The final course project will be done in Group (depending on your own choice). You may

choose your own topics (and teammates) by yourself. The purpose of this project is to

explore, analyze and model a real-world data set of your own interest using the regression

modeling techniques learned in the course.

The real-world data set can be either:

• A data set that you have personally collected (e.g., at your workplace, internship, etc.).

• An open-source data set that you have downloaded from the Internet (e.g., CDC, NIH,

NHANES, MEPS, BRFSS, Kaggle, InfoChimps, etc.).

• Textbook exercises are not suitable for course projects.

You will need to develop a problem statement and research question(s) based on the data

set that you have obtained. You must survey the state-of-the-art literature and research

developments dealing with empirical studies, algorithms, or methodologies related to

your problem. You will need to achieve two deliverables: 1) Presentation slides and

2) a final report. These deliverables will be submitted on Blackboard.

Deliverable 1: Project presentation slides (50 points; 5% of grade): This is where you

create a concise PowerPoint presentation for a broader audience. You will submit your

presentation in blackboard. You don’t need to present in class. Please upload the slides

(in PDF format) on Blackboard by May 25th, 2018, 11:59pm EST.

Deliverable 2: Final Report (250 points; 25% of grade): The final project report

should be similar to the technical papers you read in the literature. The report should not

exceed 12 single-spaced pages. (Appendices do not count in the page limit). Please

number the pages. Please upload the report (in PDF format) on Blackboard by May 25th,

2018, 11:59pm EST. The report should (at least) include the following sections:

* Abstract: Use 250 words or less to summarize your problem, methodology, and major

outcomes.

* Key words: Select a few key words (up to five) related to your work.
* Introduction: Describe the background and motivation of your problem.
* Literature review: Discuss how other researchers have addressed similar problems,

what their achievements are, and what the advantage and drawbacks of each reviewed

2 approach are. Explain how your investigation is similar or different to the state-of-the art.

Please cite the relevant papers where appropriate.

* Methodology: Discuss the key aspects of your problem, data set and regression

model(s). Given that you are working on real-world data, explain at a high-level your

exploratory data analysis, how you prepared the data for regression modeling, your

process for building regression models, and your model selection.

* Experimentation and Results: Describe the specifics of what you did (data

exploration, data preparation, model building, model selection, model evaluation, etc.),

and what you found out (statistical analyses, interpretation and discussion of the results, etc.).

* Discussion and Conclusions: Conclude your findings, limitations, and suggest areas

for future work.

References: Be sure to cite all references used in the report (APA format).

Appendices:

Supplemental tables and/or figures.

R statistical programming code.

Dataset

Obtained:

https://www.myfloridacfo.com/division/wc/

Raw data: https://raw.githubusercontent.com/cwong79/DATA621/Calvin/Final%20Project/PEO1.csv

Abstract

Entrepreneurship plays a vital role in the growth of the U.S. economy. Small and medium-sized enterprises control over 95% of the business market and regulate 60-70% of employment. Starting a business is not difficult, but managing the process for a long time is the primary challenge for every small business. 50% of small businesses do not stay in business for more than four years.

Day-to-day business challenges directly impact bottom-line financials of a small business. However, once reaching 25 employees, one of the most challenging aspects of running a small business comes from managing benefits for employees. Workers' health is essential, but the increased healthcare costs make finances difficult to manage. Compliance around various federal and state regulatory laws can also be a burden for a business owner.

Enter the professional employer organization (PEO), which is a joint-employment relationship with a small business employer, thereby allowing the PEO to share and manage employee-related responsibilities and liabilities. PEOs allow employers to outsource their human resource functions, such as employee benefits, compensation and payroll administration, workers' compensation, compliance, and employment taxes.

Acting as researchers for ADP (Automated Data Processing), our study proposes to investigate the make-up of PEO in the State of Florida. Through a dataset obtained from the Department of Workers Compensation, we will analyze critical factors considered by small business organizations when they participate in a PEO business model and identify businesses that fit ADP's business demographic. We hope to help grow this business line for ADP through this research.

Key words

Linear modelling, Business challenge, Best-fit Prospects

Introduction

ADP (Automated Data Processing) is comprehensive global provider of cloud-based human capital management (HCM) solutions that unite HR, payroll, talent, time, tax and benefits administration, and a leader in business outsourcing services, analytics and compliance expertise.

One of ADP’s HR outsourcing products is called TotalSource PEO. PEO’s (professional employer organizations) partner with companies to provide comprehensive HR outsourcing to help manage a company’s human resources, employee benefits, regulatory compliance and payroll outsourcing. TotalSource is the largest certified professional employer organization in the United States, and now co-employs more than half a million worksite employees. ADP TotalSource has continued to grow organically over the past 19 years. In fact, if ADP TotalSource were an independent employer, its more than 500,000 worksite employees would rank it second among private sector employers in the United States.

A PEO works through a co-employment arrangement, which means the PEO contractually shares certain employer responsibilities and risk with the company. The contract between a client and the Professional Employer Organization (PEO) establishes the co-employment relationship. The PEO assumes certain aspects of employer responsibilities. Your employees become co-employed by both you and the PEO, thereby giving you access to the PEO’s built-in HR, compliance, benefits, a workers' compensation insurance program, payroll and tax infrastructure.

Workers' compensation (workers’ comp) is a form of accident insurance paid by employers. No payroll deductions are taken out of employees' salaries for this insurance. If an employee is injured on the job or acquire a work-related illness, workers’ comp will pay for medical expenses and will also cover wage-loss compensation until that employee is able to return to work. Benefits are usually paid by a private insurance company or state-run workers’ comp fund. It also provides benefits to dependents if a person dies as a result of a job-related injury.

Per $100 in employee wages, Workers' Compensation costs in the United States ranged from $0.75 in Texas to $2.74 in Alaska. But those numbers are deceptively simple: they encompass all types of jobs, which means they don't reflect the variations within states that account for different risk levels. On average, Workers' Compensation costs in Florida averages $1.27 per $100 and is one of the highest Workers’ Compensation costs in the continental US. Workers’ compensation insurance is widely available, but some insurers write more policies than others. These insurers are also known as carriers and cover Workers’ Compensation for PEO organizations. The PEO’s using economies of scale leverage is able to secure better coverages at lower costs because of group buying. In the case of ADP, the group covered is 500,000 individuals versus an individual company with just 50 employees.

This case study will review South Florida PEO make-up and the appropriate Workers’ Compensation carriers. The dataset being used is a publicly available dataset from the State of Florida Workers’ Compensation Department. This dataset contains all Workers’ Compensation coverages over a one-year renewal period ending August 2019. Our focus geography will be of South Florida in Dade, Broward and West Palm Counties, also known as the birthplace of PEO. We will be acting as Business Intelligence Analyst for ADP to understand PEO makeup for ADP’s TotalSource Division. Our goal is to use the Florida State Worker’s Compensation dataset and develop a sales prospect recommendation model based on the current client makeup.

Literature review

Methodology

Experimentation and Results

Cited

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