Increasing Women in Computer Science

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Motivation

12%. That is the percentage of women pursuing computing majors at the County College of Morris in Randolph, NJ. This phenomenon is overwhelmingly present in the majority of higher education computing departments nationwide. If half of the US population is not participating in the creation of technology, how can the full promise of technology be achieved for all?

Goal

The goal of this data science project is to provide the client, CCM Department of Information Technologies, information about the students taking their introductory computing classes so that they can create messaging that encourages students to continue taking computing courses. The initial metric of this study is to discover 3-5 clusters of students. The ultimate measures of success are if there is an impact to the number of women students in a second semester computing courses and to the number of female majors.

Data Science Solution Path

Using college-level and department majors demographic data to baseline and frame the issue and then introductory course survey data to learn who is taking the initial classes, exploratory data analysis will explain the context of the problem, and then discover if there is promise of finding clusters of students interested in pursuing other computing courses. College and department demographic data included gender, race/ethnicity, and age. Course survey data also included this demographic data and major, motivation for taking this computing class and interest level in other computing courses. After initial clusters are identified, it is proposed to incorporate more features in a clustering model that will further help categorize students based upon their personal and educational backgrounds and their interests.

Tools

All data was stored in CSV files and cleaned in Excel and Google Sheets. Data visualizations were created using Google Sheets and Tableau.

Conclusions

Five groups of non-major female students with an interest level of moderate to high in another computing course stood out:

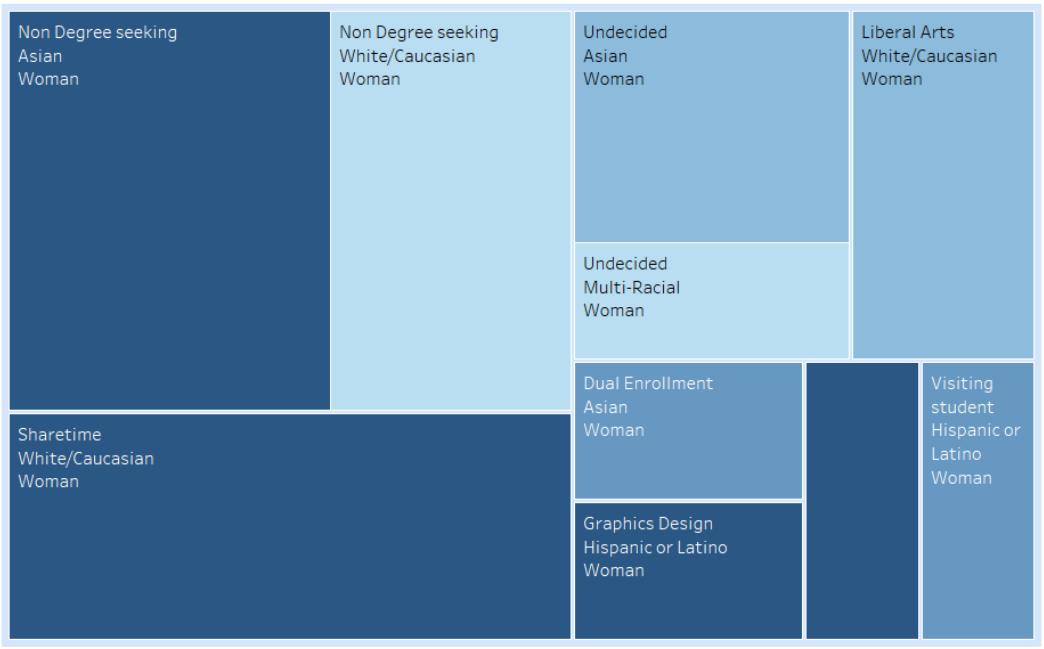
Entry-Level Computing Course	Computer Literacy Course
Non-degree seeking	Nursing
Undecided	Liberal Arts
Sharetime (HS students)	

Further study using clustering models is needed to analyze which areas of technology each group was interested.

SUPPORT

Non-Computing Majors Interested in Another Computing Course (Women)

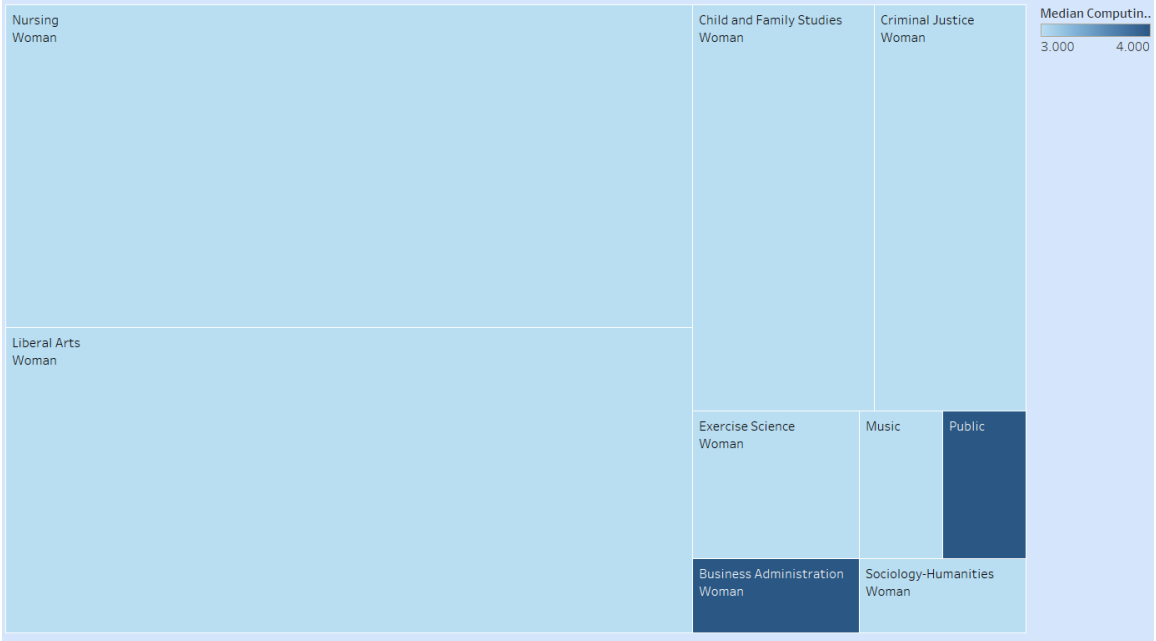
Entry-Level Computing Course



Median Computing Course Interest

3.000 5.000

Computer Literacy Students Interested in Another Computing Course (Women)



Major Cleaned and Gender. Color shows median of Computing Course Interest. Size shows count of Major. The marks are labeled by Major Cleaned and Gender. The data is filtered on Race/Ethnicity, which keeps 7 of 7 members. The view is filtered on Gender, Major Cleaned and median of Computing Course Interest. The Gender filter keeps Woman. The Major Cleaned filter keeps 26 of 26 members. The median of Computing Course Interest filter ranges from 3.000 to 5.000.