

**Evidence Suggesting that Salaries Relate Negatively  
to the Percentage of Underrepresented Minorities and  
Females at a Metropolitan University**

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## **Abstract**

Prompted by two recent studies (Knight, 2001; Trower & Chalt, 2002), this inquiry sought to determine whether the unhurried national diversity trends have been as sluggish at USF. To provide a broader perspective, this study extends to staff and students, and considers both local and national demographic and local economic data. The data show that being female or a non-Asian resident minority tends to reduce one's chances of being either in a high salaried job at USF, or job training environment as a student. Basically the same phenomenon occurs among students, faculty, and staff. These analyses make it clear that USF reflects higher education in the United States quite well with regards to representation among resident minorities and females.

## **Introduction And Background**

Stimulated by two recent studies on faculty diversity (Knight, 2001; Trower & Chalt, 2002), this inquiry sought to determine whether the extremely unhurried trends that have occurred nationally in faculty diversification have been as sluggish and selective at USF, a major metropolitan university of some 39,000 students. To provide a broader perspective on the issue, this study extends the question to both staff and students.

Higher Education, which one might expect to be at the forefront of diversity trends, whether of people or ideas, unfortunately, appears to lag substantially behind society as a whole, at least regarding faculty diversification. Trower & Chalt (2002) note:

Women currently represent 36 percent of full-time faculty compared to 23 percent in the early 1970s. Although this represents a very substantial gain nationwide, women constitute only 25 percent of the full-time faculty at research universities, versus 10 percent in 1970. Faculty of color remain a very small part of the professorate. Whites constituted 95 percent of all faculty members in 1972 and 83 percent in 1997. Most of the growth in minority participation has been by Asian Americans, from 2.2 percent in 1975 to 4.5 percent in 1997. The percentage of African American faculty members at all levels has been remarkably stagnant—4.4 percent in 1975 and 5 percent in 1997—and almost half of all black faculties teach at historically black colleges. The increase in Hispanic faculty has also been slow: from 1.4 percent in 1975 to 2.8 percent in 1997.

Nationally, a rather strong relationship occurs both among students and staff in that more highly paid positions and disciplines tend to have greater percentages of whites, non-residents, Asians and males, whereas less highly paid positions and disciplines tend to have greater percentages of underrepresented minorities and particularly females. Diversity trends in higher education have most closely paralleled local and national population trends in disciplines where pay for faculty and program graduates is comparatively low. Where compensation for faculty and graduates is high, the diversification process is substantially retarded. On this topic, Stevens (2002) asserted that if an alien were to observe higher education, s/he would note two things, one of which is: "Women and minorities appear to avoid association with white men, not immediately in all cases, but everywhere, over time."

## Methods

Most of the data used in this study came either from official USF (USF INFOMART, 2002), Florida or U.S. sources (SREB, 2001; Knight, 2001; Olsen, K, 1999). Trend data, where available was used to evaluate diversity trends among Faculty, Staff and Students. These trends were compared with national and state demographic statistics. Internal faculty/staff salary data (AAUP, 2001) and baccalaureate student first-year salary data at the department level across the Florida State University System (SUS) on over 34,000 graduates was used to compare salaries by departments (FETPIP, 2002). SUS-wide, approximately 70% of baccalaureate graduates obtain employment in Florida within one year following graduation, so these statistics may be considered reasonably representative.

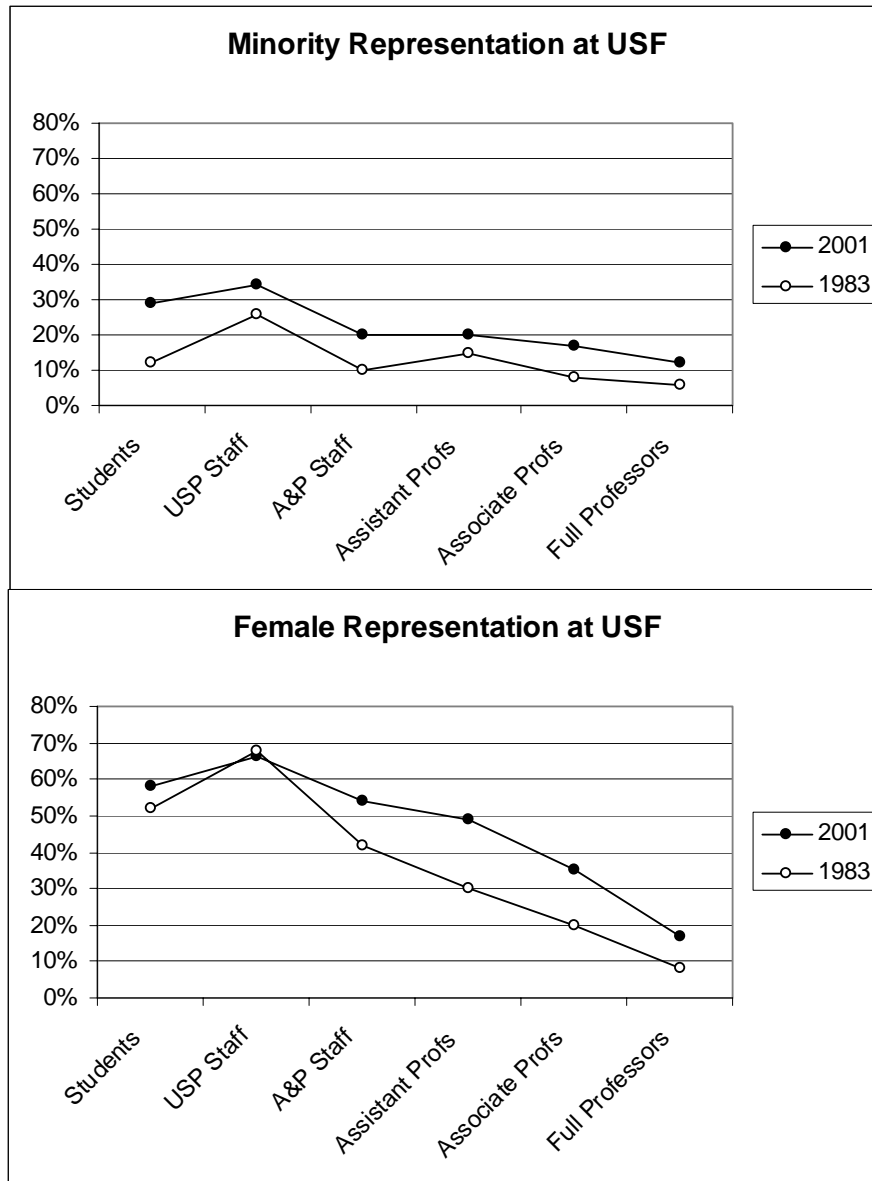
The data allow separation of students into resident and non-resident (foreign) groups when investigating minority representation. However, among faculty, it proved impossible to separate foreign-born from resident, thus underrepresented resident minority data are confounded in the faculty data.

## Results And Discussion

Paralleling their growth in the U.S. population, as the data below indicate, steady growth occurred at USF in both resident minority and female representation among all groups considered from 1983 through 2001. Interestingly, however, the greatest growth has tended to occur in areas characterized by lower compensation. **Figure 1** lists categories from left to right roughly by level of compensation (with University Support Personnel [USP] the lowest paid and full professors the highest paid). Note among minorities (**Figure 1** top panel), that growth among students and Administrative & Professional (A&P) staff was fairly great (from circa 10% to respectively 30% and 20%). Minorities were already well represented among low-salaried University Support Personnel (USP) staff in 1983 (26%), and reasonably well represented among Associate Professors (15%), leaving less room for growth. Considerable growth in minority representation has occurred among both Associate and Full Professors. However, one must realize first, that in 1983 those were respectively only 8% and 6% minority, second, that a substantial proportion of these are Asians, who are not underrepresented in higher education, and third, as Finkelstein, *et. al.* (1998) note, many new faculty in the sciences (circa 25%) tend to be foreign-born, which necessarily reduces the representation among resident minority in these generally higher-salaried fields. Also, although this suggests fairly substantial growth, the percent of minority Assistant professors reached 22% in 1992, but was only 20% in 2001.

The bottom panel shows a clear downward trend for female representation as compensation rises. For females, the greatest growth between 1983 and 2001 occurred at the assistant professor rank. Recently, there has been fairly good growth among associate professors and very gradual increases in the full professor ranks.

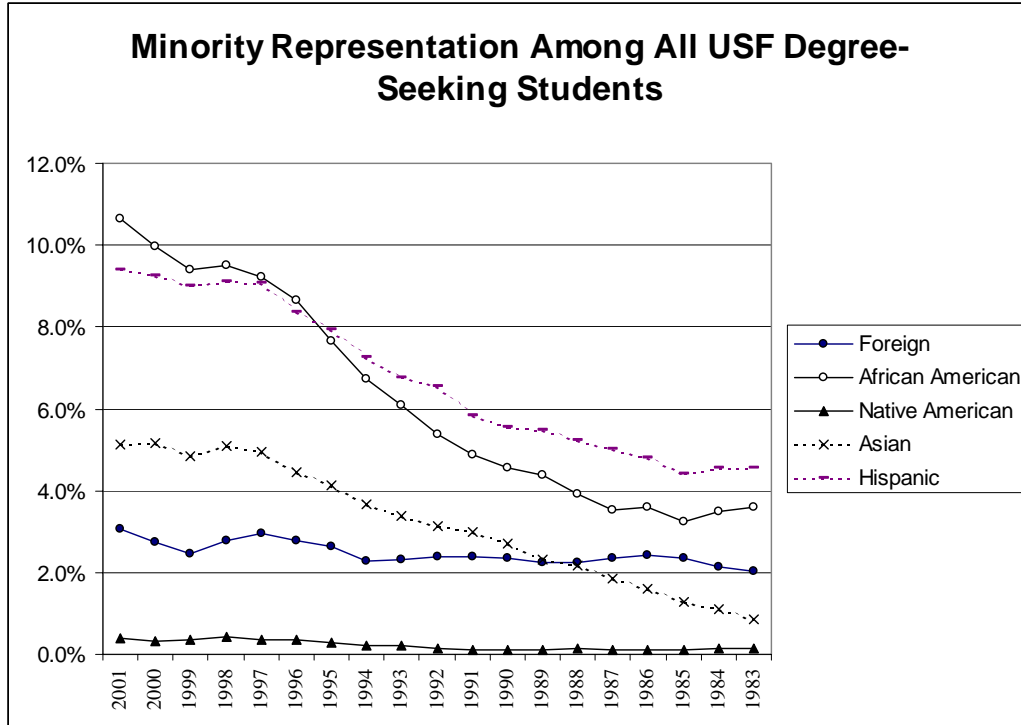
Academics argue that this lack of representation results primarily from a lack of qualified candidates for positions that require advanced graduate degrees. Sanderson, *et al.* (2001) supports this argument for the most underrepresented minority faculty (African American, Native Americans and Hispanic) in almost all fields, and for females in the physical sciences and engineering. This is discussed more thoroughly later.



**Figure 1**  
 Minority and Female Representation at USF – 1983 and 2001

***Representation Among Students***

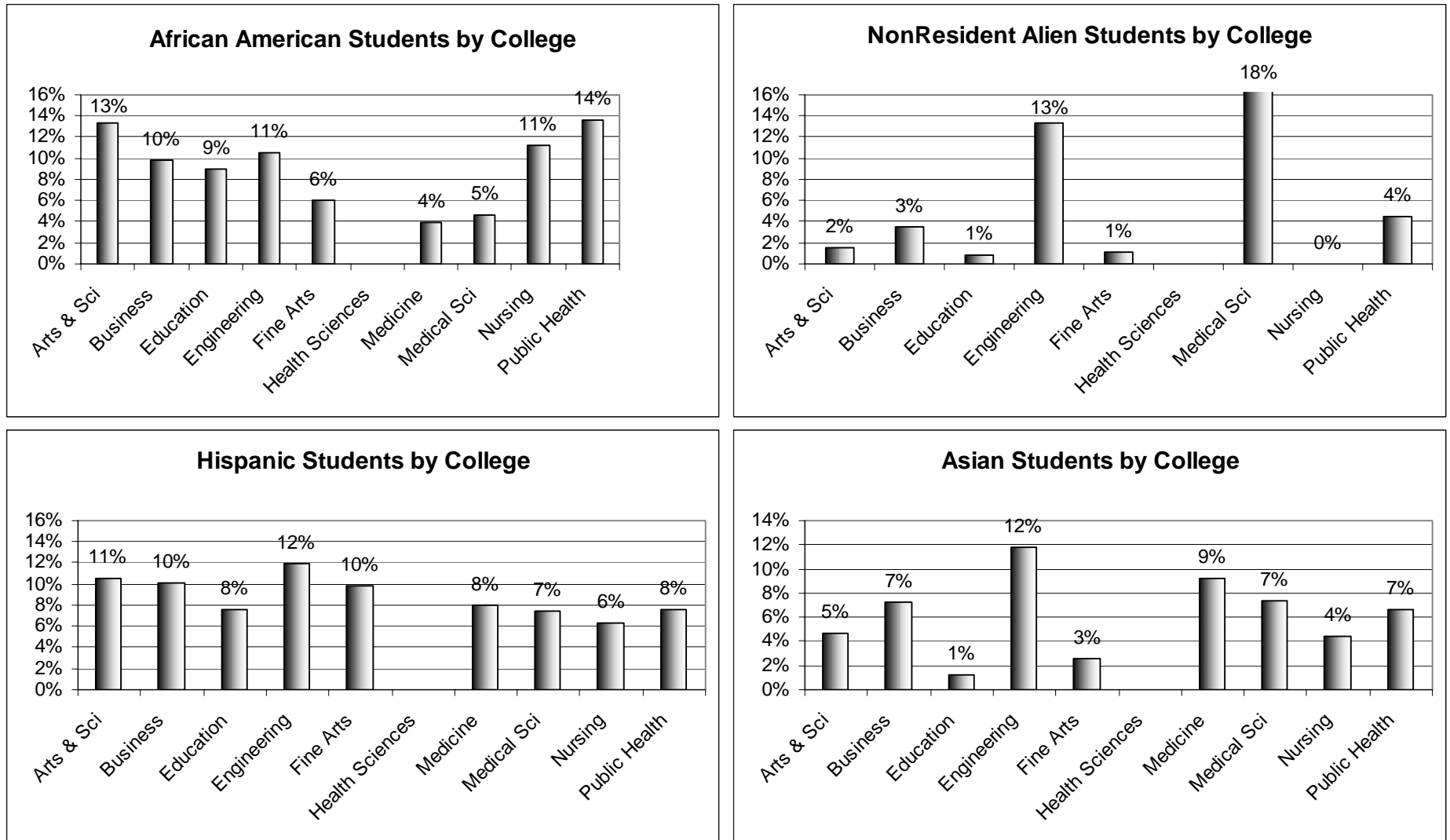
Between 1983 and 2001, minority students increased from 12% to 28% of USF’s student population. As Figure 2 shows, during that time African-American and Hispanic American students increased from about 4% to over 10% while Asians increased from about 1% to over 5%. However, among graduate students, while making up 28% of all students, resident minority students made up only about 20% of masters degree-seekers and 17% of doctoral degree-seekers in 2001. Females have comprised some 50% or more at all degree-seeking levels since 1983 (bachelors, etc.), although they have tended to be considerably less than that in physical science disciplines and even less in Engineering.



**Figure 2**  
Minority Trends Among Degree-Seeking Students

***Discipline Clustering Among Students***

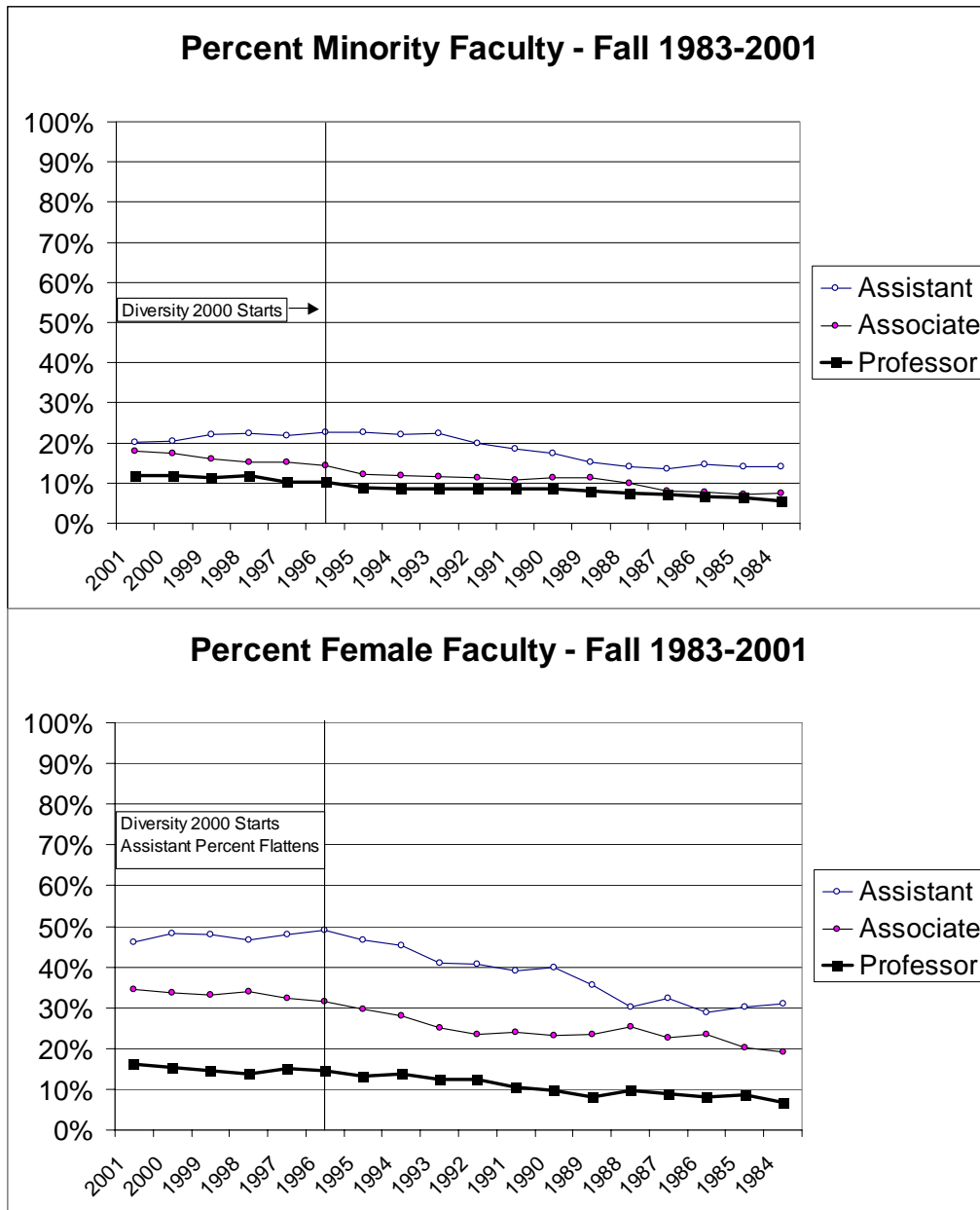
As Figure 3 shows, Asian students and non-resident students, tend to congregate in the generally higher-salaried colleges of Business, Engineering and Health Sciences. African Americans made up 10% or more of students everywhere except Medicine, Medical Science and Visual & Performing Arts. Hispanic American students are fairly evenly distributed by discipline, making up between 6% and 12% of every USF College in 2001. Among under-represented minorities, there was a small but consistent tendency to be present in greater numbers in colleges that generally receive lower salaries upon graduation. Consistent with this, female students made up only 20% of 2001 Engineering students and 40% in Business and Medicine (the three most highly paid areas), while everywhere else, they comprise at least 50% of students.



**Figure 3**  
 Specific Minority Student Representation by College – Fall 2001

### Minority and Female Faculty Growth is Greater at Lower Salaried Ranks

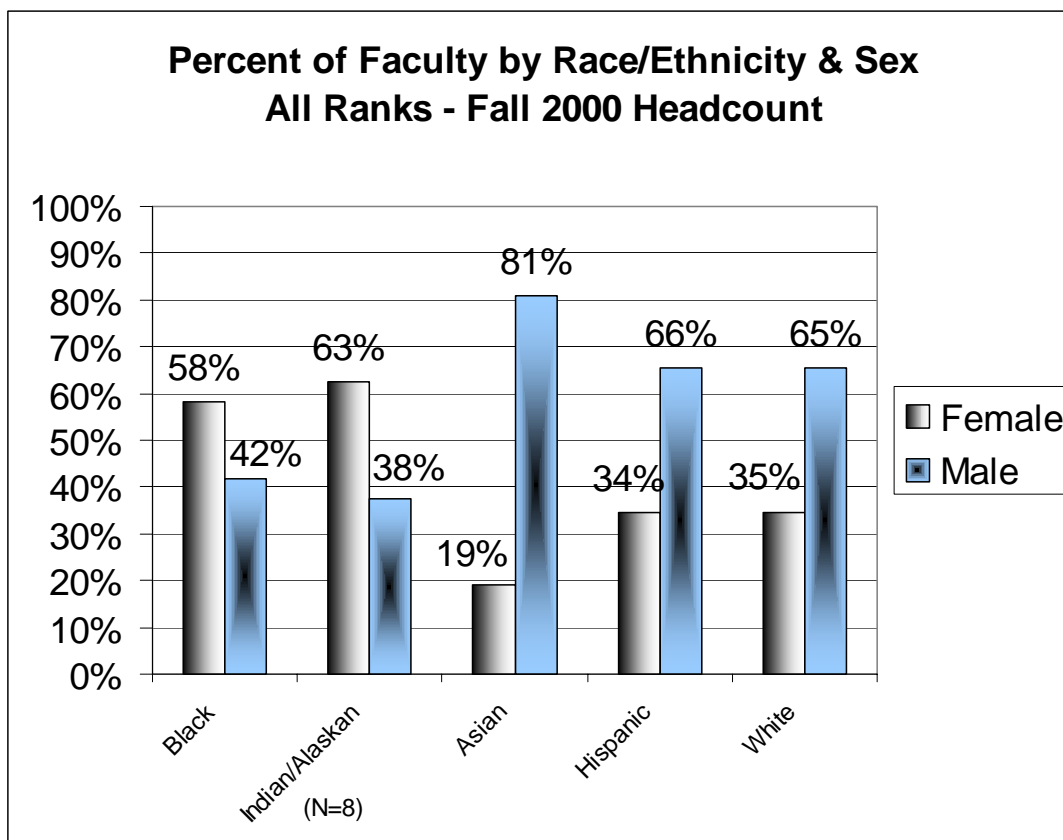
Minorities and women show the lowest representation among faculty at USF (Figure 1). The data for faculty reflect fall 2001 numbers for full-time instructional faculty on the Tampa Campus, with the exception only of Marine Science. Figure 4 shows that since the Diversity 2000 initiative began (1996), only for associate professors has the curve steepened upward for minorities and females, while the assistant professor trend flattened for both groups.



**Figure 4**  
Growth Trends Among Minority and Female Faculty by Rank

As Figure 5 shows, some interesting interactions occur regarding sex and minority faculty representation. Only two groups (African Americans and Native Americans) have more female than male faculty at USF. This may possibly reflect a tendency in the hiring process

to “kill” two birds with one stone by adding both a minority and a female to a department. This same effect does not, however, occur among either Hispanic (66% male) or Asian faculty who were 81% male in fall 2001. Asians are the only “over represented” minority among rank faculty when compared with the state’s population, and like Asian and foreign students, as well as white and foreign-born male faculty, they show a consistent tendency to locate in higher-salaried disciplines.



**Figure 5**

Interaction of Race/Ethnicity and Sex Among USF Faculty

### **Staff Representation**

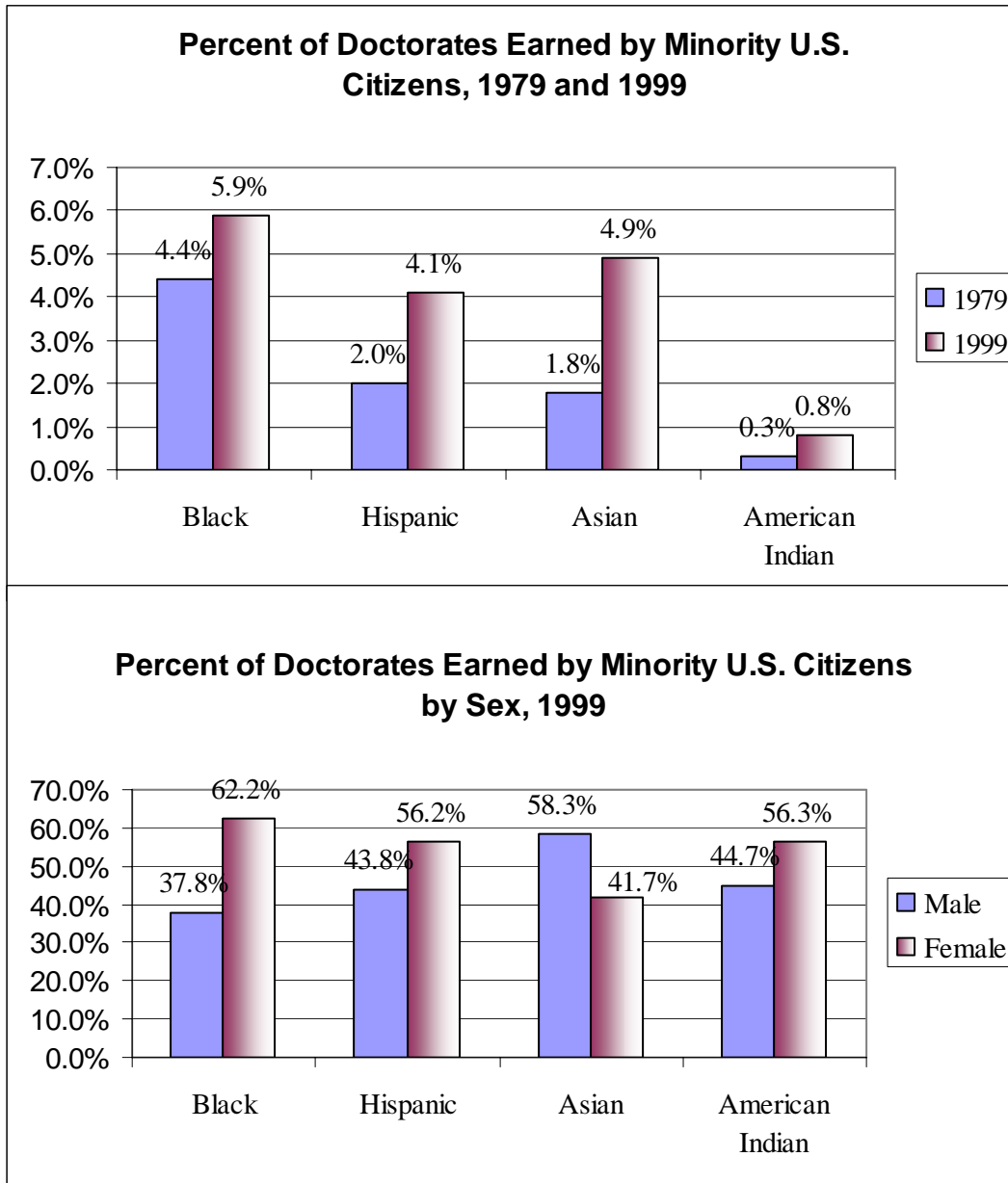
Among USF’s generally lower salaried staff positions, while minorities made up some 33% of all USP staff, they only make up 10% of the two highest pay classifications (Professional, non-faculty and Skilled Crafts). Females make up two thirds of all USP employees, but again, they make up only 52% of the higher pay classifications, and 74% of the lowest two pay classifications (Secretarial/Clerical and Service/Maintenance). The lower-salaried staff positions at USF have always been well populated by underrepresented minorities and females, with more growth occurring for minorities than females since 1983 (Figure 1).

### **The Pipeline Argument**

Many academics argue that the primary reason for the shortage of minority and female faculty among professors in general, and particularly at the rank of full professor is simply a lack of qualified candidates. The national statistics reported in Figure 6 (Sanderson, *et. al.*, 2000) shows that the percentage of doctorates granted in the U.S. to African American and



Hispanic students fairly closely matches their representation among the nation's faculty as reported by Trower & Chalt (2002) at 5% African American and 2.8% Hispanic.

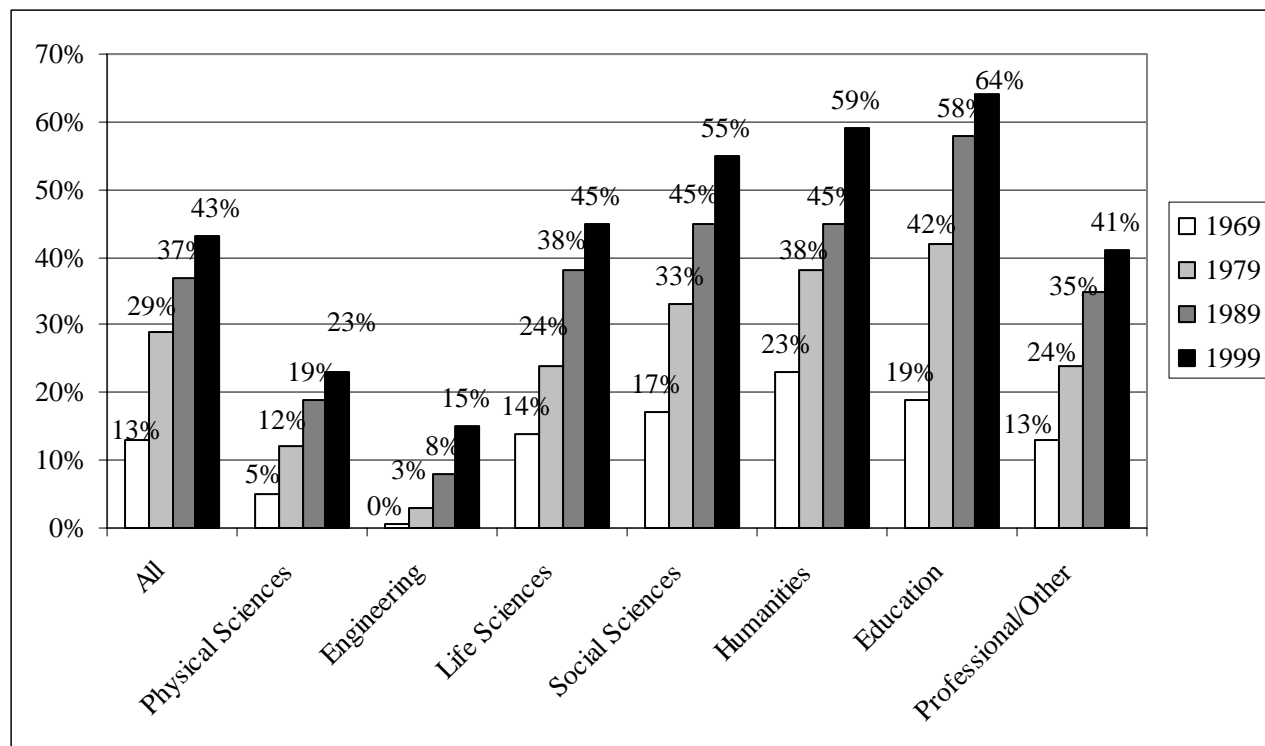


**Figure 6**

Doctorates Earned by U.S. Citizens by Minority Group – 1979 and 1999

One could also argue that the national numbers reported by Trower & Chalt (2002) of female faculty at 36% closely matches the 37% of all doctoral recipients in 1989 that Figure 7 shows. However, there has obviously been a steady growth in the percentage of doctorates earned by women, and that 37% is 12 years before the 2001 statistics shown in Figure 1. In 1989, female faculty made up 40% of USF's assistant professors. Figure 7 clearly shows the major differences that occur in the percent of doctorates granted across broad fields. All fields show substantial growth, with female Ph.D.s making up 40% or more of degree recipients in all fields except physical sciences and engineering by 1999. This growth has

been so great recently, that if one were to extend the linear growth trend of 1979 to 1999,<sup>1</sup> by 2059, all fields, even engineering, would be graduating more than 50% female Ph.D.s.



**Figure 7**

**Female Doctoral Recipients by Discipline – 1969 to 1999**

There is clearly strong support for the pipeline argument; at least as far as minority representation is concerned. However, it appears that one must look beyond this to explain the lack of representation among females among higher ranks. Also, an additional issue relating to the minority pipeline problem is foreign-born faculty. Finkelstein, *et. al.* (1998) report that for the 1992 cohort of new faculty, non-native born faculty constituted “17 percent of the new cohort (25 percent in the natural sciences)” but only 12 percent of the senior cohort in 1992. Thus, a fair percentage of minority faculty, particularly in the higher paid sciences, are not American source minorities, but are naturalized Americans.

***An Attempt to Estimate Expected Representation by Faculty Rank***

In an attempt to estimate what one should expect regarding the movement of minorities and females from lower to higher faculty ranks at USF, estimates were developed using percentages from five years prior at the respective ranks (assuming a 20% turnover at the higher rank and promotions proportional to lower rank population representation). These estimates suggest that promotions for underrepresented minority faculty to both associate and full professor fell quite near expectations, and that of Asian faculty consistently fell above expectations (over an eight year period). However, although female assistant professor promotions to the associate professor ranks were close to expectations, promotions from associate to full professor rank frequently fall below expectations. This was

<sup>1</sup> This trend is less steep than from 1969 to 1979.

not true in all years, but occurred far more frequently here than in any other comparison between actual and expected promotions. On a related topic, full professor salaries averaged \$16,000 more than those of associate professors, while associate salaries averaged \$11,000 more than assistant professor salaries across 18 departments in USF's largest college, Arts & Sciences (AAUP, 2001).

### **Salaries by Sex and Race/Ethnic Representation**

A comparison between female and minority representation and mean departmental salaries for 38 departments having at least ten faculty was conducted. For this analysis, mean salaries were standardized by rank, with the mean percentage at each rank for the college of Arts & Sciences multiplied times the mean within-rank salary for each department to create a standardized estimate of mean salaries. This assures that departments having more full professors are not given an advantage over those having a smaller percentage of higher-ranking professors.<sup>2</sup> The data suggest that no relationship occurs between the percentage of faculty who are minority and mean department salary, except among Asians, who show a fairly steep increase in salary as their representation increases. However, for female faculty, this does not hold. As the percentage of female faculty increases, the percent of high salaried departments drops, from 45% where less than 20% of the faculty is female to 10% where 60% or more of the faculty are female. The same phenomenon holds true for baccalaureate salaries around Florida, although in this case, for both African American and Hispanic American representation, a small drop occurs for higher salaried disciplines where 5% or more of faculty are African American or Hispanic American (Figure 9). Student representation closely models faculty representation across departments.

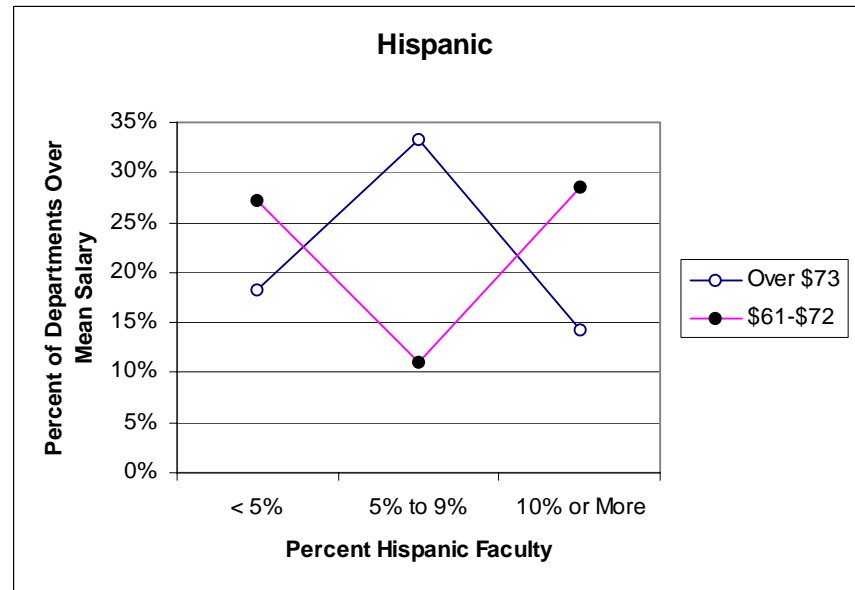
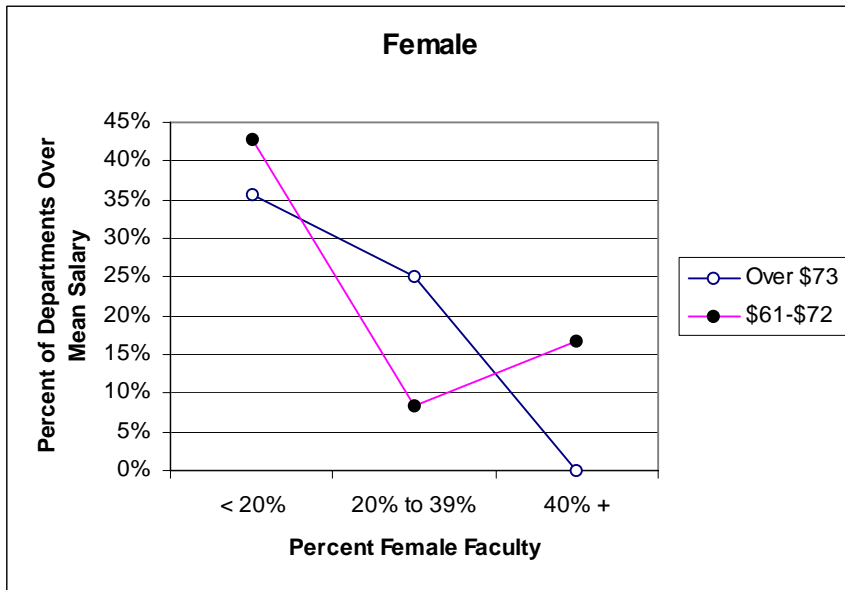
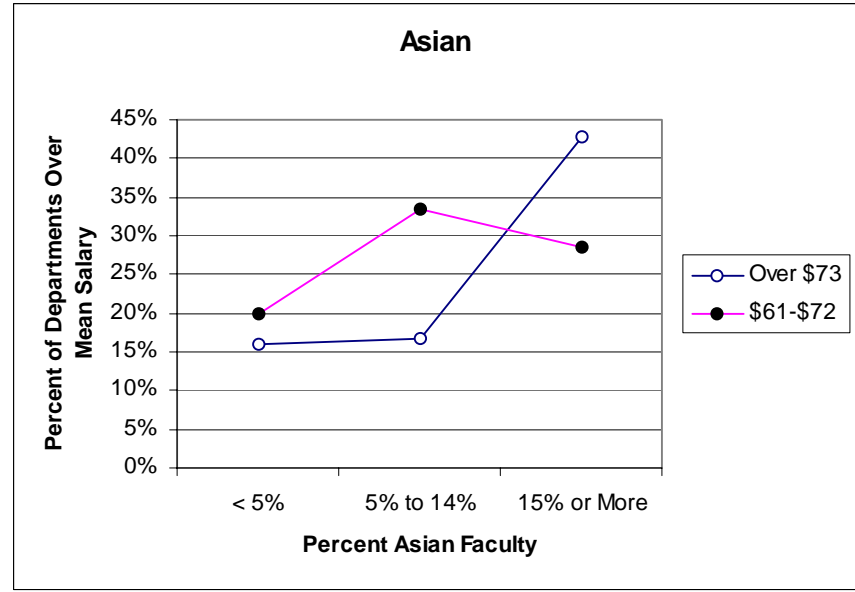
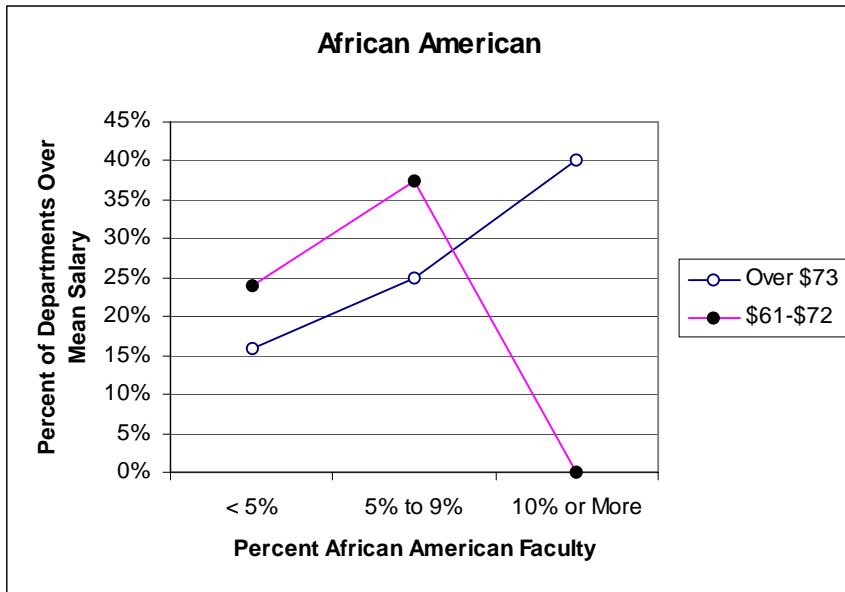
Figure 8 shows the effect noted for high salary departments. Mean faculty salaries of over \$73,000 make up the upper 21% of departments and the \$61,000 to \$72,000 salary range comprises the next 24% of departments. The figure shows that as female representation decreases, the percentage of higher salaries increases. All minority subpopulations show more positive trends for at least one high salary grouping. It is interesting to note that as the percent of Asians increases, the percent of high salary departments does also.

Figure 9 reflects an analysis created to see whether this also occurs for students. Using FETPIP (2000) data for 34,000 SUS-wide baccalaureate graduates Figure 9 shows that almost exactly the same phenomenon occurs as in Figure 8.<sup>3</sup> There is very little relationship for either African American or Hispanic graduates, however, as the percentage of female faculty increases, the percentage of high salary disciplines decreases, and the opposite occurs for Asians, perhaps to an even greater extent than in Figure 8.

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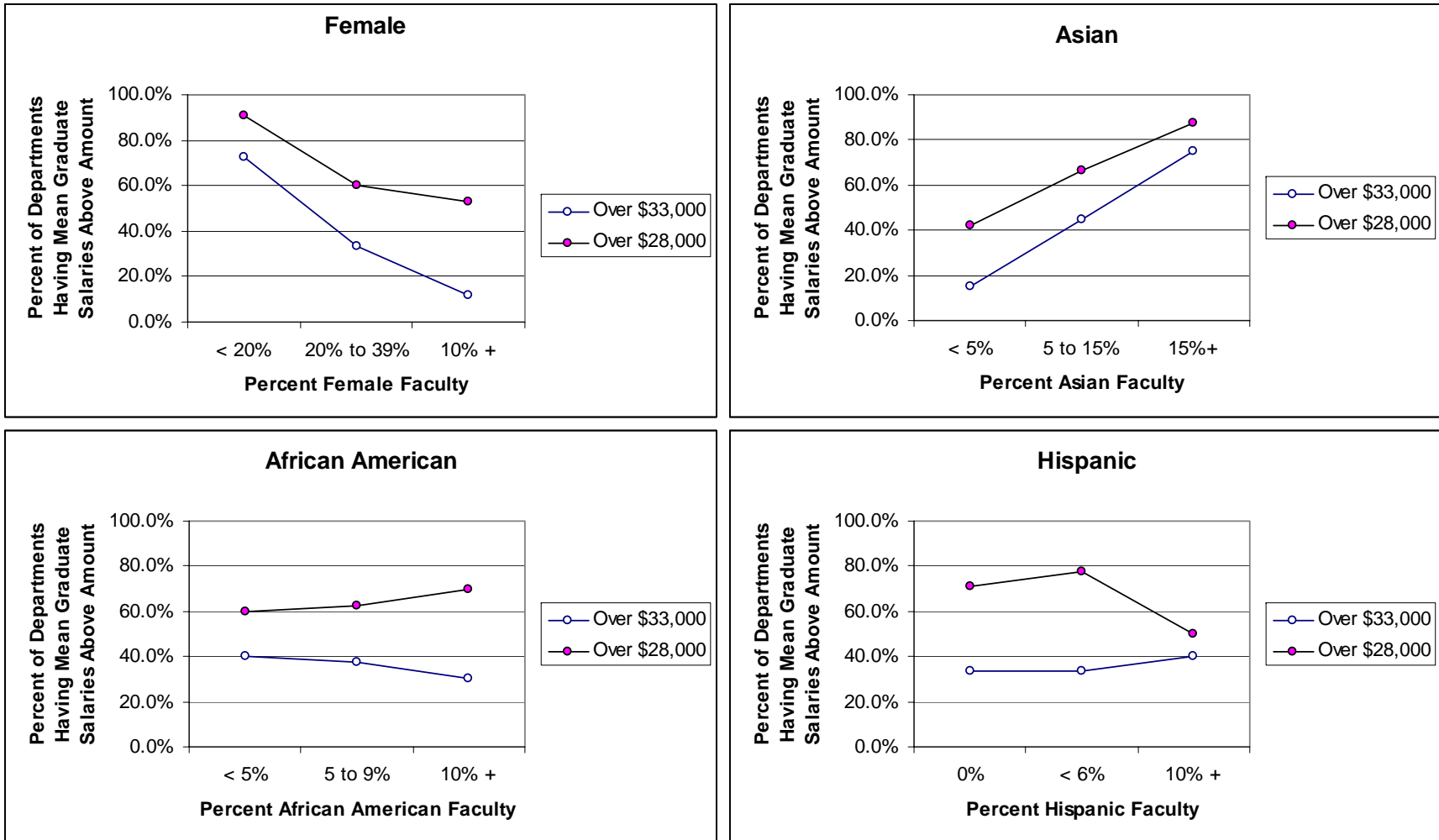
<sup>2</sup> Accentuating the possible impact of this effect had non-standardized salaries been used, is the negative relationship ( $r = -.475, p < .01$ ) between a department's percentage of full professors and the percentage of female faculty. There is a lesser and positive correlation ( $r = .338, p < .05$ ) between the percentage of minority faculty and the percentage of associate professors.

<sup>3</sup> For these data, \$33,000 or higher mean salaries occurred for only about one-third of the departments, and \$28,000 or higher salaries for 48% of the departments. Thus, these reflect approximately median and one standard deviation above median mean salaries for this group of graduates. Note also, that data for college of education graduates is a bit ambivalent, because the salaries are slightly above average teacher salaries, however, some graduates do not work as teachers, so this is probably fairly accurate.



**Figure 8**

Percent of Departments with High Salaries by Minority and Female Faculty Percentages (N of Departments = 38)



**Figure 9**

Percent of High Salaried Bachelor's Graduates and Percent of Faculty by Race/Ethnicity and Sex by Department

## Conclusions

These data show that considerable increases in the representation of minorities and females has occurred at USF and nationally over the past 20 years. However, they also indicate that the slowest growth has occurred in the areas having highest salaries, and that this is particularly true for females. Further, although little evidence of salary bias occurs for minorities, some does for women. This finding is exactly the same as that of Nettles, *et al* (2000, p. 22) in their extensive national study.

## References

- AAUP (2001). *AAUP faculty salary survey for USF*. American Association of University Professors. Internal Document, USF, Tampa, FL.
- FETPIP (2002). *1999-00 SUS occupational data by program*. Florida Education & Training Placement Information Program, Tallahassee, FL. Downloaded from the WWW on August 1, 2002. <http://www.pluralism.org/>
- Finkelstein, M.J., Seal, R., & Schuster, J.H. (1998). *New entrants to the full-time faculty of higher education institutions*. NCES document #98-252.
- Knight (2001). *Gender intelligence*. Policy Perspective of the Knight Higher Education Collaborative. September, 2001, Philadelphia, PA.
- Micceri, T. (2001). *Student minority representation comparing usf to state and national statistics 1983 to 2001*. BPA-IR Analytical Report 200111\_1.
- Nettles, M.T., Perna, L.W., Bradburn, E.M. & Zimble, L. (2000). *Salary, promotion, and tenure status of minority and women faculty in u.s. colleges and universities*. NCES Report 2000-173, Washington, D.C.
- Olsen, K. (1999). *Despite increases, women and minorities still underrepresented in undergraduate and graduate s&e education*. NSF Data Brief - NSF 99-320, January 15, 1999. Downloaded from the WWW on July 30, 2002. <http://www.nsf.gov/sbe/srs/databrf/sdb99320.htm>
- SREB (2001). *SREB fact book*. Downloaded from the WWW on July 30, 2002: <http://www.sreb.org/main/EdData/FactBook/indexoftables.asp>
- Sanderson, A.R., Dugoni, B.D., Hoffer, T. & Myers, S.L. (2000). *Doctorate recipients from united states universities: Summary report 1999*. National Opinion Research Center at the University of Chicago, Chicago, IL.
- Stevens, D. (2002). *21<sup>st</sup> Century Seabees: Florida institutional researchers as bridge builders* Keynote address at the 2002 Florida Association for Institutional Research Conference. July 17-19, 2002.
- Trower, C.A., & Chalt, R.P. (2002). *Faculty diversity*. Harvard Magazine. p 33, March-April 2002: Volume 104, Number 4. Downloaded from the WWW on July 1, 2002: <http://www.harvard-magazine.com/on-line/02ma/text/030218.html>
- USF Info Mart (2002). Downloaded from the WWW in August, 2002: <http://usfweb.usf.edu/usfirp/infomart/Faculty00/FacultyQuery.asp>