

A Second Analysis of Academic Salaries 2003-2007

The annual ASA survey of Academic Salaries has divided the faculty at research universities into 21 groups, based on academic rank and time in that rank. The information released in the reports are the first quartile, median, third quartile, 90th percentile, and (when there is sufficient data) the 95th percentile.

A previous report provides an analysis of the median salaries reported for the years 2003-2007, by comparing them to the annual consumer price index (CPI). This is done by setting the 2003 CPI salary equal to the 2003 median salary for each of the 21 groups. For years 2004-2007, the CPI salary is calculated as the previous year's CPI salary times the CPI for the current year divided by the CPI for the previous year. For each of the 21 groups a graph is plotted. The graph contains the median, first and third quartiles, and the CPI salary.

This report looks at the individual data from each survey and plots a curve of salary versus years in rank for each rank and each year. Various curves are then plotted on the same graph to compare ranks for the same year, or years for the same rank.

All Ranks, 2007 Survey:

Graph 1 provides a plot of the curve for the various ranks for the 2007 salary data, for faculty who are in statistics departments. There is nothing very surprising here. Full Professors make more than Associate Professors, who in turn make more than Assistant Professors, etc. What may be somewhat of a surprise is how large the gap is between Associate Professors and Full Professors. The 2007 gap between a beginning Assistant Professor and a beginning Associate Professor is about \$6000, while the gap between a beginning Associate Professor and a beginning Full Professor is about \$20,000. And the gap between Associate Professor and Full Professor continues to widen as the years in rank increases.

It is also not surprising that after (approximately) six years in rank, both the Assistant Professor and the Associate Professor salaries begin to decrease. Presumably, this is due to the promotion of those with higher salaries to the next rank, as well as lower raises for those who are not performing well enough to be promoted.

(Caution should be used in using these curves after year 8 for Assistant Professor and Other, year 9 for Instructor, and year 20 (possibly earlier) for Associate Professor, because of a lack of data available to fit those portions of the curves.)

Individual Ranks, Across Years:

We still look only at faculty in statistics departments. However, for years 2006 and earlier, these are inferred data, since there was no question on those surveys about the department. Data used in years 2006 and earlier are those from research universities that currently have statistics departments. Where it was clear that an entry was not from someone in a statistics department, it was removed. (We did not include biostatistics department faculty for this analysis.)

Assistant Professors:

Now let's look at Assistant Professors across the years 2003-2007. Graph 2 shows the fitted curve for each year. Salaries for new assistant professors have increased each year, starting at about \$60,000 in 2003 and rising to around \$72,000 in 2007, an increase of 20% in four years. However, in years 2004-6, the slopes of the curves are negative, at least initially. This suggests that the demand for Ph.D. statisticians was high enough that departments had to pay a premium for new faculty, which may have been taken out of the money available for raises.

Of course the cost of living has also gone up each year. Graph 3 provides the same curves as Graph 2, but in constant 2007 dollars. From this graph it is clear that most Assistant Professors are better off than in previous years. The big jump for new Assistant Professors occurred in 2004, and there is little difference between 2004, 2005, and 2006 for the first few years in rank. But after the first year, there is a clear improvement in 2007 salaries through year 5 (after which, most should move into the Associate Professor ranks).

Associate Professors:

For Associate Professors, the graphs (Graph 4 and Graph 5) are more difficult to describe and interpret. While Graph 4 does show (generally) higher salaries each year, Graph 5 shows that these increases often don't keep up with inflation.

Graph 5 shows that the best year to have become an Associate Professor was 2004. But, in general, that was not a good year to be an Associate Professor. In constant dollars, there doesn't seem to be much difference between 2005, 2006, and 2007. And after year 5, the curve for 2003 is also consistent with those years.

Both Graph 4 and Graph 5 clearly indicate that from a strictly monetary point of view, one doesn't want to remain an Associate Professor for more than about five years.

Full Professors:

For Full Professors things are fairly clear (Graphs 6 and 7). Starting with 2003 as a base, there was uniform gain in 2004, but the gains were lost in 2005. In constant 2007 dollars, 2005 salaries were below those for 2003. In 2006 Full Professors got back some of the buying power that they lost in 2005, but only reached or exceeded the 2004 level in 2007.

Additional Comments:

Graphs 1-7 give general information about faculty salaries, but it would be nice to track an individual cohort through the years. Since we don't know when faculty would be promoted from Assistant Professor to Associate Professor or from Associate Professor to Full Professor, it's difficult to track those who change ranks. But, we can follow those who stayed within a rank from 2003 through 2007. Graphs 8-10 do this (in constant 2007 dollars) for each of the three ranks. For these graphs we assumed that the individuals did not change ranks from 2003 through 2007. To get a comparison, we calculated the years in rank in 2007 for each of the years. (So, for 2003 we added 4 to the years in rank, for 2004 we added 3, etc.) Then we plotted the graphs again.

From Graph 8 we can see that Assistant Professors with no more than six years in rank are as well or better off than they were in previous years. In particular, those who became new Assistant Professor in 2003 (and would have four years in rank in 2007) had a real gain in buying power in 2004, lost a little bit of ground in 2005, more than made up for that loss in 2006, and then had another big gain in 2007. On the other hand those who became new Assistant Professors in 2004 saw their raises essentially matched by inflation in 2005 and 2006, but then saw real gains in 2007.

For Associate Professors (see Graph 9) salaries from 2004 to 2007 have not fluctuated very much, when viewed in constant dollars. Faculty members promoted to Associate Professor in 2003 saw a nice increase in 2004, followed by little more than inflationary increases. Those promoted in 2004 started off well, but have not seen increases since then.

Full Professors, as a group, are uniformly better off in 2007 than they were in any of the four previous years. (See Graph 10.) Years 2004 and 2006 were similar to each other with 2005 (and 2003 for the most part) not as good.

It is interesting to look at the shape of the graphs for Full Professors. Graph 6 provides the best view. For the past three years they have been fairly consistent with a nice upward slope through about year 10, followed by a flattening out for about five years, and then another nice increase through the end of the data. But years 2003 and 2004 are different. The curve for 2004 is almost a straight line. And the one for 2003 actually shows the largest slope where the 2005-2007 curves are flattest.