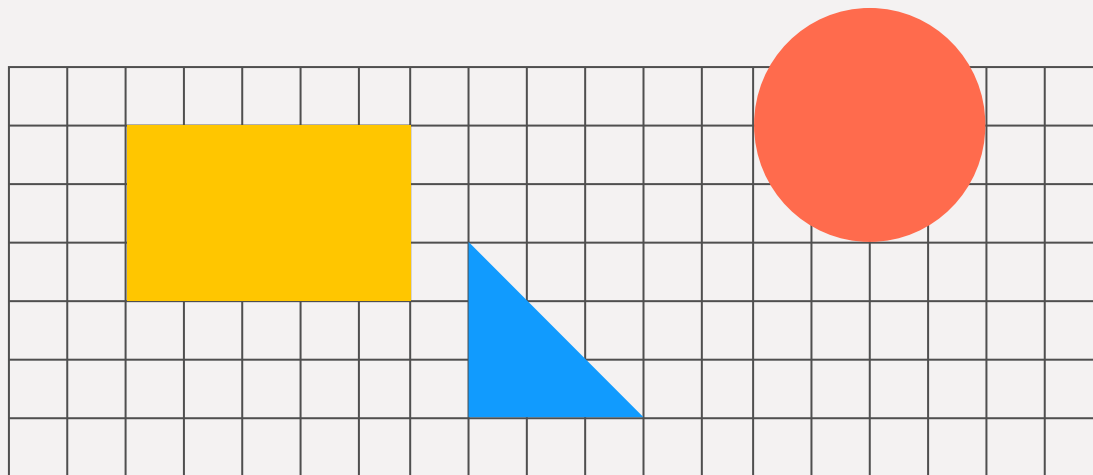
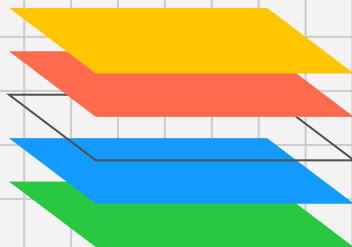
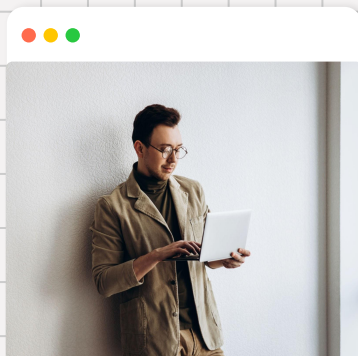


Exploring the Drivers of  
Employee Attrition and Satisfaction

# Hackathon



# Project Overview



Attrition and  
Satisfaction

Attrition rates show correlations with factors such as overtime, marital status, income, and tenure. These insights do not vary much by department, offering opportunities for tailored strategies in a cross functional way.

# Factors Influencing Attrition

Employees working more overtime are more likely to leave.

Overtime

Single employees are possibly more likely to leave.

Marital status

Employees who travel frequently are also more likely to leave.

Travel frequency

Employees with a technical degree have specific attrition patterns.

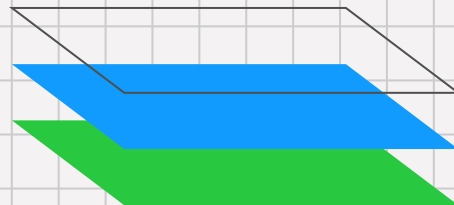
Technical education

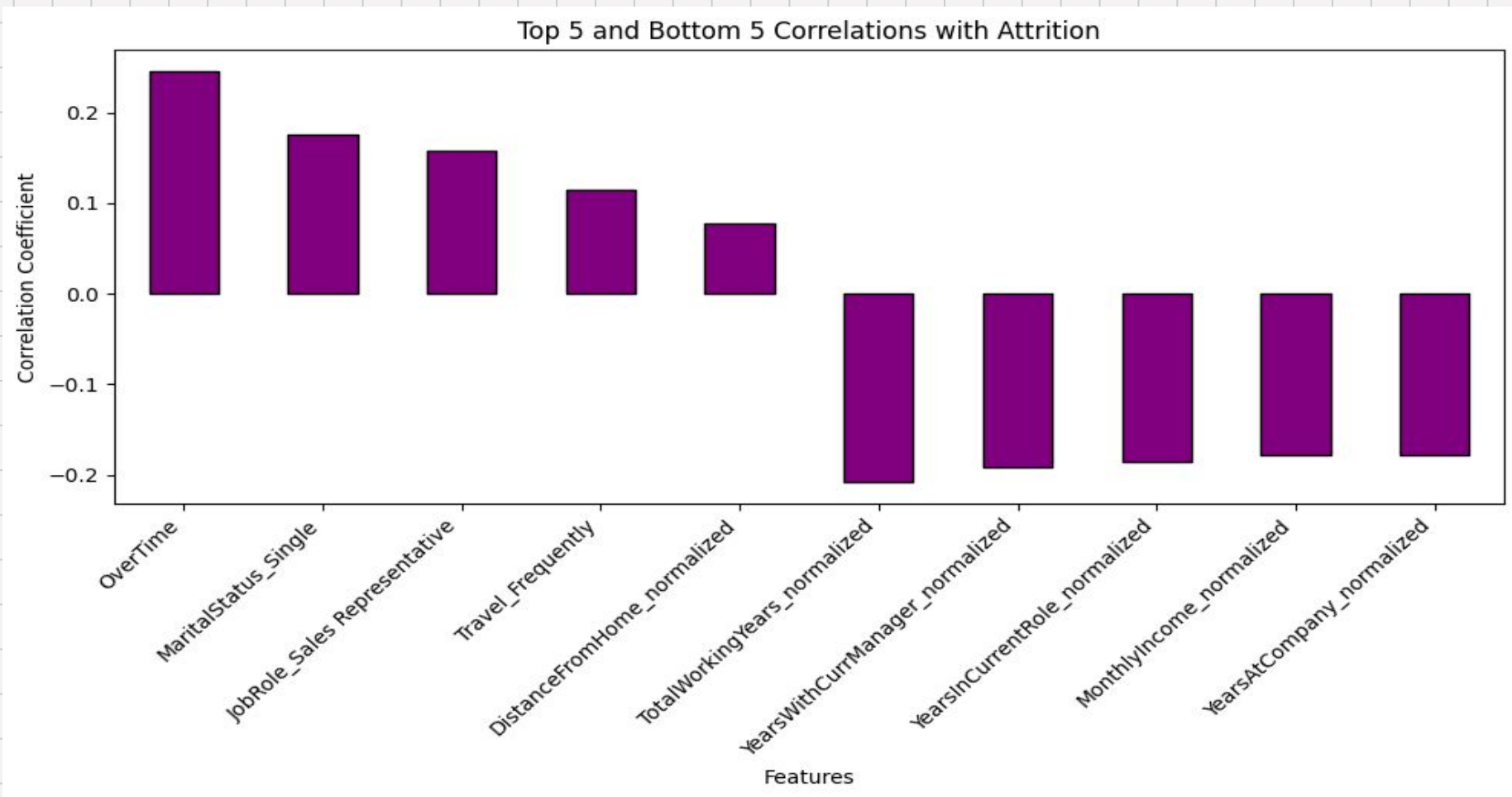
# On The

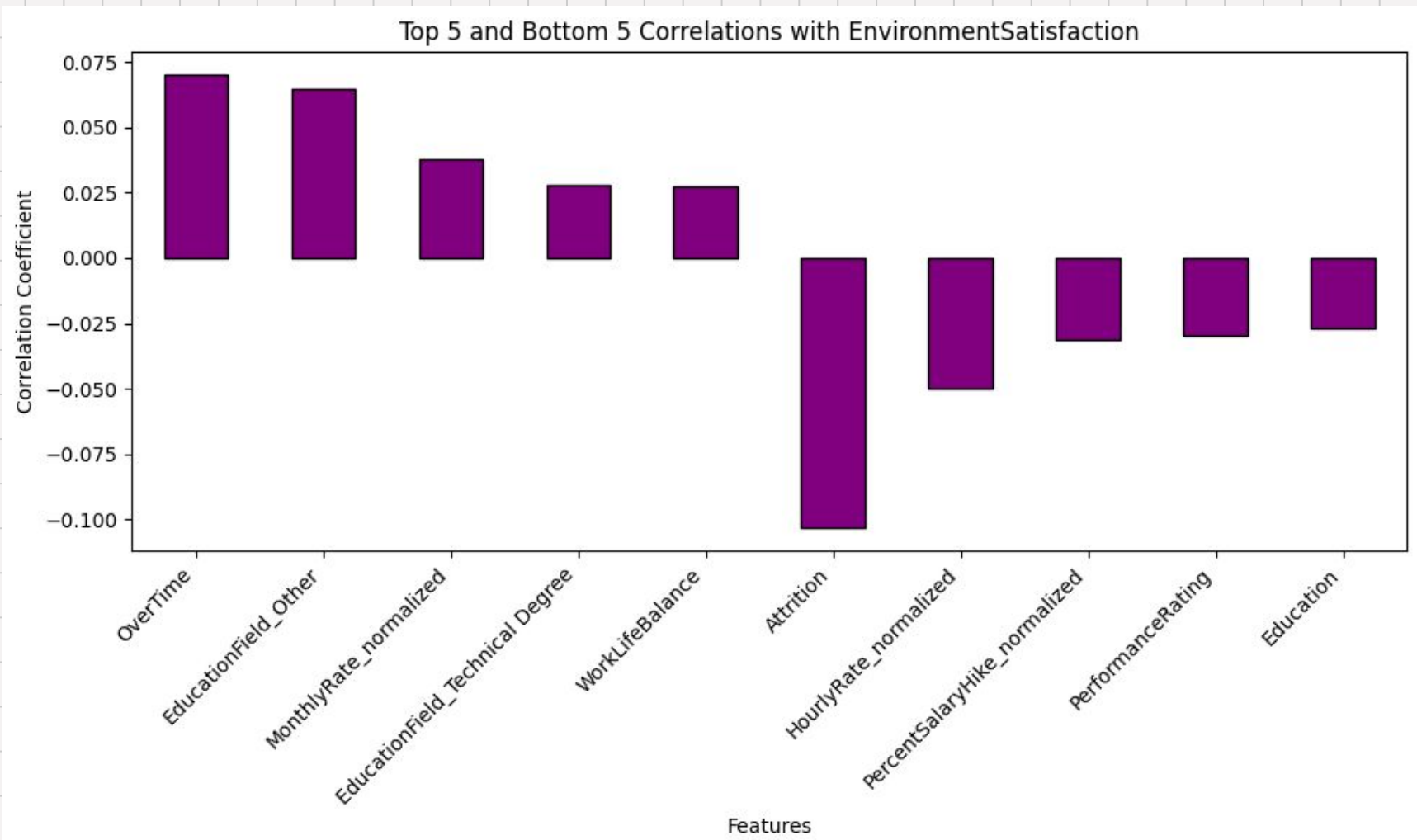
# Flip Side



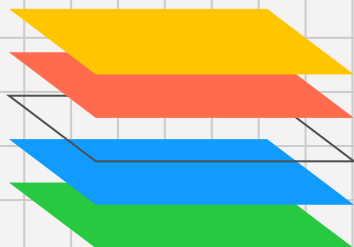
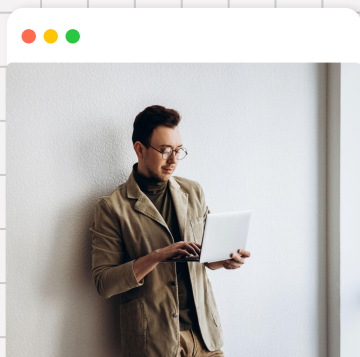
Higher income, longer tenure with a manager, and more stability in their role (such as being in the company or current role for longer) seem to reduce the likelihood of attrition.







# Hypothesis Testing

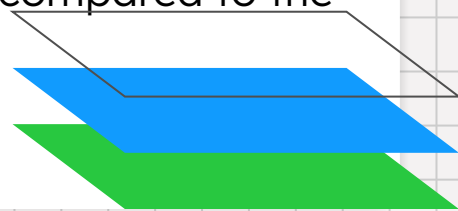


Attrition and  
Satisfaction

# Hypothesis 'a'



- **Null Hypothesis ( $H_0$ ):** Employees with high values for the bottom-5 correlated features to attrition ("TotalWorkingYears\_normalized," "YearsWithCurrManager\_normalized," "YearsInCurrentRole\_normalized," "MonthlyIncome\_normalized," "YearsAtCompany\_normalized") do not have a lower rate of attrition compared to the general population.
- **Alternative Hypothesis ( $H_1$ ):** Employees with high values for the bottom-5 correlated features to attrition have a lower rate of attrition compared to the general population.





# Results

## Topic

Top 5 Correlated Factors with Attrition:

Bottom 5 Correlated Factors with Attrition:

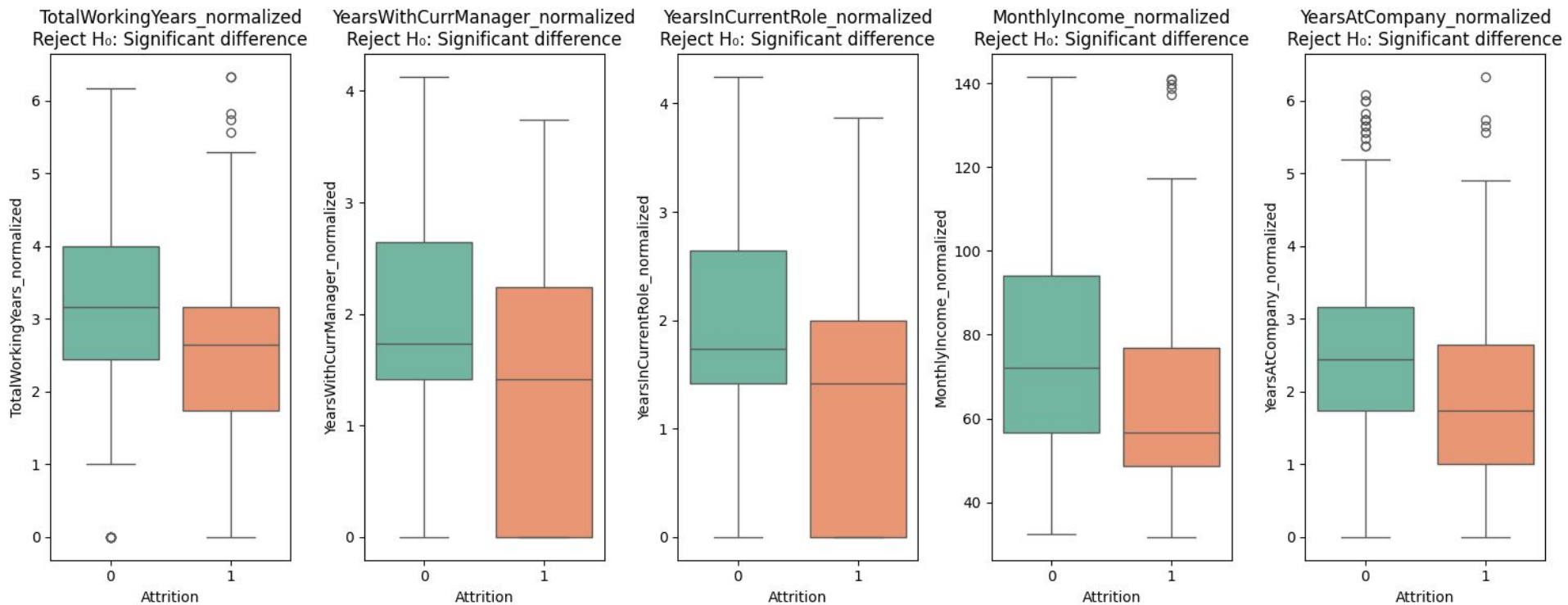
ANOVA Insights:

## Details

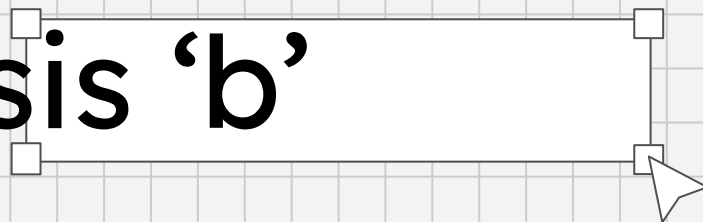
- OverTime (0.246)
- MaritalStatus\_Single (0.175)
- JobRole\_Sales Representative (0.157)
- Travel\_Frequently (0.115)
- DistanceFromHome\_normalized (0.078)

- TotalWorkingYears\_normalized (-0.208)
- YearsWithCurrManager\_normalized (-0.191)
- YearsInCurrentRole\_normalized (-0.186)
- MonthlyIncome\_normalized (-0.179)
- YearsAtCompany\_normalized (-0.17)

- :Significant differences in attrition based on factors like TotalWorkingYears, YearsWithCurrManager, and MonthlyIncome.
- Employees with higher values for these features are less likely to leave.



# Hypothesis 'b'



- **Null Hypothesis ( $H_0$ ):** "JobRole\_Sales Representative" employees with normalized monthly incomes below the 50th percentile do not experience higher attrition rates compared to other sales representatives.

- **Alternative Hypothesis ( $H_1$ ):** "JobRole\_Sales Representative" employees with normalized monthly incomes below the 50th percentile experience higher attrition rates.



# Results

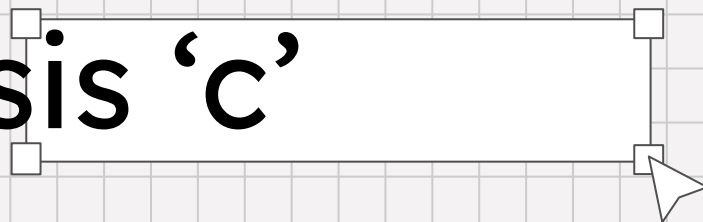
## Topic

**T-test Results for  
JobRole\_Sales  
Representative:**

## Details

- No significant difference in attrition rates between employees with income below and above the 50th percentile (p-value = 0.231).
- Data suggests low income does not correlate with higher attrition rates.

# Hypothesis 'c'



- **Null Hypothesis ( $H_0$ ):** Employees with normalized monthly incomes in the bottom 25th percentile are not more likely to experience high levels of overtime compared to the general population.
- **Alternative Hypothesis ( $H_1$ ):** Employees with normalized monthly incomes in the bottom 25th percentile are more likely to experience high levels of overtime compared to the general population.



Overtime prevalence (mean) for employees with normalized monthly incomes below and above the 25th percentile:

**29%**

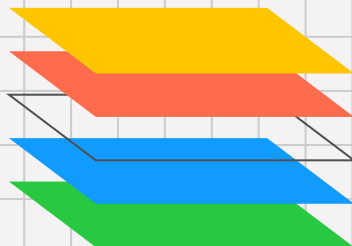
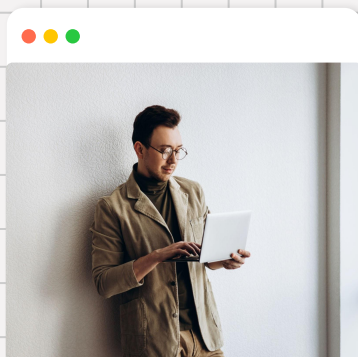
Below 25th percentile  
income to experience  
overtime

+

**28%**

above 25th percentile  
income to experience  
overtime

# Departmental Insights



Attrition and  
Satisfaction

# HR Department Insights

## Attrition Drivers:



- Correlation with Overtime (0.246) and Marital Status (Single: 0.175).
- Negatively correlated with YearsWithCurrentManager (-0.191) and MonthlyIncome (-0.179).

## Satisfaction Insights:



- Environmental satisfaction correlates positively with Overtime (0.070) and Work-Life Balance (0.028).
- Attrition is negatively correlated with satisfaction (-0.103).

## Summary



For HR employees, a balance between workload (overtime) and manager relationships significantly impacts attrition and satisfaction.



# R&D Department Insights

## Attrition Drivers:



- Significant positive correlation with Overtime (0.246), Travel\_Frequently (0.115), and JobRole\_Laboratory Technician (0.098).
- Strong negative correlation with TotalWorkingYears (-0.208) and YearsInCurrentRole (-0.186).

## Satisfaction Insights:



- Environmental satisfaction is positively linked to Overtime (0.070) and JobRole\_Manufacturing Director (0.059).
- Negatively impacted by attrition (-0.103).

## Summary



In R&D, high attrition rates are tied to workload and frequent travel. Long tenure and role-specific satisfaction can mitigate these issues.

# Sales Department Insights

## Attrition Drivers:



- Highest correlation with Overtime and Travel\_Frequently.
- Negative correlation with YearsAtCompany and MonthlyIncome.

## Satisfaction Insights:



- Work-life balance and recognition play crucial roles in satisfaction.

## Summary



Sales faces challenges due to travel demands and worklife balance. No evidence shows that low income correlates with higher attrition rates.

# Cross-Departmental Comparisons

## Common Themes:

- **Overtime:** Universal driver of attrition across departments.
- **Tenure and Income:** Recognition of long tenure and Stable income reduce attrition rates.

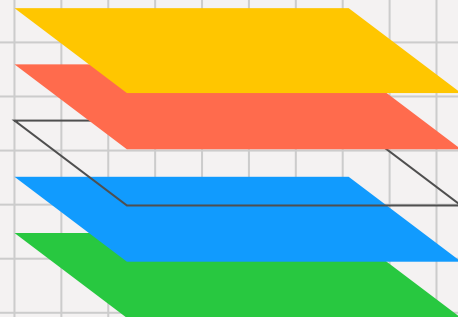
## Department-Specific Nuances:

- **HR:** Manager relationships are pivotal.
- **R&D:** Travel and role-specific demands influence retention.
- **Sales:** Work-life balance is critical.

## Summary

While some factors like overtime and income affect all departments, targeted interventions are needed for department-specific challenges.

# Actionable Recommendations



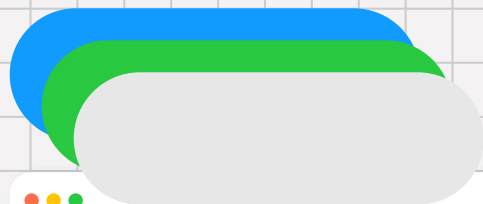
- **Reduce Overtime:**
  - Implement better roadmaps for projects and deliverables.
  - The office is where you work, home is where you rest mentality.
- **Enhance Work-Life Balance:**
  - Treat employees like adults culture, If the work is delivered don't stay.
  - Provide a 1 month sabbatical leave for employees with tenure of 3.5 years
- **Manager Training:**
  - Equip managers to foster better employee relationships.
- **Tailored Incentives:**
  - Role-specific recognition and rewards.



Proactive measures addressing these drivers will help decrease attrition and improve satisfaction across departments.

**Tips**

# Learning Outcome



Attrition is a multifaceted issue influenced by workload, tenure, income, and job-specific factors.

## Next Steps:

Implement recommendations, monitor results, and refine strategies based on continuous feedback.

