

Future Insights:

Trends in US Computer, Engineering, & Science Occupations

Group 3:

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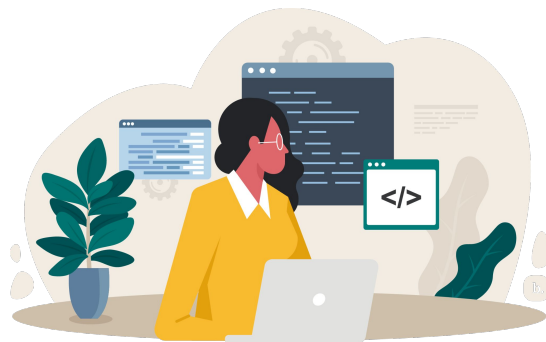
Parisima Abdali

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Why this topic?

- Guiding Educational and Career Choices
- Understanding Industry Growth and Opportunities
- Building a Diverse Tech World



Plan for Analysis

1. **Employment Trends:** workforce, annual growth by location, wage ranking and wage distribution
2. **Industry and Sector:** industry distribution, the largest share of all CS occupations
3. **Diversity and Inclusion:** gender and age, ethnicity and race
4. **Education and Skill Requirements:** educational level, major, skills(RCA)
5. **Innovation and Impact:** R&D, breakthroughs, job creation

Source of Datasets

- [U.S. Bureau of Labor Statistics](#)
- [Data.Gov](#)
- [STEM Education Data](#)
- [U.S. Department of Education](#)
- [NSF.Gov](#)



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Description of Data

- Salary data:
<https://www.bls.gov/oes/additional.htm>
- Workforce data:
<https://www.nsf.gov/nsb/sei/edTool/explore.html#workforce>
- Education- related data:
<https://www.nsf.gov/nsb/sei/edTool/explore.html#college>
- STEM employment indicators:
<https://nces.nsf.gov/indicators/states/>

We will choose datasets that align with our plan of analysis in above websites, and merge them if possible.

Division of tasks among team members

	Find suitable topics and dataset	Create the presentation slides	Operate data cleaning / preparation	Perform employment trends analysis and data visualization	Conduct diversity correlation analysis between two data and data visualization	Perform education & skills analysis and data visualization	Conduct industry and sector analysis and data visualization	Create a story to illustrate insights
Yining Wang	✓	✓	✓	✓				✓
Keyi Wang	✓	✓	✓			✓		✓
Parisima Abdali	✓	✓	✓				✓	✓
Jiaan Cao	✓	✓	✓		✓			✓

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Thank you for listening

Changes Made

- Data Source

<https://usa.ipums.org/usa/index.shtml> – **Customize** the columns we want

Additional Cleaning Operation - employment trends

- Add new calculated fields

Field Name

Occupation Category

```
IF [Occupation] >=0 AND [Occupation] < 500
THEN 'MANAGEMENT, BUSINESS, SCIENCE, AND ARTS'
ELSEIF [Occupation] >= 500 AND [Occupation]<730
THEN 'BUSINESS OPERATIONS SPECIALISTS'

ELSEIF [Occupation] >= 730 AND [Occupation] <= 950
THEN 'FINANCIAL SPECIALISTS'

ELSEIF [Occupation] > 950 AND [Occupation] <= 1240
THEN 'COMPUTER AND MATHEMATICAL'

ELSEIF [Occupation] > 1240 AND [Occupation] <= 1540
THEN 'ARCHITECTURE AND ENGINEERING'

ELSEIF [Occupation] >= 1550 AND [Occupation] <= 1990
THEN 'TECHNICIANS'

ELSEIF [Occupation] >= 2000 AND [Occupation] <= 2550
THEN 'COMMUNITY AND SOCIAL SERVICES'

ELSEIF [Occupation] >= 2600 AND [Occupation] <= 2920
```



Calculated Field

Sex

IF [SEX]=1 then 'Male' ELSE
'Female' END

- Transfer code (1/2) to label (*Male/Female*)



Calculated Field

Occupation Category

IF [Occupation] >=0 AND
[Occupation] < 500 THEN

- Classify several occupation name into different **Occupation Categories**