



Building a Sustainable Workforce for USC Builds' Growth



Team 04

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Introduction

The construction industry is growing fast, and USC Builds is ready to take on big opportunities. But finding skilled labor is a real challenge. There aren't enough trained workers, and many of the ones who do join don't stay long. High turnover and low attendance are making it harder to keep projects on track.



Objective

To identify labor-related issues and explore ways to improve workforce stability, performance, and availability at USC Builds.



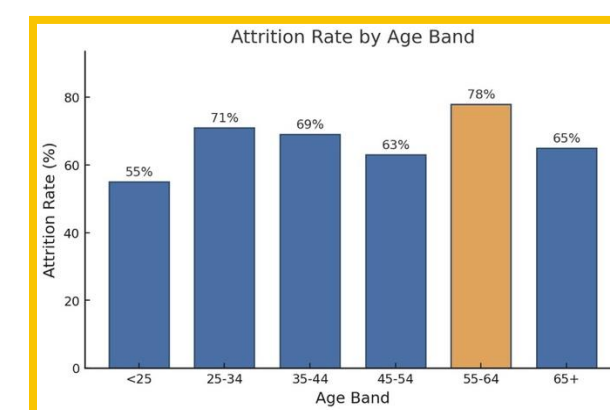
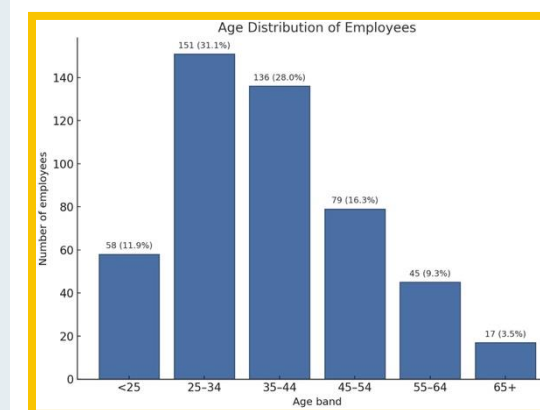
Methodology

- Collected and cleaned USC's labor-related HR data
- Analyzed workforce demographics, attendance, and attrition patterns
- Applied K-means clustering to key identify natural groupings of employees
- Used predictive modeling to find factors linked to employee turnover
- Based on insights, developed data-driven recommendations

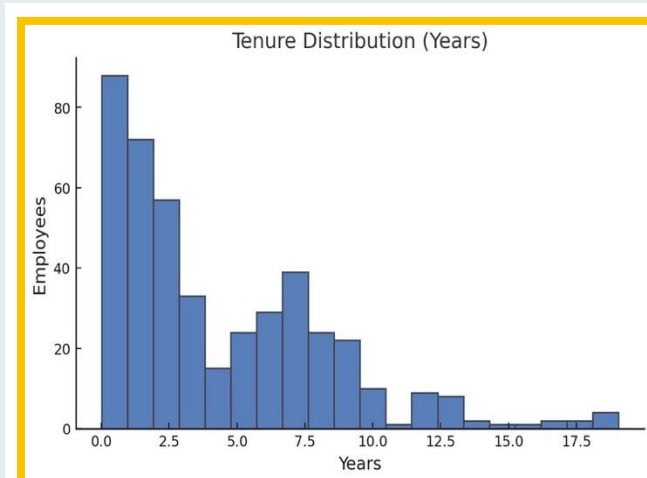


Analysis

- 59% of staff are between the ages of 25 and 44.
- Only 12% are under 25, and 13% are aged 55 or older.

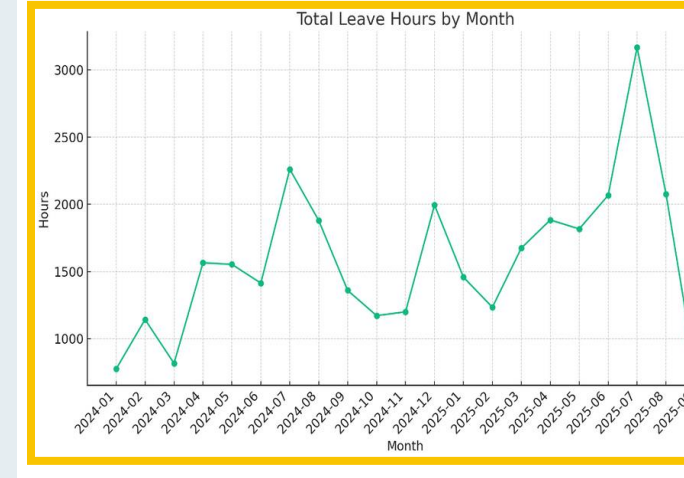


- 78% attrition rate for employees aged 55–64
- The 25–44 age group also faces high attrition (70%)



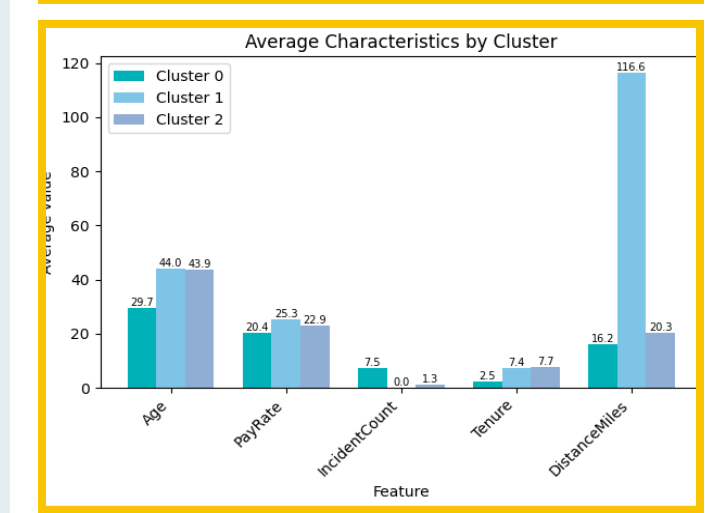
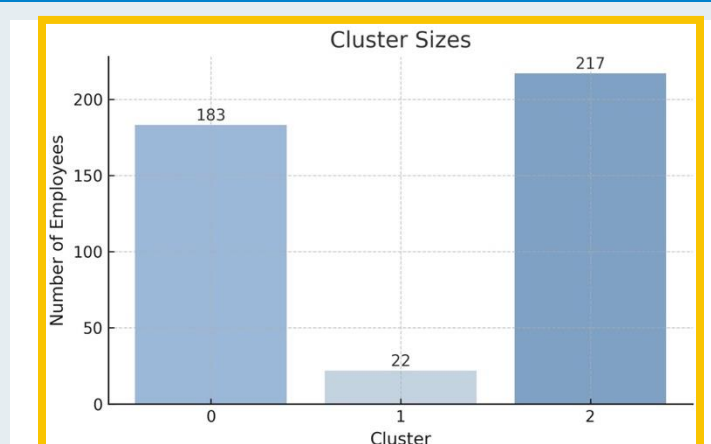
- Over 60% of employees have under 3 years of service
- Tenure sharply declines after 3 years

Sharp spikes in July, August, and December show the highest time-off activity

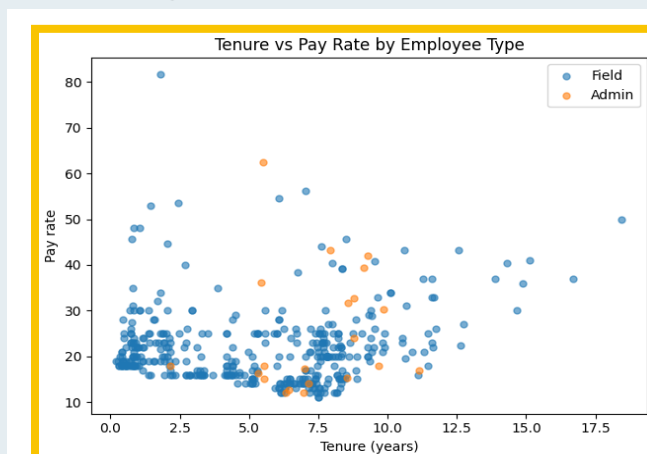


Clustering

- Risky Newcomers (Cluster 0): Youngest, lowest pay & tenure, highest incidents
- Steady Admins (Cluster 1): Oldest, highest pay, longest commutes, no incidents
- Committed Field Staff (Cluster 2): Longest tenure, few incidents, moderate pay



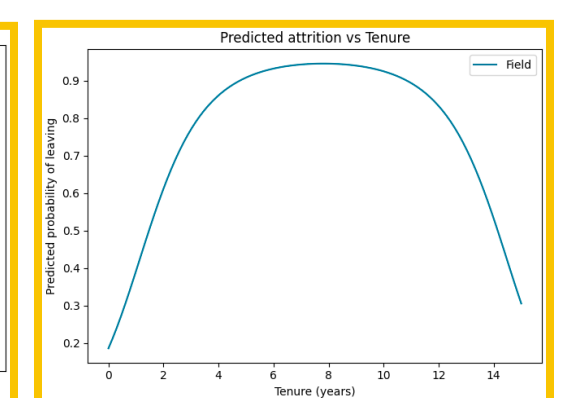
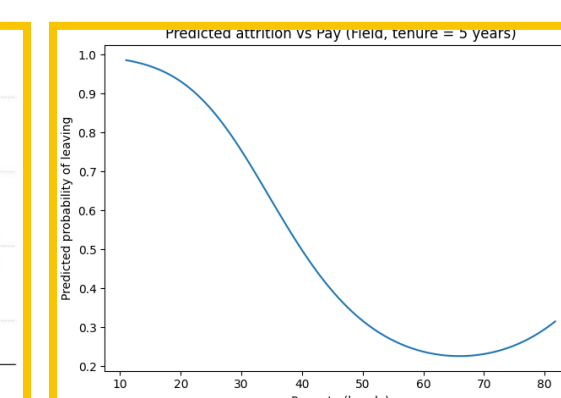
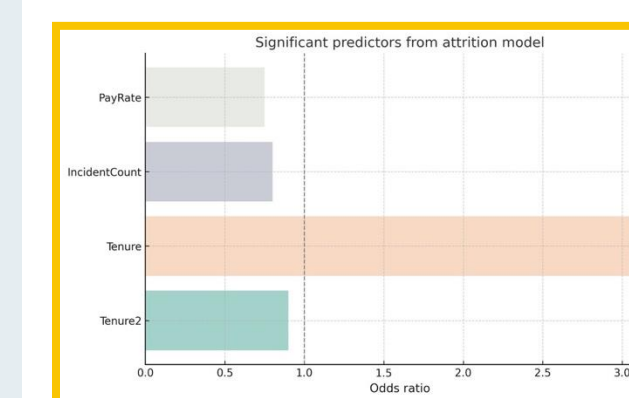
Pay vs. Tenure



- Most employees earn between \$15–30/hour
- Longer tenure doesn't always mean higher pay

- The probability of leaving is mainly influenced by tenure, pay rate, and incident count
- Low pay (<\$20/hr) shows very high attrition risk (~95%), which falls sharply as pay increases.
- Mid-tenure (3–10 years) employees have the highest probability of leaving (~90%).

Regression



Recommendations

First ninety days programme

Show five-year path in the app, assign a buddy, and complete three check-ins before day ninety.
Result: Fewer new workers leaving in the first ninety days.

Pay floor and simple pay bands

Set a minimum pay above the highest-risk level and group all roles into clear pay bands.
Result: Reduced attrition among the lowest-paid workers.

Work near home for 14622 and 14626

Use the app to place these workers at the nearest sites and support carpool or pick-up from one hub.
Result: Lower attendance incidents from distant zip codes.

“Next-role” paths for mid-career employees

Create a lighter “Senior Professional” role and pair each senior with juniors for planned skill transfer.
Result: Experience is retained, and juniors are ready to replace departing experts.

Knowledge transfer

Create a lighter “Senior Professional” role and pair each senior with juniors for planned skill transfer.
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USC App's

Key Features

- Peer review
- Find jobs near me
- Seamless data pipeline combining attendance, tenure, and HR data
- Personalized career progress tracker
- Early-exit risk detection
- Milestone roadmap

