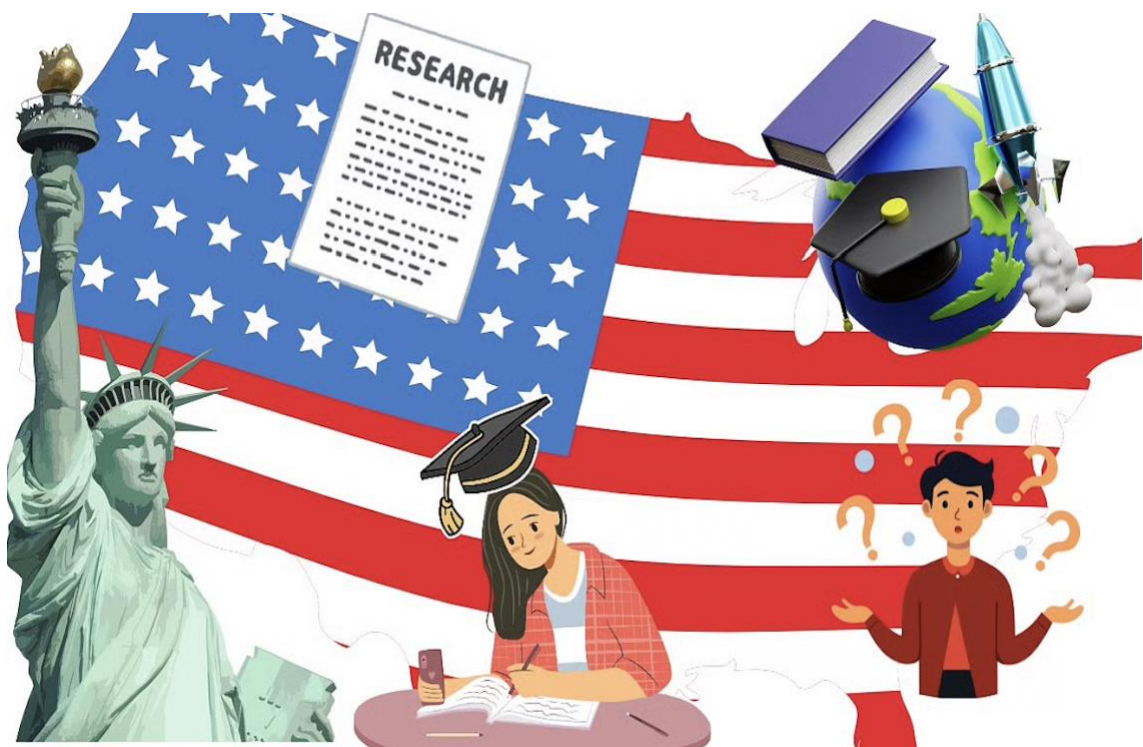


Beyond Borders: A Comprehensive Study of International Students in the United States



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1. INTRODUCTION

Every year, hundreds of thousands of students pack their bags and leave their families behind to pursue quality education in the United States. This journey is more than just academic; it is deeply personal, often involving cultural shifts, emotional resilience, and life-changing decisions. These brave individuals don't just come here to earn degrees; they bring their cultures, languages, and diversity that enrich American universities and transform classroom experience. Having experienced this journey myself, I've always been curious about the stories behind the numbers.

My research dives deep into these human stories while examining the bigger picture of international education in America. I'm particularly curious about the following key aspects of this global migration of minds:

- **The Global Classroom:** Understanding which corners of the world are sending us their brightest students and how these patterns shift with world events.
- **Dreams and Disciplines:** Exploring which academic fields are attracting international students, from the rapid rise in computer science to the consistent popularity of business programs.
- **Ripple Effects:** Understanding how international students contribute to local economies and the vibrancy of higher education institutions across the U.S.

***“For every 7 international students enrolled,
3 U.S. jobs are created.”***

- NAFA

1.1 Research Questions

This project aims to analyze patterns and trends among international students in the United States by answering the following research questions:

Who they are

- How have international student enrolments changed over time in comparison to the population?
- Which regions or countries have contributed the highest number of international students?

What they pursue

- What are the most popular fields of study among international students? Do these change with time or the origin country of the students?
- How many of these international students have employment authorizations?
- Who are the top employers of international students during their training programs - CPT, OPT, STEM-OPT?

Why it Matters

- What is the contribution of international students to the U.S. economy in 2023–2024?

This research isn't just about numbers and trends; it's about understanding a phenomenon that touches millions of lives and shapes the future of American higher education. I hope that by telling these stories with data, we can help universities better serve their international communities, assist policymakers in making informed decisions about immigration and education policy, and support the countless students who continue to see America as the place where their academic and professional dreams can come true.

2. METHODOLOGY

This research utilizes data from four authoritative web-based sources to ensure comprehensive coverage of international student trends and impacts:

1. Open Doors Data

- **Publisher:** Institute of International Education (IIE)
- **Content:** Comprehensive statistics on enrolment trends by regions, sub-regions, countries, and their fields of study
- **Website:** <https://opendoorsdata.org/>

2. Population Data

- **Publisher:** World Bank
- **Content:** Historical Population data for each country and year.
- **Website:** <https://data.worldbank.org/>

3. SEVIS

- **Publisher:** U.S. Department of Homeland Security
- **Content:** Historical data on International students with employment authorizations under training programs and their employers.
- **Website:** <https://www.ice.gov/sevis>

4. NAFSA International Student Economic Value Tool

- **Publisher:** Association of International Educators
- **Content:** State-by-state economic contributions of international students for the year 2023-24.
- **Website:** <https://www.nafsa.org/>

These sources offer complementary insights into international student trends: SEVIS provides real-time tracking of student visa activity, Open Doors delivers long-term enrollment and academic trend data, and NAFSA quantifies the economic impact at national and state levels.

Combined, they support a comprehensive analysis of enrollment patterns, academic preferences, and financial contributions across multiple dimensions and periods. Incorporating population data further enhances this analysis by enabling normalized comparisons across countries and regions.

Detailed data source links, notes, and data preparation steps for each dataset used in this study are provided in the Appendix for transparency and reproducibility.

3. ANALYSIS

This section explores the research questions through a series of data-driven visualizations. The analysis utilizes data from multiple sources to identify meaningful patterns and trends related to international student activity in the United States over time.

3.1 Research Question: How have international student enrolments changed over time in comparison to the population?

The following visualization compares the growth of international student enrollments in the U.S. with global population trends over the past 25 years. This comparison helps determine whether changes in enrollment align with global population growth.

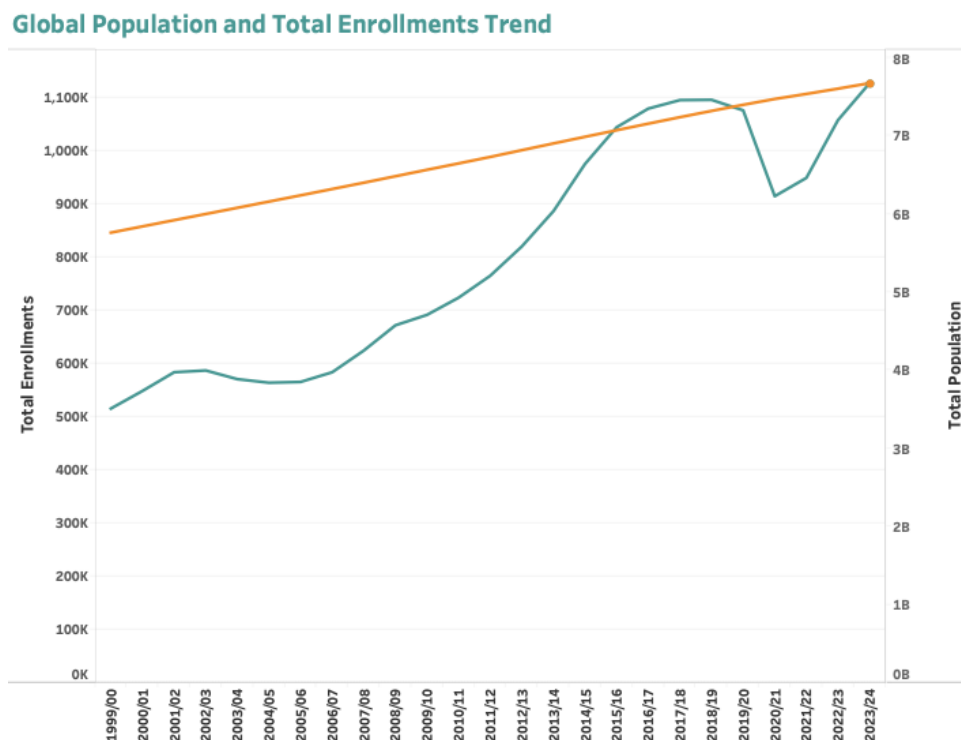


Figure 1: Global Population vs. International Student Enrollments

- In the above graph, the **orange line** represents the **global population** (sourced from World Bank data), which shows a consistent upward trend from 1999/2000 to 2023/24, reflecting natural population growth and longevity improvements worldwide.

- The **teal line** shows **international student enrollments** (sourced from Opendoors), which steadily increased until 2018/19, peaking at over 1.1 million students, followed by a noticeable decline for the next 2 years. Then, gradually increased after 2020/21. This sharp drop aligns with the global impact of the COVID-19 pandemic, which led to international travel bans, embassy closures, remote learning, and policy uncertainty for F-1 visa holders.

According to NAFSA, there was a 15% drop in overall international student enrolment and a 43% decline in new enrolments during 2020 ([NAFSA COVID-19 Impact Report](#)). The recent rebound in student numbers after 2021/22 highlights the gradual recovery as travel restrictions eased and institutions resumed in-person learning. Thus, the visualization clearly demonstrates how global disruptions such as a pandemic can affect educational mobility, even when the global population continues to rise.

3.2 Research Question: Which regions or countries have contributed the highest number of international students?

To address this question, a visual breakdown of international student enrollments by region and country was created. The dashboard highlights the leading contributors based on absolute enrollment numbers.

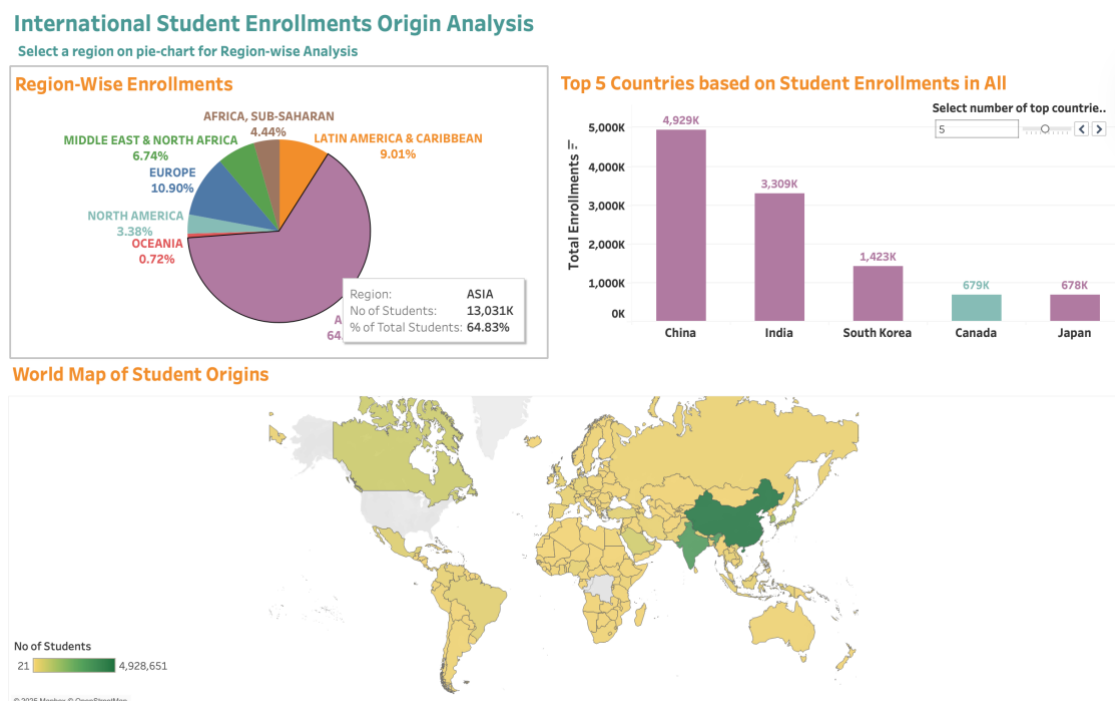


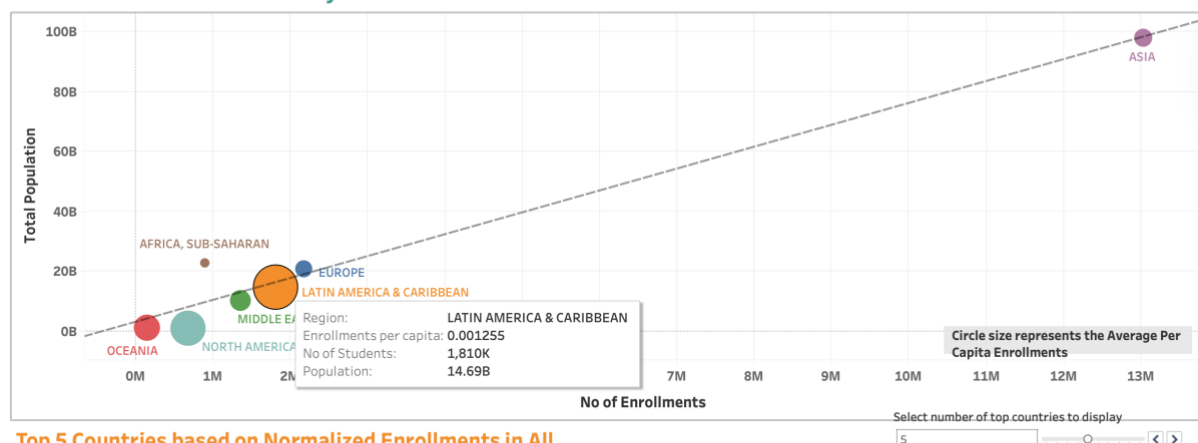
Figure 2: Dashboard of International Student Origins: Regional and Country-Level Insights

The pie chart in the above dashboard reveals that **Asia** is the leading origin region, accounting for **64.83%** of total international student enrollments. This is significantly higher than other regions, with Europe contributing 10.90% and the remaining all with less than 10% contribution.

The visualization also shows the **top countries** based on total student enrollments. These countries' high international enrollment numbers can be attributed to a combination of factors like large population sizes, strong demand for U.S. education, and accessible student visa opportunities.

As absolute enrollment numbers are heavily influenced by population size, they tend to highlight larger countries like India and China by default. To present a balanced perspective, a normalized measure, **Enrollments per capita**, was introduced, which adjusts for national population.

Normalized Enrollment Analysis



Top 5 Countries based on Normalized Enrollments in All

Country	Enrollments per capita	No of Students	Population
Bermuda	0.00660	13.07K	1.96M
Bahamas	0.00514	56.94K	10.73M
St. Kitts and Nevis	0.00418	5.79K	1.47M
Dominica	0.00398	8.17K	2.20M
British Virgin Islands	0.00381	2.81K	0.81M

Figure 3: Normalized Enrollment Analysis

The scatter plot in the above dashboard reveals that Latin America and Caribbean nations lead in per capita enrollments. The visualization also shows the **top countries** based on per capita enrollments.

In general, regions with larger populations tend to have higher international student enrollments. This trend holds across most regions, with the notable exception of Sub-Saharan Africa. The Sub-Saharan Africa region appears with a large total population (approx. 1.2 billion) but a relatively small number of international student enrollments compared to its population size. As a result, the region falls below the trend line, indicating underrepresentation in U.S. enrollments when adjusted for population.

3.3. Research Question: What are the most popular fields of study among international students? Do these change with time or the origin country of the students?

To address this question, the dashboard provides a comparative view of international student enrollments across various fields of study. It highlights the distribution between STEM and non-STEM disciplines and identifies the most popular academic areas overall.

Enrollment Analysis by Field of Study

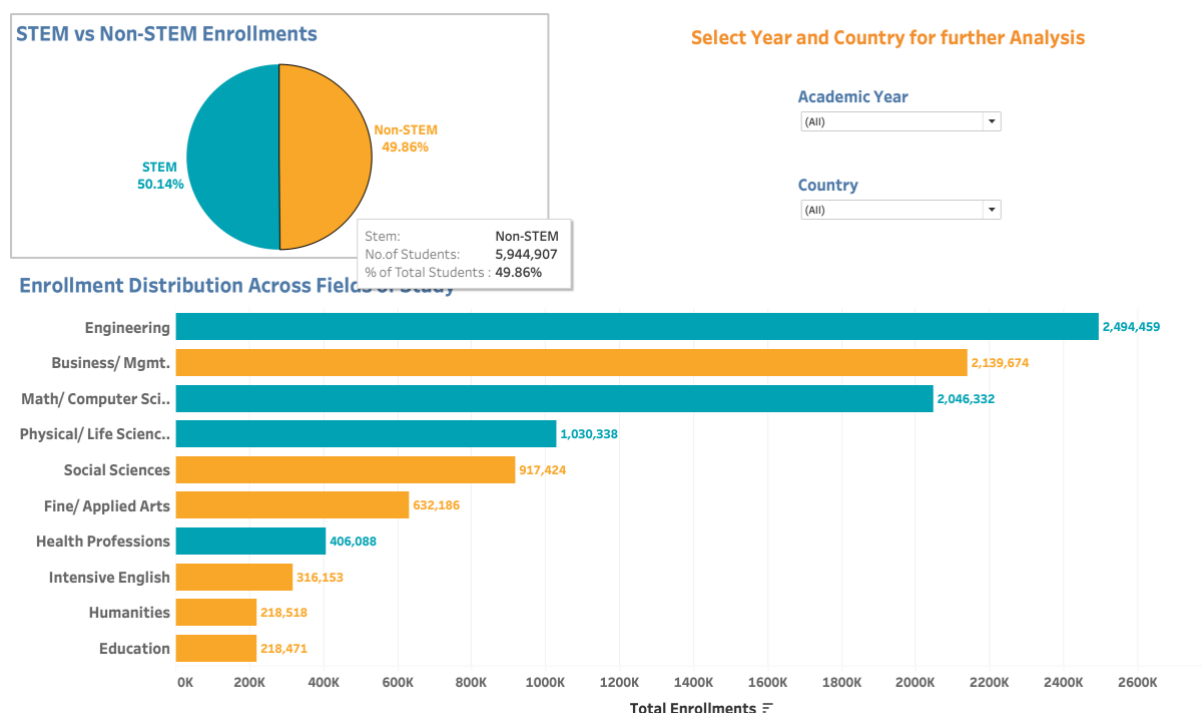


Figure 4: Enrollment Analysis by field of study

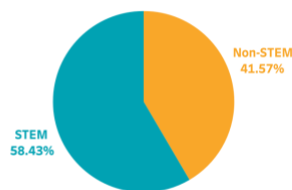
- The distribution of international students between STEM and non-STEM fields is relatively balanced, with STEM slightly leading at 50.14%.
- Engineering (2.49M) is the most enrolled field overall, followed by Business/Management (2.14M) and Math/Computer Science (2.05M). This suggests

that while technical and science-driven fields are slightly preferred, non-STEM fields like business still attract a substantial portion of students.

Having examined the overall distribution across fields of study, the following visualization focuses specifically on enrollments for the academic year 2023/24 to highlight recent preferences among international students.

Enrollment Analysis by Field of Study

STEM vs Non-STEM Enrollments



Select Year and Country for further Analysis

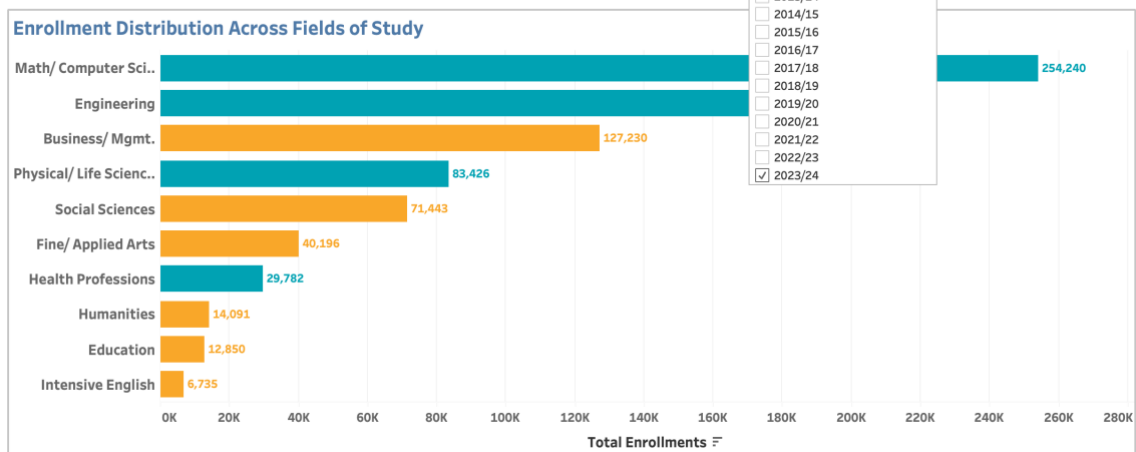


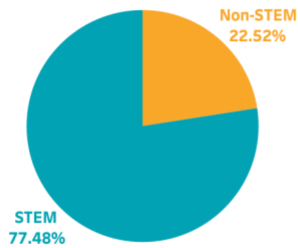
Figure 5: Enrollment Analysis by field of study - 2023/2024

- In 2023/24, STEM enrollments rose to 58.43%, showing a clear upward shift in preference toward technical fields.
- Math/Computer Science (254,240) overtook Engineering as the most enrolled field in this year.
- Business/Management (127,230) remains the top non-STEM choice.
- Fields like Humanities, Education, and Intensive English remain the least popular, accounting for a small fraction of enrollments.

After reviewing the overall and most recent year's enrollment trends, the next visualization focuses on a specific country to examine whether its field-of-study preferences align with global patterns.

Enrollment Analysis by Field of Study

STEM vs Non-STEM Enrollments



Select Year and Country for further Analysis

Academic Year

(All)

Country

India

Enrollment Distribution Across Fields of Study

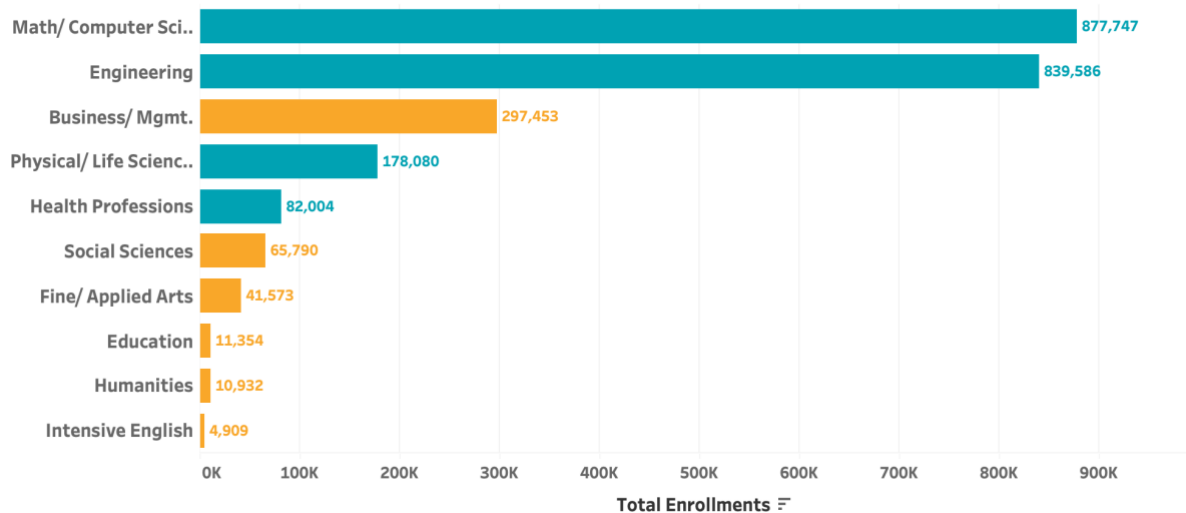


Figure 6: Enrollment Analysis by Field of Study - India

Sample Country: India.

- Between the general international student population and Indian students, India leans more heavily toward STEM, with 77% enrollment and only 23% in non-STEM fields.
- Math/Computer Science (877k) and Engineering (839k) dominate, unlike global preferences.
- Business/Management (297k) is the most preferred non-STEM field among Indian students as well.

3.4 Research Question: How many of these international students have employment authorizations?

The chart below illustrates the number and percentage of international students who received Employment Authorization Documents (EAD) over the years. It highlights trends in post-study work participation among F-1 visa holders.

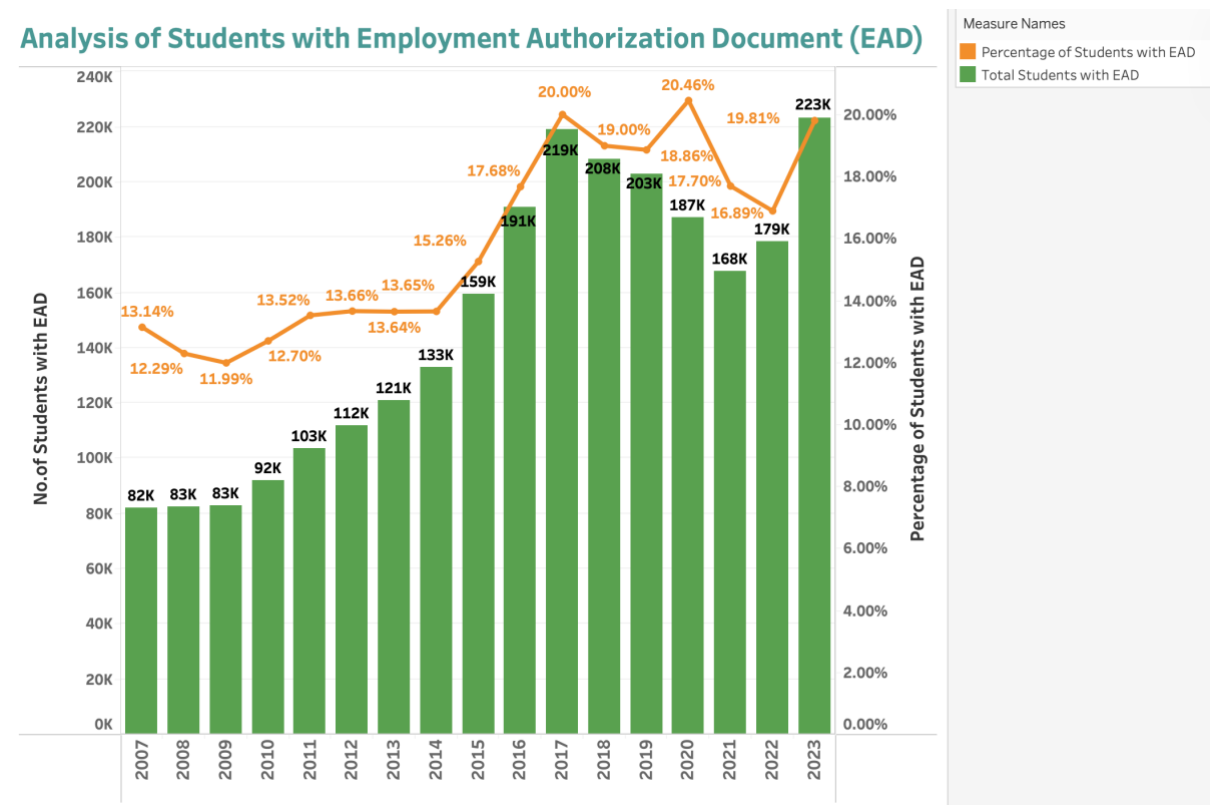


Figure 7: The number and percentage of international students who held an Employment Authorization Document (EAD) from 2007 to 2023.

- A noticeable increase in both the number and percentage of students with Employment Authorization Documents (EAD) begins around **2016**, which aligns with the **expansion of the STEM OPT extension from 17 to 24 months** (Source: [Federal Register](#)). This policy change likely encouraged more international students in STEM fields to pursue post-study work opportunities in the U.S.
- The percentage of EAD participants peaked at **20.46%** in 2018. However, a decline is observed in 2020 and 2021, reflecting the impact of the **COVID-19 pandemic**, which disrupted visa processing, travel, and job placements. The numbers begin to recover by 2022, with a sharp rise to 223K EAD holders in 2023, suggesting a post-pandemic rebound in work authorizations.

3.5 Research Question: Who are the top employers of international students during their training programs - CPT, OPT, STEM-OPT?

The following bar chart illustrates the top 10 employers of international students in the United States who were authorized to work and received the Employment Authorization Document (EAD), combining data across the years 2017, 2018, 2019, and 2024. The remaining years' data are not available.

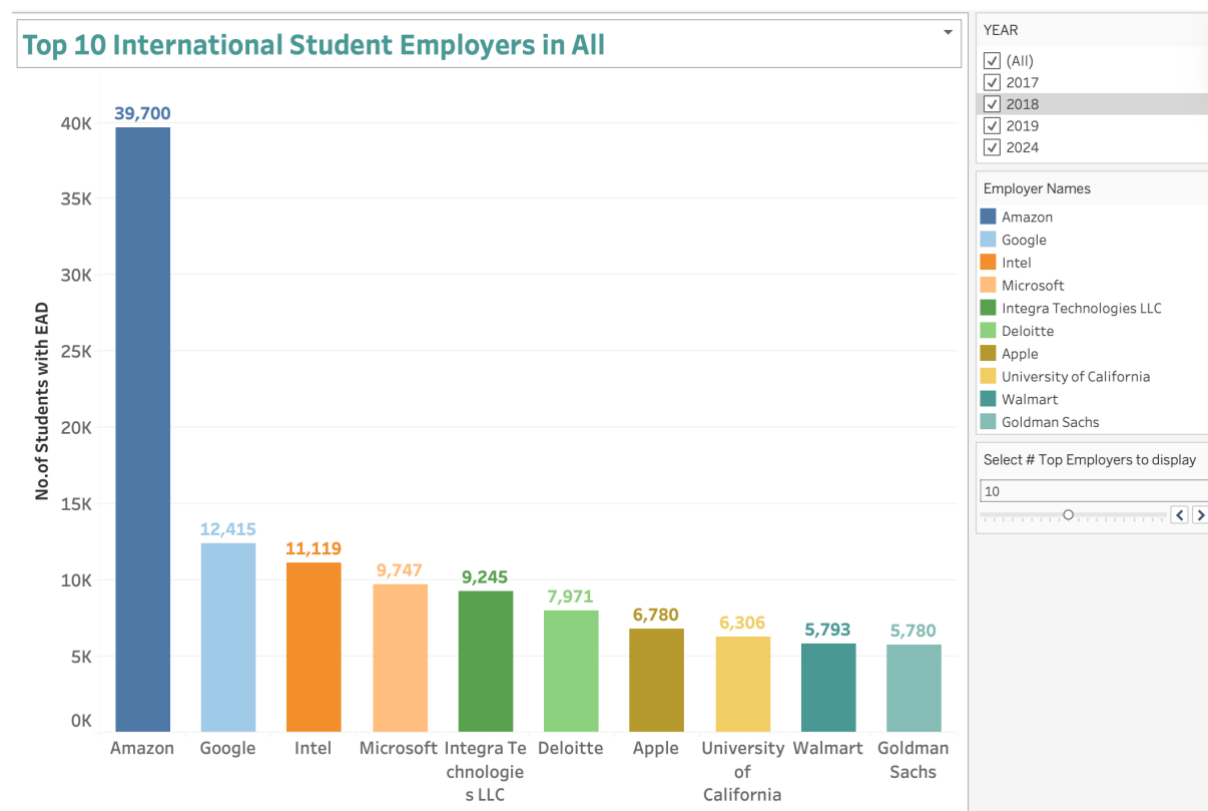


Figure 8: Top Employers of International Students

- Amazon is the dominant employer that employed 39,700 international students under EAD, a number **over three times** that of its nearest competitor.
- The tech sector leads overall, consisting of firms like Google (12,415), Intel (11,119), Microsoft (9,747), and Apple (6,780).

While reviewing the top employers, certain companies that were prominent in the years 2017–2019 no longer appear in the 2024 rankings. This shift may reflect enhanced compliance efforts and increased oversight by U.S. immigration authorities to ensure the legitimacy of OPT employers.

Public records and legal reports have identified companies such as **Integra Technologies**, **AZTech Technologies**, **Tellon Trading**, **Arecy**, **CG Max Design Corporation**, **XCG Design Corp**, and **Sino** as entities that allegedly exploited the OPT program by offering fictitious or non-compliant employment arrangements to F-1 visa holders. These enforcement actions have likely contributed to the absence of these names from more recent employer datasets. (Source: [Luu Law](#), [VisaRefusal.com](#))

3.6 Research Question: What is the contribution of international students to the U.S. economy in 2023–2024?

The dashboard below illustrates both the economic impact and enrollment density of international students across the United States for the academic year 2023–24. The visualization combines a choropleth map with state-specific statistics, highlighting the significance of international students in local economies.

Economic Contribution of International Students: 2023-24

Average Economic Contribution per Student in New York **\$46K**

Total Jobs Created in New York **51.72K**

State-wise International Student Enrollments

**By hovering on each state - values change to display State...

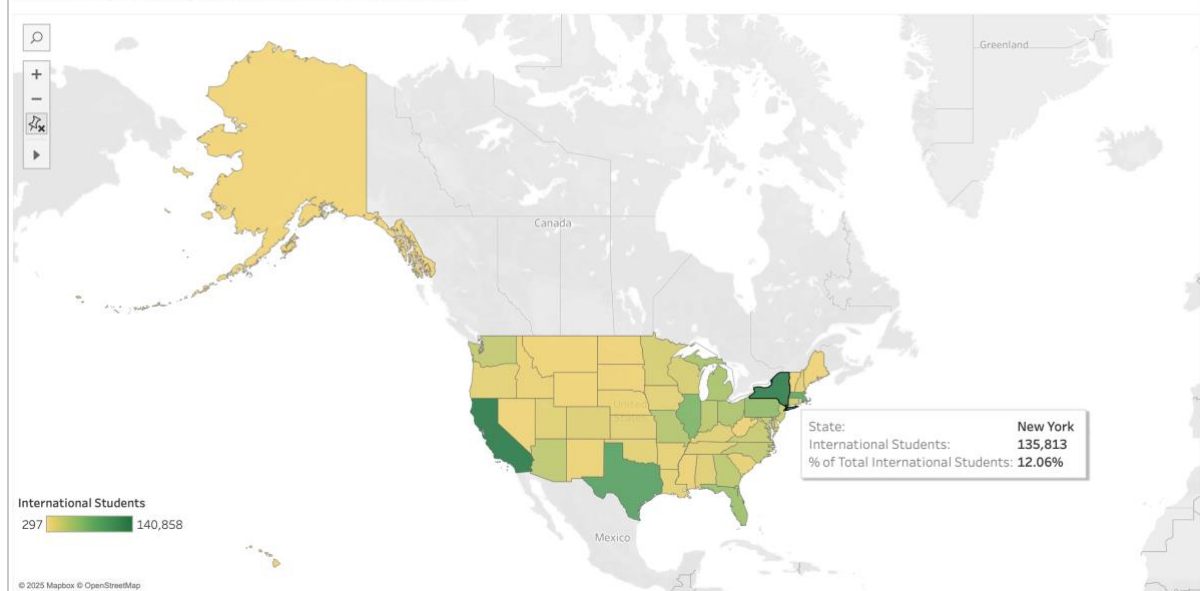


Figure 9: Economic contribution of International students: State-Level Insights (2023-24)

The average economic contribution per international student across the United States in 2023–24 is \$1,798K, and collectively they created over 378,000 jobs across the country.

4. CONCLUSION

This study provided a comprehensive analysis of international student trends in the United States by examining enrollment patterns, academic preferences, employment participation, and economic contributions. Below are the key conclusions drawn for each research question:

1. How have international student enrollments changed over time in comparison to the population?

While the global population has steadily increased, international student enrollments peaked in 2018/19 and dropped significantly during 2020–21 due to the COVID-19 pandemic. The recent recovery suggests that enrollment trends are more sensitive to global events than to demographic growth.

2. Which regions or countries have contributed the highest number of international students?

Asia contributes the highest number of international students overall, with China and India leading. However, when adjusted for population, small Caribbean countries like Bermuda and the Bahamas rank highest in per capita enrollments.

3. What are the most popular fields of study among international students? Do these change with time or the origin country?

Overall, **STEM fields** (like Engineering and Computer Science) and **Business/Management** consistently rank as the most popular among international students. While the global trend favors these fields, the exact distribution can vary by country and may differ slightly from year to year.

4. How many of these international students have employment authorizations?

Roughly 11–20% of international students receive employment authorization (EAD), with a clear uptick after the 2016 expansion of the STEM OPT program. After a temporary decrease during the pandemic, the EAD numbers are now on the rise again.

5. Who are the top employers of international students during their training programs?

Amazon, Google, and Microsoft are the top employers of EAD holders. The disappearance

of previously listed companies in recent years likely reflects improved enforcement against fraudulent OPT practices.

6. What is the contribution of international students to the U.S. economy in 2023–2024?

In 2023–24, international students contributed approximately **\$1.798 billion** and supported over **378,000 jobs**.

4.1 Additional Research Questions

While this project provided valuable insights into the origin trends, academic interests, and economic contribution of international students in the United States, it also revealed several areas where further investigation could deepen our understanding. Future research could focus on:

1. Expanding data coverage: Particularly in areas like employer information and state-level economic contributions, to allow for more detailed and actionable insights.

2. Analyzing retention and graduation outcomes: How do international students perform across different disciplines and institutional types?

3. Exploring post-graduation trajectories: How many students successfully transition from OPT/CPT to long-term employment or permanent residency?

4. Policy Impact Analysis: Assessing the impact of shifting policies and global events on student enrollment, mobility, and institutional planning.

5. Student Experience and Wellbeing: Investigating the holistic student experience, including social integration, financial challenges, and mental health, is a critical factor that shapes student success but is often underreported.

Addressing these questions would support universities, employers, and policymakers in making data-informed decisions that strengthen support systems for international students and enhance their long-term contributions.

Appendix

1. Open Doors Data (Institute of International Education)

a. [Enrollments by Places of Origin - Opendoors data](#)

Notes:

- Dash symbol (-) indicates no data available.
- In the 1969/70 publication, 3,693 students had an unknown place of origin.
- Regional names and data reflect Open Doors 2024; these may differ from older publications.
- Historical data may not always sum to stated totals.

Data Preparation:

- Removed first two rows and last two columns (AM, AN).
- Deleted “World Total” row and empty rows.
- Removed rows 297–303 containing notes.
- Manually rearranged regional and sub-regional data in Excel.
- Pivoted years as “Academic Year”; renamed “students” as “No of Students”.

b. [Field of Study by Countries - Opendoors data](#)

Notes:

- * Indicates STEM (Science, Technology, Engineering, and Math) field.
- Percentages represent student enrollment by field.
- Dash symbol (-) indicates no data available.
- Last updated: 11/14/2024.

Data Preparation:

- Deleted first two rows and note rows (37–42).
- Rearranged and pivoted data using Tableau Prep.
- Created a Boolean column “STEM” (Yes/No) based on the field category.
- Renamed columns: Country, Field_of_study, Academic_Year, No_of_Students

2. World Bank – [Global Population Data](#)

Notes:

- The population is based on de facto counts (all residents, regardless of citizenship).
- Values shown are midyear estimates.
- Last updated: 07/01/2025.

Data Preparation:

- Removed sheets: Metadata – Indicators and Metadata – Countries.
- Deleted the first three rows of the 'Data' sheet.
- Removed unnecessary columns (Country Code, Indicator Name, Indicator Code).
- Pivoted data in Tableau and renamed columns: Country, Year, Population.
- Standardized country names for consistency. The following table gives the names of the countries before and after:

Before	After
Bahamas, The	Bahamas
Brunei Darussalam	Brunei
Congo, Dem. Rep.	Congo, Dem. Rep. of the (Kinshasa)
Congo, Rep.	Congo, Republic of the (Brazzaville)
Cote d'Ivoire	Côte d'Ivoire
Czechia	Czech Republic
Egypt, Arab Rep.	Egypt
Hong Kong SAR, China	Hong Kong
Iran, Islamic Rep.	Iran
Korea, Dem. People's Rep.	North Korea
Korea, Rep.	South Korea
Kyrgyz Republic	Kyrgyzstan
Lao PDR	Laos
Macao SAR, China	Macau
Marshall Islands	Marshall Islands, Republic of the
Micronesia, Fed. Sts.	Micronesia, Federate States of
Myanmar	Burma
Russian Federation	Russia
Sao Tome and Principe	São Tomé & Príncipe
Sint Maarten (Dutch part)	Sint Maarten
Slovak Republic	Slovakia
Syrian Arab Republic	Syria
Turkiye	Turkey/Türkiye
Turks and Caicos Islands	Turks and Caicos

Venezuela, RB	Venezuela
Viet Nam	Vietnam
West Bank and Gaza	Palestinian Territories
Yemen, Rep.	Yemen

3. SEVIS Data (U.S. Department of Homeland Security)

a. Employers Reports

- i. [Top Employers 2017 \(PDF\)](#)
- ii. [Top Employers 2018 \(PDF\)](#)
- iii. [Top Employers 2019 \(PDF\)](#)
- iv. [Top Employers 2024 \(PDF\)](#)

Data Preparation:

- Combined data from 2017, 2018, 2019, and 2024 in Tableau Prep.
- Renamed columns and standardized company names for consistency. The following table gives the names of the companies before and after:

Before	After
Adobe Systems Incorporated	ADOBE INC
Advanced Micro Devices, Inc	Advanced Micro Devices
Aecom	AECOM
Apple, Inc	Apple
Blackrock	BlackRock
Brigham and Womens Hospital	Brigham & Women's Hospital
Capgemini	Capgemini America
Cisco Systems	Cisco System, Inc
CloudData Technology LLC	CloudData Technology
Dell, Inc	Dell
Expedia, Inc	Expedia Group
FedEx Services	FedEx
Intel Corporation	Intel
Kforce, Inc	Kforce
Marlabs, Inc	Marlabs
Micron Technology, Inc	Micron Technology
Microsoft Corporation	Microsoft
NVIDIA Corporation	NVIDIA
Pyramid Consulting, Inc	PYRAMID CONSULTING
Qualcomm Technologies, Inc	Qualcomm

ServiceNow, Inc	ServiceNow
Tata Consultancy Services Limited	Tata Consultancy Services
Tesla, Inc	Tesla
Uber Technologies, Inc	Uber Technologies
Vastek, Inc	Vastek

b. [EAD Report](#)

Data Preparation: Extracted data from PDF and manually structured it in Excel.

4. **NAFSA - International Student Economic Value Tool**

[NAFSA Economic Impact Report 2023-24 \(PDF\)](#)

Data Preparation: Extracted state-level data from the PDF and arranged it in Excel