

University of Minnesota

Predicting Employee Departures

Machine Learning PoC

Director, Workforce Data Management

June 9, 2020



Office of Human Resources

UNIVERSITY OF MINNESOTA

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THE
UNIVERSITY
OF MINNESOTA
IS THE
5TH
LARGEST
EMPLOYER
IN MINNESOTA

Five strong campuses. One strong state.



A land grant institution

- The University was founded in 1851, seven years before Minnesota's statehood.
- [Extension](#) services are offered across the state as part of our land grant legacy
 - [15 Regional Extension Offices](#)
 - Plus Extension County Office in every county in the state
 - Many extension employees work off campus and can feel disconnected from the broader University community or may not be aware that they are part of the University overall



Employee experience and HR

- Decentralized culture and HR service delivery
 - Campuses have different histories, policies, academic calendars, academic programs, mascots, etc.
 - Centralized communications channels: email, newsletter, and online portal
 - Human resources at the college and unit level have a dotted line reporting to the OHR vice president



OHR and HR Community

Campus, College, Unit

- Appointments
- Managing performance
- Employee development
- Setting compensation
- Discipline
- Separation
- Position and appointment data

Partnership

- Work redesign
- HR strategy
- Performance and productivity issues
- Data integrity
- Change management
- Culture change
- Employee engagement
- Leadership development

OHR

- Policies
- Hiring systems
- Labor negotiations
- Leadership and Talent Development
- Payroll
- Classification and compensation strategies
- Benefits
- HRMS

About our employees

- [Office of Institutional Research](#) maintains public data
- Informal generational analysis in 2019 (faculty & staff):
 - 37% Generation X (39 to 54 years old)
 - 33% Millennials (23 to 38 years old)
 - 28% Baby Boomers (55 to 73 years old)
 - Average age is 46

Our Project

Our ***Predicting Employee Departures*** project is part of a greater HR Analytics effort which has been progressing over the past two years.

HR Analytics - gaining valuable insight from existing HR data

104,576 Dashboard Hits **7,938** Ad Hoc Runs

5,801 Unique Users

23 Dashboards

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Ad Hoc Environment

Predicting Employee Departures

The largest single expense at the University of Minnesota is the weighted cost of the employee workforce. Furthermore, a recent study by Deloitte showed the cost of losing one employee can range from 1.0-2.0X their annual salary. Increasing employee retention would drive significant cost savings at the University.

The HR Analytics team and Carlson Analytics lab will partner to explore using machine learning to predict when an individual employee will be departing the University several months in advance of their departure. If understanding at an employee level is too granular for the data to provide reliable prediction, then understanding greater trends across areas or specialties would be another valuable tool.

A reliable predictive model deployed in the University HR Analytics system will provide insight to leaders across the enterprise. This will feed intervention plans and programs focused on employee retention - working to keep our best people here and focused on the University's mission!

Our Team

Danny Moncada
PJC scrum team
member, analyst,
and a member of
your cohort!



Data

The HR Analytics team has provided the following data sets to the Carlson Analytics Lab:

- HR Organizational Hierarchy (D_HR_ORG) - the organizational structure all employees work within and where they are assigned in that structure
- Employee job(s) data from April, 2014 to today (D_UM_EMP, F_EMP_WKFC_ACTN, F_EMP_HC_FTE) - all the employee job data and history of employment actions for current and previous employees
- Position information for each job (D_POS) - the data describing each position at the University
- Employee compensation data (F_EMP_COMP, F_EMP_CMPNT_PAY, F_EMP_ADDL_PAY) - all monetary compensation data for employees
- Market compensation data (D_UM_EMP) - market compensation information (partial)
- Market availability data (D_EEO_AVAIL) - summarized market availability data by job and location

External data sources that can enhance the probability of project success should definitely be considered as well (e.g. pre-University employment history, etc).



Future Enhancement

While the HR Analytics team has provided a lot of data, there are certain personnel attributes about our employees that have not been shared.

Private employee data has not been shared with the Carlson Analytics Lab.

These private data include age, home address, race/ethnicity, legal sex, and veteran status. These data all may be critical dimensions in determining attrition risk and could all potentially be included in any final model implemented at the University.

Questions?





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