

Interim Project



Adventure Works Data Insights

Introduction

Goal

- To utilise SQL and Python to identify key business insights from Adventure Works data.

Data source

- AdventureWorks 2019

Dataset Snapshot

- 31,465 Sales Orders
- 635 Active Retail Stores
- 290 Total Staffs

What are the regional sales in the best performing country?

Findings

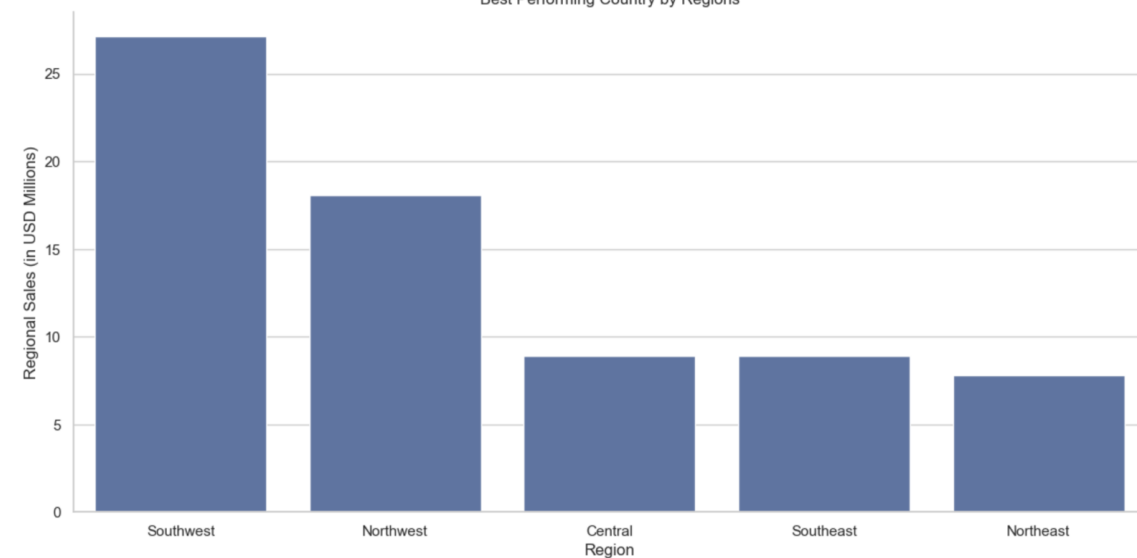
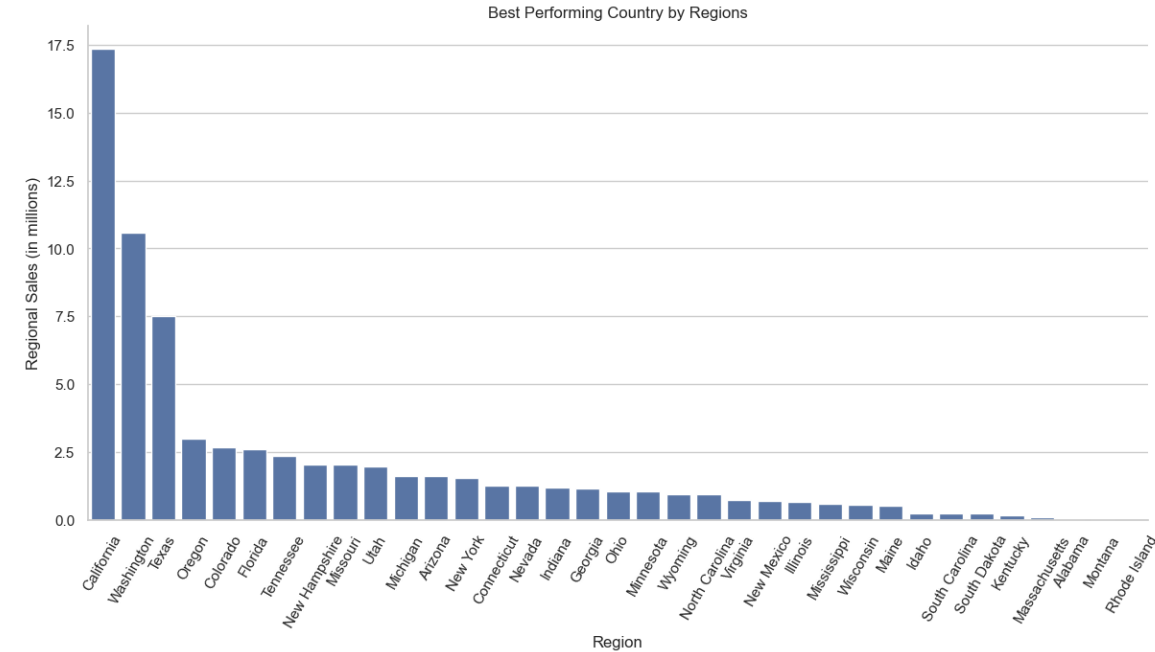
- Southwest has the highest total performing region at \$27 M, compared to the Northeast region at \$7.8 M.

Insight

- 3 states California, Washington, and Texas deliver **55 %** of total US revenue

Action Plan

- Priorities marketing resources in the regions with the lowest total revenue for the highest impact.
- Factors effecting why the revenue in these areas are lower should be investigated.

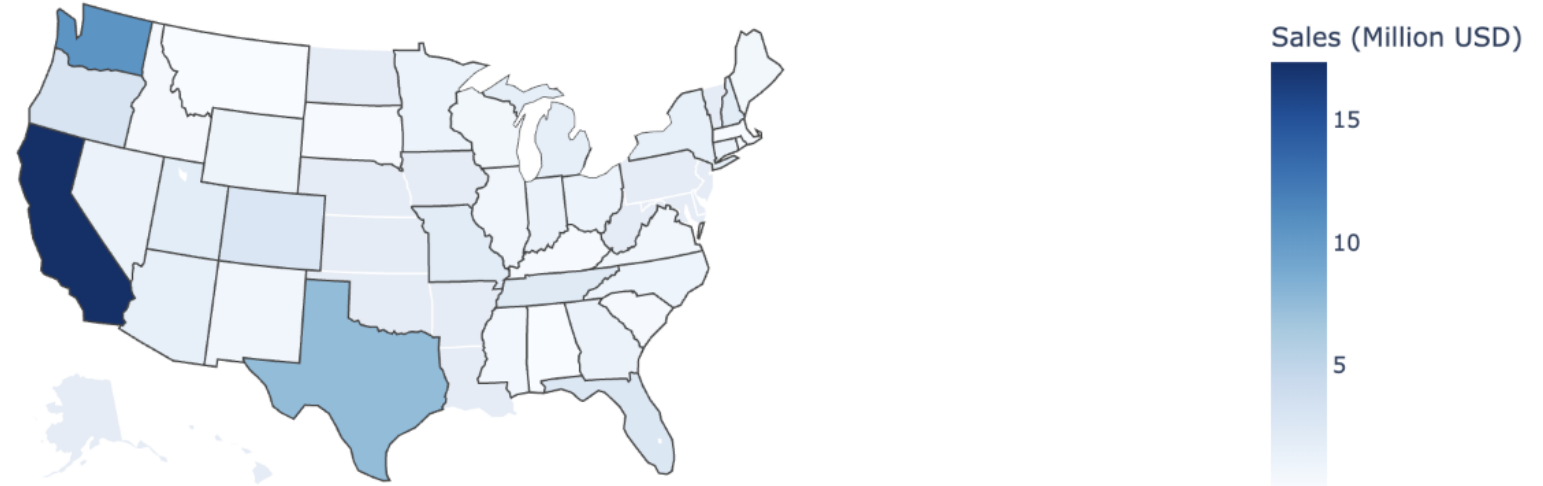


Geographical data for regional sales in the best performing country

Findings

- Revenue is heavily concentrated in just three coastal states—California (south-west), Washington (north-west) and Texas (south coast)—which together generate over half of US sales.
- Most central states sit firmly in the central area, with a combined regional total of \$8.9 M, well below the coastal leaders but ahead of the smaller outliers.

Regional Sales by U.S. State (in Millions of USD)



What is the relationship between annual leave taken and bonus?

Finding

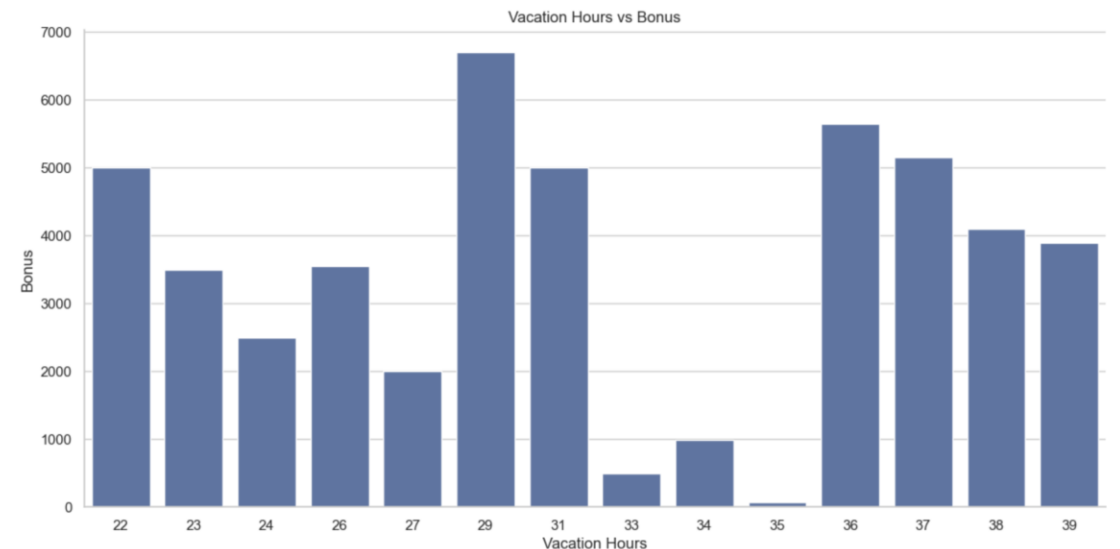
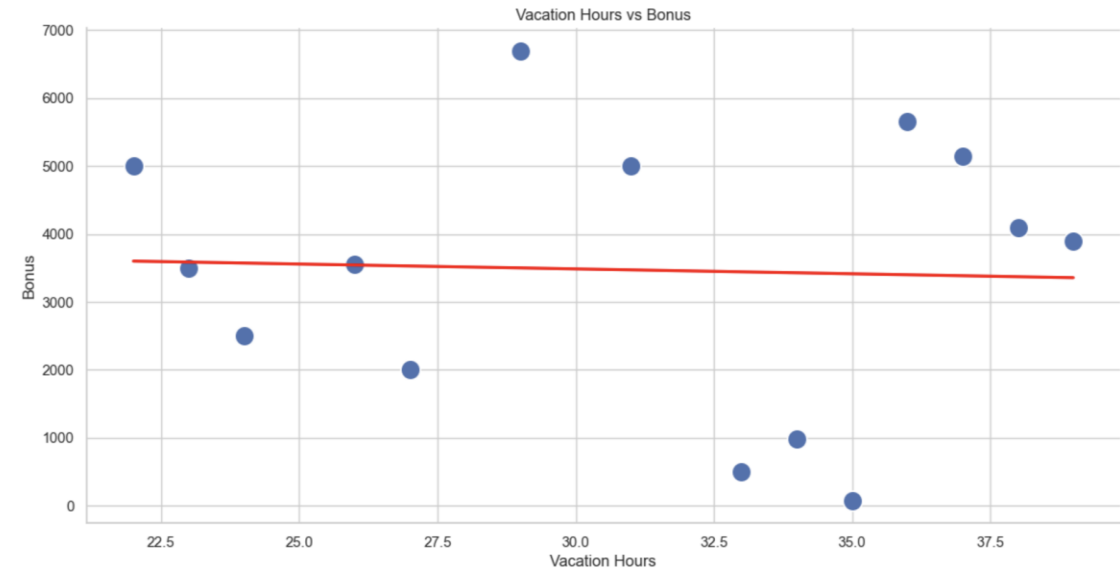
- Vacation Hours vs Sales Person Bonus (17 sales staff)
- No significant correlation (-0.041)

Insight

- Taking vacation does not negatively impact bonus earnings.

Action Plan

- Monitor annually to confirm the relationship holds as staff numbers and bonus plans evolve.
- Current data is limited, so further analysis over time is needed to draw stronger conclusions.



What is the relationship between Country and Revenue?

Finding

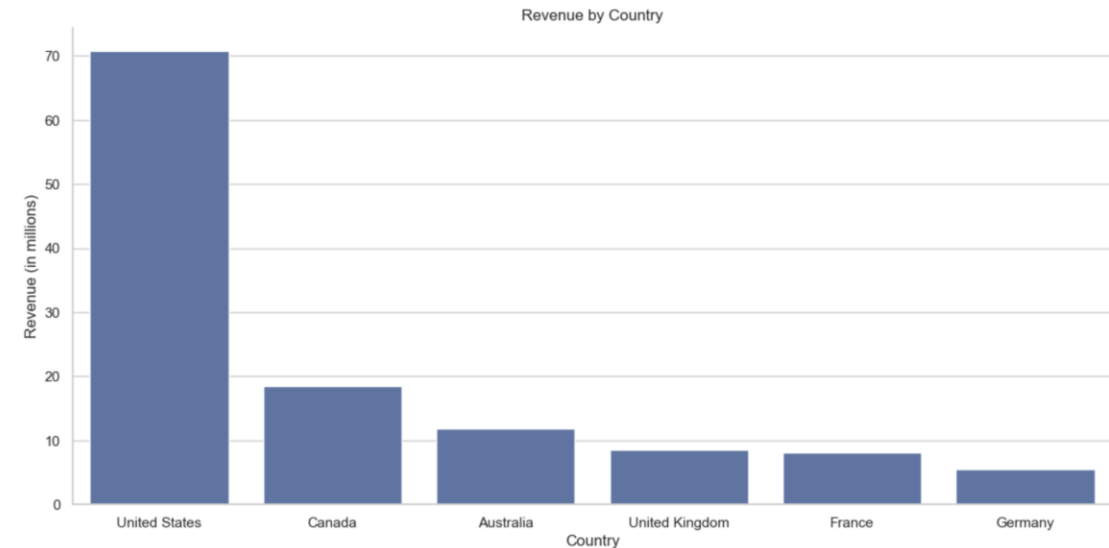
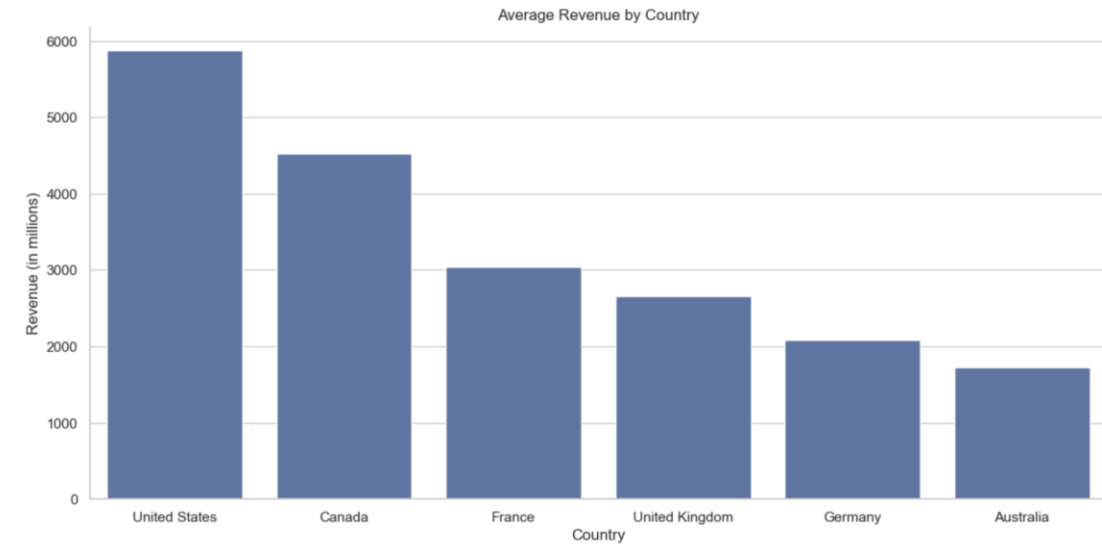
- On absolute sales, Australia (AU) sits third
- On average sales, Australia drops to the very bottom
- USA and Canada contribute 72.5% of the total world revenue.

Insight

- Australia relies on many low-spend customers, while France, Germany, and the UK earn more from fewer high-spend buyers.

Action Plan

- Implement targeted marketing in top regions
- Focus on high-value product lines for Germany, France, UK.



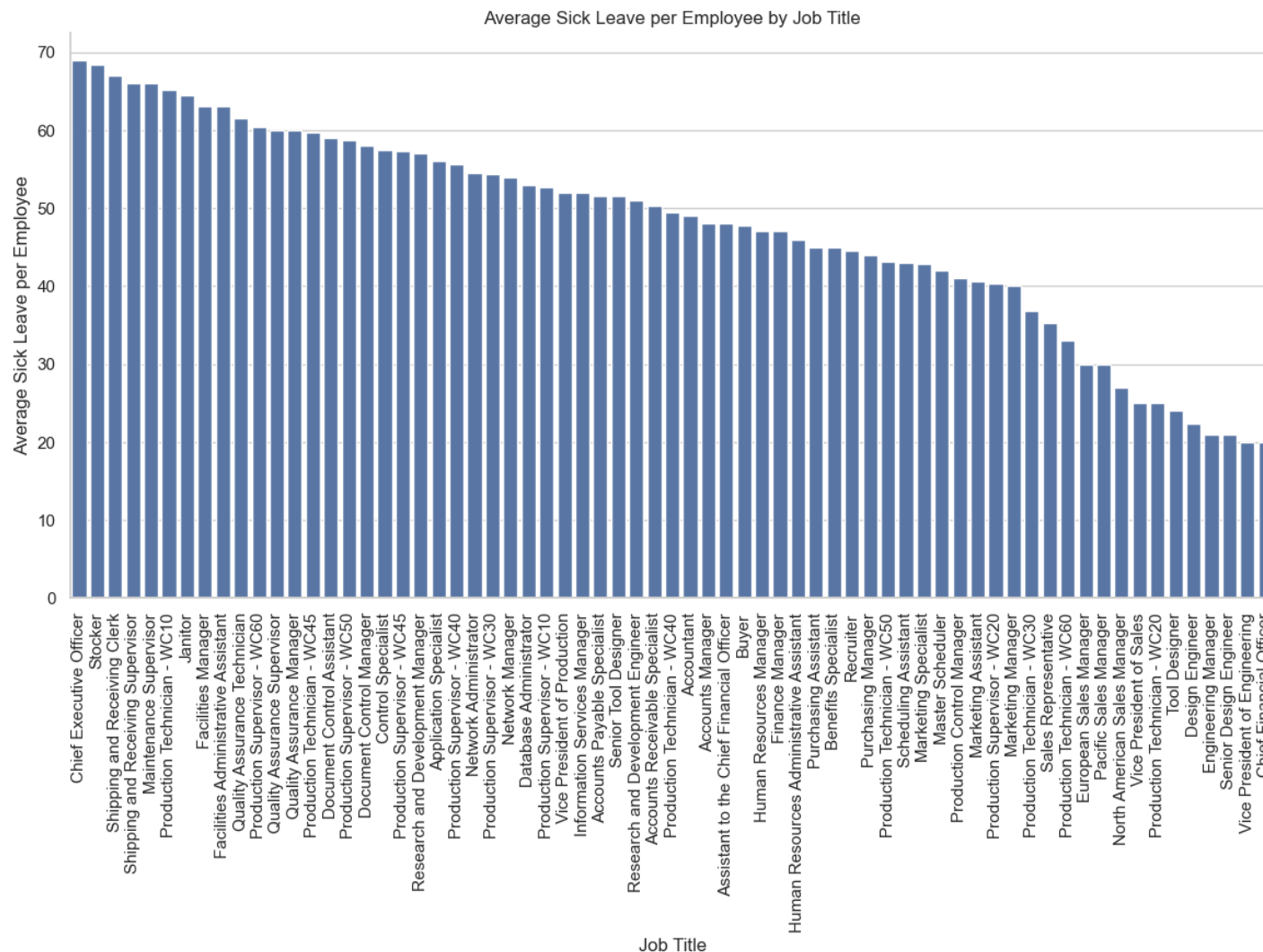
What is the relationship between sick leave and Job Title (Person Type)?

Finding

- Highest average per person - CEO (69 hours) , Stocker (68 hours)
- Lowest average per person - CFO (20 hours), VP Engineering (20 hours)

Insight

- Production Technicians recorded the highest total (6,739 hours), despite only 55 hours per person.
- The CFO and VP of Engineering recorded the lowest (20 hours each), as both roles are held by a single employee.



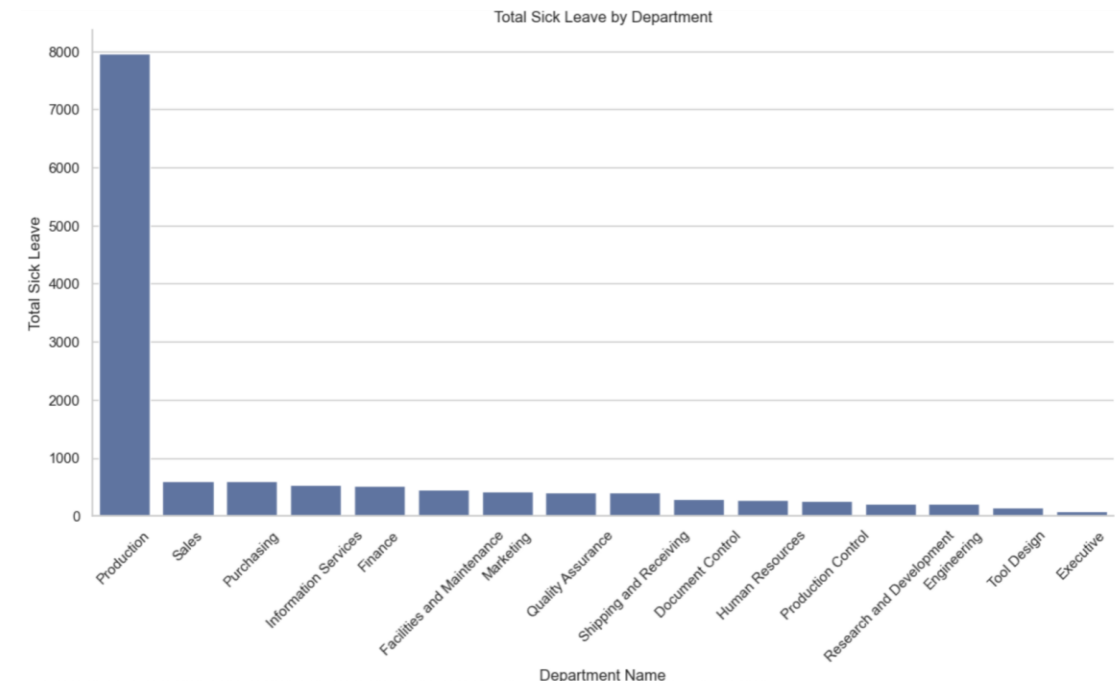
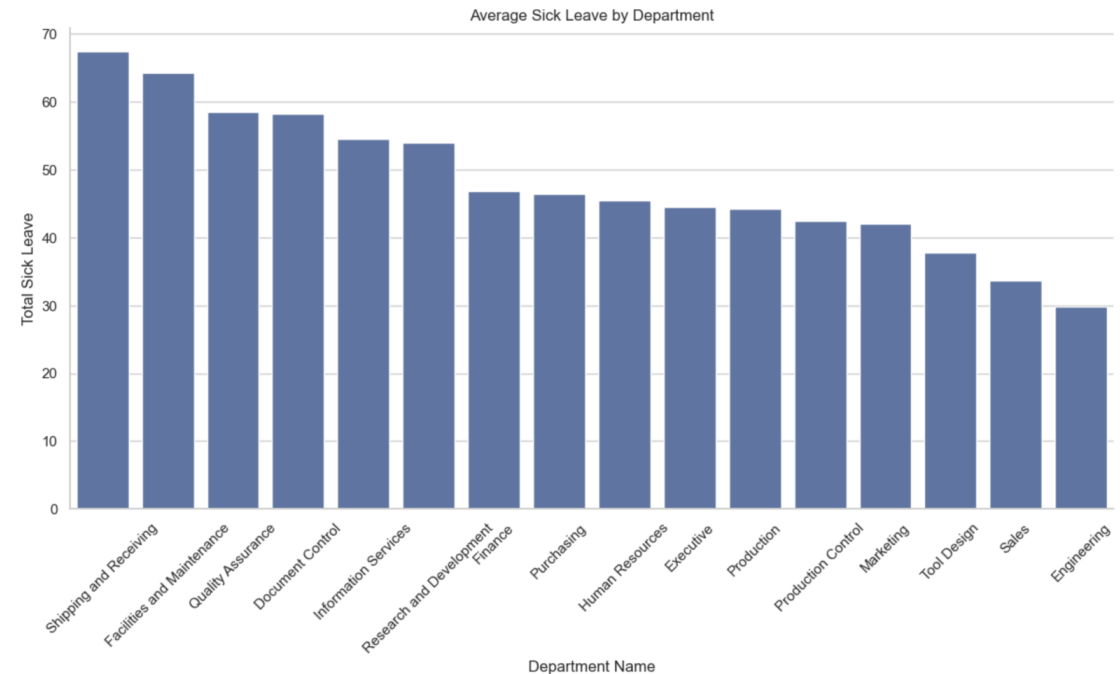
Departmental Sick-Leave Analysis

Findings

- Shipping and Receiving had the highest average sick leave at 67 hours.
- Engineering had the lowest average sick leave at 29 hours.
- The difference between the department with the lowest and highest average is 38 hours.

Insight

- Production recorded the highest departmental sick leave at 7 971 hours, because it employs 180 staff, compared with 110 across all other departments combined.



Person Type Leave Analysis

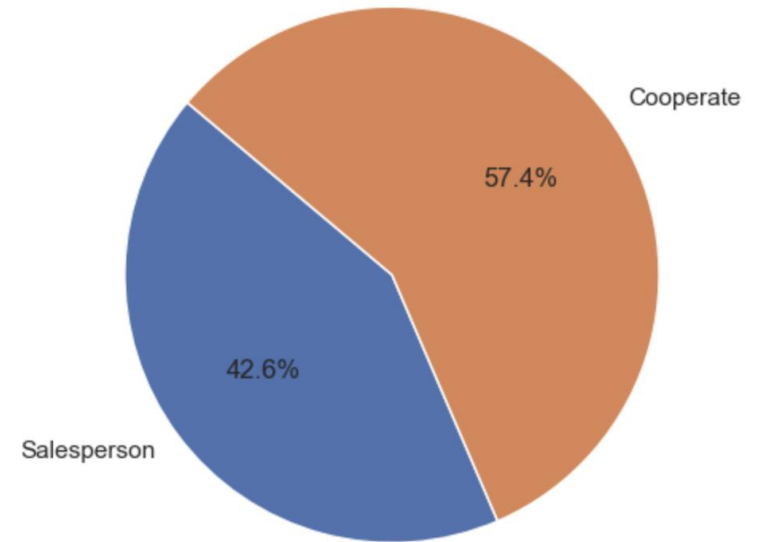
Finding

- Corporate staff (EM) generate 95.6 % of total sick-leave hours, versus 4.4 % for Sales staff (SP)—largely because there are far more corporate employees.

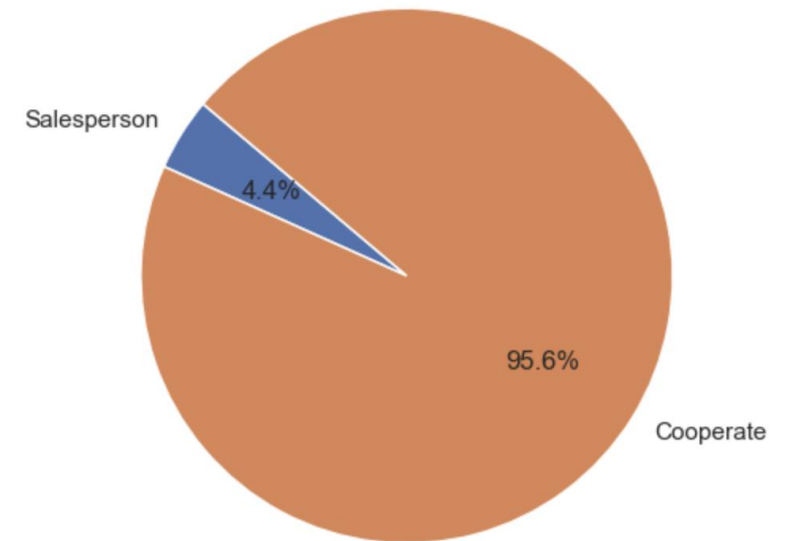
Insight

- Even on a per-employee basis, corporate workers still take about 15 % more sick leave than their sales counterparts.

Average Sick Leave by Person Type



Proportion of Sick Leave by Person Type



Shift Sick Leave Analysis

Findings

- Night shift has the highest average sick leave per employee (35 %), edging out Day and Evening shifts.

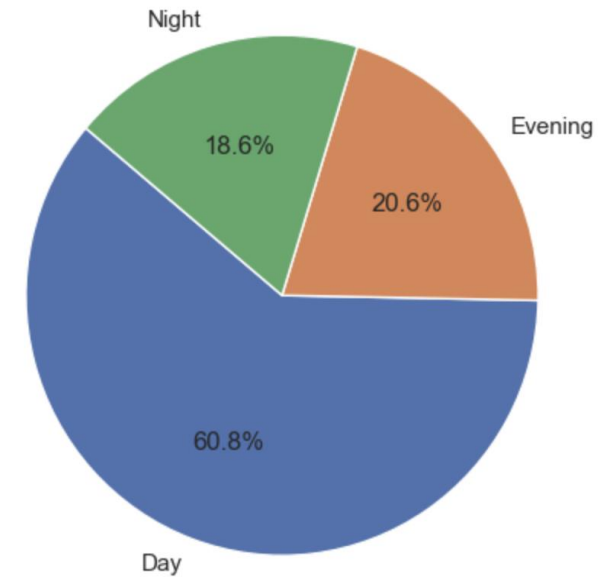
Insight

- Day shift accounts for the majority of total sick-leave hours (60.8 %) simply because it has the largest head-count.

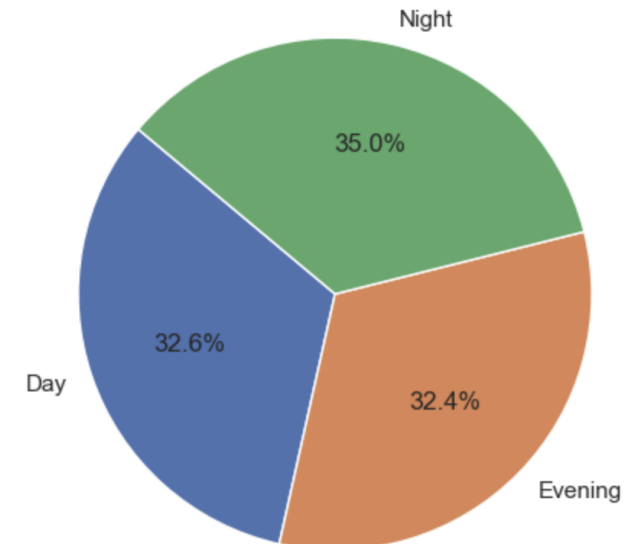
Action

- Roll out ergonomic & wellness programmes
- Introduce health-monitoring and flexible scheduling
- Investigate underlying causes

Total Sick Leave Hours by Shift



Average Sick Leave Hours by Shift



What is the relationship between store trading duration and revenue?

Findings

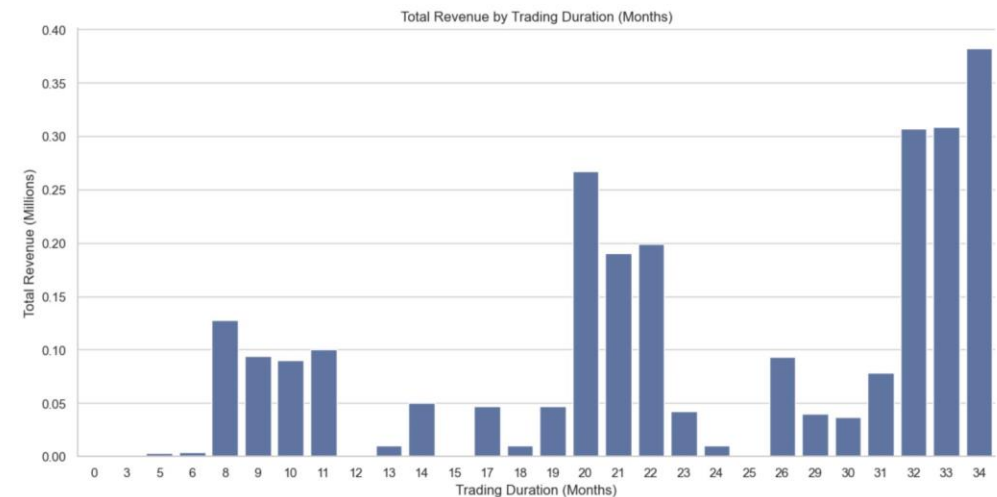
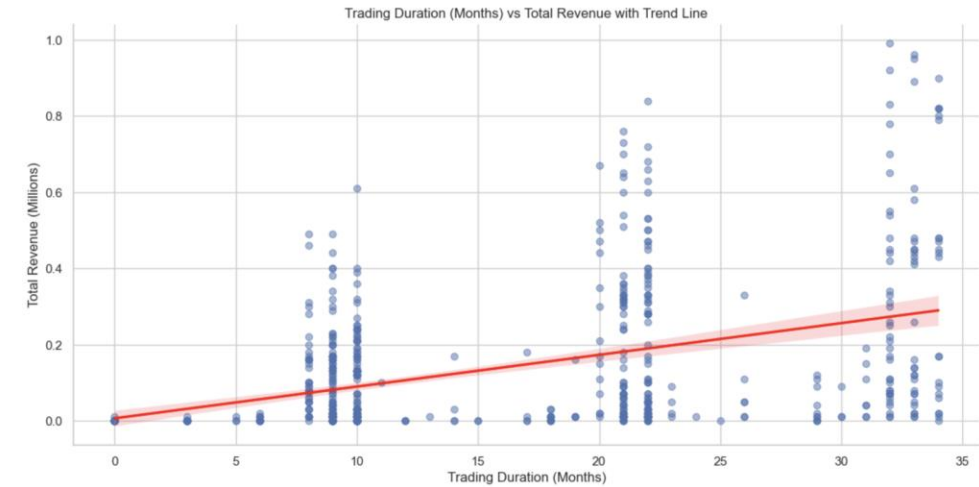
- Moderate positive link between trading duration and revenue ($r = 0.41$, 635 stores)
- Stores trading for 32, 33, and 34 months lead in revenue (>\$0.30M).
- Some newer stores (8, 20, 21, and 22 months) already exceed \$0.10M in sales.

Insights

- Although longer trading time boosts revenue, several stores that are less than 24 months old still out-earn older outlets.

Action

- Interview managers of top-performing young stores (20 to 22 months).
- Create a guidebook using those best practices to help new stores grow revenue faster.
- Flag older stores (30+ months) in the bottom 25% for audit or review for closure.



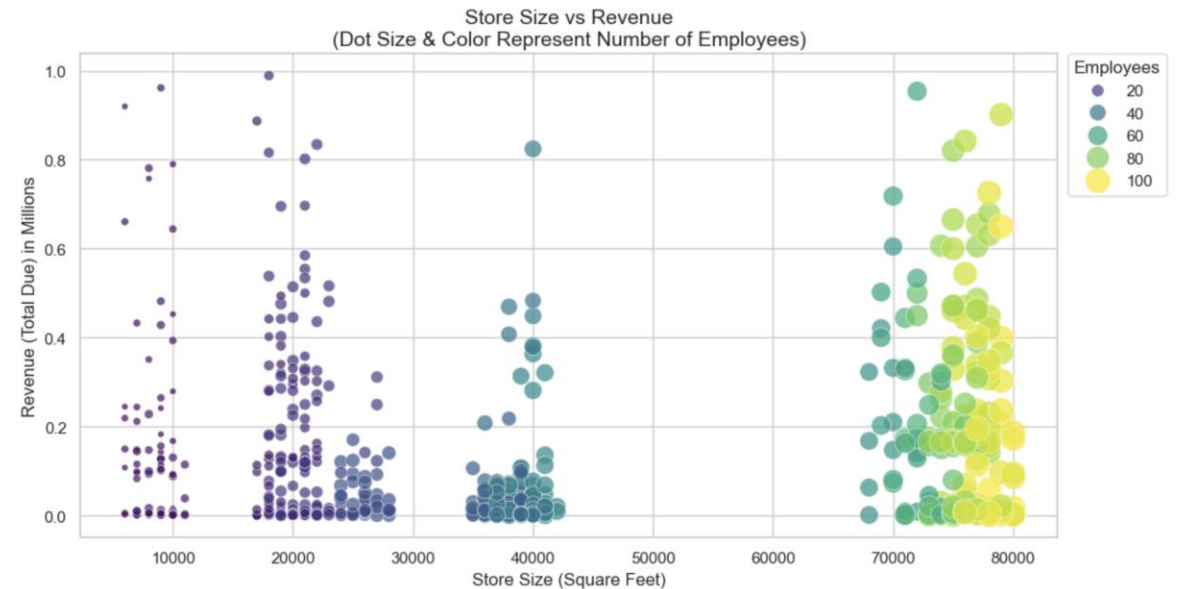
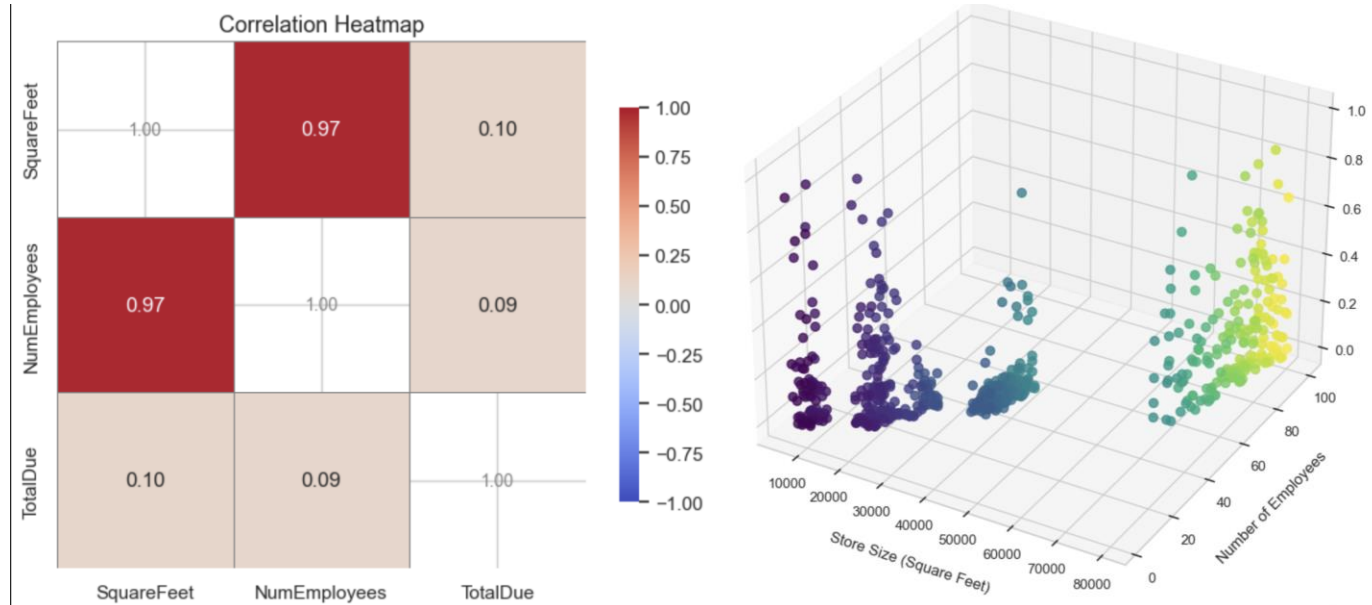
What is the relationship between the size of the stores, number of employees and revenue?

Finding

- Store size and employee count are tightly linked ($r = 0.97$), but both have weak relationships with revenue ($r = 0.10$).
- Only a few large stores exceed \$800 k, showing that size alone doesn't guarantee high revenue.

Insight

- More floor space alone doesn't guarantee higher takings
- Larger stores run bigger teams.



Analysis of store sizes, employees count and revenue by category

Finding

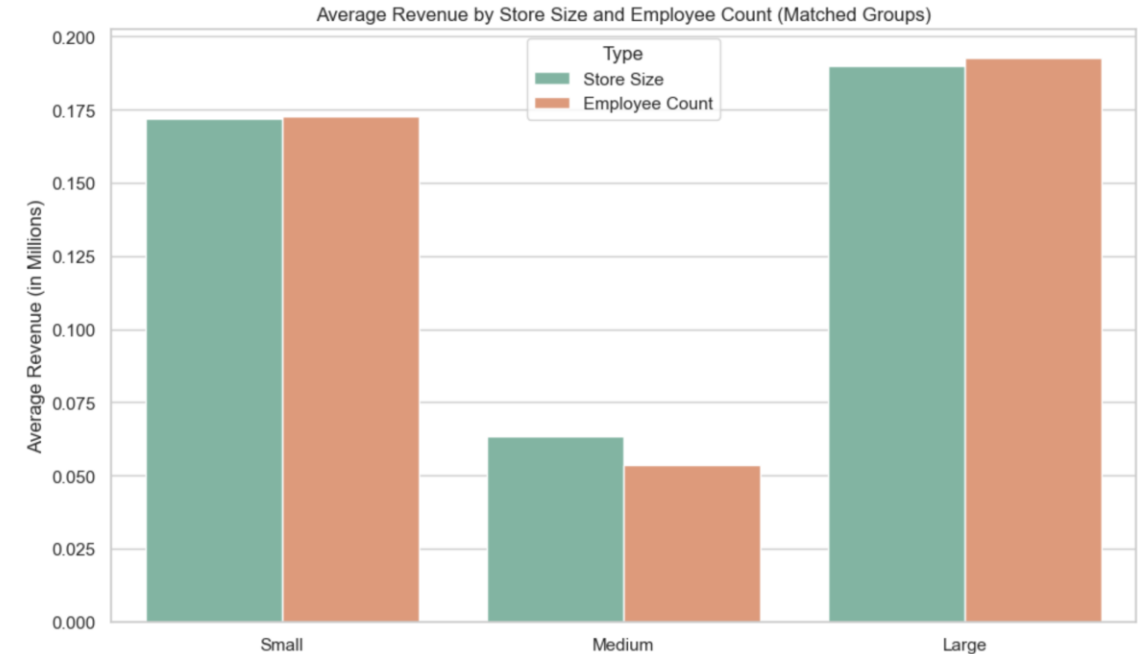
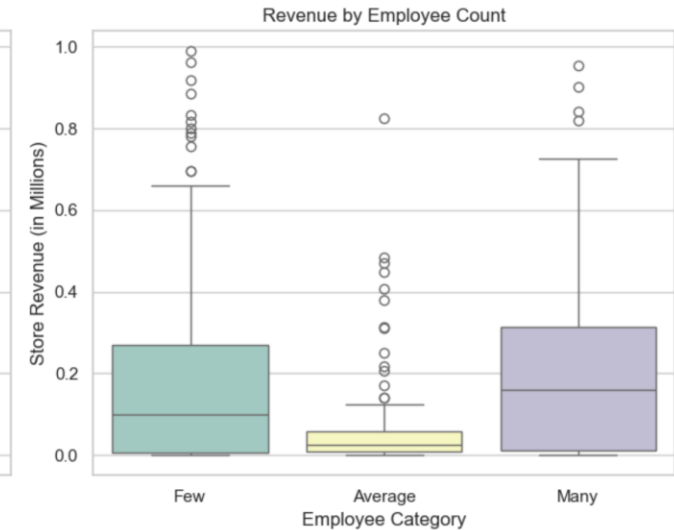
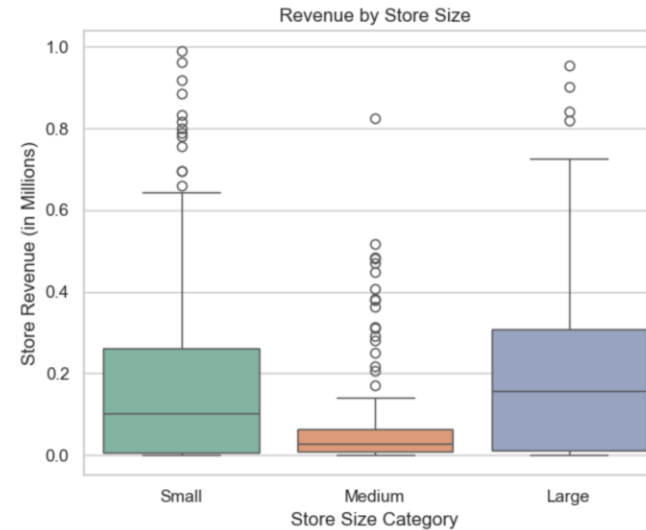
- Large stores earn the most on average (\$192k), followed by small stores (\$172k); medium stores lag far behind (\$53k).

Insight

- Top performers are either large stores with big teams or small stores with lean, flexible staff.

Action

- Medium stores need review; many underperform and vary widely.
- New medium-store proposals must show a strong business case, at least 30% above the current average.



Key Wins



Geographic Targeting

- Three U.S. states (California, Washington, Texas) drive 55% of total revenue.
- Focusing marketing efforts here offers the fastest path to revenue growth.

Store Optimization

- Medium-sized stores consistently under-perform. Optimising or right-sizing these locations provides immediate cost savings and improved profitability.

Employee Flexibility

- No correlation between vacation time and bonuses. This supports maintaining a flexible-leave policy that promotes employee well-being without harming productivity.

Thank You

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