Major, Occupation, Regional COLI & Earning An Application for Career Path Exploration

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Introduction

Career options and earnings potential are important factors for students choosing a college major. However, many students have limited and inaccurate understanding of the career landscape. Moreover, career outcomes data are scattered and hard to use. With better information, students would be able to mitigate unwanted major-job mismatch and regret.

M.O.R.E's Approach

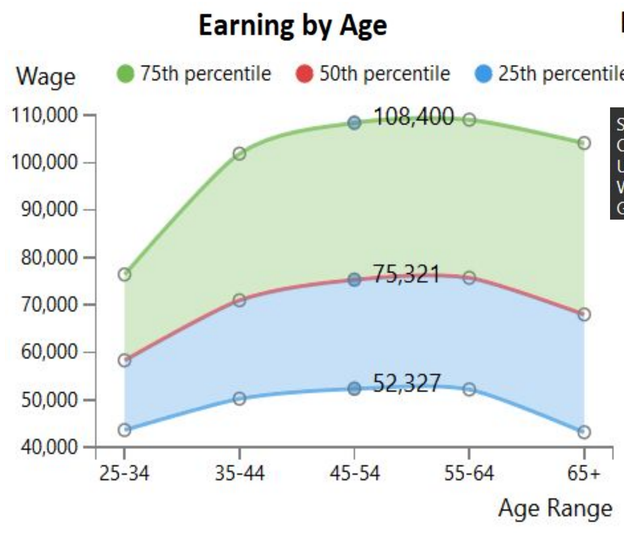
What: M.O.R.E. is an interactive career and college major exploration and recommendation application.

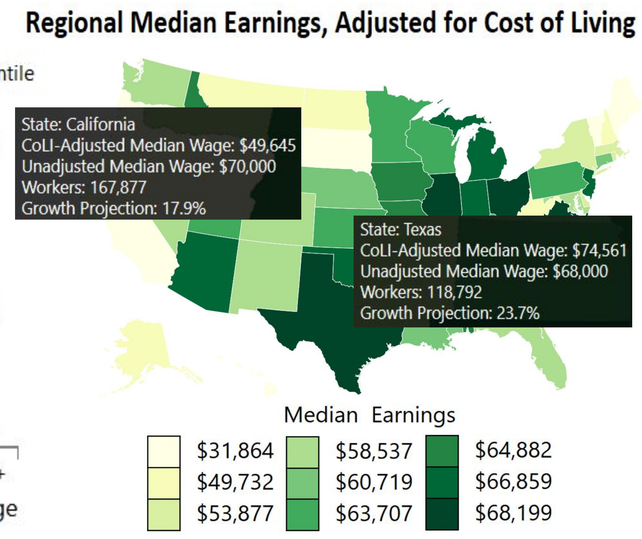
How: The application enables user to obtain information via interactive visualizations that connect college major, occupation and earning distribution. Our application is helpful for both users with little prior information and those who have targeted selection(s) in mind.

- Enter/search major or occupation using select box
- Display similar majors or occupations to entered value in select box
- Display all majors that lead to a career selection
- Display all occupations that a selected major may lead to
- Earning and percentile histogram
- Earning by age (career stage) curve
- Color-scaled cost of living (COL) adjusted regional median earning map
- Wage, number of workers and job growth projection tool-tip

Intuition: M.O.R.E. is better than state of the art because

M.O.R.E.	Existing
• Integrated database	• Scattered information
• Representative dataset	• incidental data collection
• Interactive Exploration	• Static table
• Range, average, median, percentile	• Aggregated average
• Current and Forward Looking	• Stale





New Feature / Innovation:

- Major and occupation two-way exploration
- Multiple majors selection and comparison
- Similar major and career suggestions
- Earning by age range (career stage)
- Regional COL adjusted earnings
- Job growth projection by state

Data

The main dataset for this project is the 2012-2016 ACS 5-year PUMS data file, consisting of more than 15 million records and 280 columns. The dataset was filtered and adjusted with the criteria below:

- College major and occupation required
- Worked at least 30 hours a week for some period in the last 12 months
- Earnings numbers were adjusted to reflect a full year's salary

Purchasing power parity (cost of living) and Employment projections datasets are used on an as-is basis after determining that there were no anomalies.

Experiments And Results

Description: Participants (n=29) were surveyed about beliefs relating to their college major prior to viewing or using MORE. After filling out the survey, they were taken to MORE and instructed to use the website for a period of ten minutes, exploring whatever interests them. Following ten minutes of website usage, they were taken to a survey asking them the same belief questions as the pre-survey, so that we can determine what changed. They were also asked four questions that allowed us to determine how helpful MORE was, using a 5-point Likert scale, and the survey ended with a qualitative "What could we improve?" question.

Results:

- Participants (55% male, 45% female) represented a diverse sample of college majors: 31% business majors, 24% liberal arts majors, and 45% STEM majors.
- Belief changes: Between the pre-survey and post-survey, 34% of participants changed answer related to the best major-career paths, 41% changed answer related to earnings for a major, and 38% changed answer related to best US state for a major.
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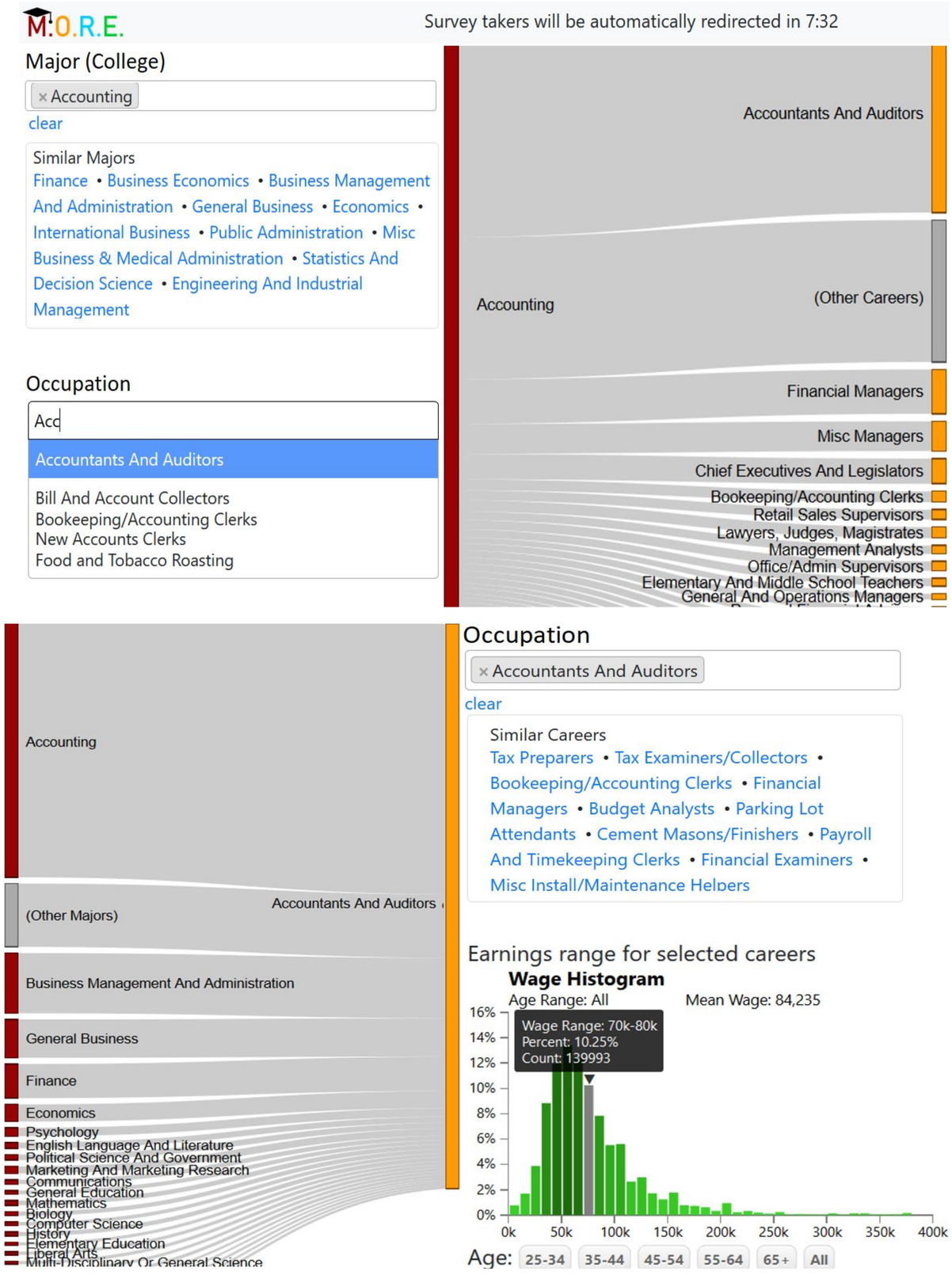
Likert-scale Questions	Agree or Strongly Agree
"After using MORE, I feel better educated about how college majors, occupations, and geography are related."	62.1%
"Had MORE been available when I was in college, I would have used it to make informed decisions."	75.9%
"I will use MORE again in the future."	48.3%
"I will recommend MORE to a friend."	69.0%



Conclusion Remarks

Experiment results show that MORE is effective at changing major/career beliefs, but there was significant feedback about the application's lack of usability. Moving forward, the following changes will be added:

- Usability improvements including better labeled sections as well as informative tooltips to explain how to interpret the plots
- Pre-set filter to assist selection:
  - Top paid careers
  - Majors with most career options
  - Top careers in nonprofit
- Additional graphs to allow side by side careers comparison
- Wage distribution by majors