

Tesla Inc.

BUSINESS REPORT



Tesla Inc. Business Report

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Tesla, Inc. Competitive Strategy

Executive Summary

Many students are considering graduation as the school year nears its midpoint. But like all soon-to-be graduates, it can be challenging to know how to start your job search. The wide range of functions covered by the most in-demand roles for graduates demonstrates the variety of entry-level jobs available to students with different backgrounds and interests. Therefore, rest assured that there are possibilities no matter what degree you decide to do or what your ideal career may be. One company, Tesla Inc., is creating new roles and positions in many different departments, including Design, Manufacturing, Operations, Engineering, and Finance.



Business Understanding

In San Carlos, California, Tesla Inc. was established in 2003 as a car manufacturer specializing in electric vehicles. Nikola Tesla, a physicist, and engineer, is honored by having his name associated with the business. The AC current theory, which Nikola Tesla first proposed in 1882, was the basis for Tesla Motors' first design of its electric motors. Elon Musk's motivation over the years has been to make Nikola Tesla back into the outstanding inventor he once was.

Elon Musk had stated that Tesla would manufacture 1,500 Model 3 cars in 2017 and increase output to 5,000 vehicles per week (total of 65,000 cars). By the end of 2017, Tesla had surpassed both Ford and GM to claim the title of most valued American electric vehicle manufacturer. In 2016, Elon Musk revealed the second phase of his grand plan for the organization, outlining how it would carry out its mission to quicken sustainable energy development. Elon Musk outlined a list of objectives, such as constructing solar roofs with built-in storage and increasing the selection of electric vehicles. As many years pass, one strategy will help Tesla Inc. expand and improve its company forever.

With the aim to sell millions of electric vehicles annually by 2030, Tesla, Inc. is a business that seeks to accelerate the global switch to sustainable energy. As Tesla, Inc. develops new technology integrated into its vehicles, all qualified students and new workers should have access to a variety of new jobs. The rise of the global economy will now be supported by Tesla's most recent approach to creating new positions.

Business Objectives

- Tesla faces many issues brought by its shortage of batteries. This results in manufacturing delays and the inability to meet increasing demand.

- Battery shortage presents an opportunity for Tesla to consider bringing battery production technology in-house.
- By analyzing the National Industry-Specific Occupational Employment and Wage Estimates in 2021, we will be able to promote Tesla's employment wages and new opportunities.
- By analyzing data from the U.S. Department of Education, we will be able to show that there is a pool of qualified candidates across the nation, thus assuring that Tesla could bring battery production to the U.S.

Business Success Criteria

- Demonstrate that Tesla's demand for skilled candidate needs would be met should battery production and manufacturing be brought into the U.S.
- Demonstrate that candidate needs would be met for one factory servicing the Eastern United States region consisting of a minimum of 4,000 employees and one factory servicing the Western United States region consisting of a minimum of 4,000 employees.
- Pricing position with excellent coverage: Tesla model has various prices which creates high customer traffic. Tesla has soaring prices in which rich can customize based on their needs. However, they also have cheaper models which are affordable for people who have lower budgets. Overall, Tesla offers distinct items depending on the customer's needs to increase their sales and profit.

Assess the Situation

Risks and contingencies

- Risks include data containing too many null values to make accurate calculations.
- Having poor quality of data can lead to various risks factors because it fosters distrust, weakens the evidence, and leads to poor decision making.

- Some Risks associated with expanding the business:
 - a. Supplier Selection Risk: concerns that the quality and quantity of vendors may pose. And too many vendors will lead to higher prices and unnecessary services.
 - b. Delivery delays: Failure to meet the expectations and quality of the production will not just harm the core business, but also the reputation of the new products.
 - c. Lack of information transparency: miscommunication, and sometimes it can also ruin companies' reputation and leaves a permanent stain on the company's image.
- The contingency plan consists of a slight pivot of data analysis to instead demonstrate the skillset of the average American worker, as production positions require a High School Diploma and some Excel competency. While positions in operations require degrees and training predominantly in project management to be demonstrated with a dataset of professionals trained in this specific skill. The risk will be mitigated by having ready a dataset by the Bureau of Labor Statistics which overviews the employment and wage statistics.

Data Analysis Goals

Demonstrate a rising qualified candidate pool for Tesla Inc. exists within the national labor market that would sustain Tesla Inc.'s growing operations and need to meet growing demand.

- Description
 - Data to describe the number of graduates of Computer and Information Sciences and Support Services Majors each year
 - Data to describe the number of graduates of Engineering and Engineering Technology Majors each year

- Data to describe the average earnings of a graduate of Computer and Information Sciences and Support Services Major
- Data to describe the average earnings of a graduate of Engineering and Engineering Technology Majors
- Average Cost of Attendance
- Dependency
 - Tesla's current high prices are largely due to the expensive manufacturing of the EV battery, which is currently only manufactured in Asia. Should battery production be brought into the U.S., Tesla Inc. Could offer an inexpensive vehicle and meets its goal of selling 20 million vehicles each year by 2030.
- Prediction
 - Data to support full staffing of one west coast and one east coast production and manufacturing base by providing Tesla Inc. with four option States to choose from.
 - Our Team will be able to examine the factors that Tesla Inc. will promote more employment positions in the upcoming years.

Data Understanding

Our team has chosen the U.S. Department of Education College Scorecard to analyze the data from different institutions. The data features the name of the institutions, student enrollment, financial aid, awarded years, costs, and outcomes from the year 2018-2021. Our College Scorecard Data Dictionary has 2990 data elements. Of those, about 300 had sub-labels describing each variable. To sort through the hundreds of unnecessary variables, we focused on the 300 sub-label names. These were equally divided among each team member, and

each has chosen five specific variables to focus on. Our group has chosen to focus on factors that will help Tesla's employment rates. Our team will concentrate on aspects such as the states with the highest graduation rates, the degrees that will contribute to Tesla's employment, the highest graduation rates at the institutions, and other factors that will benefit our company.

Collect Initial Data

- Institution-level data files for 2018-2021 were acquired from U.S. Department of Education

- Of 2990 possible variables 15 were chosen to solve the data analysis goal, these variables include:
 - C200_4 - First-time, full-time bachelor's degree candidates' four-year university completion rate.
 - UGDS – Enrollment of undergraduate certificate/degree-seeking students.
 - PCIP11 – Percentage of degrees awarded in support services and computer and information science.
 - PCIP14 - Percentage of degrees awarded in Engineering.
 - PCIP15 - Percentage of engineering technologies and engineering-related fields that grant degrees.
 - PCIP44 - Percentage of degrees awarded in Professions of Social Work and Public Administration fields
 - PCIP45 - Percentage of social sciences degrees given.
 - PCIP46 - Percentage of degrees awarded in Construction Trades.
 - PCIP48 - Percentage of degrees awarded in Precision Production.
 - PCIP49 - Percentage of transportation and materials moving degrees issued.
 - C150_4_UNK - First-time, full-time students' completion rate in institutions with less than four years.
 - PCIP03 - Percentage of degrees given in conservation and natural resources.
 - PCIP27 - Percentage of degrees awarded in Mathematics and Statistics.
 - PCIP47 - Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians.
 - PCIP52 - Percentage of business management, marketing, and related support services degrees given.

Describe, Explore and Verify Data Quality

Variable I ‘Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion)’

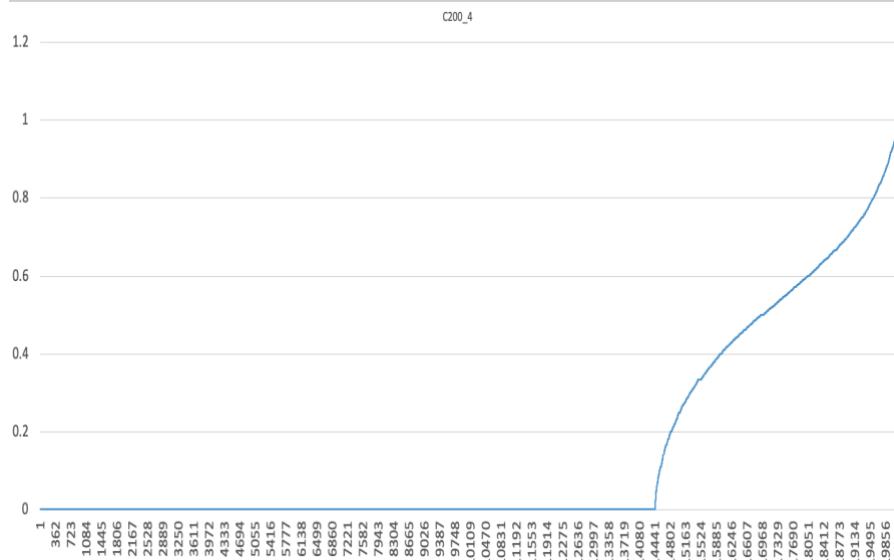
Data Description

Table I.1 data description of variable “Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion)”

		C200_4	
Numerical: Continuous (Cross-sectional)		Summary Measures	Value
Attribute/Variable Name	C200_4	Mean	0.515973284
		Variance	0.049940158
		Std. Dev.	0.223472947
Data Volume (number of observation/rows)	20182	Skewness	-0.199281912
		Kurtosis	-0.319118821
		Median	0.523
Meaning of the attribute	Completion rate for first-time, full-time bachelor's-degree-seeking students at four-year institutions (200% of expected time to completion)	Mean Abs. Dev.	
		Mode	0
		Minimum	0
		Maximum	1
Meaning of the attribute in business terms	Completion rate for first-time, full-time bachelor's-degree-seeking students at four-year institutions (200% of expected time to completion)	Range	1
		Count	5899
		Sum	3043.7264
		1st Quartile	0.369
Attribute types (select from the list)	Continuous	3rd Quartile	0.6692
		Interquartile Range	0.3002
		Missing / Blank	13964
Excel: Summary Statistics *Stat Tools: One Variable Summary			

Explore Data

Graph I.2 summary graph of variable “Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion)”



Key Findings:

- Given the values of this variable, there are about 14 thousand Null values. Therefore, the values are not normal. Since this data represents actual nationwide degree completion rates which vary per school and per State, and program we will not be able to normalize them. These will be ignored in our final analysis.

Verify Data Quality

Table 1.3 data quality of variable “Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion)”

Variable Name	Data Quality Issue	Description/ Example	Problem (S)	Assessment
C200_4 Completion rate for first-time, full-time bachelor's-degree-seeking	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	contains many 0 and NULL values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	Yes	blank and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter Decide whether a deviation is "noise" or may indicate an interesting phenomenon	No	
	Deviations	interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparserness	Any data which as very large zero value and very little no zero value	Yes	blank and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

Variable 2 ‘Enrollment of undergraduate certificate/degree-seeking students’

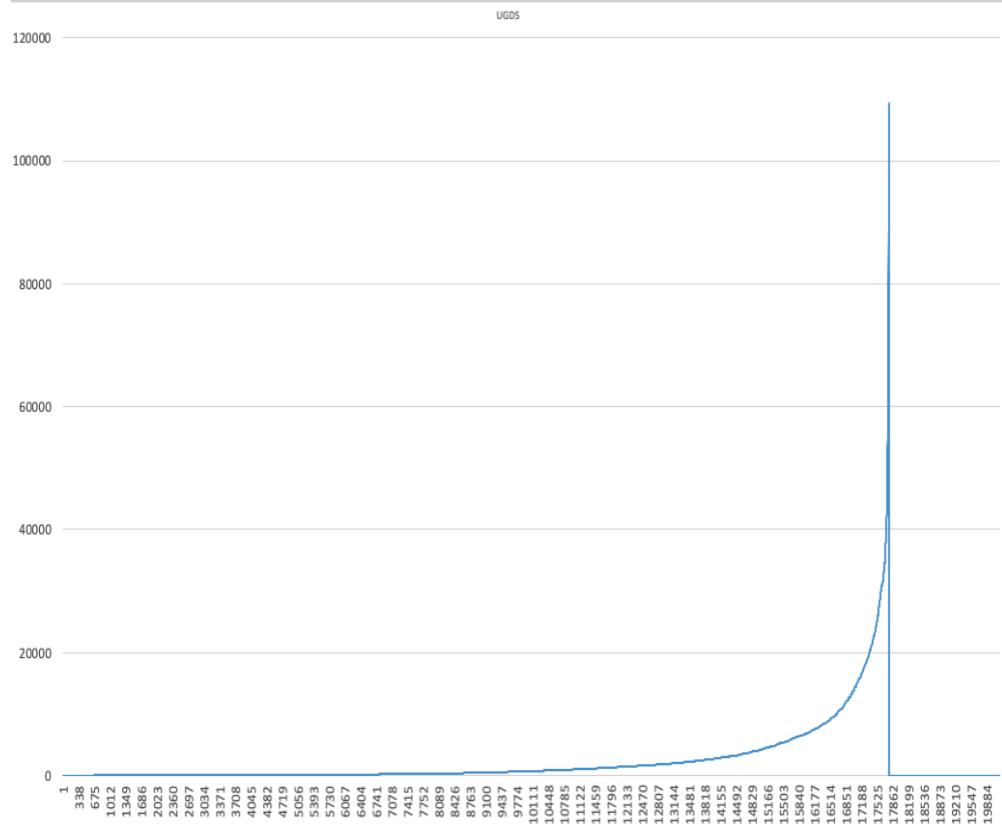
Data Description

Table 2.1 data description of variable “Enrollment of undergraduate certificate/degree-seeking students”

UGDS		
Numerical: Discrete	Value {e.g. number of UGDS}	
Attribute/Variable Name	Count/Frequency	6842
UGDS	Percentage	
Data Volume (number of observation/rows)	Summarize the variable	
20182	Mean	4384.891698
	Median	1666
Meaning of the attribute	Mode	46
Enrollment of undergraduate certificate/degree-seeking students	Minimum	0
	Maximum	109233
	Standard deviation	7655.52307
Meaning of the attribute in business terms		
number of enrolled undergraduate students seeking degrees		
Attribute types (select from the list)		
Discrete		

Explore Data

Graph 2.2 summary graph of variable “Enrollment of undergraduate certificate/degree-seeking students”



Key Findings:

- Given the values of this variable there are about 2,398 Null values, therefore the values are normal.

Verify Data Quality

Table 2.3 data quality of variable “Enrollment of undergraduate certificate/degree-seeking students”

Variable Name	Data Quality Issue	Description/ Example	Problem (S)	Assessment
UGDS Enrollment of undergraduate certificate/degree-seeking students	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	No	no issues identified
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	no issues identified
	Missing Attribute or blank fields	How will you address this?	No	no issues identified
	Duplicate	Duplicated records (observations)	No	no issues identified
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	no issues identified
	Deviations		No	no issues identified
	Plausibility	E.g., all fields having the same or nearly the same values	No	no issues identified
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	no issues identified
	High Cardinality	A high number of values in a set	No	no issues identified
	Outliers	An observation that lies well outside of the norm.	No	no issues identified
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	no issues identified
	Sparseness	Any data which is very large zero value and very little no zero value	No	no issues identified
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	no issues identified
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	no issues identified

Variable 3 ‘Percentage of degrees awarded in Computer and Information Sciences and Support Services’

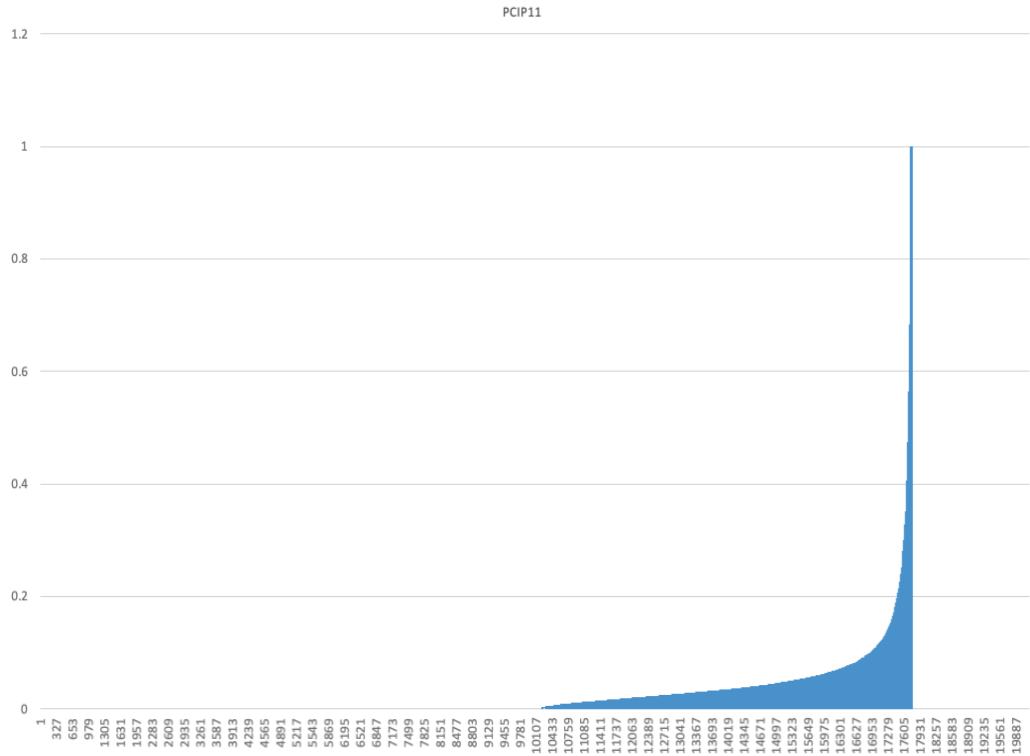
Data Description

Table 3.1 data description of variable “Percentage of degrees awarded in Computer and Information Sciences and Support Services”

Numerical: Continuous (Cross-sectional)	PCIP11	Summary Measures	Value
Attribute/Variable Name	PCIP11	Mean	0.033103769
		Variance	0.00390644
		Std. Dev.	0.062501518
Data Volume (number of observation/rows)	20182	Skewness	6.026563873
		Kurtosis	56.65061578
		Median	0.0178
Meaning of the attribute	Percentage of degrees awarded in Computer And Information Sciences And Support Services.	Mean Abs. Dev.	
		Mode	0
		Minimum	0
		Maximum	1
Meaning of the attribute in business terms	Percentage of degrees awarded in Computer And Information Sciences And Support Services.	Range	1
		Count	6845
		Sum	226.5953
		1st Quartile	0
Attribute types (select from the list)	Continuous	3rd Quartile	0.0282
		Interquartile Range	0.0282
		Missing / Blank	12159

Explore Data

Graph 3.2 summary graph of variable “Percentage of degrees awarded in Computer and Information Sciences and Support Services”



Key Findings:

- Given the values of this variable there are about 2,412 Null values, therefore the values are normal.

Verify Data Quality

Table 3.3 data quality of variable “Percentage of degrees awarded in Computer and Information Sciences and Support Services”

Variable Name	Data Quality Issue	Description/ Example	Problem (S)	Assessment
PCIP11 Percentage of degrees awarded in Computer And Information Sciences	Check coverage Meaning Of Attributes	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution) Verify that the meanings of attributes and contained values fit together	Yes No	contains many 0 and NULL values
	Missing Attribute or blank fields	How will you address this?	Yes	blank and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter Decide whether a deviation is "noise" or may indicate an interesting phenomenon	No	
	Deviations		No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparse ness	Any data which has very large zero value and very little non-zero value	Yes	blank and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

Variable 4 ‘Percentage of degrees awarded in Engineering’

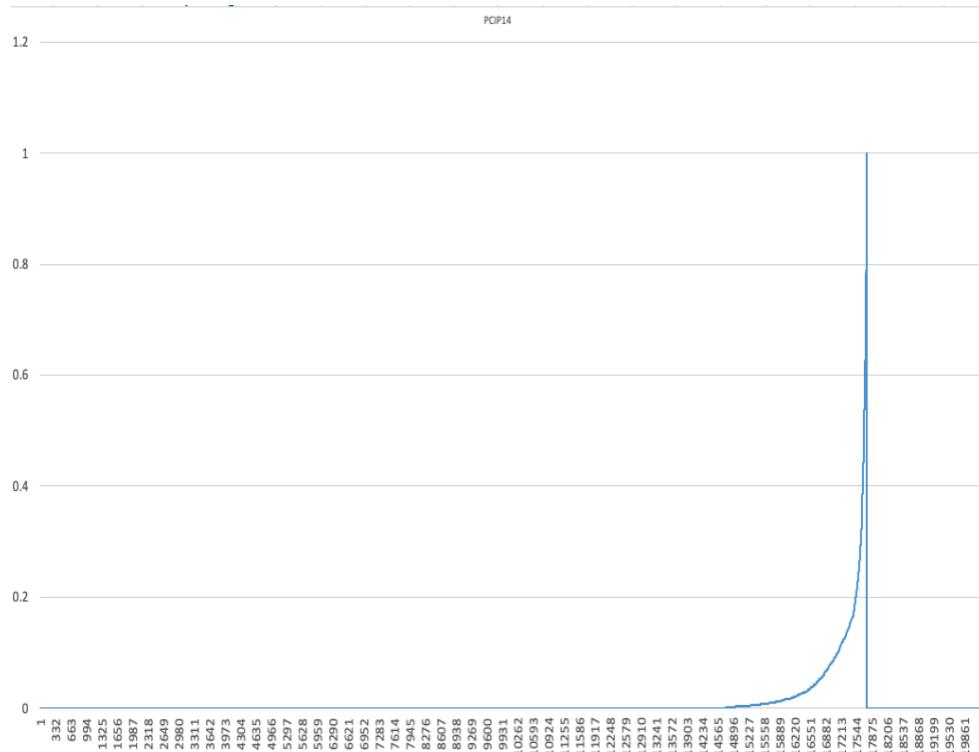
Data Description

Table 4.1 data description of variable “Percentage of degrees awarded in Engineering”

PCIP14		
Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name PCIP14	Mean	0.027734317
	Variance	0.007583162
	Std. Dev.	0.087081353
Data Volume (number of observation/rows) 20182	Skewness	5.754575961
	Kurtosis	42.37331282
	Median	0
Meaning of the attribute Percentage of degrees awarded in Engineering.	Mean Abs. Dev.	
	Mode	0
	Minimum	0
	Maximum	1
Meaning of the attribute in business terms Percentage of degrees awarded in Engineering.	Range	1
	Count	6845
	Sum	189.8414
	1st Quartile	0
Attribute types (select from the list) Continuous	3rd Quartile	0
	Interquartile Range	0
	Missing / Blank	16635

Explore Data

Graph 4.2 summary graph of variable “Percentage of degrees awarded in Engineering”



Key Findings:

- Given the values of this variable there are about 2,412 Null values, therefore the values are normal.

Verify Data Quality

Table 4.3 data quality of variable “Percentage of degrees awarded in Engineering”

Variable Name	Data Quality Issue	Description/ Example	Problem (S)	Assessment
PCIP14 Percentage of degrees awarded in Engineering.	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	contains many 0 and NULL values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	Yes	blank and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter Decide whether a deviation is "noise" or may indicate an interesting phenomenon	No	
	Deviations		No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparseness	Any data which as very large zero value and very little no zero value	Yes	blank and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

Variable 5 ‘Percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields’

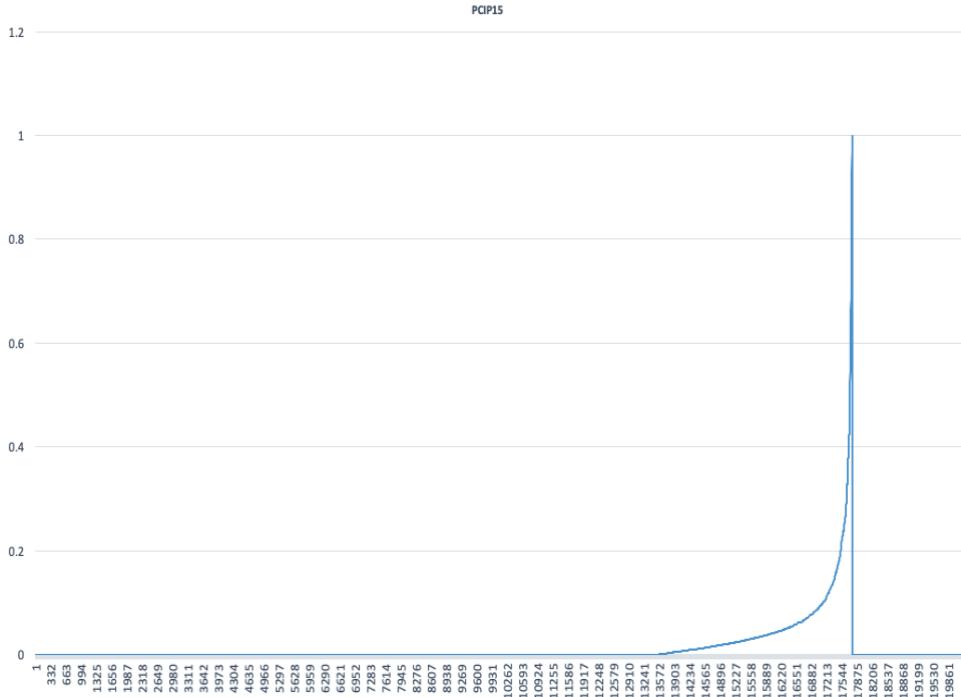
Data Description

Table 5.1 data description of variable “Percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields”

PCIP15		
Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name PCIP15	Mean	0.010859985
	Variance	0.001493836
	Std. Dev.	0.038650176
Data Volume (number of observation/rows) 20182	Skewness	9.520807206
	Kurtosis	155.8379419
	Median	0
Meaning of the attribute Percentage of degrees awarded in Engineering Technologies And Engineering-Related Fields.	Mean Abs. Dev.	
	Mode	0
	Minimum	0
	Maximum	1
Meaning of the attribute in business terms Percentage of degrees awarded in Engineering Technologies And Engineering-Related Fields.	Range	1
	Count	6845
	Sum	74.3366
	1st Quartile	0
Attribute types (select from the list) Continuous	3rd Quartile	0
	Interquartile Range	0
	Missing / Blank	15497

Explore Data

Graph 5.2 summary graph of variable “Percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields”



Key Findings:

- Given the values of this variable there are about 2,412 Null values, therefore the values are normal.

Verify Data Quality

Table 5.3 data quality of variable “Percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields”

Variable Name	Data Quality Issue	Description/ Example	Problem [S]	Assessment
PCIP15 Percentage of degrees awarded in Engineering Technologies And	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	contains many 0 and NULL values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	Yes	blank and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is "noise" or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparseness	Any data which has very large zero value and very little non-zero value	Yes	blank and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

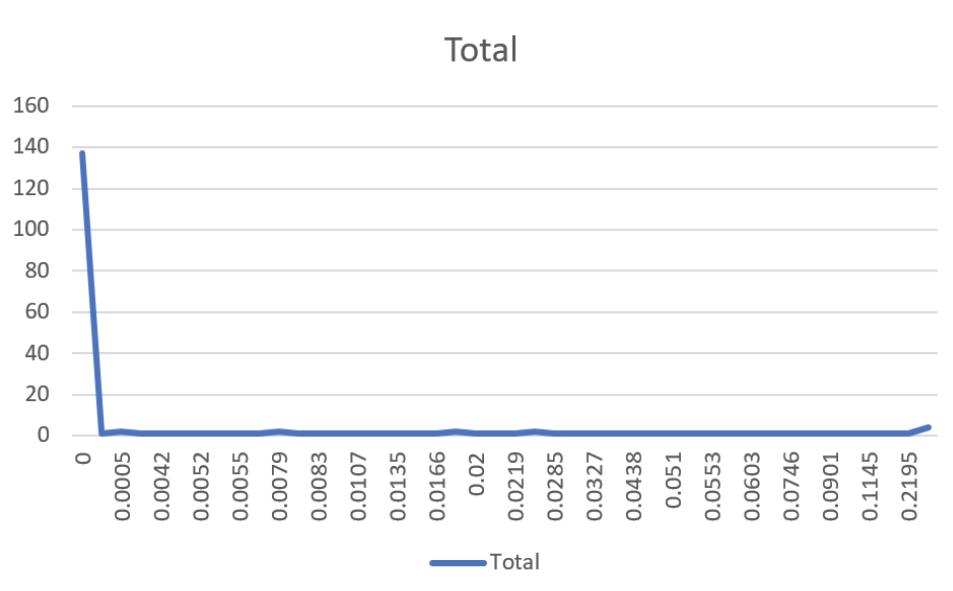
Variable 6 ‘Percentage of degrees awarded in Professions of Social Work and Public Administration fields’

Data Description

Table 6.1 Description of the Variable “Public Administration and Social Professions”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	4.25
Count of PCIP44/PCIP44	Variance	419.633721
	Std. Dev.	20.4849633
Data Volume (number of observation/rows)	Skewness	6.6264702
20182	Kurtosis	43.9380097
	Median	0.32
Meaning of the attribute	Mean Abs. Dev.	99.0506328
Percentage of degrees awarded in Public Administration And Social Service	Mode	1
	Minimum	0.1
	Maximum	0.997
Meaning of the attribute in business terms	Range	136
	Count	3,495
	Sum	1348
	1st Quartile	0.19
Attribute types (select from the list)	3rd Quartile	0.54
Continuous	Interquartile Range	0.32
	Missing / Blank	13,247

Graph 6.2 Explore Data: Percentage of degrees for variable “Public Administration and Social Professions” of cities with Los Angeles County



Key Findings:

- Overall based on the values they are normal because there are about 4 null values.
- This variable will be analyzed further because it will help Tesla hire employees that will work with their public relations.

Verify Data Quality

Table 6.3 Verify Data Quality of Variables “Public Administration and Social Services Professions”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
PCIP44	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Contains Many 0 fields and Null Values
Percentage of Degree in Administration And Social Service Professions	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	N/A
	Missing Attribute or blank fields	How will you address this?	Yes	Blanks and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	N/A
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	N/A
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	N/A
	Plausibility	E.g., all fields having the same or nearly the same values	No	N/A
	Conflict with Common Sense	E.g., Students degrees awarded in Public Administration and Social Service Professions.	No	N/A
	High Cardinality	A high number of values in a set	No	N/A
	Outliers	An observation that lies well outside of the norm.	No	N/A
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	N/A
	Sparse ness	Any data which as very large zero value and very little no zero value	Yes	Blanks and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	N/A
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	N/A

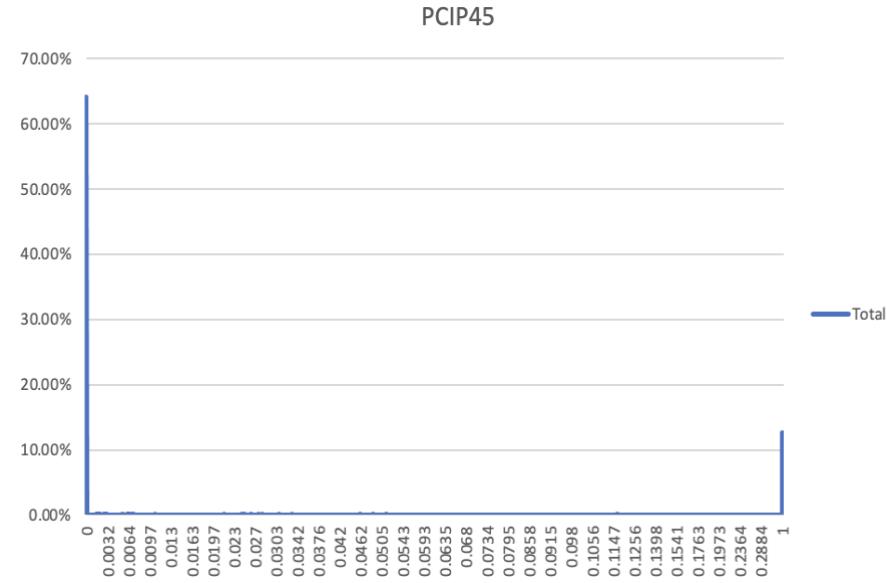
Variable 7 ‘Percentage of degrees awarded in the professions of Social Science fields’

Data Description

Table 7.1 Description of the Variable “Percentage of degrees awarded in the professions of Social Science fields”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	14.56104651
PCIP45/Social Science	Variance	53174.91755
	Std. Dev.	230.5968724
Data Volume (number of observation/rows)	Skewness	18.54641121
20182	Kurtosis	343.9795146
	Median	0.335
Meaning of the attribute	Mean Abs. Dev.	10756.58728
Percentage of degrees awarded in Social Sciences.	Mode	0.12
	Minimum	0.1
	Maximum	4279
Meaning of the attribute in business terms	Range	4278
	Count	4,714
	Sum	313
	1st Quartile	0.1846
Attribute types (select from the list)	3rd Quartile	0.588
Continuous	Interquartile Range	0.335
	Missing / Blank	18,766

Graph 7.2 Explore the variable "Percentage of degrees awarded in the professions of social science fields" by states



Key Findings:

- **This variable is normal because it has about 12% null values.**
- **This variable is significant to analyze further because it will help us choose candidates for Tesla that will understand Tesla's goal very well because they try to develop products that will help society.**

Verify Data Quality

Table 7.3 Verify Data Quality of Variables “Percentage of degrees awarded in Social Science”

Variable Name	Data Quality Issue	Description/ Example	Problem (Sel)	Assessment
PCIP45 Percentage of degrees awarded in Social Sciences.	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Contains Many 0 fields and Null Values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	N/A
	Missing Attribute or blank fields	How will you address this?	Yes	Blanks and NULL values will be ignored
	Duplicate	Duplicated records (observations) E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	N/A
	Spelling and format		No	N/A
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	N/A
	Plausibility	E.g., all fields having the same or nearly the same values	No	N/A
	Conflict with Common Sense	E.g., Graduates awarded in Social Science.	No	N/A
	High Cardinality	A high number of values in a set	No	N/A
	Outliers	An observation that lies well outside of the norm.	No	N/A
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	N/A
	Sparse ness	Any data which is very large zero value and very little no zero value	No	N/A
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	N/A
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	N/A

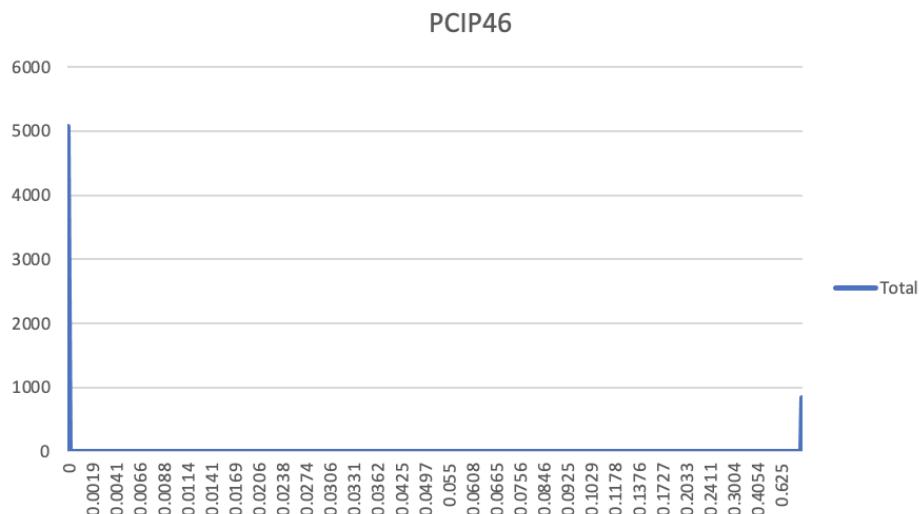
Variable 8 ‘Percentage of degrees awarded in the professions of Construction Trade fields’

Data Description

Table 8.1 Description of the Variable “Percentage of degrees awarded in Construction Trades”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	11.994614
Count of PCIP46/PCIP46	Variance	47468.63127
	Std. Dev.	217.8729705
Data Volume (number of observation/rows)	Skewness	22.75291948
20182	Kurtosis	527.5646818
	Median	0.33
Meaning of the attribute	Mean Abs. Dev.	9649.82929
Percentage of degrees awarded in Construction Trades.	Mode	0.25
	Minimum	0.1
	Maximum	5075
Meaning of the attribute in business terms	Range	5074
Percentage of degrees awarded in Construction Trades.	Count	2,286
	Sum	6681
	1st Quartile	0.186
Attribute types (select from the list)	3rd Quartile	0.593
Continuous	Interquartile Range	0.33
	Missing / Blank	14,980

Graph 8.2 Explore variable “Percentage of degrees awarded in Construction Trades”



However, we might not analyze this variable because we are mostly focusing on the production of cars.

Verify Data Quality

Table 8.3 Verify Data Quality of Variables “Percentage of degrees awarded in Construction Trades”

Variable Name	Data Quality Issue	Description/ Example	Problem (Select from the list)	Assessment
Percentage of degrees awarded in Construction Trades.	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Contains Many 0 and NULL Values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	N/A
	Missing Attribute or blank fields	How will you address this?	Yes	Blanks and NULL Values will be ignored
	Duplicate	Duplicated records (observations)	No	N/A
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	N/A
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	N/A
	Plausibility	E.g., all fields having the same or nearly the same values	No	N/A
	Conflict with Common Sense	E.g., Graduates of degrees awarded in Construction Trades.	No	N/A
	High Cardinality	A high number of values in a set	No	N/A
	Outliers	An observation that lies well outside of the norm.	No	N/A
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	N/A
	Sparsereness	Any data which as very large zero value and very little no zero value	Yes	Blanks and NULL Values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	N/A
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	N/A

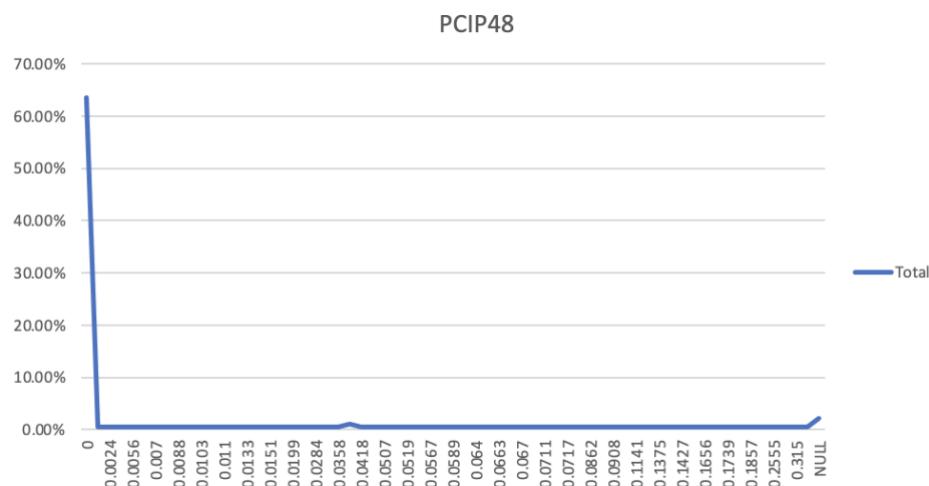
Variable 9 ‘Percentage of degrees awarded in the professions of Precision Production’

Data Description

Table 9.1 Description of the Variable “Percentage of degrees awarded in Precision Production”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	2.876923077
Count of PCIP48/ PCIP48	Variance	0.069888704
	Std. Dev.	0.264364718
Data Volume (number of observation/rows)	Skewness	18.54641121
20182	Kurtosis	343.9795146
	Median	0.35
Meaning of the attribute	Mean Abs. Dev.	73.21742046
Percentage of degrees awarded in Precision Production	Mode	1
	Minimum	1
	Maximum	119
Meaning of the attribute in business terms	Range	118
	Count	2,868
	Sum	5009
	1st Quartile	0.1861
Attribute types (select from the list)	3rd Quartile	0.63
Continuous	Interquartile Range	0.35
	Missing / Blank	17,316

Graph 9.2 Explore Data for the Variable “Percentage of degrees awarded in Precision Production”



Key Findings:

- **Based on the dataset, the variable is normal as it contains about 2.14% null values.**

- **This variable could be significant to further analyze because it will help Tesla look for candidates that could help assist them with the production strategies.**

Verify Data Quality

Table 9.3 Verify Data Quality of Variables “Percentage of degrees awarded in Precision Production”

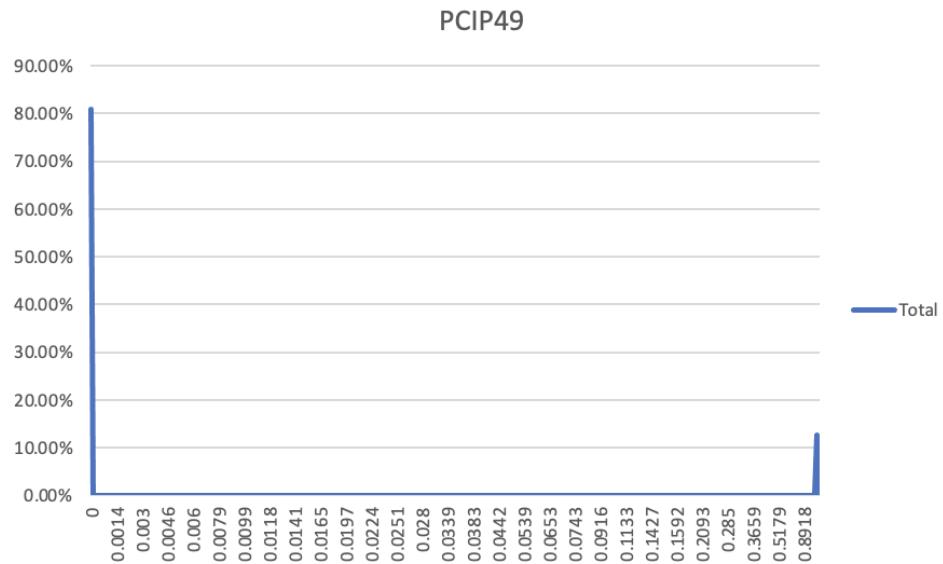
Variable Name	Data Quality Issue	Description/ Example	Problem (Select from the list)	Assessment
PCIP48	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Blanks and 0 Values will be ignored
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	N/A
	Missing Attribute or blank fields	How will you address this? Remove duplicates.	Yes	Blanks and 0 Values will be ignored
	Duplicate	Duplicated records (observations)	No	N/A
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	N/A
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	N/A
	Plausibility	E.g., all fields having the same or nearly the same values	No	N/A
	Conflict with Common Sense	E.g., Graduates who graduated in Precision Production.	No	N/A
	High Cardinality	A high number of values in a set	No	N/A
	Outliers	An observation that lies well outside of the norm.	No	N/A
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	N/A
	Sparse ness	Any data which as very large zero value and very little no zero value	Yes	Blanks and 0 Values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	N/A
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	N/A

Variable 10 ‘Percentage of transportation and materials moving degrees issued’

Table 10.1 Description for the Variable “Percentage of degrees awarded in Transportation and Materials Moving”

Numerical: Continuous (Cross-sectional)		Summary Measures	Value
Attribute/Variable Name		Mean	19.4781341
Count of PCIP49/PCIP49		Variance	87199.1742
		Std. Dev.	295.295063
Data Volume (number of observation/rows)		Skewness	17.9255199
	20182	Kurtosis	326.860445
		Median	0.3367
Meaning of the attribute		Mean Abs. Dev.	17571.814
Percentage of degrees awarded in Transportation and Materials Moving		Mode	1
		Minimum	0.1
		Maximum	5407
Meaning of the attribute in business terms		Range	5406
		Count	12,776
		Sum	6681
		1st Quartile	0.1855
Attribute types (select from the list)		3rd Quartile	0.59355
Continuous		Interquartile Range	0.3365
		Missing / Blank	16,920

Graph 10.2 Explore Data for the Variable “Percentage of degrees awarded in Transportation and Materials Moving”



Key Findings:

- **Based on the dataset, the variable is normal since it has about 12.66% of null values.**

Verify Data Quality

Table 10.3 Verify Data Quality of Variables “Transportation and Materials Moving”

Variable Name	Data Quality Issue	Description/ Example	Problem (Select from the list)	Assessment
PCIP49	Check coverage	All possible values are represented *Use metadata (e.g., domain, range, dependency, distribution)	Yes	Contains many 0 fields and NULL values
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	N/A
	Missing Attribute or blank fields	How will you address this?	Yes	Blank and NULL values will be ignored
	Duplicate	Duplicated records (observations)	No	N/A
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	N/A
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	N/A
	Plausibility	E.g., all fields having the same or nearly the same values	No	N/A
	Conflict with Common Sense	E.g., Graduates who degrees awarded in Transportation And Materials Moving.	No	N/A
	High Cardinality	A high number of values in a set	No	N/A
	Outliers	An observation that lies well outside of the norm.	No	N/A
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	N/A
	Sparse ness	Any data which as very large zero value and very little no zero value	Yes	Blank and NULL values will be ignored
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	N/A
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	N/A

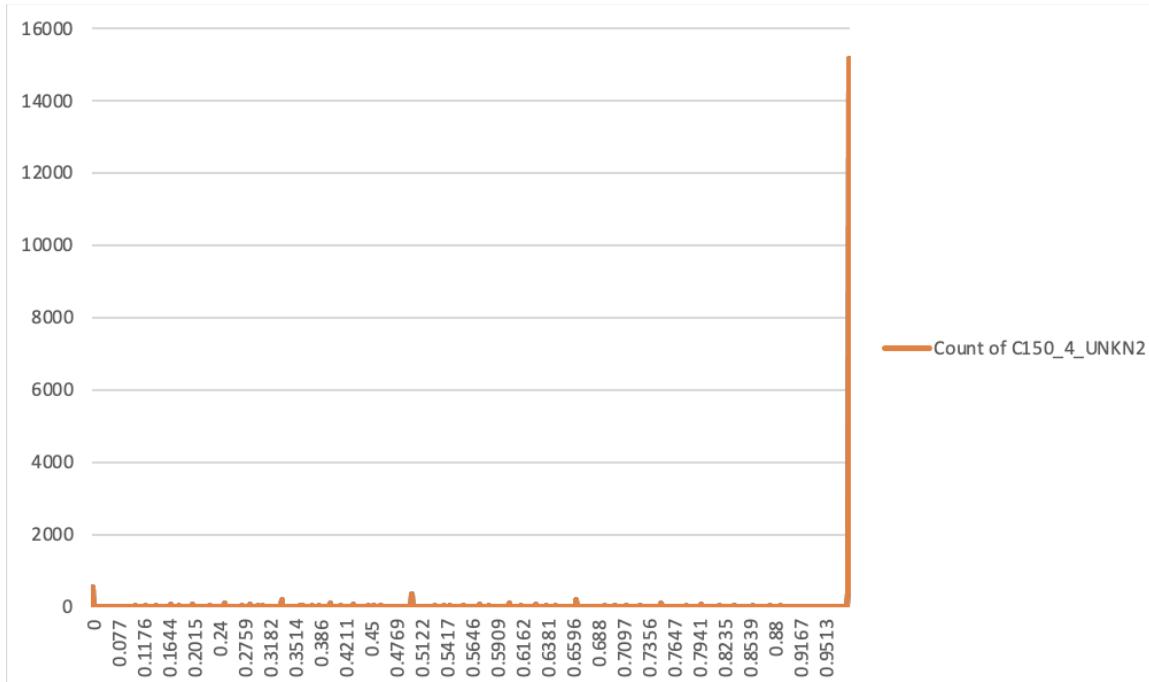
Variable 11 “Completion Rate for First-time, Full-Time Students at four-year”

Table 11.1 Data Description of the Variable “Completion Rate for First-time, full-time students at four-year”

Numerical: Discrete	Value (e.g. number of ch	C150_4_UNKN	Count of C150_4_UNKN
Attribute/Variable Name	Count/Frequency	989	
Count of C150_4_UNKN	Percentage		Mean 20.4064712
	Summarize the variable		Standard Error 15.3517534
Data Volume (number of observation/rows)			Median 1
20182	Mean	20.4064712	Mode 1
	Median		1 Standard Deviation 482.787625
Meaning of the attribute	Mode		1 Sample Variance 233083.891
Completion rate for first-time,full-time students at four-year institutions	Minimum		Kurtosis 982.754314
	Maximum	15164	Skewness 31.3020162
	Standard deviation	482.787625	Range 15163
Meaning of the attribute in business terms			Minimum 1
Completion rate for full-time students at four-year institutions			Maximum 15164
			Sum 20182
Attribute types (select from the list)			Count 989
Discrete			

Explore Data

Graph 11.2 Data Exploration of the Variable “Completion Rate for First-time, full-time students at four-year”



Key findings:

- Based on the dataset the values are not normal because there are about 15164 null values which is about 75%. Therefore, we would not be able to normalize these data and analyze further.

Verify Data Quality

Table 11.3 Data Quality Verification of the Variable “Completion Rate for First-time, full-time students at four-year”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
C150_4_UNKN - Completion rate for first-time, full-time students at four-year	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Includes nulls and 0
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	Yes	Ignore the blank fields
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparserness	Any data which as very large zero value and very little no zero value	Yes	Avoid the nulls, blanks, missing fields.
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

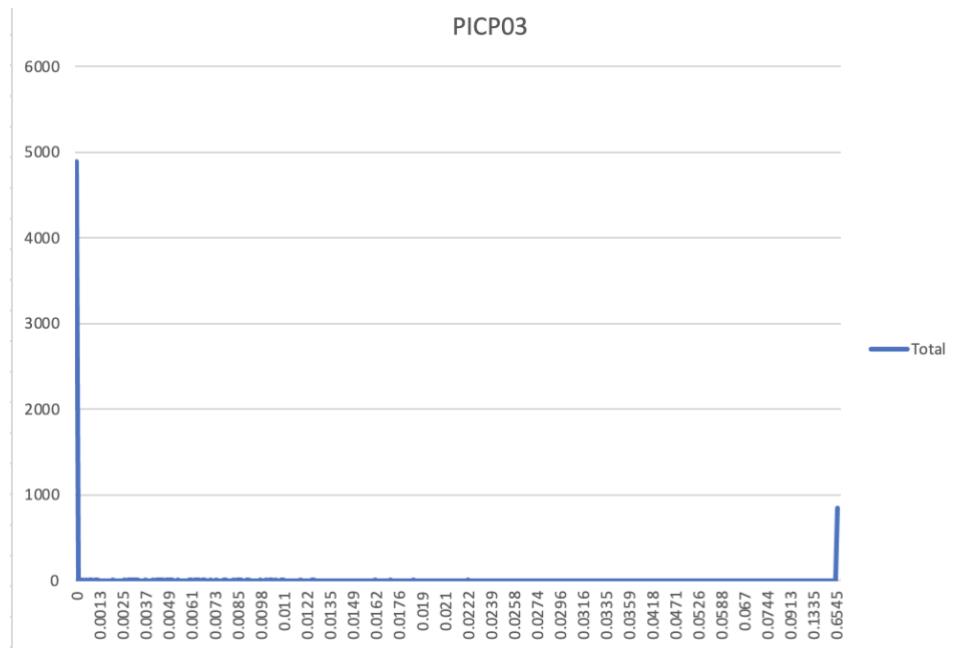
Variable 12 “Percentage of degrees awarded in Natural Resources and Conservation”

Table 12.1 Data Description of the Variable “Percentage of degrees awarded in Natural Resources and Conservation”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	1.13292394
PCIP03	Variance	2.52531608
	Std. Dev.	1.58912431
Data Volume (number of observation/rows)	Skewness	4.35723696
20182	Kurtosis	32.2441087
	Median	0.572
Meaning of the attribute	Mean Abs. Dev.	8.606
Percentage of degrees awarded in Natural Resources and Conservation	Mode	0.468
	Minimum	0.112
	Maximum	17.1
Meaning of the attribute in business terms	Range	16.988
	Count	330
	Sum	373.8649
	1st Quartile	0.112
Attribute types (select from the list)	3rd Quartile	17.1
Continuous	Interquartile Range	16.988
	Missing / Blank	13501

Explore Data

Graph 12.2 Data Exploration of the Variable “Percentage of Degrees awarded in Natural Resources and Conservation”



Key findings:

- Overall, based on the dataset the values are normal as the number of null values is 846 and they fall in the range.
- This variable will also be useful in determining the percentage of students with a degree in natural resources and conservation since they will be able to comprehend Tesla's goals and will assist the large management.

Verify Data Quality

Table 12.3 Data Quality Verification of the variable “Percentage of degrees awarded in Natural Resources and Conservation”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
PCIP03 - Percentage of degrees awarded in Natural Resources And Conservation.	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Avoid Nulls and zeros
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	Yes	Ignore the blanks
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Spareness	Any data which as very large zero value and very little no zero value	Yes	Ignore the zero values
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

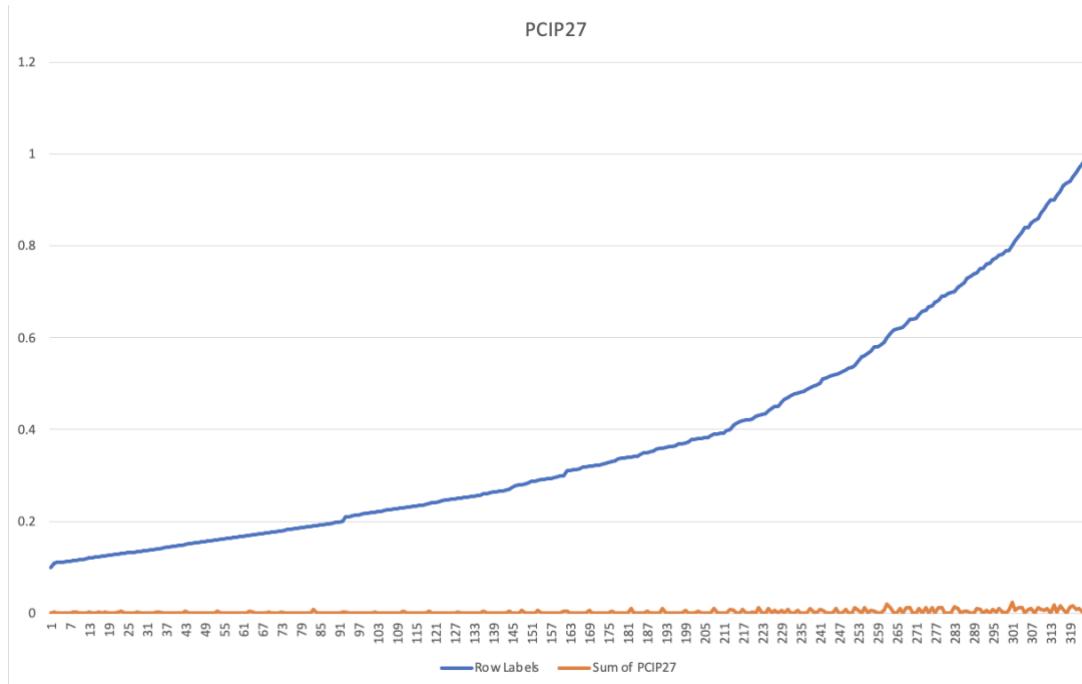
Variable 13 “Percentage of degrees awarded in Mathematics and Statistics”

Table 13.1 Data Description of the Variable “Percentage of degrees awarded in Mathematics and Statistics”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	1.70471049
PCIP27	Variance	5.08037701
	Std. Dev.	2.25396917
Data Volume (number of observation/rows)	Skewness	2.03873221
20182	Kurtosis	4.11086642
	Median	0.6545
Meaning of the attribute	Mean Abs. Dev.	6.85585
Percentage of degrees awarded in Mathematics and Statistics	Mode	0.336
	Minimum	0.1117
	Maximum	13.6
Meaning of the attribute in business terms	Range	13.4883
	Count	324
	Sum	552.3262
	1st Quartile	0.1117
Attribute types (select from the list)	3rd Quartile	13.6
Continuous	Interquartile Range	13.4883
	Missing / Blank	18777

Explore Data

Graph 13.2 Data Exploration of the Variable “Percentage of degrees awarded in Mathematics and Statistics”



Key Finding:

- The dataset value is normal because there are 846 null values after reviewing the dataset. There are 5,835 data values with a range of zero.
- Overall, analyzing this aspect may be important in determining the overall percentage of degrees in mathematics and statistics, which will eventually assist the organization recruit individuals who will benefit from their financial operations.

Verify Data Quality

Table 13.3 Data Quality Verification of the Variable “Percentage of degrees awarded in Mathematics and Statistics”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
PCIP27 - Percentage of degrees awarded in Mathematics	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Avoid the nulls
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	No	
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparse ness	Any data which as very large zero value and very little no zero value	Yes	Ignore the zero values
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

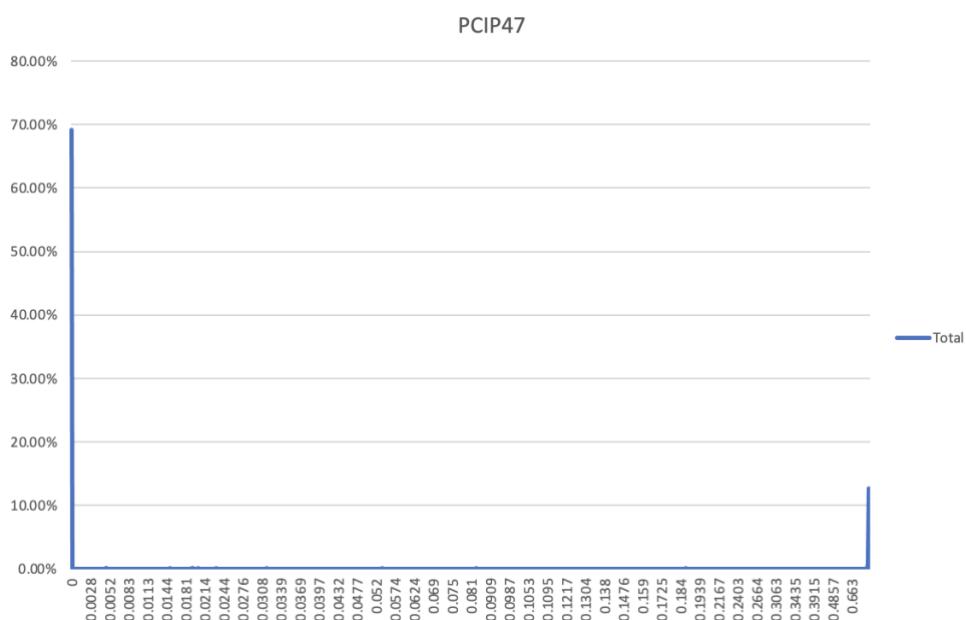
Variable 14 “Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians”

Table 14.1 Data Description of the variable “Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	0.676366852
PCIP47	Variance	4.581885608
	Std. Dev.	2.140533954
Data Volume (number of observation/rows)	Skewness	24.18552002
20182	Kurtosis	624.617331
	Median	0.432
Meaning of the attribute	Mean Abs. Dev.	28.0555
Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians	Mode	0.6
	Minimum	0.111
	Maximum	56
Meaning of the attribute in business terms	Range	55.889
	Count	718
	Sum	485.6314
Attribute types (select from the list)	1st Quartile	0.111
Continuous	3rd Quartile	56
	Interquartile Range	55.889
	Missing / Blank	18969

Explore Data

Graph 14.2 Data Exploration of the variable “Percentage of degrees awarded in Mechanics and Repair Technologies/Technicians”



Key Findings:

The variable is normal as it has overall 12.66% of null values which is very less compared to total values in the dataset.

Verify Data Quality

Table 14.3 Data Quality Verification of the Variable “Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
PCIP47 Percentage of degrees awarded in Mechanic And Repair Technolog	Check coverage	All possible values are represented •Use metadata (e.g., domain, range, dependency, distribution)	Yes	Avoid nulls and blanks
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	No	
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparsereness	Any data which as very large zero value and very little no zero value	Yes	Ignore the zero values
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

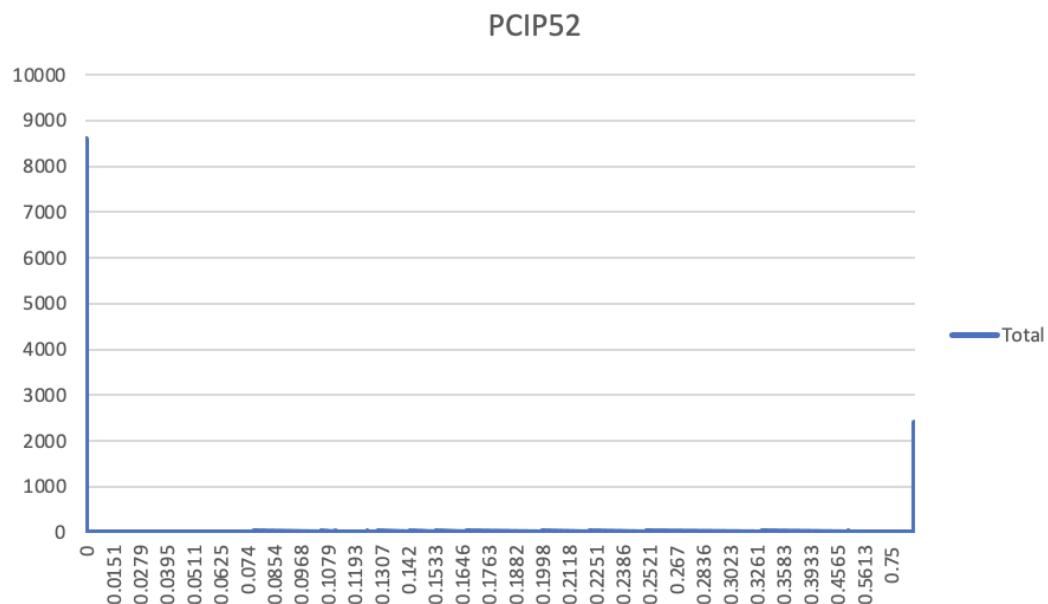
Variable 15 “Percentage of degrees awarded in Business, Management, Marketing, and Related Support Services”

Table 15.1 Data Description of the Variable “Percentage of degrees awarded in Business, Management, Marketing, and Related Support Services”

Numerical: Continuous (Cross-sectional)	Summary Measures	Value
Attribute/Variable Name	Mean	1.24403623
PCIP52	Variance	2.99484126
	Std. Dev.	1.73056097
Data Volume (number of observation/rows)	Skewness	9.48376175
	20182	Kurtosis
		213.205693
Meaning of the attribute	Median	0.65765
Percentage of degree awarded in Business, Management, Marketing, and Related Support Services	Mean Abs. Dev.	24.0567
	Mode	0.3678
	Minimum	0.1134
Meaning of the attribute in business terms	Maximum	48
	Range	47.8866
	Count	2564
	Sum	3189.7089
Attribute types (select from the list)	1st Quartile	0.1134
Continuous	3rd Quartile	48
	Interquartile Range	47.8866
	Missing / Blank	11017

Explore Data

Graph 15.2 Data Exploration of the Variable “Percentage of degrees awarded in Business, Management, Marketing, and Related Support Services”



Key Findings:

- After analyzing the variable, it is a normal variable as it contains total null values of 2412.
- So, we will be further able to analyze this significant variable as it will help Tesla look for employees that help expand the growth of their Business.

Verify Data Quality

Table 15.3 Data Quality Verification of the Variable “Percentage of degrees awarded in Business, Management, Marketing, and Related Support Services”

Variable Name	Data Quality Issue	Description/ Example	Problem	Assessment
PCIPS2 - Business, Management, Marketing, and Related Support Services	Check coverage	All possible values are represented • Use metadata (e.g., domain, range, dependency, distribution)	No	
	Meaning Of Attributes	Verify that the meanings of attributes and contained values fit together	No	
	Missing Attribute or blank fields	How will you address this?	No	
	Duplicate	Duplicated records (observations)	No	
	Spelling and format	E.g., same value but sometimes beginning with a lower-case letter, sometimes with an upper-case letter	No	
	Deviations	Decide whether a deviation is “noise” or may indicate an interesting phenomenon	No	
	Plausibility	E.g., all fields having the same or nearly the same values	No	
	Conflict with Common Sense	E.g., teenagers with high income levels.	No	
	High Cardinality	A high number of values in a set	No	
	Outliers	An observation that lies well outside of the norm.	No	
	Redundant Input	Does not give any new information that was not already explained by other inputs	No	
	Sparseness	Any data which as very large zero value and very little no zero value	Yes	Ignore the zero values.
	Irrelevant Input	Does not provide information about the target (dependent Variable)	No	
	Unstructured Data	Unstructured data is data that does not follow a specified format	No	

Data Preparation

- To prepare our data we started by combining 2018-2021 Institution-Level data files from the U.S. Department of Education into one file.
- Then we extracted into a separate file all the variables we will analyze along with additional institution identifiers that may be useful in our visualizations, such as the name of the campus, state, latitude, and longitude of each college or educational institution.

Clean Data

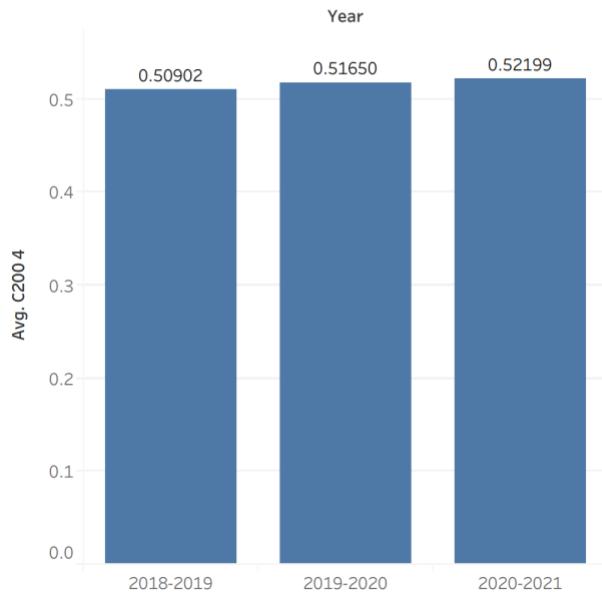
- Our team will be cleaning the data on the Excel sheet labeled "Final Dataset II." There are 482,317 fields and various types of data in this Excel document. First, we would eliminate every null value from our Excel sheet.

Modeling About 60,787 null and blank fields were discovered. We can produce precise charts, tables, and graphs by changing the nulls to blank fields.

- For our final analysis, we will not perform estimation by modeling for missing values in our data. Our data's Null values will instead be ignored as these represent data that does not apply to the educational institution or data that was not collected for a given time period.

Variable I ‘Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion)

Completions rate for first-time, full-time bachelor’s degree-seeking students at four-year institutions (200% of expected time to completion) 3 Years



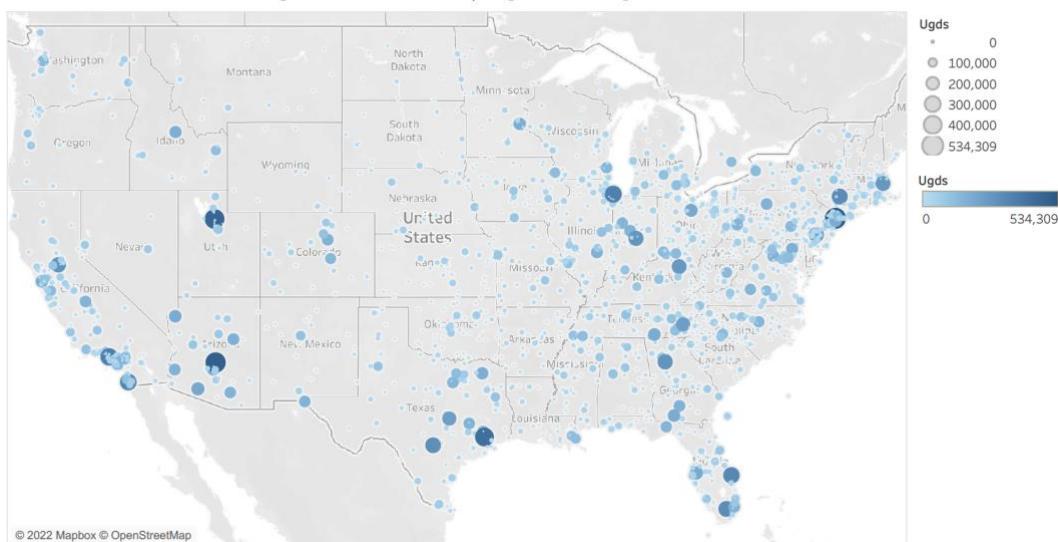
Graph 1.1 summarizes the completion rate of first-time bachelor's degree seekers at four-year institutions nationwide between 2018-2021

Key Findings:

- Completion rate for first time students has continued to increase over the past three years.
- This data shows gradual growth in the number of students pursuing specialized degrees. Thus, increasing the candidate pool for Tesla nationwide.

Variable 2 ‘Enrollment of undergraduate certificate/degree-seeking students’

Sum of Enrollment of undergraduate certificate/degree-seeking students



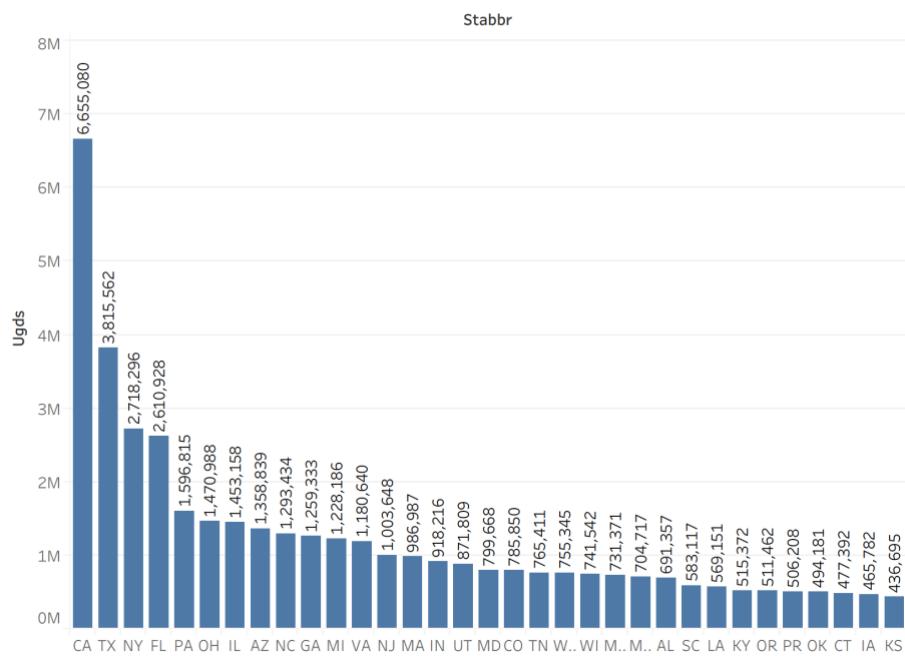
Graph 2.1 map summarizes the number of student enrollments for undergraduate certificates and degree by state from 2018-2021

Key Findings:

- The East Coast has the highest concentration of overall enrollments during 2018-2021.
- States such as California, Texas, New York, Pennsylvania, Florida have the highest number of enrolled students for certificates and degrees between 2018-2021.

- This data shows that Tesla has several options in areas where a battery manufacturing factory could be opened and adequately staffed with sufficient qualified candidates.

Sum of Enrollment of undergraduate certificate/degree-seeking students by State



Graph 2.2 summarizes the number of student enrollments for undergraduate certificates and degree by state in bar format provides total enrollees

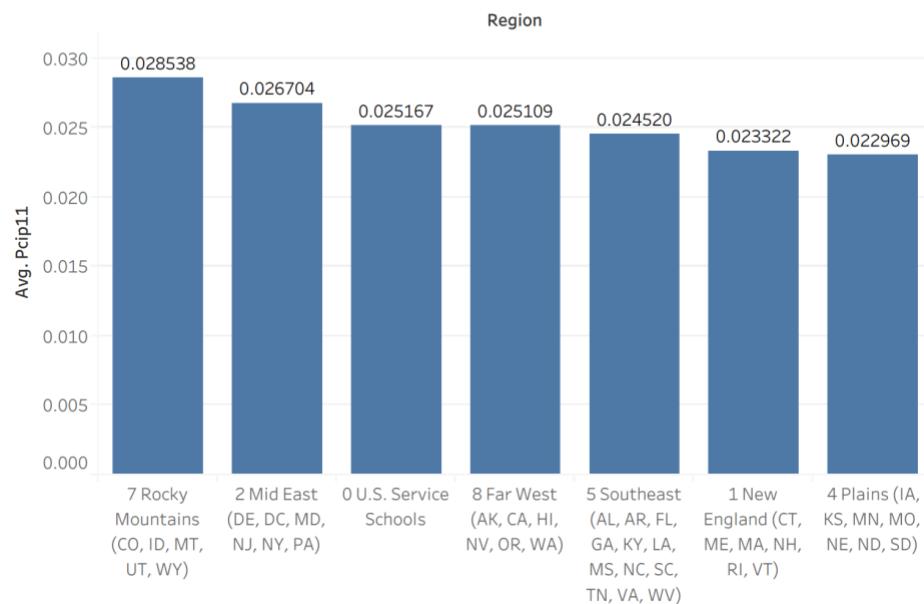
Key Findings:

- States such as California, Texas, New York, Pennsylvania, Florida have the highest number of enrolled students for certificates and degrees between 2018-2021.
- California has the most enrollments between 2018-2021.
- Texas has the second most enrollments between 2018-2021.
- California has close to 50% more enrollments than Texas.

- This data demonstrates a great opportunity for a qualified candidate pool for Tesla in California, Texas, New York, and Florida.

Variable 3 ‘Percentage of degrees awarded in Computer and Information Sciences and Support Services’

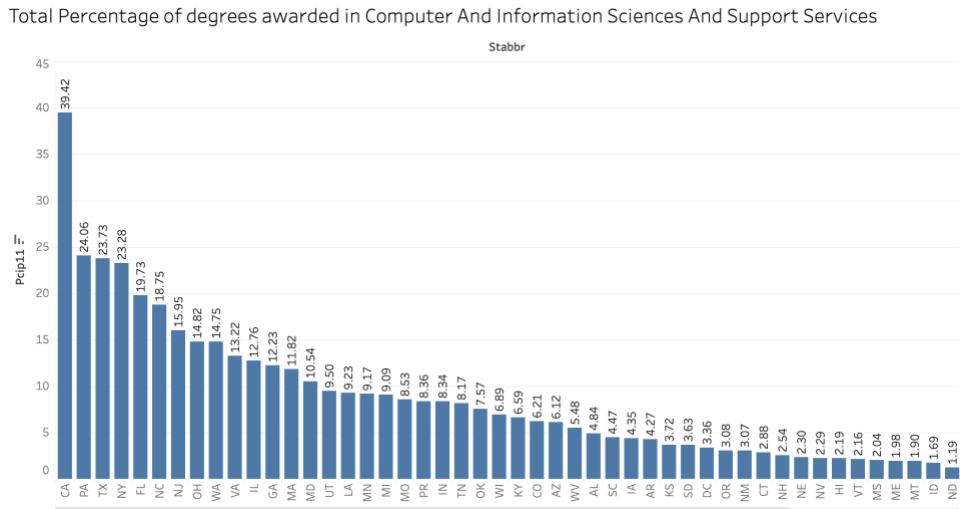
Average of Percentage degrees awarded in Computer And Information Sciences And Support Services



Graph 3.1 Summarizes the average percentage of degrees awarded in Computer and Information Sciences and Support Services by region

Key Findings:

- Region CO, ID, MT, UT, WY have the highest average of degrees in Computer Information Sciences and Support Services awarded between 2018-2021.
- This data represents a combined candidate pool for Tesla from CO, ID, MT, UT, WY Region for Computer Information Science graduates.



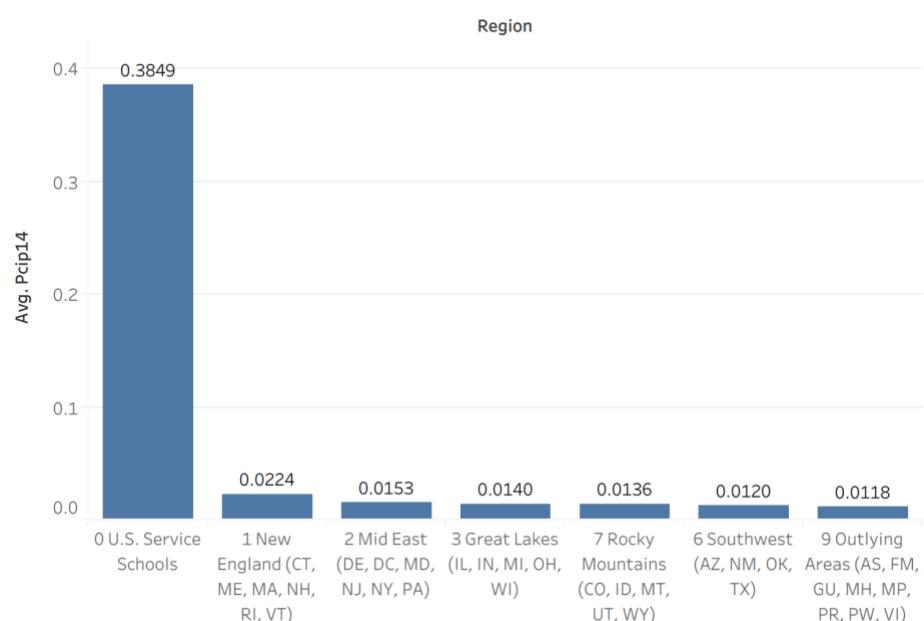
Graph 3.2 summarizes the total percentage of degrees awarded in Computer and Information Sciences and Support Services by state

Key Findings:

- California has the highest overall percentage of degrees awarded in Computer and Information Sciences and Support Services from 2018-2021.**
- Pennsylvania has the second highest overall percentage of degrees awarded in Computer and Information Sciences and Support Services from 2018-2021.**
- California has almost close to double the percentage of degrees awarded in Computer and Information Sciences and Support Services than Pennsylvania between 2018-2021.**
- This data shows that California could offer Tesla a great candidate pool for candidates with a major in Computer Science.**

Variable 4 ‘Percentage of degrees awarded in Engineering’

Average of Percentage degrees awarded in Engineering

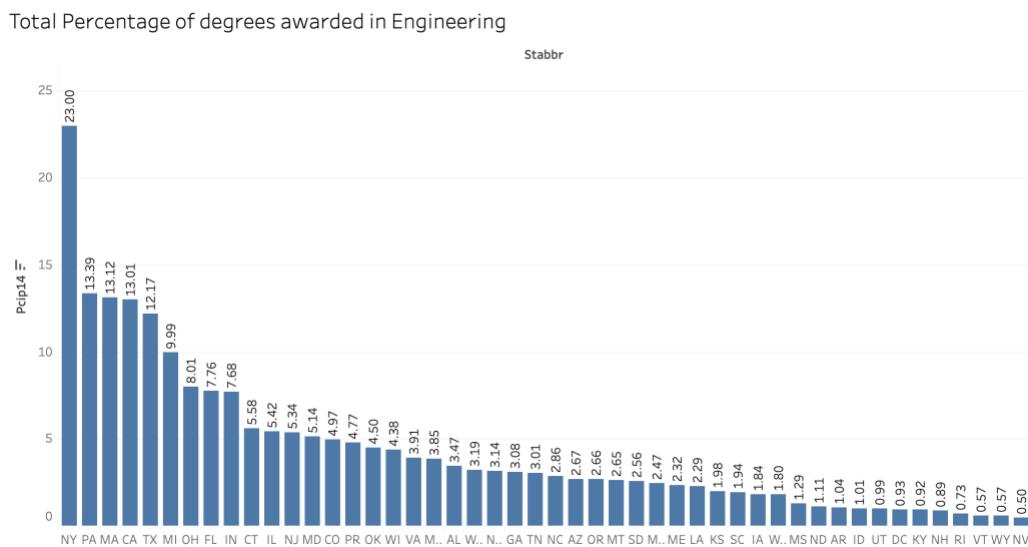


Graph 4.1 Summarizes the average percentage of degrees awarded in Engineering by region

Key Findings:

- **Region U.S. Service Schools have the highest average of degrees in Engineering awarded between 2018-2021.**
- **Region 0 – U.S. Service Schools consists of only one educational institution United States Naval Academy in WestPoint New York, which offer many programs with an emphasis on Engineering. While Regions 1-9 combines several hundred educational institutions, this skews the data.**

- However, when analyzed similarly by State, to include ALL educational institutions, as Graph 4.2 will show below, New York is still a top-ranking State for Engineering major candidates for Tesla.



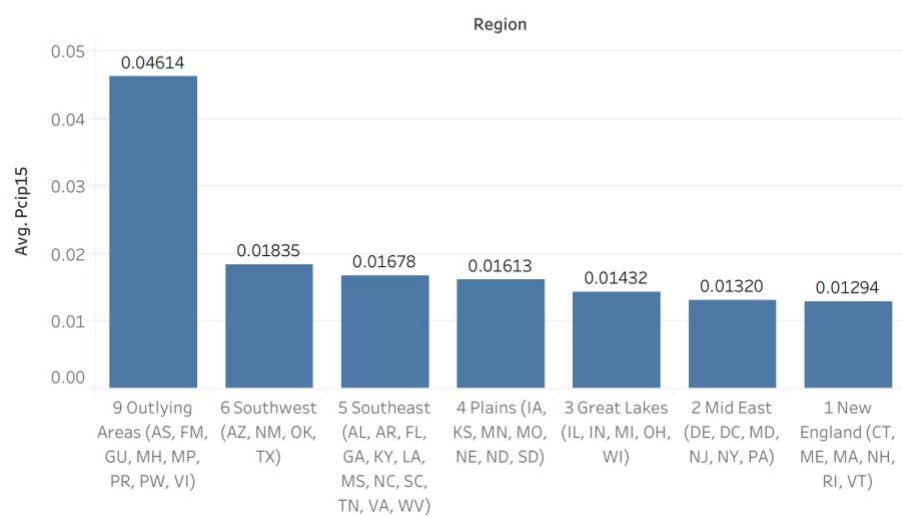
Graph 4.2 summarizes the total percentage of degrees awarded in Engineering by state

Key Findings:

- New York has the highest overall percentage of degrees awarded in Engineering from 2018-2021.
- Pennsylvania has the second highest overall percentage of degrees awarded in Engineering from 2018-2021.
- New York has almost close to double the percentage of degrees awarded in Engineering than Pennsylvania between 2018-2021.
- This data shows that New York could offer Tesla a great candidate pool for candidates with a major in Engineering.

Variable 5 ‘Percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields’

Average of Percentage degrees awarded in Engineering Technologies And Engineering-Related Fields

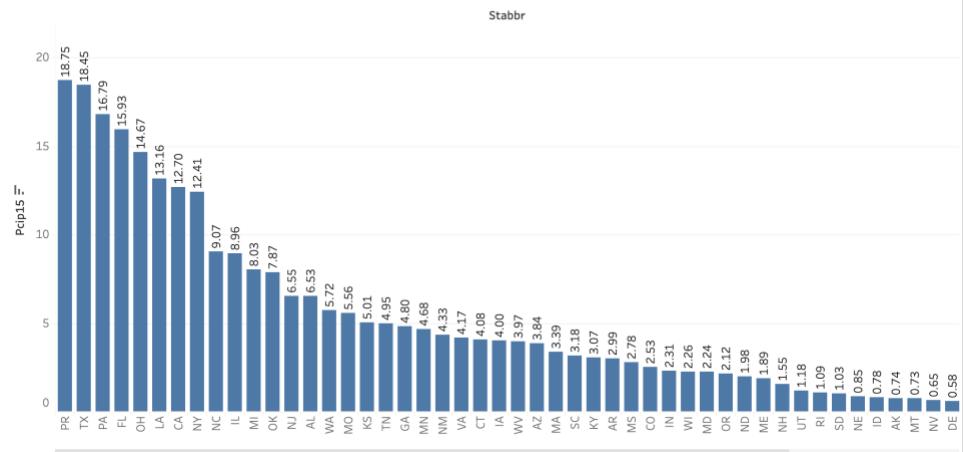


Graph 5.1 Summarizes the average percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields by region

Key Findings:

- **Region AS, FM, GU, MH, MP, PR, PW, VI of Outlying areas have the highest average of degrees in Engineering Technologies and Engineering-Related Fields awarded between 2018-2021.**
- **This data represents a combined candidate pool for Tesla from AS, FM, GU, MH, MP, PR, PW, VI Region for Engineering Technologies and Engineering-related field graduates.**

Total percentage of degrees awarded in Engineering Technologies And Engineering-Related Fields per State

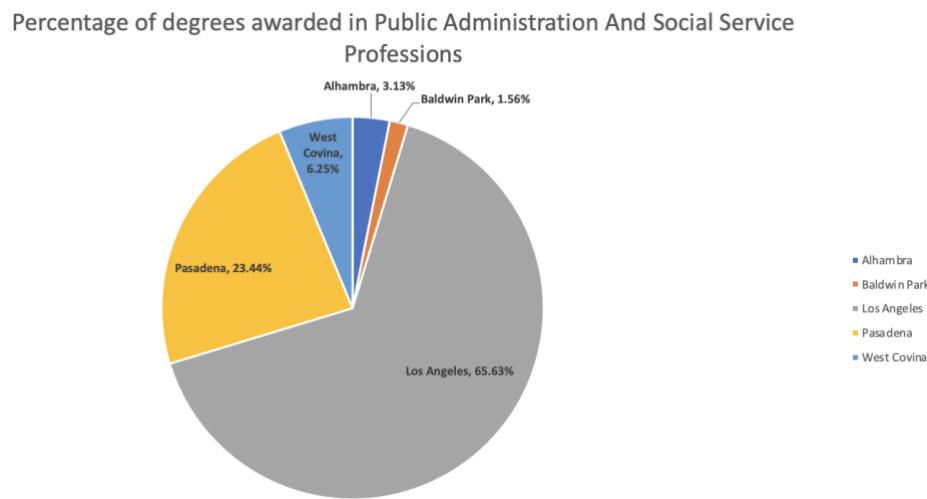


Graph 5.2 summarizes the total percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields by state

Key Findings:

- **Puerto Rico has the highest overall percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields from 2018-2021.**
- **Texas has the second highest overall percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields from 2018-2021.**
- **Puerto Rico has almost the same percentage of degrees awarded in Engineering Technologies and Engineering-Related Fields than as Texas between 2018-2021.**
- **This data shows that Puerto Rico could offer Tesla a great candidate pool for candidates with a major in Engineering Technologies and Engineering-related fields.**

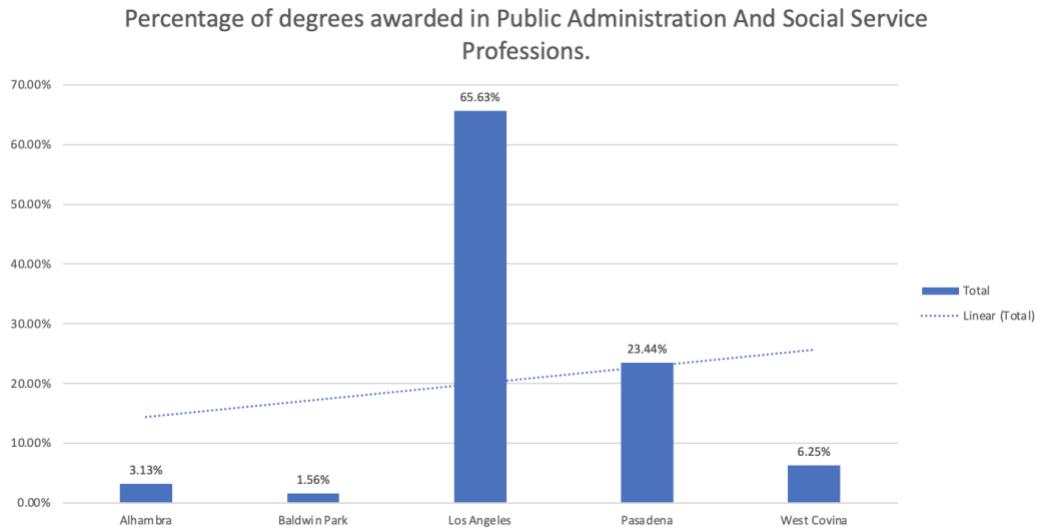
Variable 6 ‘Percentage of degrees earned in the areas of social work and public administration fields’



Graph 6.1 Pie Chart shows the number of students awards in Public Administration and Social Service within 2018-2021.

Key findings:

- **Cities such as Los Angeles and Pasadena have the highest number of students awarded in Public Administration and Social Service.**
- **Numerous cities such as Alhambra and Baldwin Park have a low percentage rate of students awarded in Public Administration and Social Service.**
- **A public administration degree would be beneficial to Tesla since it would enable the company to network and share its knowledge with people from various backgrounds.**



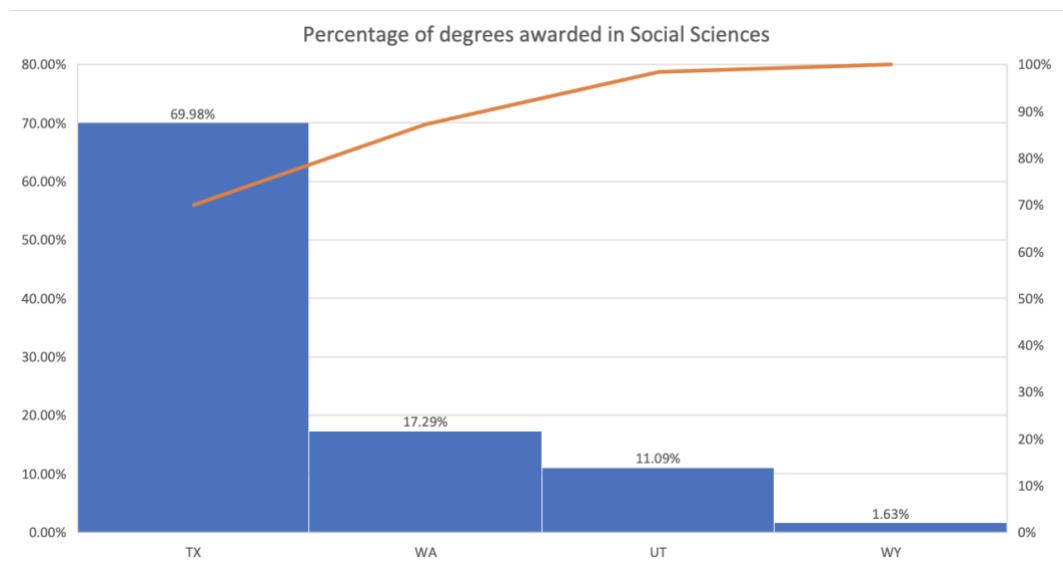
Graph 6.2 - bar chart shows the count of percentage degrees awarded in Public Administration and Social Science by cities within Los Angeles County.

Key findings:

- We had picked the cities within Los Angeles County because our company is in the heart of Los Angeles.
- The highest rate of degrees awarded in the Social Services and Public Administration field was within Los Angeles.
- The lowest rate of degrees awarded in Social Services and Public Administration Professions was in Alhambra and Baldwin Park.
- I have changed the row labels to Los Angeles Cities within this table. By changing the row labels to Cities, I found four cities with the highest and lowest rate of degrees awarded in the Social Services and Public Administration fields.
- A degree in public administration and social work would be beneficial to Tesla because Tesla wants to educate a diverse spectrum of pupils in Los Angeles. Los Angeles would be a fantastic location to increase value for both its consumers and society at large.

Variable 7 ‘Percentage of social sciences degrees given’

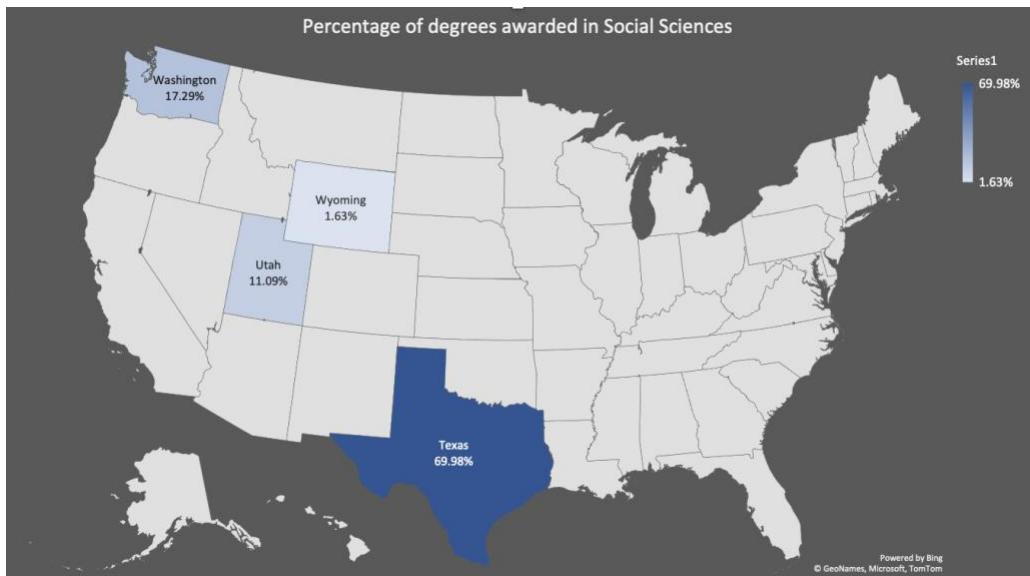
Data Modeling the Percentage of degrees for variable “Percentage of degrees awarded in the professions of Social Science fields”



Graph 7.1 - the count of "Percentage of degrees awarded in the professions of social science fields" by states.

Key findings:

- Highest percentage of degrees awarded in Social Science was Texas (TX).
- Lowest percentage of degrees awarded in Social Science was Wyoming (WY).
- Within this table, I have changed the row labels to states. By changing the row labels to states, I was able to find four states that had the highest and lowest percentage of degrees award in Social Sciences.
- A degree in Social Science would be beneficial to Tesla because economic and other social science majors may analyze how Tesla automobiles are produced, distributed, and used in the workplace.



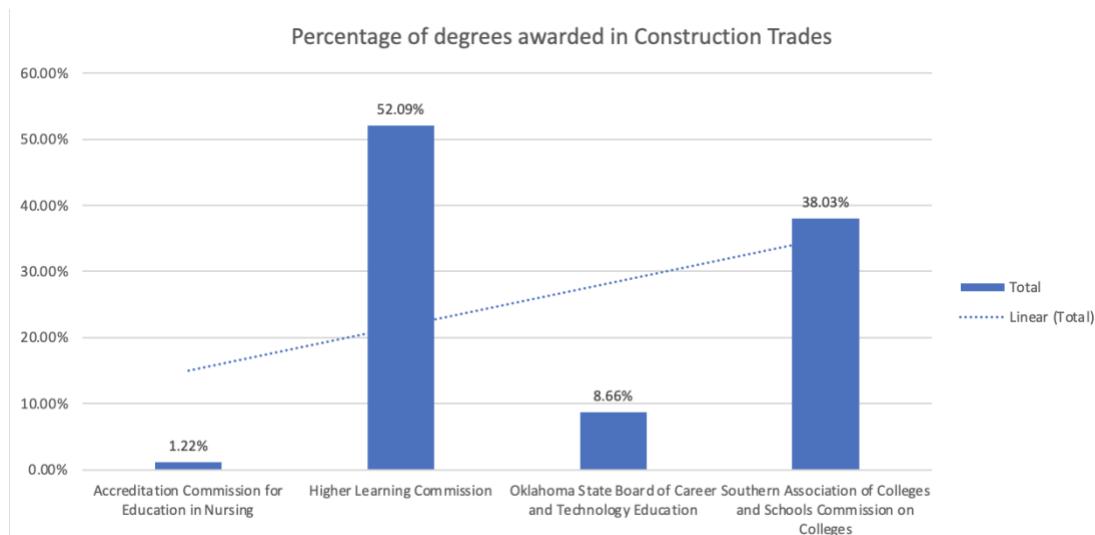
Graph 7.2 - Sum of “Percentage of the degrees awarded in Social Science” by states.

Key findings:

- States such as Texas and Washington have the highest sum count in degrees awarded in Social Science.
- The highest sum count would be Texas because it is 68.98%, and it is the highest percentage in the degree awarded in Social Science.
- A degree in Social Science would be beneficial to Tesla especially in Austin, Texas because students can analyze the effects and come up with new innovative ideas for the company's shift to sustainable energy.

Variable 8 ‘Percentage of degrees awarded in the professions of Construction Trade fields’

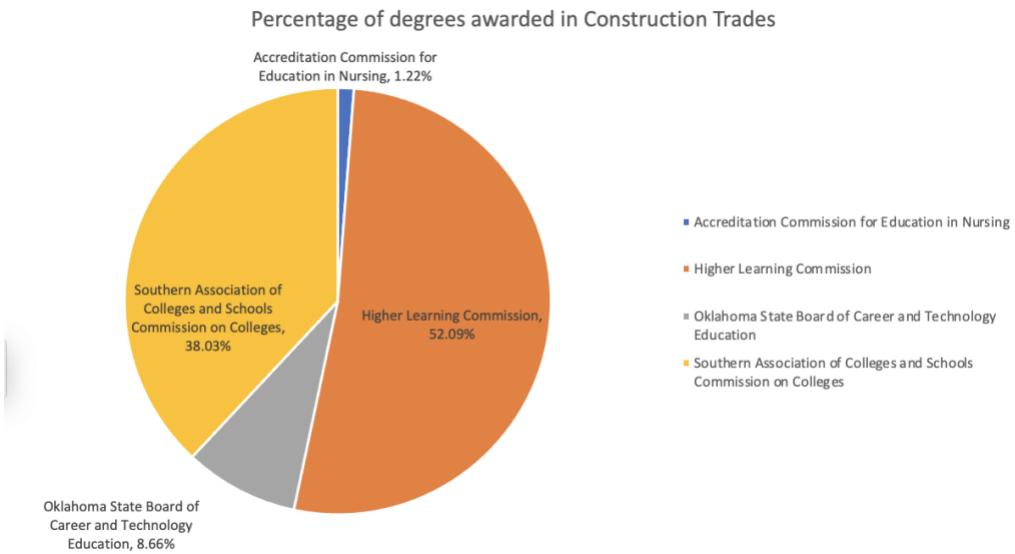
Data Modeling the Percentage of degrees for variable ‘Percentage in the professions of Construction Trade fields’



Graph 8.1 - Sum count of the percentages of degrees awarded in Construction Trades by School within the United States.

Key findings:

- School such as Higher Learn Commission and Southern Association of Colleges have the highest sum of percentage for degrees awarded in Construction Trades.
- The percentage of degrees awarded in construction trades could be advantageous because companies like Tesla would require graduates to work as structural builders and steelworkers, which requires lifting large objects like steel beams with cranes to build Tesla's factory.



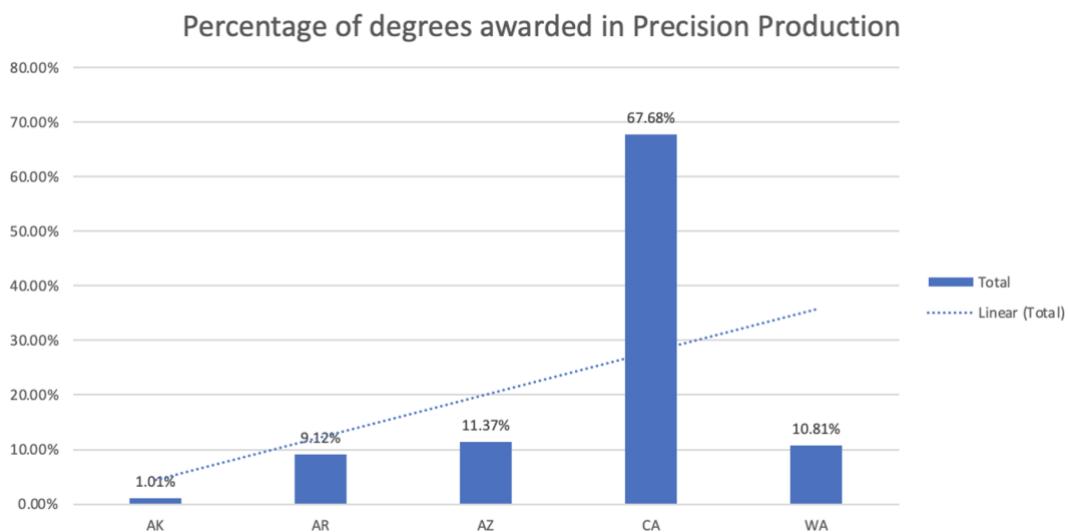
Graph 8.2 - Sum count of the percentages of degrees awarded in Construction Trades by School within the United States.

Key findings:

- **Highest percentage of degrees awarded in Construction Trades was in Higher Learning Commission.**
- **Lowest percentage of degrees awarded in Construction Trade was Accreditation Commission for Education in Nursing.**
- **Within this table, I have changed the row labels to Accredited Schools. By changing the row labels to Accredited Schools, I was able to find four Accredited Schools that had the highest and lowest percentage of degrees award in Construction Trades.**
- **The percentage of degrees awarded in Construction Trades by school could be beneficial because companies like Tesla would need students who can work in construction to help Tesla create automobiles, structures, and enormous factories for their vehicles.**

Variable 9 ‘Percentage of degrees earned in Precision Production.

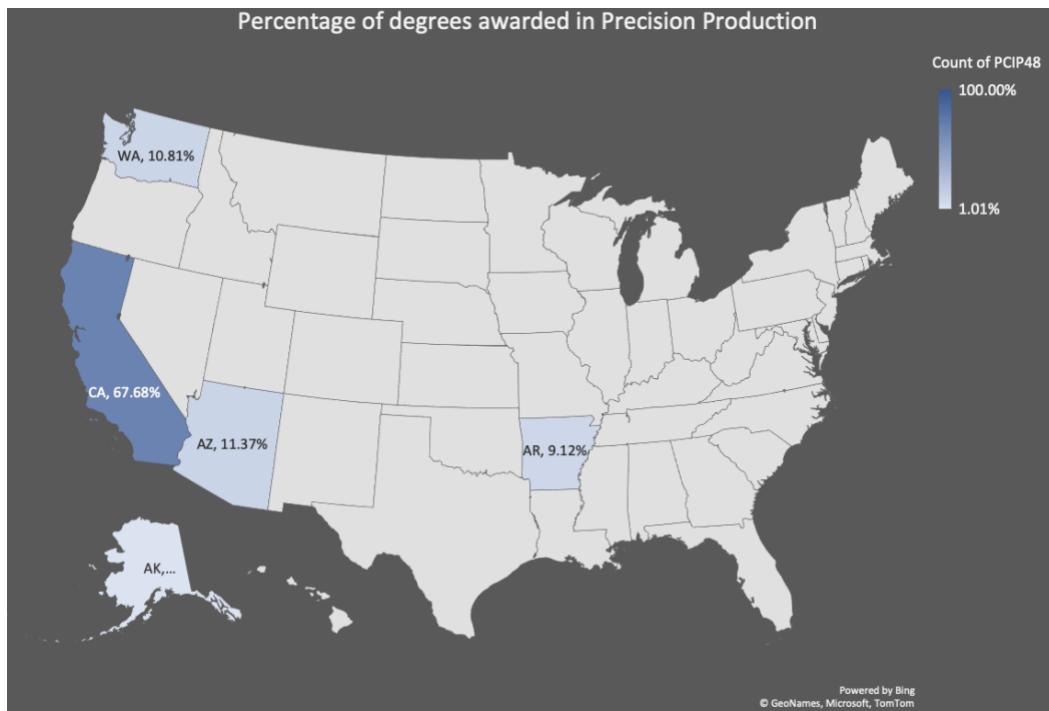
Data Modeling the rate of degrees for variable “Percentage of degrees awarded in Precision Production”



Graph 9.1- Sum percentage of the variable ‘percentage of degree awarded in Precision Production’

Key findings:

- **Highest count of degrees awarded in Precision Production was in California.**
- **Lowest percentage of degrees awarded in Precision Production was in Arkansas.**
- **Within this table, I have changed the row labels to States. By changing the row labels to States, I was able to find five states that had the highest and lowest count of degrees award in Precision Production.**
- **The percentage of degrees awarded in Precision Production could be beneficial because companies like Tesla would need students who can work in operating advanced manufacturing equipment. Tesla is currently constructing battery cell factories for its automobiles, and these factories require new staff who can operate production machinery.**



Graph 9.2 - Sum count of the percentages of degrees awarded in Precision Production by states.

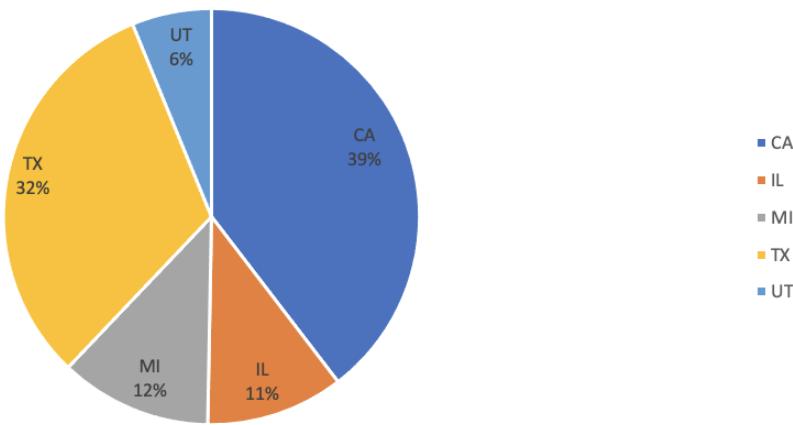
Key findings:

- **California has the highest percentage of degrees awarded in Precision Production.**
- **Tesla is currently constructing battery cell factories for its automobiles, and these factories require new staff who can operate production machinery. Having a degree in Precision Production can help students land a job in operating production machinery.**
- **Tesla has several superchargers in California, graduates from that state will have the best employment opportunities there.**

Variable 10 ‘Percentage of transportation and materials moving degrees issued.

Data Modeling the Percentage of degrees for variable “Percentage of degrees awarded in Transportation and Materials Moving”

Percentage of degrees awarded in Transportation And Materials Moving



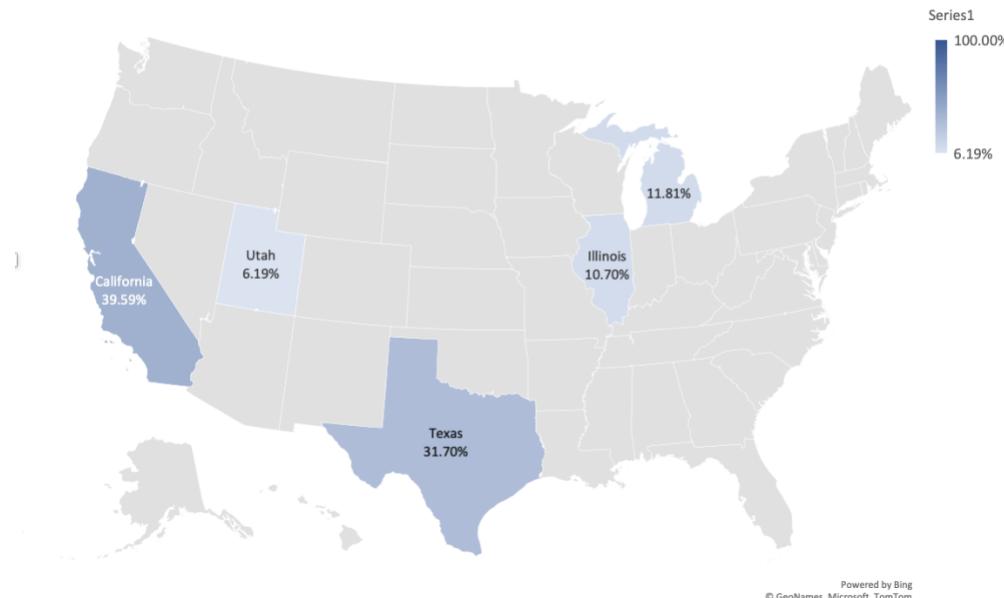
Graph 10.1 - Sum count of the percentages of degrees awarded in Transportation and Materials by states.

Key findings:

- States such as California and Texas have the highest percentage of degrees awarded in Transportation and Materials.
- Utah has the lowest percentage of degrees in transportation and material moving awarded.
- Tesla has the highest rate of degrees awarded in Transportation and Materials, so it may promote employees and add new roles for its

factories in Texas and California.

Percentage of degrees awarded in Transportation And Materials Moving



Graph 10.2 - Percentage of degrees awarded in Transportation and Materials Moving within five states.

Key findings:

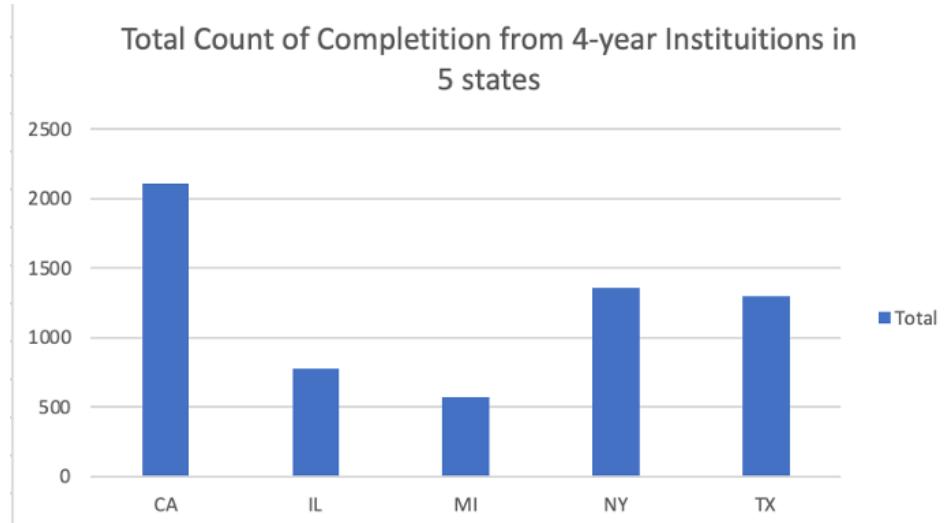
- **Highest count of degrees awarded in Transportation and Materials Moving was in California.**
- **Lowest percentage of degrees awarded in Transportation and Materials Moving was in Utah.**
- **Within this table, I have changed the row labels to States. By changing the row labels to States, I was able to find five states that had the highest and lowest count of degrees award in Transportation and Materials Moving.**
- **The percentage of degrees awarded in Transportation and Materials Moving could be beneficial because companies like Tesla would require students who can work as material movers, tractor trailer truck drivers who can carry Tesla's supplies from one area to another. A large number of workers transport**

materials between Tesla's factories and storage facilities or onto container ships.

Variable 11 “Completion Rate for First-time, Full-Time Students at four-year”

Row Labels	Count of C150_4_UNKN
CA	2111
IL	776
MI	570
NY	1356
TX	1296
Grand Total	6109

Table 11.1 Count of completion rate for first-time, full-time students at four-year institutions for 5 states.



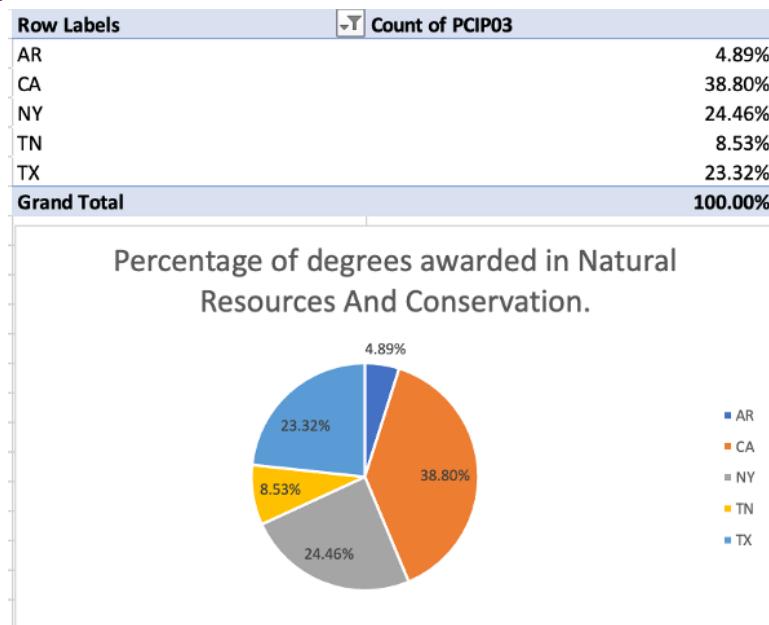
Graph 11.2 Bar chart form - count of completion rate for first-time, full-time students at four-year institutions for 5 states.

Key findings:

- California had the highest total count of students who completed their degree for a first-time, full-time student from a four-year institution.

- Michigan had the lowest total count of students who completed their degree for a first-time, full-time student from a four-year institution. Whereas Illinois was the second lowest.
- New York and Texas also had a decent total count of students who completed from a 4-year institution for the first time.
- Overall, the students with the competition degree from a 4-year institution will benefit the company when hiring because there will be hire chances of students who will be able to offer the skills that they gained in from the 4-year institution program.

Variable 12 “Percentage of degrees awarded in Natural Resources and Conservation”



Table/Graph 12.1 Percentage of degrees awarded in Natural Resources and Conservation.

Key findings:

- The chart shows the percentage of the degree students earn in Natural Resources and Conservation. Students with this degree

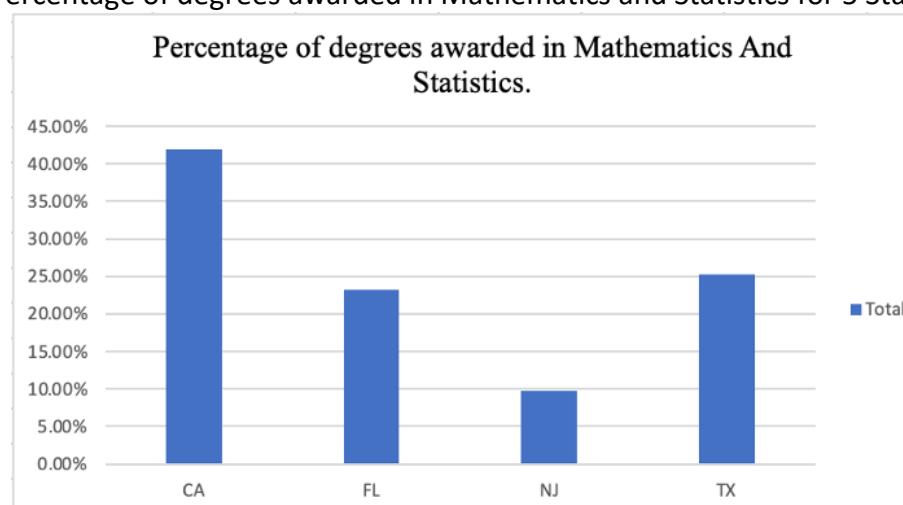
would help Tesla insights as Tesla goal is to make more sustainable vehicles.

- Of the Five states, California has the highest percentage of degrees awarded in Natural Resources and Conservation.
- Arizona had the lowest percentage of degrees awarded in Natural Resources and Conservation than the other states.

Variable 13 “Percentage of degrees awarded in Mathematics and Statistics”

Row Labels	Count of PCIP27
CA	41.93%
FL	23.19%
NJ	9.69%
TX	25.19%
Grand Total	100.00%

Table 13.1 Percentage of degrees awarded in Mathematics and Statistics for 5 States.



Graph 13.2 Bar chart form - Percentage of degrees awarded in Mathematics and Statistics for 5 States.

Key findings:

- California had the highest percentage of degrees awarded in Mathematics and Statistics. Texas being the second highest. And

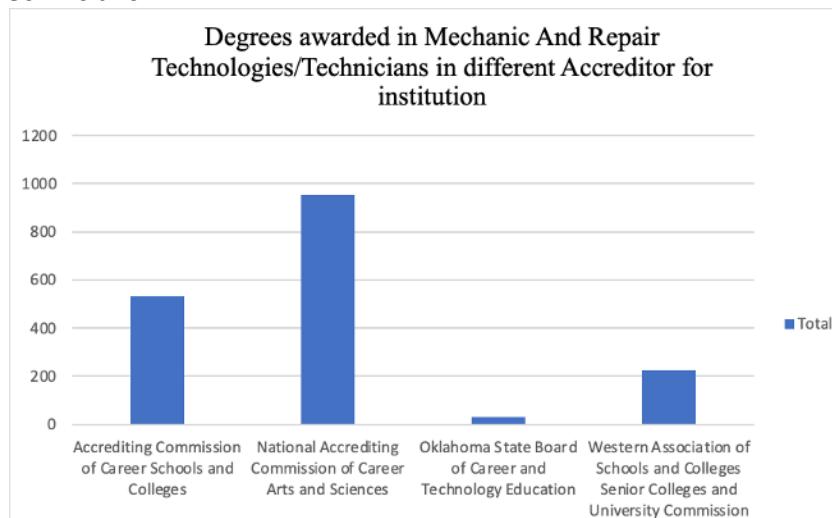
New Jersey had the lowest percentage of degrees awarded in Mathematics and Statistics.

- **The percentage of degrees awarded in Mathematics and Statistics could be valuable because companies like Tesla look for students who can work in the financial sector for the company with their budget, assets, and investments.**

Variable 14 “Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians”

Row Labels	Count of PCIP47
Accrediting Commission of Career Schools and Colleges	530
National Accrediting Commission of Career Arts and Sciences	955
Oklahoma State Board of Career and Technology Education	31
Western Association of Schools and Colleges Senior Colleges and University Commission	225
Grand Total	1741

Table 14.1 Count of Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians



Graph 14.2 Bar chart form - Count of Percentage of degrees awarded in Mechanic and Repair Technologies/Technicians.

Key Findings:

- **The National Accrediting Commission of Career Arts and Science had a higher total count of degrees awarded in Mechanic**

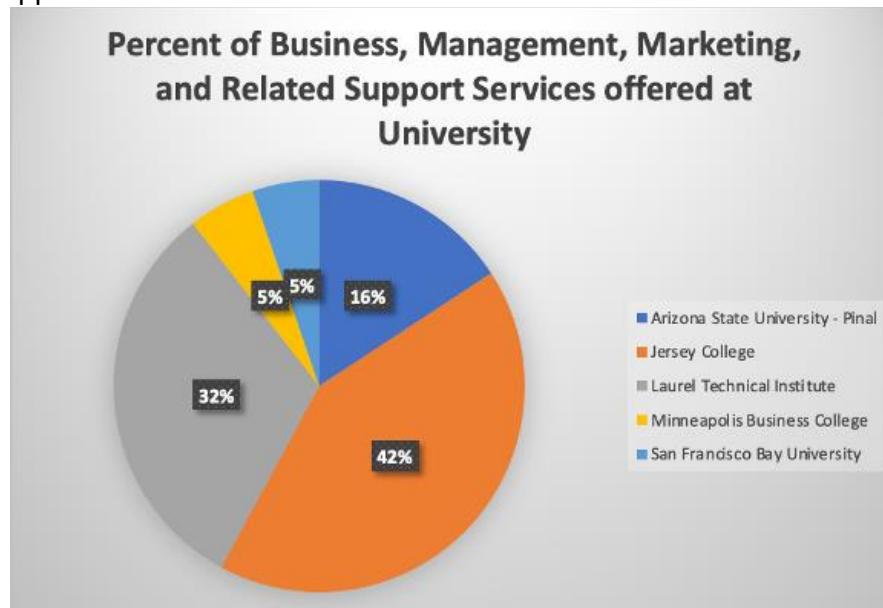
and Repair Technologies/Technicians than at different institutions.

- **Having a degree in Mechanics and Repair Technologies/Technicians would help them start a career with Tesla as they need people with skills in Mechanics and Repair Technology and Technician.**

Variable 15 “Percentage of degrees awarded in Business, Management, Marketing, and Related Support Services”

Mean	5.9358824
Median	2
Mode	1
Minimum	1
Maximum	8605
Standard deviation	153.20912

Table 15.1 Statistics of Percentage of degrees awarded in Business, Management, Marketing, and related support fields.



Graph 15.2 Statistics of Percentage of degrees awarded in Business, Management, Marketing, and related support fields offered at select Universities.

Key Findings:

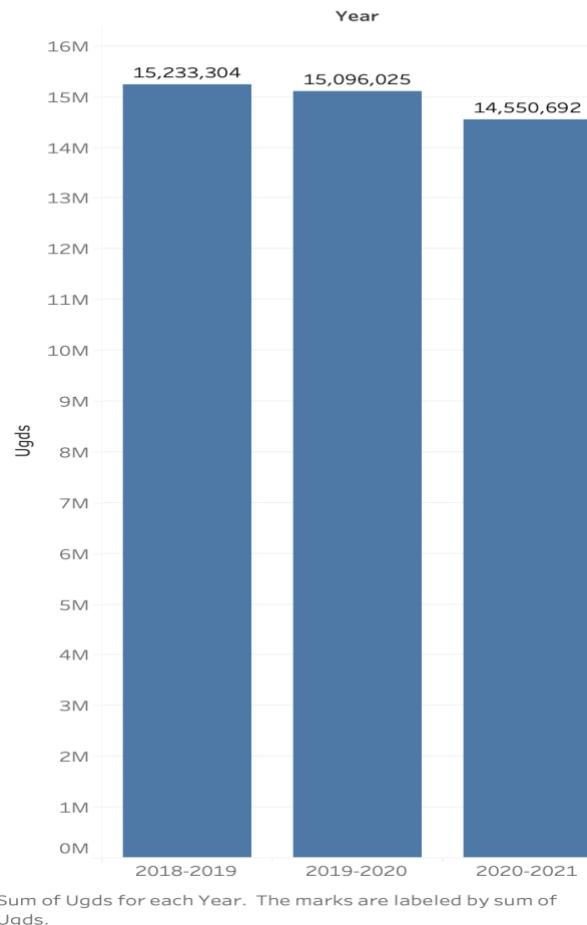
- **Laurel Technical Institute and Jersey college had the highest percentage of degrees awarded in Business, Management, Marketing, and Related Support Services.**
- **Having a degree in Business, Management, Marketing, and Related Support Service can help Tesla network and build local market knowledge and insights.**

Evaluation

The number of Enrolled Undergraduate Students (variable UGDS) and Computer and Information Sciences and Support Services Majors (variable PCIP11) were chosen primarily because of the degree's versatility within any company. Within Tesla a Computer and Information Sciences Major could fulfill many roles such as those within the IT department, Business Intelligence Operations along with C-suite level administrators, and even Human Resources.

Over the past 3 years, the number of Enrolled Undergraduate Students (UGDS) has decreased as shown below in graph 1.1. While the number of Computer and Information Sciences and Support Services Majors (PCIP11) has increased. This is great news for Tesla because the business objectives can still be met, and they can provide sufficient staffing.

Number of undergraduate certificate/degree-seeking students enrollees per year



Graph 1.1 Number of undergraduate certificate/degree seeking student per year

For our multi-linear model, we narrowed down our analysis by regions while also including the Enrolled Undergraduate Student (UGDS) and Computer and Information Sciences and Support Service Majors (PCIP11) since previous analysis showed us a higher concentration of educational institutions with Computer Information Science graduates in some East and West Coast areas thus meeting our business objectives.

Evaluate Results

Linear Regression Model

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SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.054779433
R Square	0.003000786
Adjusted R Square	0.002598121
Standard Error	0.07879025
Observations	2478

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.046263218	0.046263218	7.452309583	0.006380354
Residual	2476	15.37076897	0.006207903		
Total	2477	15.41703219			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.022840593	0.001787717	12.7764023	3.01917E-36	0.019335018	0.026346168	0.019335018	0.026346168
UGDS	6.69746E-07	2.45338E-07	2.729891863	0.006380354	1.88657E-07	1.15083E-06	1.88657E-07	1.15083E-06

Graph 1.1 Linear Regression Model Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) for region 8 which includes AK, CA, HI, NV, OR, WA.

Key Findings:

- Coefficient - as the value of Enrolled Undergraduate Students (UGDS) increases by 1 the Computer and Information Sciences and Support Services Majors (PCIP11) increases by 0.022.
- P-Value – a value of 0.006 means the values are statistically significant because the value is lower than 0.05.
- Multiple R - shows a weak relationship between Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) since the value is closer to 0 than it is to 1.
- R Squared – measures the goodness of fit for this model, our model shows that .3% of the variables fall on the regression line. This model is still a good fit because our Coefficient and P-Value are statistically significant.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.182586474
R Square	0.033337821
Adjusted R Square	0.033006772
Standard Error	0.071163111
Observations	2922

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.509982398	0.509982398	100.7036773	2.53885E-23
Residual	2920	14.78743023	0.005064188		
Total	2921	15.29741262			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.020492339	0.001455132	14.08280799	1.25596E-43	0.017639151	0.023345527	0.01763915	0.023345527
UGDS	2.84865E-06	2.83868E-07	10.03512218	2.53885E-23	2.29205E-06	3.40525E-06	2.292E-06	3.40525E-06

Graph 1.2 Linear Regression Model Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) region 2 which includes DC, DE, MD, NJ, NY, PA.

Key Findings:

- Coefficient - as the value of Enrolled Undergraduate Students (UGDS) increases by 1 the Computer and Information Sciences and Support Services Majors (PCIP11) increases by 0.020.
- P-Value – value of 2.5 means the values are not statistically significant because the value is higher than 0.05.
- Multiple R - shows a weak relationship between Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) since the value is closer to 0 than it is to 1.

Multi-Linear Regression Model

StatTools Report						
Analysis: Regression Performed By: Pamela Howell Date: Wednesday, November 16, 2022 Updating: Static Variable: PCIP11						
Multiple Regression for PCIP11 Summary		Multiple R	R-Square	Adjusted R-square	Std. Err. of Estimate	Rows Ignored
		0.2778	0.0772	0.0714	0.039705963	0
ANOVA Table		Degrees of Freedom	Sum of Squares	Mean of Squares	F	p-Value
Explained		6	0.126084736	0.021014123	13.32906826	< 0.0001
Unexplained		956	1.507194718	0.001576564		
Regression Table		Coefficient	Standard Error	t-Value	p-Value	Confidence Interval 95%
Constant		0.036574473	0.00536665	6.815141006	< 0.0001	0.0260427 0.047106247
STABBR (CT)		-0.026218792	0.006024604	-4.35195274	< 0.0001	-0.038041767 -0.014395817
STABBR (MA)		-0.012711904	0.005686605	-2.235411682	0.0256	-0.023871575 -0.001552234
STABBR (ME)		-0.019952344	0.006609369	-3.018797081	0.0026	-0.03292289 -0.006981797
STABBR (NH)		-0.017989402	0.00666091	-2.700742286	0.0070	-0.031061096 -0.004917708
STABBR (RI)		-0.023081108	0.007334113	-3.147089189	0.0017	-0.037473927 -0.008688288
UGDS		1.55162E-06	2.14194E-07	7.244020385	< 0.0001	1.13128E-06 1.97197E-06

Graph 1.3 Multi-Linear Regression Model Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) Region 1, which includes, CT, MA, ME, NH, RI, VT.

Key Findings:

- Coefficient - as the value of Enrolled Undergraduate Students (UGDS) increases by 1 the Computer and Information Sciences and Support Services Majors (PCIP11) increases by 1.55.
- P-Value – values range from <0.0001-0.0256 meaning the values are statistically significant because all the values are lower than 0.05.
- Multiple R - shows a weak relationship between Enrolled Undergraduate Students (UGDS) and Computer and Information Sciences and Support Services Majors (PCIP11) since the value is closer to 0 than it is to 1.
- R Squared – the goodness of fit for this model, since our model shows that 7% of the variables fall on the regression line. This model is still a good fit because our Coefficient and P-Value are statistically significant.

Our goal was to set out and utilize data to identify states where Tesla Inc. would benefit from local newly graduated individuals looking to enter the workforce. By analyzing data from several states, regions, and educational institutions and drilling down to majors relevant to potential functions at Tesla, we were able to successfully meet the business goal. We can now make a recommendation supported by data of which U.S. States Tesla can consider to open manufacturing operations where it can quickly fulfill its candidate pool. As a result, we have identified that Tesla can quickly meet its need for candidates in an eastern state, such as New York, or Pennsylvania a western state, such as California or Texas given its relatively high number of graduates from specialized fields related to Information Technology and Engineering.

Determine Next Steps

- Based on the results of our analysis, we will recommend two states in the Western United States California or Texas and two states in the Eastern United States such as New York or Pennsylvania where Tesla may consider opening a manufacturing plant. In these states, nearby colleges will provide Tesla Inc. the minimum of 4,000 potential qualified employees to support plant operations.

The deployment of our data will consist of the following factors development, testing and monitoring to ensure a smooth rollout.

The development will be based on the new data, and it will help with the planning process and the model predictions.

To monitor, maintain and improve the data used to support this project our team will conduct a retrospective study at the close of this and future projects. This will ensure that our data capture achieved its intended goal and if adjustments need to be made to support the changing business strategic goal these can be implemented.

To ensure access to quality data, our team will download and clean the college Scorecard data from the U.S. Department of Education site once per year as it becomes available at the close of the calendar school year. Additionally, our team will use this data to support future Tesla Inc. Employee recruitment needs as Tesla seeks to expand in the future.

Deployment

- Deployment Potential:
 - California - Computer & Information Sciences, Mathematics and Statistics, Mechanics and Repair Technologies/ Technicians, Precision Production, Public Administration and Social Services, Transportation and Material
 - Texas - Mathematics and Statistics, Engineering, Social Science, Transportation and Material
 - New York - Engineering
 - Pennsylvania – Engineering and Computer and Information Sciences
- Possible actions ranked:

1. Tesla Inc. Open Manufacturing Operations in California
 2. Tesla Inc. Open Manufacturing Operations in New York
 3. Tesla Inc. Open Manufacturing Operations in Texas
 4. Tesla Inc. Open Manufacturing Operations in Pennsylvania
- Action Selection: Our goal was to provide Tesla Inc. with data-supported figures to make an educated business decision. It is entirely up to Tesla Inc. To make the determination of which location suits Tesla's additional business needs. All four states are completely suitable for Tesla's recruitment goal.
 - Reason for choice: Data analysis of institution-level graduation percentages across multiple states consistently shows a high percentage of graduates from Computer & Information Sciences, Engineering, Social Science, Precision Production, Mathematics & Statistics and Mechanic Technologies.
 - Deployable results: Tesla Inc. Will continue to gather data for Engineering, Social Science, Precision Production, Mathematics & Statistics and Mechanic Technologies graduates and use this in determining where to expand manufacturing operations as they prepare for mass production to meet business goals.

Conclusions

Our objective was to set out and use data to narrow down states where Tesla Inc. would benefit from nearby recently graduated individuals looking for employment. We were able to achieve the business objective by examining data from multiple states, regions, and educational institutions, then narrowing it down to majors relevant to potential roles at Tesla. We can now recommend U.S. states for Tesla to open manufacturing operations where it can quickly fill its candidate pool, supported by data. Given its relatively large number of graduates from specialized subjects relating to Information Technology and Engineering, we have determined that Tesla can quickly satisfy its requirement for new employees

in eastern states such as New York or Pennsylvania and western states such as California or Texas.

Glossary of Terms

Term	Definition
ANOVA	A statistical method for comparing variances between mean (or average) values for various groups.
Microsoft Windows	The computer operating system (OS) that powers personal computers was created by Microsoft Corporation (PCs).
MacOS	The operating system (OS) for Apple laptops and desktop computers. Every Mac is run on a customized graphical operating system.
Pivot tables	A table of grouped values that compiles each item in a larger table into one or more subgroups. There may be sums, averages, or other statistics in this summary.
Palisade Stat Tools	A tool set within Microsoft Excel that has the option to create new, customized analyses and statistical methods.
Regression Statistics	A statistical method that connects one or more independent (explanatory) data to a dependent variable
Statistical analysis add-in for MS Excel	A tool within Excel that provides you with powerful visual summaries, trends, and patterns that help you comprehend your data.
Tableau Software	A visual analytics tool that is improving how we utilize data to address issues and enabling individuals and companies to maximize their data.

References

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