2018 Faculty Salary Equity Study
General Campus

Overview

A joint Administration-Academic Senate Committee redesigned our annual campus pay equity study of ladder rank faculty salaries. The analysis includes an examination of equity by gender and ethnicity for the campus overall and by academic school that go beyond the annual residual analysis conducted in the past (1997-2014). Analysis of salary data from October 2017 indicate no evidence of systemic disparity in pay associated with gender and/or ethnicity at the campus level when experience, discipline, and rank are included in the model.

Methodology

Multiple linear regression model: A series of regressions were used to examine potential correlations between gender/ethnicity variables and salary. This approach provided a broad view of faculty employment and pay structure by demographic variables and by experience, discipline, and rank.

- Demographic factors entered the equation as indicator variables for Women, Asian, and Underrepresented Minorities (URM).
- Experience variables include Years Since Degree, Years of Service, and Decade of Hire. Years Since Degree is the number of years passed from the year the highest degree was earned to the present. Years of Service is the number of years passed since the individual became a Ladder Rank faculty member. Decade of Hire consists of four binary categorical variables to account for the decade the individual became senate faculty: 2008 to 2017, 1998 to 2007, 1988 to 1997, or prior to 1987.
- Discipline is accounted for by adding an indicator variable for each school. The discipline variable accounts for internal demand and a market ratio derived using AAUDE salary data for UCI's peer institutions is used to account for external demand by field.
- Rank includes Current Rank and Step, Initial Rank and Step at time of hire, and Progress Rate.

Progress Rate measures number of years the faculty member is ahead or behind normal progression through the ranks. Normative time to achieve each rank is determined by computing the number of years it would take to move from the initial rank to the current rank and step, if the individual is progressing at the university's established normal rate. If an individual was promoted to their specific rank/step in the normative time, then rate of progression is 0. If they took longer than normative time, rate of progression is expressed as a negative number (years). If they took less than normative time then rate of progression is expressed as a positive number (years). The appendix shows normative time table and sample calculations.

In order to evaluate whether biases exist within progression through the ranks, several box and scatter plots by gender, ethnicity, rank, and school were generated to visualize and investigate the data. Progression rate differences by demographic groups were also tested with t-tests. Finally, a series of regression models were run to quantify progression rate differences that may exist by gender or ethnicity.

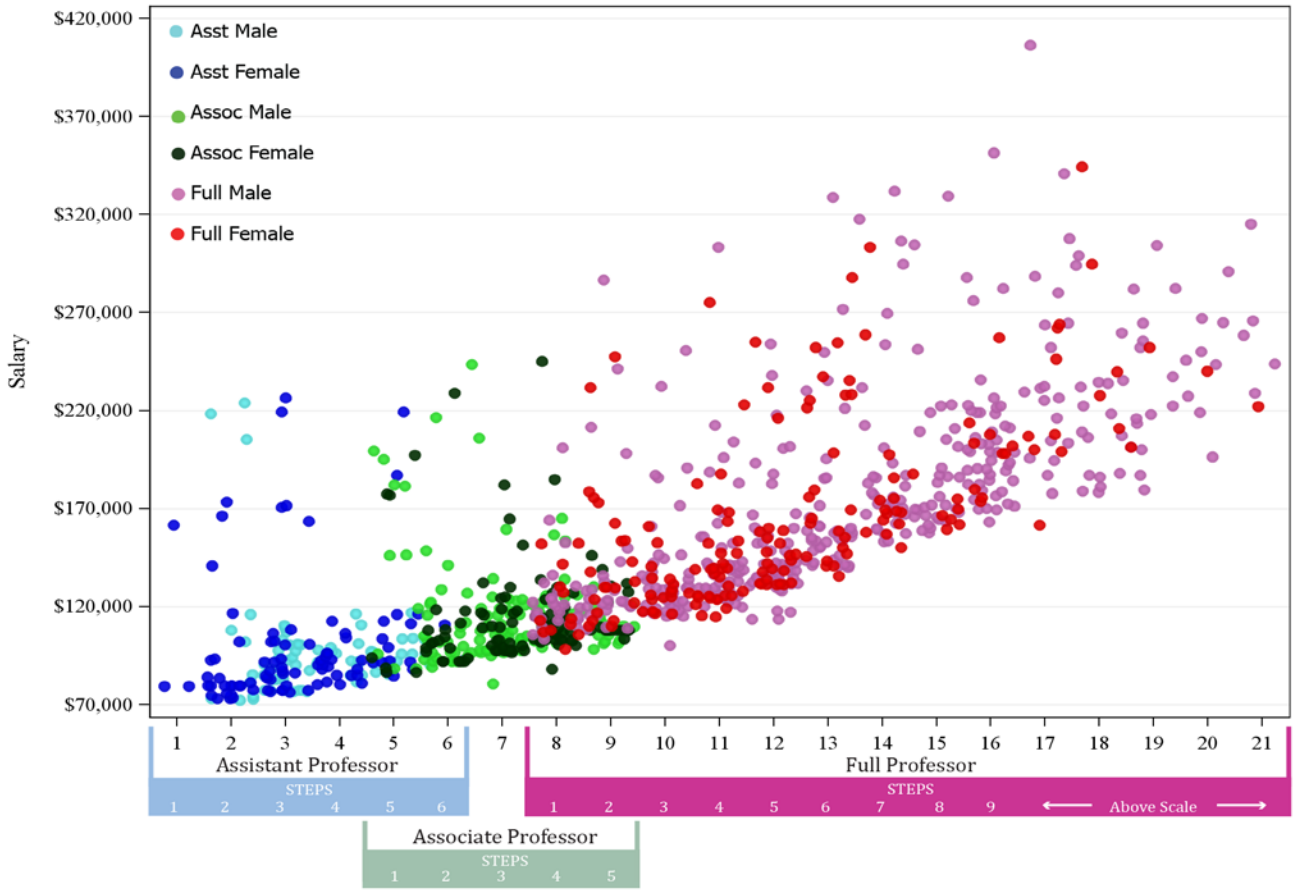
There is a possibility that one or more of the explanatory factors in the salary regression models are correlated; we therefore evaluated the effect of multicollinearity in our models. There was evidence of multicollinearity, therefore, data are presented with and without removal of variables with variance inflation factors ≥ 10. In the interest of consistency over time, variables retained in the final model corrected for collinearity are the same as the previous year.

Results for Salary Data (October 2017)

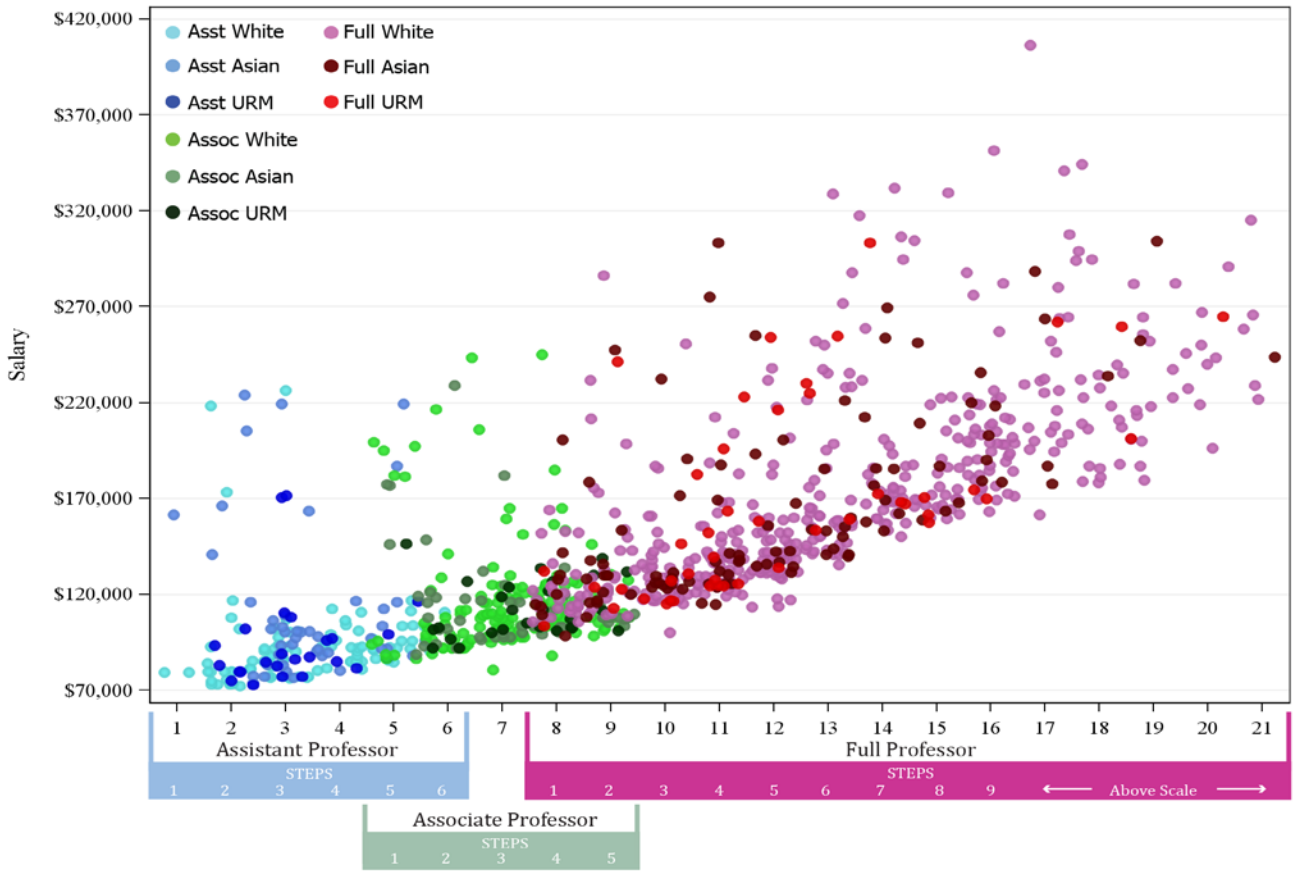
Campus level

1. Salary data for all ladder rank faculty plotted as a function of rank/step/gender and rank/step/ethnicity are illustrated in Graphs 1 and 2.

Graph 1: General Campus, Salary by Rank/Step and Gender



Graph 2: General Campus, Salary by Rank/Step and Ethnicity



2. Multiple linear regression analysis: When these data are evaluated with the simplest model that includes only demographic variables the result indicate that women earn salaries that are 11.4% lower, compared to their colleagues who are male and URM faculty earn 8% less than white faculty, but only 4% of the salary variation is explained by the model (Table 1). As additional explanatory variables are added to the model, salary differences diminish to less than 2% between women, Asian, and URMs when compared to white men; and the percentage of salary variation explained by the model increases to 91% (Table 1). This indicates that at the campus level, there is little evidence of salary inequity associated with gender and/or ethnicity.

Table 1-GC

Submodel[1]	R-sq	Significant Variables	Salary Difference: Women vs Men	Salary Difference: Asian vs White	Salary Difference: URM vs White
1 Demography	0.04	Women***, URM*	-11.4%	-3.7%	-7.6%
2 Demography, Experience	0.40	Women**, Experience***	-5.0%	2.4%	-2.2%
3 Demog, Exper, Field	0.72	Women*, Experience***, Field***	-2.7%	-2.6%	-2.0%
4 Demog, Exper, Field, Rank	0.92	Experience**, Field***, Rank***	0.3%	0.1%	1.3%
5 Demog, Exper, Field, Rank[2]	0.91	Experience*, Field***, Rank***	0.3%	0.1%	1.2%

*p<0.05, **p<0.01, ***p<0.001

[1]Experience includes years of services, years since degree, and decade of hire. Field includes school and the market ratio of salaries tied to the faculty member's department. Rank includes their starting rank at UCI, their current rank at UCI, and where they stand in relation to normal progress.
[2]Final model corrected for collinearity and included demographics, decade of hire*, years since degree, school***, market salary ratio***, progress***, current rank***, and initial rank***.

3. Rank/Step Distribution Analysis: The distribution of faculty among ranks both currently and at time of hire is displayed in Table 2 and Table 3. The tables, along with graphs of the data, reveal women and minorities predominately begin in the lower ranks while the ranks in which white men begin is more evenly dispersed. The current rank for white men is also normally distributed while the distribution for others are skewed to the right.

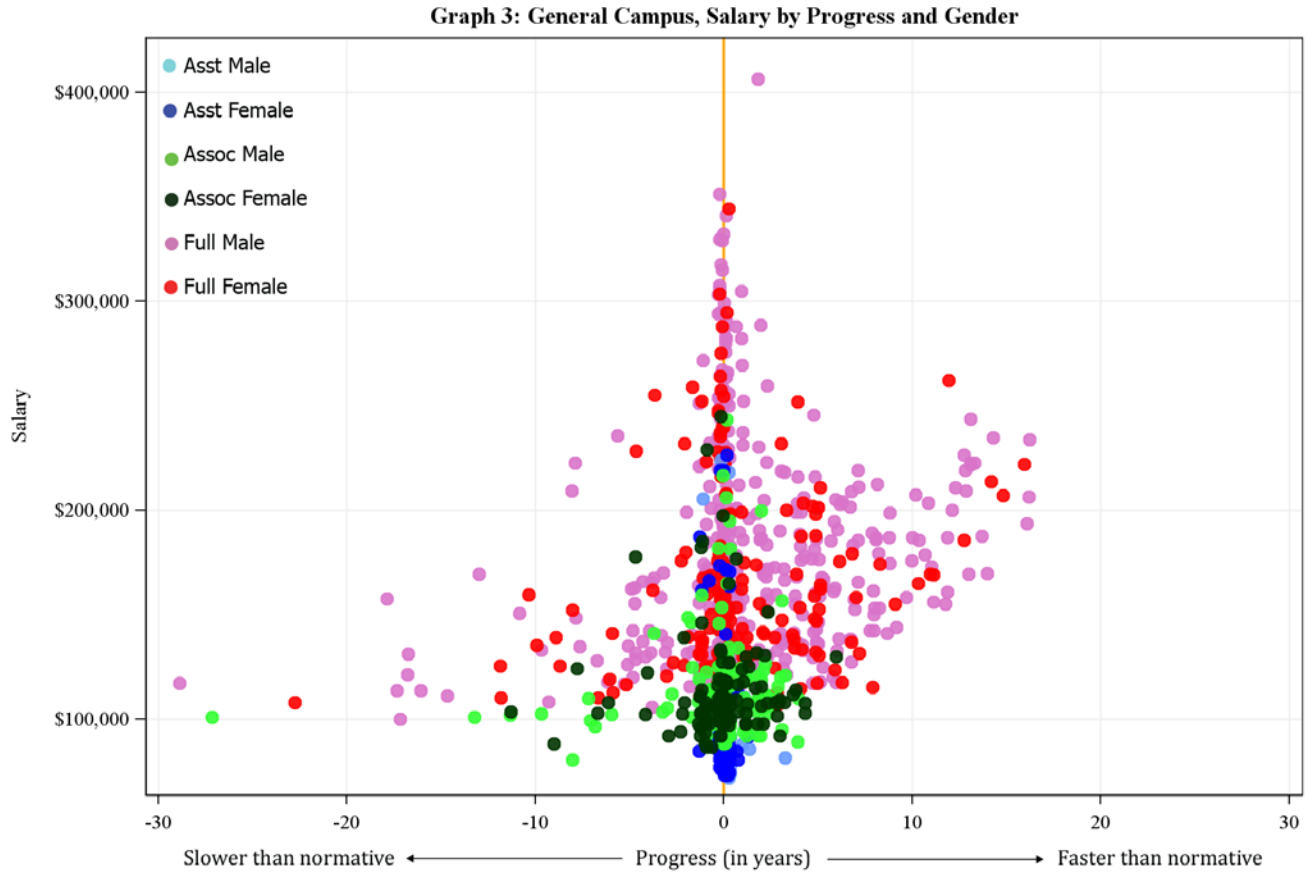
Table 2-GC White Men vs. Women Faculty

All Faculty		Current Salary N	Current Salary %	Current Salary Mean	Current Salary StdErr	CPI Initial Salary N	CPI Initial Salary %	CPI Initial Salary Mean	CPI Initial Salary StdErr
I. Asst Prof, all Steps	White/Unk Men	46	33%	$93,678	$3,171	298	52%	$80,956	$1,086
	Women	95	67%	$100,025	$3,373	275	48%	$82,515	$1,447
II. Assoc Prof, all Steps	White/Unk Men	93	45%	$118,072	$3,036	57	51%	$103,935	$3,556
	Women	114	55%	$114,468	$2,446	54	49%	$104,544	$4,160
III. Full Prof, Steps 1-5	White/Unk Men	153	59%	$139,305	$2,254	56	56%	$150,798	$5,806
	Women	108	41%	$142,172	$3,048	44	44%	$142,973	$5,143
IV. Full Prof, Steps 6-9 and Above Scale	White/Unk Men	170	70%	$208,228	$3,782	50	76%	$215,979	$6,941
	Women	73	30%	$198,199	$5,144	16	24%	$211,203	$13,529

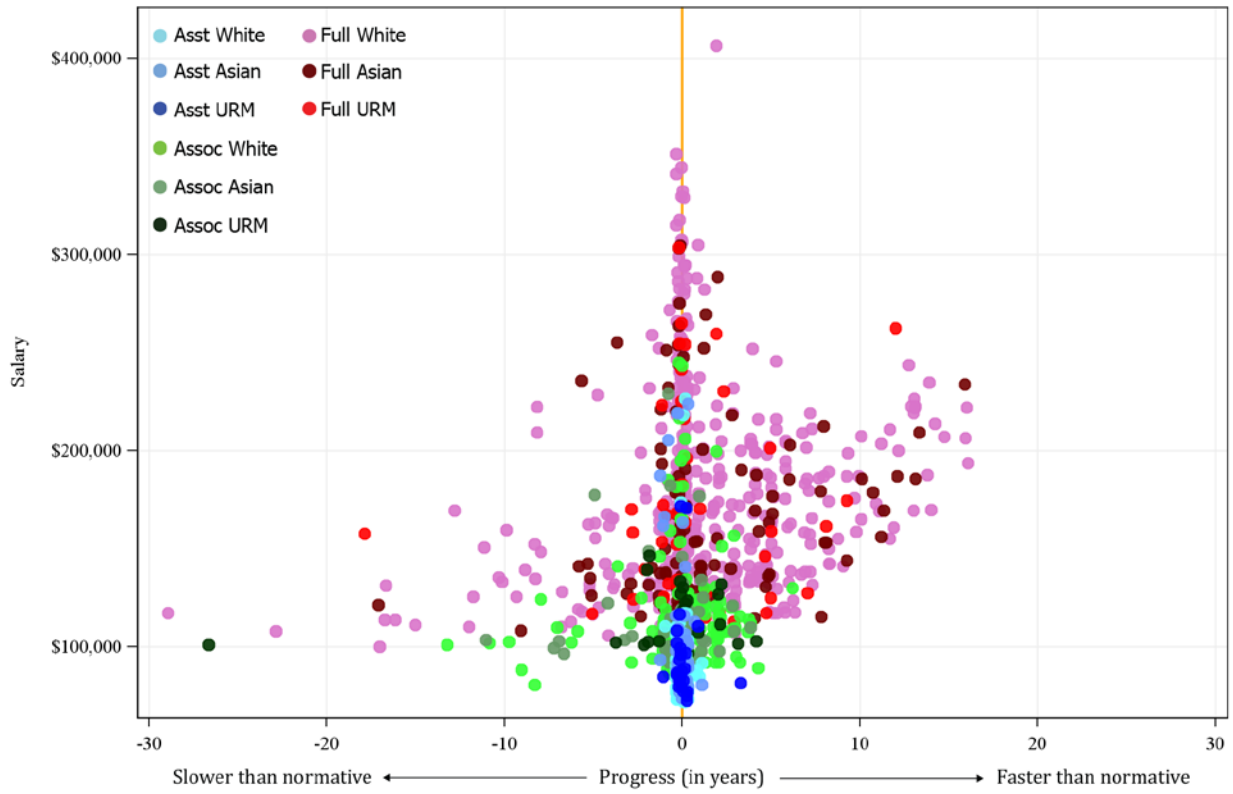
Table 3-GC White Men vs. Asian and URM Faculty

All Faculty		Current Salary				CPI Initial Salary			
		N	%	Mean	StdErr	N	%	Mean	StdErr
I. Asst Prof, all Steps	White/Unk Men	46	40%	$93,678	$3,171	298	57%	$80,956	$1,086
	Asian	44	38%	$113,645	$6,244	154	29%	$89,281	$2,314
	URM	25	22%	$95,684	$5,071	71	14%	$80,886	$2,327
II. Assoc Prof, all Steps	White/Unk Men	93	54%	$118,072	$3,036	57	64%	$103,935	$3,556
	Asian	52	30%	$115,688	$3,613	22	25%	$109,194	$6,878
	URM	27	16%	$112,693	$2,888	10	11%	$102,389	$5,634
III. Full Prof, Steps 1-5	White/Unk Men	153	62%	$139,305	$2,254	56	63%	$150,798	$5,806
	Asian	67	27%	$145,663	$4,962	20	22%	$136,422	$7,945
	URM	28	11%	$148,296	$7,831	13	15%	$175,891	$7,237
IV. Full Prof, Steps 6-9 and Above Scale	White/Unk Men	170	74%	$208,228	$3,782	50	81%	$215,979	$6,941
	Asian	42	18%	$194,838	$6,734	8	13%	$210,765	$15,081
	URM	18	8%	$203,039	$11,299	4	6%	$210,853	$33,253

4. Progress Rate Graphs: By Gender and Ethnicity are illustrated in Graphs 3 and 4.



Graph 4: General Campus, Salary by Progress and Ethnicity



5. Progress Rate Analysis: Using a simple *t*-test, the results indicate that there is no statistically significant difference in progression rate means by ethnicity when compared to white male faculty. However, women on average advanced at a rate that was 0.62 years slower than White men. After using multivariate regression to adjust for experience, discipline, and initial rank, there was no statistically significant difference in rates of progression between White men, women, URM, or Asian faculty.

Progress Rate (in years) Comparison

Comparison	n	Mean	t	df	p-value
White Male vs	462	0.97			
Women[a]	390	0.35	-2.26	842	0.024
URM	98	0.10	-1.75	558	0.080
Asian[a]	205	0.54	-1.30	467	0.195

[a]Homogeneity of variance assumption not met. Satterthwaite variance estimator used.

School Level

Analyses at the school level yield a range of results. When controlling for experience, department within the school, and rank, salary differences are, for the most part, similar to that of the campus as a whole, but there are exceptions. Some units show statistically significant lower salaries for women and minority groups while the opposite holds true in other units. Known limitations to the current analysis are that data on "Stop the Clock" was not readily available nor was there enough data to consistently address the impact of outside offers.

Summary

In summary, we found no evidence for systemic inequity in salary associated with gender and/or ethnicity among faculty at the campus level. However this study does highlight several areas for further evaluation including understanding factors contributing to low representation of women and minority faculty in the higher ranks and steps. Progression rates through the ranks should also be further examined. Although, overall progression rates are similar for all faculty, there were outliers and evidence to suggest that groups of faculty in specific academic units may benefit from intervention to help them progress through the ranks and steps.

Appendix

PROGRESSION THROUGH THE RANKS

Normal time (in years) it takes to achieve rank/step

STARTING RANK/STEP \ ENDING RANK/STEP	Asst2	Asst3	Asst4	Asst5	Asst6	Assoc1	Assoc2	Assoc3	Assoc4	Assoc5	Prof1	Prof2	Prof3	Prof4	Prof5	Prof6	Prof7	Prof8	Prof9	ProfAS
Asst1	2	4	--	--	--	6	8	10	--	--	12	15	18	21	24	27	30	33	36	40
Asst2	--	2	4	--	--	6	8	10	--	--	12	15	18	21	24	27	30	33	36	40
Asst3	--	--	2	4	--	--	6	8	10		--	13	16	19	22	25	28	31	34	38
Asst4	--	--	--	2	4	--	--	6	8	11	--	--	14	17	20	23	26	29	32	36
Asst5 *	--	--	--	--	--	--	2	4	6	--	--	9	12	15	18	21	24	27	30	33
Asst6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Assoc1	--	--	--	--	--	--	2	4	--	--	6	9	12	15	18	21	24	27	30	34
Assoc2	--	--	--	--	--	--	--	2	4	--	--	7	10	13	16	19	22	25	28	32
Assoc3	--	--	--	--	--	--	--	--	2	5	--	--	8	11	14	17	20	23	26	30
Assoc4	--	--	--	--	--	--	--	--	--	3	--	--	6	9	12	15	18	21	24	28
Assoc5	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	25
Prof1	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	24	28
Prof2	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	21	25
Prof3	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	18	22
Prof4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	15	19
Prof5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	12	16
Prof6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	9	13
Prof7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	6	10
Prof8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3	7
Prof9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4
ProfAS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

EXAMPLES:

Professor A: Normal Progression
- Initial Rank/Step: Assistant Professor III
- Current Rank/Step: Professor VI
- Years of Service: 25 years
- Expected time to get from Asst III to Prof VI: 25 years
- Progress Rate: 0 (Normal Progression)

Professor B: Accelerated Progression
- Initial Rank/Step: Assistant Professor II
- Current Rank/Step: Professor VIII
- Years of Service: 26 years
- Expected time to get from Asst II to Prof VIII: 33 years
- Progress Rate: +7 (Accelerated Progression)

Professor C: Slower Progression
- Initial Rank/Step: Assistant Professor I
- Current Rank/Step: Associate Professor IV
- Years of Service: 20 years
- Expected time to get from Asst I to Assoc IV: 12 years*
- Progress Rate: -5 (Accelerated Progression)

For Professor C, why is the progress rate not -8?

Because we have to correct for the 3 years that Prof C would have normally gotten to progress to the next step (it should not count against Prof C). Otherwise everyone who is between reviews and progressing normally will look like they are progressing slowly.

** It is not normative for someone who started at Asst I to end up as an Assoc IV. One would expect that this individual would have moved to Full Professor by now, which is why the matrix does not have a year attributed to that cross section.We obtained the expected time from Asst I to Assoc IV by adding 2 years (normal review cycle for Assoc III to Assoc IV) to the expected time from Asst I to Assoc III (10 years).*