
<tr>
<td>Percent in most orthodox Christian churches</td>
<td>-.233*</td>
</tr>
<tr>
<td>Percent in all 49 Christian denominations</td>
<td>-.229*</td>
</tr>
<tr>
<td>Percent not in any of the 49 Christian denominations</td>
<td>.229*</td>
</tr>
</tbody>
</table>

*significant at .05; **not significant at .05

**Brief Discussion of the 2011 Study Results:**

The theoretical rationale for the 2011 study was the same as the 1978 study and the variables were measured in the same way. The two major differences in the 2011 study are the inclusion of 139 Christian denominations and a much larger number of public libraries (N=8,169). The correlations, however, for the 2011 study are quite different: the relationships between library development and the least and medium orthodox communities is weak and slightly negative while the most orthodox is strongly negative. The findings for the percent of the community in all Christian denominations is strongly negative while the percent not in any of the Christian denominations is strongly positive. These two results are completely opposite from the 1978 study.

**Summary of Results for Hypothesis Testing:**

1. A positive association between increases in the library development index and increases in the percent of the community in the least and medium orthodox Christian churches:

   --Accept the hypothesis for the 1978 study but reject it for the 2011 study

2. A negative association between the increases in the library development index and increases in the percent of the community in the most orthodox churches:

   --Reject the hypothesis for the 1978 study but accept for the 2011 study

3. A positive association between increases in the library development index and increases in the percent of the community in Christian denominations:

   --Accept for the 1978 study but reject for the 2011 study

4. A negative association between increases in the library development index and the percentage of the population in Christian denominations:

   --Accept for the 1978 study but reject for the 2011 study

**Religious Orthodoxy and Public Library Development: Study Conclusions**

This report compares two different studies, completed 33 years apart, testing the same theoretical rationale: that as the percentage of the population in a community increases in religious orthodoxy, or fundamentalism, level of public library development will decrease. The variable, religious orthodoxy, was measured at three different levels, least, medium, and most orthodox. The allocation of a Christian
denomination to one of these categories was based on information they supplied in a variety of publications that described their religious beliefs. An alternative measure to religious orthodoxy, percent Christian/not Christian in the library service area, was also examined to determine how it related to library development. The data on libraries was collected by agencies of the U.S. government. Four different variables that measured their financial support, service activities, and collection size were combined to form the library development index.

It is clear from the hypothesis testing results that the relationship between increasing levels of library development and increasing religious orthodoxy in the area served by the library is not uniform. It is also clear that between 1978 and 2011 the relationships between religious orthodoxy and library development changed. In 1978, the relationship between library development and the percentage of the population in the least and medium orthodox churches was positive. In 2011 it was much weaker and almost nonexistent. In 1978, the relationship between library development and the percentage of the population in the most orthodox churches was very low and almost nonexistent. By 2011, this relationship had become strongly negative. The relationship between library development and the percent of the population in or not in the Christian churches also switched. In 1978, the percent of the population in the 49 Christian churches was positively associated with the level of library development index but by 2011, with 139 denominations in the study, the relationship was strongly negative.

There are doubtless many potential explanations for these differences in results from the 1978 study to the 2011 study. Certainly measurement errors in both library development and religious orthodoxy could be one potential explanation. However, we prefer to note the continuing growth of orthodox Christianity in the U.S. and the continuing decline in the percent of the population “adhering” to any Christian denomination. ARDA reports that those who never or seldom attend church services has continued to increase since the 1970’s and in 2008 was about 41.2%. Similarly, strength of religious affiliation continues to decline. (Association of Religion Data Archives, 2011) These statistics could account for the differences in results noted here. An additional factor that could also be at work is the high rate of denominational “switching” that continues to take place in American religious life (Pew Forum, 2008).

The concepts public library development and religious orthodoxy are difficult to define and measure. The definition offered here for each concept is only one of the possibilities. The library development index does have some degree of reliability and validity based on earlier studies (Williams, 1978, 1980-81) but certainly needs more study. The concept of religious orthodoxy does have considerable validity and reliability but is always open to further study and testing. We hope that other researchers will follow up on our work and continue the study of how religious orthodoxy affects, either positively or negatively, public library development.

References:

Association of Religion Data Archives. Quick Stats. (2011). Available: http://www.thearda.com/QuickStats/ (Note that ARDA collects statistical charts and tables from a variety of sources with particular use of surveys such as the General Social Survey.)


Institute of Museum and Library Services (2008). Public Library (public use) data files. Available at: http://harvester.census.gov/imls/data/pls/index.asp (All data files and associated documentation are available for downloading at this site.)


