

Data Analysis and Visualization Project

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1 Abstract

This project analyzed and visualized the tuition and the fees of University of Central Arkansas (UCA) over the past ten years with LaTeX and Python. The data is received from the UCA's website provided by Finance and Administration of UCA [1]. The graph 1 shows the relationship between the amount of the payment and years with the linear equation 1. Followd with the equation, the cost will increase over years.

2 introduction

Tuition is a sum of money charged for receiving education from educational institutions. The tuition is given by multiplication of the amount of money per one credit (one hour) and the numbers of credits that students take. Usually, students take 15 credits in one semester. Given the fact, my project assumed that the transition of the cost is based on 15 hours in one semester. Moreover, fees are costs for students to receive any kind of service in universities such as academic registration, technology, library fees, and so on. The cost of the fees is also given by multiplication of the number of the classes that students take and the amount of each fee per one credit.

3 Result

The data and the graph of the amount of the payment is given below.

Years	Dollars
2012	7183
2013	7332
2014	7595
2015	7889
2016	7889
2017	8224
2018	8524
2019	8756
2020	9188
2021	9338

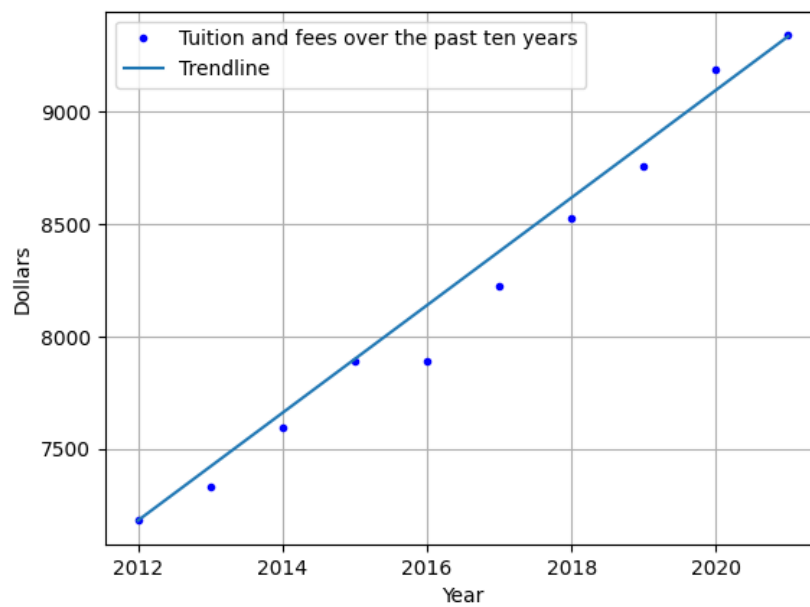


Figure 1: Relationship between the amount of the payment and years

4 Discussion

The given data show the tuition and the fees for education at UCA. Each data point represents the amount of the payment each year. The line shows the tendency of the amount of the payment over the past ten years. An upward trend in the tuition and the fees can be seen from the graph except for one in 2015. Since the amount of the payment is proportional to years, the relationship in the two factors can be expressed as a linear equation.

$$y = 239x - 473685 \quad (1)$$

In this equation 1, x represents years, and y represents dollars. For example, in ten years (2031), the total cost of the tuition and the fees will be $y = 239 * 2031 - 473685 = 11724$. The cost of the tuition and fees will increase over years according to the equation.

5 summary

This project analyzed and visualized the raw data about the transition of the cost of the tuition and the fees in UCA over the past ten years with LaTeX and Python. The graph made by the data showed the relationship between x and y elements with the linear equation. According to the linear equation, the amount of the payment will increase for the future since the x and y elements are proportional to each other.

References

- [1] Members of the Board of Trustees. Final budget-book-board-fy21.pdf, 2020.