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Revelations From Workforce Turnover

A Closer Look Through Predictive Analytics

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Predicting Voluntary Turnover in the Workforce

Addressing workforce turnover has long been more of an art than a science. The real drivers that cause employees to leave one company for another have remained elusive despite years of study. That is changing.

Turnover has real impact, both financial and otherwise. Thus, employers have a genuine need to understand why their workers leave. The cost - in lost skill sets, depressed morale or even the hampered time-to-market of a new product - can spell failure instead of success for specific goals or even an entire venture[1]. In a vibrant economy, retaining good talent is a crucial element of success. The impacts of lowered productivity and an overworked staff are often hidden; they don't appear on profit and loss statements. Yet, without clear cause-and-effect insights, moving forward without answers suggests frustrated resignation of turnover as simply the cost of expediency.

Fortunately, that no longer needs to be the case.

To date, attempts at analyzing turnover have focused on quantifying its extent, its costs, and on identifying some means of control. The result: generalizations that provide limited and non-specific actionable insights. Merely suggesting increased dissatisfaction when new jobs are readily available[2], or evoking the value of orientation and engagement[3] is one thing. Being able to map an array of influences and then point to the combinations driving turnover is quite another.

Here we find that "Big Data" makes a difference – a transformational difference. The overwhelming sea of data that has sunk so many ships of inquiry can now be mastered. Today, data consisting of millions of actual employee experiences is the foundation for usable, factual information. Suppositions can be tested. Correlations can be compared. Drivers can be evaluated, weighed and given relative value. More importantly, models – actionable models – can be built.

The average monthly turnover rate in the U.S. is approximately 5%.

Source: ADP Research Institute

In this study, we compare turnover within specific industries to the national experience and explore how predictive models help determine the likelihood of turnover in a company, an office, even for a specific employee.

Riding the waves of insight instead of sinking into a tsunami of data is exhilarating. Especially when connections previously indiscernible now reveal the truth behind voluntary turnover.

[1] http://247wallst.com/special-report/2017/06/05/the-worst-companies-to-work-for-3/2/

[2] Carsten, J. M.; Spector, P. E. (1987). "Unemployment, job satisfaction and employee turnover: a meta-analytic test of the Muchinsky model." Journal of Applied Psychology. 72 (3): 374-381. https://www.researchgate.net/publication/211383680 Unemployment Job Satisfaction and Employee Turnover A Meta-Analytic Test of the Muchinsky Model

[3] Testa, B (2008). "Early Engagement, Long Relationship?" Workforce Management. 87 (15): 27-31.

Data and Methodology

In lieu of big data capabilities, HR professionals historically relied on employee surveys and the expert opinions of colleagues. These sources are subjective and prone to preconceived notions.

For this study, ADP Research Institute® (ADP RI) looked at monthly anonymized payroll data for companies with 25 or more employees for a two-year period from January 2015 through December 2016. This sample of 41,000 companies and 12.5 million employees was used for describing the overall turnover landscape and determining benchmarks by industry.

To develop an additional model for predicting voluntary turnover, a subset of the above sample selected 1900 companies with 1000 or more employees. This provided a sample of 7 million employees.

Voluntary Turnover

Classifying potential leavers versus non-leavers in a large amount of data requires a more flexible approach than a standard "if this, then that" rationale process. Commute times, for example, are not dependent on salary level but both play a role. A non-linear method of categorizing and assigning attributes, known as a random forest model, leverages the volume to increase the precision of the estimates.

Multiple company-level models are built. Historical data from companies with similar attributes is used to build a model. The model is then applied to the firm's employee data. The company then tweaks the output to reflect their reality. This correction provides the necessary adjustments to improve the overall model. Where sufficient historical data does not exist for a particular company, "nearest neighbors" – companies with similar attributes – are identified and representative data is used to build that model.

Two different types of datasets validate the model performance. Each provides a reference point to assess the strength and the utility of the predictive relationships.

As for predicting the potential of actual employees leaving, the probabilities are classified as high, medium or low. Benchmarks are then built using the model-identified attributes and the turnover probabilities.

The Landscape of Turnover

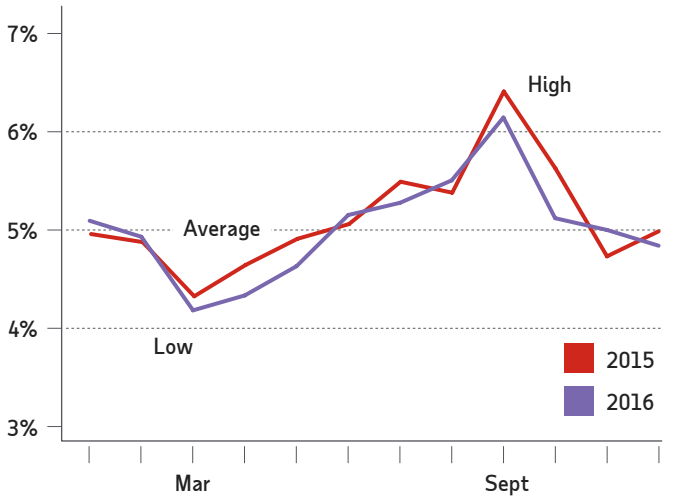
Turnover, of course, occurs throughout the year.

Analysis reveals the average monthly turnover rate to be approximately 5%. That varies month to month with the lowest in March and the highest in September.

The difference between the two highest and lowest months is observed to be about 2%. And it is noted that the seasonality in the turnover data is consistent across the two years.

Lowest: March
Highest: September
Average: 5%

Average Monthly Turnover Rate



Variations by Industry

The aggregate patterns of turnover continue by industry, but with some specific differences.

Most industries' turnover rates reach their highest level in September, the same as the national average. The exception is Education & Health, where the rate peaks in July just as the academic year draws to a close and educator contracts expire.

The only industry where turnover peaks in July rather than September is Education & Health.

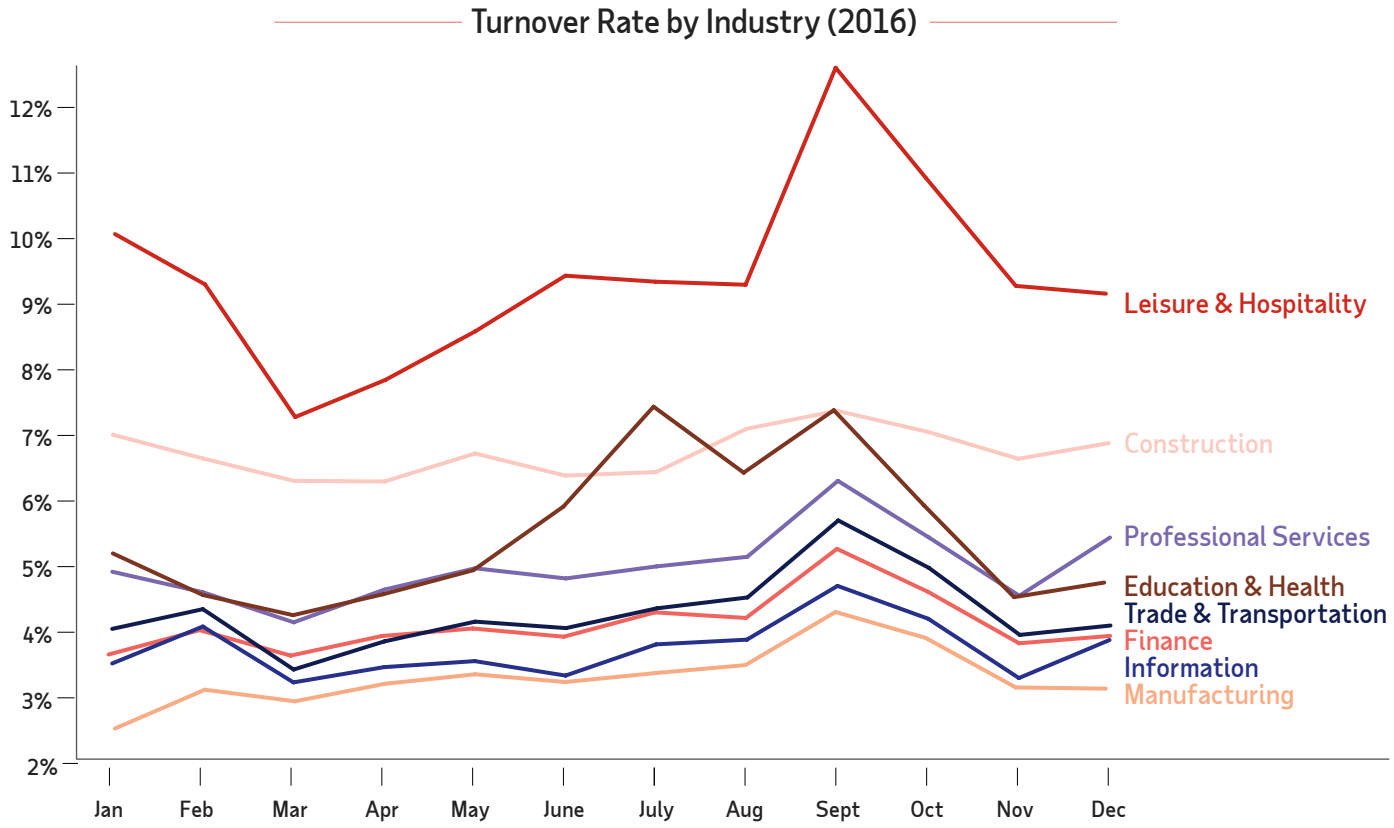
The rate of turnover for most industries reaches its lowest point in March. For Manufacturing, that low point happens in January. Manufacturing also has the lowest turnover rate (3.4%) of all the industries observed and the difference between its highest and lowest points (1.3%) is the smallest of any of the industries.

The least fluctuation between high and low months is in Manufacturing.

Manufacturing is an industry requiring skilled workers. Many of the jobs are unionized and thus have agreed-upon wages. Therefore, there is less incentive, and probably less opportunity, to change jobs easily.

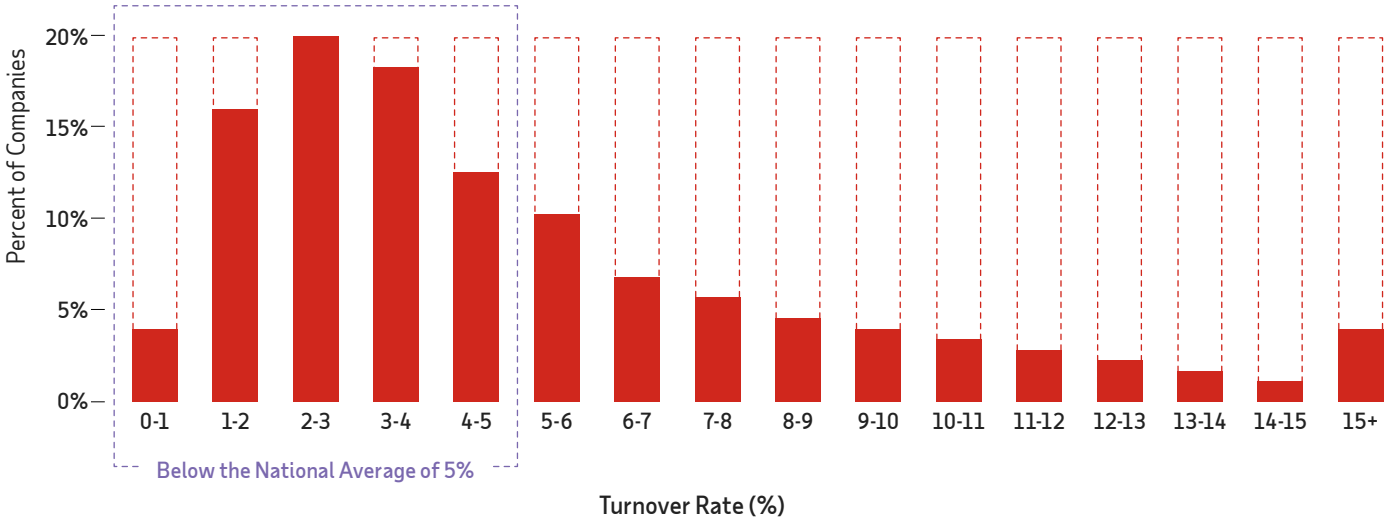
Compare this with the Leisure & Hospitality industry, where the proportion of part-time jobs is higher than for other industries. Since part-time workforces tend to show less employee loyalty, this industry has the highest rate of turnover (9.1%) among all industries. The difference between the highest and lowest rates of turnover (5.6%) for Leisure & Hospitality is also the highest of the industries.

The rate of turnover for Leisure & Hospitality is the highest of all the measured industries.



Analyzing the spectrum of turnover rates – from less than 1% to more than 15% – across all the industries, almost two-thirds of the companies have a monthly turnover rate below the national average of 5%. This provides a benchmark for individual companies. Does the difference between the national average and the company's own experience warrant more attention to the causes?

Company Distribution by Turnover Rate

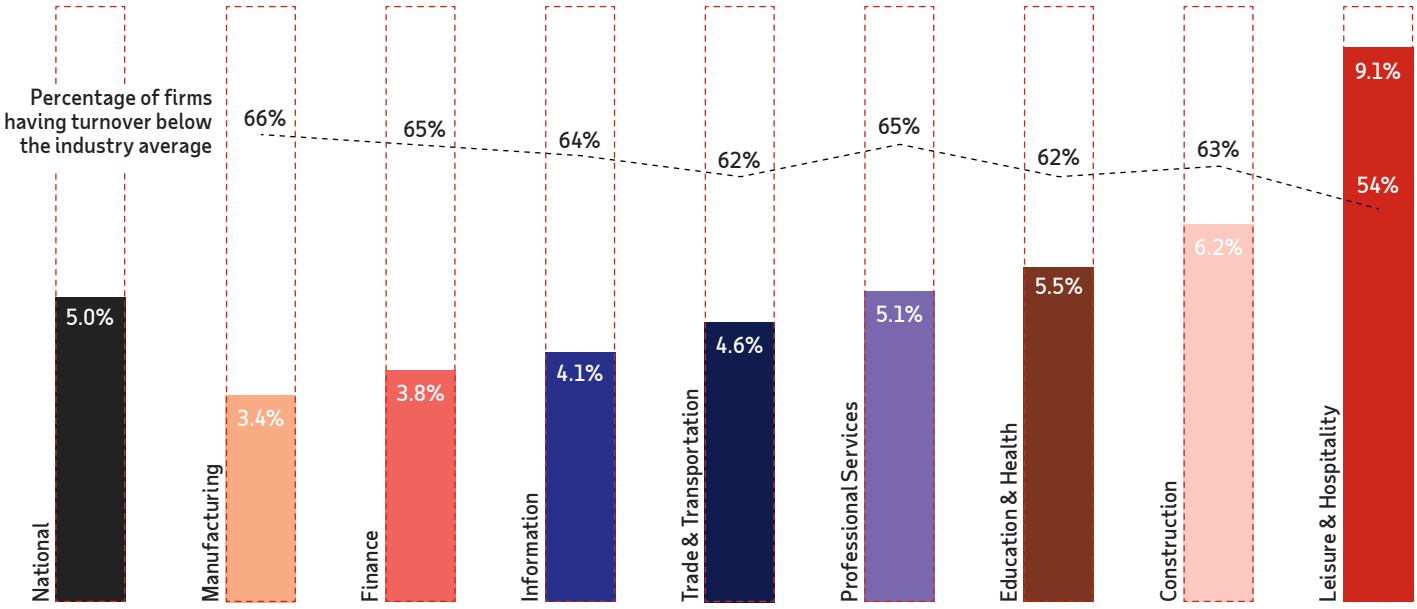


With the exception of Leisure & Hospitality, all the industries show a similar distribution of companies. Almost two-thirds of the firms in each of these industries have an average monthly turnover rate less than the industry's specific average.

A company experiencing higher turnover rates than their industry average has to look beyond the particular influences of that industry. There is some reason why the competition is operating at an advantage. The choice may be deliberate but competitors are incurring the costs of replacing workers less frequently and are able to offer the industry's better workers a more stable environment.

Conversely, a company with lower rates than their industry average should identify the factors working in their favor and take steps to maintain that beneficial edge.

Average Monthly Turnover Rates by Industry



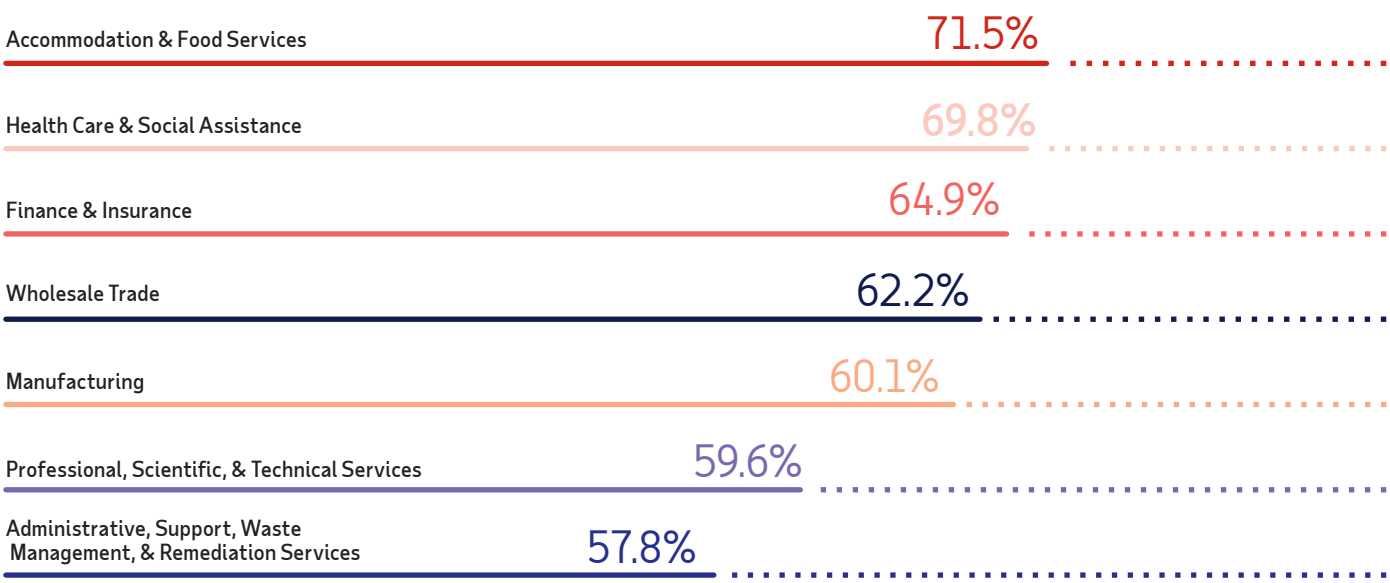
Predicting Voluntary Turnover

With a picture in place of turnover across the nation and by industry, analysis turns to creating a model for predicting voluntary turnover in the workplace.

About 60–70% of turnover in each industry is voluntary (see chart below). And because it is initiated by the employee, voluntary turnover is more difficult to predict.

Seeking a model where companies can proactively identify employees that are likely to leave, the study begins identifying the attributes of voluntary turnover.

Voluntary Contribution to Turnover (January 2015 – December 2016)



Which combinations of attributes signal that an employee is likely to leave?

The analysis takes a closer look at companies with 1,000 or more employees. Using a sample of 1,900 firms that employ 1,000 or more workers, representing about 7 million total employees, the study identifies a set of approximately 40 relevant attributes. These attributes have been tested, validated and found to work together to increase the likelihood of predicting voluntary turnover.

The attributes are dynamic in nature so their relative weight changes from company to company, reflecting the unique qualities of each workforce. The attributes work in combination with one another and consist of a mix of individual employee characteristics, internal as well as industry benchmarks and ratios.

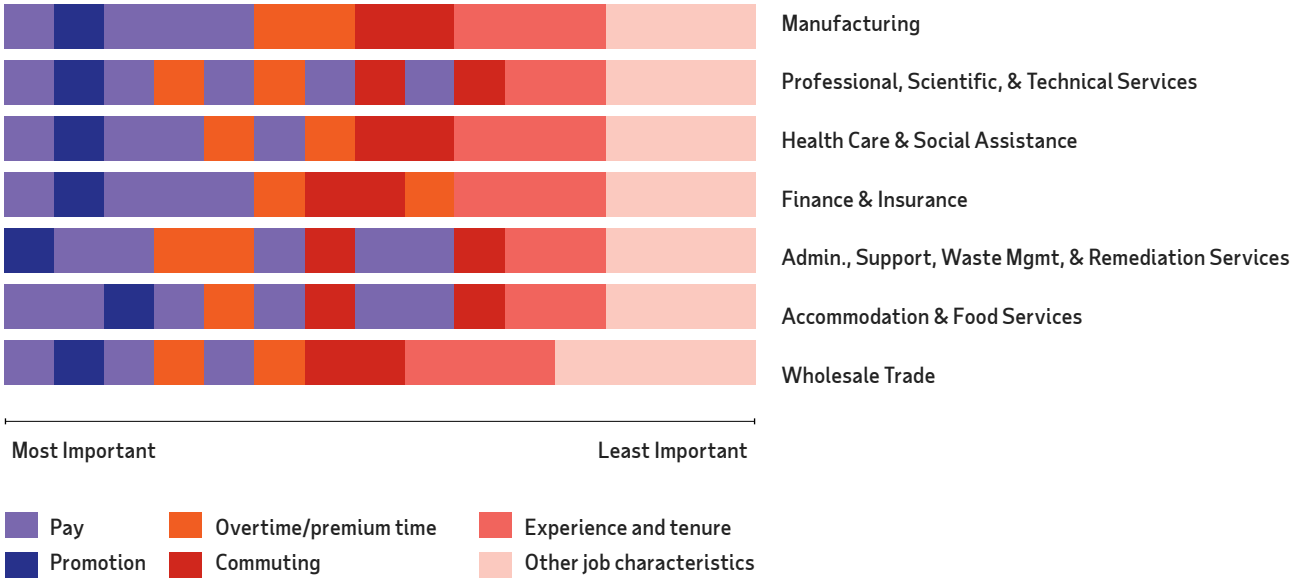
More than 40 different potential drivers of voluntary turnover are identified. Those are grouped into categories for relative comparison.

The attributes, which range from job level and experience to commuting distance and overtime pay, have varying degrees of impact depending on the industry and the company in question. But, across the best represented industries, the characteristics of pay and promotion in the compensation category are, as might be expected, the lead drivers of voluntary turnover.

Pay and promotion-related factors are the primary drivers of turnover.

The next most influential attributes are the overtime/premium-time factors. Commute characteristics tend to be more important than experience and tenure. These same attributes can have different effects for different firms, depending on their impact in combination with other attributes. The model provides each company the ten most impactful attributes behind the risk scoring at every level.

Attributes Driving Voluntary Turnover by Industry

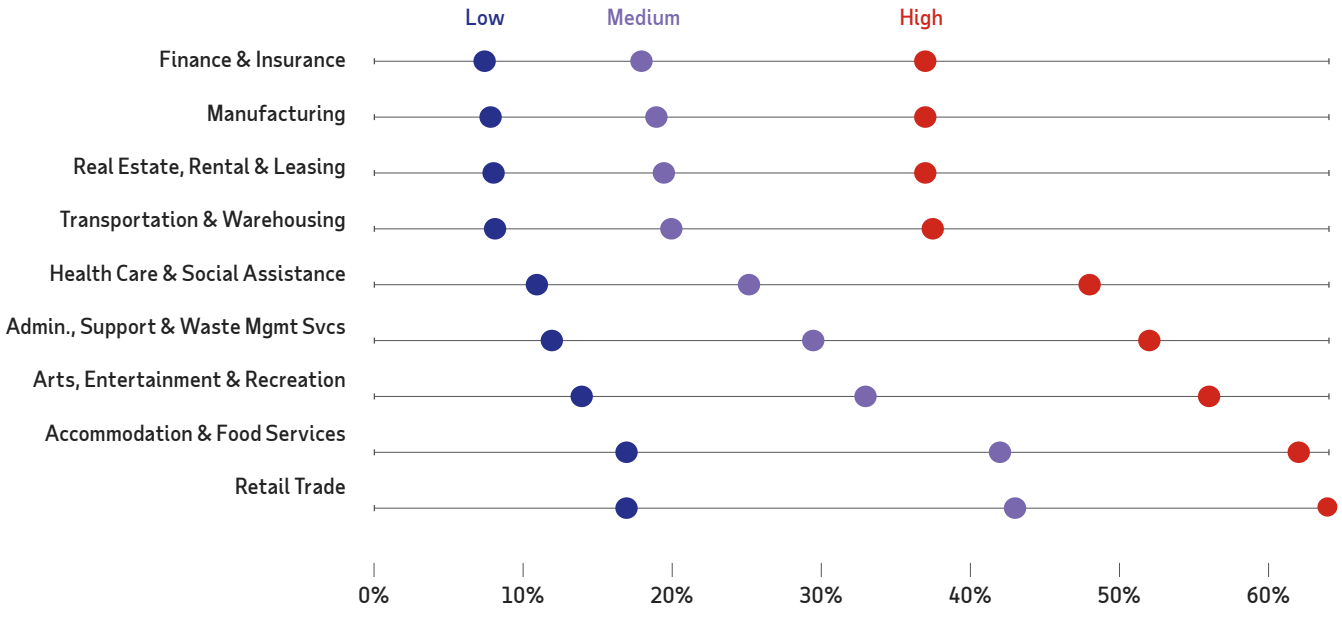


Model Results

Testing and validation efforts with historical data have shown that by applying the organization's historical turnover rate, the probability model identifies "at risk" employees at a rate 5-6 times higher than guesswork.

Across industries, the majority of workers have a low probability of leaving. Workers classified as medium or high probability leave at far greater rates than those with a low predicted turnover probability. But, the following chart shows that the actual likelihood of leaving a job is not uniform across industries – even if the employee falls in the high probability of turnover bucket. For example, if the employee works in the retail sector and belongs to the 'high' category, the probability of leaving the job is about 65% compared to the manufacturing industry where the same probability is slightly less than 40%.

Turnover Probability by Industry

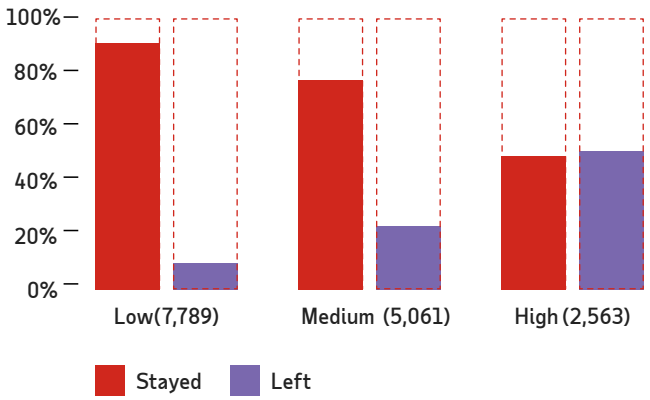


An Individual Company's Analysis

Applying the model to an individual company provides even deeper insights. In this sample, Company "A", with just over 15,000 employees, measures voluntary turnover rate at 12%. Using historical data, the ADP RI model classifies workers with relatively low and relatively high probabilities of leaving the company. Comparing these predictions with the actual observed turnover shows its validity. The low probability group almost uniformly stayed with the company. But the 2,563 employees identified as high risk left at a rate of 50%.

For Company "A", commuting distance played a more significant role than salary increases.

Turnover Percentage by Probability Sample Company "A"

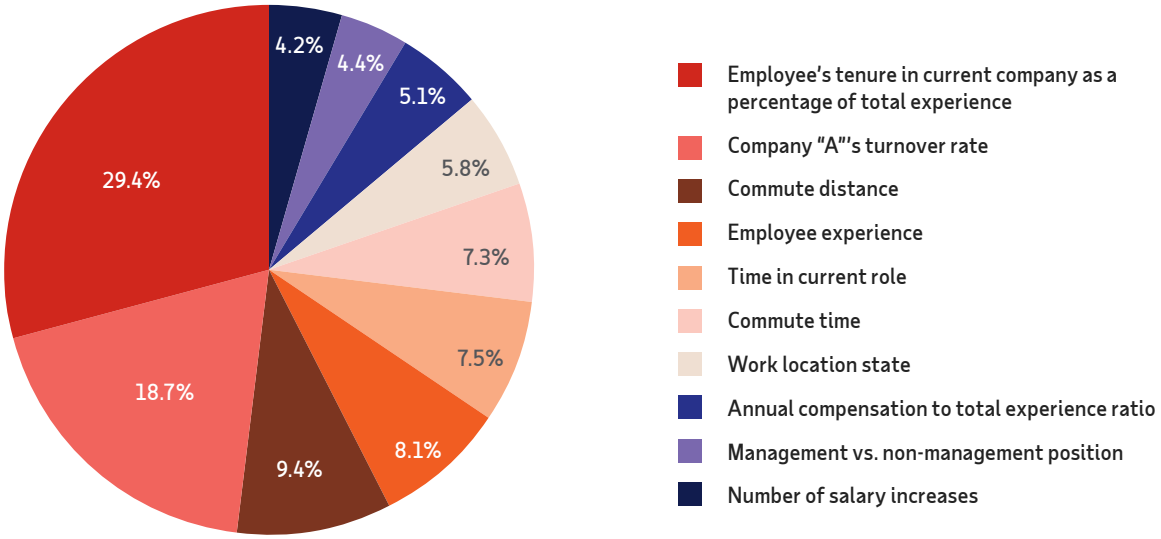


Which factors contributed to Company "A"'s turnover? Here, the model shows that an employee's tenure relative to the overall experience levels, at 29.4%, had the most impact. For this company, the number of salary increases actually played a much less significant role than the commuting distance.

It can be helpful to remember that each factor's contribution to an employee's turnover risk is dependent not only on its own magnitude but its relativity to all the other factors. Therefore, it is not always possible to accurately isolate and quantify the importance of a single factor in each individuals' risk. But when aggregated across all employees, the importance to the overall turnover rate of a specific factor can be measured. These measures can be useful for understanding which factors are most helpful in explaining turnover and to what degree they can or should be addressed.

This process of testing against historical data refines and perfects the model. And, because the model is always "learning," current data can be applied to predicting future probabilities whether for that company, for that industry and potentially for regional or national outlooks.

Factors Contributing to Voluntary Turnover Company "A"



Conclusion

While in some situations, turnover can lead to better and more relevant talent, high turnover is a business liability.

Besides the direct costs of identifying, hiring and training replacement workers, studies have attributed other, less obvious costs to turnover such as loss of productivity, reduced time to market and lost institutional knowledge. In general, a low turnover rate is a sign that good employees have incentive to stay.

Intuition may be helpful in knowing that a problem exists but the ability to understand and focus efforts and resources on the true drivers of turnover is a better option. Without big data capabilities, employers have had to turn to employee surveys, industry opinion and whatever information they could muster.

Any predictive model has to be actionable to be of value. Industry-level and internal benchmarks provide means of not just identifying but also contextualizing the situation to better understand how various factors contribute to turnover.

Those who find their rates in excess of their industry average can now take action. They can identify the factors contributing to the likelihood of an employee leaving, whether those are company culture or region-specific issues. They can develop the necessary strategies to reduce the turnover and retain the employees important to their success.

Taking Action

- Once you know the influences for voluntary turnover, what do you do? Sometimes a creative response is necessary when a direct one isn't an option.
- Can't increase pay? A formalized training program could increase skill sets and thus expand opportunities for employees to advance to the next pay level.
- Commute times an issue? Look at offering more telecommuting options.
- And if attrition is the goal, now you know how to make that happen faster.

Additional Resources

Evolution of Work 2.0: The Me vs. We Mindset eBook
Take a deeper look at why two-thirds of employees are actively looking or open to a new job, and what they consider when deciding to stay at their current job or accept a new position.

The ADP Workforce Vitality Index
Stay in the know with a comprehensive, quarterly measure of U.S. workforce dynamics including employment growth, job turnover, wage growth and other labor market indicators.

How Powerful is Your People Data?
Take a short assessment to find out where you are now in the journey from HR data to workforce intelligence – and get some pointers on how to get to the next level.

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