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Expert Analysis

Reduction in Force: Problems With a Commonly Used Approach

Prior to terminating employees in connection with a reduction in force (RIF), downsizing firms often rely on a preliminary period over which voluntary separations and a freeze on hiring reduce the size of the work force before any employees are dismissed. The RIF itself will then require fewer involuntary terminations. This might appear to be an unmitigated good for both employees and employers. However, as regards the accuracy of statistical testing for age discrimination charges, quite the opposite may be true. Whether or not it depends upon the length of the pre-RIF period and the age characteristics of those leaving the firm.

If the pre-RIF period is sufficiently long and if younger workers represent a larger percent of those leaving the company voluntarily than they do of the employer's work force—as the data we present below imply—the percent older employees represent of the firm's work force will increase as the pre-RIF period lengthens. The older the work force becomes, the likelier it is that the conventional statistical test for age discrimination—which we review later—no longer distinguishes accurately between discriminatory and non-discriminatory RIFs. It would appear then that when a company's downsizing efforts include a sufficiently long pre-RIF period, a second statistical test—in addition to the conventional one—might usefully be applied



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to the data before drawing conclusions about age discrimination.

Since the Supreme Court's ruling in *Castaneda v. Partida*, 430 U.S. 482 (1977), on using statistical evidence in employment discrimination cases, employment law attorneys are frequently required to understand sophisticated statistical analysis.

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Terms like "standard deviation," "chi-square test" and even "multiple regression" have, of necessity, entered their lexicon. However, sometimes this focus on technicalities obscures the simpler, but important, issues involved in testing for age discrimination. This article focuses on one of them.

Total Separation Rates

General Characteristic of the American Labor Force. Separations—both voluntary and involuntary—are a central characteristic of the American work force. For the 16,000 establishments that were surveyed by the Bureau of Labor Statistics Job Openings and Labor Turnover Survey (JOLTS), private and

public non-farm establishments in the sample experienced an annual voluntary separation rate during 2006 of 26.7 percent.¹ More than a quarter of the non-farm work force in survey respondent establishments quit a job during the year. Another 3.6 percent took early or normal retirement and 15.8 percent were laid off. Thus, just over 30 percent of all non-farm job holders voluntarily left their jobs in 2006. The overall separation rate was 46.1 percent.²

The Total Separation Rate of Younger as Compared to Older Employees. It would appear that separation rates are not only relatively high; they are also related to age. To obtain data on this relationship, we must turn to a second source—Quarterly Workforce Indicators (QWI), produced by the U.S. Census Bureau—that allows us to determine the separation rate for each age group, individually. To keep the presentation manageable, we focus on separation behavior in five states—Georgia, Minnesota, New Jersey, Washington and Arkansas—that are representative of the U.S. economy as a whole as well as widely-dispersed regionally.³

Looking at all five states as a group, we find that the separation rate varies closely and inversely with age (up to the 65 and over group who have, of course, the option of retiring).⁴ Younger employees are far more likely to separate than are older workers. The percent of those in the under-25 age group who left their employers was about double the percent of employees 25 to 44 years of age who did so, and triple the percent of those 45 to 64 of age who separated.⁵ Even more important, we see this same inverse relationship in each of the five states individually.

Comparing Representation in the Work

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ABC Company's Reduction in Force After a Hiring Freeze and Period of Voluntary Separation

Age	Initial Work Force 10,000 workers	Reduction In Force 5,000 workers	Voluntary Separations Jan. 1 to Dec. 30 2,000 workers	Employees Still at ABC On Eve of RIF: 8,000 workers	Required Terminations 3,000 workers	Post-RIF Work Force 5,000 workers
Under 40:	60%	60%	72%	57%	52%	60%
40 and over:	40%	40%	28%	43%	48%	40%

Force to Representation in Total Separations.

We can now look at the QWI data (for the same five states in the same year) in another way that will prove useful. Since we know the total number of separations in 2006, we can calculate the percent of this total that each age group represented in that year. That is, instead of comparing the separation rate of one age group to another, let's compare the percent of total separations in 2006 for which each age group accounted.

Using this measure, we see much the same inverse relationship between age and the likelihood of leaving one's employer. Employees under 25 years of age were significantly over-represented amongst those separating: only 14.6 percent of the total work force as compared to 28.4 percent of all separations. Those 25 to 44 years of age were represented in separations in about the same proportion as they were represented in the work force. And the next highest age group—those 45 to 64—were clearly under-represented in separations, accounting for only 24.0 percent of those leaving their employers compared to 36.4 percent of the work force as a whole.

Separation Rates

The data presented thus far show that total separation rates—which reflect the level of involuntary, as well as voluntary, separations—decrease with age. Ideally, we would like to exclude all involuntary separations from the analysis so as to focus on the relationship between age and purely voluntary separation. As the available data on separations are not broken down in this more refined way, we have to bring indirect evidence to bear on the question of whether the voluntary separation rate varies with age in the same inverse fashion we observe for the total separation rate. Would it be reasonable to assume this to be the case for the purposes of our analysis? That

would depend largely on two factors: the first, being the relative importance of the voluntary component of total separations and the second being the degree to which economic theory predicts an inverse relationship between age and strictly voluntary separation rates.

As to the first condition, the relevant data suggest that it is satisfied.⁶ In the years prior to the most recent recession, over half of all separations were voluntary.⁷ As to the second condition—theoretical support for the relationship—this condition, as well, is satisfied. Human-capital theory—developed some decades ago and widely accepted by labor economists today—does, in fact, clearly predict that voluntary separation rates can be expected to vary inversely with age. We therefore proceed with our analysis under this assumption.

Testing on Age Discrimination

It will be useful at this point to provide a brief review of the way in which charges of age discrimination in termination are generally tested. When the charge is disparate impact, the statistical test involves a simple comparison between the percent that older workers represented of the employer's work force on the eve of the RIF and the percent they represent of those terminated.

When the charge is disparate treatment, we apply a more sophisticated procedure: "multiple regression analysis." Using multiple regression, we can control for all relevant differences—such as education and job experience—between the two age groups when we compare their separation rates. Whichever technique is employed, we then apply a test for "statistical significance" to our results.

Two Alternative Downsizings. The implications of using a pre-RIF period of voluntary separations and zero hires to reduce employment, rather than relying

from the outset on dismissals, are best shown initially by contrasting the results of each policy. We therefore construct a hypothetical company, ABC Inc. with a work force of 10,000 employees: 60 percent under 40 years of age and 40 percent 40 and over.⁸ Management has decided that the company must reduce employment by half and that this must be done in the

shortest time possible.

In preparation for the RIF, a list of the positions in which employment is to be reduced is prepared. If age played no role in the selection of these positions or in the selection of employees within each position to be terminated—and let us assume for the purposes of this hypothetical that it did not—we would expect the age distribution of the employees on the RIF list to be very close to the age distribution of ABC's work force as a whole.⁹ In other words, about 60 percent of those on the RIF list would be under 40 years of age and about 40 percent would be 40 years of age or over. Were ABC to implement this list without delay, we would expect to see that the age distribution of those terminated was very close to the age distribution of the initial work force. Under these circumstances, the results of the conventional statistical test would—quite rightly—provide no support whatever for a discrimination charge.

Now, let's assume that ABC's management decides to allow a pre-RIF period during which voluntary separations and a hiring freeze accomplish some of the desired reduction in employment. And, for simplicity, let's assume ABC allows the first 364 days of the year for the hiring freeze and voluntary separations to have their effect on the number employed, leaving the last day of the year for terminations. Let's look at Table 1, below, to see how different from scenario 1 the outcome might be.

In the first column of the table, we show the age distribution of ABC's work force at the start of the year, and in column 2, we show the age distribution of those on the RIF list. As can be seen there, we begin here with the same assumptions about ABC's work force and RIF list as were made for the purposes of the first scenario, discussed above. That is, we assume the same initial age distribution of the work force—younger

workers representing 60 percent and older workers representing 40 percent of ABC's initial work force—and we assume, as before, that age played no role whatever in the RIF selections. As above, the age distribution of those on the RIF list is shown to be identical to the age distribution of ABC's initial work force.¹⁰

There the similarity to the first scenario ends. While, in Scenario 1, ABC proceeds directly to termination of those on the RIF list, in this second scenario, the company implements a hiring freeze and allows a pre-RIF period during which voluntary separations reduce the size of the work force by 2,000 employees. The age distribution of those separating from ABC is shown in columns 3. Reflecting our assumption that younger workers will be over-represented in voluntary separations, we see there that they account for 72 percent of all voluntary separations although they represented only 60 percent of the initial work force.¹¹ Naturally, given this over-representation of younger employees amongst those separating voluntarily, ABC's work force will be older at the end of the pre-RIF period than it was at the start. This is shown in column 4. As we can see there, the percent that younger employees represent of ABC's work force has fallen from 60 percent at the start of the pre-RIF period to 57 percent at its conclusion while the representation of older employees has increased (from 40 percent to 43 percent of the work force) over the period.

Now, on the last day of the year, ABC proceeds to implement the RIF list, terminating the additional 3,000 employees required to reduce the work force, as planned, to 5,000 people. The age distribution of these terminations is shown in column 5 and, in column 6, we show the age distribution of ABC's post-RIF work force. As can be seen by comparing column 6 to column 1, the work force at the end of the RIF has exactly the same age distribution as it had at the start of the year. On these grounds, one might conclude that ABC's downsizing was age neutral.

However, if the conventional approach to testing for age discrimination is employed, the expert statistician will not base her conclusion on a comparison of column 6 to column 1. Rather, she will—for the purposes of the test—compare the age distribution of those “RIF'd” (column

5) to the age distribution of ABC's work force on the eve of the RIF (column 4). This comparison will, as can be seen in the table, show older workers to be over-represented amongst the RIF'd employees: 48 percent of those terminated compared to 43 percent of those still with the company at the end of the pre-RIF period. If the over-representation is large enough to be statistically significant, it will support a charge of age discrimination even though the RIF has, in fact, left the age distribution of ABC's work force unchanged.

Conclusions

It would appear then that when a company's downsizing efforts include a sufficiently long

Human-capital theory—developed some decades ago and widely accepted by labor economists today—does, in fact, clearly predict that voluntary separation rates can be expected to vary inversely with age.

pre-RIF period, a second statistical test—in addition to the conventional one—might usefully be applied to the data before drawing conclusions about age discrimination. As we have discussed here, information as to whether the work force has aged or grown younger during the pre-RIF period and the statistical significance of any such change is, under these circumstances, relevant to the decision.

There will, of course, be difficulties in providing this information. The key problem will be determining the point in time that the RIF decisions were made as opposed to the date they were implemented. For example, management might have made termination decisions throughout the pre-RIF period, making it difficult to determine which age distributions should be compared for the purposes of the test. But this problem bedevils the conventional test as well and an increase in the accuracy with which age discrimination charges are tested would appear to make an attempt at its solution worthwhile.



1. U.S. Department of Labor, Bureau of Labor Statistics, Job Openings and Labor Turnover Survey. (Accessed May, 8, 2010 at: <http://www.bls.gov/jlt/>).

2. There appears to be fairly wide variation in measured separation rates due, in large part, to variation in the definitions employed from study to study. The JOLTS estimates are, however, relatively well regarded and widely used.

3. The data are for the fourth quarter of 2006. We use data from this year—rather than from more recent years—because the employment effects of the recession that began in 2007 changed the mix in total separations of involuntary as compared to voluntary separations, raising, as one would expect, the ratio of the former to the latter. Because we are interested in the general relationship between age and voluntary separation, we thought it was advisable to examine this relationship using data from a more representative year.

4. The separation rate of those 65 years of age and over is higher than the rate for those 45 to 64 but this behavior largely reflects the possibility of full retirement rather than the more general factors governing the behavior of those under 65.

5. The QWI data do not allow us to make the under 40 vs. 40 and over age boundary usually presented (along, of course, with narrower age intervals) in age discrimination cases.

6. These data are from the U.S. Department of Labor, Bureau of Labor Statistics, referenced in footnote 1, above. U.S. Department of Labor, Bureau of Labor Statistics, Job Openings and Labor Turnover Survey, referenced in footnote 1, above.

7. This ratio began to decline—as one would expect—when the economy moved into recession in 2007, and by 2009, layoffs and discharges accounted for a larger percent of total separations than voluntary separations did.

8. We choose this age distribution in order to ground our hypothetical, to some degree, in reality. It is a reasonable approximation, albeit a rough one, to the age distribution of the actual work force (discussed in an earlier section) in the five states for which we have these data.

9. This assumes that younger and older employees at ABC are perfectly substitutable in production.

10. In fact, as noted in the previous paragraph, our statistical expectation in this case is that the age distribution of the employees on the RIF list will be very close—not identical to—the age distribution of the initial work force. However—and purely to simplify presentation—we show the age distribution of the RIF list as identical to age distribution of ABC's initial work force.

11. We choose this age distribution in order, once again, to ground the hypothetical, as much as is possible, in reality. It is a reasonable, albeit rough, approximation to the age distribution of actual separations (discussed earlier) in the five states for which we have these data.