Unemployment and Public Library Usage in the United States: Evidence from Before and During the COVID-19 Pandemic

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Abstract

Scholars and policymakers have long argued that public libraries offer essential community resources during times of economic strife. However, to our knowledge, most of this evidence has been anecdotal or correlational. Using Public Library Survey, Bureau of Labor Statistics, and Business Dynamic Statistics Datasets, we present causal estimates of the effect of regional unemployment on local public library usage. From OLS and instrumental variable models, we find that from 2008 to 2018, increased rates of unemployment led to increased visits at local libraries. However, from 2019 to 2022, COVID-related unemployment caused a reduction in library visits, but not use. Reflecting on various dimensions of community need and library resources, we contextualize our results in the broader literature on public libraries as valuable economic resources.

Introduction

In 1986, Stephen James explored the concept he called the "librarians' axiom": the idea that public library use increases during economic downturns. James' research led him to conclude that there was no relationship between the two, but librarians and scholars have continued to ask the question as economies have fluctuated. As researchers began to study the effects of the 2008 recession in both the US and the UK, statistics began to show that public library use was increasing during this particular economic downturn. The librarians' axiom began to take shape beyond the anecdotal as circulation and visitor statistics showed upward trends from 2007-2009. The research into public library use during this period led most researchers to the same conclusion: public libraries must continue to be funded given their importance to their community. This paper explores the effects of the 2008 recession and the COVID-19 pandemic on public library use across the United States through unemployment data. Rather than offering descriptive statistics, this paper uses causal inference to examine the types of services that are used most frequently during economic downturns and periods of higher unemployment to provide a model for public libraries' programming and allocation of resources for the future.

Data and Methods

I. Data

i. Public Library Survey Data (PLS)

The study uses annual data from the Museum and Library Services (IMLS) Public Libraries Survey, covering over 9,000 U.S. libraries. It includes details on library collections, staffing, finances, visits, and circulation. Our analysis focuses on data from 2008 to 2022 across all states and D.C.

We draw on a range of library-level variables reported in the PLS. These include service usage metrics such as total annual library visitors and total circulation. Future analyses will make use of children's circulation, registered users, public internet computer use, and website visit data.

ii. Unemployment Indicators

We used monthly unemployment data from Federal Reserve Economic Data (FRED). We averaged each year's monthly rates to get annual state-level unemployment rates. These were then merged with PLS data from 2008 to 2022 for analysis.

iii. Establishment Death Data

To identify causality, we use an instrumental variable approach with county-level establishment death data from 2008-2022 as an instrument for unemployment. Due to data limitations, Connecticut libraries are excluded from this analysis.

II. Methods

i. Baseline Model

We begin by estimating simple panel fixed effects models given by the following equation:

$$Y_{i,s,t} = \beta_1 Unemployment_{s,t} + \beta_2 X'_{i,t} + \gamma_i + \alpha_t + \epsilon_{i,s,t}$$

i is a subscript that represent individual libraries reporting to PLS, s for state, and t for years

α_t is year dummies

$X'_{i,t}$ is vector of covariates

γ_i is library-level fixed effect, controls for time invariant unobserved heterogeneity through the individual specific effect

$Y_{i,s,t}$ is outcome variable for library i, in state s, at year t

ii. Instrumental Variable Approach

To identify a causal relationship between unemployment and library usage, we use annual county-level establishment death data as an instrument for unemployment. This affects regional unemployment, but not library usage.

Results

Table 1: Total Annual Visits before and during COVID

Dependent Variable = Total Annual Visits

	2008 to 2018		2019 to 2022	
	OLS	Instrumental Variable	OLS	Instrumental Variable
Unemployment Rate	4890.226***	47.997	-1186.251	-397581.420***
	(445.126)	(2110.504)	(1103.592)	(49278.887)
Book Volume	0.608***	0.473***	0.892***	0.992***
	(0.008)	(0.021)	(0.039)	(0.097)
Ebook Volume	-0.148***	-0.038**	-0.020***	-0.044**
	(0.007)	(0.017)	(0.007)	(0.019)
Audio Volume	-0.002***	-0.001	0.007*	0.012
	(0.001)	(0.001)	(0.004)	(0.010)
Video Volume	-0.351***	-0.267***	0.097**	0.208*
	(0.037)	(0.064)	(0.048)	(0.118)
Has Branch Libraries	-27406.460***	-30540.295***	-49052.448**	-38631.592
	(4687.485)	(8033.443)	(19058.143)	(47491.503)
Has Bookmobile	22143.967***	-17585.543**	-37416.070***	-59736.195**
	(3812.458)	(8037.271)	(11571.693)	(28438.539)
Total Librarians	968.483***	260.501	-2002.209***	-2186.488**
	(114.584)	(211.595)	(404.442)	(988.924)
Total Hours Open	21.311***	21.994***	38.857***	32.936***
	(0.401)	(0.694)	(0.324)	(1.083)
Total Income (State, Federal, Local)	-0.025***	-0.024***	-0.049***	-0.052***
	(0.000)	(0.001)	(0.001)	(0.003)
Legal Service Area Population	-0.140***	-0.140***	-2.085***	-2.460***
	(0.016)	(0.027)	(0.162)	(0.398)
Urban	47.997	19000.321***	6667.523	-38350.691
	(2110.504)	(4216.517)	(18602.247)	(46310.723)
Number of Observations	94,821	91,842	35,647	34,579
Number of Groups	9,426	9,228	9,234	9,038
R-squared:				
Within	0.197	.	0.468	.
Between	0.858	0.669	0.005	0.039
Overall	0.840	0.617	0.034	0.009

- OLS (2008 to 2018): a 1 percentage point increase in unemployment was associated with 4,890 more visits per year. IV (2019 to 2022): a 1 percentage point increase in unemployment reduced visits by 397,581 per year

Figure 1: Total library visits by state across the U.S. in 2018

Results (continue)

Table 2: Total Annual Circulation before and during COVID

Dependent Variable = Total Annual Circulation

	2008 to 2018		2019 to 2022	
	OLS	Instrumental Variable	OLS	Instrumental Variable
Unemployment Rate	4306.258***	-60335.465***	1488.255	118242.532***
	(585.287)	(17922.721)	(1123.817)	(24959.351)
Annual Visits	0.460***	0.479***	0.464***	0.468***
	(0.004)	(0.007)	(0.006)	(0.008)
Book Volume	0.262***	0.299***	0.124***	0.092*
	(0.011)	(0.016)	(0.040)	(0.049)
Ebook Volume	0.085***	0.048***	0.052***	0.060***
	(0.009)	(0.014)	(0.008)	(0.009)
Audio Volume	-0.005***	-0.005***	-0.009**	-0.010**
	(0.001)	(0.001)	(0.004)	(0.005)
Video Volume	0.775***	0.751***	0.099**	0.065
	(0.049)	(0.053)	(0.049)	(0.060)
Has Branch Libraries	26873.589***	28627.065***	-42898.745**	-47898.486**
	(6158.220)	(6753.277)	(19409.424)	(23865.093)
Has Bookmobile	-49387.145***	-36618.560***	36094.383***	40536.563***
	(5008.636)	(6802.635)	(11785.838)	(14297.067)
Total Librarians	4741.759***	5020.621***	5163.752***	5276.169***
	(150.571)	(177.229)	(412.036)	(497.190)
Total Hours Open	-2.804***	-3.251***	21.106***	22.762***
	(0.536)	(0.602)	(0.410)	(0.598)
Total Income (State, Federal, Local)	-0.005***	-0.005***	0.010***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
Legal Service Area Population	0.150***	0.152***	-1.826***	-1.708***
	(0.021)	(0.023)	(0.166)	(0.201)
Urban	3168.627	-3592.062	7320.053	21659.378
	(2772.386)	(3591.751)	(18942.794)	(23272.027)
Number of Observations	97,771	91,792	35,647	34,579
Number of Groups	9,426	9,228	9,234	9,038
R-squared:				
Within	0.164	0.048	0.483	0.277
Between	0.798	0.754	0.628	0.584
Overall	0.779	0.726	0.587	0.537

Note: Individual fixed-effects and year dummies included in the model. Connecticut libraries are not included in instrumental variable models because county-level establishment death data are not given. Standard errors given in parenthesis; *** indicates p < 0.01, ** indicates p < 0.05, * indicates p < 0.1

- IV: From 2008 to 2018, a 1 percentage point increase in state-level unemployment reduced circulation by 60,335 items per year. However, from 2019 to 2022, a 1 percentage point increase in state-level unemployment increased circulation by 118,242.

Conclusion

This study uses public library data on visits and circulation to provide a roadmap of resources utilized during periods of unemployment. Next steps include adding analyses of program attendance, inter-library loan usage, computer usage, and types of media circulated. Combined with data from the COVID-19 pandemic, when physical visits to the library decreased, this information provides public libraries with a framework for prioritizing programming and acquisitions to align with economic changes. Results uphold the "librarians' axiom," but move beyond correlations to provide actionable data for public libraries' future planning.

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