Analysis of Permanent Resident Admissions in Canada

Introduction and background:

Canada is a diverse country with significant importance on immigration. It welcomes people from around the world to become permanent residents and contribute to its society and economy. Immigration plays a crucial role in Canada's growth, cultural richness, and economic development. The country values the contributions and talents that immigrants bring, making it an attractive destination for individuals seeking new opportunities and a better future.

Canada's population is experiencing growth like never before, with an increase of 1,050,110 people in 2022. This marks the first time in Canadian history that its population grew by over 1 million individuals in a single year. Additionally, the recorded annual population growth rate of 2.7% in 2022 is the highest since 1957, when it reached 3.3%. As of June 16, 2023, there are now 40 million Canadian. This is a historic milestone for Canada. (*Canada's population reaches 40 million. 2023, June 19*)

Our team has explored datasets related to Air Quality Index, Coffee quality, Fuel efficiency, Housing and mortgage, Pollution, Wages of different departments, e-Commerce sales, US health care, Global financial markets, micro and macro-economic trends, flights data, music data of Spotify, movies data of IMDb and Billboard chart data.

As an international student and a potential applicant for permanent residency in Canada, the team thought it would be great to understand the trends and analyse the data of Permanent residency in Canada. The news article that came out on June 16, 2023, about the population milestone of 40 million Canadians has greatly impacted in choosing this topic for our Visualisation project. (*Canada's population reaches 40 million. 2023, June 19*)

Datasets:
We are using the data from:

1. Transition from Temporary Resident to Permanent Resident Status – Monthly IRCC Updates - Open Government Portal (canada.ca) – **Province Wise Temporary resident to permanent resident**

2. Express Entry-Invited Candidates – Monthly IRCC Updates - Open Government Portal (canada.ca) – **Express Entry Invitations and Applications at Province level**

3. Temporary Residents: Study Permit Holders – Monthly IRCC Updates - Canada - Study permit holders by country of citizenship and year in which permit(s) became effective - Open Government Portal – **Study permit holders by Country of citizenship.**

4. [Permanent Residents – Monthly IRCC Updates - Open Government Portal (canada.ca)](canada.ca) – **Permanent resident admissions by country of citizenship.**

5. [Express Entry Permanent Residents – Monthly IRCC Updates - Open Government Portal (canada.ca)](canada.ca) – **Express Entry admissions by country of citizenship.**

Our team will use the above datasets containing information of people who have been granted permanent resident status, express entry, temporary residency, province level information related to permanent residency and express entry from the Year 2015 to 2023 (Q1) obtained from Open Government portal of Canada. The Open Government Portal and related initiatives in Canada are funded by the Government of Canada.

Our team will mainly focus on understanding trends for various categories of data available, identify the top nations/provinces involved in the above categories as well.

Publications that used some of the above data:

1. Choi, Y., Crossman, E., & Hou, F. (2021). *International students as a source of labour supply: Transition to permanent residency*. Statistics Canada= Statistique Canada.
2. Immigration, R. (2021). Express Entry Year-End Report 2020

All the datasets we have listed have information from the year 2015 to 2023 containing different information (**Latitude, Longitude – Country, Count of issuances, Year, Month, Country of category)** with respect to express entry, permanent residency, etc at global countries and Canadian province level.

Contributions – Team:

We had 5 data sources for our project that have been cleaned and transformed to create the visualisations. The detailed information for data source and other information can be found below:
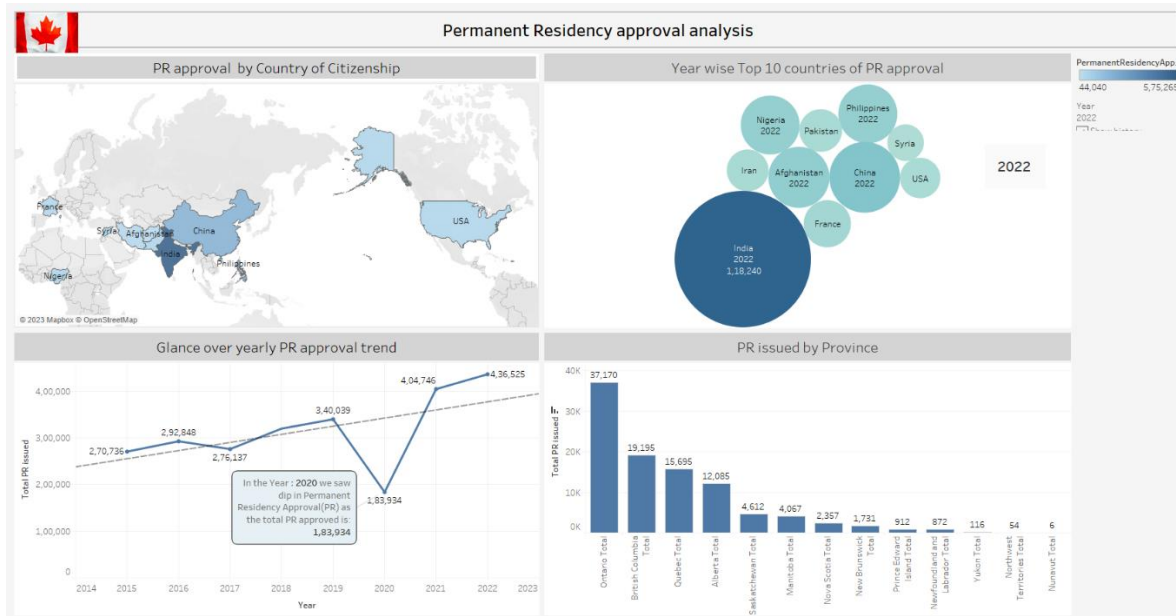
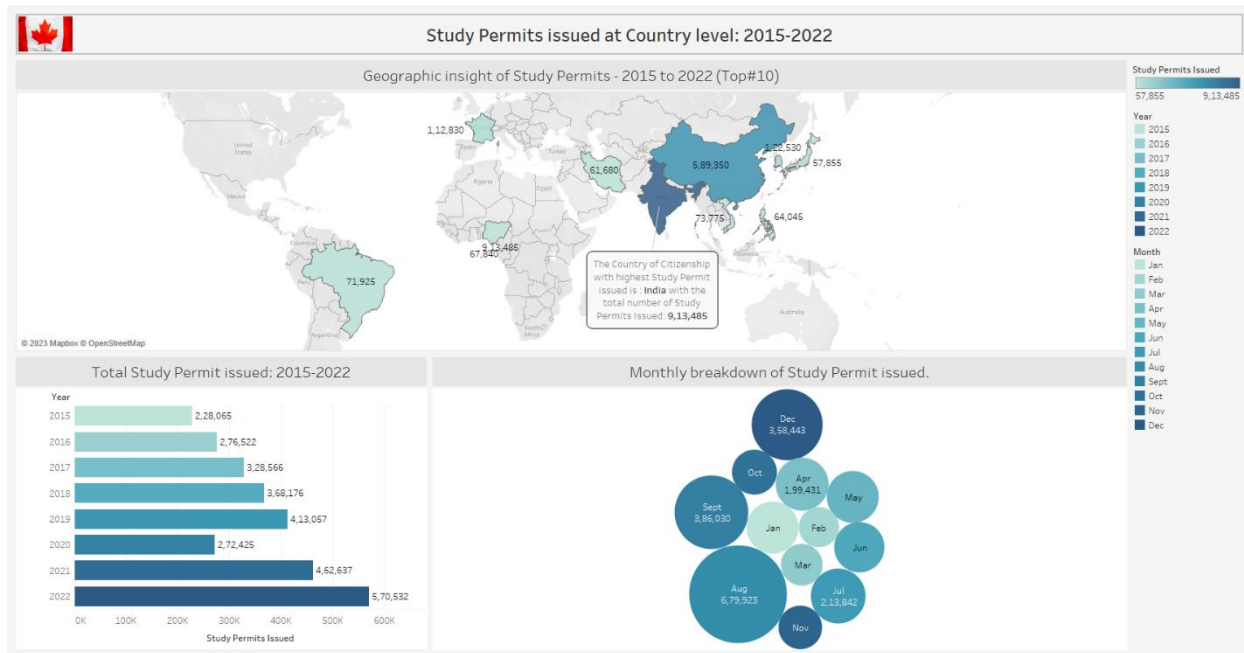|	
Study permit holders by country of citizenship	Data at country level and Month/Year
Admissions of Permanent Residents with Prior Study Permit Holder Status by Province/Territory	Data at Province and Month/Year
Express Entry at Province and Country level	Data at Country/Province level and Month/Year
Combined Permanent Residents Country Level	Data at Continent/Country and Month/Year
Express Entry Province Level	Data at Province level with Invitation category and Month/Year

We have explored each file and consolidated the data into a single Excel tab and then pivoted columns upon cleaning and changing the column type.

Objectives and Data story:

We have started our journey by cleaning the data, arranging it, pivoting columns in tableau to explore the trends in immigration categories namely Permanent residency, Express entry and Study permit. We have created three dashboards (Permanent residency, Express entry and Study permit) showing the key insights of our data.
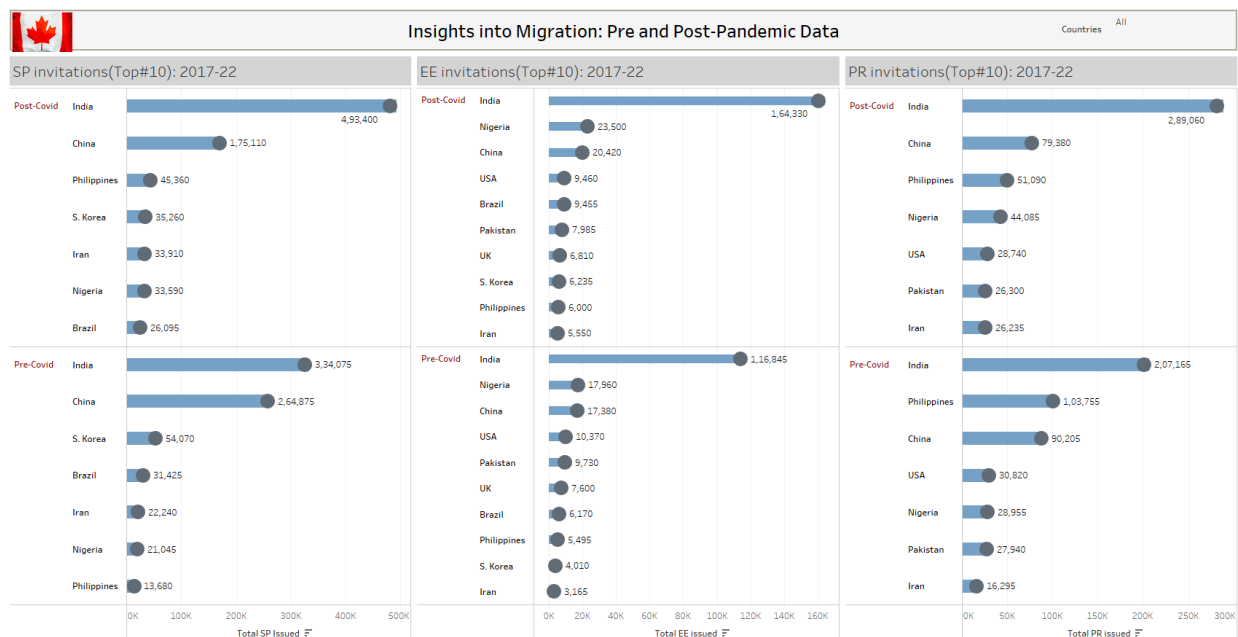
Permanent residency Dashboard

PR Dashboard helps us identify the top nations for which PR is approved, Annual trends of those countries and province level information for the PR category.

Express entry Dashboard

EE Dashboard helps us understand the geographic insight for the express entry invites for the year 2015 – 2022, Annual trends, Province level distribution and express entry invitation category insights.

Study Permit Dashboard

Study permit dashboard helps us with the geographic insights, study permit issue count and trend, month wise study permit breakdown of study permits.

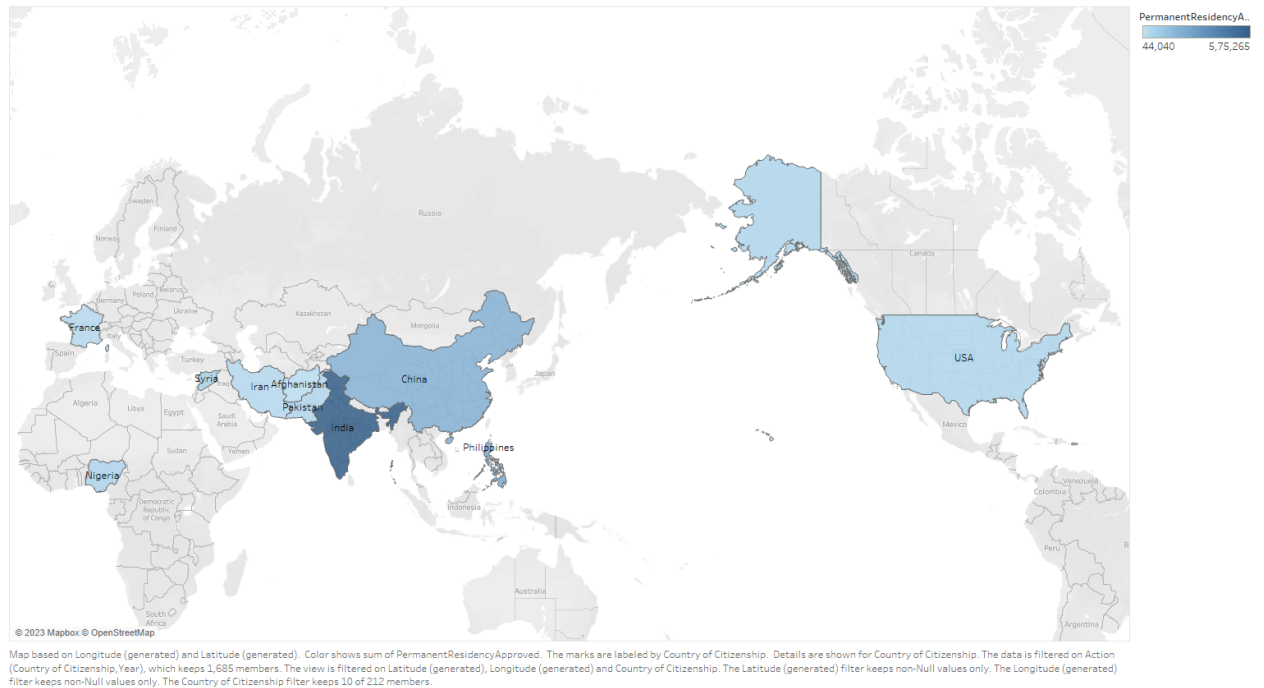**Immigration trends - pre and post pandemic Dashboard**

This Dashboard helps with the immigration trends for Study permit, Express entry and Permanent residency. A filter has been added to view the data at a specific country level.

We have added objectives along with screenshots of the graphs from our tableau workbook.
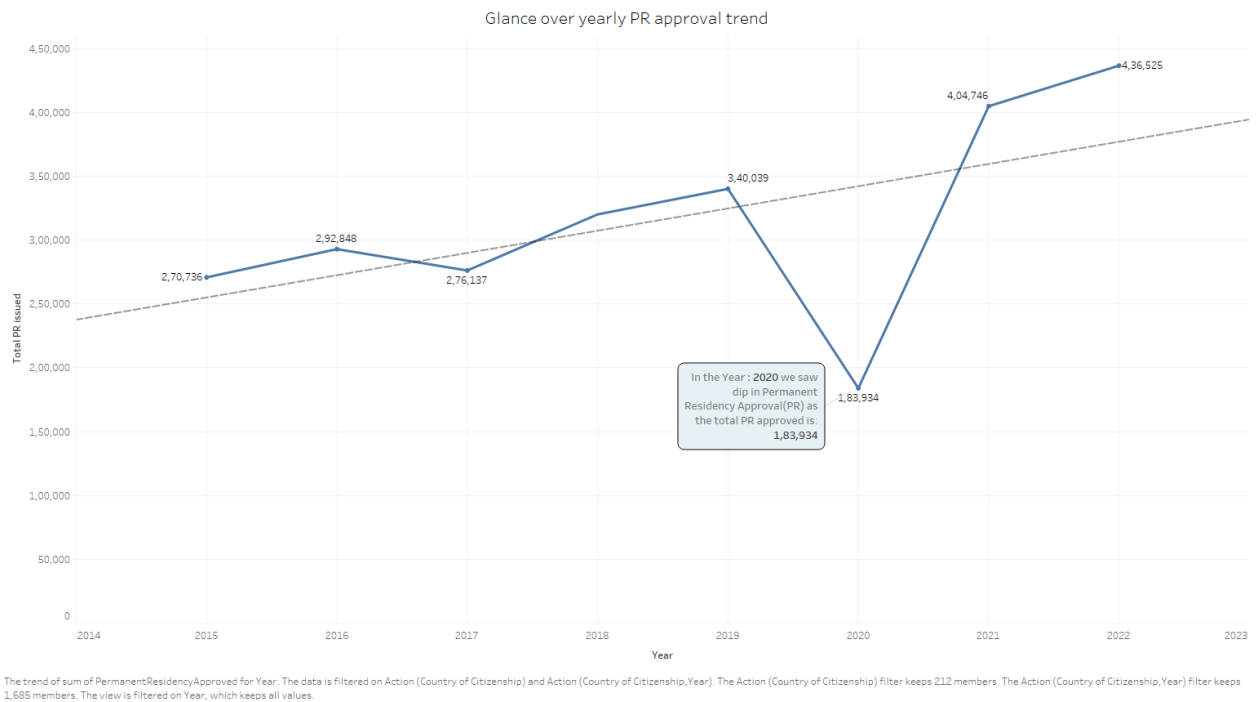
1. **Leading Nationalities for Permanent Residency Approvals in Canada: Top 10 Countries**
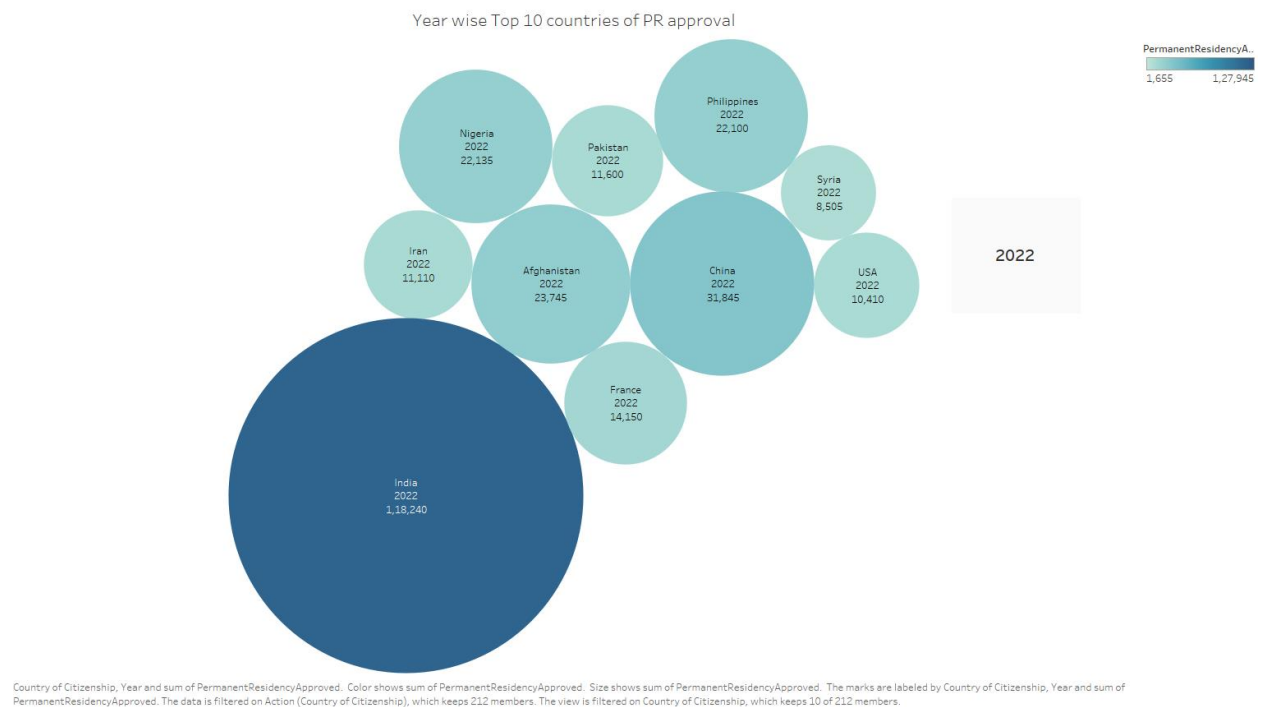
PR approval by Country of Citizenship

The map shows us the top 10 countries (Sequentially coloured) for which Canadian government has granted permanent residency for the years 2015-2022. India is the top nation through the years.

2. **Annual Trends: Top 10 Countries for Permanent Residency Approvals in Canada.**
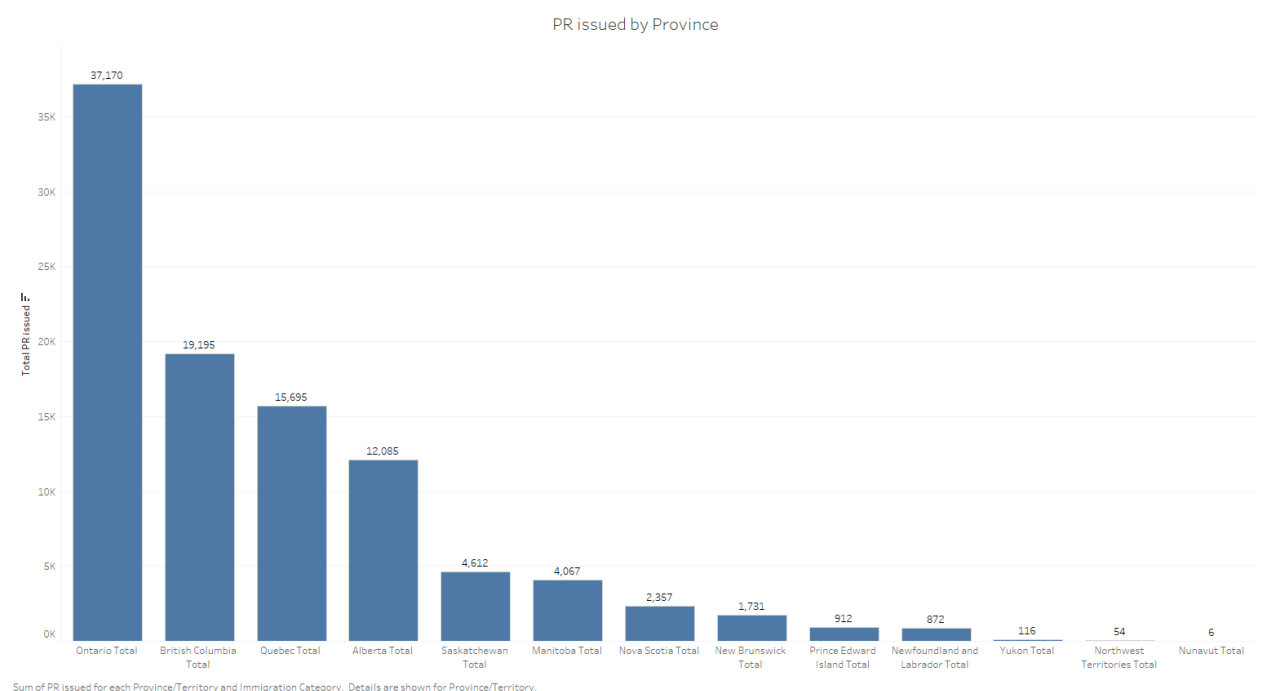

Glance over yearly PR approval trend

The above line chart displays the yearly PR approval count along with the trend line (Linear). We can understand the dip in the year 2020 is due to the pandemic of Covid 19.

3. **Overview of Annual Approved Permanent Residency Applications in Canada**

Country of Citizenship, Year and sum of PermanentResidencyApproved. Color shows sum of PermanentResidencyApproved. Size shows sum of PermanentResidencyApproved. The marks are labeled by Country of Citizenship, Year and sum of PermanentResidencyApproved. The data is filtered on Action (Country of Citizenship), which keeps 212 members. The view is filtered on Country of Citizenship, which keeps 10 of 212 members.
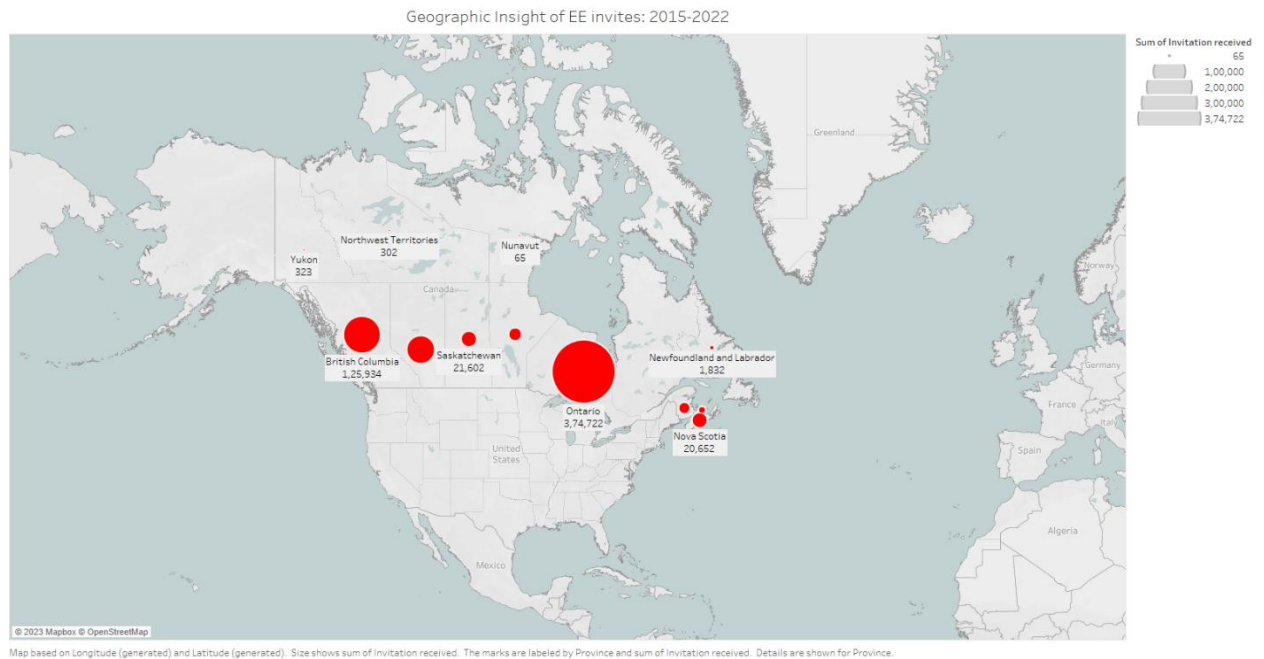
The bubble chart shows us the yearly top 10 Countries for the years 2015 – 2022. We can understand that India has been the top country across the years.

4. Provincial Distribution of Permanent Residency Issuances in Canada.

Sum of PR issued for each Province/Territory and Immigration Category. Details are shown for Province/Territory.

The histogram helps in understanding the distribution of PR issuances province wise. We can understand that Ontario has highest number of PR issuances for the years 2015-2022.

5. Derive Geographical Insights of Canadian provinces for express entry program (2015 – 2022)

Map based on Longitude (generated) and Latitude (generated). Size shows sum of Invitation received. The marks are labeled by Province and sum of Invitation received. Details are shown for Province.

The maps display the province information for admissions through express entry program and helps us identify the top 10 provinces of Canada for the express entry program. Ontario is leading in the express entry segment as well.

6. **Analysis of country level information for express entry program to identify leading countries. (Top 10)**

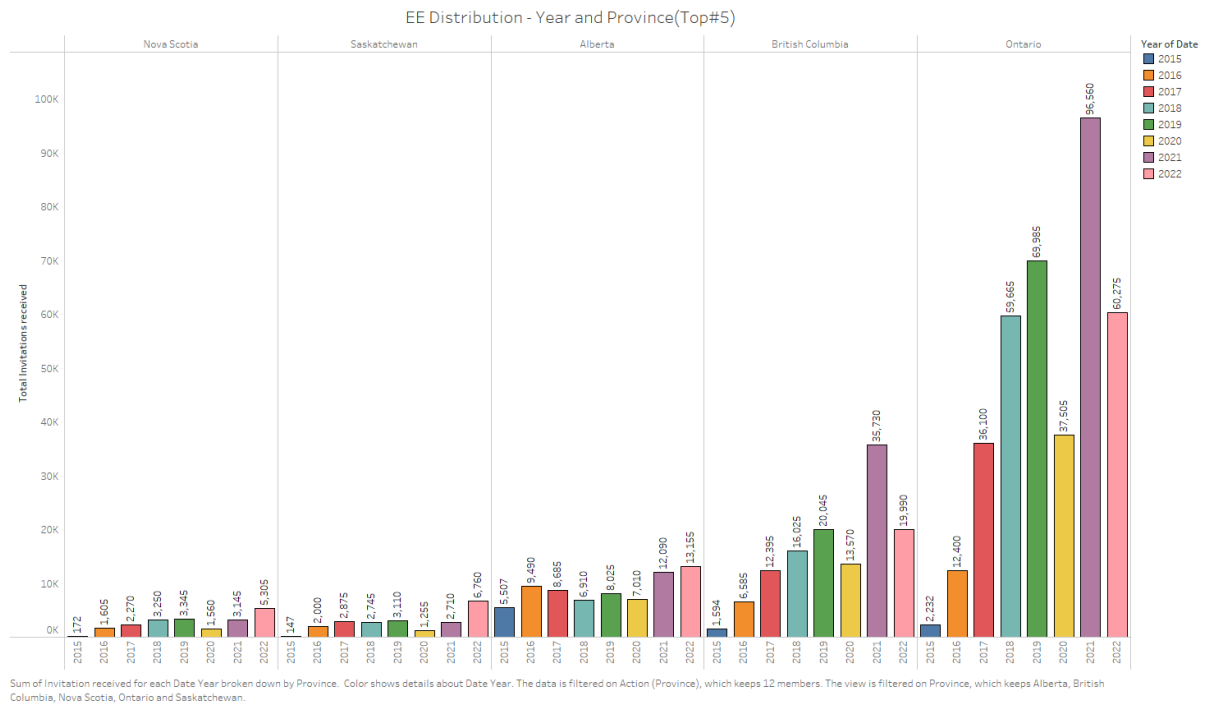Country level Express Entry Invitations issued over the years: 2015-2022

Country of Cit..	2015	2016	2017	2018	2019	2020	2021	2022
India	1,844	9,580	26,325	39,680	50,840	27,645	82,960	53,725
Nigeria	97	1,035	2,880	6,650	8,430	3,920	5,795	13,785
China	359	2,645	5,740	5,885	5,755	4,315	11,700	4,405
USA	361	1,250	2,845	3,580	3,945	2,350	4,285	2,825
Pakistan	104	820	1,520	3,520	4,690	2,295	1,685	4,005
Philippines	2,445	3,740	2,685	1,480	1,330	825	2,940	2,235
UK	799	2,020	2,385	2,650	2,565	1,670	3,550	1,590
Brazil	84	480	1,440	2,215	2,515	1,960	5,645	1,850
S. Korea	349	745	1,170	1,190	1,650	1,035	3,850	1,350
Iran	21	320	385	1,365	1,415	1,135	2,385	2,030

Sum of Invitations issued broken down by Year vs. Country of Citizenship. Color shows sum of Invitations issued. The marks are labeled by sum of Invitations issued. The view is filtered on Country of Citizenship, which has multiple members selected.

The table shows us the information at country level and the count of invitations issued for express entry program for the years 2015 – 2022 with countries ranked (Top 10).

7. **Mapping Provincial Distribution of Express Entry Issuances in Canada (2015 – 2022) (Top 5)**

Sum of Invitation received for each Date Year broken down by Province. Color shows details about Date Year. The data is filtered on Action (Province), which keeps 12 members. The view is filtered on Province, which keeps Alberta, British Columbia, Nova Scotia, Ontario and Saskatchewan.
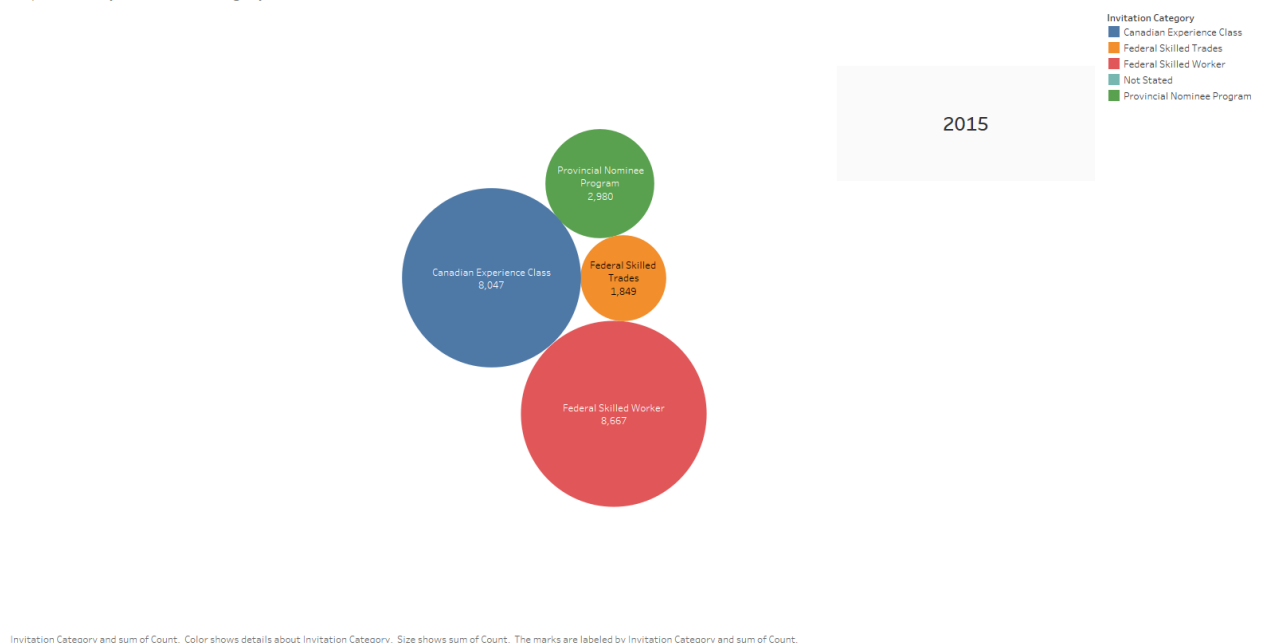
The histogram helps us in identifying the yearwise count of express entry issuances for the years 2015 – 2022 of the top 5 provinces of Canada.

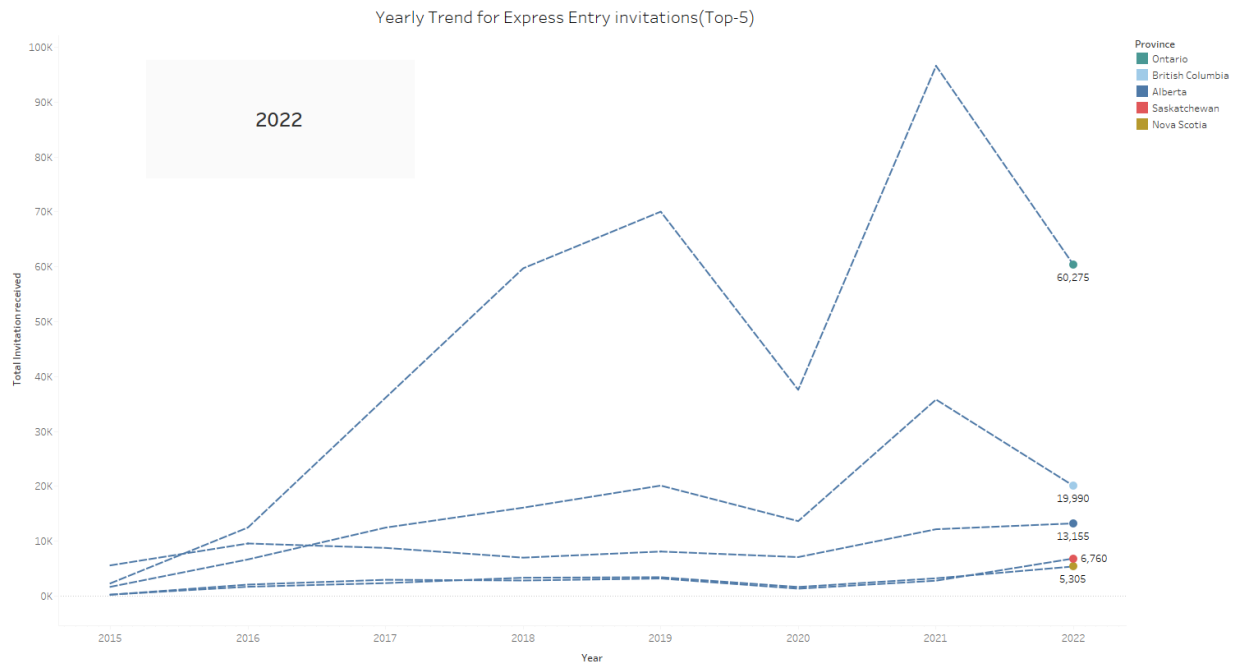8. **Explore Express Entry Invitation Categories in Canada (2015 - 2022) (Yearly)**

Express Entry invitation Categorywise: 2015-2022

Invitation Category and sum of Count. Color shows details about Invitation Category. Size shows sum of Count. The marks are labeled by Invitation Category and sum of Count.

The animated bubble chart shows us the invitation categories for express entry program for the years 2015 – 2022 and we can observe that every year we had different categories at the top and that can be seen in the tableau animation.

9. **Understand the annual trends for express entry in Canada (2015 - 2022) (yearly)**

Yearly Trend for Express Entry invitations(Top-5)

2022

Province
Ontario
British Columbia
Alberta
Saskatchewan
Nova Scotia
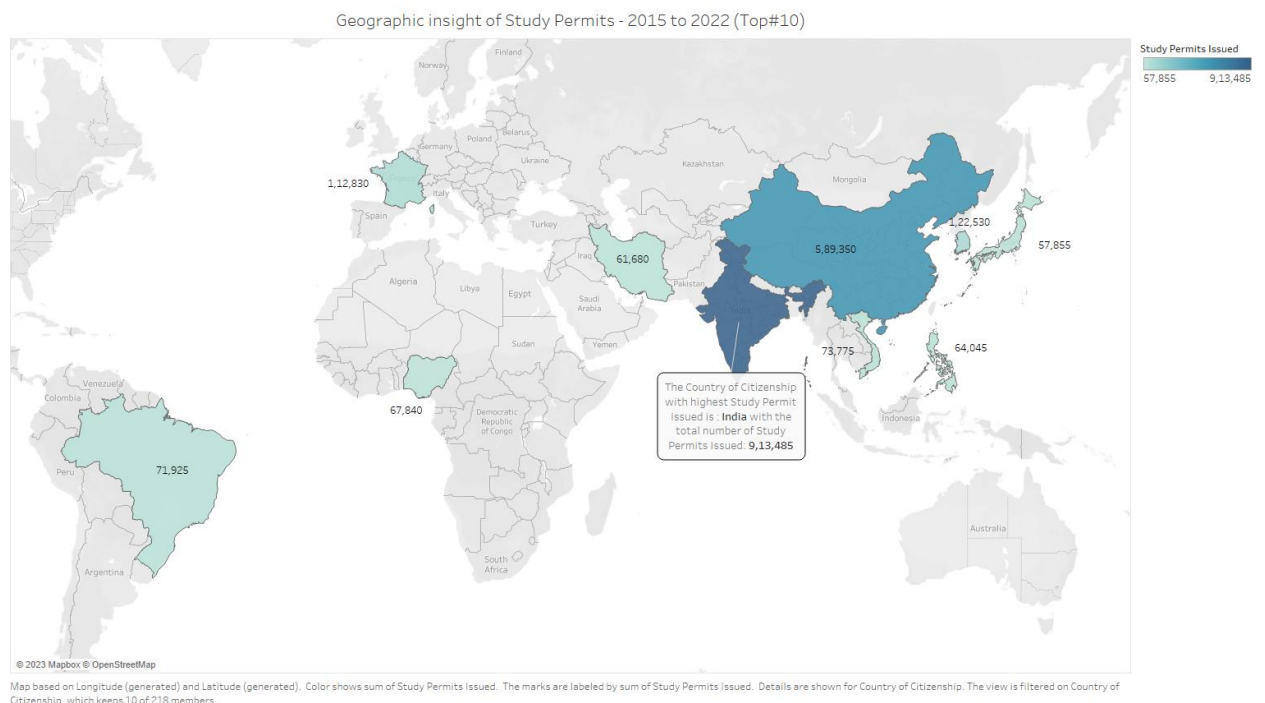
60,275
19,990
13,155
6,760
5,305

The plot of sum of Invitation received for Date Year. Color shows details about Province. The marks are labeled by sum of Invitation received. The data is filtered on Action (Province), which keeps 12 members. The view is filtered on Province, which keeps Alberta, British Columbia, Nova Scotia, Ontario and Saskatchewan.

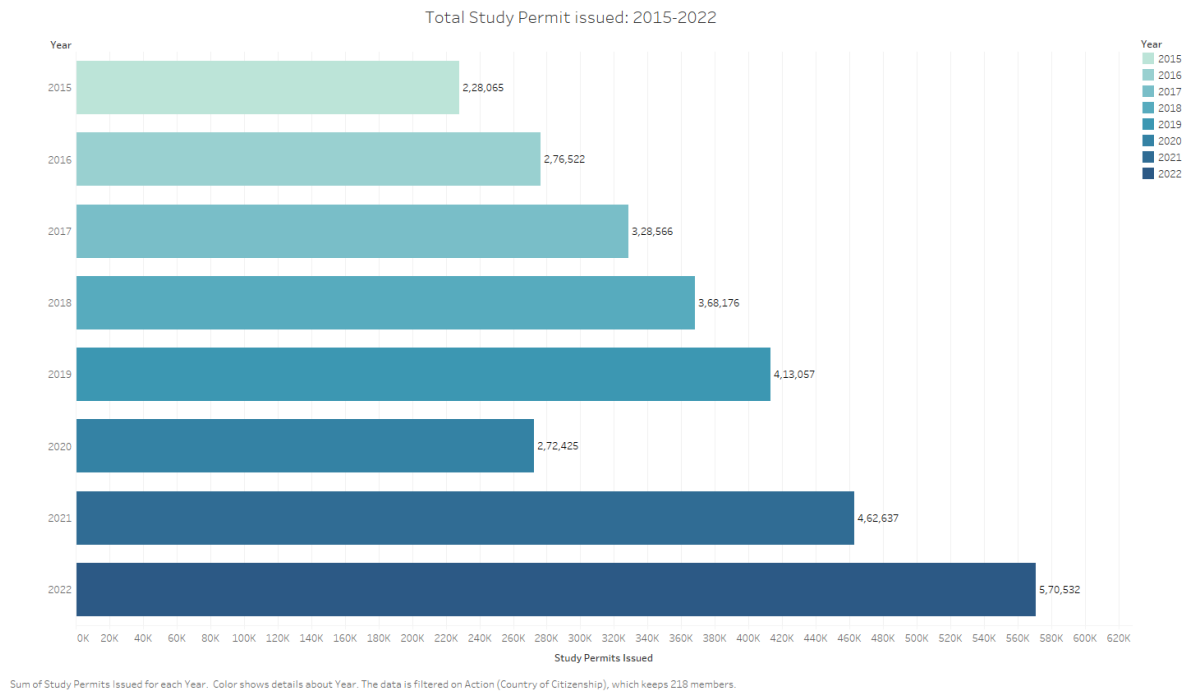The animated line chart shows us the yearly counts of express entry for the top 5 provinces of Canada.

We can understand that there has been a steady rise in the invitations till 2020 and we have seen a dip due to the pandemic, following year the invitations rose again and slight decline in the subsequent year.

10. **Derive Geographical Insights of issued study permits at Country level (2015 – 2022) [Top 10]**

Geographic insight of Study Permits - 2015 to 2022 (Top#10)

Study Permits Issued
57,855   9,13,485

The Country of Citizenship with highest Study Permit issued is : India with the total number of Study Permits Issued: 9,13,485

Map based on Longitude (generated) and Latitude (generated). Color shows sum of Study Permits Issued. The marks are labeled by sum of Study Permits Issued. Details are shown for Country of Citizenship. The view is filtered on Country of Citizenship, which keeps 10 of 218 members.
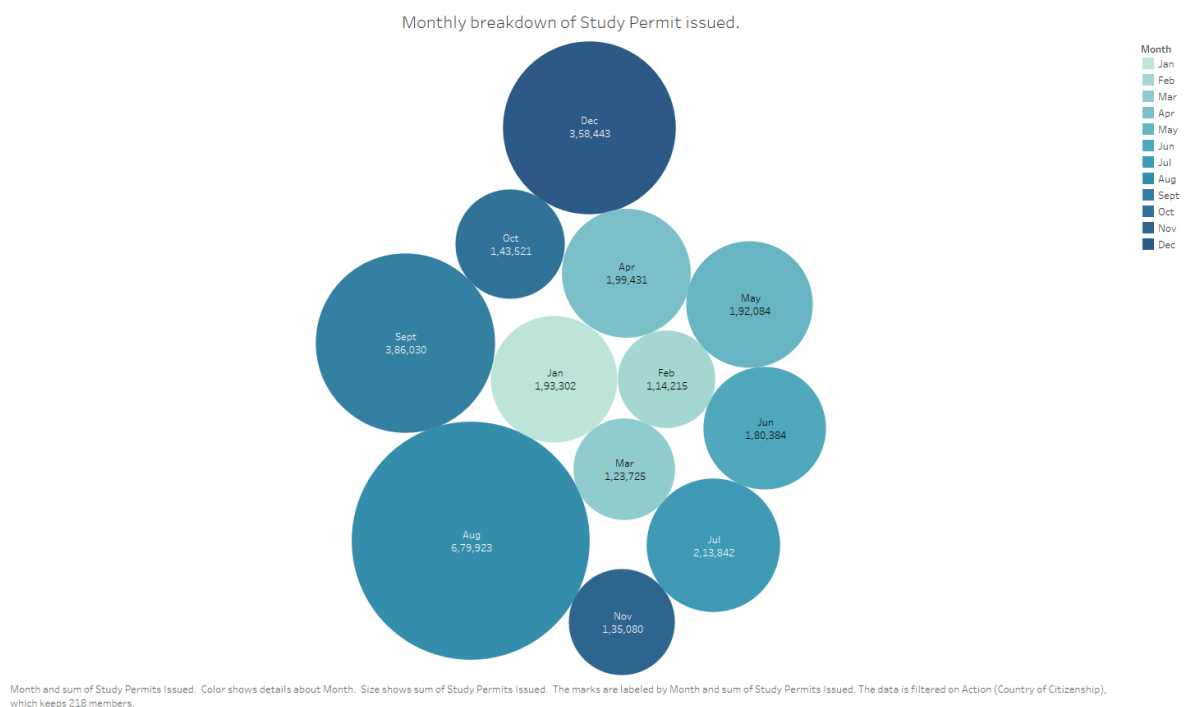
The maps show the top countries for which study permits have been issued by the Canadian government for the years 2015 – 2022. India is the top country in the study permits category.

11. **Analyze the yearly trends of issued study permits (2015 – 2022)**
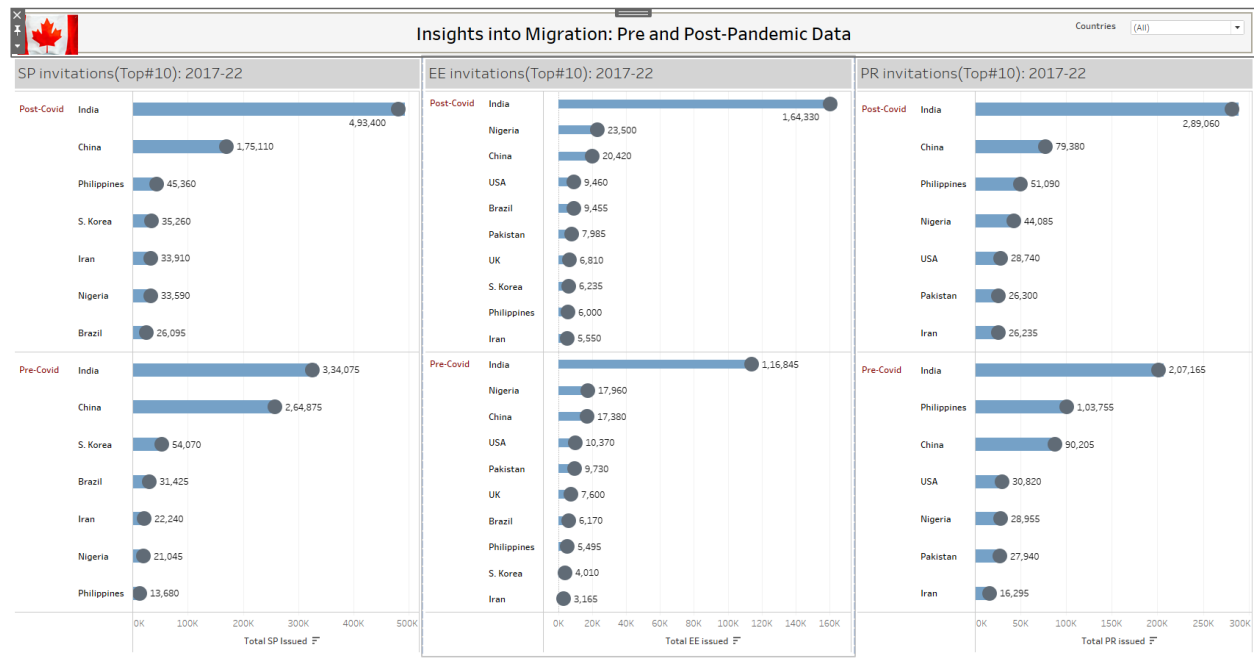
Total Study Permit issued: 2015-2022

The bar chart helps us visualize the count of study permits every year from 2015 – 2022 and it can also be observed that study permits issued have been on a continuous rise even after a dip in the year 2020 due to the covid 19 pandemic.

12. Monthly Analysis of Study Permits Issued (2015-2022)

Monthly breakdown of Study Permit issued.

The bubble chart shows the monthly count of study permits issued for the years 2015-2022. We can see that August, September and December have the highest number of permits compared to other months of the year since new college session starts around those months.

13. Comparative Analysis: Study Permits, Express Entry, and PR Data. Pre - and Post-COVID-19

The lollipop chart shows the comparative analysis for study permits, express entry invitations and permanent resident data for the period (2017 - 2022) before covid 19 pandemic and post pandemic. India has been the top nation for all the categories listed above and important observation is the significant rise of immigration in these categories post covid.

Limitations of dataset:

1. Data is not available at a granular level and has been aggregated.
2. Data available has limited variables for each category.
3. Data is available only from 2015 to 2023.

Conclusion:

1. Dashboard(s) can help us identify key trends and patterns related to immigration routes namely Express entry, study permit and Permanent residency.

2. Interactability of the dashboard can help us drill down into the visuals that interests the user.

3. We can observe that India is currently the leading nation for immigration categories of Express entry, Study permits and acquiring permanent residency.

4. We can observe that the province Ontario is the top location preferred by the applicants.

5. We can understand that the months of August, September and December saw the highest number of study permits issued.

6. It is evident that the Covid-19 pandemic has slowed down the immigration for all the categories related to our data, however, we can observe that the post-pandemic backlog has been cleared with a substantial rise of invitations issued.

References

- ***Canada's population reaches 40 million***. (2023, June 19). Statistics Canada: Canada's national statistical agency / Statistique Canada : Organisme statistique national du Canada. https://www.statcan.gc.ca/en/subjects-start/population_and_demography/40-million

- ***Express entry permanent residents – Monthly IRCC updates*** - *Open government Portal*. (2017, February 28). Open Government | Open Government, Government of Canada. https://open.canada.ca/data/en/dataset/52e4b14b-597a-4ecf-a184-23a6e69b0d57

- ***Permanent residents – Monthly IRCC updates*** - *Open government Portal*. (2017, February 28). Open Government | Open Government, Government of Canada. https://open.canada.ca/data/en/dataset/f7e5498e-0ad8-4417-85c9-9b8aff9b9eda

- ***Express entry-invited candidates – Monthly IRCC updates*** - *Open government Portal*. (2016, September 2). Open Government | Open Government, Government of Canada. https://open.canada.ca/data/en/dataset/593e9165-c6ce-4f9b-b519-03d315f92cd4

- ***Temporary residents: Study permit holders*** *– Monthly IRCC updates – Canada – Study permit holders by country of citizenship and year in which permit(s) became effective*. (n.d.). Open Government | Open Government, Government of Canada. https://open.canada.ca/data/en/dataset/90115b00-f9b8-49e8-afa3-b4cff8facaee/resource/b505b9bc-d375-4525-af39-afdf25639acf

- ***Transition from temporary resident to permanent resident status – Monthly IRCC updates*** - *Open government Portal*. (2016, October 17). Open Government | Open Government, Government of Canada. https://open.canada.ca/data/en/dataset/1b026aab-edb3-4d5d-8231-270a09ed4e82