

Data Analysis: Factors Relating to Hispanic Library Materials

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As part of a group research effort, we took a collection of data on public libraries, their population makeup, budgets, and book availability, and analyzed it for factors that appear to correlate (positively or negatively) to Hispanic/Latino themes in literature holdings. While we were provided with the raw data, it was up to us to choose how to make use of it in drawing conclusions, as well as adjust for any inaccuracies or inconsistencies in the data source. In addition to the data, we were also provided with two research questions to consider:

- 1) *Are there indications that high quality children's materials featuring Hispanic/Latino themes and characters are readily available in U.S. public libraries?*
- 2) *What factors seem to coincide with the availability of those materials?*

The former is objectively determinable through our data; the study uses sixteen specific titles as quality material, and their regular presence (or lack thereof) can be used as an indicator of general availability. The latter question, however, is one that requires more analysis (and at best, we can only show correlation, not causation), and will be discussed more thoroughly.

Data Concerns

While processing the data, we discovered several issues that may have tainted our results if not addressed. The first was invalid entries in the spreadsheet fields for title availability; the data was provided with the understanding that each title was represented via a binary variable. Either the library had the book (represented as a "1" in the field,) or did not (a "0"). Some fields, however, contained other numerical values. We can make guesses about the meaning there (perhaps a value of "4" indicates four copies of the book are held,) but guessing is a poor research methodology. The following libraries contained this invalid data:

Ada County District	Campbell County Public Library ²
Albany Public Library (Washington)	Canton Public Library
Albany Public Library (14th)	Carlsbad City Library
Cambria Sys Admin Unit ¹	Carmel Clay Public Library
Cambridge Public Library	

1. *Online catalog unavailable*

2. *Numbers in data set do not match holdings, but confirmed to have*

By checking the publicly available catalogs for these libraries, we were able to confirm that those erroneous values were, indeed, representative of total copies held (in most cases, as noted above.) We are still only interested in the presence or lack thereof, and thus treated the values above as "1s" while working with the data set further, but by auditing the data ourselves, we were able to ensure its accuracy to a more reasonable degree.

The second—and more confounding—error was with the Martin Memorial Library, where a number of data fields (including population, available income, total staff, and circulation) were listed as “-3”. The data, however, comes from the Institute of Museum and Library Services’ *Fiscal Year 2017 Public Libraries Survey*, where the appendix indicates that a value of -3 indicates the site is “closed or temporarily closed administrative entry” (A-2). By conferring with classmates and searching the [updated 2017 survey document](#), we were able to determine the correct information, as follows:

Table 1: Martin Memorial Library Data

<i>POPULATION</i>	<i>MASTER</i>	<i>TOTAL STAFF</i>	<i>TOTAL INCOME</i>	<i>VISITS</i>	<i>TOTAL CIRC</i>	<i>EBOOK</i>	<i>GP TERMS</i>	<i>PITUSR</i>
241,593	14.5	102.5	\$6,758,082	620,266	1,229,027	48,630	109	130,446

While we cannot be sure there are no further errors in the data set, nothing else overtly out of place was noticed, and we continued working.

Data Analysis: Results

In relation to the question of availability of children’s materials with Hispanic/Latino themes, we looked at several metrics: the average number of the indicator titles held by each library, the number of libraries holding each title (Figure 1), and the frequency distribution of said titles (Table 2, Figure 2). We found that the average (mean) titles held by each library is 10.584, while the median number is 12. Likewise, the frequency table shows the same—just over half of the libraries have at least twelve of the sixteen indicator volumes. Thirty-seven libraries (7%) held all sixteen, while 12 held none of them.

Regarding the second question—factors coinciding with availability of materials—we analyzed the data for percentage of population identifying as Hispanic/Latino, as well as the library’s total yearly budget and budget per capita served. In order to manage this information in discrete groups, we divided it into quartiles and calculated averages and availability based upon those. Table 3 includes the total budgets, per-capita budgets, and Hispanic population of each quartile, as determined in the attached spreadsheet. (For example, the fourth quartile’s library with the highest yearly budget is \$16M, while the first quartile’s wealthiest sees \$1.3M.) We chose to derive and work with budget-per-capita as well as total income because it provides a normalized base that accounts for the fact that larger libraries will naturally have more titles available in general.

Table 2: Holdings Frequency

# of Titles	Holding Exactly	Holding at Least
0	12 2%	500 100%
1	9 2%	488 98%
2	12 2%	479 96%
3	9 2%	467 93%
4	15 3%	458 92%
5	17 3%	443 89%
6	14 3%	426 85%
7	31 6%	412 82%
8	24 5%	381 76%
9	23 5%	357 71%
10	40 8%	334 67%
11	38 8%	294 59%
12	47 9%	256 51%
13	55 11%	209 42%
14	57 11%	154 31%
15	60 12%	97 19%
16	37 7%	37 7%

Table 3: Quartile Information (as maximum per quartile)

	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Hispanic Pop. (as percentage)	3.27%	6.25%	16.52%	90.63%
Total Income (yearly)	\$1,361,554	\$2,533,994	\$4,147,328	\$16,889,497
Budget per capita served	\$17	\$31	\$51	\$201

In Figures 3 and 4, we compare frequency of holdings to Hispanic/Latino population and by income (against the average holdings, represented by the red “overall” line), finding that variance is substantially greater as funding fluctuates compared to ethnicity of the served population. The libraries serving the highest portion of Hispanic/Latino patrons even had fewer of the indicator books than the average in a number of cases. The greatest frequency of holdings belongs to libraries with the greatest funding and budget-per-capita, holding 81% and 79.9%, respectively, of the indicator titles.

Limitations on our data include the lack of population percentages for non-Hispanic/Latino ethnicities, and the fact that we do not know the means by which the libraries in this dataset were selected; there are 9,057 public libraries in the United States (IMLS, 2017) and we are only looking at 500 of them. While this sample size is generally acceptable for a population of this scope (Leedy & Ormrod, p. 214), it does require it to have selected via unbiased sampling and we do not know that to be the case.

Conclusions

As one of the fastest-growing ethnic groups in the country (Flores et al., 2019), it is important our libraries are addressing the needs of Hispanic/Latino readers. Children—within any community—benefit from having access to books that represent their culture, where they can see characters who look, act, and speak like themselves. According to Nilsson, “multicultural literature may hold the potential to benefit everyone; mainstream and minority children alike may learn to function more effectively in an increasingly pluralistic society” (2005, p. 535). Since public libraries are often a major source of access to reading materials for this population (Ruhlmann, 2014), it is essential public libraries have a depth and breadth of unique children’s materials for them. Based on our analysis of the data from this study and interpretation of the results, it is evident that an assortment of high-quality children’s materials featuring Hispanic/Latino themes and characters are available in the majority of public libraries surveyed.

Although we expected libraries that served communities with higher Hispanic populations would have more of the titles from the list, that is not what the patterns revealed. The number of titles present at each branch does not vary significantly based upon the percentage of the Hispanic population, instead fluctuating most significantly with the size of their budget. Based on the charts and analysis of the results, libraries with bigger budgets are more likely to have a

higher number and wider selection of titles of Hispanic books, regardless of the ethnic makeup of those they serve. It makes sense that the libraries with the largest budgets would hold the highest number of titles; however, Figure 5 shows several related issues that should be considered.

While looking at holdings based on Hispanic/Latino population divided into quartiles did not show a strong correlation, looking at the population ethnicity directly shows that the vast majority of libraries serve a very small ethnic population. Of the 500 libraries surveyed, 309 serve a population that is less than 10% Hispanic/Latino; given that these groups make up 18.3% of the US population (US Census, 2018), they are not representative of the larger population. And areas that serve larger Hispanic/Latino populations generally see a decrease in funds available, meaning that there does remain a link between the ethnic representation in a population and the likelihood of libraries carrying relevant children's literature, albeit an indirect one. This correlation is important because it identifies an inequity of access that needs further study and action.

References

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Appendix: Figures

Figure 1: Percentage of Libraries Holding Each Title

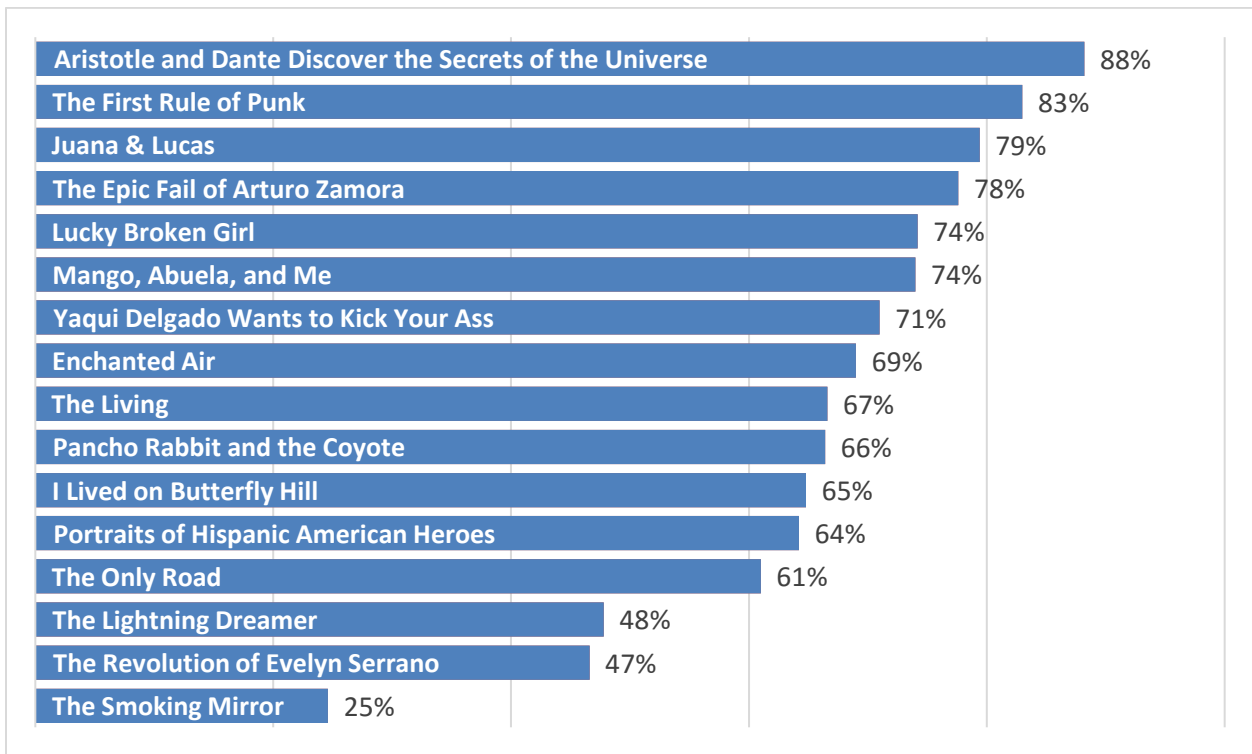


Figure 2: Frequency of Holdings Distribution, total

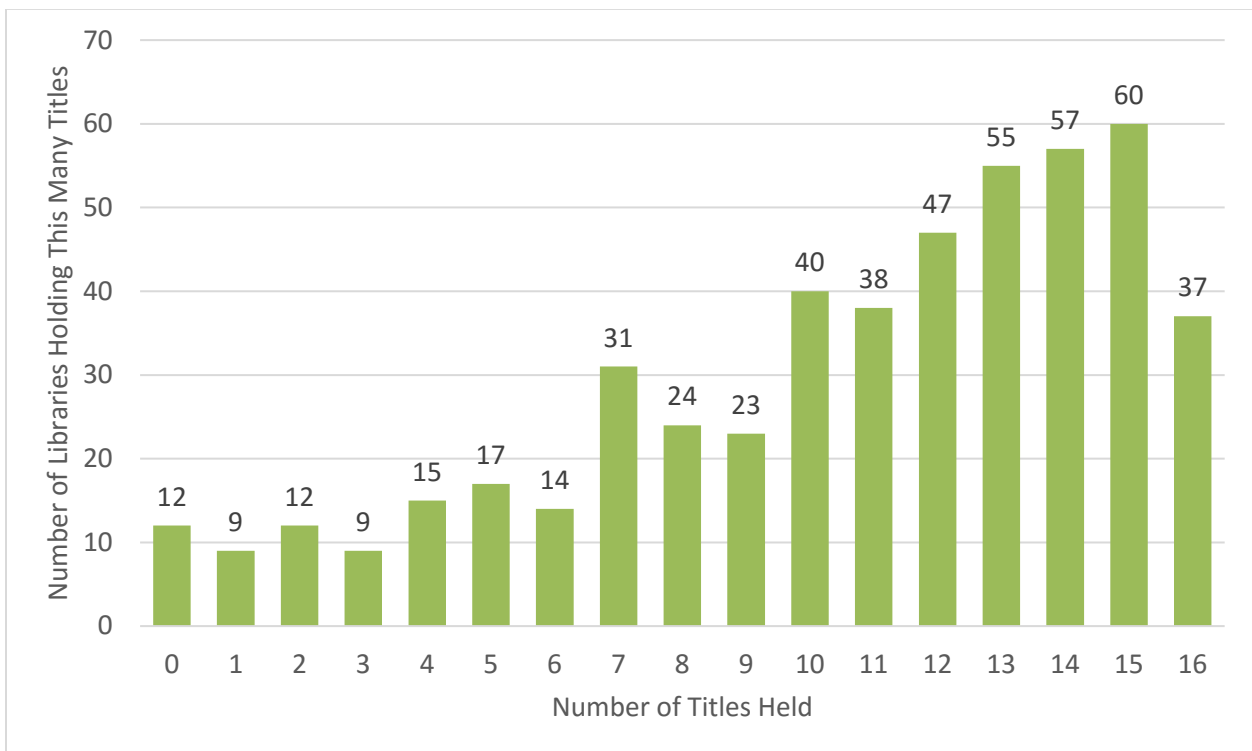


Figure 3: Minimum Number of Titles Held, by Income Quartile

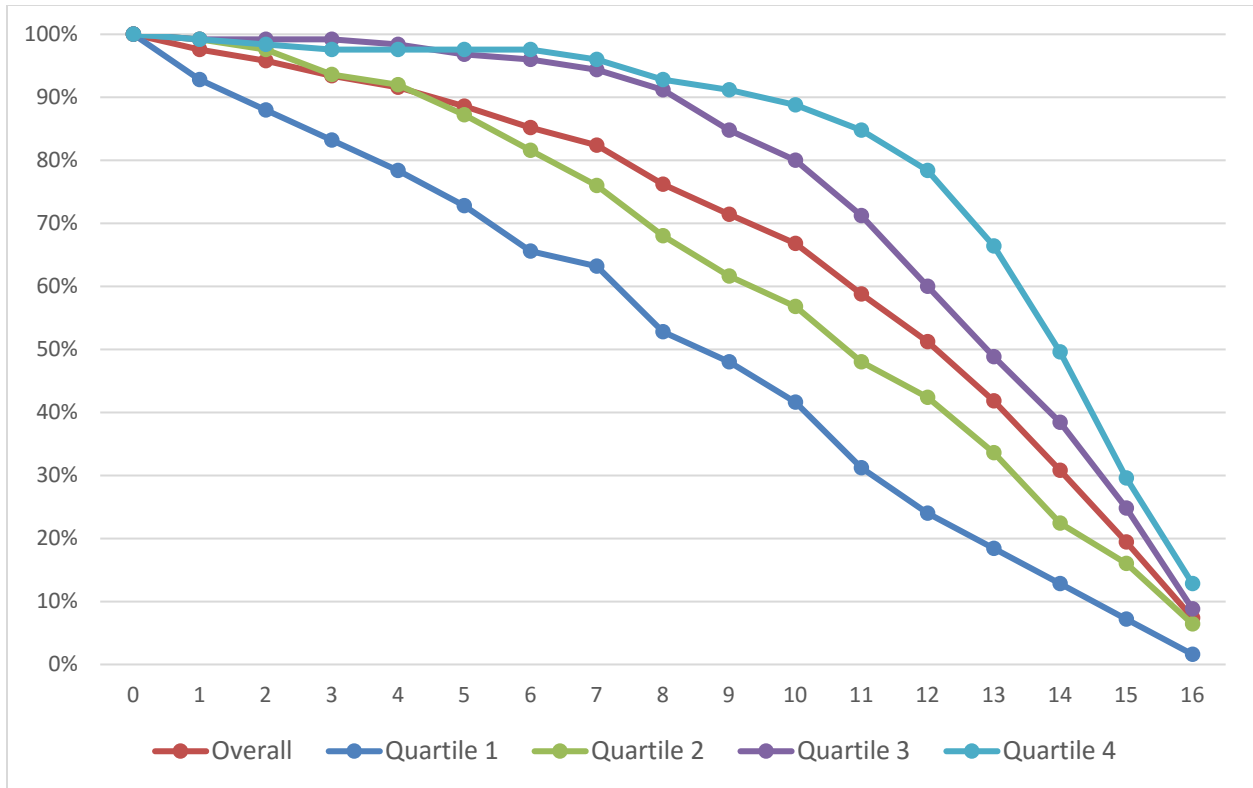


Figure 4: Minimum Number of Titles Held, by Hispanic Population Quartiles

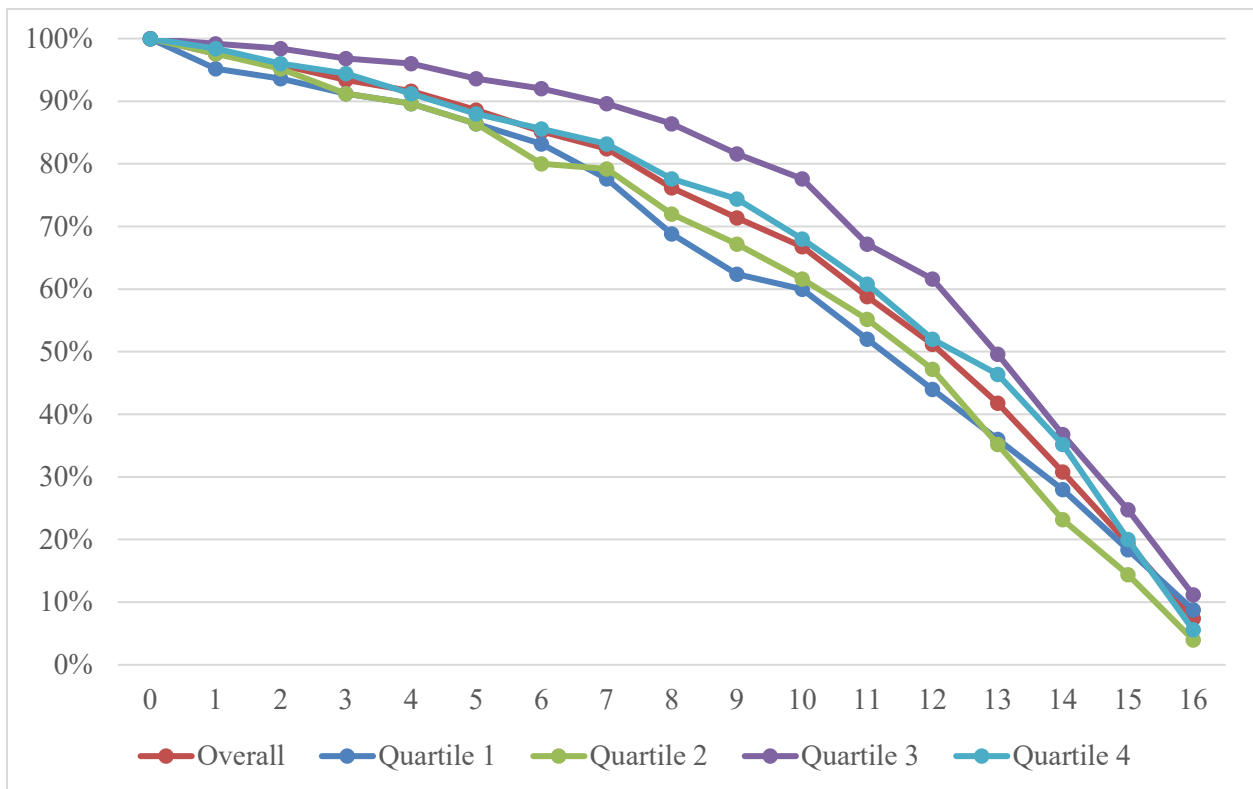


Figure 5: Hispanic Population of Service Area Compared to Per Capita Budget Average

