Multnomah County Workforce Analytics Report

Report 3: Separation Patterns

March 2015

Introduction

This report is the third in a series of reports analyzing the demographics of the Multnomah County workforce and recent trends in hiring, terminations, promotions and work out of class. This report focuses on patterns of employees separating from Multnomah County over the 2013 and 2014 fiscal years, using statistical analysis to compare turnover rates by department and bargaining unit, and to analyze whether the likelihood of separating from county employment was affected by one's race, age, or gender.

The first report in this series, "*Employee Demographics and Retirement Eligibility*" describes the entire county workforce at the end of both the 2013 and 2014 fiscal years, including estimations of retirement eligibility.

Other reports on "*Hiring Patterns*" and "*Promotions, Work out of Class, and Demotions*" analyze trends similar to the ones discussed in this report.

Goal and scope of the report

The goal of this report was to use statistical analysis to identify patterns in how employees move through the organization, identifying significant patterns that could indicate strengths or areas for improvement. However, this report is not a qualitative review of how people interact with the organization and does not capture the actual lived experience of employees. Importantly, failure to identify a significant trend does not necessarily mean that underlying patterns, including possible disparities in treatment or experience, do not exist.

Since this report only offers one view of employee experience, it cannot answer every question or definitively explain the cause of identified patterns. The information in these reports is intended to be a starting point, providing baseline information that will guide the county as it continues to learn about employee demographics and experience. For this

reason, the report does not offer recommendations for how to act on identified patterns. Rather, the report highlights a number of areas where further research is needed, both to help county leadership better understand workforce patterns and to guide decision-making that will improve all employee's experiences.

Overview of findings

- The overall county two-year turnover rate for regular employees was 15%, meaning that approximately 15% of regular employees separated from the county over the 2013 and 2014 fiscal years. This broke out to yearly turnover rates of just under 8% each year, slightly higher than the public sector turnover rate of 6% for both the region and the state.

- The voluntary two-year turnover rate was 13.6%. This included 373 separations in 2013 (6.9%) and 364 separations in FY 2014 (6.7%). The county's combined nondepartmental agencies (NOND) were the only agencies with a different voluntary turnover rate than the county average.

- NOND had higher turnover rates than other departments for all termination types except for retirement. This is expected, since NOND agencies include the County Chair and Commissioner's offices and other appointed offices, all of which are affected by changes in elected leadership.

- The involuntary turnover rate was 1.9%. NOND and the Sheriff's Office were the only departments to have significantly different rates of involuntary turnover. The Sheriff's

Office had the lowest involuntary turnover rate, while NOND had the highest rate.

- Only 25% of people eligible for regular retirement in FY 2013 actually retired in FY 2014. However, almost 40% of all separations of regular employees were people retiring from the county.

- Race and gender were not predictive of most separations. However, race did affect the probability of retirement, with people of color less likely to retire, potentially due to lower average tenure at the county and a lower average age.

- There was also some relationship between African-Americans and involuntary separations, with African-Americans having more involuntary separations than Caucasians. The statistical significance of this relationship changed depending on the type of test and level of significance, but there is support for a larger pattern that warrants a more in-depth look in this area.

- Gender was only significantly predictive of someone leaving the county for other employment, with women about two-thirds as likely to leave for other employment as men.

- Millennials left the county at a higher rate than other employees, excluding retirement. Including retirement, Baby Boomers and Traditionalists were the most likely to leave county employment overall. However, Millennials were more likely than other age groups to leave the county both for "other employment" and "other voluntary termination" reasons.

- Among regular employees, executive employees had the highest overall and voluntary turnover rates (excluding retirement). There was no difference in either retirements or involuntary separations by employee group.

A note on language and categories

In order to reflect the county's commitment to maintaining a diverse workforce, this report focuses on race, age, and gender demographics. Although we recognize that not all employees fit into the gender, race, or ethnicity categories currently collected by the county HR system (SAP), our analysis necessarily reflects the data as it is entered in SAP. Therefore race and ethnicity are discussed using the five SAP categories, and we will discuss gender in terms of the binary male/female genders. We acknowledge that this does not represent the experience of those employees who do not fit within the current categories. Multnomah County is in the process of implementing more inclusive race and gender categories, and we hope future reports will be more representative of all employees.

Methodology in brief

We analyzed separation patterns in two ways. First, we compared rates by both department and bargaining unit, using One Way Analysis of Variance (ANOVA), and confirming these results with a Chi-Square test of Independence.

Second, we examined whether race, age, or gender had an impact on the likelihood of separating from the county. To do this we ran a series of logistic regression equations, with separation (separated/did not separate) as the dependent variable and race, age, gender, and department as categorical independent variables. Including all four variables allowed us to look at the effect of one variable (e.g. race) while holding the other variables "constant," meaning that the affect of race could be interpreted outside of the affect of age, gender, or department.

Since we analyzed differences between departments using rates as described in the first paragraph, department was included in the logistic regression mainly as a controlling variable, so we could interpret the effect of race, age, and gender while holding department constant. However, we did crosscheck our department ANOVA results with the results of the logistic regression for department to ensure that the two tests presented similar results. We were not able to control for employee group (represented, management, executive) due to data configuration issues.

Logistic regression requires that you compare each variable to one "reference" category. For race, our reference category was Caucasians. This means we were testing first whether there was an overall difference in probability by race. If there was a significant difference by race overall, we then analyzed if any of the specific race/ethnic groups were significantly different *than Caucasian employees*. Caucasians were used as the reference because we were interested to know if the experience of minority groups differed from the experience of the majority population.

For age, the reference category was Millennials; chosen because it is easiest to compare to one end of the age spectrum, Millennials had greater numbers than Traditionalists, and research on generational differences in the workplace suggests that Millennials' experience might differ from Generation X and Baby Boomers. Males were the reference category for gender, but the reference category is less important with a binary variable. See Appendices 2 and 3 for full methodology and results.

Definitions of separation reasons are included in Appendix 1.

What does "significant" mean?
A **"significant"** difference means that statistical tests indicated that the difference in measures between groups was likely not due to chance. In this report, we use a 95% confidence level, meaning that we can be 95% sure that the difference is not due to chance.
If a result is **not significant**, this means that any observed difference may be due to chance. In other words, we cannot prove with 95% confidence that this observed difference is indicative of a larger pattern or concrete difference in outcomes.

Data Limitations

When running our regressions we were unable to control for important factors such as experience, education, or other factors that would affect someone's chances of being hired, promoted, or leaving an organization. For this reason our models, when significant, only explained a small amount of the variation between outcomes (for example, between those who are hired and not hired). The percent of variation explained ranged between 1 and 17% of total variation, showing that there were many underlying concepts that we were not able to measure in our analysis. Further, as mentioned in the introduction, this report is not a qualitative review of how people interact with the organization and does not capture the actual lived experience of employees.

See Appendices 2 and 3 for full test results, along with estimates of effect.

When the analysis only includes regular employees the "Baby Boomer" and "Traditionalist" age categories are grouped together in order to have large enough numbers for analysis.

Results

Separations by department

We grouped separations from the county into four large categories: retirement, leaving for other employment, other voluntary termination, and other involuntary termination. We initially included layoffs as a separate category for separation from the county. However, after removing planned seasonal layoffs at school-based programs, there were only 24 remaining layoffs over the entire two-year period. For the purposes of analyses, these layoffs were grouped into "other involuntary terminations" as shown below.

As shown in Figure 1, a much larger group of temporary employees were involuntarily separated from county employment. This is expected due to the nature of temporary employment. What is not shown here is the number of temporary employees that were subsequently rehired after separating, although we know from our "*Hiring Trends*" report that almost 400 people were rehired as temporary workers during the same two-year period. Since temporary separations and rehires are so frequent, we will not examine temporary hires further. From this point forward, we will only discuss the separation of regular employees.

Figure 2 breaks down separation reason by department, and Figures 3, 4, and 5 show turnover rates by department. It is important to look at these two figures together, since the turnover rate helps to understand turnover patterns in proportions to each department's size by comparing the number of separations to the number of people in that department.

Figure 1: Permanent and temporary separation reasons
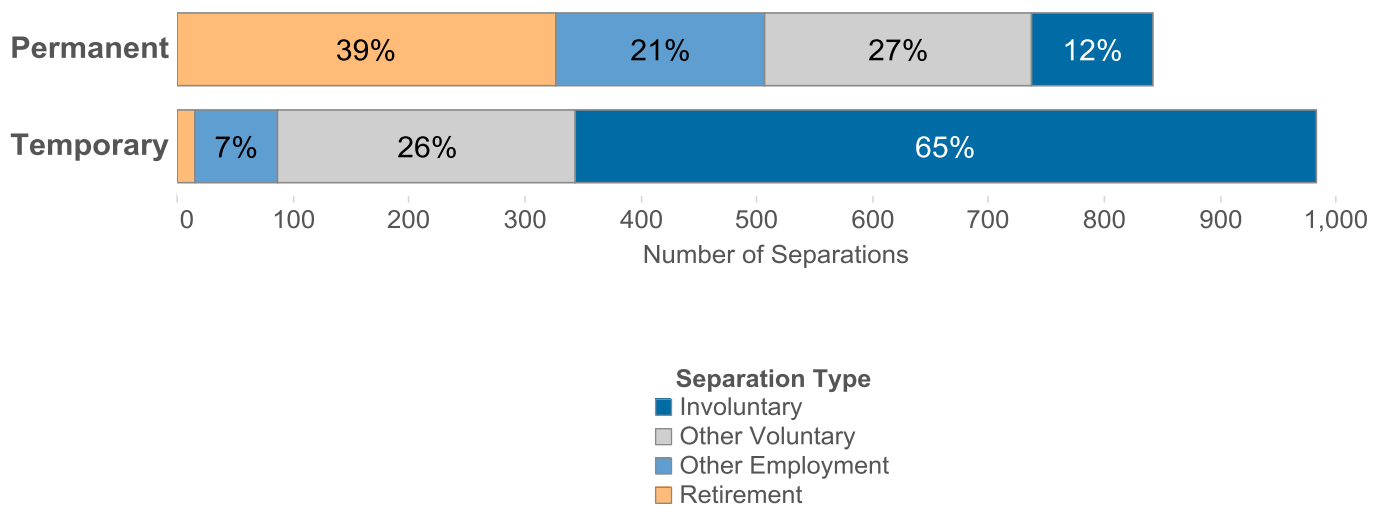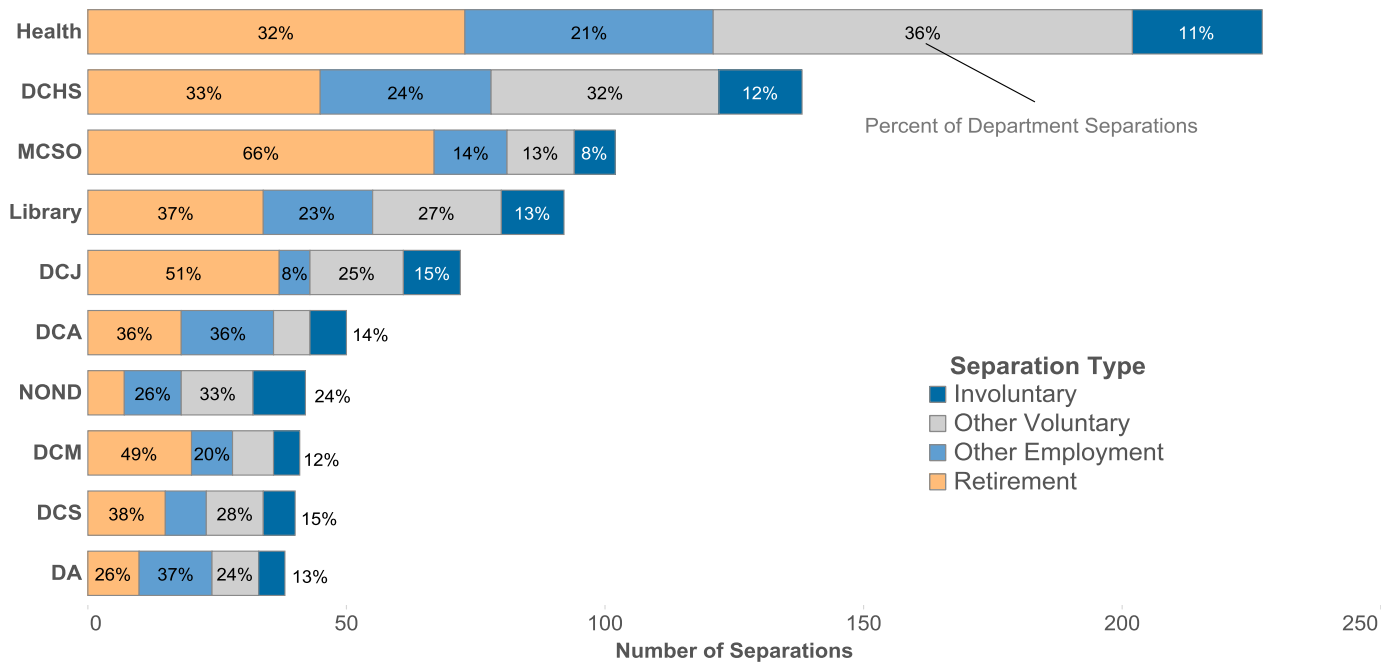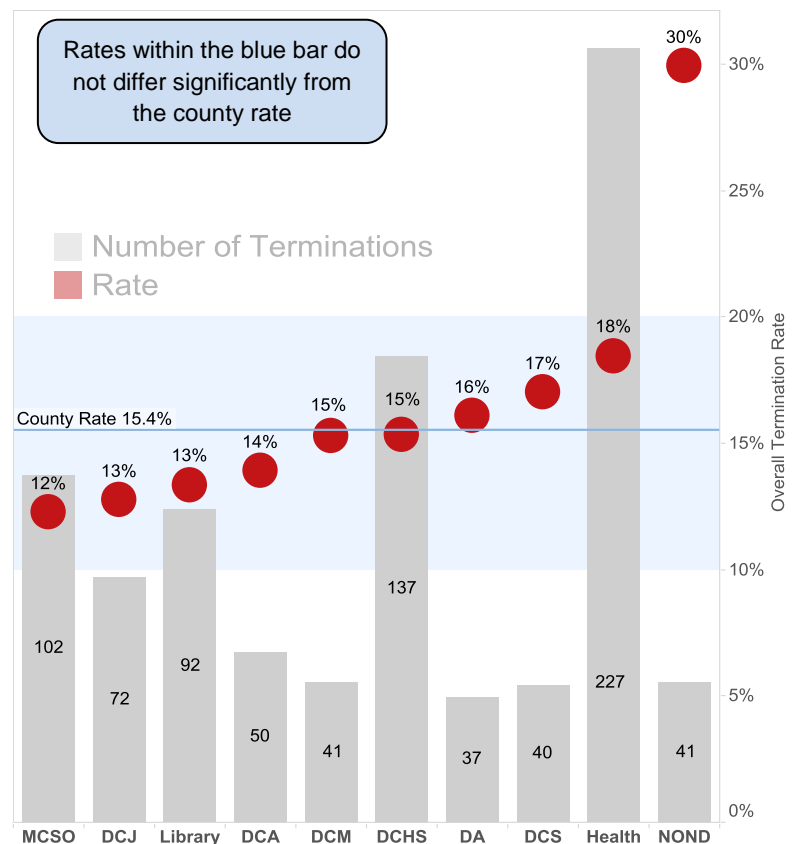FY 2013 and 2014 combined, countywide

Separation Type
- Involuntary
- Other Voluntary
- Other Employment
- Retirement

Figure 2: Separations reasons by department
2013 and 2014 combined,

Department	Retirement	Other Employment	Other Voluntary	Involuntary
Health	32%	21%	36%	11%
DCHS	33%	24%	32%	12%
MCSO	66%	14%	13%	8%
Library	37%	23%	27%	13%
DCJ	51%	8%	25%	15%
DCA	36%	36%		14%
NOND		26%	33%	24%
DCM	49%	20%		12%
DCS	38%	28%		15%
DA	26%	37%	24%	13%

Percent of Department Separations

Separation Type
- Involuntary
- Other Voluntary
- Other Employment
- Retirement

Number of Separations (axis: 0, 50, 100, 150, 200, 250)

The overall two-year county turnover rate was about 15%, meaning that approximately 15% of regular employees separated from the county over the 2013 and 2014 fiscal years. This includes 428 total separations (8%) in FY 2013 and 414 total separations (7.6%) in FY 2014. The US Census Bureau estimated that 2013 public sector turnover in both the county region and the state was 6%.[1]

Figure 3: Overall turnover rate
(All separation reasons)
FY 2013 and 2014 combined, regular employees

Rates within the blue bar do not differ significantly from the county rate

Number of Terminations
Rate

County Rate 15.4%

Department	Rate	Number of Terminations
MCSO	12%	102
DCJ	13%	72
Library	13%	92
DCA	14%	50
DCM	15%	41
DCHS	15%	137
DA	16%	37
DCS	17%	40
Health	18%	227
NOND	30%	41

Overall Termination Rate (axis: 0%, 5%, 10%, 15%, 20%, 25%, 30%)

Data Note: Separation Rate Calculations

The **separation rate** for each kind of separation is calculated as the number of regular employees leaving for that reason divided by the total number of regular employees who were in the department during the two-year period.

[1] U.S. Census Bureau, Quarterly Workforce Indicators, FY 2013 Qs 1-4. http://qwiexplorer.ces.census.gov/

NOND was the only department with a significantly higher overall turnover rate than the county rate, with a turnover rate of 30% over two years. This is not unexpected, since NOND agencies include the County Chair and Commissioner's offices and other appointed staff, all of which are affected by changes in elected leadership.

No other departments had a significantly different overall termination rate when comparing rates using one-way ANOVA. However, we also compared department separations using a chi-square test. Using this test, the Health department had more overall terminations, and the Sheriff's Office less, than would be expected if the likelihood of separations was completely independent of department.

The combined two-year voluntary turnover rate was 13.6%. This included 373 separations in 2013 (6.9%) and 364 separations in FY 2014 (6.7%). NOND was again the only department with a different voluntary turnover rate than the county average, as shown in Figure 4.

Table 1: Separations and separation rates by fiscal year
Regular employees

Separation Reason	2013		2014	
	Number	Rate	Number	Rate
Overall terminations	428	7.9%	414	7.6%
Other employment	96	1.8%	85	1.6%
Retirement	174	3.2%	152	2.8%
Other voluntary separations	103	2%	127	2%
Involuntary separation	55	1.0%	50	0.9%
All voluntary terminations	373	6.9%	364	6.7%

Figure 4: Voluntary turnover rate
(Retirement, other employment and other voluntary)
FY 2013 and 2014 combined, regular employees

Rates within the blue bar do not differ significantly from the county rate

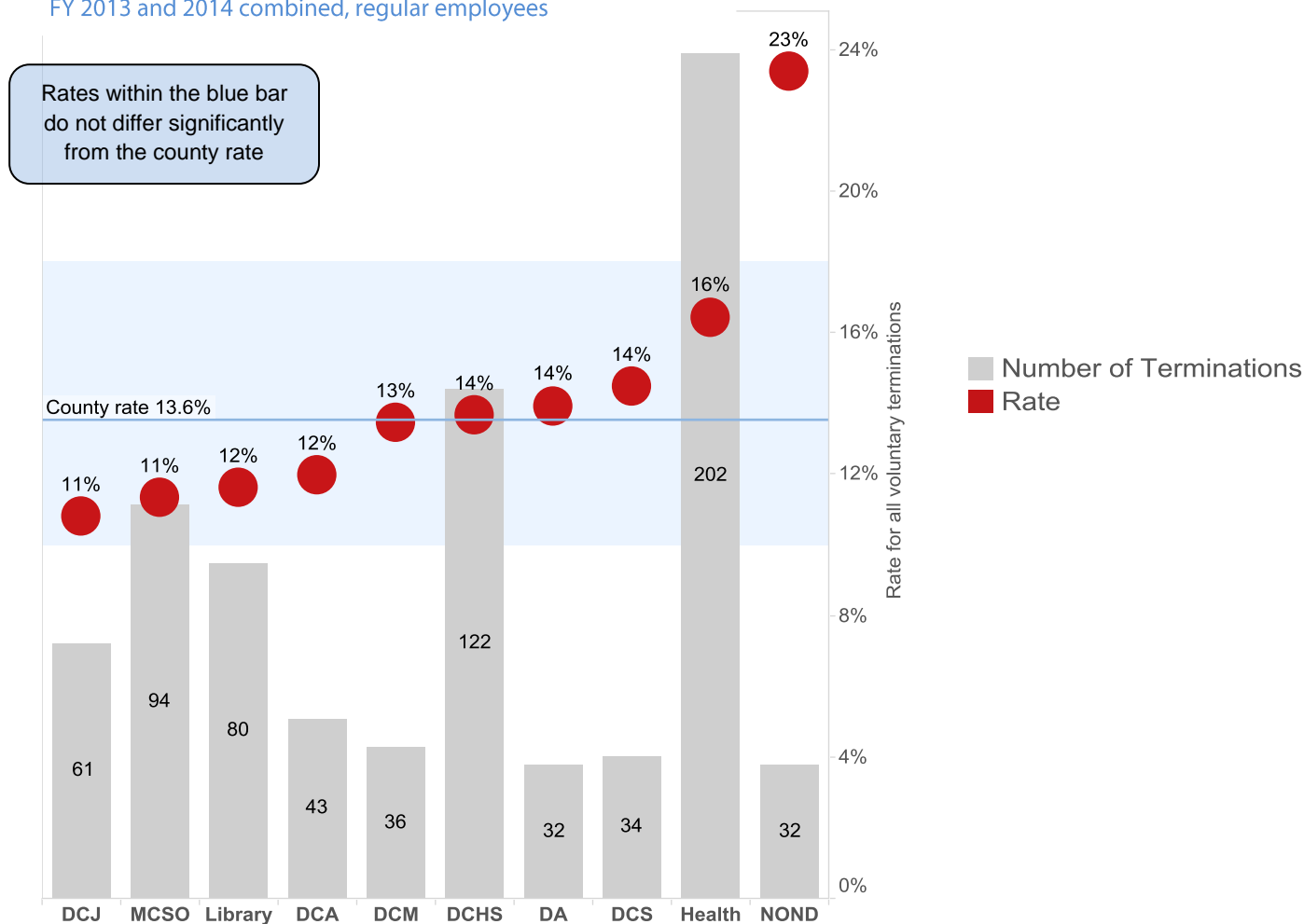County rate 13.6%

Number of Terminations
Rate

Figure 5 shows turnover rates for four specific separation reasons. NOND had higher turnover rates than other departments and the county for all termination reasons except for retirement. This is expected, since NOND agencies include the County Chair and Commissioner's offices, and other appointed staff, all of whom are affected by changes in elected leadership. Conversely, the Sheriff's Office had a significantly lower turnover rate for all separation reasons except retirement.

As shown in Figure 1 on page 5 and Table 1 on page 7, over 300 separations, or almost 40% of all separations of permanent employees, were people retiring from the county. Figure 5 shows that, when compared to all of the people who were at the county over the two-year period, this amounts to an approximately 6% retirement rate: 3.2% in FY 2013 and 2.8% in FY 2014. There was not a significant difference in retirement rate by department, but the Sheriff's Office (MCSO) had both the highest percentage of separations that were retirements (66%, see Figure 2) and the highest retirement rate (8%, see Figure 5). DCJ and DCM also had high rates and proportions of retirements.

Figure 5: Turnover rates by department and separation reason 2013 and 2014 fiscal years combined, regular employees

Rates within the blue bar do not differ significantly from the county rate
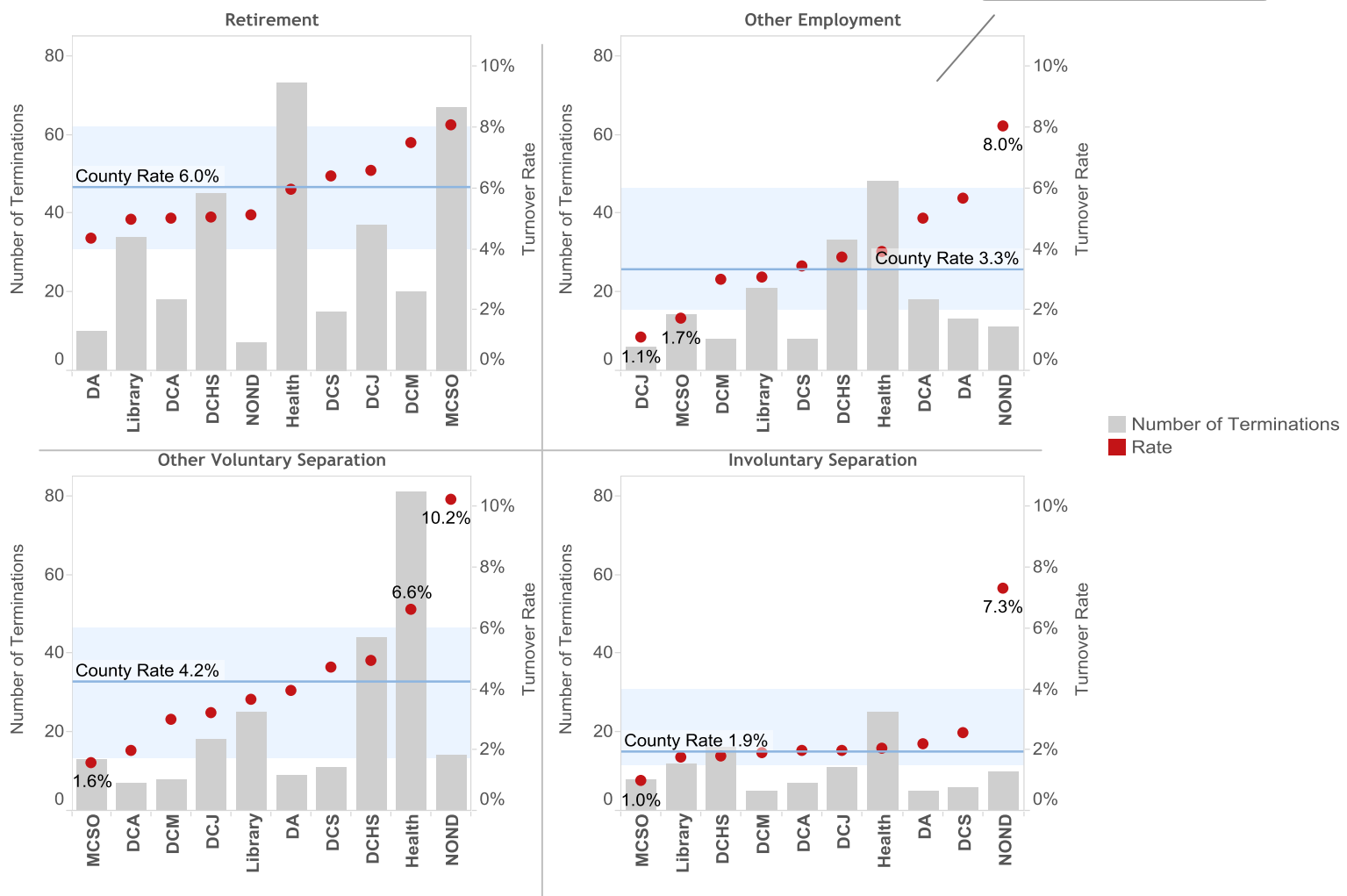
NOND and MCSO were the only departments to have significantly different rates of involuntary turnover. Within NOND, almost a quarter of all separations (10 people) were involuntary. Our analysis found that people from NOND were almost 4 times as likely as people from DCHS and the Sheriff's Office to be involuntarily terminated. Again, this is not surprising given the role of elected leadership in employment in NOND agencies.

While Figure 2 shows that DCA and the DA's office had the highest percentage of people who left for other employment, at 36% and 37%, respectively, Figure 5 shows that neither of these departments' turnover rates for other employment were significantly different than the county average of 3.3%. However, DCJ and MCSO did have significantly lower rates of people leaving for other employment.

The Health department had the highest proportion of people leaving for "other voluntary separation" reasons, translating into a significantly higher rate than other departments and the county average.

Turnover by employee group

Executive employees had higher overall and voluntary turnover rates than represented and management employees. Our report on hiring found that executive employees also had the highest hiring rate for regular employees. While executive employees tend to be in positions of higher responsibility, they are not subject to the civil service protections. This could be one reason that these positions had a higher pace of both hiring and separation.

There was no difference in either retirements or involuntary separations by employee group.

Figure 6: Overall terminations by employee group
FY 2013 and 2014 combined, regular employees
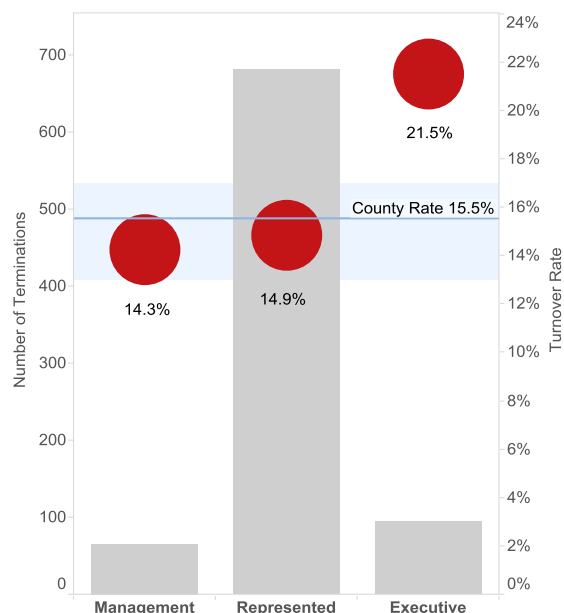
Figure 7: Executive employees had higher voluntary and overall separation rates but did not differ on retirement or involuntary separations
FY 2013 and 2014 combined, regular employees
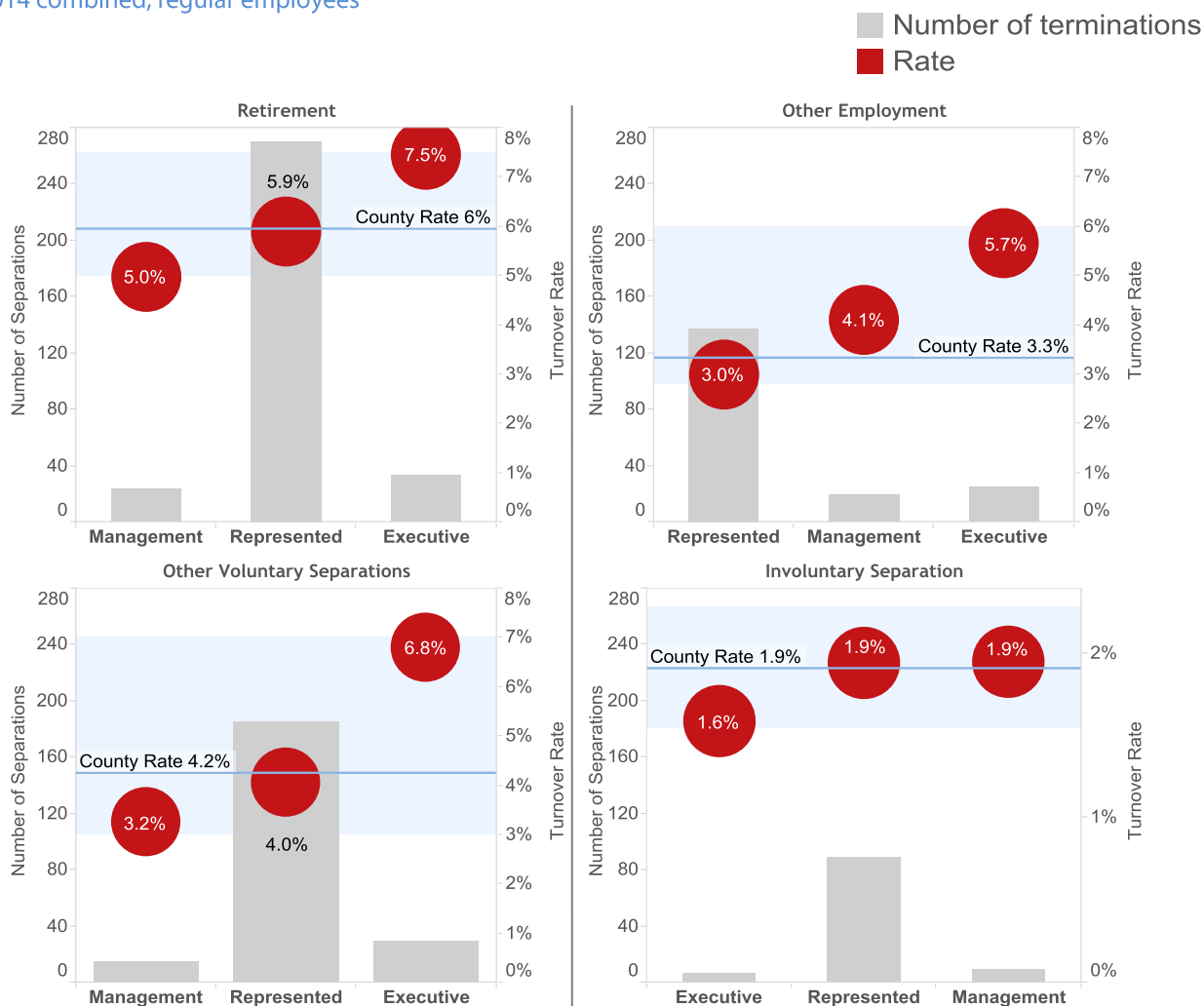
Rates within the blue bar do not differ significantly from the county rate

Age and separation likelihood

Age did play a role in the likelihood of separation from Multnomah County. Since we were looking only at regular employees for this analysis, the number of Traditionalists was too small to analyze separately and was grouped with Baby Boomer employees.

As shown in Figures 8, Baby Boomers and Traditionalists were the most likely to leave county employment, followed by Millennials. Holding race, department and gender constant, Baby Boomers and Traditionalists were 1.3 times more likely than Millennials to leave the county for any reason, but Generation X employees were half as likely as Millennials to leave for any reason.

We did not test retirement likelihood by age because all of the retirements were either Baby Boomers or Traditionalists. However, from Figure 9 on the following page, it is clear that the high rate of Baby Boomers leaving the county is due in large part to retirements. Excluding retirements, Millennials were significantly more likely to leave the county voluntarily than all the other age groups.

Figure 8: Including retirements, Baby Boomers and Traditionalists were the most likely to leave the county, followed by Millennials
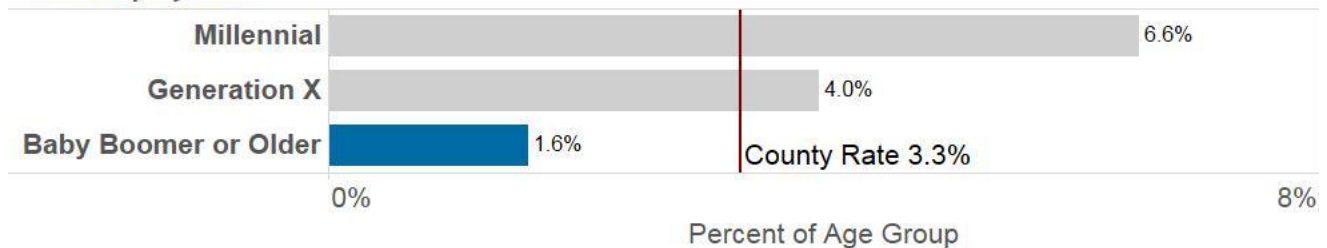FY 2013 and 2014 combined, regular employees
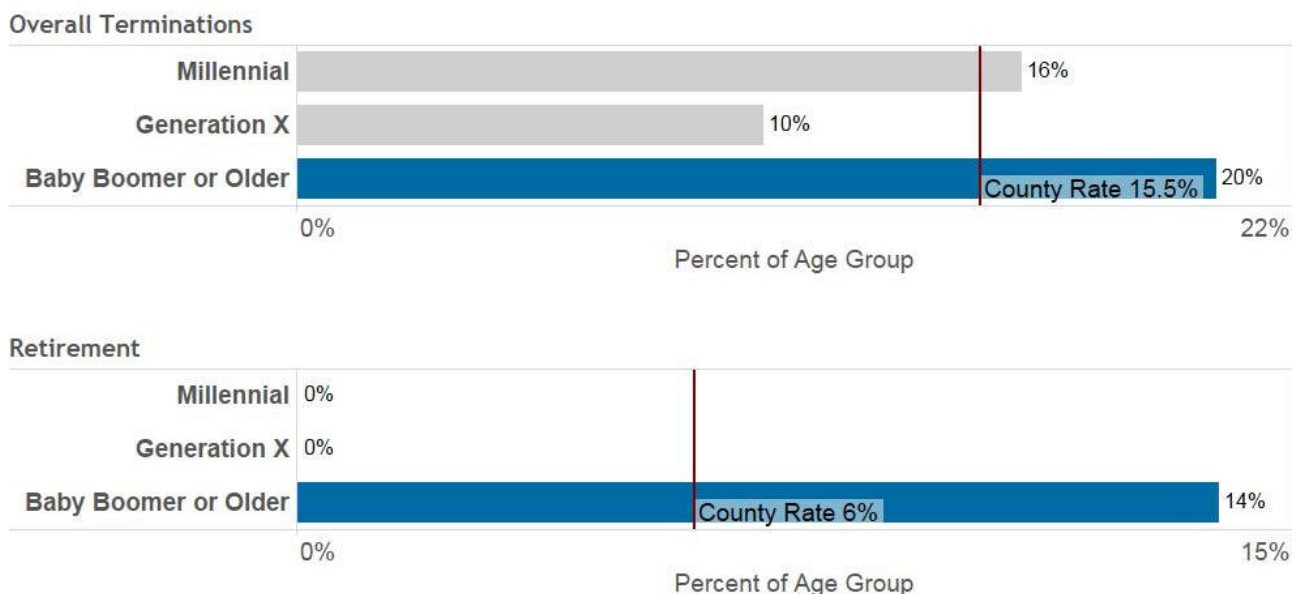
Generation X employees were half as likely as Millennials to leave for other employment or "other voluntary terminations." Baby Boomers were about a quarter as likely as Millennials to leave for other employment, and just over 40% as likely to leave for "voluntary terminations."
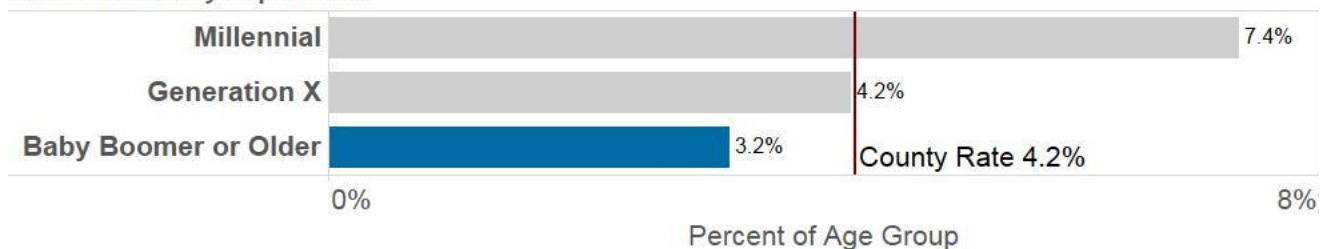
Accompanying reports in this series show that Millennials were more likely to be promoted and work out of class than the other age groups. However, the results below show that, apart from retirement, Millennials were more likely to voluntarily leave the county despite having a higher likelihood of promotion. Given the importance of Millennial employment to succession planning, the county should do further research to better understand career paths and retention techniques for Millennials.

Figure 9: Excluding retirement, Millennials were more likely to leave the county voluntarily (excluding retirement) FY 2013 and 2014 combined, regular employees
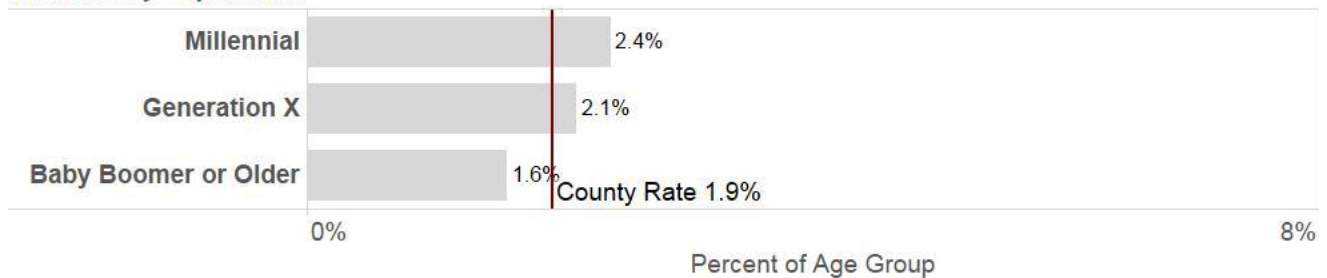

Other Employment

	Percent of Age Group
Millennial	6.6%
Generation X	4.0%
Baby Boomer or Older	1.6%

County Rate 3.3%

Other Voluntary Separation

	Percent of Age Group
Millennial	7.4%
Generation X	4.2%
Baby Boomer or Older	3.2%

County Rate 4.2%

Involuntary Separation

	Percent of Age Group
Millennial	2.4%
Generation X	2.1%
Baby Boomer or Older	1.6%

County Rate 1.9%

Race and separation likelihood

Figure 9 shows the number of overall terminations by race, as well as the percent of each race/ethnicity that turned over during the two-year period. As shown in the figure, race was not a significant predictor of whether or not a person would separate from the county in general.

Although Native/Americans/Alaskans appear to have a higher turnover rate overall, this difference was not statistically significant. As mentioned in the methodology, logistic regression tests both whether a variable (e.g. race) plays a predictive role in general, and then whether any specific category of that variable plays a role. For overall terminations, race did not play a significant role in general. On top of that, the specific rate for Native Americans/Alaskan Natives was also not significantly different than the rate for Caucasian employees. Please see Appendix 2 for a list of the specific tests along with results and p-values.

Figure 9: The overall probability of termination did not differ by race or ethnicity
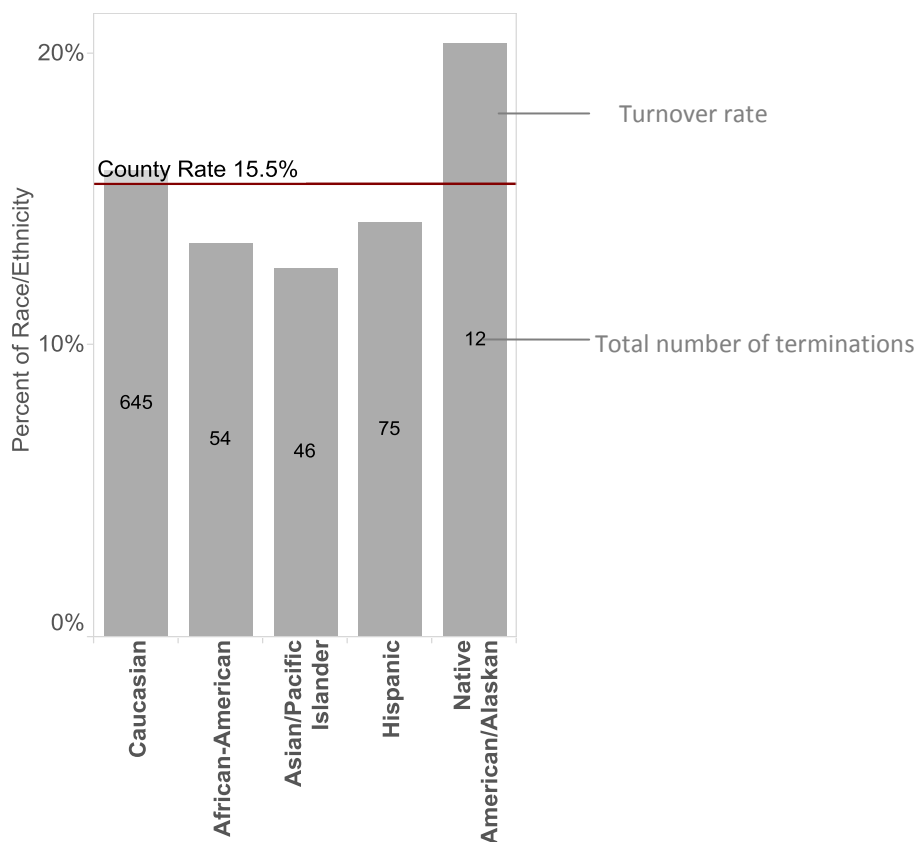FY 2013 and 2014 combined, regular employees

Figure 10 shows the termination rates and numbers for each separate termination reason by race. As shown in the figures, the different turnover rates for other employment, involuntary separations, and "other" voluntary separations are relatively close to one another, and to the countywide rate. This shows that when comparing terminations to everyone at the county over the two-year period, the turnover rates for other employment, other voluntary separation, and involuntary separation did not differ significantly by race.

However, race did affect the probability of retirement. Holding department and gender constant, African-Americans, Asians/Pacific Islanders and Hispanic employees were all less likely to retire than Caucasian employees. African-Americans were just over half as likely as Caucasian employees to retire, while the odds of retirement decreased by more than 60% for Asians/Pacific Islanders and 70% for Hispanic employees (when compared to Caucasians). We saw in the report on *Multnomah County Demographics* that employees of color had lower average tenure and lower retirement eligibility than Caucasian employees, which could partially explain why people of color were less likely than Caucasians to retire during FY 2013 and FY 2014.

Figure 10: Most people of color less likely to retire than Caucasians
Termination reasons, FY 2013 and 2014 combined, regular employees
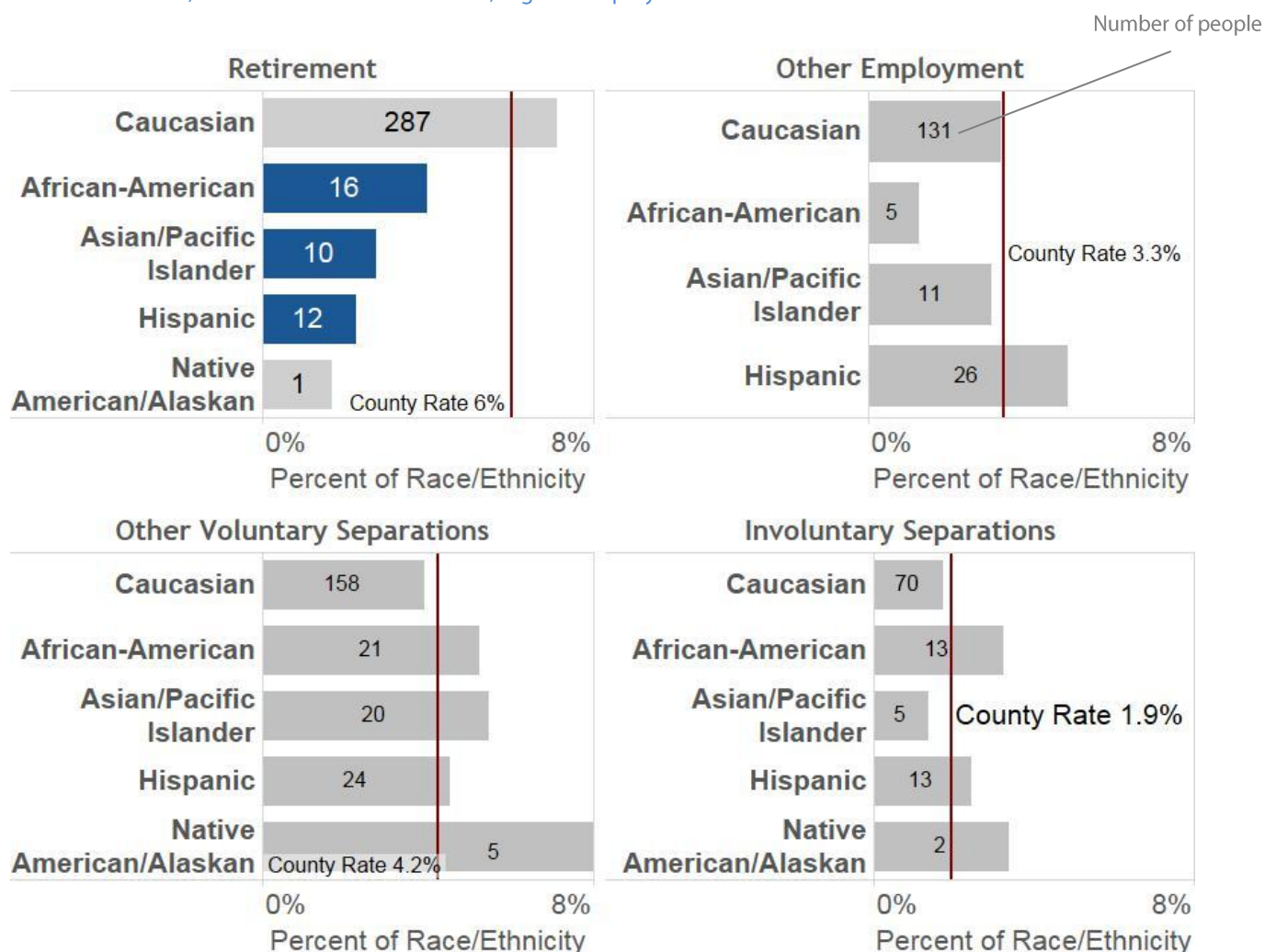
As shown above in Figure 10, when we compare involuntary terminations to everyone who was in the county over the two year period, there is not a significant relationship between race and involuntary termination. However, the observed difference in involuntary terminations between African-Americans and Caucasians, as shown below in Figure 11, was large enough that we decided to look further into the relationship between race and involuntary terminations. As shown in Figure 11, when you look the percent of terminations that were involuntary a difference by race does seem to appear: 25% of African-American terminations were involuntary compared to 11% of Caucasian terminations.

To analyze this further, we performed logistic regression on just those people who were actually terminated during our testing time period. Due to the smaller dataset, the logistic regression model only included department and race (see Appendix 2 for a description of sample size requirements). The test analyzed whether different race or ethnic groups were more or less likely to have a termination be involuntary, with department held constant. This test was not significant overall, showing that using race and department to predict involuntary terminations was not significantly better than predicting based on overall separation patterns.

We also ran a logistic regression that just included race. This test was not significant at the 95% confidence level but it was significant at the 90% confidence level, showing that African-Americans were just over 2.5 times more likely than Caucasians to have a termination that was involuntary. A third test, a simple chi-square, confirmed at the 95% confidence level that more African-Americans had involuntary terminations than would be expected if there was no relationship between race and involuntary terminations. Importantly, neither of these tests controlled for age, gender, or department, and they do not address time of hire or length of employment.

Given these results, we cannot say with 95% confidence that African-Americans are more likely than Caucasians to have a termination be involuntary. However, a higher percentage of African-American terminations over the testing period were involuntary, and there is some evidence that this may indicate a larger pattern. More research is needed in this area to understand and address any potential differences in treatment.
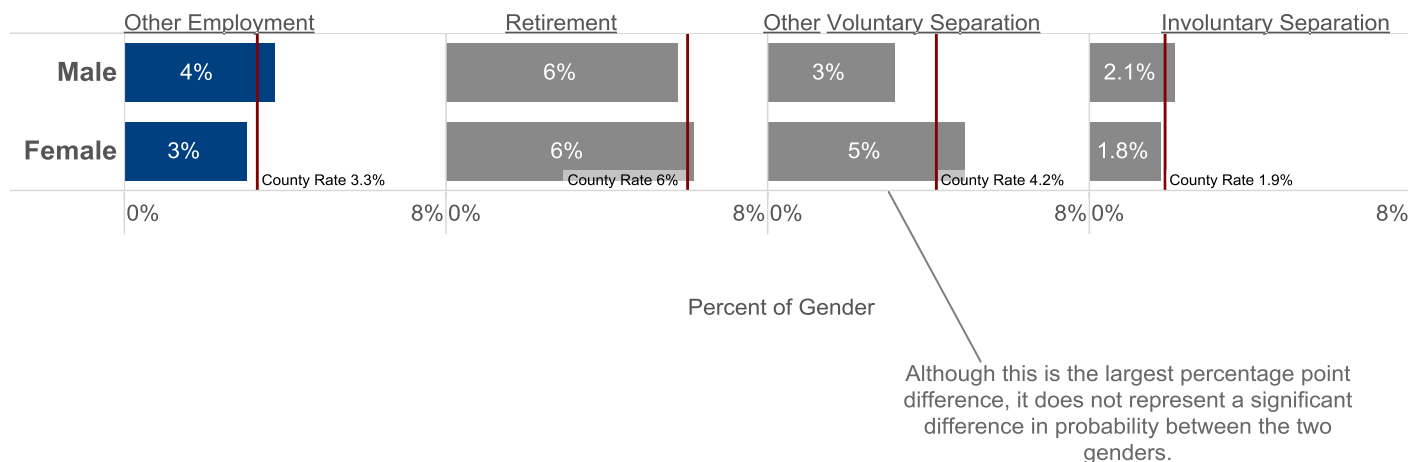
Please see Appendix 2 for full testing results.

Figure 11: A higher percentage of African-American terminations were involuntary
For those people who were terminated, FY 2013 and 2014

Number of involuntary terminations

Percent of Terminations for each Race/Ethnicity
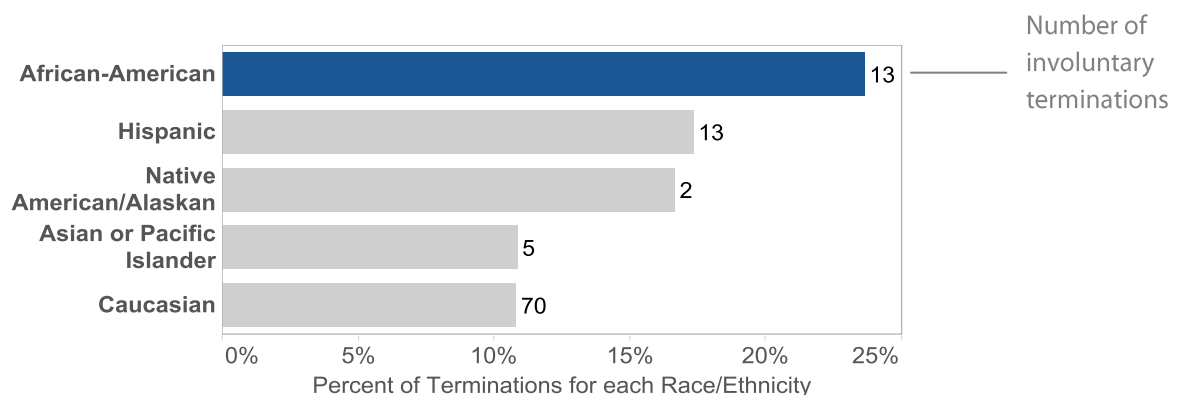
Gender and separation likelihood

Gender was only significantly predictive of someone leaving the county for other employment, with women 33% less likely to leave for other employment than men. The other observed differences in separation likelihood were not statistically significant.

Figure 12: Females were less likely to leave for other employment
FY 2013 and 2014 combined, regular employees

Percent of Gender

Although this is the largest percentage point difference, it does not represent a significant difference in probability between the two genders.

Hiring compared to terminations

Over the two-year period, countywide hiring outpaced terminations by 152 total employees, and most departments' hiring outpaced separations.

Figure 13: Most departments' hiring outpaced separations
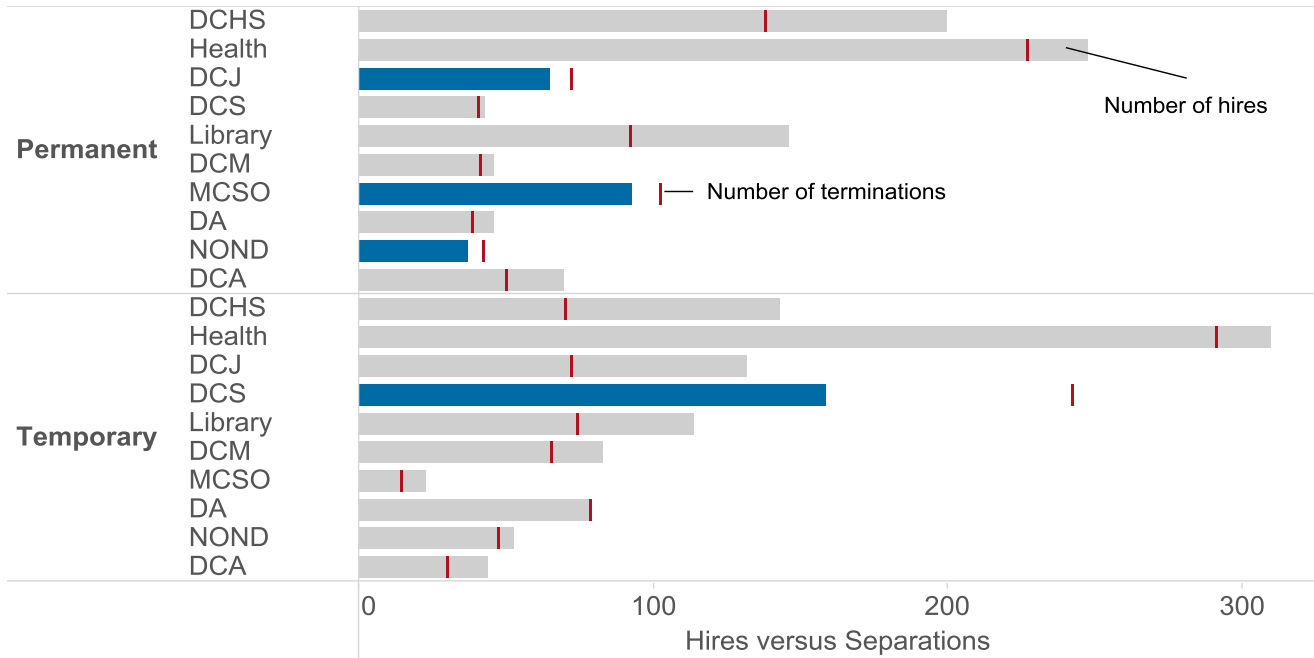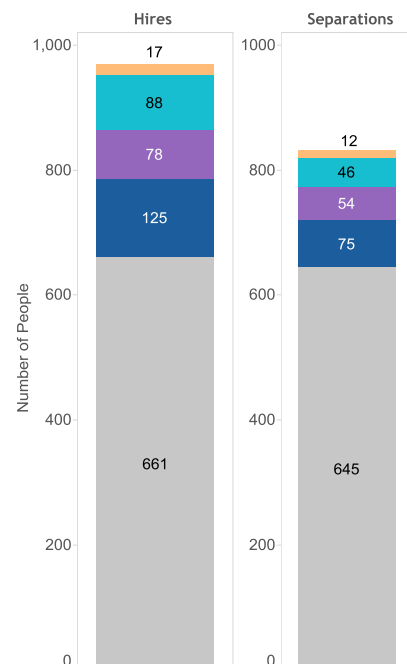FY 2013 and 2014 combined

Figure 14: Hiring exceeded terminations for all race and ethnic groups
FY 2013 and 2014 combined, regular and temporary employees

As shown in Figure 14, hiring outpaced terminations for all of the racial/ethnic groups as well. This is a positive trend for maintaining a diverse workforce.

Race/Ethnicity
- Native American/Alaskan
- Asian/Pacific Islander
- African-American
- Hispanic
- Caucasian

The county also had net gains in the number of Millennials and Generation X employees, with hiring for these groups exceeding terminations. Conversely, more Baby Boomers left the county than were hired. Many of the Baby Boomer separations were retirements.

Figure 15: Hiring exceeded terminations for both Millennials and Generation X FY 2013 and 2014 combined, regular and temporary employees
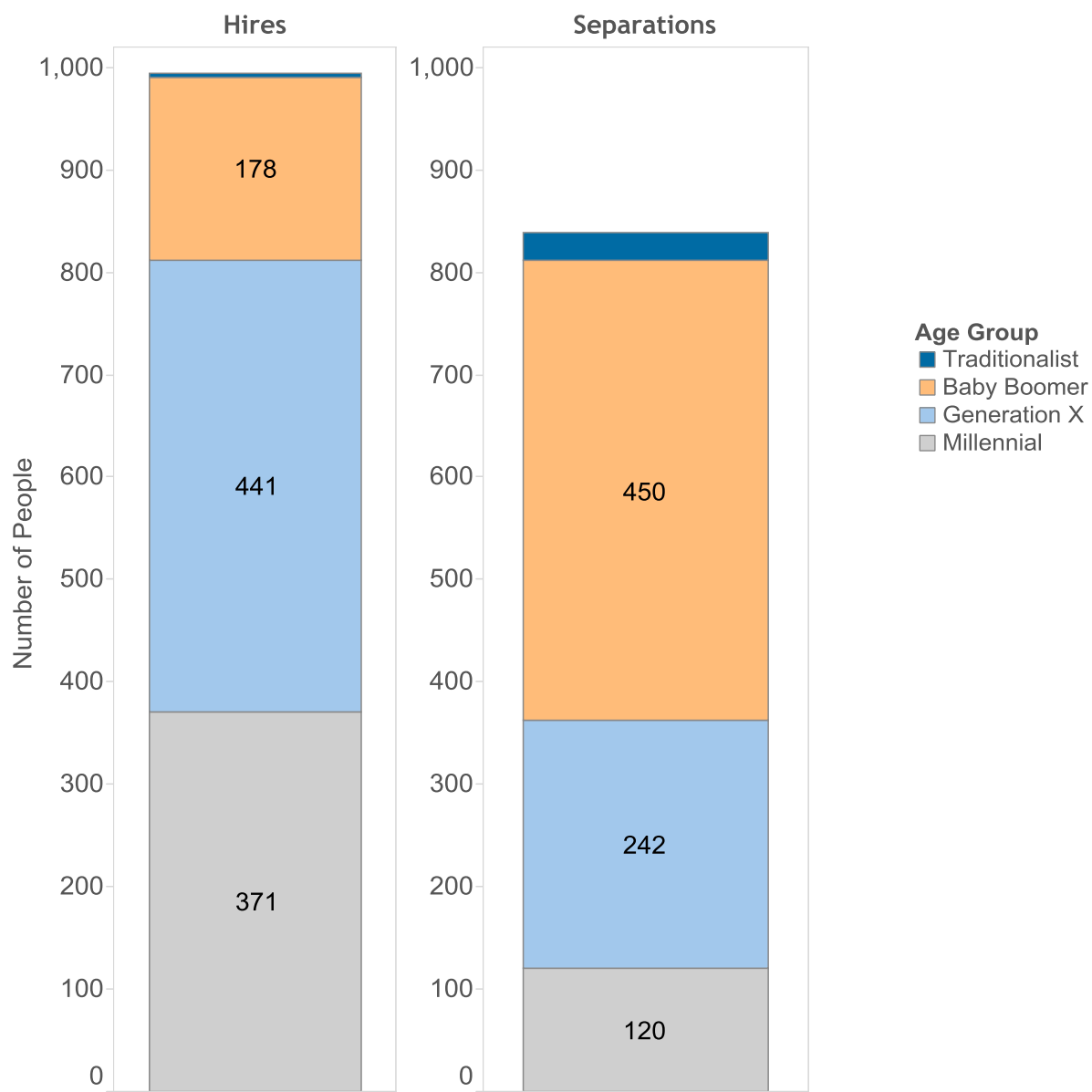
Conclusion

The overall county turnover rate for regular employees over the two-year period was 15%, just under 8% each year. This is slightly higher than the public sector total turnover rate of 6% for both the region and the state. Voluntary turnover was lower: 14% over the two-year period, with just under 7% turnover in each year.

With some exceptions, the countywide overall turnover rate did not vary much by department. However, turnover did vary by age, with Baby Boomers and Traditionalists more likely to leave overall and Millennial employees more likely to leave for all voluntary reasons besides retirement. Turnover also varied by employment group, with executive employees having higher voluntary turnover than management and represented employees. Further research into retention of Millennials and executive employees may help understand how to better retain these valuable employees.

Race played a small role in the probability of separating from Multnomah County. People of color were less likely than Caucasians to retire, but people of color also had lower proportions of people actually eligible to retire. However, a higher percentage of African-American terminations over the testing period were involuntary, and there is some evidence that this may indicate a larger pattern. Moving forward, this would be a good area for further study.

Interestingly, women were less likely than men to leave for other employment, but gender did not affect the likelihood of separating from the county for any other reason.

Hiring outpaced terminations both overall and for all race/ethnicity groups, Millennials, and Generation X employees. This is a positive signal for recruiting and retaining a diverse workforce.

For further information, please see the additional reports in this series:

- *Executive Summary*
- *Multnomah County Workforce Demographics and Retirement Eligibility, FY 2013 & FY 2014*
- *Hiring Patterns*
- *Promotions, Work out of class, and Demotions*