

A Data-Driven Exploration of Public Tenders

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Acronym: DDEPT

Introduction

Awarded Public Tenders Procurement and Contracts

Contains the awarded vendor & amount for government & public sector tenders by entity, vendor, category, start date, end date and awarded date.

Last Updated
November 5, 2024

About this Dataset

Updated
November 5, 2024

Data Last Updated	Metadata Last Updated
November 5, 2024	November 5, 2024

Date Created
November 19, 2015

Views	Downloads
20K	9,924

Data Provided by	Dataset Owner
(none)	Open Data Nova Scotia

Detailed Metadata

Department	Service Nova Scotia
Geographic Region Name	Nova Scotia
Language	eng
Frequency	Monthly
Time Period Coverage	2010-04-01/2024-10-31
Usage Considerations	Tenders that are awarded to multiple vendors or cancelled tenders are not reflected in the data set. Requests For Information (RFI) are included in the data, but these records would not have an identified vendor as they are not awarded.
Related Documents	http://www.novascotia.ca/tenders/tenders/ns-tenders.aspx?date=1

Topics

Category	Procurement and Contracts
Tags	procurement, public tenders, tenders, awards, public sector

Licensing and Attribution

License	Nova Scotia Open Government Licence
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URL: https://data.novascotia.ca/Procurement-and-Contracts/Awarded-Public-Tenders/m6ps-8j6u/about_data

Dataset

```
df.head()
```

✓ [8] < 10 ms

TENDER_ID	ENTITY	GOODS	SERVICE	CONSTRUCTION	TENDER_START_DATE	TENDER_CLOSE_DATE	TENDER_DESCRIPTION	AWARDED_DATE	AWARDED_AMOUNT	VENDOR
DAL2023-001	Dalhousie University	N	N	Y	2023/01/09	2023/01/30	B Building Washroom, Mens & Gender Neut...	2023/01/31	431915.0	Avondale Construction Limited
HR2022-01	St. Francis Xavier University	N	Y	N	2022/09/19	2022/10/24	Payroll and Time/Attendance Solution	2023/01/31	548220.0	The Ultimate Software Group of Cana
MET23-201	Nova Scotia Provincial Housin...	Y	N	N	2023/01/10	2023/01/24	SUPPLY OF MISCELLANEOUS APPLIANCE PARTS	2023/01/31	1.0	Various
MET23-202	Nova Scotia Provincial Housin...	Y	N	N	2023/01/10	2023/01/24	SUPPLY OF EXTERIOR BUILDING MATERIALS	2023/01/31	1.0	Various
MET23-203	Nova Scotia Provincial Housin...	Y	N	N	2023/01/10	2023/01/24	SUPPLY OF INTERIOR BUILDING MATERIALS	2023/01/31	1.0	Various

Dataset includes more than 29,000 awarded tenders, with fields like tender ID, dates, description, amount, and vendor.

```
df.info()
```

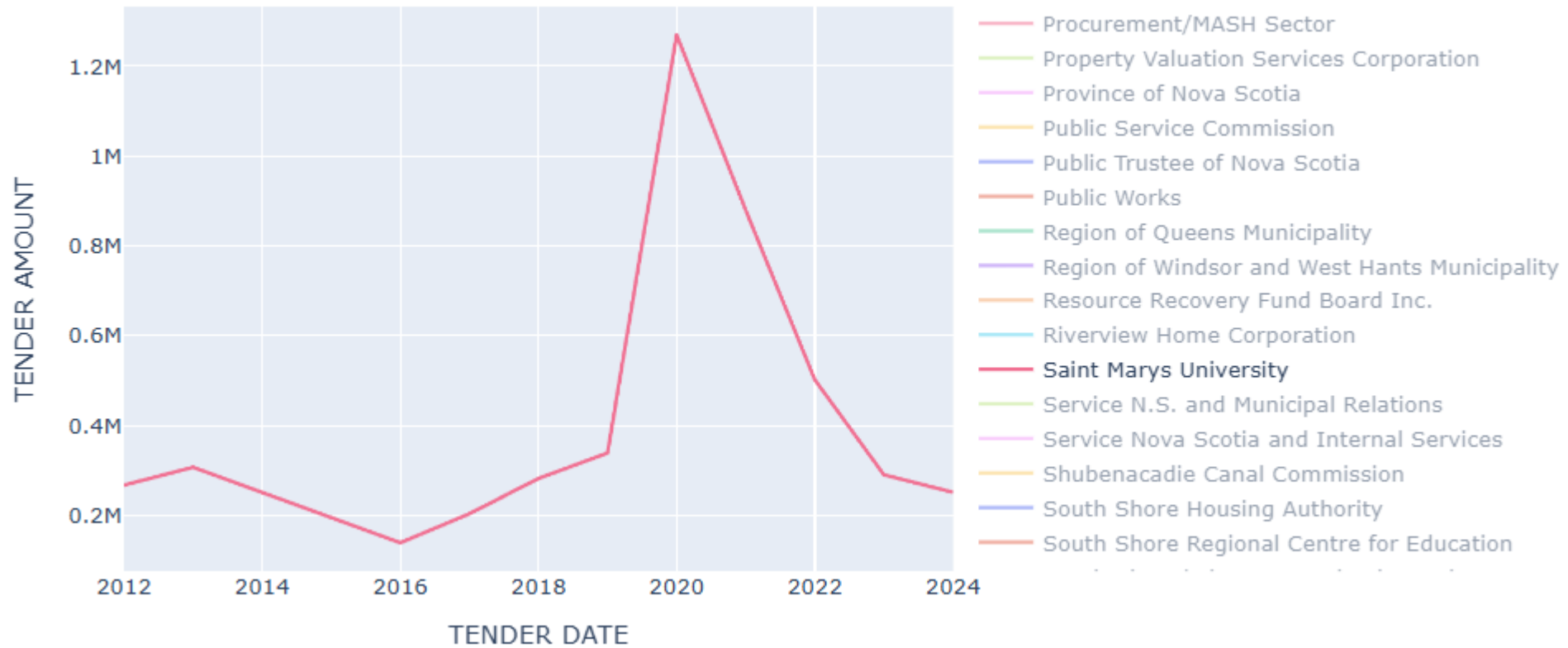
✓ [6] 21ms

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 28980 entries, 0 to 28979
Data columns (total 11 columns):
 #   Column                Non-Null Count  Dtype  
---  -
 0   TENDER_ID             28980 non-null  object 
 1   ENTITY                28980 non-null  object 
 2   GOODS                 28980 non-null  object 
 3   SERVICE               28980 non-null  object 
 4   CONSTRUCTION          28980 non-null  object 
 5   TENDER_START_DATE     28980 non-null  object 
 6   TENDER_CLOSE_DATE     28980 non-null  object 
 7   TENDER_DESCRIPTION    28971 non-null  object 
 8   AWARDED_DATE          28980 non-null  object 
 9   AWARDED_AMOUNT        28980 non-null  float64
10   VENDOR                28876 non-null  object 
dtypes: float64(1), object(10)
memory usage: 2.4+ MB
```

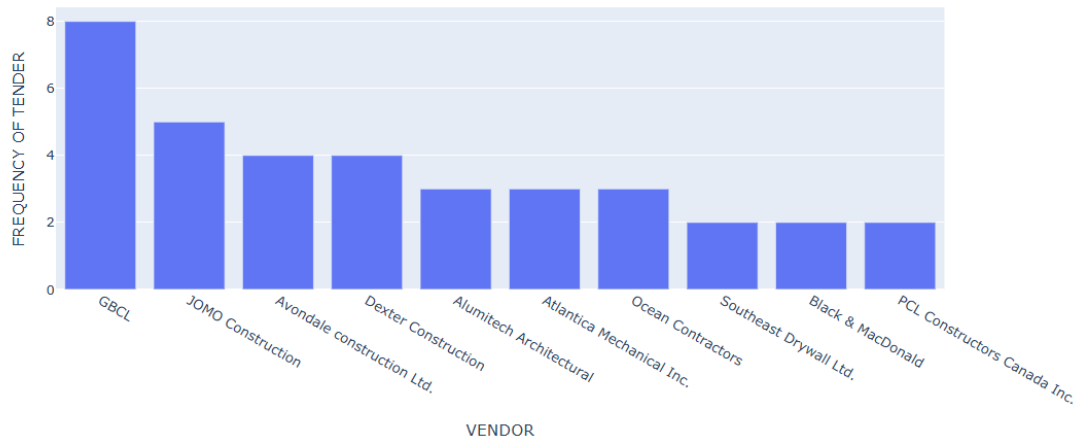
Problem Definition

- Understand and interpret procurement trends and vendor patterns in awarded tenders.
- Analyze the expenditure trends of an organization or sector across various categories over a year.
- Discover insights from tender descriptions using topic modelling and visualization.

Evolution of Average Yearly Tender Allocation at Saint Mary's University



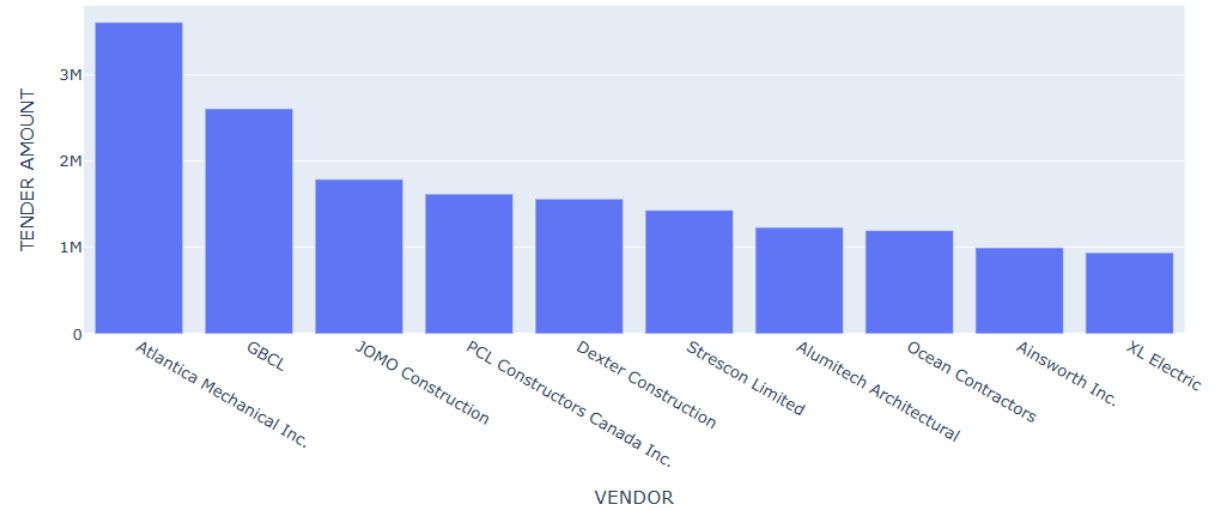
Which Vendors Have the Most Frequent Tender Awards in Saint Marys University?



There are 46 unique-vendor tenders with the selected filters. This bar chart shows 10 of those vendors who have received the most tender awards within the Saint Marys University organization. The vendors are ranked by the number of tenders they won, revealing which companies have been most successful in securing university contracts.

- X-axis (VENDOR): Shows the company names that received tender awards.
- Y-axis (FREQUENCY): Shows the count of tenders awarded to each vendor.

Which vendors have received the highest total awarded amounts in Saint Marys University?



There are 46 unique-vendor tenders with the selected filters. This bar chart highlights the top 10 vendors based on their total awarded tender amounts within the Saint Marys University organization. It identifies vendors with the largest financial awards, sorted by the total awarded amount.

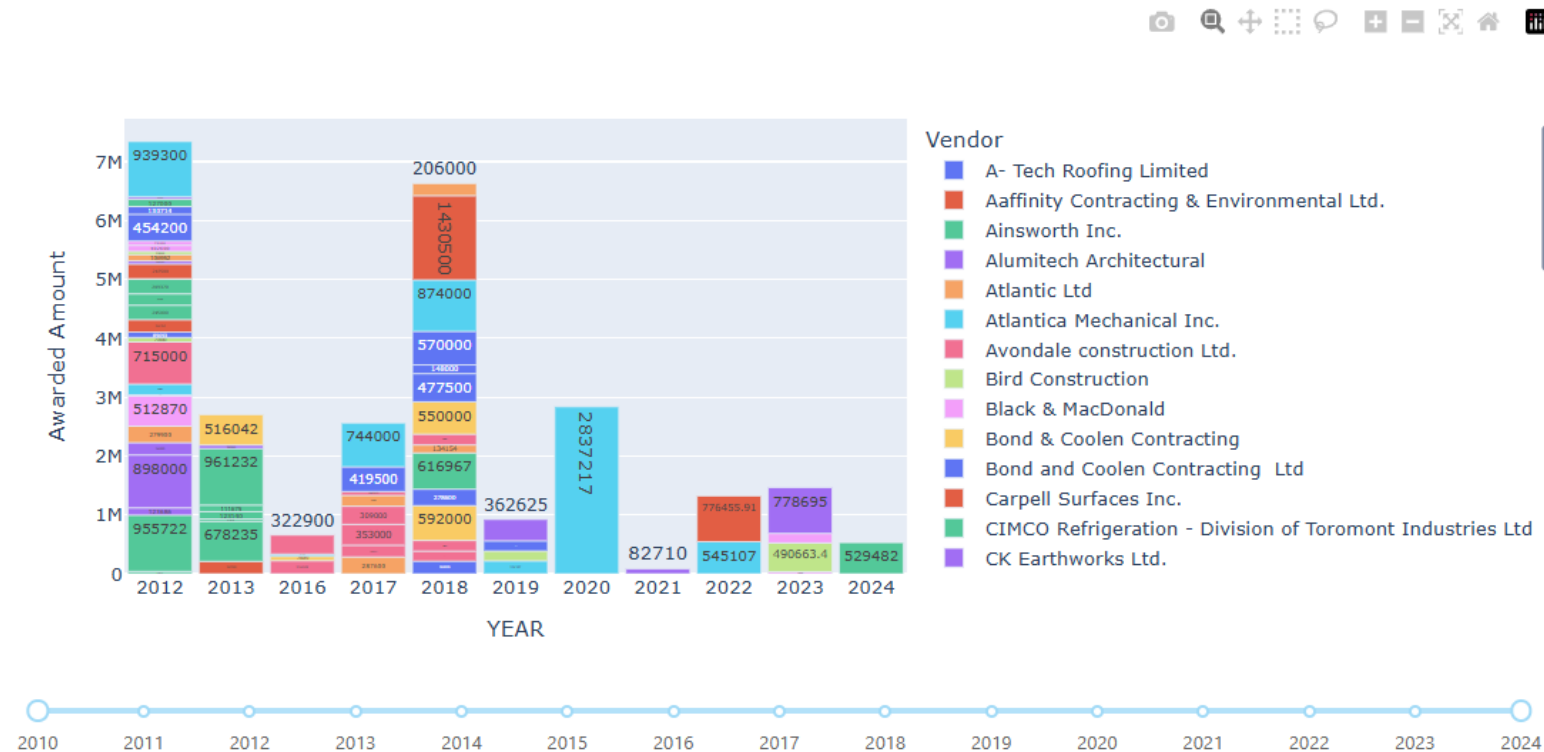
- X-axis (VENDOR): Represents the names of vendors awarded tenders.
- Y-axis (AWARDED_AMOUNT): Indicates the total monetary value of tenders awarded to each vendor.

What are the key topics and frequently recurring themes in tender descriptions for Saint Marys University, as identified through topic modeling?



This BERTopic-based word cloud, generated from the tender descriptions of 46 vendors in the Saint Marys University organization, highlights key topics and frequently occurring words. It visualizes the most prominent topics and terms reflecting the focus of procurement activities. Topic modeling provides deeper insights into main themes and commonly awarded vendor names, offering a comprehensive view of procurement priorities within the Saint Marys University organization.

How are tender amounts distributed by size, vendor, and year in Saint Marys University, and which vendors or tenders stand out when examining detailed information in pop-ups?



This stacked bar chart displays the total awarded tender amounts by year for various vendors in the Saint Marys University organization. It highlights yearly trends in vendor participation and awarded amounts, enabling comparisons across vendors over time and identifying peak years for tender awards. This visualization helps us see each vendor's total awarded amount by year, providing insight into yearly trends in vendor awards within the Saint Marys University organization.

- X-axis (YEAR): Represents the year of tender awards.
- Y-axis (AWARDED AMOUNT): Indicates the total tender amount awarded to vendors in each year.
- Legend (VENDOR): Lists vendors contributing to the awarded amounts.

Data Preprocessing

- ◆ Data Standardization
- ◆ Eliminating Empty Row
- ◆ Fixing Datetime Column

```
vendors_to_exclude = [
    'Three separate companies',
    'Various Vendors',
    '2 Different Companies',
    '2 vendors',
    '3 separate companies',
    'bid was split between 3 contractors',
    'Bidding Options 3 successful companies split the contract',
    'Multiple Vendors',
    'No bids - award - vendor chosen',
    'There are multiple vendors',
    'There were 4 vendors who submitted low bids',
    'Awarded to more than one vendor. See details below.',
    'Awarded To Multiple Vendors',
    'Awarded to sixteen different vendors',
    'Awarded to Various Suppliers (See Below)',
    'Awarded to vendors below',
    '21 Vendors added to existing Standing Offer List',
    '3 contractors were awarded parts of this bid',
    '30 separate bidders split this contract',
    '4 Different Bidders',
    'Awarded Low-Bid - See list of vendors below',
    'Awarded to all Bidders',
    'Four bidders won a portion of this tender. See memorandum.',
    '0',
]
```

```
"Belanger Electric": "Belanger Electric",
"BELFOR (Canada) Inc": "BELFOR (Canada) Inc",
"Belfor(Canada) Inc": "Belfor(Canada) Inc",
"BelieveCo": "BelieveCo",
"Bell": "Bell",
"BELL ALAINT": "Bell",
"Bell Aliant": "Bell",
"BELL ALIANT": "Bell",
"BELL ALIANT LP": "Bell",
"Bell Aliant LP": "Bell",
"Bell Aliant LP - Xwave": "Bell",
"Bell Aliant Regional Communications LP": "Bell",
"Bell Business Markets": "Bell",
"Bell Canada": "Bell",
"BELL CANADA": "Bell",
"BELL MOBILITY": "Bell",
"Bell Mobility": "Bell",
"BELL MOBILITY INC": "Bell",
"Bell Mobility Inc.": "Bell",
"Bell Multi Construction Inc": "Bell",
"Bell/Aliant": "Bell",
"BellAliant": "Bell",
"Beliveau Ford Ltd.": "Beliveau Motors",
"Beliveau Motors": "Beliveau Motors",
"Beliveau Motors Ford": "Beliveau Motors",
"Beliveau Motors Ltd.": "Beliveau Motors",
"Beliveau Veinotte Inc.": "Beliveau Motors",
"BELLWETHER HEALTHCARE SOLUTIONS": "BELLWETHER HEALTHCARE SOLUTIONS",
"BELMAC SUPPLY": "Belmac Supply",
"BELMAC SUPPLY LIMITED": "Belmac Supply",
"BELMAC SUPPLY LTD.": "Belmac Supply",
"Belmac Supply Ltd.": "Belmac Supply",
"Ben Brush": "Ben Brush",
```

Dataset Summary

Unique Entities

215 entities

Unique Vendors

5,244 vendors

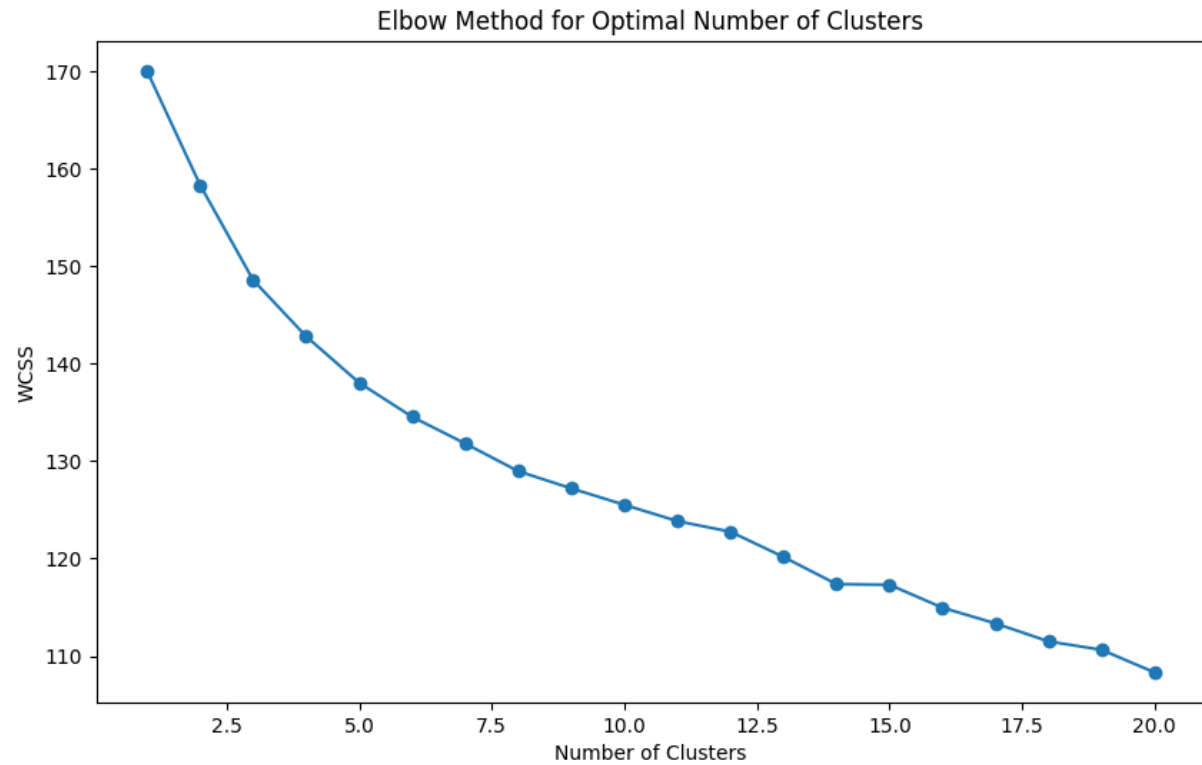
Awarded Amount

Min: \$1,000.00
Max: \$717,915,205.00

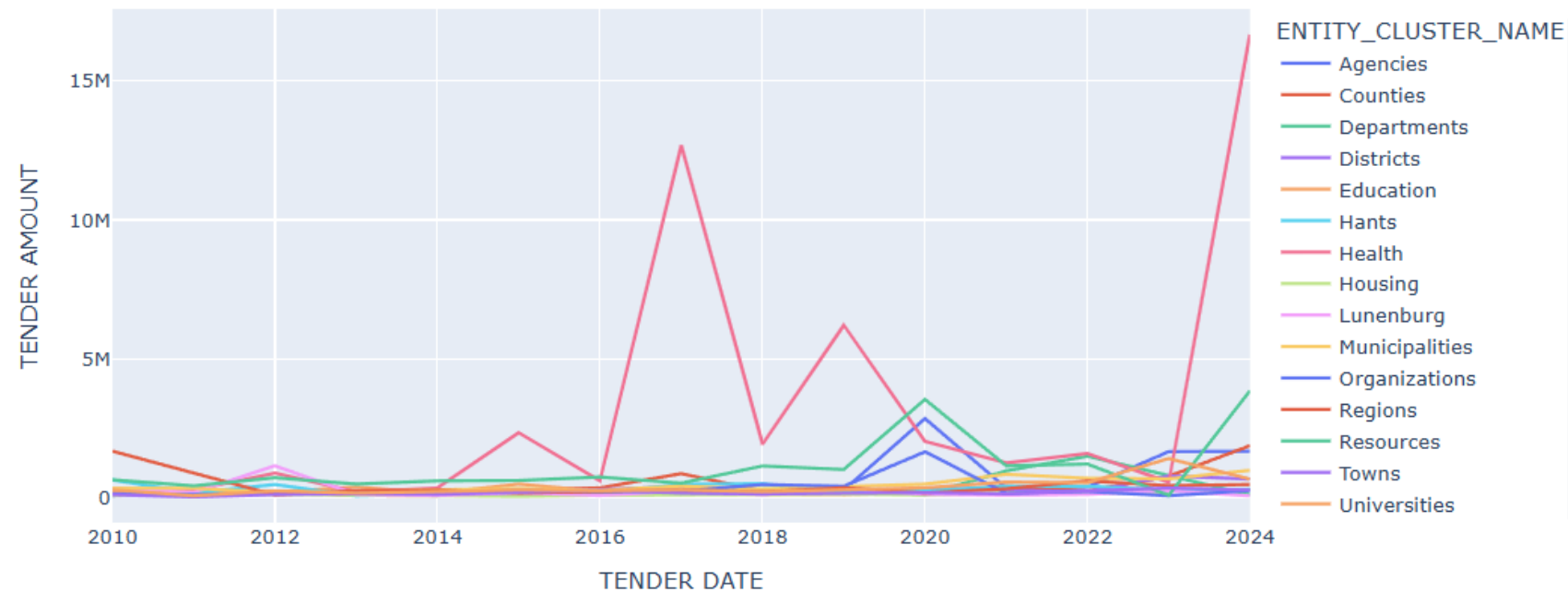
Awarded Year

Range: 2010 - 2024

Entity Clustering



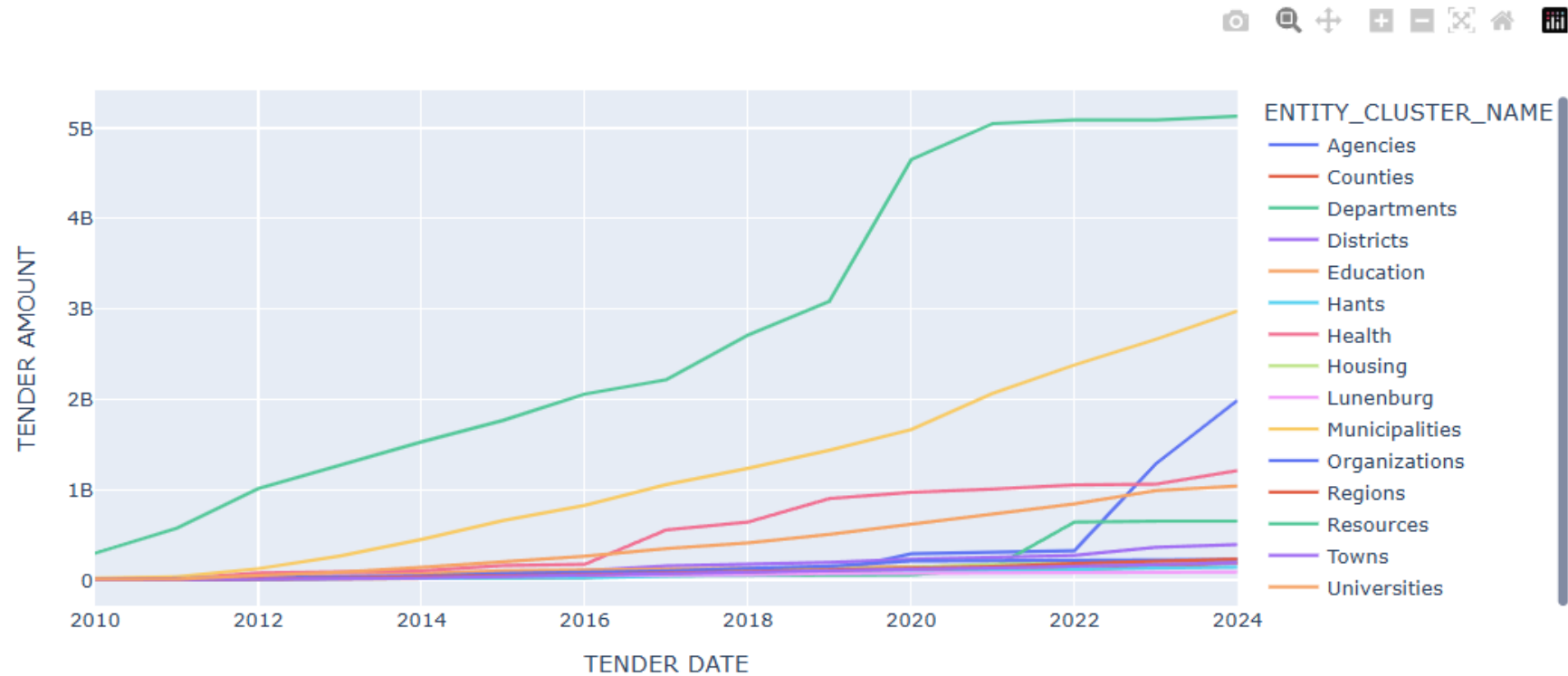
How Do Organization Clusters in Nova Scotia Show Different Spending Patterns Over Time (by Year)?



This visualization displays average tender amounts granted to different organizational clusters in Nova Scotia across multiple years. It reveals funding patterns among various groups—including universities, agencies, municipalities, and education—showing notable spikes and changes that reflect shifting priorities and major projects.

- X-axis (TENDER DATE): This represents the year when funds or awards were accepted.
- Y-axis (TENDER AMOUNT): This shows the average tender expenditure to each cluster of organizations for each year.

Which clusters have contributed the most to cumulative tender amounts over the years in Nova Scotia?

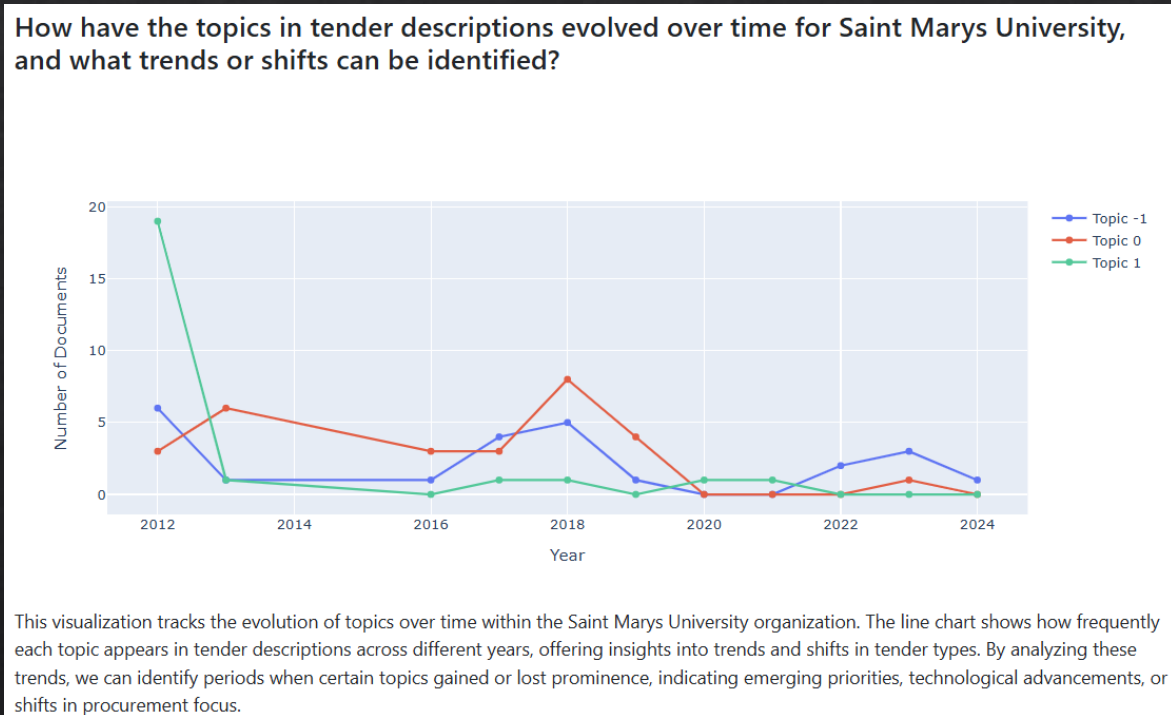


This visualization shows the cumulative awarded tender amounts for each cluster of entities over time. It highlights the total contribution of different clusters to tendering activities, emphasizing clusters with significant and consistent growth.

- X-axis (TENDER DATE): Shows the yearly accumulation of awarded funds.
- Y-axis (TENDER AMOUNT): Displays the total accumulated tender amounts awarded to each cluster over time.

Future Work

- ◇ Scheduler-Driven Hosting: Ensures the most up-to-date data at all times.
- ◇ Enhanced User Control: Users can insert instances and manually update clusters.
- ◇ Integrate LLM: Provides deeper insights from topic models.



Thank you !

Q & A