INDENG 299 Internship
Final Report

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1 Objective

The objective of this project is to leverage data analysis and visualization techniques to derive actionable insights from job orders and placement data. This project provides a comprehensive report for regional leaders to identify current business mix for both supply and demand, based on job function categories, monitor trends over time and incorporate external data to assist with future planning. The aim is to facilitate data-driven decision making, enabling leaders to focus on areas of high demand and profitability, manage resources efficiently and strategize future actions.

2 Data Source

Our analysis is based on extensive data including interviews, job orders, and placements across all US staffing brands from January 2018 to June 2023. We collected our data from OA, ensuring that we have comprehensive and accurate information to inform our analysis.
Our dataset includes data on both national and retail accounts. However, for the purpose of this report, we exclude National Accounts.

3 Data Analysis & Visualization

3.1 Tools and Methodology

To achieve this, I selected Power BI, a powerful tool for data analysis. The process included 4 steps: data integration, data transformation, data Analysis and data visualization: I used Power BI's query editor to clean and transform our data, preparing it for analysis. Next, I utilized Data Analysis Expressions, or DAX, to create a variety of calculated columns and measures. This enabled me to perform complex computations across different tables, providing a deeper, more comprehensive analysis. Then, I used Power BI's visual interface to design interactive dashboards. I employed charts, tables, and slicers to effectively communicate the insights I derived from the analysis. Throughout this process, I not only improved my technical skills in handling large datasets, but I also gained valuable insights into data-driven decision-making in a business context.

3.2 Data Visualization

Let's take a look at some elements in the dashboard. The first graph represents 'Demand' across job categories. We can see very clearly that our top two categories in terms of demand are 'Administrative' and 'Customer Service' at 35% and 29% respectively.

The second graph presents the 'Total Profit' earned from each job category. Now, this is where it gets interesting. Although 'Customer Service' has a considerable demand of 29%, it only contributes to 17% of our total profit. On the other hand, the 'Administrative' category, which has a slightly higher demand at 35%, contributes 50% to our total profit.
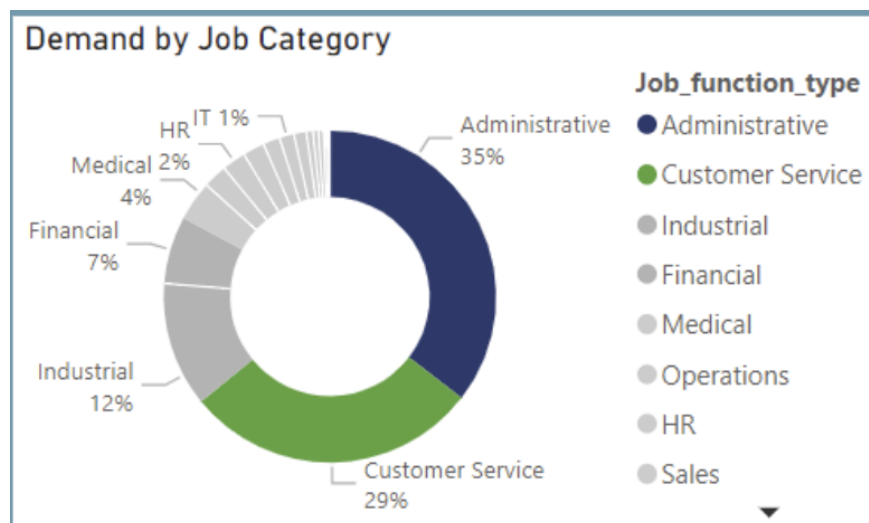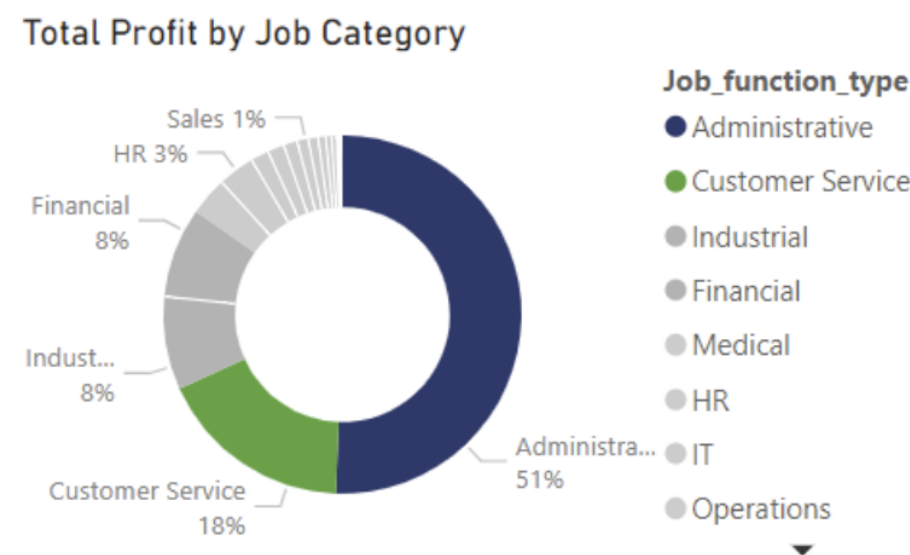

Figure1: Demand by Job Category

Figure 2: Total Profit by Job Category

This chart gives us more details about the 'Profit Per Placement' for each job category. Customer service ranks near the bottom of the chart, with one of the lowest profits per placement. This category has the second highest demand and total profit. However, the profit per placement for these categories is low, creating an interesting paradox.
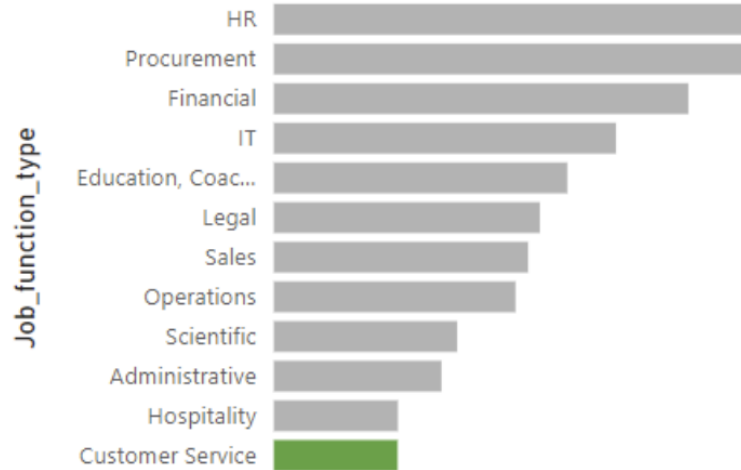
Profit per Placement

Figure 3: Profit per placement

Now, we track the change in demand over the years through a line chart. Here, we find out that the demand for 'Customer Service' roles has seen a significant decrease of 33% from 2018. This shows a less stable demand for customer service over the observed period.
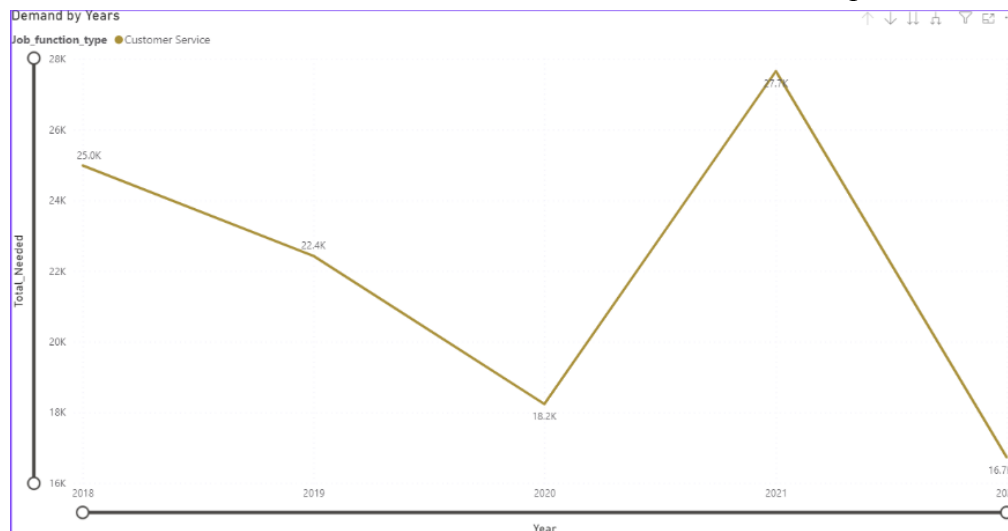

Figure 4: Demand by years

Moving forward, we need to keep our eyes on the future trends in job markets. According to The Occupational Outlook Handbook, published by the U.S. Bureau of Labor Statistics, it provides us with some valuable insights. They predict a decline in the customer service occupation by 4%, which translates to a potential loss of 100K jobs in the same period. This suggests that, while customer service remains a significant part of our business, we may need to prepare for the potential reduction in demand for these roles.

But let's take a step back and look at the demand picture again. What truly stands out is the Financial category. While the demand for "Financial" is 6.7%, it contributes to an impressive

8.2% of our total profit. This indicates that although we have lower demand in the Financial category it tends to be more profitable for our business.
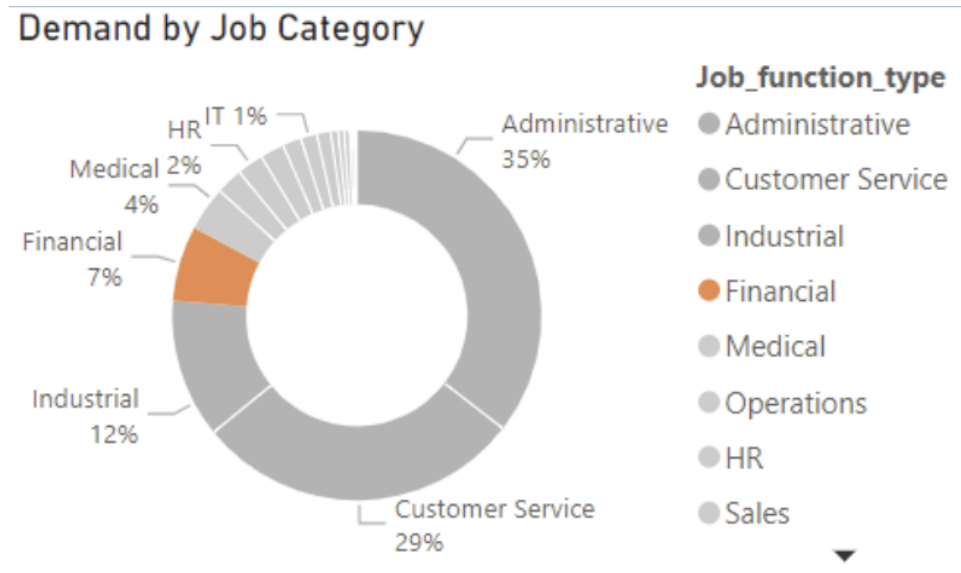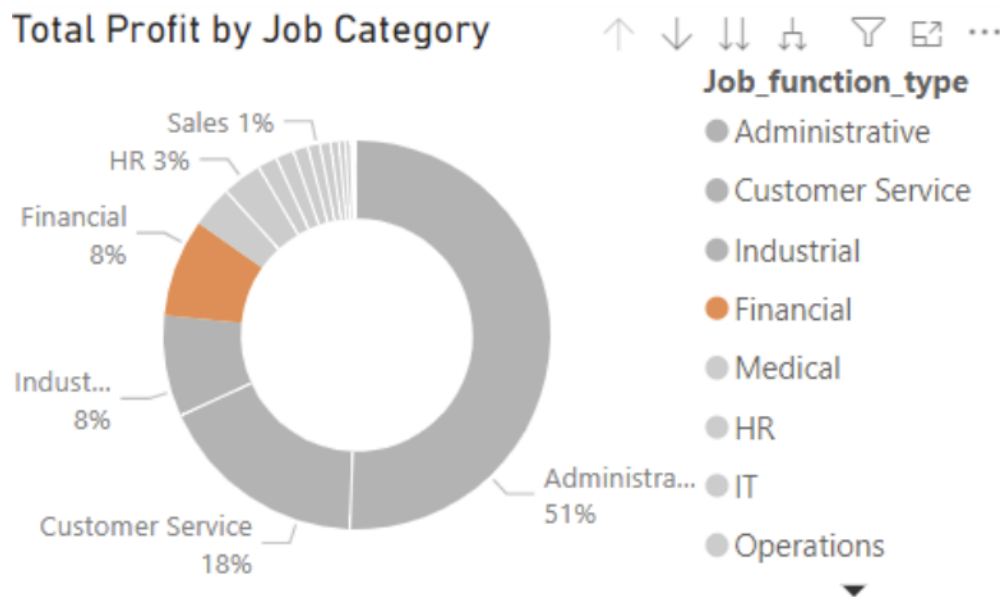

Figure 4: Demand by job category

Figure 5: Total profit by job category

In terms of profit per placement, the 'Financial' category surpasses nearly all other categories. The profit per placement in the 'Financial' category is four times greater than that in the 'Customer Service' category.
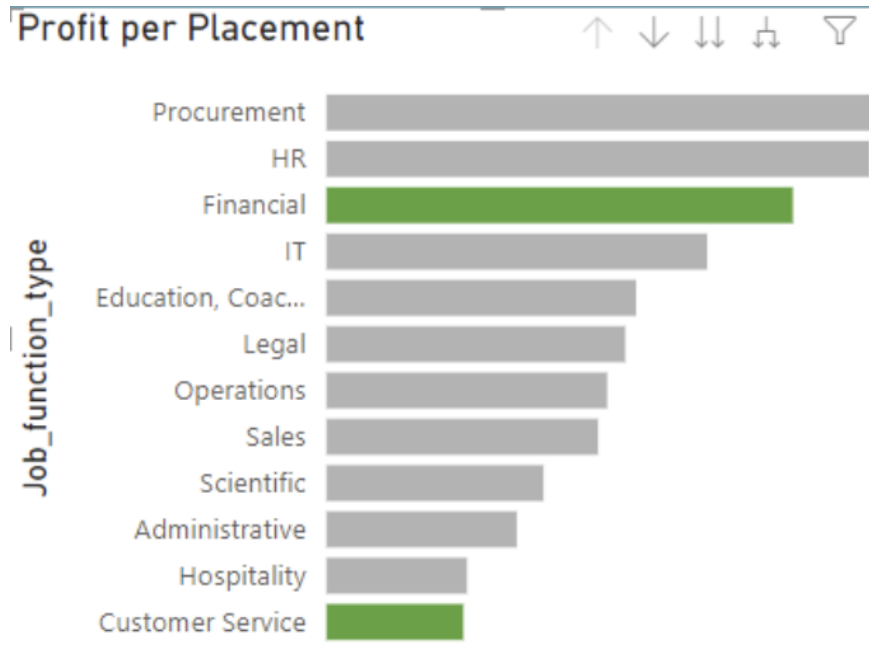
Figure 6: Profit per placement

According to the occupational outlook handbook. They forecast that overall employment in business and financial categories is projected to grow 7%, potentially adding up to 700K more jobs over the decade from 2021 to 2031. This indicates a tremendous opportunity for us to strengthen our efforts and resources in the financial job category.

Now, we have a comparison between the 'Financial' and 'Customer Service' categories. Interestingly, even though the 'Customer Service' category exhibits a high demand, they don't necessarily translate to high profits.

The key takeaway here is that demand and profit are not necessarily proportional. This insight should make us rethink our strategy and possibly shift our focus to investing more in the 'Financial' category, which seems to have a potential for profitability.

4 Conclusion

Now, consider this - what if we could shift our focus from just meeting the high demand to optimizing for profit per placement? We can significantly increase our profitability by directing more of our efforts towards building demands to the Financial category.
This comprehensive analysis has illuminated key areas of opportunity and growth within the organization's job orders and placements. By prioritizing areas with high profit margins and aligning strategies with future market trends, the organization is poised to make informed, data-driven decisions.

The insights and recommendations provided in this report serve as a roadmap for regional leaders, allowing them to navigate through complex market dynamics, optimize resource allocation, and set a path for future success.