Case Study On
Alberta Libraries Dataset Analysis

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1. Introduction

In today's digital world, data helps organizations make better decisions and improve their services. Libraries, which were once mainly for borrowing books, have now expanded to offer digital resources, educational programs, and community services. As libraries grow, using data analytics can help them manage resources effectively, improve operations, and better serve the community.

This report analyses the Alberta Libraries dataset to understand how libraries are funded, how they spend their budget, and how users engage with their services. By studying key factors like revenue sources, spending patterns, and user participation, we can identify what is working well and where improvements can be made.

Using data visualization tools, we will present insights that can help library managers and policymakers make informed decisions. The goal is to improve accessibility, enhance efficiency, and ensure libraries continue to meet the needs of their users. This study highlights the importance of data-driven strategies in shaping the future of public libraries in Alberta.

2. Open-Source Data Information

The Alberta Libraries dataset offers a comprehensive overview of library operations, covering key aspects such as funding sources, expenditures, service metrics, and user engagement. This dataset provides valuable insights into how libraries allocate financial resources, manage operational costs, and deliver services to the public.

It includes data on library budgets, staffing levels, facility usage, program participation, and borrowing trends, allowing for in-depth analysis of financial sustainability and service effectiveness. Sourced from Alberta.ca and publicly available, this dataset serves as a crucial tool for policymakers, researchers, and library administrators to assess performance, identify trends, and make data driven decisions that enhance library services across the province.

3. Purpose and Goals

The main goal of this study is to evaluate how Alberta libraries perform by analyzing important financial, operational, and user engagement data. Libraries play a crucial role in communities, offering access to books, digital resources, educational programs, and various public services. To ensure they operate efficiently and continue to meet the needs of users, it is important to understand how they manage funds, allocate resources, and engage with the public.

One of the key objectives of this analysis is to examine funding allocation where libraries get their money from and how they distribute it across different areas, such as staffing, facility maintenance, technology upgrades, and book collections. By studying expenditure efficiency, we can determine whether libraries are using their budgets effectively and identify opportunities for cost-saving while maintaining high-quality services.

Another focus of this study is service availability, which includes understanding how well libraries are staffed, how accessible their resources are, and how different libraries compare in terms of operations. Additionally, we analyze user participation patterns, such as membership trends, program attendance, and borrowing habits. This helps us see what services are most valuable to the community and where improvements can be made.

By gathering and analyzing this data, we can identify trends, strengths, and areas that need improvement. These insights will help important decision-makers including policymakers, library administrators, and community leaders make better, data-driven choices. The goal is to optimize how resources are distributed, improve service delivery, and ensure that libraries continue to meet the changing needs of their communities.

Ultimately, this study aims to improve accessibility, efficiency, and user satisfaction by providing libraries with the knowledge they need to adapt and grow. By leveraging data analytics, we can help create a library system that is better equipped to serve the public, making information and resources more accessible to everyone.

4. Key Questions on The Data

- ❖ How are Alberta libraries funded, and what are the primary revenue sources?
- ❖ How are library expenditures distributed across different categories?
- ❖ What operational efficiencies or inefficiencies exist within different library systems?
- ❖ How do membership trends impact resource allocation?
- ❖ What are the key drivers behind user engagement in library programs and services?

5. Metrics and KPIs:

Revenue Sources Analysis: Examines funding by breaking down income from local appropriations, provincial grants, and self-generated revenue (e.g., fees, donations). This assesses financial stability and funding diversification.

> ➔ Insight from Results: The primary source of funding is local appropriations, indicating strong community support. Self-generated income contributes a smaller share.

Expenditure Distribution: Tracks fund allocation across staffing, facility maintenance, technology upgrades, and collection development. Understanding spending patterns ensures efficient budget management.

> ➔ Insight from Results: A significant 82.94% of total expenses go toward operational costs, including staff salaries and facility maintenance.

Service Efficiency: Measures effectiveness by evaluating staffing levels relative to the population served and the number of service points. This determines resource adequacy and operational reach.

> ➔ Insight from Results: Efficiency varies across library systems, suggesting opportunities for optimizing resource allocation.

Circulation Trends: Analyzes borrowing patterns of physical books, e-books, and digital media over time. This helps libraries adjust collections to match user preferences and demand.

> ➔ Insight from Results: There is a growing shift toward digital resource usage.

User Engagement: Assesses library usage through metrics like program participation rates, demographic trends in memberships, and workstation usage. This helps gauge community involvement and identifies areas for service improvement.

> ➔ Insight from Results: Membership participation fluctuates depending on location, with urban libraries often seeing higher foot traffic than rural counterparts.

6. Data Model:

The dataset includes multiple dimensions:

- Revenue & Expenditure Tables: Track financial inflows and outflows.

- Operational Metrics: Includes data on service points, employees, and circulation.

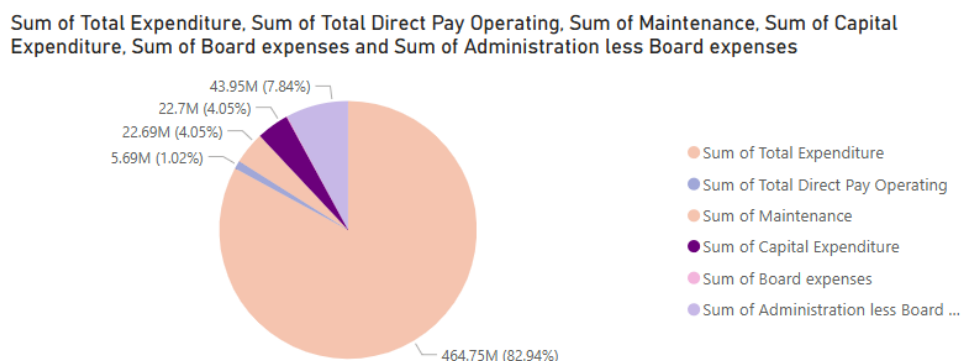- User Engagement Metrics: Captures membership trends and program attendance.

7. Dataset
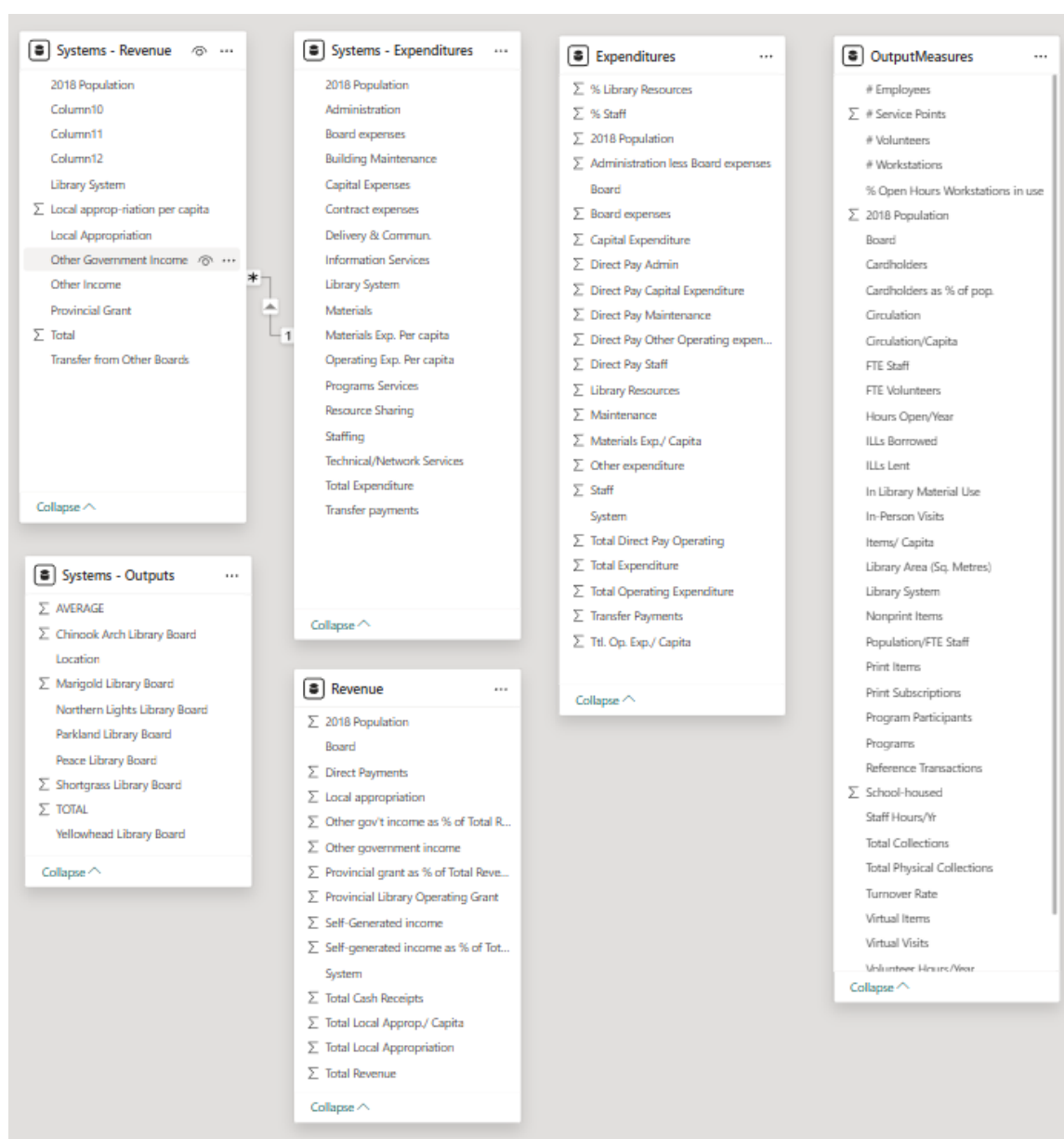
8. Dashboard Explanation

I.   Distribution of Expenditure

Sum of Total Expenditure, Sum of Total Direct Pay Operating, Sum of Maintenance, Sum of Capital Expenditure, Sum of Board expenses and Sum of Administration less Board expenses

Based *solely* on the pie chart data, here's the answer to the question it *can* address:
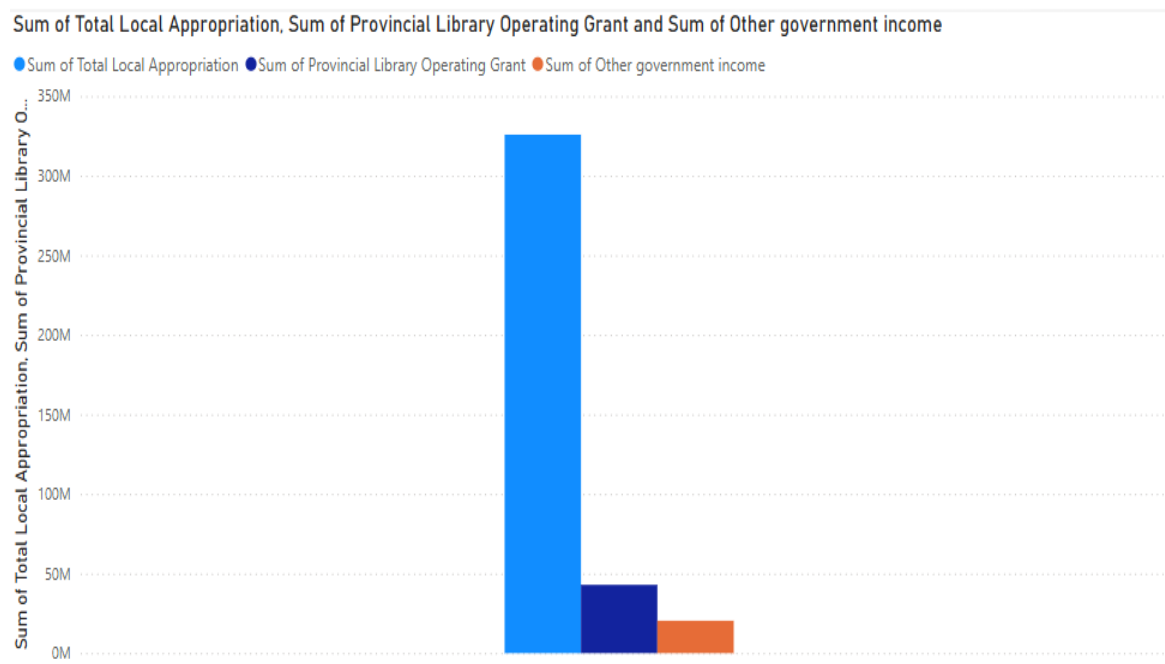
How are library expenditures distributed across different categories?

- Sum of Total Expenditure: 82.94%

- Sum of Administration less Board Expenses: 7.84%

- Sum of Maintenance: 4.05%

- Sum of Capital Expenditure: 4.05%

- Sum of Total Direct Pay Operating: 1.02%

- Sum of Board Expenses: (Appears negligible and not specifically quantified in this chart)

The provided pie chart delineates the allocation of expenditures within the subject organization. The predominant component is the "Sum of Total Expenditure," which constitutes 82.94% of the total expenditure, amounting to 464.75 million. Subsequent expenditure categories represent considerably smaller proportions of the overall budget. "Sum of Administration less Board Expenses" accounts for 7.84%, equivalent to 43.95 million. The categories "Sum of Maintenance" and "Sum of Capital Expenditure" each represent 4.05% of the total expenditures, with values of 22.69 million and 22.7 million, respectively. "Sum of Total Direct Pay Operating" constitutes a comparatively minor fraction of the total, at 1.02% or 5.69 million. The "Sum of Board Expenses" is not prominently featured in this visualization and appears to be an immaterial expenditure. This chart underscores

the substantial weighting of total expenditures within the organization's overall financial management strategy.

II.   Sources of Income

Sum of Total Local Appropriation, Sum of Provincial Library Operating Grant and Sum of Other government income

● Sum of Total Local Appropriation ● Sum of Provincial Library Operating Grant ● Sum of Other government income

How are Alberta libraries funded, and what are the primary revenue sources?

The image illustrates the funding sources for Alberta libraries, breaking them down into three main categories:

- Total Local Appropriation: This appears to be the most significant source of funding, as indicated by the tallest blue bar. Based on the scale, it looks to be around 325M.

- Provincial Library Operating Grant: The darker blue bar represents funding from the provincial government specifically allocated as operating grants for libraries. It looks like this is close to 40M.

- Other Government Income: The orange bar indicates additional government income received by libraries, possibly from various grants or funding programs. It looks like this value is around 25M.

III.   Sum of Total Expenditure by Library System
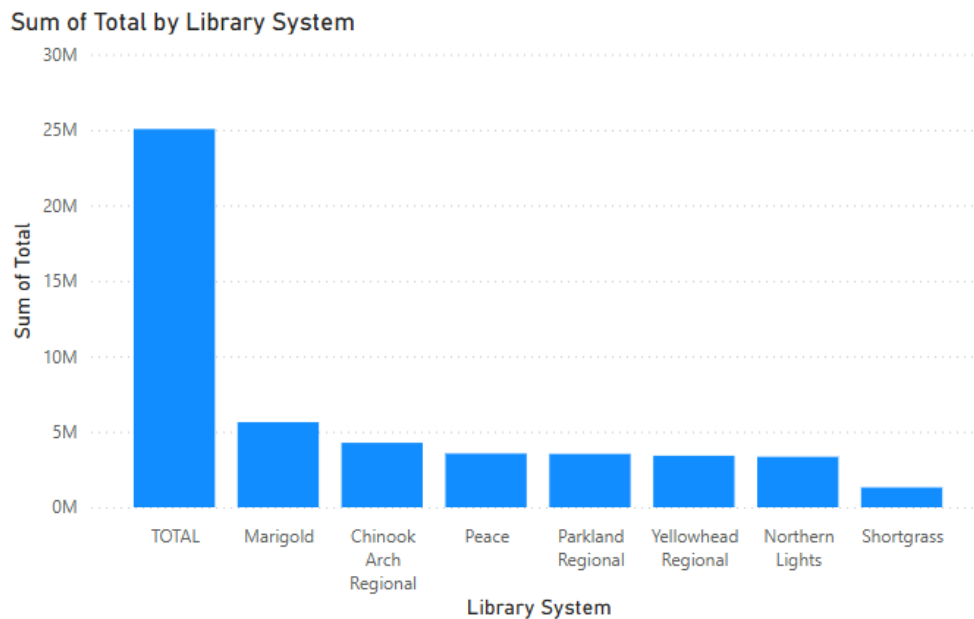
The provided chart illustrates the distribution of funds across various Alberta library systems. A total sum of funds, represented by the "TOTAL" bar at $25 million, appears to be allocated among several regional systems. Marigold receives the largest portion of this allocation, with approximately $6 million. Chinook Arch Regional is allotted around $4 million. Peace, Parkland Regional, Yellowhead Regional, and Northern Lights each receive roughly $3.5 million. Shortgrass is allocated a smaller sum of about $1.5 million. The chart suggests an uneven distribution of funds among these library systems, with Marigold receiving the largest share.

How are library expenditures distributed across different categories?

The second image shows the "Sum of Total by Library System."

- TOTAL: $25 Million.

- Marigold $6 Million.

- Chinook Arch Regional: $4 Million

- Peace $3.5 Million

- Parkland Regional $3.5 Million

- Yellowhead Regional $3.5 Million

- Northern Lights $3.5 Million

- Shortgrass $1.5 Million

Results

Revenue Insights – The primary source of library funding comes from local appropriations, reflecting strong community and municipal support. This indicates that libraries are primarily funded by their local governments, which provides a stable revenue stream. On the other hand, self-generated income, such as membership fees, donations, and late fines, contributes a smaller share of the budget. This suggests that libraries have limited reliance on independent revenue streams, which could be a potential area for growth and diversification.

Expenditure Trends – A significant 82.94% of total expenses go toward operational costs, which include staff salaries, facility maintenance, and other essential day-to-day library services. This highlights that libraries prioritize maintaining core functions and services, which are crucial for meeting the public's needs. Smaller proportions of the budget are allocated to administrative costs, capital investments, and technology upgrades, which may be areas to reconsider for greater efficiency.

Operational Performance – Efficiency in service delivery varies across different library systems. Some libraries manage to operate with lower costs per user while still maintaining high levels of service quality. Meanwhile, other libraries face higher costs for similar levels of service, which may reflect inefficiencies in resource allocation or higher operational expenses. This variation suggests that there are opportunities for optimizing resource allocation and improving overall efficiency across the province's library systems.

User Trends – Membership participation fluctuates based on location, with urban libraries often seeing higher foot traffic compared to rural libraries. Urban areas benefit from larger populations and greater accessibility, leading to more active participation. Additionally, there is a growing shift toward digital resource usage, with more users engaging with e-books, online databases, and virtual programs. This shift reflects changing user preferences, highlighting the increasing importance of digital services in the future of library offerings.

Conclusion

The analysis of Alberta Libraries' dataset highlights key insights into funding, expenditure, operational efficiency, and user engagement. Local appropriations remain the primary funding source, while self-generated income plays a minor role, suggesting a need for diversified revenue streams. The majority of expenditures go toward operational costs, particularly staff salaries and facility maintenance, with variations in efficiency across different library systems. Urban libraries experience higher user engagement than rural ones, and there is a growing shift toward digital resource usage. To enhance services and sustainability, libraries should optimize resource allocation, invest in digital infrastructure, and implement strategies to boost community participation, ensuring they continue to meet evolving public needs.