EDA: COVID-19's Impact on US Libraries (2017-2020)

January 2023

Our Team

Vanessa Walden

Olivia Montesano

Mary Marcontell

Gabriela Lopez

Nicole Campos

How has COVID-19 impacted US library services and patronage?

Who will this inform?

This analysis may assist **library directors, policymakers, activists, and educators** in making informed decisions about the strategic management and support of libraries.

Objectives & Methodology

Key Questions

After the COVID-19 pandemic began:

- How did per capita expenditures change?
- How did library patronage change?
- Is there a correlation between expenditures and library usage?

Approach

Use annual US survey data from the [Institute of Museum and Library Services](), which examines when, where, and how library services are changing to meet the needs of the public. These data are supplied annually by 17,000 public library systems across the United States and its territories.

Link to proposal; Link to repository

Data Processing

Software / Libraries: Jupyter Notebooks, Pandas, Numpy, Matplotlib, Scipy.stats

Manipulations Conducted:

- Cleaned the data to include only the columns we needed (out of 179 columns available)
- Created data frames for each year
- Merged the data frames into a single dataframe
- Collapsed regions based on US Census Five Regions
- Calculated per capita: expenditures, library visits, and registered users
- Ran regressions to understand variable relationships

|	STABR	STARTDAT	ENDDATE	POPU_LSA	OBEREG	TOTOPEXP	TOTINCM
0	AK	01/01/2016	06/30/2017	649636	8	36314818	38350520
1	AL	10/01/2016	09/30/2017	4858979	5	103451548	110021023
2	AR	01/01/2017	12/31/2017	2925255	5	77694876	83910305
3	AS	10/01/2016	09/30/2017	60300	9	353951	407986
4	AZ	07/01/2016	06/30/2017	10986792	6	180628098	191756420

Study Limitations & Challenges

Notably, several limitations arose in reviewing the raw survey data (meaning, results should be interpreted directionally):

- Survey field dates are not the same for every library, meaning the variability we see in the data may be due in part to different survey fielding periods
  - Similarly, budget data is recorded during different time periods for each library
- The survey uses self-reported data, which is subjective and imprecise
- Library visit count may be inaccurate (e.g., people exiting the facility and returning later would count as two separate visitors)
- Web visits were not tracked until 2018
- 2021-2022 library data were unavailable to compare and further illustrate COVID-19's impact
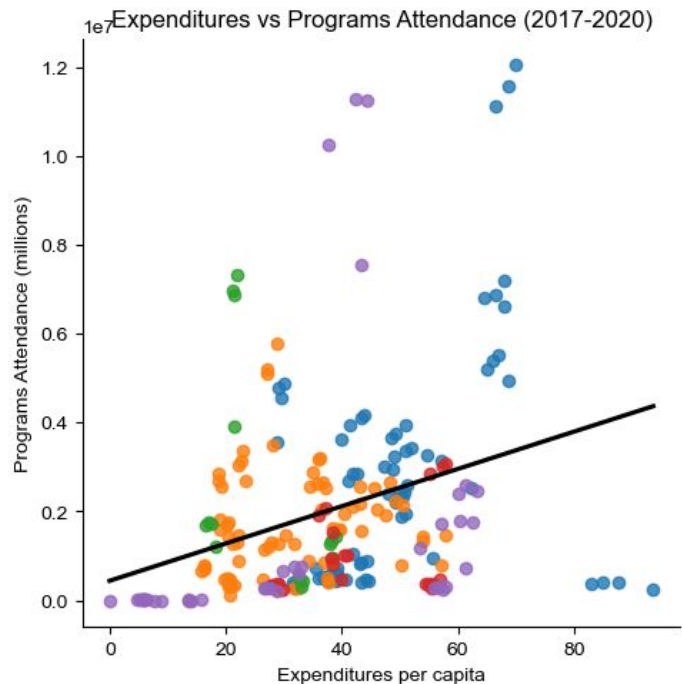
Data Analysis and Visualizations 📊

Southwest users and expenses are higher than all other regions; southeast expenses are the lowest.

Average Registered Users Per Capita (2017-2020)

Per Capita Library Expenditures (2017-2020)
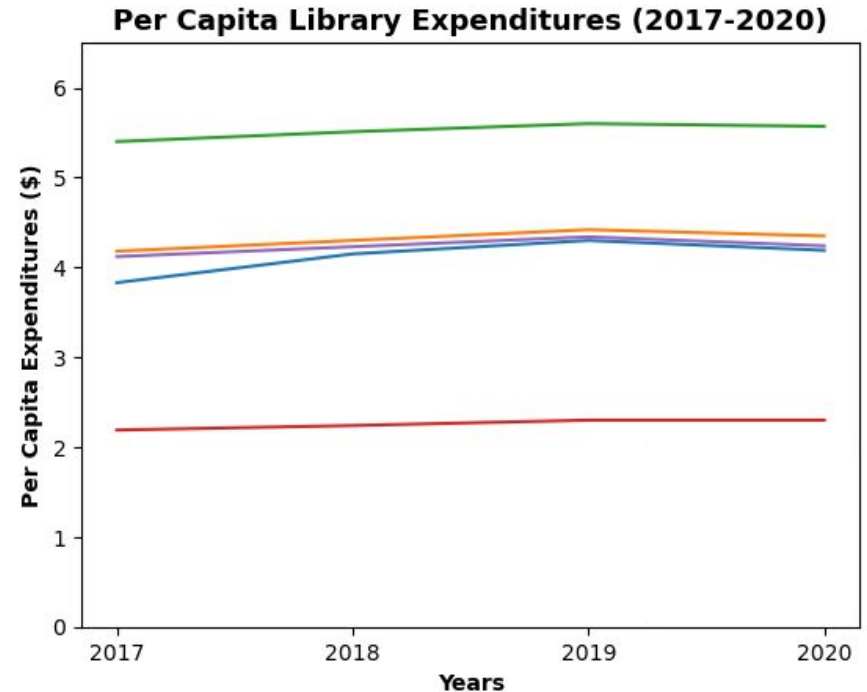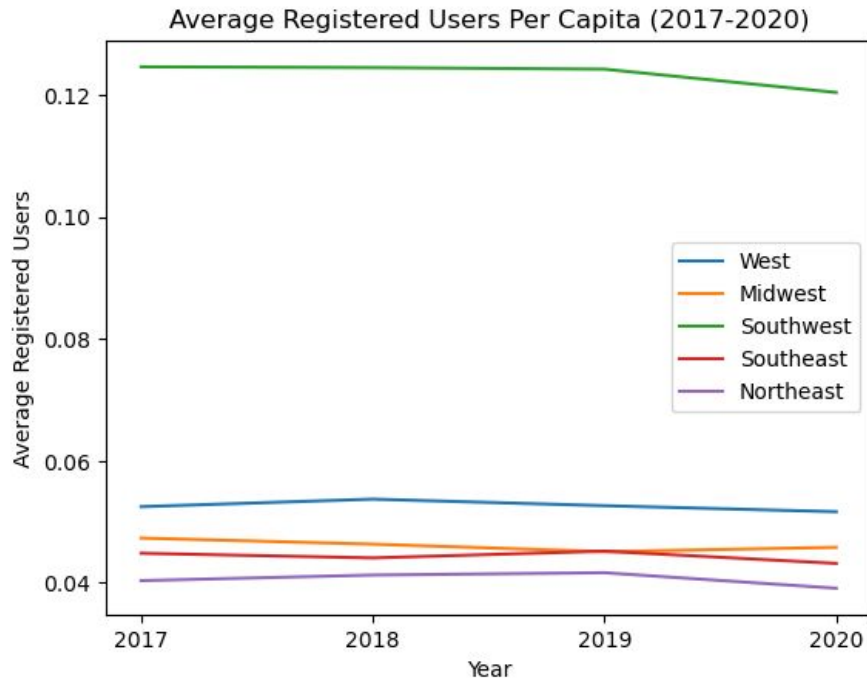
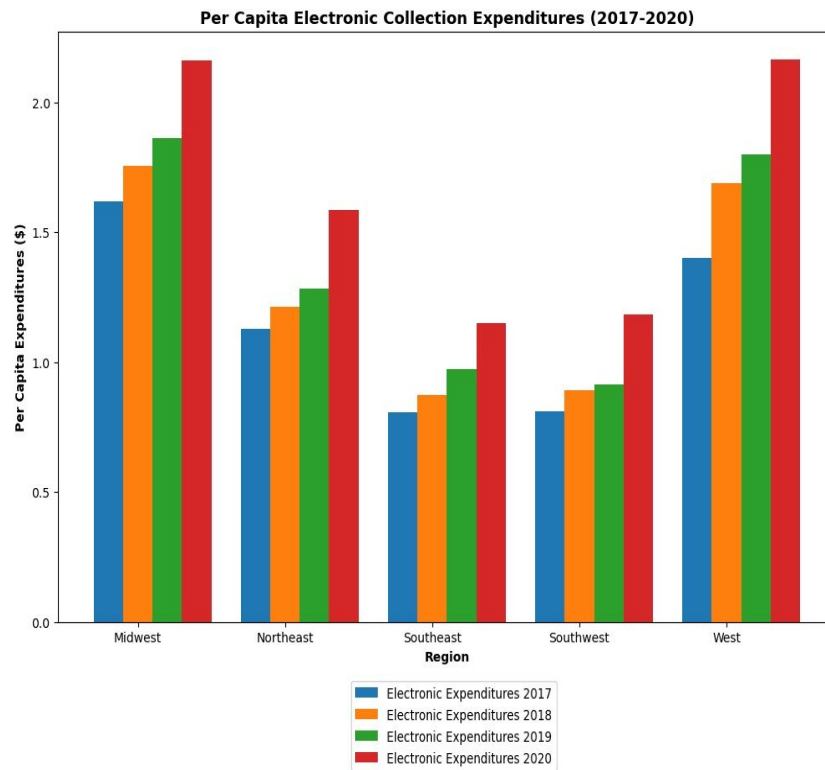# Expenditures per capita are weakly correlated with library program attendance and total circulation.
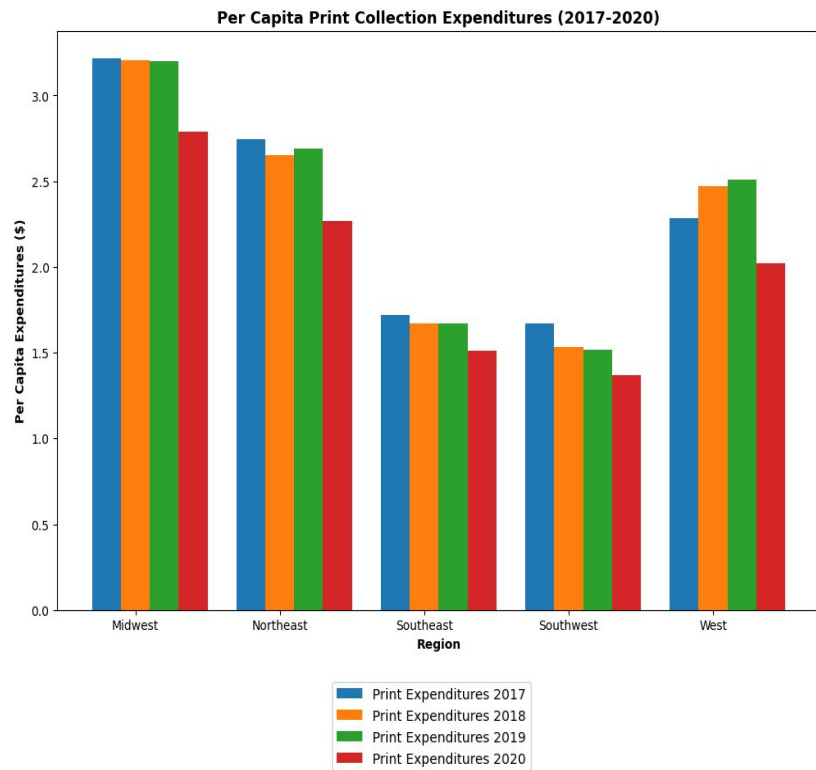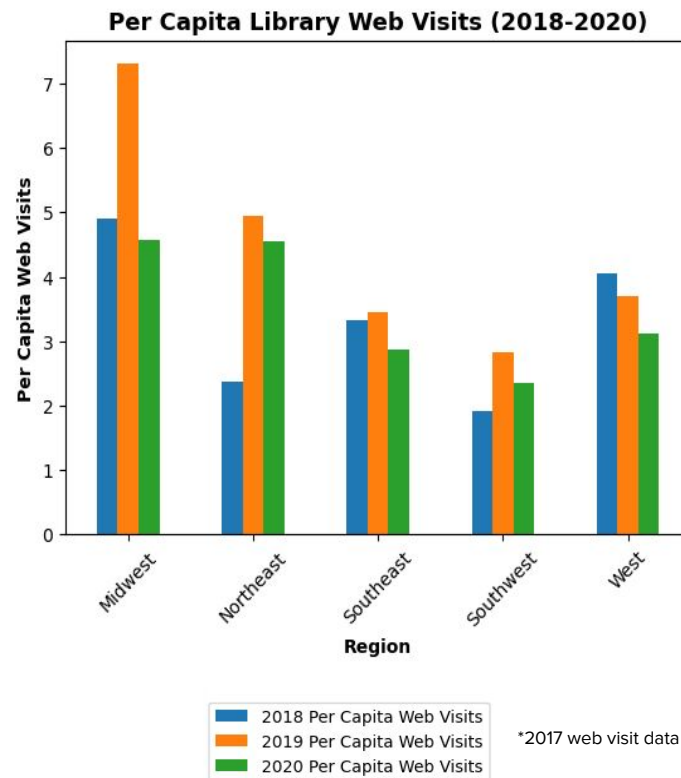

Correlation Coefficient = 0.3102869225310964
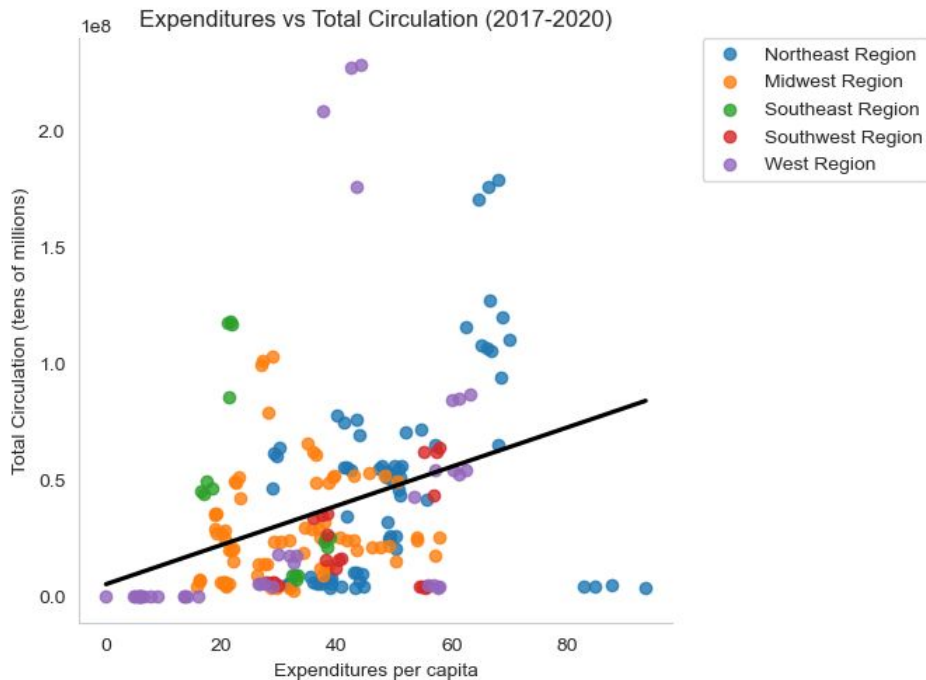
Correlation Coefficient = 0.338276755028096

Expenditures fell for print collections and rose for digital.

Per Capita Print Collection Expenditures (2017-2020)

Legend:
- Print Expenditures 2017
- Print Expenditures 2018
- Print Expenditures 2019
- Print Expenditures 2020

Per Capita Electronic Collection Expenditures (2017-2020)

Legend:
- Electronic Expenditures 2017
- Electronic Expenditures 2018
- Electronic Expenditures 2019
- Electronic Expenditures 2020

Library patronage decreased after the pandemic began.

Per Capita Library Visits (2017-2020)

- 2017 Per Capita Visits
- 2018 Per Capita Visits
- 2019 Per Capita Visits
- 2020 Per Capita Visits

Per Capita Library Web Visits (2018-2020)

- 2018 Per Capita Web Visits
- 2019 Per Capita Web Visits
- 2020 Per Capita Web Visits

*2017 web visit data was not available

Key Takeaways

1. The Southwest sees the highest number of users and expenses per capita; US libraries generally experienced declines in usership in 2020.

2. Correlations show that expenditures have little to do with program attendance and circulation.

3. The trend of falling expenditures for print collections and increasing for digital accelerated significantly during the pandemic.

4. Library patronage decreased after the pandemic began.

Thank you! 😊📚