Universities & Racial Diversity

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Research Question

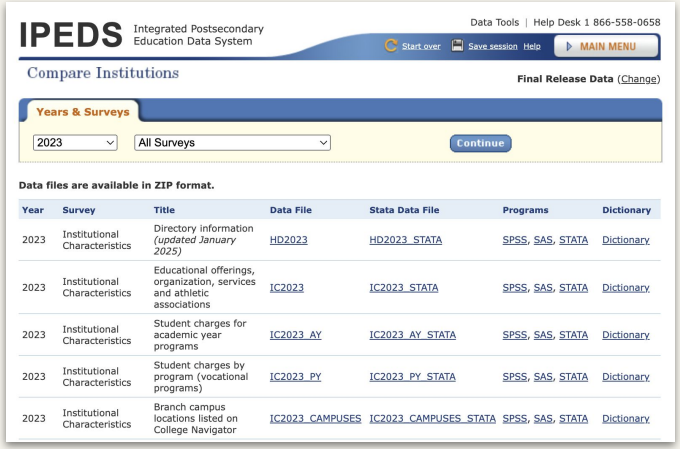
How Does the Location of Universities Affect Their Racial Diversity?

Tractable Data
&
Data Retrieval

Tractable Data

Integrated Postsecondary Education Data System

- A system administered by the National Center for Education Statistics (NCES) that provides detailed data on U.S. higher education institutions.
- Available in annual reports, accessible to the public and researchers.



IPEDS Integrated Postsecondary Education Data System

Data Tools | Help Desk 1 866-558-0658

Start over | Save session | Help | MAIN MENU

Compare Institutions

Final Release Data (Change)

Years & Surveys

2023 | All Surveys | Continue

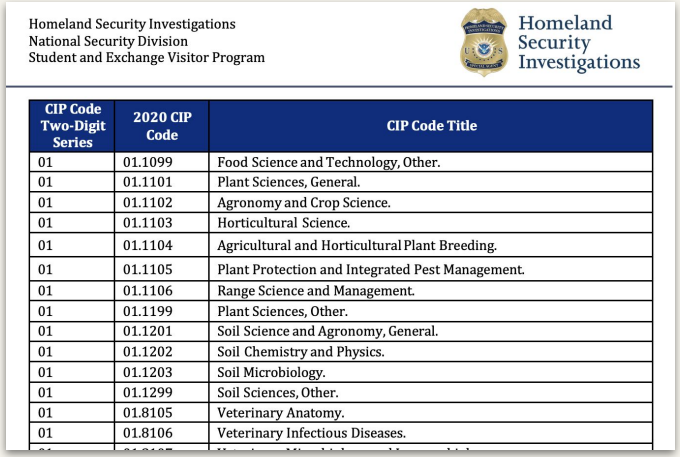
Data files are available in ZIP format.

Year	Survey	Title	Data File	Stata Data File	Programs	Dictionary
2023	Institutional Characteristics	Directory information *(updated January 2025)*	HD2023	HD2023_STATA	SPSS, SAS, STATA	Dictionary
2023	Institutional Characteristics	Educational offerings, organization, services and athletic associations	IC2023	IC2023_STATA	SPSS, SAS, STATA	Dictionary
2023	Institutional Characteristics	Student charges for academic year programs	IC2023_AY	IC2023_AY_STATA	SPSS, SAS, STATA	Dictionary
2023	Institutional Characteristics	Student charges by program (vocational programs)	IC2023_PY	IC2023_PY_STATA	SPSS, SAS, STATA	Dictionary
2023	Institutional Characteristics	Branch campus locations listed on College Navigator	IC2023_CAMPUSES	IC2023_CAMPUSES_STATA	SPSS, SAS, STATA	Dictionary

U.S. Immigration and Customs Enforcement

> 2024 DHS STEM Designated Degree Program List

- A list that includes degree programs across U.S. institutions that are designated as STEM fields.



Homeland Security Investigations
National Security Division
Student and Exchange Visitor Program

Homeland Security Investigations

CIP Code Two-Digit Series	2020 CIP Code	CIP Code Title
01	01.1099	Food Science and Technology, Other.
01	01.1101	Plant Sciences, General.
01	01.1102	Agronomy and Crop Science.
01	01.1103	Horticultural Science.
01	01.1104	Agricultural and Horticultural Plant Breeding.
01	01.1105	Plant Protection and Integrated Pest Management.
01	01.1106	Range Science and Management.
01	01.1199	Plant Sciences, Other.
01	01.1201	Soil Science and Agronomy, General.
01	01.1202	Soil Chemistry and Physics.
01	01.1203	Soil Microbiology.
01	01.1299	Soil Sciences, Other.
01	01.8105	Veterinary Anatomy.
01	01.8106	Veterinary Infectious Diseases.

Data Retrieval

- **Downloaded CSV files from IPEDS:**
  - Directory
    - Year: 2023 (most recent)
    - Variables: university names, locale codes, institution size, cbsa type, institution category
  - Completions
    - Year: 2014-2023
    - Variables: degree level, CIP codes, degrees awarded by race

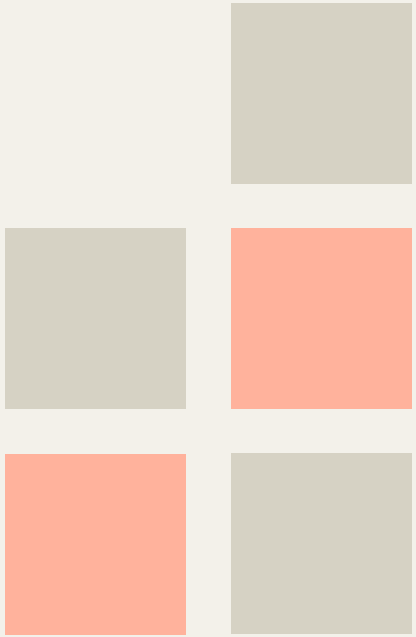
- **Downloaded pdf file from ICE:**
  - 2024 DHS STEM Designated Degree Program List

- **Loaded all files into python**
  - Merged Directory & Completions on UNITID and merged with DHS STEM LIST on CIP Codes

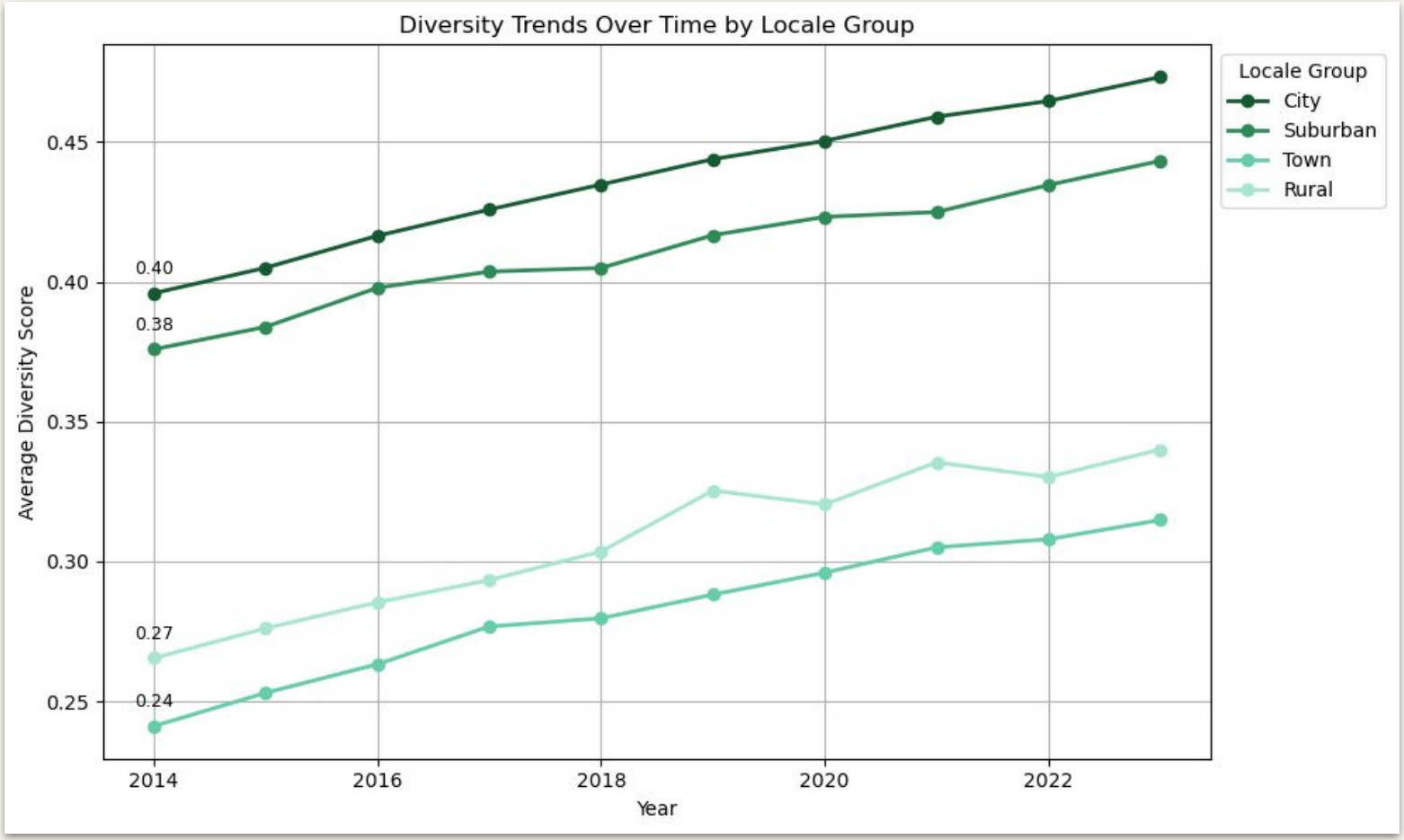
Data Cleaning & Preprocessing

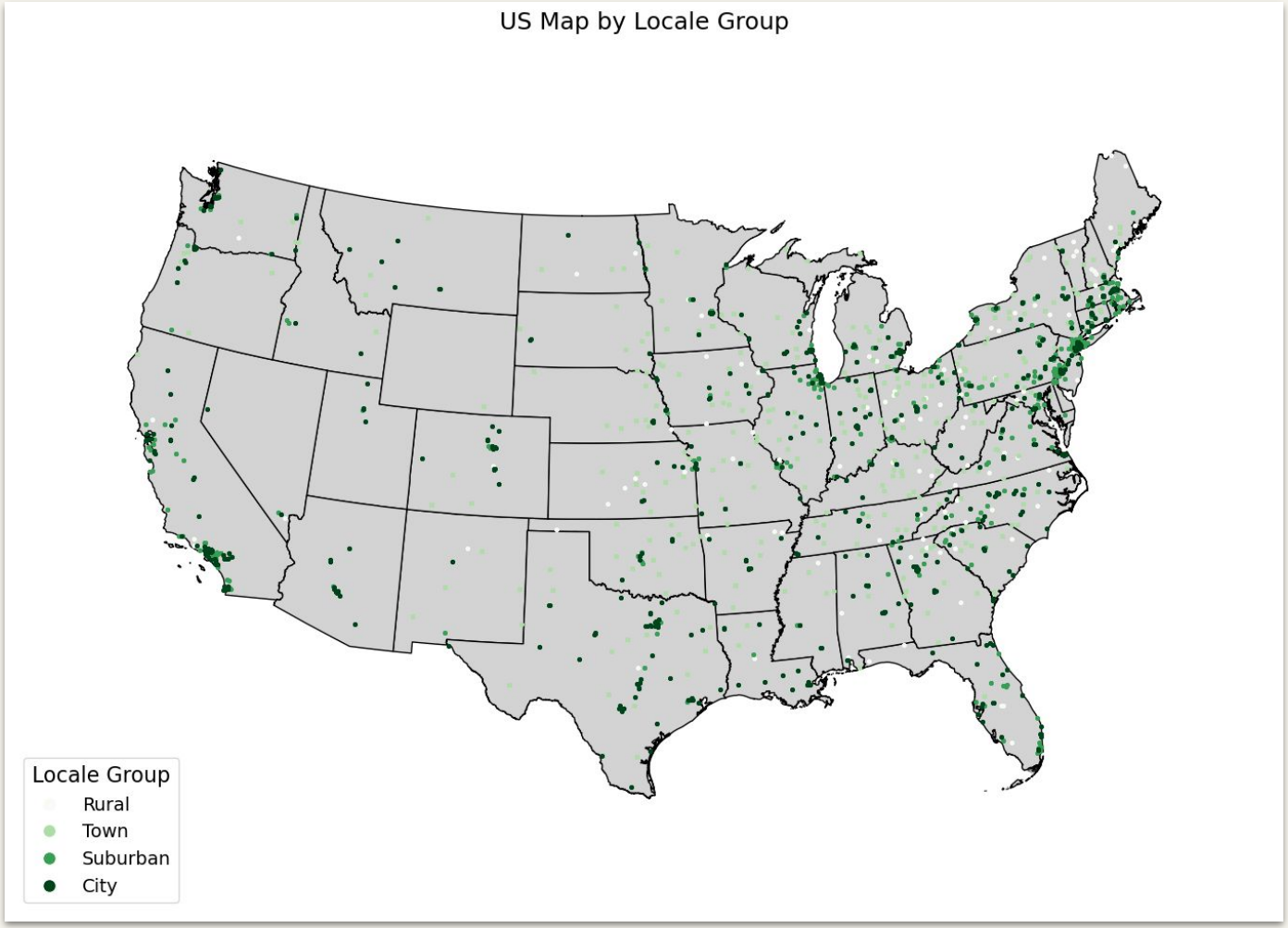
- 15 Columns & 28,740 Rows (1,495 institutions)

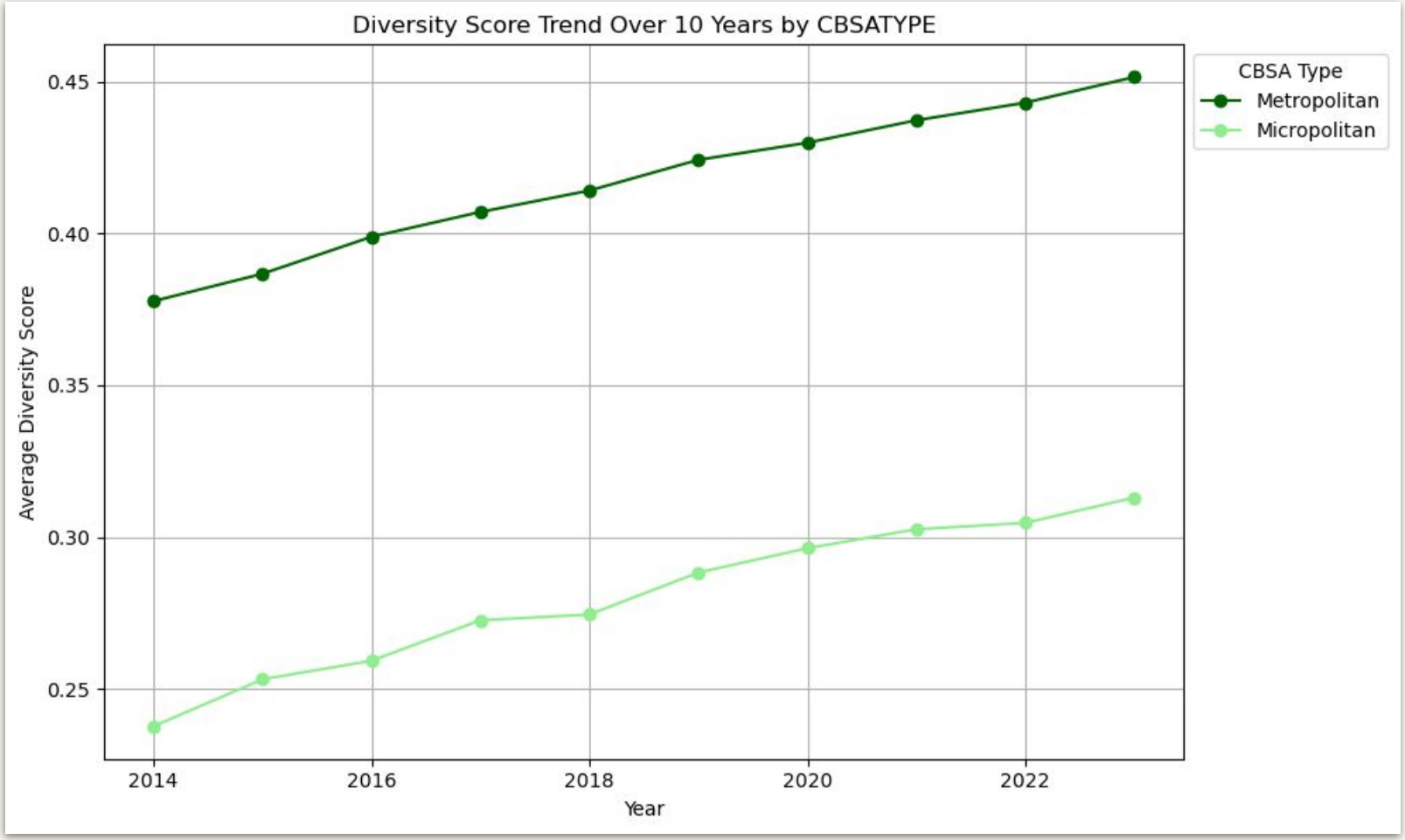
Award Level	Filtered data for bachelor's degree
HBCU	Excluded HBCU colleges to remove outliers
Degree Type	Categorized the data into STEM and non-STEM degrees based on CIP codes
Diversity	Created a diversity score where Diversity = (non-white/total)

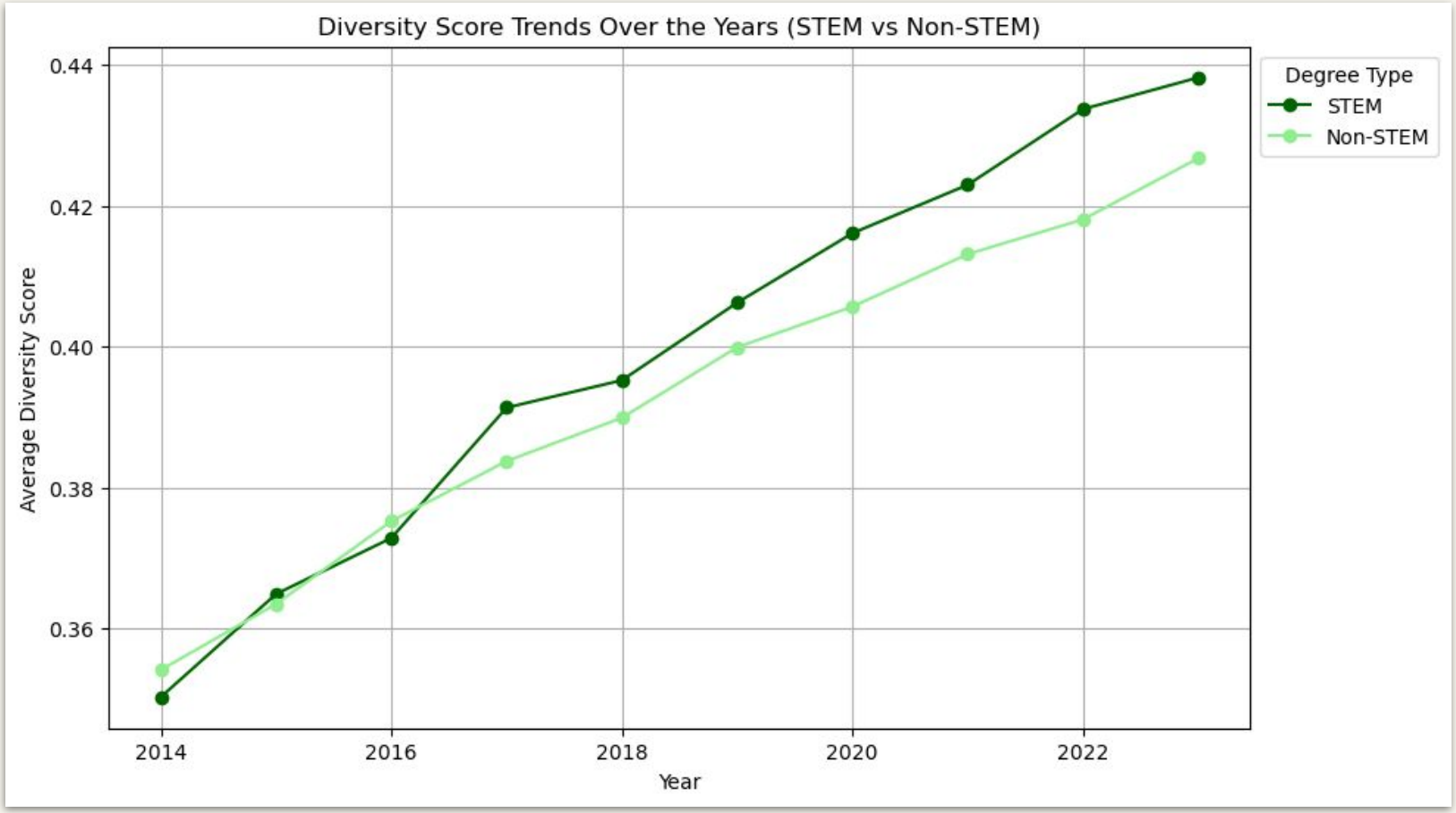


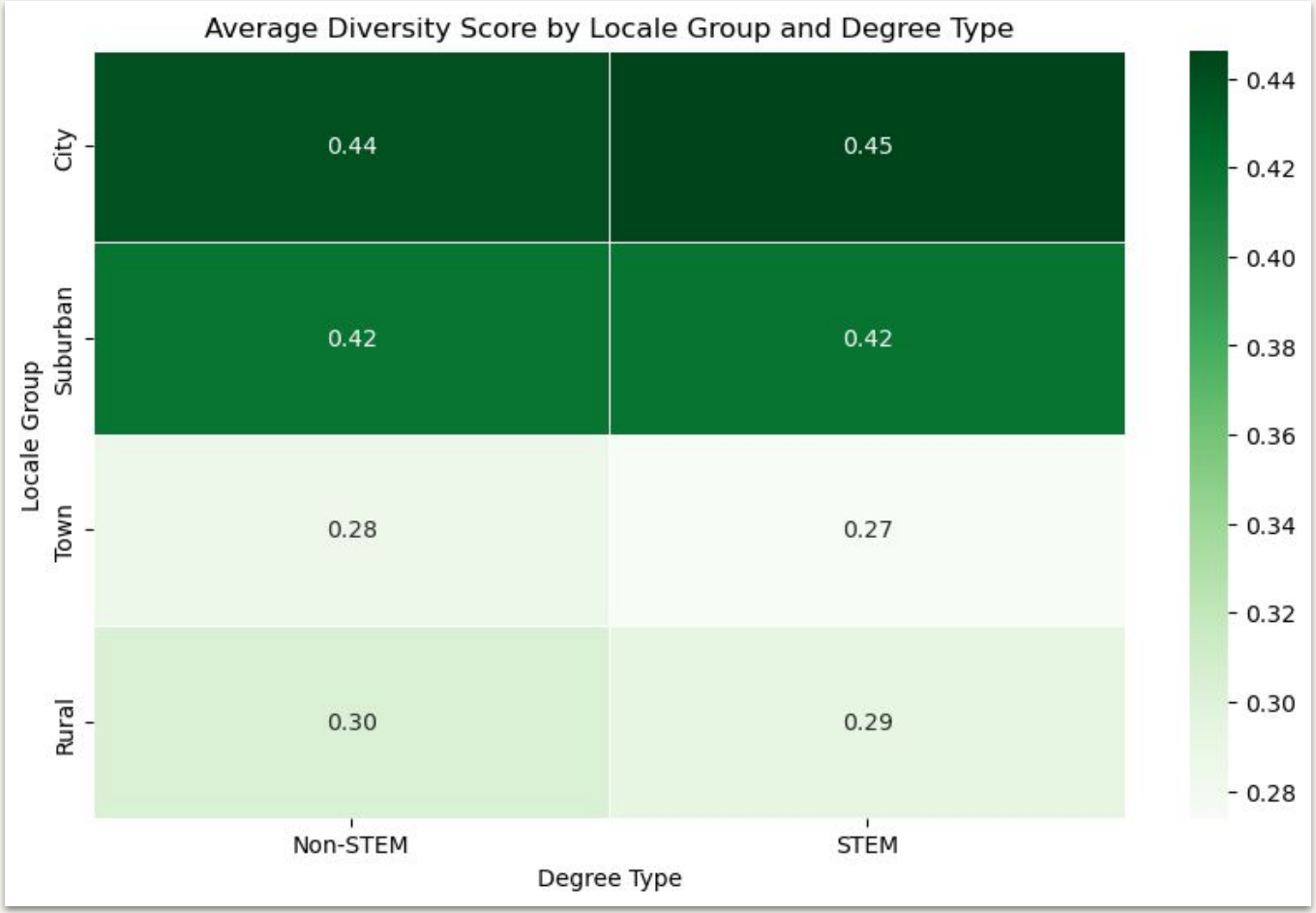
Exploratory Data Analysis

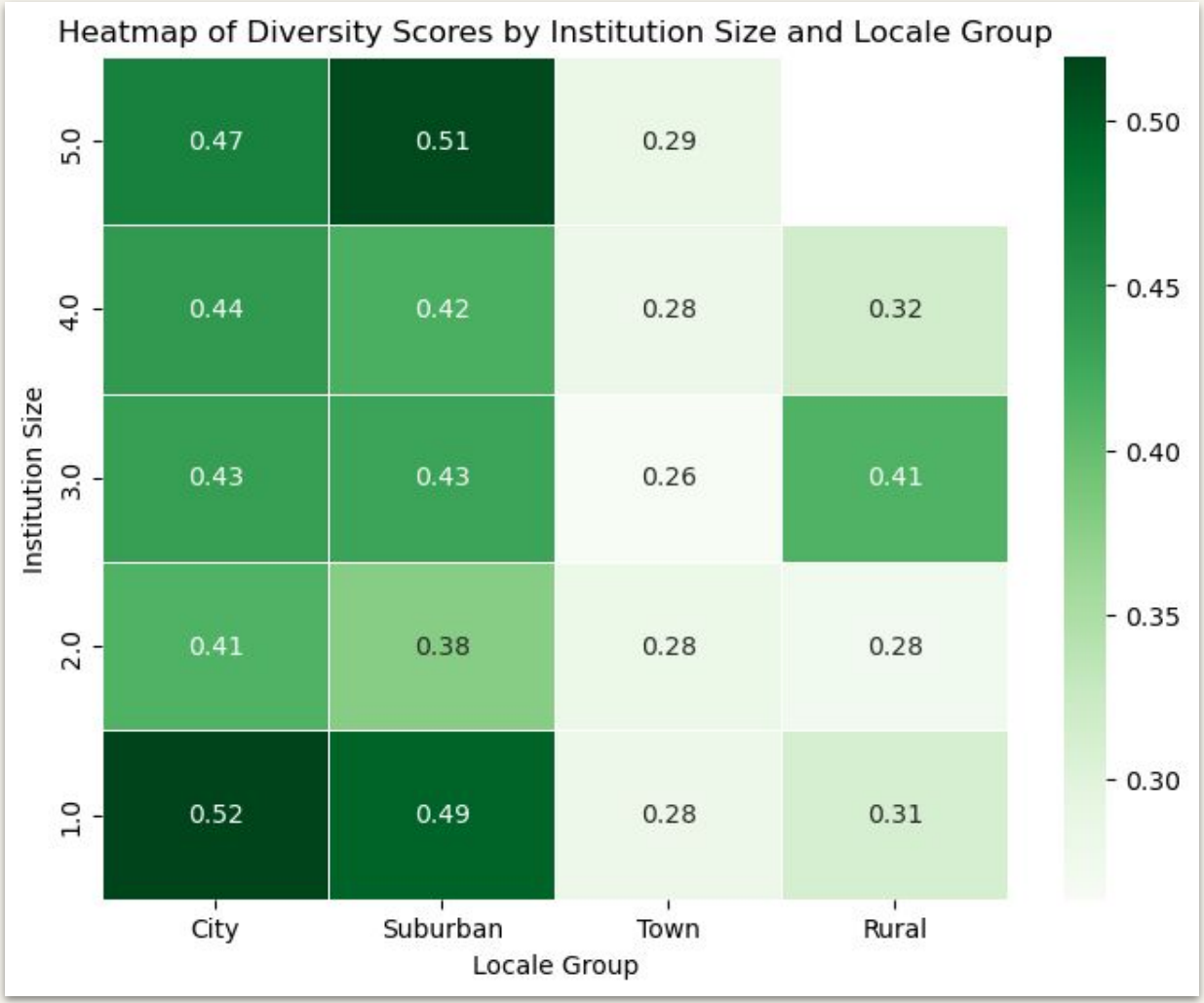

Diversity Trends Over Time by Locale Group
Average Diversity Score
Year
Locale Group
City
Suburban
Town
Rural
0.40
0.38
0.27
0.24
0.45
0.40
0.35
0.30
0.25
2014
2016
2018
2020
2022


US Map by Locale Group
Locale Group
Rural
Town
Suburban
City

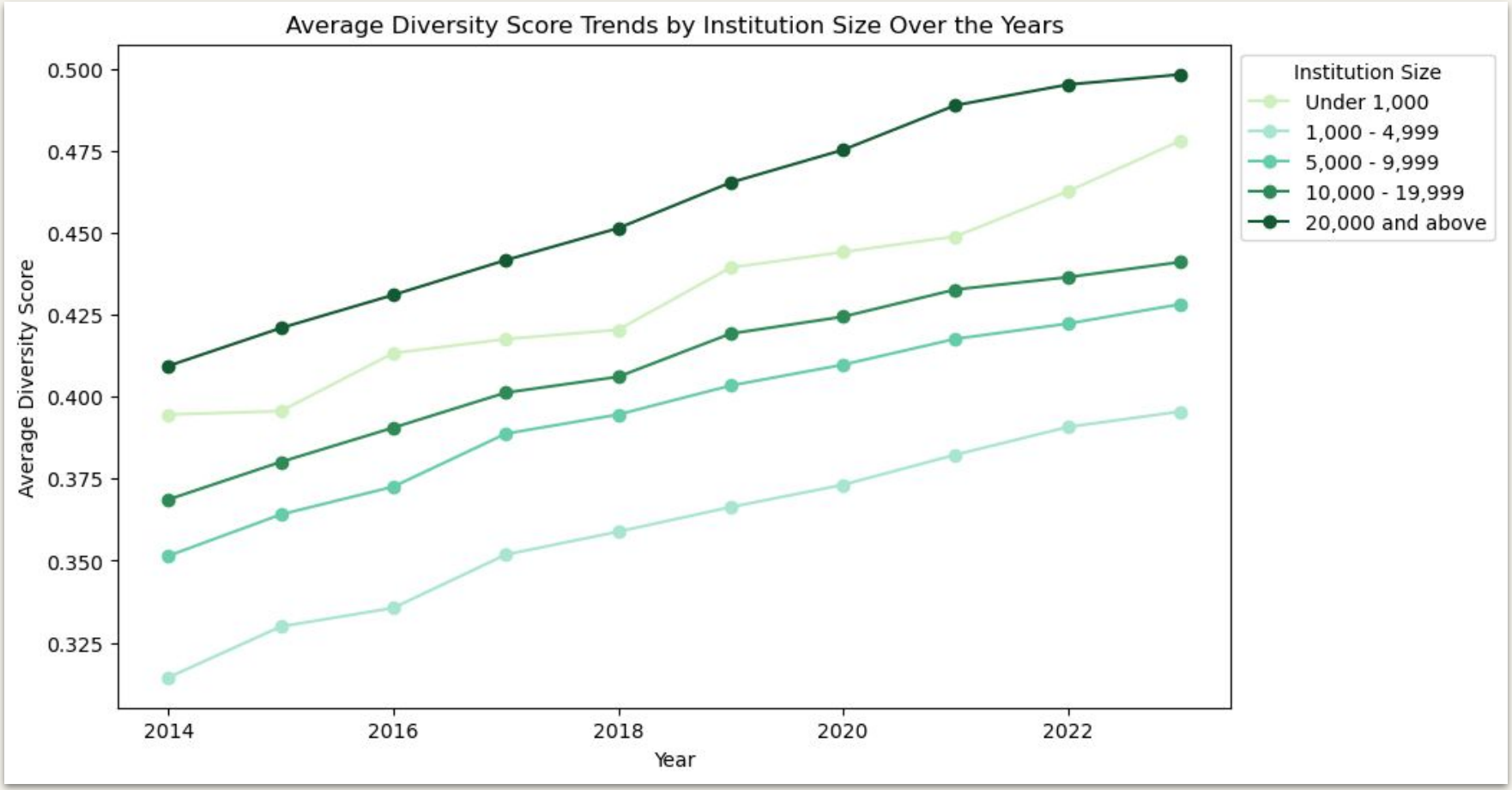

Diversity Score Trend Over 10 Years by CBSATYPE
Average Diversity Score
0.45
0.40
0.35
0.30
0.25
2014
2016
2018
2020
2022
Year
CBSA Type
Metropolitan
Micropolitan

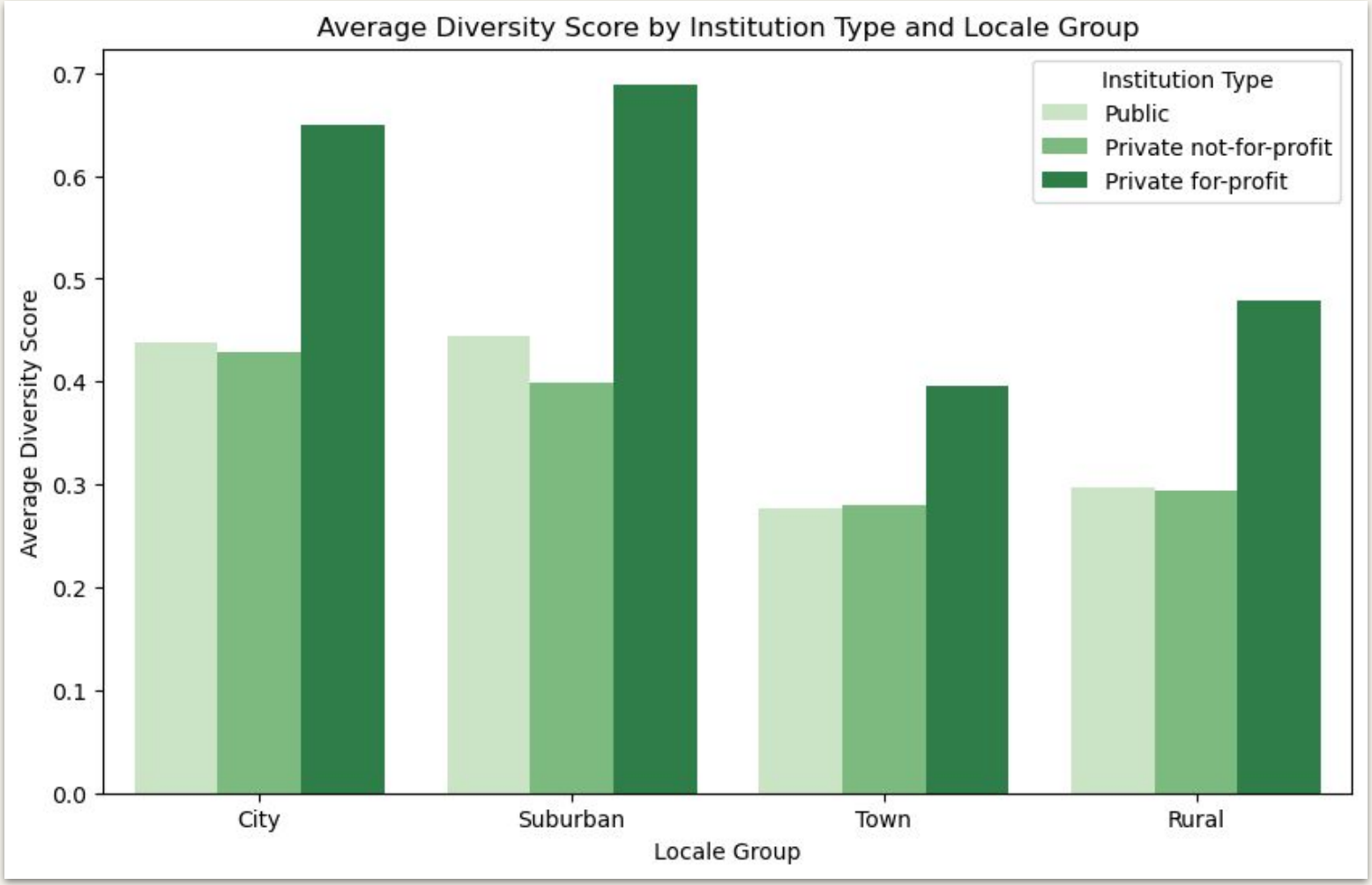

Diversity Score Trends Over the Years (STEM vs Non-STEM)
Average Diversity Score
0.44
0.42
0.40
0.38
0.36
2014
2016
2018
2020
2022
Year
Degree Type
STEM
Non-STEM


Average Diversity Score by Locale Group and Degree Type
City
Suburban
Town
Rural
Locale Group
0.44
0.45
0.42
0.42
0.28
0.27
0.30
0.29
Non-STEM
STEM
Degree Type
0.44
0.42
0.40
0.38
0.36
0.34
0.32
0.30
0.28



Institution Size
1.0: Under 1,000
2.0: 1,000 - 4,999
3.0: 5,000 - 9,999
4.0: 10,000 - 19,999
5.0: 20,000 and above


Average Diversity Score Trends by Institution Size Over the Years
Average Diversity Score
0.500
0.475
0.450
0.425
0.400
0.375
0.350
0.325
2014
2016
2018
2020
2022
Year
Institution Size
Under 1,000
1,000 - 4,999
5,000 - 9,999
10,000 - 19,999
20,000 and above


Average Diversity Score by Institution Type and Locale Group
Institution Type
Public
Private not-for-profit
Private for-profit
Average Diversity Score
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
City
Suburban
Town
Rural
Locale Group

Conclusion

Findings:

- Increasing trend in diversity score overall, but there seems to be a big gap in diversity between metropolitan and micropolitan areas
- Higher diversity scores for private-for-profit universities
- Increasing trend in gap between STEM and non-STEM degree diversity scores

Future Analysis:

- **Explore the Influence of Surrounding Area Diversity on University Diversity**
  - Collect data on the diversity of the surrounding areas where universities are located.
  - Analyze how local demographic diversity correlates with university diversity scores over time
- **Explore the Influence of Institutional Funding on University Diversity**
  - Collect data on the funding levels of universities, including public and private sources.
  - Analyze how variations in institutional funding correlate with changes in university diversity scores over time.

Implications for Stakeholders

Universities:

- **Recruitment:** Adjust outreach to attract diverse students, especially in underrepresented areas.
- **Retention:** Strengthen support programs to improve degree completion for underrepresented groups.

Policymakers:

- **Funding:** Allocate resources to institutions in areas with lower diversity.
- **Policy Reform:** Develop policies that promote racial diversity in higher education.

Students:

- **Informed Decisions:** Offer data on diversity at universities to help students make choices that align with their values.
- **Campus Engagement:** Encourage student-led initiatives that promote inclusivity and equitable opportunities.

Ethical, Legal, & Societal Implications

Ethical Implications:

- **Equity in Access:** Ensure fair access to education for underrepresented groups.
- **Bias in Policies:** Prevent policies from unintentionally reinforcing disparities.
- **Transparency & Accountability:** Maintain transparency and accountability in diversity efforts.

Legal Implications:

- **Funding Allocation:** Ensure funding decisions comply with anti-discrimination policies.
- **Anti-Discrimination Laws:** Align recruitment and retention with affirmative action laws.
- **Data Privacy:** Protect student data and uphold ethical data use.

Societal Implications:

- **Community Impact:** Strengthen community integration through inclusive education.
- **Student Empowerment:** Empower students to make informed choices and advocate for change.

Sources

DHS STEM Designated Degree Program List CIP Code Two-Digit Series 2020 CIP Code CIP Code Title.

"IPEDS Data Center." *Ed.gov*, 2023,

nces.ed.gov/ipeds/datacenter/DataFiles.aspx?year=2023&surveyNumber=-1&sid=37c646f5-c31a-4355-a887-a92d2c297362&rtid=1. Accessed 20 Feb. 2025.

Thank You