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REVOLVING DOOR

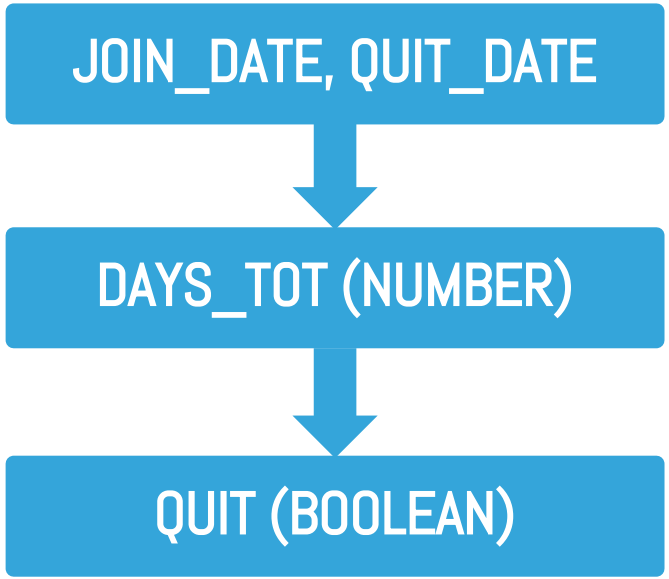
EMPLOYEE TURNOVER ANALYSIS

GOALS

- Define why and when employees will leave
- Suggest a data driven recommendations to reduce employee turnover

25K EMPLOYEE RECORDS

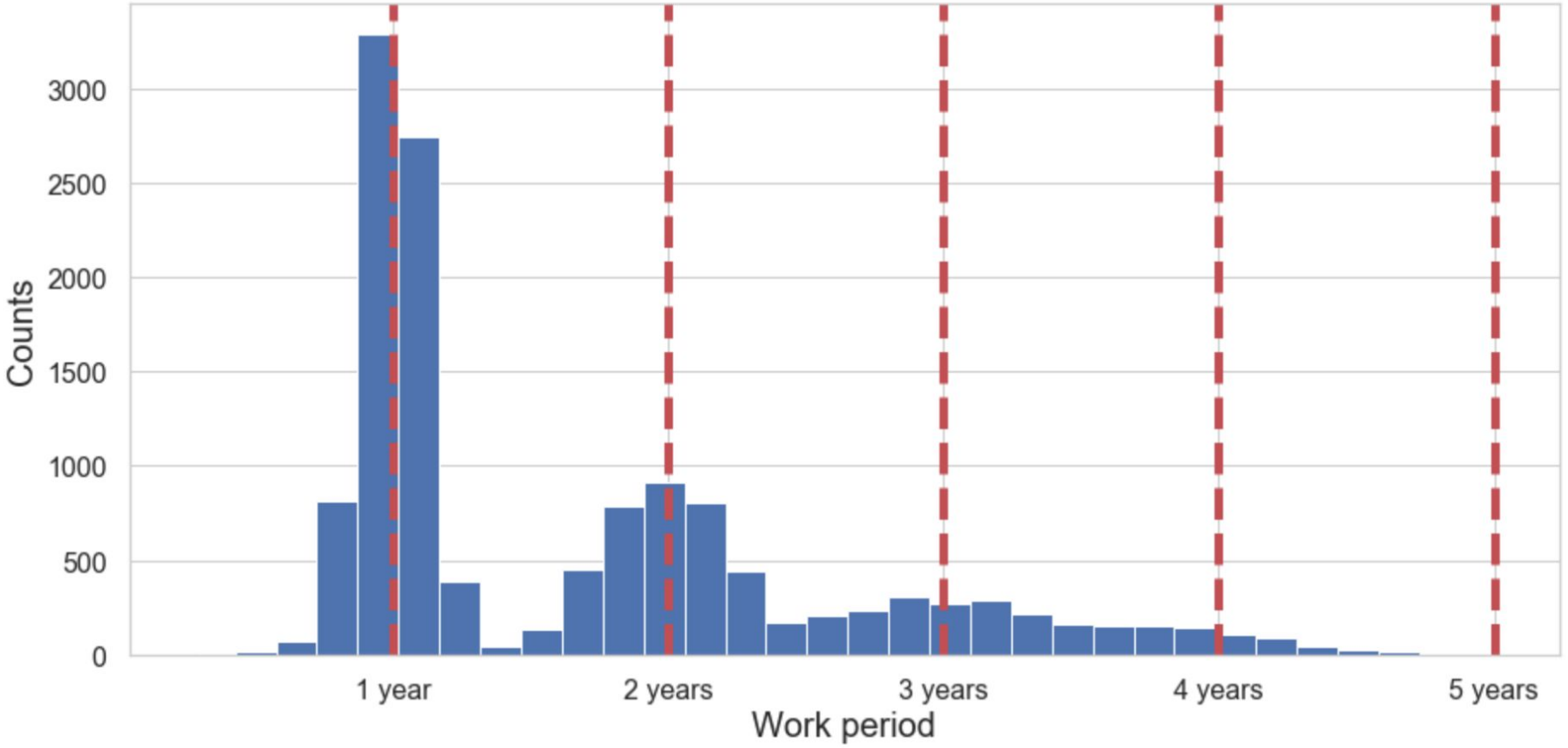
- 10 (originally 12) companies,
- 6 departments
- Yearly salary
- Seniority - years of experience when hired
- Join_date and quit_date (if available)
  ~5 years of data



BALANCED CLASSES

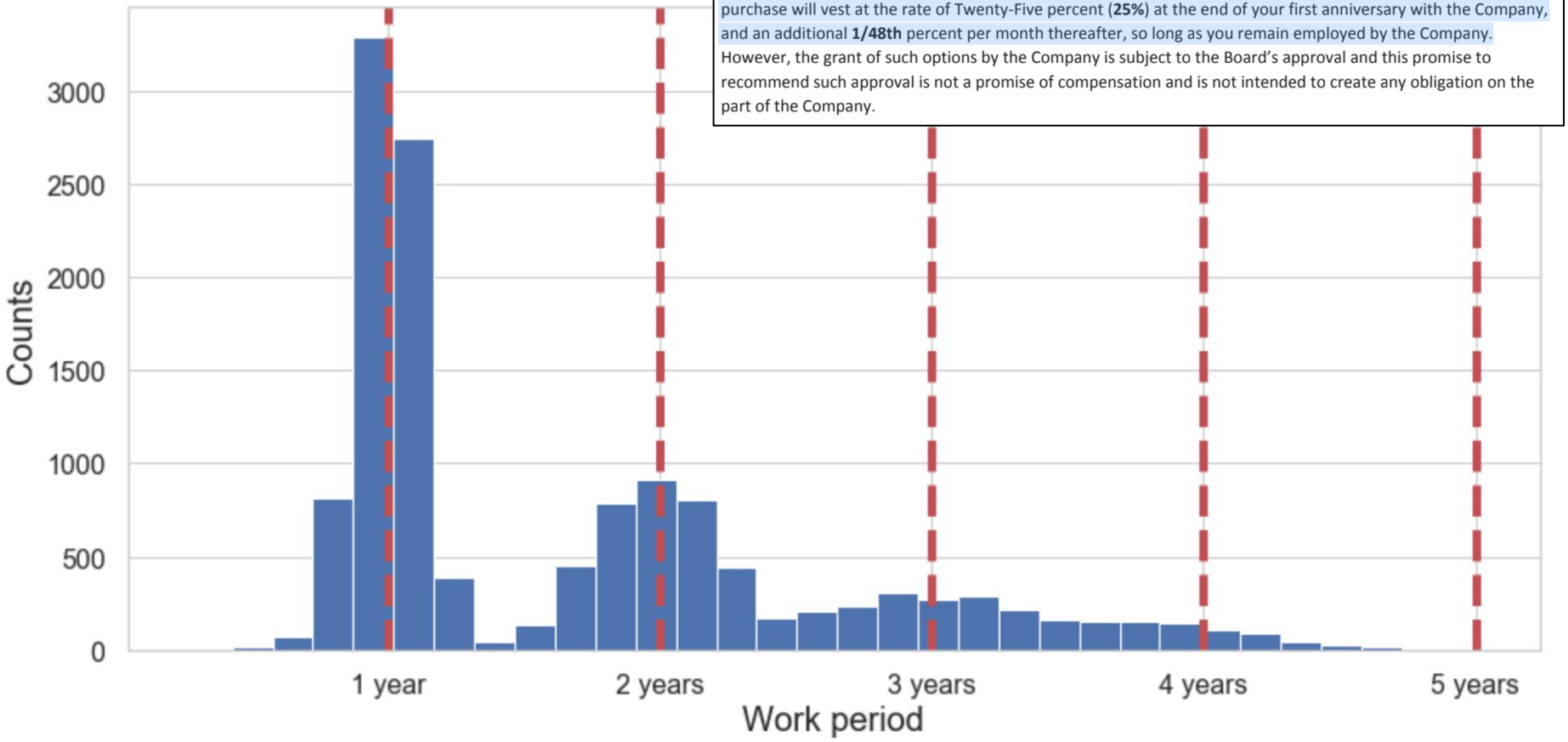
join_date	quit_date	days_tot	quit
2014-03-24	2015-10-30	585.0	True
2013-04-29	2014-04-04	340.0	True
2014-10-13	NaT	NaN	False
2012-05-14	2013-06-07	389.0	True
2011-10-17	2014-08-22	1040.0	True
2012-01-30	2013-08-30	578.0	True
2013-10-21	NaT	NaN	False
2014-03-05	NaT	NaN	False
2012-12-10	2015-10-23	1047.0	True
2012-06-12	NaT	NaN	False
2012-11-12	2015-02-27	837.0	True

WHEN DO PEOPLE QUIT?

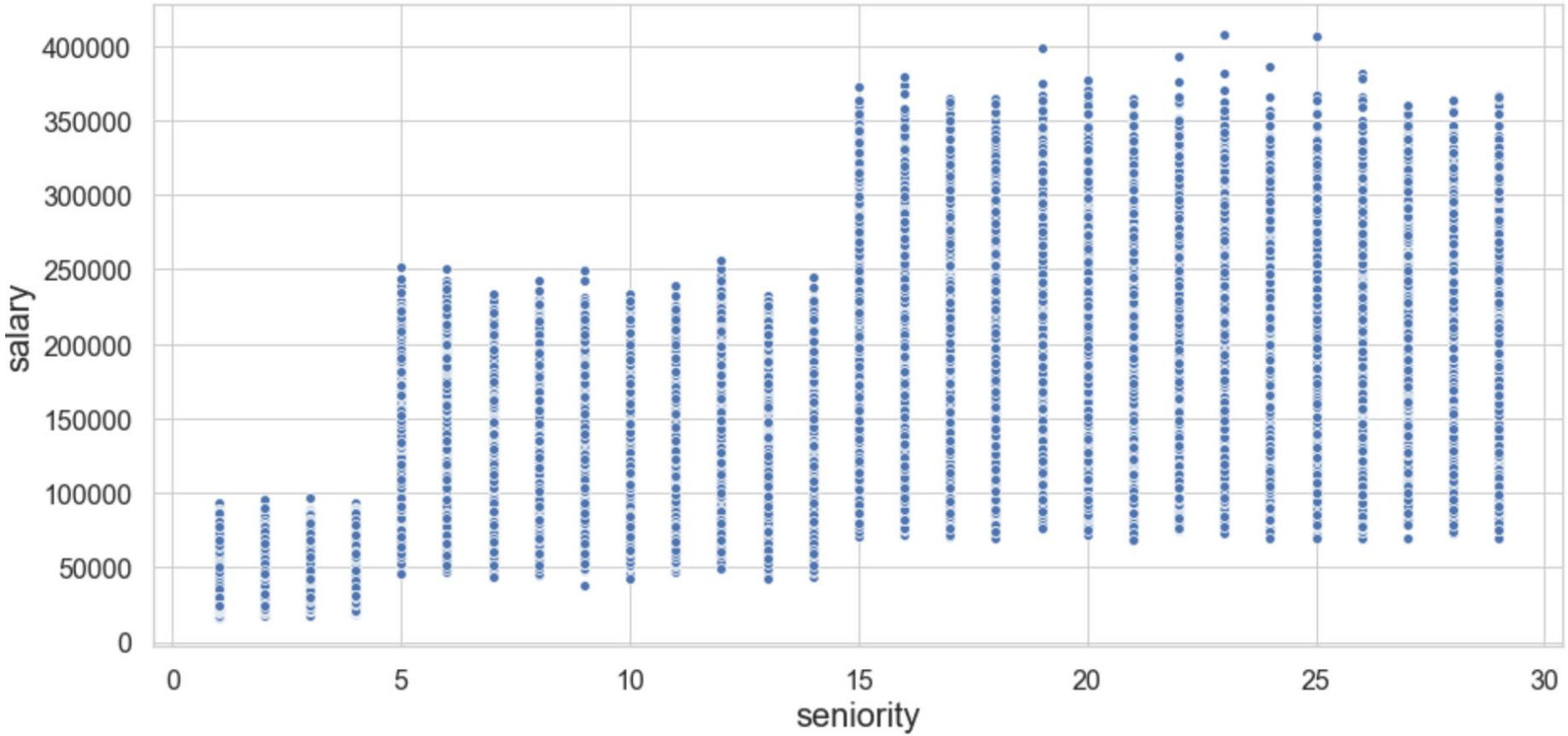


WHEN DO PEOPLE QUIT?

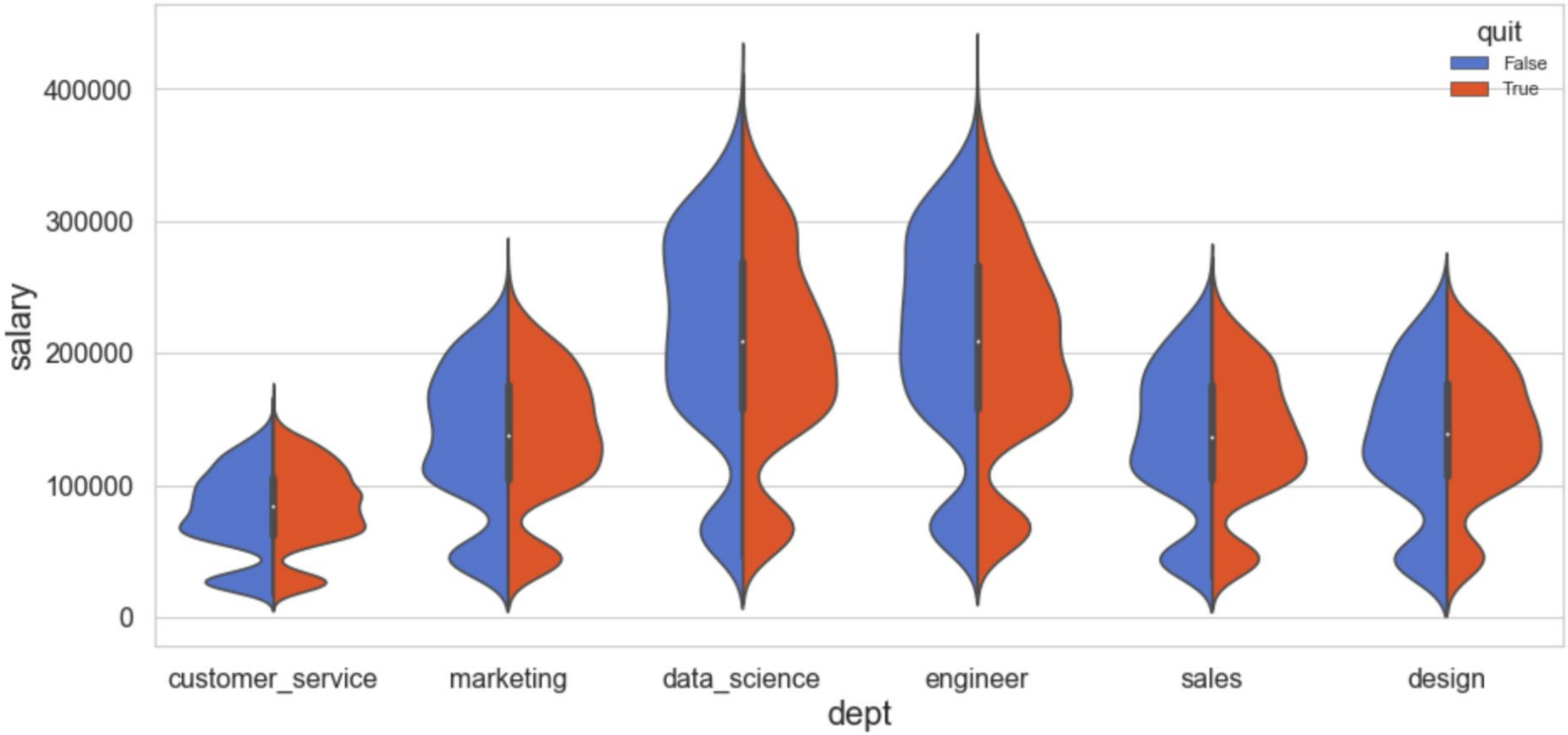
4. **Options**. We will recommend to the Board of Directors of the Company that you be granted the opportunity to purchase up to thirty-six thousand **(36,000) shares of Common Stock** of the Company under the Company's 2019 Equity Incentive Plan (the "Plan") at the fair market value of the Company's Common Stock, as determined by the Board of Directors on the date the Board approves such grant. The shares you will be given the opportunity to purchase will vest at the rate of Twenty-Five percent (**25%**) at the end of your first anniversary with the Company, and an additional **1/48th** percent per month thereafter, so long as you remain employed by the Company. However, the grant of such options by the Company is subject to the Board's approval and this promise to recommend such approval is not a promise of compensation and is not intended to create any obligation on the part of the Company.



SALARY INCREASES WITH SENIORITY (DUH!)

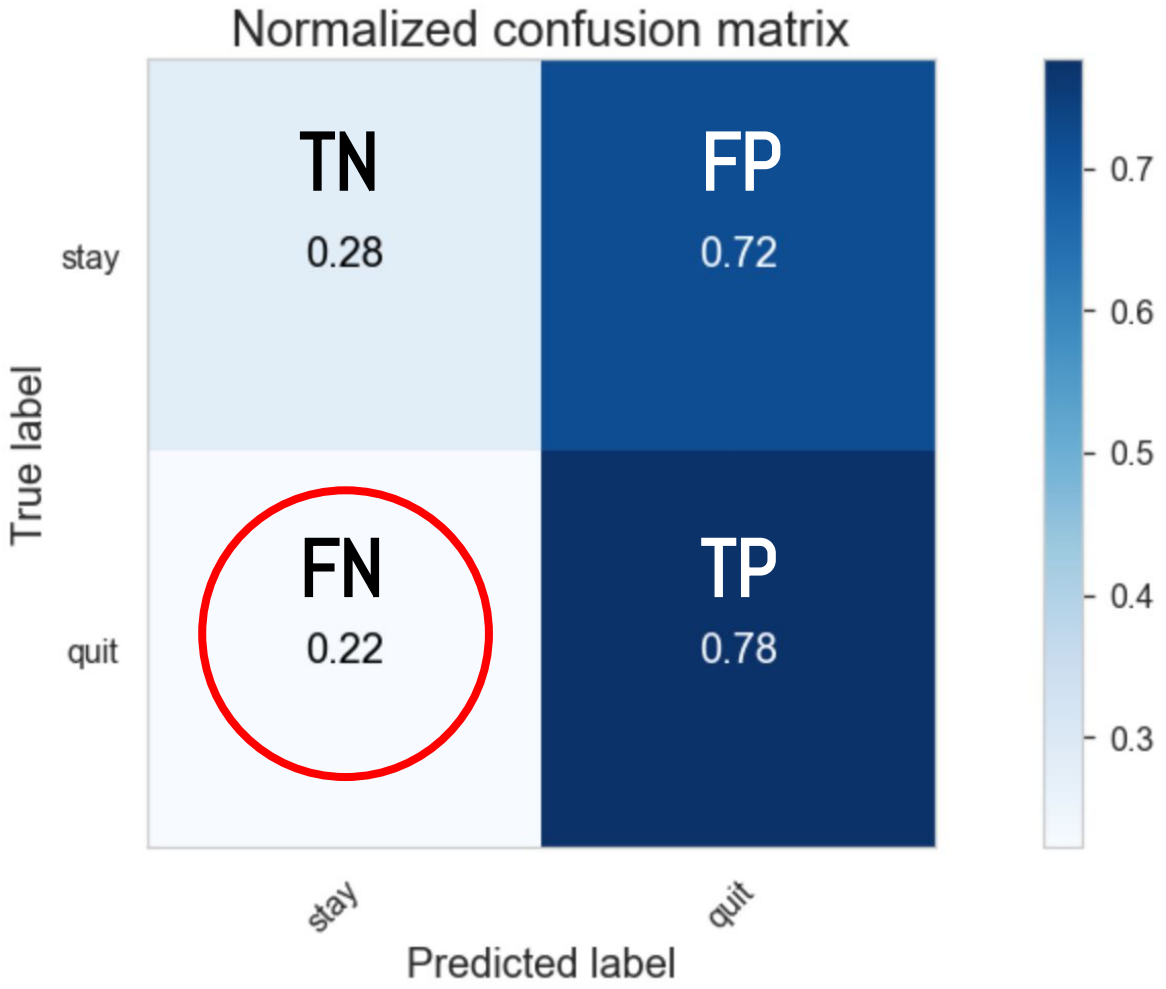


WHY DO PEOPLE QUIT? SALARIES



STRATEGY

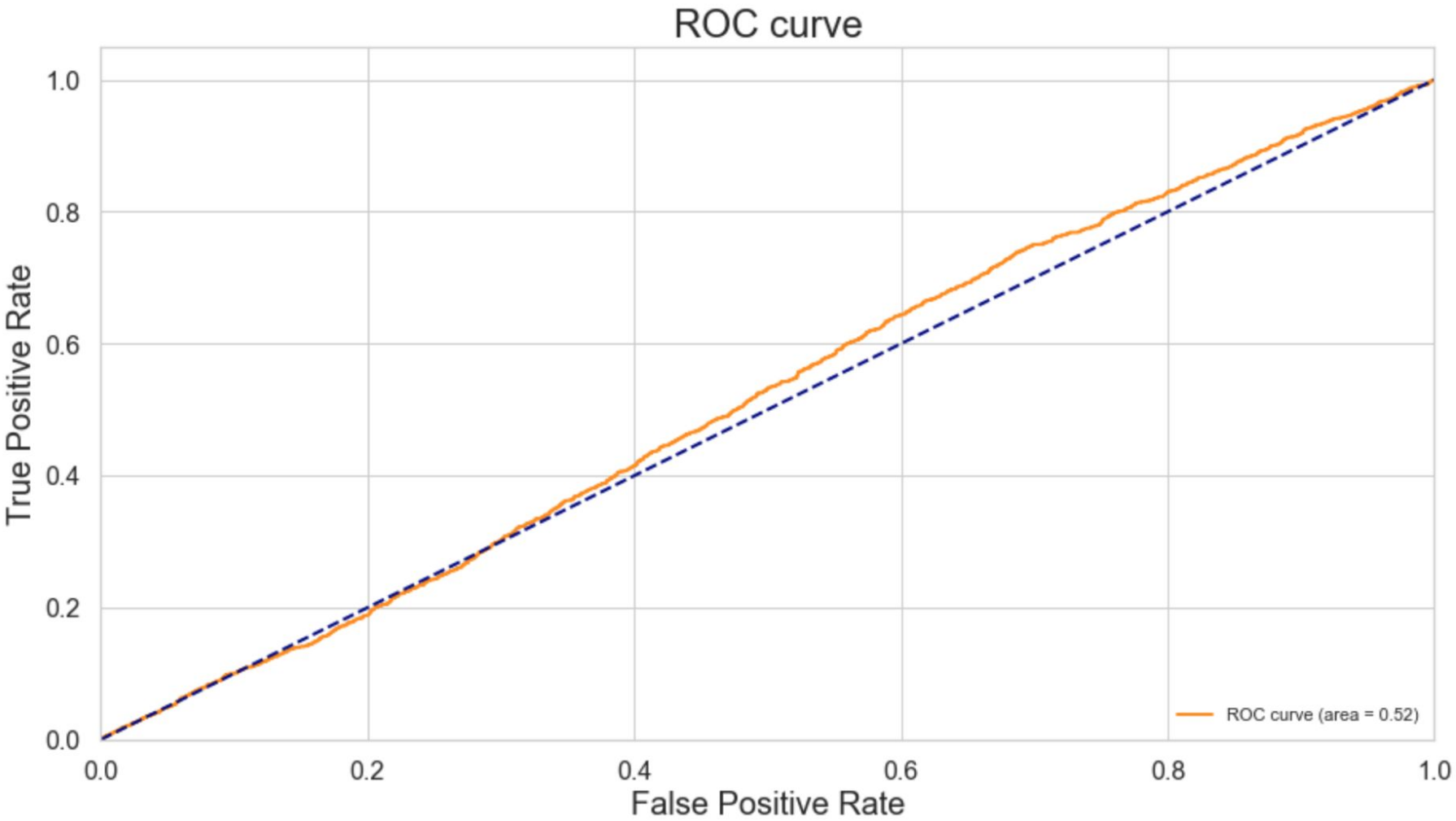
1. Bin salary by quartiles (per department)
2. Generate salary-department interaction features
3. Train a logistic regression classifier
4. Analyze regression coefficients



RECALL = 0.76

PRECISION = 0.57

F1_SCORE = 0.65


ROC curve
True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0
ROC curve (area = 0.52)

engineer salary_4q	-0.094
customer_service salary_1q	-0.067
data_science salary_4q	-0.052
engineer salary_3q	-0.049
data_science salary_3q	-0.041
...	...
sales salary_3q	0.028
sales salary_2q	0.032
data_science salary_1q	0.036
customer_service salary_3q	0.038
customer_service salary_4q	0.048

1. Highly paid engineers and data scientists tend to **stay**
   Satisfied with growth and compensation

2. Highly paid customer service workers tend to **leave**
   No further growth opportunities?

3. Low paid customer service workers tend to **stay**
   Hard to find a better job with no experience

4. Low paid data scientists tend to **leave**
   Easy to find a better paid job?

CONCLUSIONS

1) Groups of risk of leaving were identified
   a) Increase salaries for data sci and engineers
   b) Encourage experienced customer service workers
2) Most people quit after 1 year at work - incentivize them
   a) Add bonuses
   b) Optimal stock vesting schedule if any
3) The analysis can be extended to include seniority feature, train multiclass classification for different work periods and