Exploring Employee Turnover

An in-depth analysis for leading causes of attrition at DDSAnalytics

by

The Unofficial Intelligence Data Science Team

- Who are we?

Introduction

- Who are we?
  - Samantha Sprague - CFO (Chief Factor Operator)

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- What are we doing here?
  - Fighting attrition using data science

Outline

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Bottom Line Up Front

Factors Leading to Attrition

Four factors:

- Overtime

Factors Leading to Attrition

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- Monthly Income

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- Business Travel

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Four factors:

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- Business Travel
- Job Role

Factors Combatting Attrition

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- Department Compa Ratio

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Factors Combatting Attrition

Four factors:

- Department Compa Ratio
- Environment Satisfaction
- Stock Options
- Work-Life Balance

Initial Analysis

Data Manipulation

- NA checking

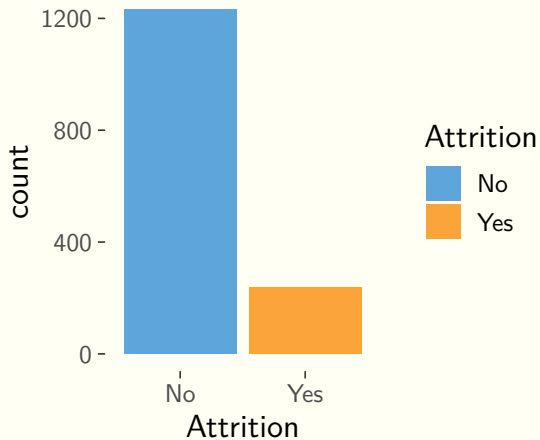# Data Manipulation

- NA checking
- Factorization

Data Manipulation

- NA checking
- Factorization
- Enumeration

Attrition

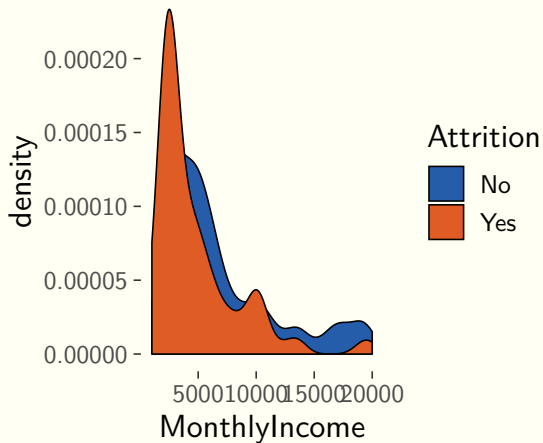# Attrition

	Attrition	Proportion
1	No	0.84
2	Yes	0.16

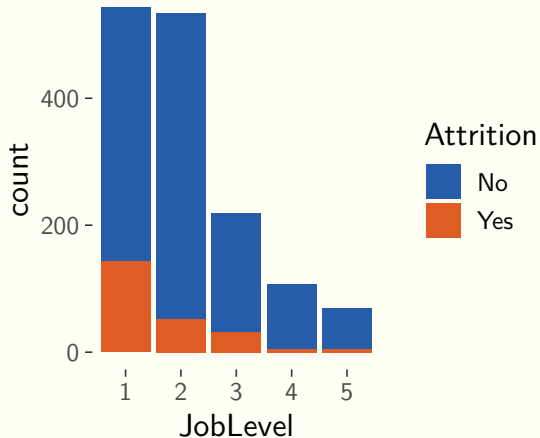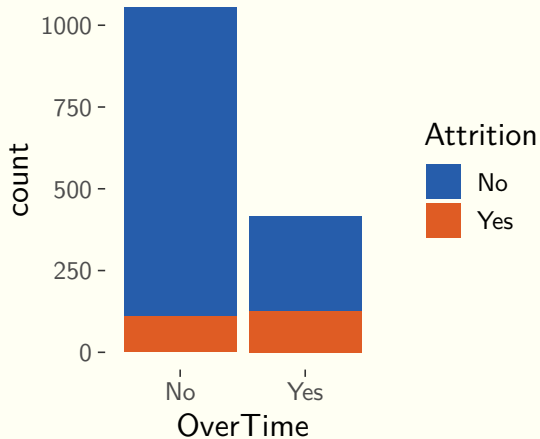Proportion of Attrition

Exploratory Graphics

Monthly Income deserves further investigation
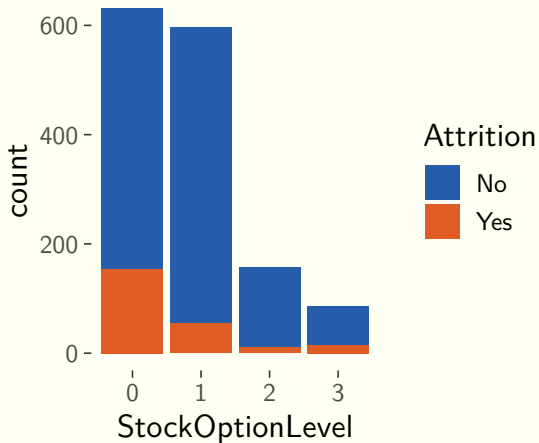
Exploratory Graphics

Job Level seems like an important variable
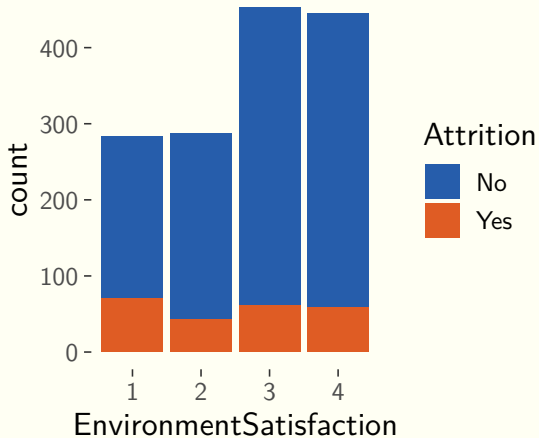
Exploratory Graphics

As does overtime

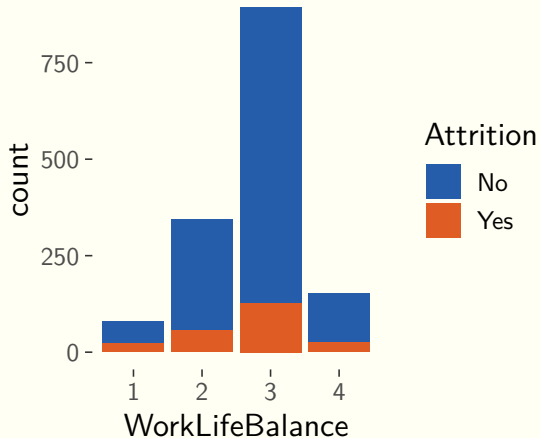# Exploratory Graphics

Stock options seem to lower attrition

Exploratory Graphics

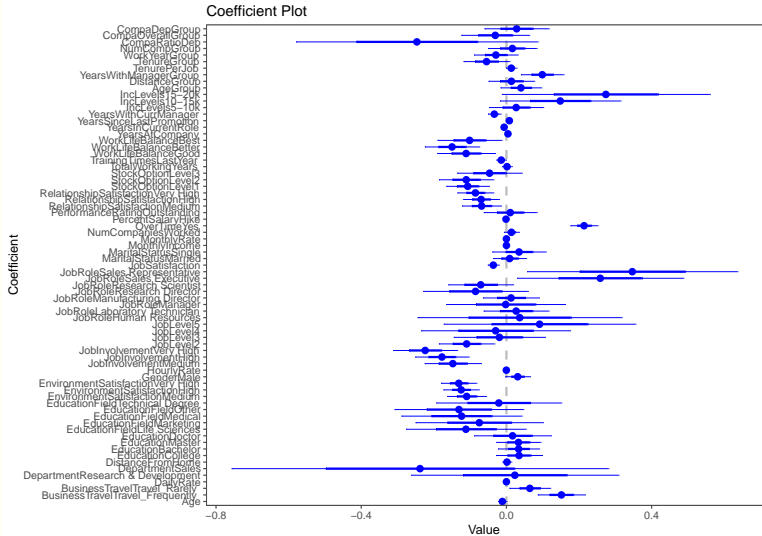As does a healthy working environment

Exploratory Graphics

Work Life Balance also appears to combat attrition
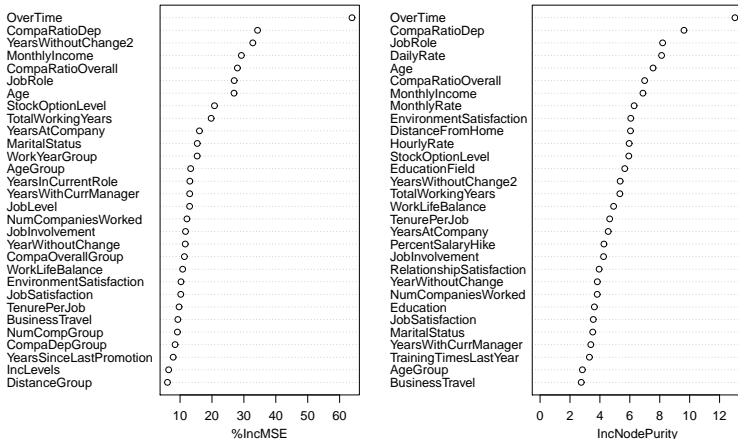
In-Depth Analysis

Linear Model

Coefficient Plot

Random Forests

VariableImportance

Feature Engineering

- Created 14 new variables

Feature Engineering

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  - Compa Department Ratio

Feature Engineering

- Created 14 new variables
  - Compa Department Ratio
- Binned many variables

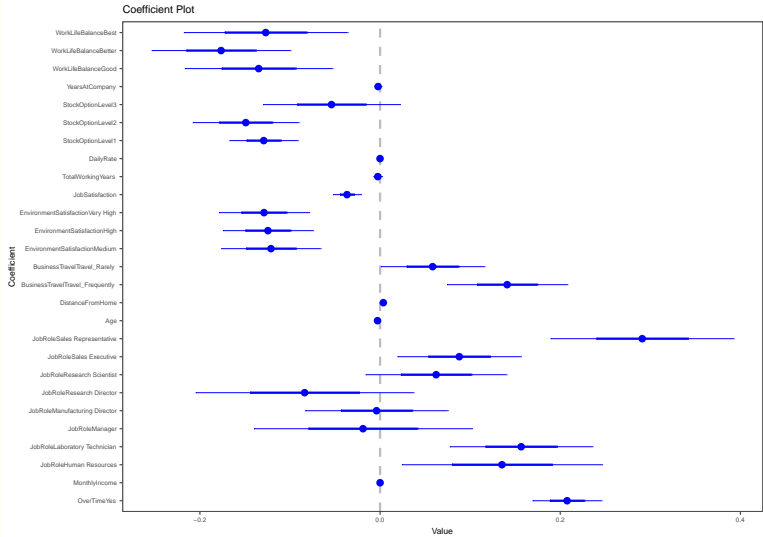# Iteration

- Added features

Iteration

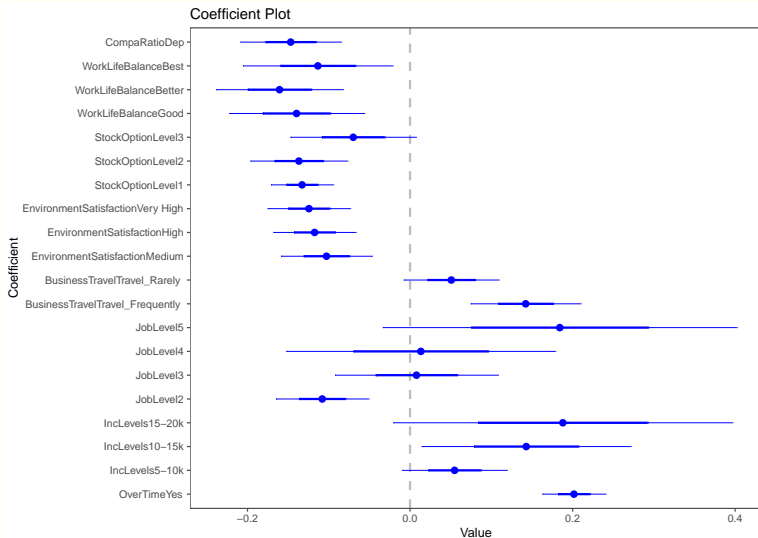- Added features
- Removed unimportant variables

Coefficient Plot

Iteration

Coefficient Plot

Executive Summary and Next Steps

Executive Summary

- 8 Explanatory Variables

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- Explanation : 30%

Executive Summary

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- Engineered Features : 14

Executive Summary

- 8 Explanatory Variables
- Explanation : 30%
- Engineered Features : 14
- Number of models : > 50

Next Steps

- More Data

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- Time stamps

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- Demographic Statistics

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- More Models

Questions