



American Planning Association and its professional institute,

American Institute of Certified Planners

Technical Report for the Minority Pass Rate Project

September 22, 2004



Unpublished Work Copyright © 2004 by Educational Testing Service. All Rights Reserved. These materials are an unpublished, proprietary work of ETS. Any limited distribution shall not constitute publication. This work may not be reproduced or distributed to third parties without ETS's prior written consent. Submit all requests through www.ets.org/legal/copyright



The Technical Report for the Minority Pass Rate Project

AICP Commission Introduction

March 2005

This study was prompted by the AICP Commission's distress in learning that the 2002 examination pass rate for Whites was 61.8% and for Minorities was 43.4%. There may be some small consolation in noting that this study shows that 2002 was a very bad year in that respect. The Minority pass rate was higher in other years and nearly as high as the White pass rate was in 2003 – 64.6%. But then the Minority pass rate in 2003 was 35.2%. There clearly is a White/Minority gap.

This technical report, prepared by Educational Testing Service, seems thorough and well done. But it is disappointing in that it delivers no direct solutions. Indeed, it is not clear whether it offers any solutions at all.

The three most significant variables that statistically explain exam failure are: 1) being in the minority, 2) not attending an accredited school, and 3) previously failing the exam. Professional experience seems to play non-linear role. Performance is high after leaving school, drops off in years four through 6, and then rises again.

The study noted 79 particular test items over the six years that statistically seemed to favor certain groups -- Minorities, Whites, Men, and Women. Twenty-eight of those items had already been altered or eliminated by prior committee actions for reasons we cannot track. (The exam is under continuous improvement so these alterations and eliminations are not unusual.) Seven members of the current AICP Exam Committee (including two African Americans, one Asian, and one Hispanic) and the Executive Director of APA reviewed each of the remaining 51 questions at a meeting in Princeton, NJ, on Nov. 6, 2004. The committee found no reasons to modify or eliminate any of the remaining 51 items. It could detect no racial, ethnic or gender bias in the questions.

The ETS study shows that the impact of higher education is significant for both Minority and White examinees. Does it matter which school was attended or if it was an Historically Black College or University? The data are too sparse to tell. Of the Minorities, 30 reported going to HBCUs, 407 reported other schools, 662 did not report this information at all. Similarly, 126 Whites reported attending HBCUs, 1,446 reported other schools, and 1,619 did not report their schools.

The Exam committee has advised us to put no confidence in the data analysis of the "bundles" of questions or sections of the exam (Figures 6-15) because the committee has over the past two years found a very large number of questions had been incorrectly categorized, perhaps 20-25%, due to revisions over the years in the categories of the exam without simultaneous



correction of the classifications of the old questions. These have been corrected in the past two years, but the prior condition renders the data in that part of the study suspect.

The conclusions of the study are also limited by its lumping of all minorities into one category: Asians, Blacks, Hispanics, American Indians, and others. This was done because the number of exam takers in these categories was too small to perform the statistical analysis on each group. The pass rates for each of the sub-groups, shown in the two tables at the end of this introduction, reveal quite significant differences among minority groups, yet all minority pass rates, except for the "other" category, are substantially lower than whites.

So why do Minorities fail at a higher rate than Whites and what can we do about it? The reasons are poorly explained by this study. We conclude that the reasons have much to do with the inequalities of community life and education that are racially based in our society. By the time people get to college, professional life, and taking the AICP exam many of these differences are well set and difficult to overcome. Can we do anything about it? We believe we can. In response to this study, the AICP Commission proposed the following Goal and Strategies for the APA Development Plan in Houston in January 2005.

Goal 5. Expand membership in APA and AICP to reflect America's diversity

Strategies:

- 5.1 Expand and improve the recruitment and training of students of color in all planning schools.
- 5.2 Facilitate the placement of planning students of color in planning jobs.
- 5.3 Assist applicants of color in passing the AICP exam.
- 5.4 Partner and coordinate with academic institutions (PAB, ACSP, etc.) and appropriate Divisions of APA in the pursuit of these strategies.
- 5.5 Recruit a greater proportion of planners of color to leadership positions, on committees and task forces, and on special projects.
- 5.6 Redesign products and services to meet the needs of divers population for effectively.

In addition, the Commission has requested that the exam committee consider requiring additional data on exam takers so that future analyses of this sort might yield more effective results. Additional data collected might include:

1. Mandatory school information.
2. Date of Birth.
3. Language (candidate's first or best language).
4. Grade Point Average.
5. Years of experience and specific information of kind of experience.



- 6. Time and materials used in preparation for the exam.
- 7. Why they need this certification (to continue in current job, for promotion, etc.).

Finally, we can identify success stories, like Kenya Wheeler's experience with the AICP exam* and build programs of exam preparation that support that experience. We can give priority to work with the Planning and the Black Community Division of APA and other Minority planners to imagine and craft solutions. We can build truly better communities.

*See "The Choice: My Experience Taking the AICP Exam" by Kenya Wheeler, AICP. 2004. *Planning and the Black Community News*, Winter, 2004, pp. 5-6.

http://www.pbcdplanning.freesevers.com/PBCDNews_WINTER2004.pdf

Number of AICP Exam Takers and Pass Rates by Ethnicity/ Race and Year

| | 1997 | 1997 | 1998 | 1998 | 2000 | 2000 | 2001 | 2001 |
|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | Takers | % Pass | Takers | % Pass | Takers | % Pass | Takers | % Pass |
| Minorities | | | | | | | | |
| Asian | 26 | 50% | 36 | 67% | 37 | 59% | 42 | 71% |
| Black | 27 | 30% | 38 | 39% | 26 | 42% | 36 | 33% |
| Hispanic | 22 | 52% | 26 | 50% | 26 | 65% | 37 | 62% |
| Indian | 2 | 100% | 2 | 50% | 3 | 33% | 4 | 75% |
| Other | 5 | 60% | 11 | 55% | 68 | 84% | 89 | 87% |
| White | 464 | 80% | 591 | 85% | 605 | 84% | 529 | 86% |

| | 2002 | 2002 | 2003 | 2003 | Total 1997-98 & 2000-2003 | | |
|-------------------|-------------|-------------|-------------|-------------|--------------------------------------|---------|--------|
| | Takers | % Pass | Takers | % Pass | Takers | Passing | % Pass |
| Minorities | | | | | | | |
| Asian | 46 | 41% | 45 | 47% | 232 | 129 | 56% |
| Black | 41 | 24% | 32 | 28% | 200 | 65 | 33% |
| Hispanic | 26 | 27% | 32 | 42% | 169 | 84 | 50% |
| Indian | 6 | 0% | 1 | 100% | 18 | 8 | 44% |
| Other | 85 | 82% | 6 | 67% | 264 | 217 | 82% |
| White | 596 | 70% | 624 | 70% | 3409 | 2688 | 79% |

Prepared by Don Krueckeberg and Mark Winogron



American Planning Association and its professional institute,

American Institute of Certified Planners

Technical Report for the Minority Pass Rate Project

September 22, 2004



Unpublished Work Copyright © 2004 by Educational Testing Service. All Rights Reserved. These materials are an unpublished, proprietary work of ETS. Any limited distribution shall not constitute publication. This work may not be reproduced or distributed to third parties without ETS's prior written consent. Submit all requests through www.ets.org/legal/copyright



The results of this research project are based on a request from the American Institute of Certified Planners (AICP) to address concerns regarding low minority pass rates on their certification test.

The specific research questions addressed, as stated in the scope of the services are:

1. What are the factors (e.g., ethnicity/race, gender, years of professional experience, and/or education level) that contribute to differences in pass/fail rates?
2. What are the factors (e.g., ethnicity/race, gender, years of professional experience, and/or education level) that contribute to differences in total and section scores?
3. What is the importance of background variables such as candidates' prior achievements, test preparation time, test-taking strategies, and skill on actual test performance?

Item-level performance has also been studied to identify specific items leading to differential performance between minority groups and the total exam population. With item-level data, two additional questions were addressed. They are:

4. Is there evidence of differential item functioning between groups?
5. Is there evidence of differential bundle functioning (e.g., content areas) between groups?

Thus, the purpose of this project was to investigate which factors could explain the lower passing rates of minority examinees on the AICP certification exam. The effects of pass rate disparity, for both the test-takers and the test-administrator, can have important consequences, and therefore, we are proposing a more thorough investigation of the problem by analyzing test taker's responses at the item level.

Project Approach and Methodology

There is a large body of research that documents minority group differences in test performance (e.g., Allik, Must, & Lynn, 1999; Gallagher, Bridgeman, & Cahalan, 2002; Roach, 2001; Holland & Wainer, 1993). The specific factors that contribute to differential performance, however, are not well understood. Therefore, it is important to examine possible factors that can produce group differences using a variety of approaches.



Standard statistical procedures can be utilized to monitor overall group differences or trends. These procedures include comparing means and standard deviations, conducting chi-square analyses to examine the relationship of pass/fail rates of different groups on background factors (i.e., age and/or education level), and using regression methods to examine the importance of predictor variables in explaining pass/fail rates and overall item and test level performance for different groups.

In addition to these standard procedures, this research included investigations at the item and content level. The first of these, differential item functioning (DIF), occurs whenever examinees from different subgroups that are matched on ability have a different probability of answering an item correctly (Holland & Wainer, 1983). A DIF index is derived statistically; however, substantive and judgmental reviews need to be conducted to determine whether the item unfairly favors one group over another (i.e., item bias) or whether group differences reflect actual ability differences in the construct being measured (i.e., item impact). Differential performance may also be assessed for bundles (e.g., content areas) of items, denoted here as differential bundle functioning (DBF). DBF procedures can be used in concert with DIF procedures to obtain a more holistic approach to identifying and understanding differential performance across groups. The building blocks of exams are often small bundles of items (e.g., content areas) and they can provide an opportunity for testing DIF amplification (Douglas, Roussos, & Stout, 1996). Nandakumar (1993) suggested that DIF, when present in small quantities, may go statistically undetected in the single item approach, but may be detected at the bundle level. She has also found that the bundle approach results in greater statistical power compared to the single item DIF approach.

The first section of this study analyzes the background variables that may impact the passing rates of minority candidates (e.g., African-American, Hispanic, Asians, Indian). The second section of this report defines differential item functioning (DIF) and reports the item and content level statistical findings. It should be noted that all of the analyses were first carried out for each individual race/ethnicity group; however, the results were not statistically significant. Thus, we collapsed all groups into one Minority group, except for the White group, in order to increase power.



Background Variable Results

Statistical analyses were conducted to investigate performance differences between White and minority examinees to identify factors that may explain lower passing rates for minorities who have taken an AICP examination. Descriptive statistics for the main studied variables across years of test administration and race/ethnic membership are presented in Tables 1 and 2 (also see Appendix A for a graphical representation of Table 2). The analyses were conducted on the data set for each year from 1997 to 2000 except 1999 (data for this year was not provided) along with the combined data from 2000 to 2003. It should be noted that for the combined data from 2000 to 2003, only the first administration data for test repeaters was considered to remove the possible dependency caused by the duplication of the examinees. For this reason, the total sample is 3,041 instead of 4,858.

As seen in Table 1, over 75% of examinees identified themselves as White. The proportions of other race/ethnicity groups, except Indian (less than 1%), were relatively small (range = 4.0 to 8.2%). As seen in Table 2 (M = minority group and W = white group), over 60% of examinees were male in both the White and minority groups. A larger percentage of minority examinees finished higher education programs compared to White examinees and this trend was consistent across all years of the AICP administrations. Less than half of the examinees (43%) were in accredited school, but more than half of examinees (56%) were in a planning program. The proportion in planning programs was slightly higher with minority examinees (60%) than with White examinees (55%). The proportion of test repeaters was relatively high (28%) in 2002 as compared to the remaining years where the proportion of test repeaters was relatively low to moderate (9 to 22 %). The proportion of test repeaters was higher in minority examinees, as compared to White examinees. Examinees' years of professional experience were fairly similar in both race/ethnic groups across all the administrations, except 2002. However, the passing rate of the AICP examination differed significantly based on race/ethnicity membership. The 2000 to 2003 accumulated results show about 77.1% of White examinees passing the AICP tests, while only 59.2% of minority examinees passed the same test. This passing rate varied across years. The associations between minority status on the AICP test and other demographic variables were investigated using statistical tests based on the probability structure of contingency tables. These results are presented next.



Chi-Square Tests of Independence

Since the main response variable is the pass/fail status in this study, the association between this variable and race/ethnicity membership was examined separately by years of administrations. Two-way contingency tables were used to test whether or not pass/fail status depended on race/ethnicity. As presented in Table 3, the pass/fail status differed significantly according to race/ethnicity, indicating a substantial association between them. The pass rate of White examinees was much higher than that of minority examinees. As shown in Figure 1, the trend was very similar across all the administrations, thus indicating conditional independence by years.

Further, chi-square tests were conducted to examine the effect of race/ethnic group in terms of associations between pass/fail status and other demographic variables. These results are summarized in Tables 4 to 9. As presented in Table 4, pass/fail status was not associated with gender for both White and minority groups, supporting conditional independence by race/ethnicity. Although White male examinees (78%) showed higher passing rates than White female examinees (75%), the difference was not significant. Table 5 presents a chi-squared test of the association between pass/fail status and accredited school. Regardless of race/ethnic group, examinees that were in accredited schools showed higher passing rates, than did examinees that were not. However, the effect of accredited school experience was statistically significant only for the White group (see Figure 2). Both Table 6 and Figure 3 present the association between pass/fail status and planning program by race/ethnicity group membership. The passing rate was not associated with planning program for examinees in the minority group, whereas the passing rates for White examinees were increased with respect to planning program. Consequently, the association between them was much stronger in the White group ($r = .12$) than in the minority group ($r = .02$). As summarized in Table 7, a clear association exists between accredited school and planning program variables. Regardless of race/ethnicity and pass/fail status, the majority of examinees showed the same response for these two variables (i.e., both Yes or both No). Examinees responding "No" for the planning program variable were considerably less when they were in accredited school. The association between examinees' education and pass/fail status was statistically significant only in White group as presented in both Table 8 and Figure 4. In the White group, examinees having higher education, such as a masters or doctorate were more likely to pass the AICP examination, than examinees having



only a bachelors degree (including no degree). The association between pass/fail and test repeater status was very clear. As presented in Table 9, examinees who failed the test previously, tended to fail again. This trend was statistically significant for both groups and the strength of association was very similar in both groups. Since the main question related to test repeaters is whether they finally passed the exam, the last test administration data of each test repeater was considered in this analysis. For this reason, a total of 4,290 examinees are noted in Table 9, rather than 3,041 as the other tables previously mentioned.

Since years of professional experience were continuous, an independent sample *t*-test was conducted to determine race/minority differences in this variable. The length of experience was statistically longer for White examinees ($M = 9.14$), than for minority examinees ($M = 7.91$) [$t = -4.04$, $p < .0001$]. Since this variable was not normally distributed (Skewness = 2.30; Kurtosis = 5.32) and showed a very wide range (2 to 41), a total of six ranks were imposed on the years of experience variable. Thus, this grouping was used as a ordered categorical variable in order to determine the conditional independence between race/ethnicity and pass/fail status for each group. As presented in Table 10, the association between race/ethnicity and pass/fail status slightly depended on examinees' years of experience. Although the passing rates for White examinees was higher than that for minority examinees, the strength of association was relatively lower in the third rank ($4 < \text{years} < 6$). In addition, the relationship between years of experience and pass/fail status was curvilinear regardless of race groups (see Figure 5). The linear and negative relationship between them changed into a moderately linear and positive relationship after the fourth rank around 6 to 9 years of experience.

Interpreting the Logistic Regression Model

The most important question answered in this study was which factors mainly contributed to passing rates on the AICP examinations, particularly for the lower minority group passing rates. Since the passing rate variable was binary data (i.e., pass or fail), logistic regression methods were used to assess the importance of qualitative and quantitative explanatory variables when reviewing passing rate status, rather than the ordinary least square regression method. Race/ethnicity (White versus minority examinees), gender, education level, accredited school, planning program, years of professional experience, and test repeater status were the major explanatory variables in these analyses. Table 11 presents correlations among all the study variables. There is a high correlation (.78) between accredited



school and planning program. The three largest relationships with pass/fail status were test repeater status ($r = -.51$), race/ethnicity (.17) and accredited school (.12).

In testing logistic regression models, the total AICP data summed from years 2000 to 2003 were analyzed with only the first administration data of each test repeater in order to remove the possible dependency caused by the duplication of examinees. In these analyses, the function of years of professional experience was broken down into linear and quadratic functions, because the relationship of this variable with the passing rates seemed to be curvilinear (see Figure 5). Therefore, a total of eight variables were used as the major explanatory variables. The two logistic models were tested; the first model included only the main effects of each explanatory variable, while the second model included all possible interaction terms related to the race/ethnicity variable and all of the main effect terms.

The first main effect model based on all examinees from 2000 to 2003 is presented in Table 12. In this model, all of the main effects were statistically significant, except gender and the linear function of years of experience. As expected, the passing rates of White examinees were much higher than that of minority examinees and the quadratic function on years of experience were statistically significant, thus supporting a curvilinear relationship between passing rate status and years of experience. Examinees completing higher education programs, such as a master or doctoral degree, did show higher passing rates than examinees having no degree or just a bachelor's degree. The passing rates of examinees studied at the accredited school were higher than that of examinees studied at the non-accredited schools. As expected, test repeaters tended to fail the AICP tests more than once.

As mentioned previously, the major focus of this current study was to examine the factors that may explain the lower passing rates of race/ethnic on the AICP examinations. For that reason, product terms of race/ethnicity with other explanatory variables were included to assess unique interaction effects related by race membership. Interaction terms are only interpreted in this model, because the interpretation for the main effect terms tends to be misleading in the interaction model. As shown in Table 12, any interaction effect related to race/ethnicity was not statistically significant in the interaction model. When the full interaction model was compared to the main effect model, this model has a decreased deviance of 11.74 on $df = 7$ ($p = .1094$), which supports dropping all seven interaction terms.



Since the correlations among the three interaction effects (i.e., education level by race/ethnicity, planning program by race/ethnicity, and accredited school by race/ethnicity) were related (correlations of .54 – .81), these interaction effects were included in the model separately in order to control for multicollinearity, thus allowing three different interaction models. These interaction effects were statistically significant as shown in the chi-square tests of independence (see Table 12). The positive influence of higher education was statistically stronger in White examinees than in Minority examinees, although minority examinees with higher degrees tended to pass the examination with higher probability. The positive influences of planning program and accredited school were also statistically stronger in White examinees than in minority examinees. Particularly, the passing rates of minority examinees were not related to planning program or accredited school. As shown in Table 10 and Figure 5, the passing rates of Minority examinees were substantially lower than White examinees across all years of professional experience, but the parallel pattern indicated non-significant interaction by race/ethnicity.

The same sets of logistic regression analyses were conducted separately by year of administration and the findings are presented in Table 13. The main effects of the eight explanatory variables were idiosyncratic, indicating year specific effects. Both race/ethnicity and test repeater status tended to be related to passing rates across all of the administrations. The effects of gender and planning program did not clearly appear in each year as it did when using accumulated data. Interestingly, although accredited school has a substantial influence on the passing rates in the total sample, this effect was not clear in yearly analyses, except for 2003. This may be related to a reduction in statistical power caused by the small sample of Minority examinees. The main effects of education level and quadratic function of years of experience variables were relatively consistent across each administration. Non-significant findings due to small number of minority examinees may have posed problems in the interaction models studies here.

Additional Analyses investigating school effect and pass rates

Additional analyses to examine the effect of school on pass rates could not be conducted because of lower sample sizes in each school. The frequency counts showed that there were 4290 examinees and 261 schools in the total sample from 1997 to 2003 (It should be noted that the counts are



based on a reduced sample in which test repeaters were removed). However, school information was provided by only 2009 examinees. Of the 261 schools listed, seven schools belonged to historically Black colleges and Universities. Also, from the sample of 2009 examinees that provided their school information, 156 examinees belonged to Historically Black colleges and Universities and 76 percent of these 156 examinees were White (see Appendix B for a complete listing of the seven historically black schools and Universities and the number of Whites and Minorities belonging to each school and Appendix C for a cross tabulation of pass/fail status for Whites and Minorities across Historically Black Colleges and Universities, other Colleges and Universities).

Defining DIF

DIF is a method of comparing the differences between two groups on item level performance. The first step in this process is matching examinees by their total test scores. The rationale here is that two test-takers with the same number of correct items are probably pretty closely matched, although not identical in terms of their knowledge of what the test is measuring. If this assumption is true, then the examinees performance on an item ought to be the same, because they have already been matched in terms of what they know. DIF occurs when these matched test takers perform differentially on a studied item.

It is important to note that the DIF index is derived statistically; thus, substantive and judgmental reviews will need to be conducted by AICP test developers in order to determine whether the item unfairly favors one group over another (i.e., item bias) or whether group differences reflect actual ability differences in the construct being measured (i.e., item impact). Differential performance may also be assessed for bundles (e.g., content areas) of items, denoted here as differential bundle functioning (DBF). DBF procedures can be used in concert with DIF procedures to obtain a more holistic approach to identifying and understanding differential performance across groups.

Item and Content Area Results

Statistical DIF analyses were conducted using a computer program called SIBTEST (Shealy and Stout, 1993) to evaluate the comparability of the AICP certification exam for White and minority examinees. Additionally, the items in the test were analyzed as item bundles (i.e., differential bundle functioning or DBF analysis) based on specific content areas (e.g., plan making) to examine whether a



particular content area favored either White and minority examinees. Since the sample sizes for the DIF analysis in the current study were very small, the DIF statistics obtained may not be entirely stable. Therefore, the authors used a more conservative guideline to flag DIF items, whereby borderline C-level DIF items were not flagged; instead items with a DIF statistic that was significantly greater than the minimum required value for C-level DIF items were flagged (i.e., beta-uni statistic ≥ 0.1 instead of ≥ 0.88). This procedure ensured that items that performed significantly differently across two groups of examinees were always flagged. However, items that were borderline C-level DIF items (which may result from inaccurate estimates due to small sample sizes) were not flagged. This guideline was also followed for the DBF analysis. It should be noted that although the study was designed to evaluate the comparability of the AICP certification exam for White and minority examinees, we have also conducted DIF statistical analyses to compare the performance of males and females on the exam.

Descriptive statistics for the White versus minority examinees and males versus female comparisons for the AICP examination are presented in Tables 14. The mean total test scores for White and minority examinees demonstrate that White examinees performed better than minority examinees across all administrations included in the study. However, the mean total test scores for males and females demonstrate that males and females performed equally well across all administrations included in the study.

Differential Item Functioning Results

Results of the DIF analyses are presented in Tables 14 and 15. For the White versus minority examinees DIF comparison, only results from the 1999, 2001, and 2002 administrations are reported as these administrations had the minimum sample sizes required ($N > 200$ in each group) for conducting reasonably reliable DIF analysis. Similarly, for the male versus female comparison, only results from 1997, 1998, 1999, 2000, 2001, and 2002 are reported as these administrations had the minimum required sample sizes. The 2003 administration had three tests, thus the sample sizes were too small. As seen in Table 15, two items (1.3%) favored White examinees and two items (1.3 %) favored minority examinees in the 1997 administration. For the 2001 administration 17 items (11.3 %) favored White examinees and four items (2.6 %) favored minority examinees. Finally, for the 2002 administration, 11 item (7.3 %) favored White examinees and four items (2.6 %) favored minority examinees. As seen in



these results, a substantially large number of items favored White examinees as compared to minority examinees. This trend was true across all the years studied except for 1997 administration, in which an equal number of items favored White and minority examinees.

As seen in Table 16, five items (3.3%) favored males and six items (4 %) favored females in the 1997 administration. For the 1998 administration, four items (2.7 %) favored males and three items (2 %) favored females. For the 1999 administration two item (1.3 %) favored males and three items (1.7 %) favored females. For the 2000 administration, two items (1.3 %) favored males and there were no items that favored females. For the 2001 administration, five items (3.3 %) favored males and two items (1.3 %) favored females. Finally, for the 2002 administration, two items (1.3 %) favored males and seven items (4.7 %) favored females. As seen in these results, a relatively smaller number of items were identified as DIF for males and females as compared to the White and minority examinees. Furthermore, more items favored males than females in the 1998, 1999, 2000, and 2001 administrations. However, more items favored females than males in the 1997 and 2002 administrations. The actual item numbers and the corresponding DIF statistic (Beta-Uni) for the White versus minority examinees and male versus female comparisons are presented in Tables 15 and 16, respectively.

The authors suggest that the items identified as DIF using SIBTEST for the White versus minority group comparison and the male versus female comparisons should be analyzed using substantive or judgmental reviews to identify the cause of differential performance on these items. If any problems/flaws are found on these items (e.g., use of certain words that may make an item more difficult for minority examinees), then these items should be removed or revised before using them in future test administrations.

Differential Bundle Functioning Results

For the DBF analysis, six content areas from the test specifications were used to organize the items into bundles. DBF analysis primarily consists of four steps (Gierl, Bisanz, Bisanz, Boughton, & Khaliq, 2001). First, all DIF items are identified using a single item DIF analysis (i.e., the single item DIF analysis reported earlier for White versus minority examinees and males versus females). Second, items are grouped by using the content areas from the test specifications. Third, item bundles are identified by



visually examining the graphs and by looking for interpretable patterns. Fourth, item bundles if identified, are statistically tested to evaluate whether it favors any particular group of examinees.

In the current study, the first three steps discussed above were conducted to identify any item bundle consistently favoring either White or minority examinees and males or females. The items were grouped into bundles based on the six content categories (see Figure 6 for example). The X-axis represents the six content categories and the Y-axis represents the DIF statistic or Beta-Uni. The middle point on the X-axis is zero, which is the point of no difference between pairs of groups compared (e.g., White versus minority examinees or males versus females). The circles in the Figure represent the Beta-Uni for each item and circles that fall above the zero line favors the reference group (e.g., White examinees and males) and circles that fall below the zero line favors the focal group (e.g., minority examinees and females) The farther the circles are away from the zero line, the greater is the difference in performance across two groups. The closed circles represent beta-unis, which are less than 0.1 and hence not considered DIF items. The open circles represent beta-unis that are greater than 0.1 and hence considered DIF items.

As seen in Figures 7, 8, and 9, there were no bundles based on the six content categories that seemed to favor either White or minority examinees. Similarly, as seen in Figures 10, 11, 12, 13, 14, and 15, there were no bundles based on the six content categories that seemed to favor either males or females. Since, in both the White versus minority examinees comparison and the male versus female comparison, the items across the six content categories were uniformly distributed across the groups compared, it was not necessary to conduct the fourth step, which is to statistically test whether particular item bundles favored any specific examinee group. Based on the results of the differential bundle analysis, we conclude that there was no specific content area that systematically favored either White or minority examinees and males or females.

Discussion and Conclusion

The findings of this research report are:

- 1) The proportion of test repeaters was higher for the minority examinees as compared to the White examinees.



- 2) Across 2001 to 2003, about 80% of the White examinees passed an AICP test, with only 60% of minority examinees passing those same tests.
- 3) Pass/Fail status was not associated with gender.
- 4) Regardless of race/ethnicity, examinees that were in accredited schools showed higher passing rates, however, only the White group has statistical significance.
- 5) The passing rate was not associated with a planning program in the minority group, however, it was associated with the majority White group.
- 6) There is an association between accredited school and planning program with the majority responding, "yes" to both or "no" to both.
- 7) There is a statistically significant association between education level and pass/fail status for the White group only, with higher educated people more likely to pass the examination.
- 8) Test repeaters tended to fail when re-taking the test regardless of race/ethnicity.
- 9) Regardless of race/ethnicity, passing status tended to be greatest for examinees with less than 4 years or greater than 9 years of years of experience.
- 10) The AICP examinations do not show much difference at the item or content level when comparing males and females.
- 11) Many items did show differential performance across race/ethnicity at the item level; however, no specific content category posed a problem. Note that this does not demonstrate that the examination is biased or unfair towards Minority examinees. Only a review of the items by item and content specialists can make that determination.

The purpose of this project was to investigate which factors could help explain the lower passing rates of minority examinees on the AICP certification exam. The effects of pass rate disparity, for both the test-takers and the test-administrator, can have important consequences, and therefore, the AICP has funded an investigation of the problem by analyzing which background variables, content areas, and item level differences may have caused lower performance. The internal *ETS Standards for Quality and Fairness* (2002) stress that tests should be designed and developed to be equivalent for different minority groups, and that group differences, if observed, should be investigated to determine that such differences are not caused by factors irrelevant to the construct being measured.



Overall the findings suggested that factors such as educational level of examinees and whether examinees attend an accredited school and/or planning program influenced the passing rates for the White group but not for the minority group. Also, years of experience affected passing rates regardless of race or ethnicity (examinees with less than four years or more than nine years of experience showed the greatest passing rates). At the item level analysis, many items were found to exhibit DIF across White or Minority examinees and males or females. Therefore the authors suggest that these items should be reviewed by item and content specialists and if needed, they should be removed from the test. The bundle level analysis suggested that there was no specific content category that favored either White or minority examinees and males or females. Therefore further substantive investigation of item bundles based on content category to identify item bundles that may favor any particular examinee group may not be needed.



References

- Allik, J., Must, O., & Lynn, R. (1999). Sex differences in general intelligence among high school graduates: Some results from Estonia. *Personality and Individual Differences, 26*, 1137-1141.
- Camilli, G., & Shepard, L. A. (1994). *Methods for identifying biased test items*. Newbury Park, CA: Sage.
- Cole, N., & Zieky, M. J. (2001). The new faces of fairness. *Journal of Educational Measurement, 38*, 4, pp. 369-382.
- Dorans, N. J., and Kulick, E. (1986). Demonstrating the utility of the standardization approach to assessing unexpected differential item performance on the Scholastic Aptitude Test. *Journal of Educational Measurement, 23*, 355-368.
- Douglas, J. A., Roussos, L. A., & Stout, W. (1996). Item-bundle DIF hypothesis testing: Identifying suspect bundles and assessing their differential functioning. *Journal of Educational Measurement, 33*, 465-484.
- Educational Testing Service (2002). *ETS Standards for Quality and Fairness*. Princeton, NJ: Author.
- Gallagher, A., Bridgeman, B., & Cahalan, C. (2002). The effect of computer-based tests on racial-ethnic and gender groups. *Journal of Educational Measurement, 39* (2), 133-147.
- Gierl, M. J., Bisanz, J., Bisanz, G., & Boughton, K. A. (April, 2002). Identifying content and cognitive skills that produce gender differences in mathematics: A demonstration of the DIF analysis framework. Paper presented at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.
- Holland, P. W., & Thayer, D. T. (1988). *Differential item performances and the Mantel-Haenszel procedure*. In H. Wainer and H. I. Braun (Eds.), *Test Validity*, (pp. 129-145). Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers.
- Holland P. W. & Wainer, H. (Eds.). (1993). *Differential item functioning*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Nandakumar, R. (1993). Simultaneous DIF amplification and cancellation: Shealy-Stout's test for DIF. *Journal of Educational Measurement, 30*, 293-311.
- Roach, R. (2001). *Black Issues in Higher Education*. 18 (16), p12.



Roussos, L. A., & Stout, W. F. (1996). Simulation studies of the effects of small sample size and studied item parameters on SIBTEST and Mantel-Haenszel type I error performance. *Journal of Educational Measurement*, 33, 215-230.

Shealy, R., & Stout, W. (1993). A model-based standardization approach that separates true bias/DIF from group ability differences and detects test bias/DIF as well as item bias/DIF. *Psychometrika*, 58, 159-194.

Zieky, M. (2002). *Ensuring the Fairness of Licensing Tests*. CLEAR Exam Review, Volume XII, Number 1, Winter 2002, pp. 20-26.

Zieky, M. (1993). *Practical questions in the use of DIF statistics in test development*. In P. W. Holland & H. Wainer (Eds.). *Differential item functioning* (pp. 337-347). Hillsdale, NJ: Erlbaum.



Table 1

Frequencies of the Study Variables by Year of Administration (%)

| Study variables | (levels) | Year of Administration | | | | | | |
|-------------------------------|-----------|------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------------------|
| | | 1997 (N = 744) | 1998 (N = 1045) | 2000 (N = 1132) | 2001 (N = 1189) | 2002 (N = 1277) | 2003 (N = 1260) | 2000 thru 2003 (N = 3041) |
| Gender | Female | 269 (36.2) | 79 (38.4) | 428 (37.8) | 429 (36.1) | 463 (36.3) | 501 (39.8) | 1147 (37.7) |
| | Male | 475 (63.8) | 127 (61.6) | 704 (62.2) | 760 (64.0) | 814 (63.7) | 759 (60.2) | 1894 (62.3) |
| Race | Asian | 32 (4.3) | 49 (4.7) | 52 (4.6) | 62 (5.2) | 76 (6.0) | 80 (6.4) | 170 (5.6) |
| | Black | 36 (4.8) | 68 (6.5) | 61 (5.4) | 78 (6.6) | 88 (6.9) | 89 (7.1) | 135 (4.4) |
| | Hispanic | 28 (3.8) | 38 (3.6) | 37 (3.3) | 55 (4.6) | 44 (3.5) | 52 (4.1) | 120 (4.0) |
| | Indian | 2 (0.3) | 2 (0.2) | 5 (0.4) | 9 (0.8) | 9 (.70) | 5 (0.4) | 14 (0.5) |
| | Others | 6 (.81) | 11 (1.1) | 97 (8.6) | 153 (12.9) | 126 (9.9) | 13 (1.0) | 248 (8.2) |
| | White | 640 (86.0) | 877 (83.9) | 880 (77.7) | 832 (70.0) | 934 (73.1) | 1021 (81.0) | 2354 (77.4) |
| Education Level | BA | 297 (39.9) | 365 (34.9) | 408 (36.0) | 449 (37.8) | 467 (36.6) | 507 (40.2) | 1079 (35.5) |
| | MA/PhD | 447 (60.1) | 680 (65.1) | 724 (64.0) | 740 (62.2) | 810 (63.4) | 753 (59.8) | 1962 (64.5) |
| Accredited School | Yes | 343 (46.1) | 469 (44.9) | 483 (42.7) | 521 (43.8) | 554 (43.4) | 452 (35.9) | 1315 (43.2) |
| | No | 401 (53.9) | 576 (55.1) | 649 (57.3) | 668 (56.2) | 723 (56.6) | 808 (64.1) | 1726 (56.8) |
| Planning Program | Yes | 394 (53.0) | 563 (53.9) | 621 (54.9) | 677 (56.9) | 716 (56.1) | 621 (49.3) | 1698 (55.8) |
| | No | 350 (47.0) | 482 (46.1) | 511 (45.1) | 512 (43.1) | 561 (43.9) | 639 (50.7) | 1343 (44.2) |
| Repeat status | Yes | 127 (17.0) | 168 (16.1) | 215 (19.0) | 266 (22.4) | 351 (27.5) | 276 (21.9) | 275 (9.0) |
| | No | 617 (82.9) | 877 (83.9) | 917 (81.0) | 923 (77.6) | 926 (72.5) | 984 (78.1) | 2766 (91.0) |
| Pass/Fail status on AICP exam | Pass | 559 (75.1) | 807 (77.2) | 870 (76.9) | 896 (75.4) | 726 (56.9) | 744 (59.1) | 2220 (73.0) |
| | Fail | 185 (24.9) | 238 (22.8) | 262 (23.1) | 293 (24.6) | 551 (43.1) | 516 (41.0) | 821 (27.0) |
| Years of experience | <i>M</i> | 9.36 | 8.64 | 7.67 | 7.77 | 11.52 | 8.05 | 7.77 |
| | <i>SD</i> | (5.68) | (5.67) | (5.54) | (6.43) | (11.31) | (6.64) | (8.47) |

Note. Since the first time date of each test repeater was only included, a total of examinees from 2000 to 2003 are 3041 rather than 4858.



Table 2

Frequencies of the Study Variables by Race and Year of Administration (%)

| Study Variables | Race | Level | Year of Administration | | | | | | |
|--------------------|------|--------|------------------------|------------|------------|------------|------------|------------|----------------|
| | | | 1997 | 1998 | 2000 | 2001 | 2002 | 2003 | 2000 thru 2003 |
| | | | (N = 744) | (N = 1045) | (N = 1132) | (N = 1189) | (N = 1277) | (N = 1260) | (N = 3041) |
| Gender | M | Female | 35 (33.7) | 22 (44.9) | 83 (32.9) | 129 (36.1) | 126 (36.7) | 101 (42.3) | 264 (38.4) |
| | | Male | 69 (66.4) | 27 (55.1) | 169 (67.1) | 228 (63.9) | 217 (63.3) | 138 (57.7) | 423 (61.6) |
| | W | Female | 234 (36.6) | 57 (36.3) | 345 (39.2) | 300 (36.1) | 337 (36.1) | 400 (39.2) | 883 (37.5) |
| | | Male | 406 (63.4) | 100 (63.7) | 535 (60.8) | 532 (63.9) | 597 (63.9) | 621 (60.8) | 1471 (62.5) |
| Education Level | M | BA | 30 (28.9) | 33 (19.6) | 71 (28.2) | 117 (32.8) | 102 (29.7) | 78 (32.6) | 207 (30.1) |
| | | MA/PhD | 74 (71.2) | 135 (80.4) | 181 (71.8) | 240 (67.2) | 241 (70.3) | 161 (67.4) | 480 (69.9) |
| | W | BA | 267 (41.7) | 332 (37.9) | 337 (38.3) | 332 (39.9) | 365 (39.1) | 429 (42.1) | 872 (37.1) |
| | | MA/PhD | 373 (58.3) | 545 (62.1) | 543 (61.7) | 500 (60.1) | 569 (60.9) | 592 (57.9) | 1482 (62.9) |
| Accredited School | M | Yes | 58 (55.8) | 91 (54.2) | 119 (47.2) | 169 (47.4) | 161 (46.9) | 111 (46.4) | 327 (47.6) |
| | | No | 46 (44.2) | 77 (45.8) | 133 (52.8) | 188 (52.7) | 182 (53.1) | 128 (53.6) | 360 (52.4) |
| | W | Yes | 285 (44.5) | 378 (43.1) | 364 (41.4) | 352 (42.3) | 393 (42.1) | 341 (33.4) | 988 (41.9) |
| | | No | 355 (55.5) | 499 (56.9) | 516 (58.6) | 480 (57.7) | 541 (57.9) | 680 (66.6) | 1366 (58.1) |
| Planning Program | M | Yes | 69 (66.4) | 113 (67.3) | 147 (58.3) | 224 (62.8) | 204 (59.5) | 148 (61.9) | 410 (59.7) |
| | | No | 35 (33.7) | 55 (32.7) | 105 (41.7) | 133 (37.3) | 139 (40.5) | 91 (38.1) | 277 (40.3) |
| | W | Yes | 325 (50.8) | 450 (51.3) | 474 (53.9) | 453 (54.5) | 512 (54.8) | 473 (46.3) | 1288 (54.7) |
| | | No | 315 (49.2) | 427 (48.7) | 406 (46.1) | 379 (45.6) | 422 (45.2) | 548 (53.7) | 1066 (45.3) |
| Test repeat Status | M | Yes | 39 (37.5) | 52 (30.9) | 81 (32.1) | 118 (33.1) | 119 (34.7) | 85 (35.6) | 94 (13.7) |
| | | No | 65 (62.5) | 116 (69.1) | 171 (67.9) | 239 (66.9) | 224 (65.3) | 154 (64.4) | 593 (86.3) |
| | W | Yes | 88 (13.8) | 116 (13.2) | 134 (15.2) | 148 (17.8) | 232 (24.8) | 191 (18.7) | 181 (7.7) |
| | | No | 552 (86.3) | 761 (86.8) | 746 (84.8) | 684 (82.2) | 702 (75.2) | 830 (81.3) | 2173 (92.3) |
| Pass/Fail Status | M | Pass | 47 (45.2) | 81 (48.2) | 151 (59.9) | 220 (61.6) | 149 (43.4) | 84 (35.2) | 407 (59.2) |
| | | Fail | 57 (54.8) | 87 (51.8) | 101 (40.1) | 137 (38.4) | 194 (56.6) | 155 (64.8) | 280 (40.7) |
| | W | Pass | 512 (80.0) | 726 (82.8) | 719 (81.7) | 676 (81.3) | 577 (61.8) | 660 (64.6) | 1813 (77.1) |



| | | | Fail | 128 (20.0) | 151 (17.2) | 161 (18.3) | 156 (18.8) | 357 (38.2) | 361 (35.4) | 541 (22.9) |
|------------|---|----|------|------------|------------|------------|------------|------------|------------|------------|
| Years of | M | M | | 8.94 | 8.17 | 7.63 | 7.96 | 8.72 | 8.41 | 7.91 |
| Experience | | SD | | 4.97 | 4.43 | 4.81 | 6.79 | 6.82 | 6.84 | 6.33 |
| | W | M | | 9.43 | 8.73 | 7.67 | 7.68 | 12.55 | 7.96 | 9.14 |
| | | SD | | 5.79 | 5.87 | 5.74 | 6.28 | 12.41 | 6.60 | 8.95 |

Note. M indicates Minority including Asian, Black, Hispanic, and others. W indicates White in race grouping.



Table 3

Pass/Fail Rate of the AICP Examination by Race and Year of Administration (% of Rows)

| Race | Years of Administration | | | | | | | | | | | | | |
|-------------------|-------------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|-------------------|---------------|
| | 1997 (N=744) | | 1998 (N=1045) | | 2000 (N=1132) | | 2001 (N=1189) | | 2002 (N=1277) | | 2003 (N=1260) | | Total (N=3041) | |
| | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail |
| Minority | 47 (45.2) | 57 (54.8) | 81 (48.2) | 87 (51.8) | 151 (59.9) | 101 (40.1) | 220 (61.6) | 137 (38.4) | 149 (43.4) | 194 (56.6) | 84 (35.2) | 155 (64.8) | 407 (59.2) | 280 (40.8) |
| White | 512 (80.0) | 128 (20.0) | 726 (82.8) | 151 (17.2) | 719 (81.7) | 161 (18.3) | 676 (81.3) | 156 (18.7) | 577 (61.8) | 357 (38.2) | 660 (64.6) | 361 (35.4) | 1813 (77.0) | 541 (23.0) |
| χ^2 (df = 1) | 58.02 | | 95.79 | | 52.26 | | 51.81 | | 34.39 | | 69.68 | | 85.25 | |
| p-value | 0.0001 | | .0001 | | 0.0001 | | 0.0001 | | 0.0001 | | 0.0001 | | 0.0001 | |
| r | 0.28 | | 0.30 | | 0.21 | | 0.21 | | 0.16 | | 0.24 | | 0.17 | |

Note. *r* indicates the association of two dichotomous variables, race and pass/fail status.



Table 4

Cross Classification of Pass/Fail Status by Gender in Each Race (% of Row)

| <u>Gender</u> | <u>Minority (N = 687)</u> | | <u>White (N = 2354)</u> | |
|---------------|---------------------------------|-------------|----------------------------------|-------------|
| | <u>Pass/Fail Status</u> | | | |
| | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> |
| Female | 155 (58.7) | 109 (41.3) | 665 (75.3) | 218 (24.7) |
| Male | 252 (59.6) | 171 (40.4) | 1148 (78.0) | 323 (22.0) |
| | $\chi^2 = .05, df=1, p = .8230$ | | $\chi^2 = 2.32, df=1, p = .1273$ | |
| | $r = -.0085$ | | $r = .0314$ | |

Table 5

Cross Classification of Pass/Fail Status by Accredited School in Each Race (% of Row)

| <u>Accredited School</u> | <u>Minority (N = 687)</u> | | <u>White (N = 2354)</u> | |
|--------------------------|----------------------------------|-------------|-----------------------------------|-------------|
| | <u>Pass/Fail Status</u> | | | |
| | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> |
| Yes | 204 (62.4) | 123 (37.6) | 837 (84.7) | 151 (15.3) |
| No | 203 (56.4) | 157 (43.6) | 976 (71.5) | 390 (28.5) |
| | $\chi^2 = 2.55, df=1, p = .1102$ | | $\chi^2 = 57.01, df=1, p = .0001$ | |
| | $r = .0609$ | | $r = .1556$ | |



Table 6

Cross Classification of Pass/Fail Status by Planning Program in Each Race (% of Row)

| | <u>Minority (N=687)</u> | | <u>White (N = 2354)</u> | |
|-------------------------|---------------------------------|-------------|-----------------------------------|-------------|
| <u>Planning Program</u> | <u>Pass/Fail Status</u> | | | |
| | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> |
| Yes | 246 (60.0) | 164 (40.0) | 1050 (81.5) | 238 (18.5) |
| No | 161 (58.1) | 116 (41.9) | 763 (71.6) | 303 (28.4) |
| | $\chi^2 = .24, df=1, p = .6233$ | | $\chi^2 = 32.60, df=1, p < .0001$ | |
| | $r = .0187$ | | $r = .1177$ | |



Table 7

Cross Classification between Accredited School and Planning Program by Race and Pass/Fail Status (% of Row)

| | Minority (N = 687) | | | | White (N = 2354) | | | |
|-------------------------|--------------------|-----------|----------------|-----------|-------------------|-----------|----------------|-----------|
| | Pass (N = 407) | | Fail (N = 280) | | Pass (N = 1813) | | Fail (N = 541) | |
| | Accredited school | | | | Accredited school | | | |
| <u>Planning program</u> | <u>Yes</u> | <u>No</u> | <u>Yes</u> | <u>No</u> | <u>Yes</u> | <u>No</u> | <u>Yes</u> | <u>No</u> |
| Yes | 204 | 42 | 123 | 41 | 836 | 214 | 151 | 87 |
| (%) | (82.9) | (17.1) | (75.0) | (25.0) | (79.6) | (20.4) | (63.5) | (36.5) |
| No | 0 | 161 | 0 | 116 | 1 | 762 | 0 | 303 |
| (%) | (0.0) | (100.0) | (.0.0) | (100.0) | (0.1) | (99.9) | (0.0) | (100.0) |



Table 8

Cross Classification of Pass/Fail Status by Education Level in Each Race (% of Row)

| <u>Education Level</u> | <u>Minority (N=687)</u> | | <u>White (N = 2354)</u> | |
|------------------------|---------------------------------|-------------|-----------------------------------|-------------|
| | <u>Pass/Fail Status</u> | | | |
| | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> |
| No Degree/BA | 112 (54.1) | 95 (45.9) | 583 (66.9) | 289 (33.1) |
| MA/PhD | 295 (61.5) | 185 (38.5) | 1230 (83.0) | 252 (17.0) |
| | $\chi^2 = 3.24, df=1, p = .072$ | | $\chi^2 = 80.78, df=1, p < .0001$ | |
| | $r = .0686$ | | $r = .1852$ | |

Table 9

Cross Classification of Pass/Fail Status by Test Repeat Status in Each Race (% of Row)

| <u>Test Repeat Status</u> | <u>Minority (N=892)</u> | | <u>White (N = 3398)</u> | | <u>Total (N = 4290)</u> | |
|---------------------------|-----------------------------------|---------------|------------------------------------|---------------|------------------------------------|---------------|
| | <u>Pass/Fail Status</u> | | | | | |
| | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> | <u>Pass</u> | <u>Fail</u> |
| Yes | 50 (29.2) | 121 (70.8) | 110 (41.3) | 156 (58.7) | 160 (36.6) | 277 (63.4) |
| No | 492 (68.2) | 229 (31.8) | 2667 (85.2) | 465 (14.8) | 3159 (82.0) | 694 (18.0) |
| | $\chi^2 = 88.17, df=1, p < .0001$ | | $\chi^2 = 314.92, df=1, p < .0001$ | | $\chi^2 = 461.47, df=1, p < .0001$ | |
| | $r = -.31$ | | $r = -.30$ | | $r = -.33$ | |



Table 10

Cross Classification of Pass/Fail Status by Race in Each Years of Experience Rank (% of Row)

| | Years of Experience | | | | | | | | | | | |
|-------------------|---------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | Years < 4 | | Years = 4 | | 4<Years<6 | | 6<=Years<9 | | 9<=Years<14 | | 14<=Years | |
| | (N = 638) | | (N = 436) | | (N = 407) | | (N = 542) | | (N = 498) | | (N = 520) | |
| | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail | Pass | Fail |
| Total | 533 (83.5) | 105 (16.5) | 320 (73.4) | 116 (26.6) | 272 (66.8) | 135 (33.2) | 338 (62.4) | 204 (37.6) | 357 (71.7) | 141 (28.3) | 400 (76.9) | 120 (23.1) |
| Minority | 96 (71.6) | 38 (28.4) | 64 (60.4) | 42 (39.6) | 51 (56.7) | 39 (43.3) | 71 (50.7) | 69 (49.3) | 66 (55.9) | 52 (44.1) | 59 (59.6) | 40 (40.4) |
| White | 437 (86.7) | 67 (13.3) | 256 (77.6) | 74 (22.4) | 221 (69.7) | 96 (30.3) | 267 (66.4) | 135 (33.6) | 291 (76.6) | 89 (23.4) | 341 (81.0) | 80 (19.0) |
| χ^2 (df = 1) | 17.47 | | 12.15 | | 5.38 | | 10.91 | | 18.91 | | 20.68 | |
| p-value | .0001 | | .0005 | | .0203 | | .0010 | | .0001 | | .0001 | |
| r | .17 | | .17 | | .12 | | .14 | | .19 | | .20 | |



Table 11

Correlation Matrix of All the Study Variables (N = 3041)

| Study variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------------------|------|------|------|------|------|------|------|------|------|----|
| 1. Pass/Fail status | -- | | | | | | | | | |
| 2. Race | .17 | -- | | | | | | | | |
| 3. Gender | -.03 | -.01 | -- | | | | | | | |
| 4. Years of experience | .05 | .06 | -.10 | -- | | | | | | |
| 5. Linear function | .05 | .06 | -.10 | 1.00 | -- | | | | | |
| 6. Quadratic function | .11 | .09 | -.04 | .85 | .85 | -- | | | | |
| 7. Education level | .14 | -.06 | .06 | -.09 | -.09 | .03 | -- | | | |
| 8. Planning program | .08 | -.04 | .05 | -.15 | -.15 | .04 | .40 | -- | | |
| 9. Accredited school | .12 | -.05 | .07 | -.16 | -.16 | .05 | .43 | .78 | -- | |
| 10. Test Repeat status | -.51 | -.09 | .01 | -.02 | -.02 | -.06 | -.08 | -.07 | -.07 | -- |

Note. $r = .04, p < .05$; $r = .06, p < .01$; $r = .07, p < .001$ when N is greater than 2000.



Table 12

Results of Logistic Regression Models to AICP Pass/Fail Data Based on Total Examinees from 2000 to 2003 with First Time Test Takers

| Predictors \ Models | Total Examinees from 2000 and 2003 (N = 3041) | |
|---|---|---------------------------------|
| | Main effect only model | Main and full interaction model |
| Main effects: | | |
| Race | *** | * |
| Gender | + | NS |
| Years of experience: Linear function | + | * |
| Years of experience: Quadratic function | *** | *** |
| Education level | *** | NS |
| Planning program | * | NS |
| Accredited school | ** | NS |
| Test repeat | *** | *** |
| Interaction Effects | | |
| Race*Gender | -- | NS |
| Race*Yrs_Linear | -- | NS |
| Race*Yrs_Quadratic | -- | NS |
| Race*Education level | -- | NS |
| Race*Planning | -- | NS |
| Race*Accredited | -- | NS |
| Race*Test repeat | -- | NS |
| Deviance | 2621.29 | 2609.55 |
| <i>df</i> | 3032 | 3025 |
| Deviance/ <i>df</i> | .8645 | .8627 |

Note. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; NS: Non-Significant



Table 13

Results of Logistic Regression Models to AICP Pass/Fail Data by Year of Administration with First Time Test Takers: Main Effect Model

| Predictors | Year of Test Administration | | | | | |
|--|-----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | 1997 (N = 744) | 1998 (N = 1045) | 2000 (N = 1132) | 2001 (N = 1189) | 2002 (N = 1277) | 2003 (N = 1260) |
| Race | *** | *** | *** | *** | *** | *** |
| Gender | ** | NA | NS | NS | NS | NS |
| Years of experience: Linear function | NS | NS | NS | *** | NS | ** |
| Years of experience: Quadratic function | + | NS | + | *** | *** | ** |
| Education level | NS | *** | *** | NS | *** | ** |
| Planning program | NS | NS | NS | NS | * | NS |
| Accredited school | NS | NS | NS | NS | + | ** |
| Test repeat | *** | *** | *** | *** | *** | *** |
| Deviance | 422.70 | 822.13 | 634.94 | 828.97 | 1101.52 | 1517.13 |
| df | 735 | 1037 | 1123 | 1180 | 1268 | 1251 |
| Deviance/df | .5751 | .7928 | .5654 | .7025 | .8687 | 1.2127 |

Note. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; NS: Non-Significant; NA: Not available due to 80% of missing.



Table 14

Descriptive Statistics for the White examinees versus Minority examinees and males versus female comparisons

| Year | <u>White</u> | | | <u>Minority examinees</u> | | |
|------|--------------|-------|------|---------------------------|-------|-----|
| | Mean | SD | N | Mean | SD | N |
| 1999 | 102.27 | 11.90 | 1022 | 90.54 | 14.91 | 296 |
| 2001 | 109.85 | 12.74 | 719 | 102.53 | 16.16 | 260 |
| 2002 | 109.36 | 13.00 | 641 | 100.60 | 16.63 | 226 |
| Year | <u>Males</u> | | | <u>Females</u> | | |
| | Mean | SD | N | Mean | SD | N |
| 1997 | 100.46 | 14.20 | 464 | 99.51 | 13.44 | 259 |
| 1998 | 100.62 | 15.86 | 686 | 100.70 | 14.74 | 433 |
| 1999 | 99.90 | 13.88 | 856 | 99.13 | 12.90 | 462 |
| 2000 | 105.71 | 15.97 | 644 | 103.37 | 15.46 | 396 |
| 2001 | 108.26 | 14.64 | 632 | 107.26 | 3.04 | 347 |
| 2002 | 107.62 | 14.87 | 558 | 106.10 | 13.92 | 309 |

Note. Means and SDs are reported in the raw score metric.



Table 15

Results of the SIBTEST DIF analysis White examinees and Minority examinees for the AICP Certification exam

| Year | <u>Favors White examinees</u> | | <u>Favors Minority examinees</u> | |
|------|-------------------------------|----------|----------------------------------|----------|
| | Item Number | Beta-Uni | Item Number | Beta-Uni |
| 1999 | 8 | 0.107* | 32 | -0.115* |
| | 43 | 0.150* | 144 | -0.106* |
| 2001 | 15 | 0.142* | 40 | -0.097* |
| | 18 | 0.123* | 87 | -0.136* |
| | 24 | 0.109* | 129 | -0.153* |
| | 31 | 0.130* | 138 | -0.099* |
| | 34 | 0.144* | | |
| | 38 | 0.118* | | |
| | 46 | 0.148* | | |
| | 59 | 0.117* | | |
| | 61 | 0.114* | | |
| | 65 | 0.117* | | |
| | 84 | 0.116* | | |
| | 98 | 0.106* | | |
| | 123 | 0.143* | | |
| | 130 | 0.115* | | |
| | 131 | 0.113* | | |
| 149 | 0.131* | | | |
| 150 | 0.146* | | | |
| 2002 | 14 | 0.102* | 57 | -0.108* |
| | 19 | 0.130* | 66 | -0.119* |
| | 34 | 0.169* | 79 | -0.101* |
| | 75 | 0.121* | 139 | -0.108* |
| | 82 | 0.119* | | |
| | 88 | 0.110* | | |
| | 95 | 0.194* | | |
| | 116 | 0.123* | | |
| | 117 | 0.129* | | |
| | 118 | 0.117* | | |
| 122 | 0.133* | | | |

* $p < 0.05$



Table 16

Results of the SIBTEST DIF analysis for males and females for the AICP Certification exam

| Year | <u>Favors Males</u> | | <u>Favors Females</u> | |
|------|---------------------|----------|-----------------------|----------|
| | Item Number | Beta-Uni | Item Number | Beta-Uni |
| 1997 | 71 | 0.930* | 12 | -0.115* |
| | 74 | 0.187* | 13 | -0.102* |
| | 88 | 0.101* | 18 | -0.113* |
| | 111 | 0.151* | 32 | -0.109* |
| | 112 | 0.119* | 39 | -0.096* |
| | | | 149 | -0.104* |
| 1998 | 58 | 0.089* | 37 | -0.108* |
| | 92 | 0.105* | 64 | -0.099* |
| | 126 | 0.091* | 107 | -0.100* |
| | 150 | 0.093* | | |
| 1999 | 54 | 0.093* | 50 | -0.132* |
| | 125 | 0.144* | | |
| 2000 | 146 | 0.09* | | |
| | 150 | 0.177* | | |
| 2001 | 25 | 0.092* | 106 | -0.094* |
| | 60 | 0.09* | 126 | -0.102* |
| | 67 | 0.17* | | |
| | 71 | 0.118* | | |
| | 137 | 0.089* | | |
| 2002 | 34 | 0.088* | 32 | -0.094* |
| | 131 | 0.091* | 37 | -0.100* |
| | | | 51 | -0.098* |
| | | | 56 | -0.094* |
| | | | 97 | -0.088* |
| | | | 119 | -0.102* |
| | | 148 | -0.102* | |

* $p < 0.05$

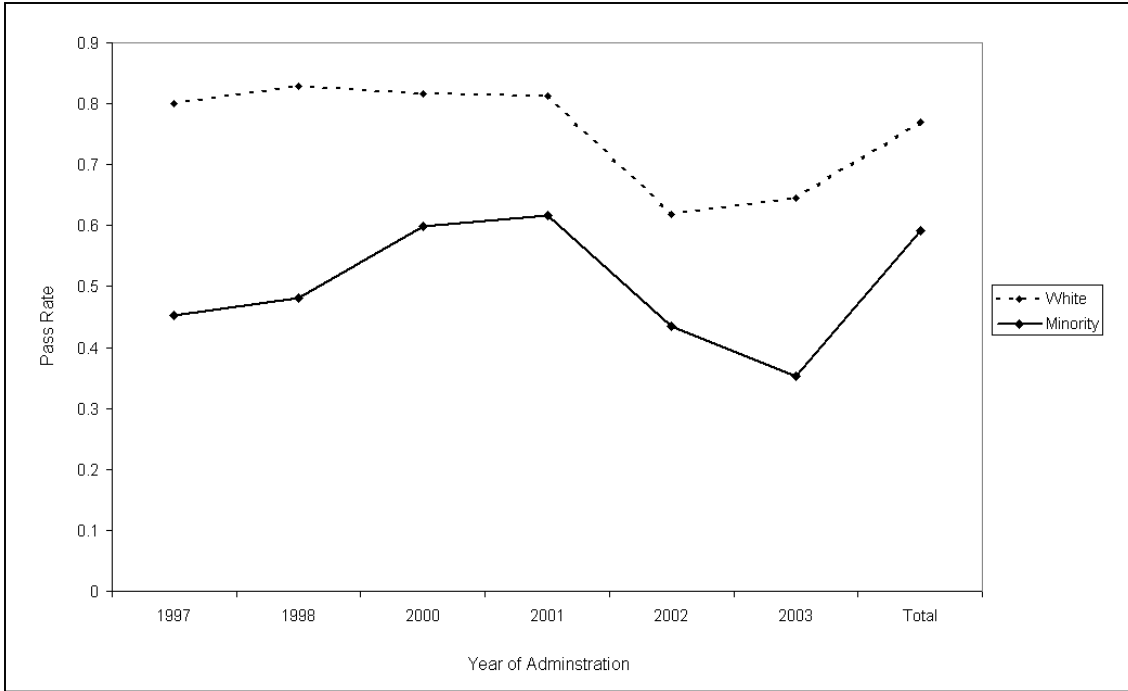


Figure 1. Pass Rate of AICP Examination by Race and Year of Administration

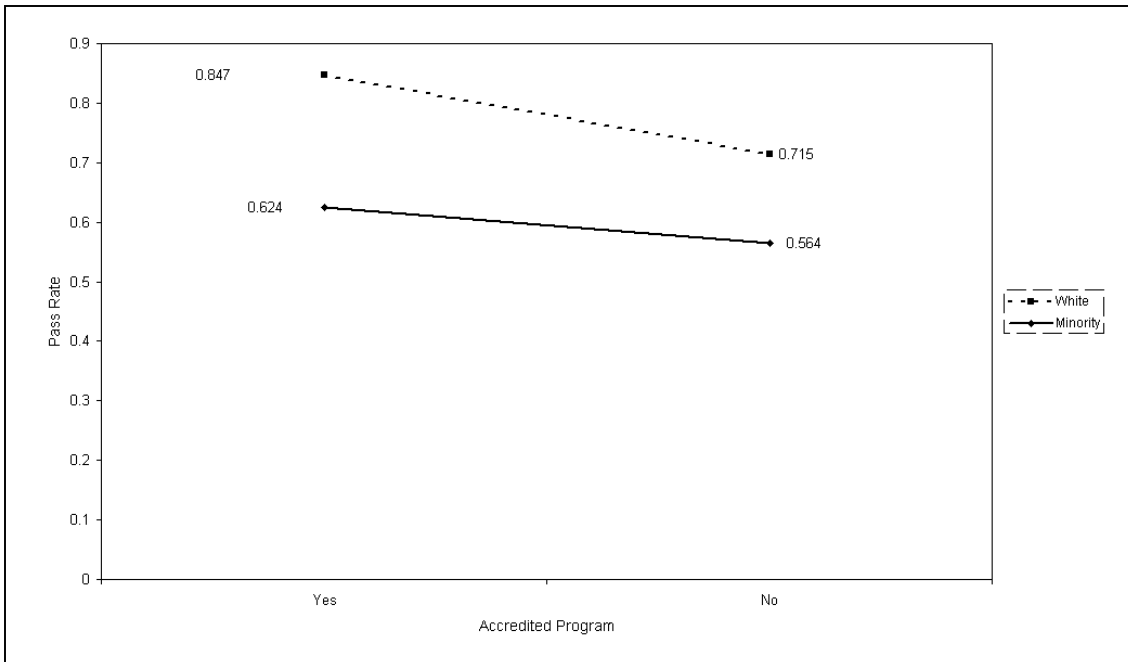


Figure 2. The association between accredited program and pass rate by race

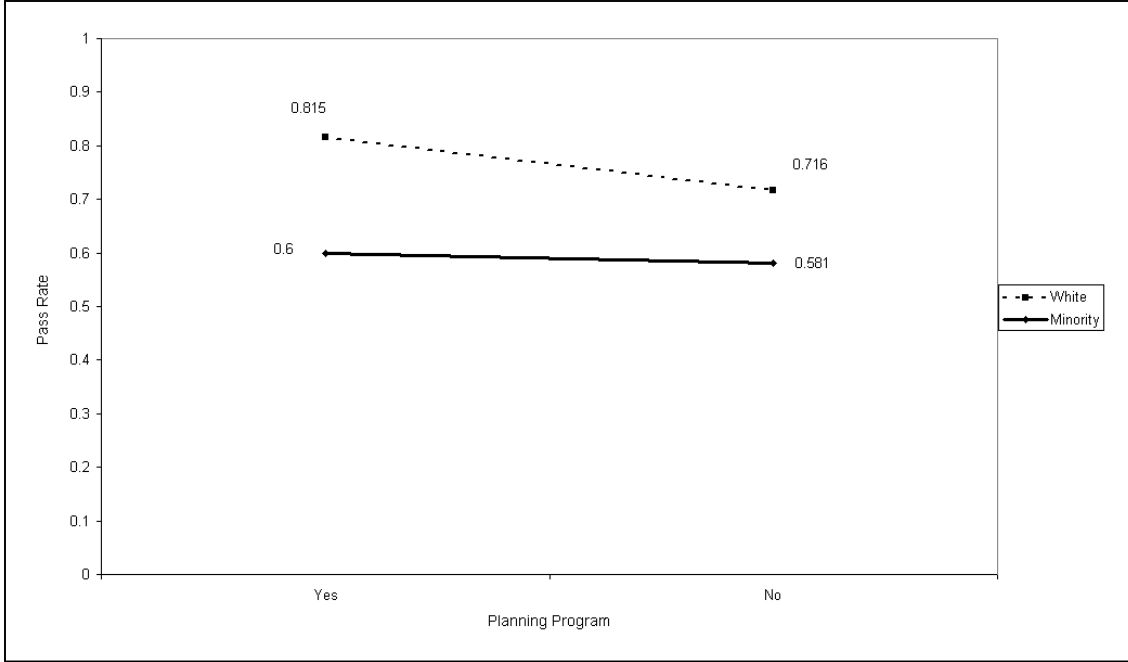


Figure 3. The association between planning program and pass rate by race

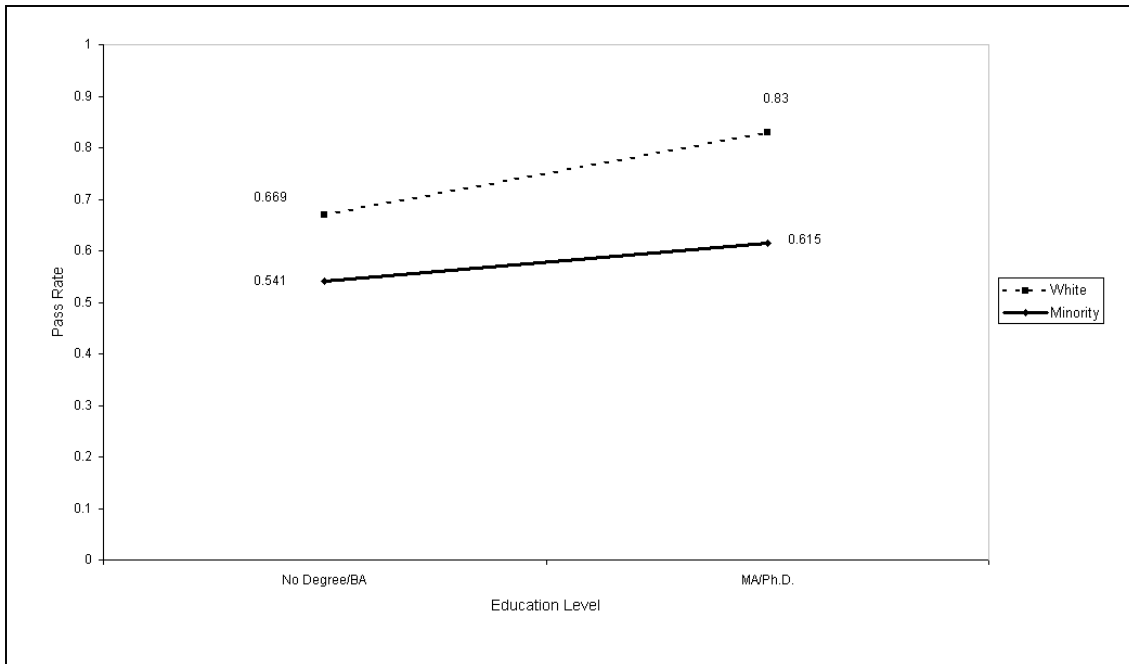


Figure 4. The association between education level and pass rate by race

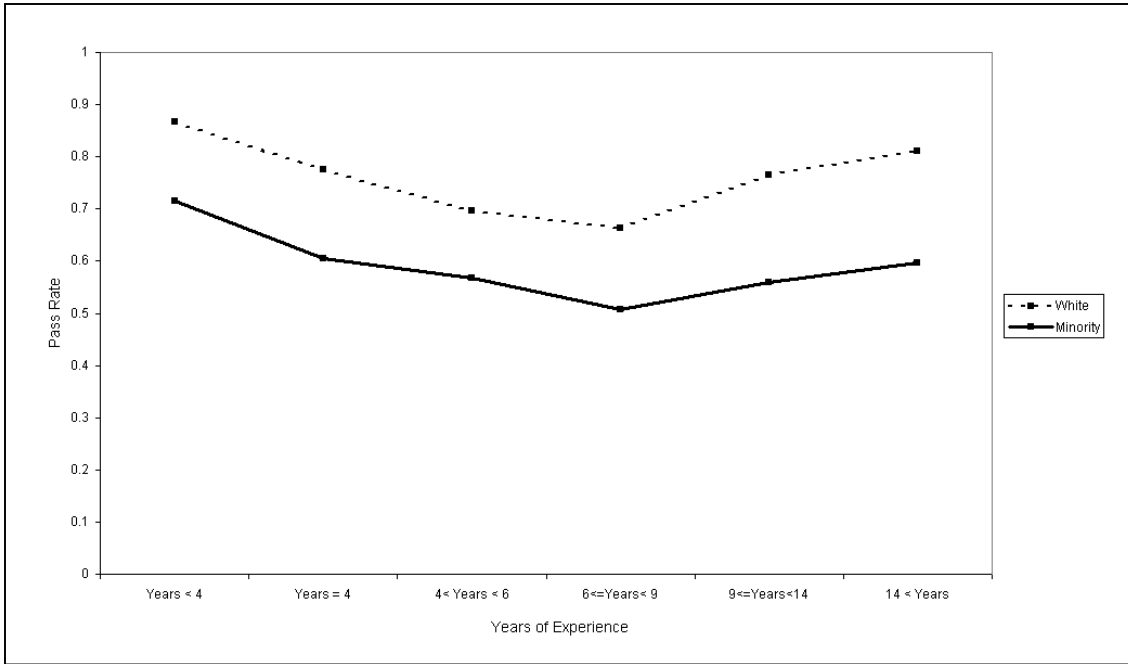


Figure 5. Pass Rate of AICP Examination by Race and Years of Experience

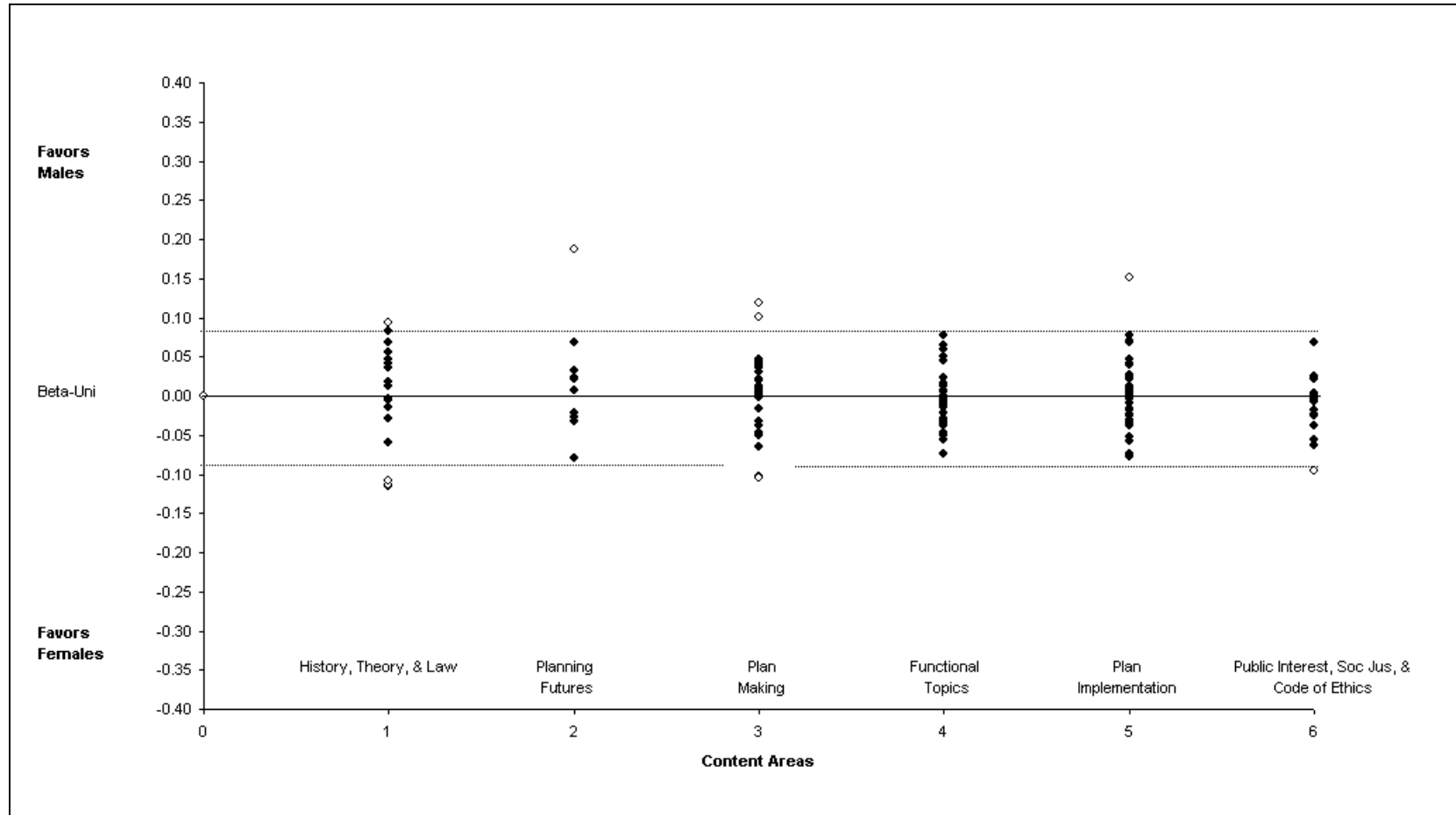


Figure 6. Example of a Differential Bundle Functioning or DBF chart

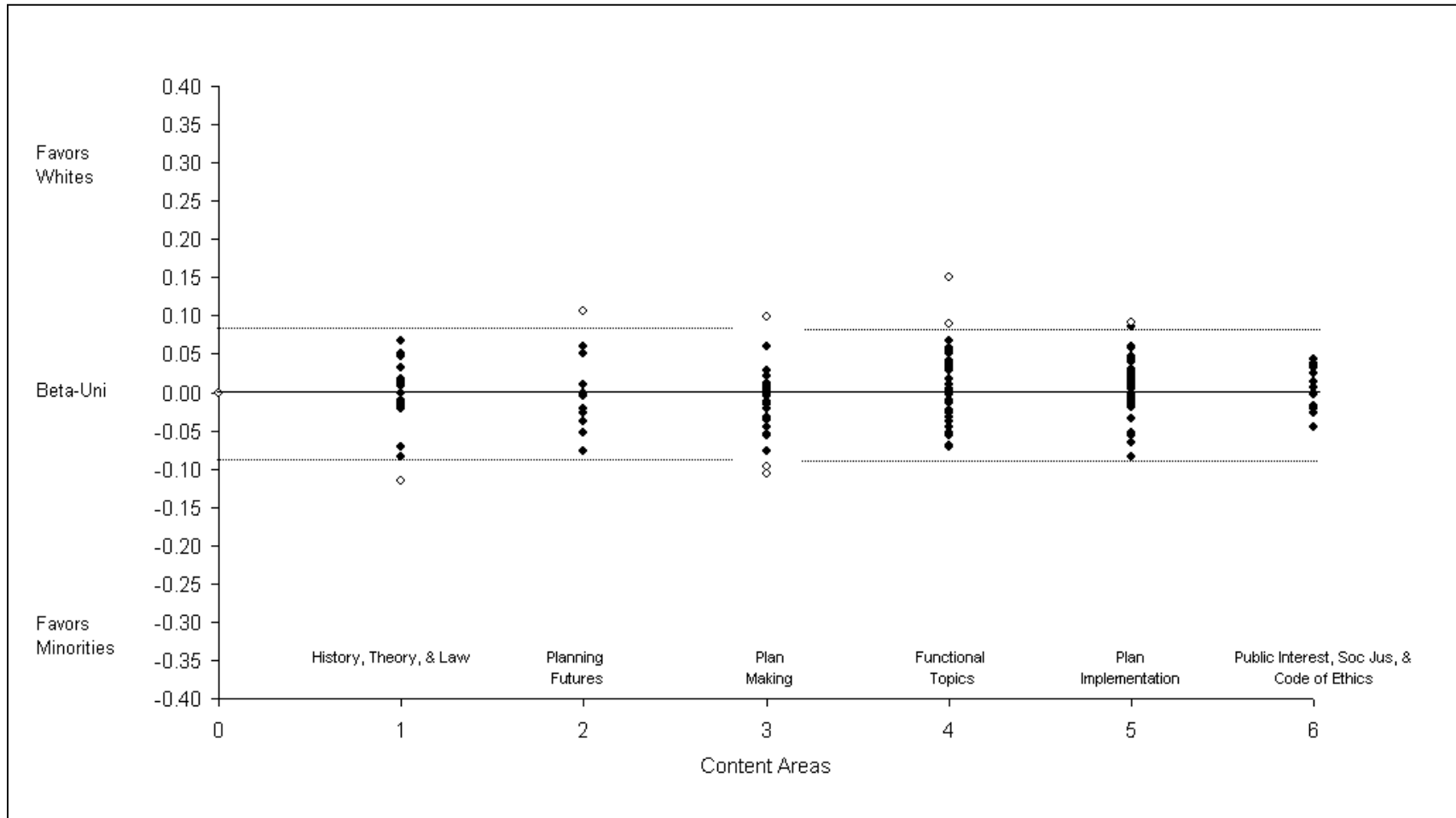


Figure 7. Differential bundle analysis for White examinees and Minority examinees: 1997 administration

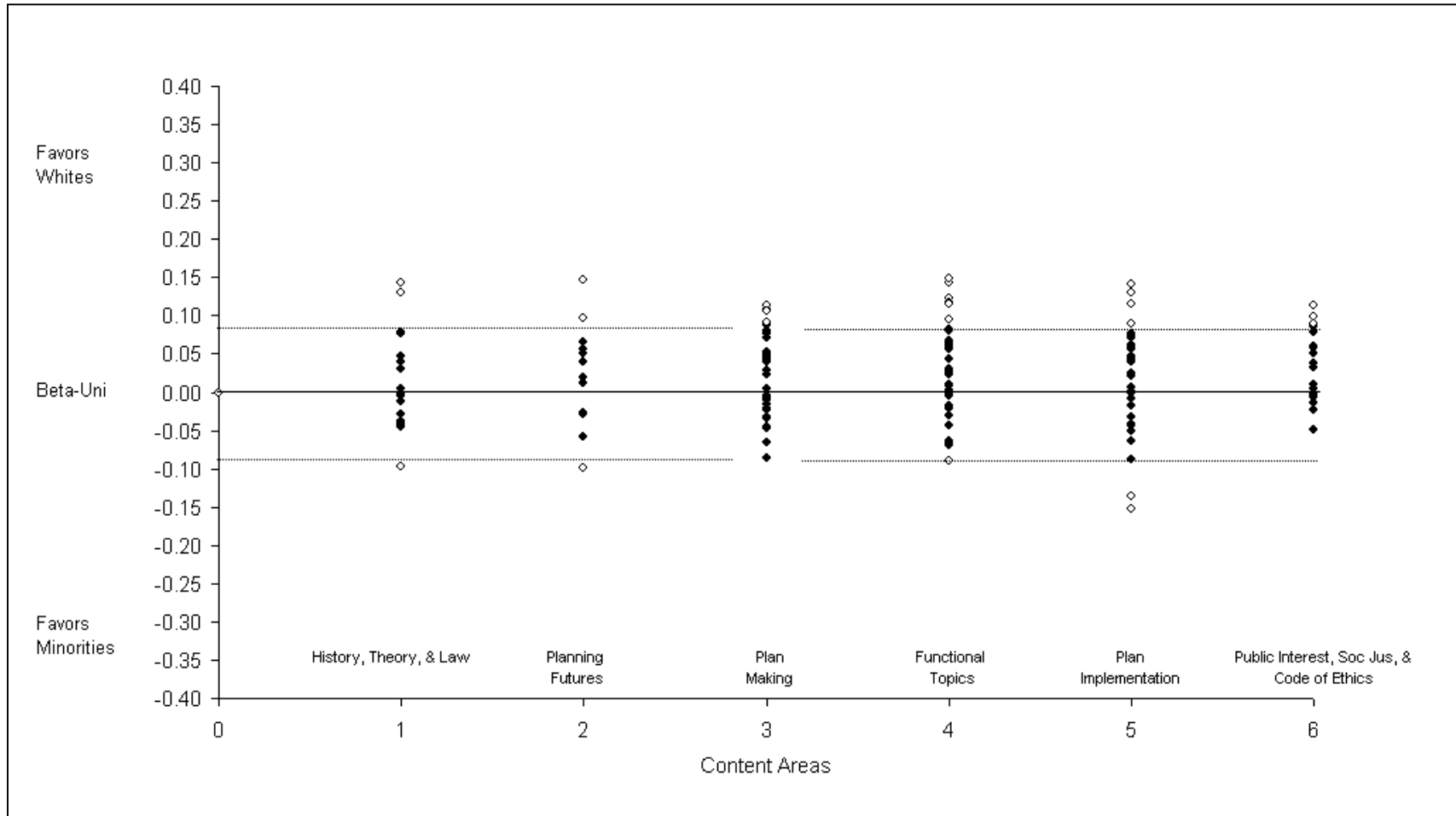


Figure 8. Differential bundle analysis for White examinees and Minority examinees: 2001 administration

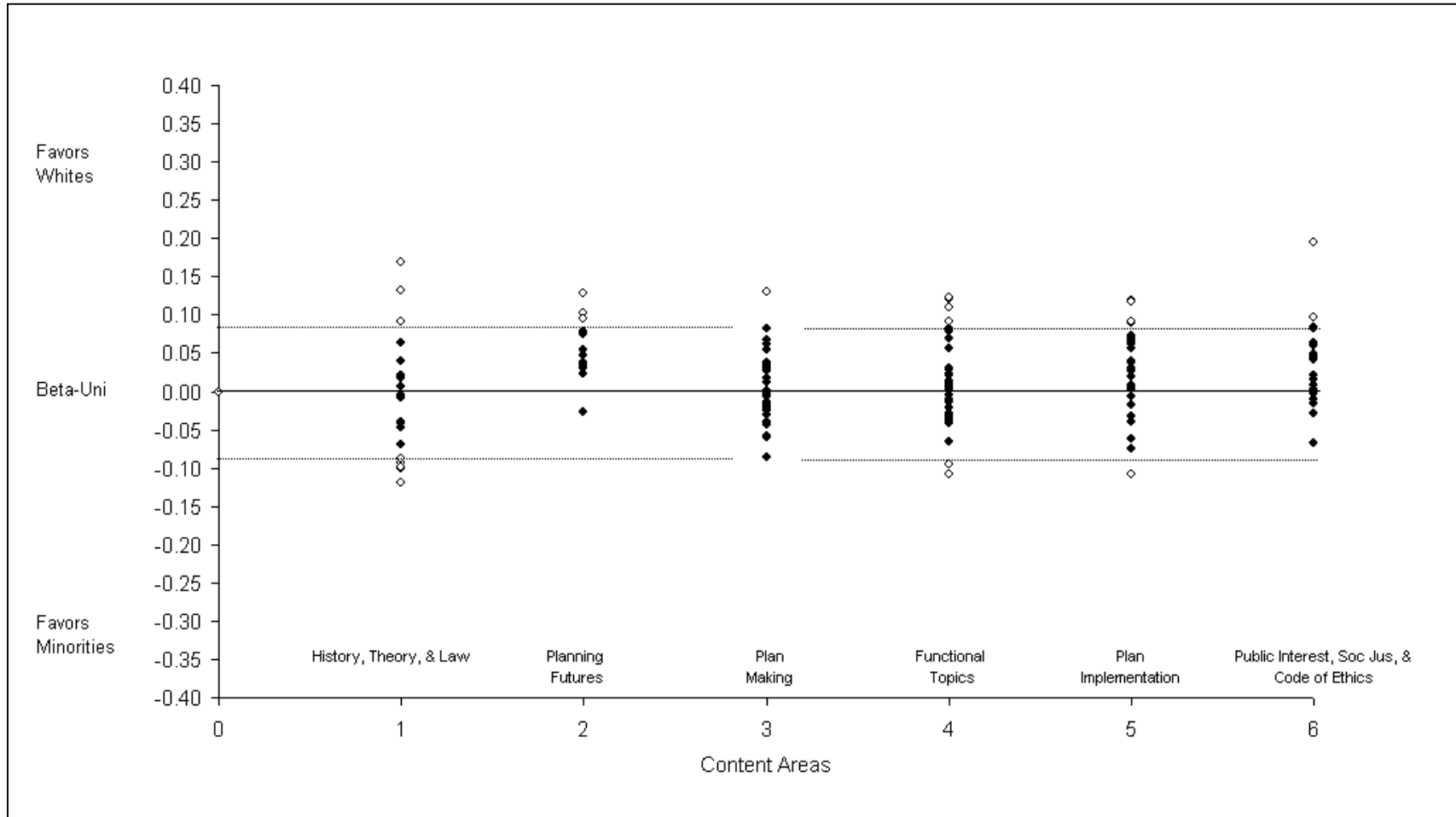


Figure 9. Differential bundle analysis for White examinees and Minority examinees: 2002 administration

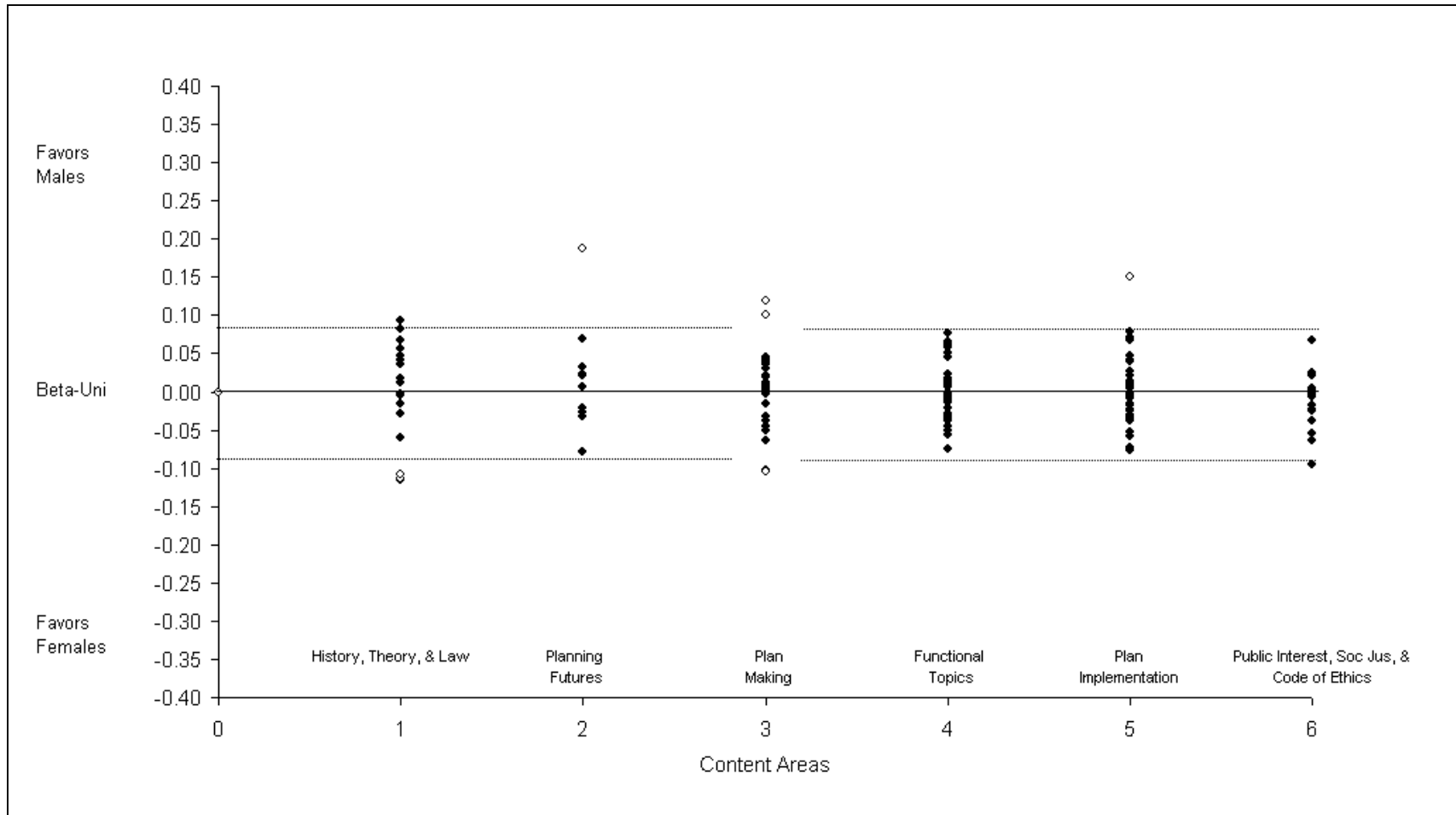


Figure 10. Differential bundle analysis for males and females: 1997 administration

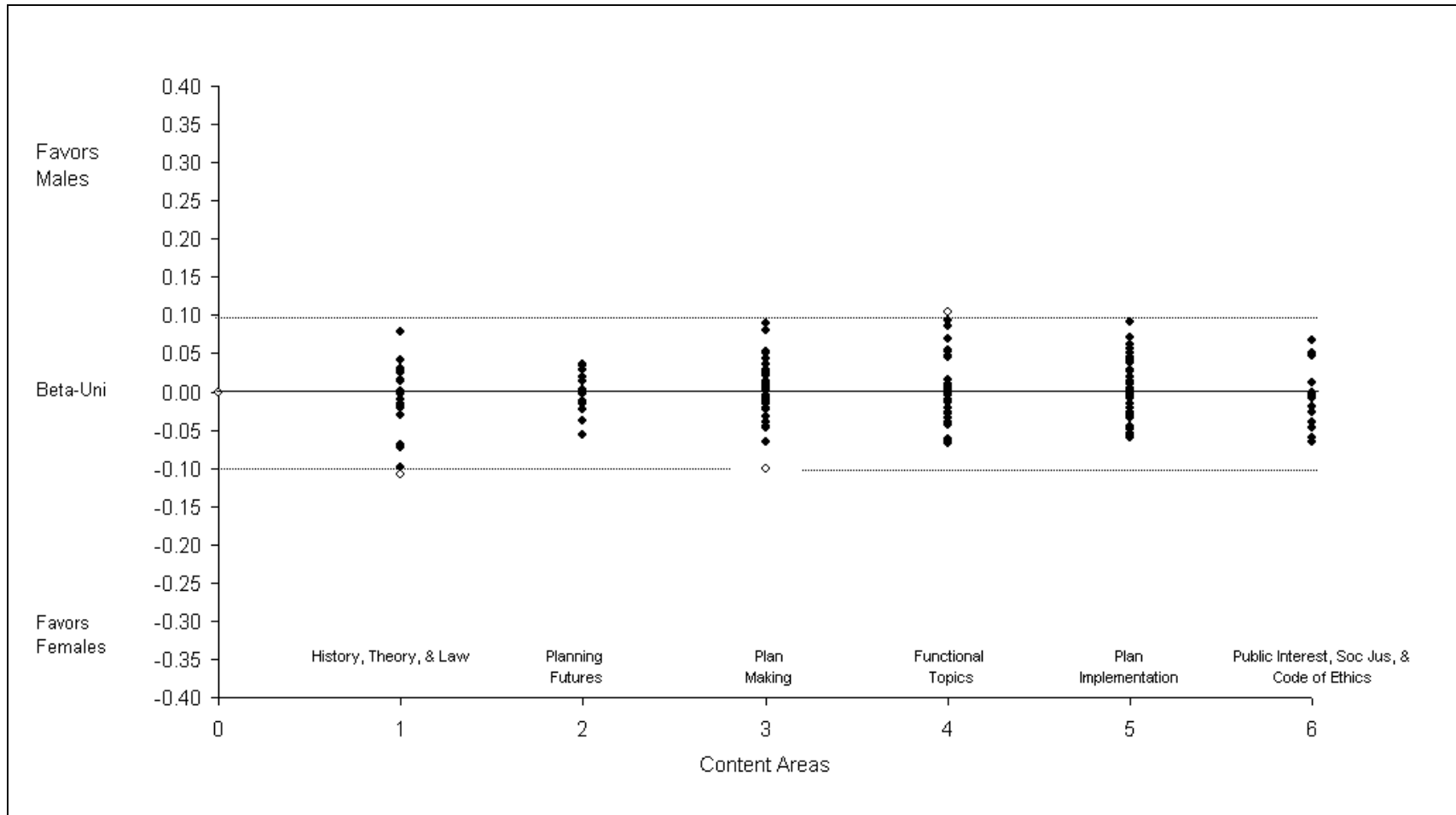


Figure 11. Differential bundle analysis for males and females: 1998 administration

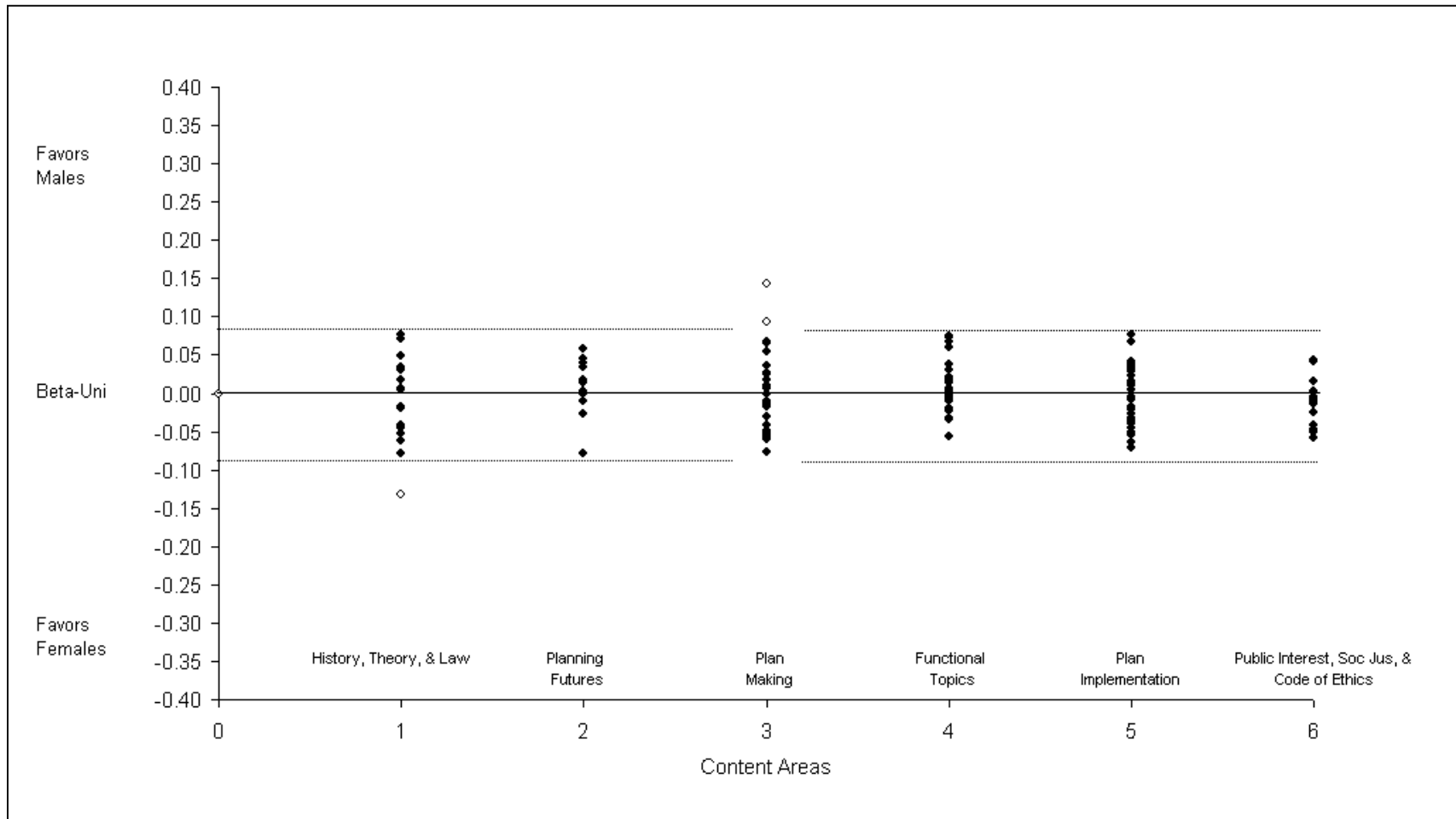


Figure 12. Differential bundle analysis for males and females: 1999 administration

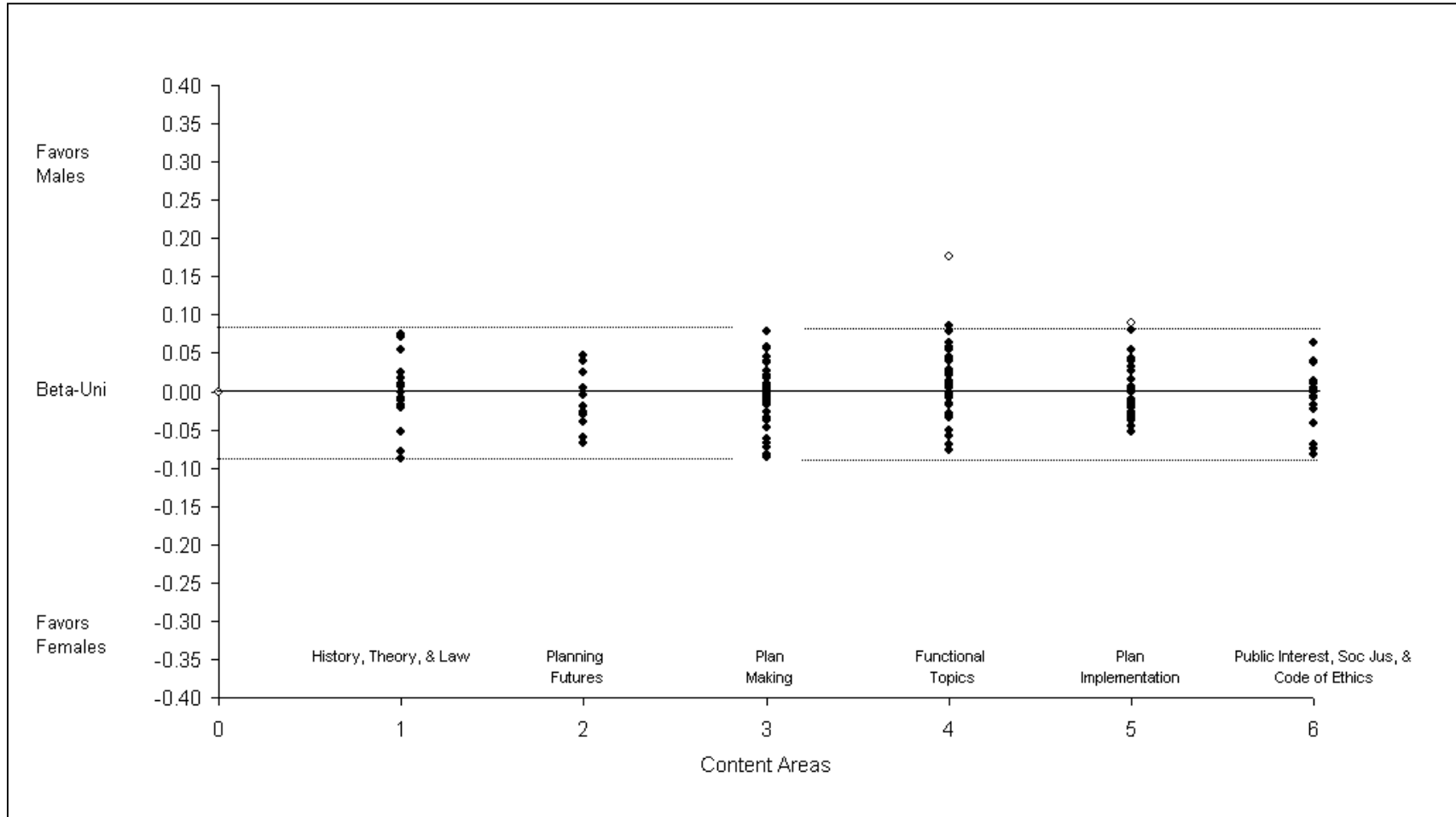


Figure 13. Differential bundle analysis for males and females: 2000 administration

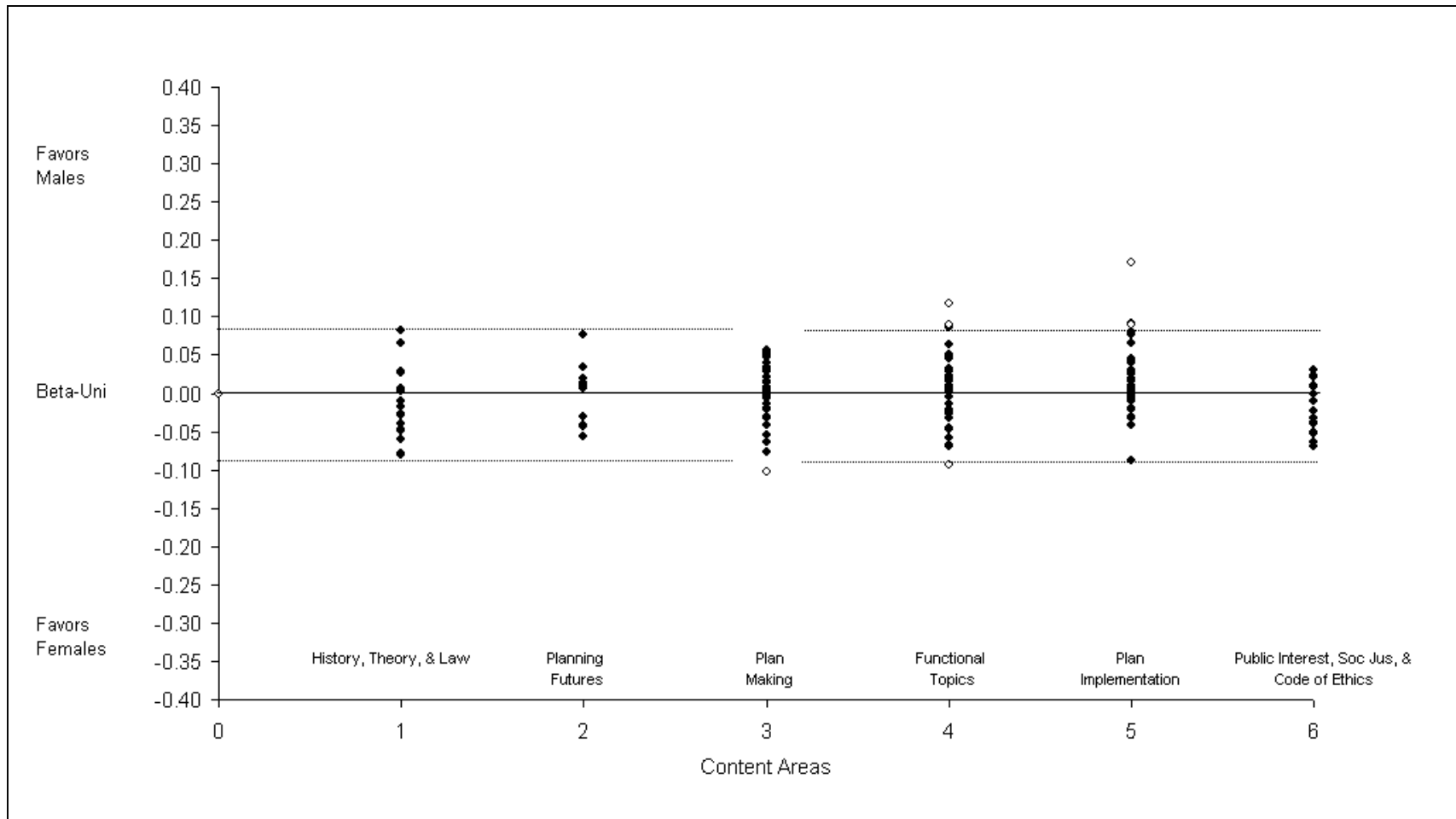


Figure 14. Differential bundle analysis for males and females: 2001 administration

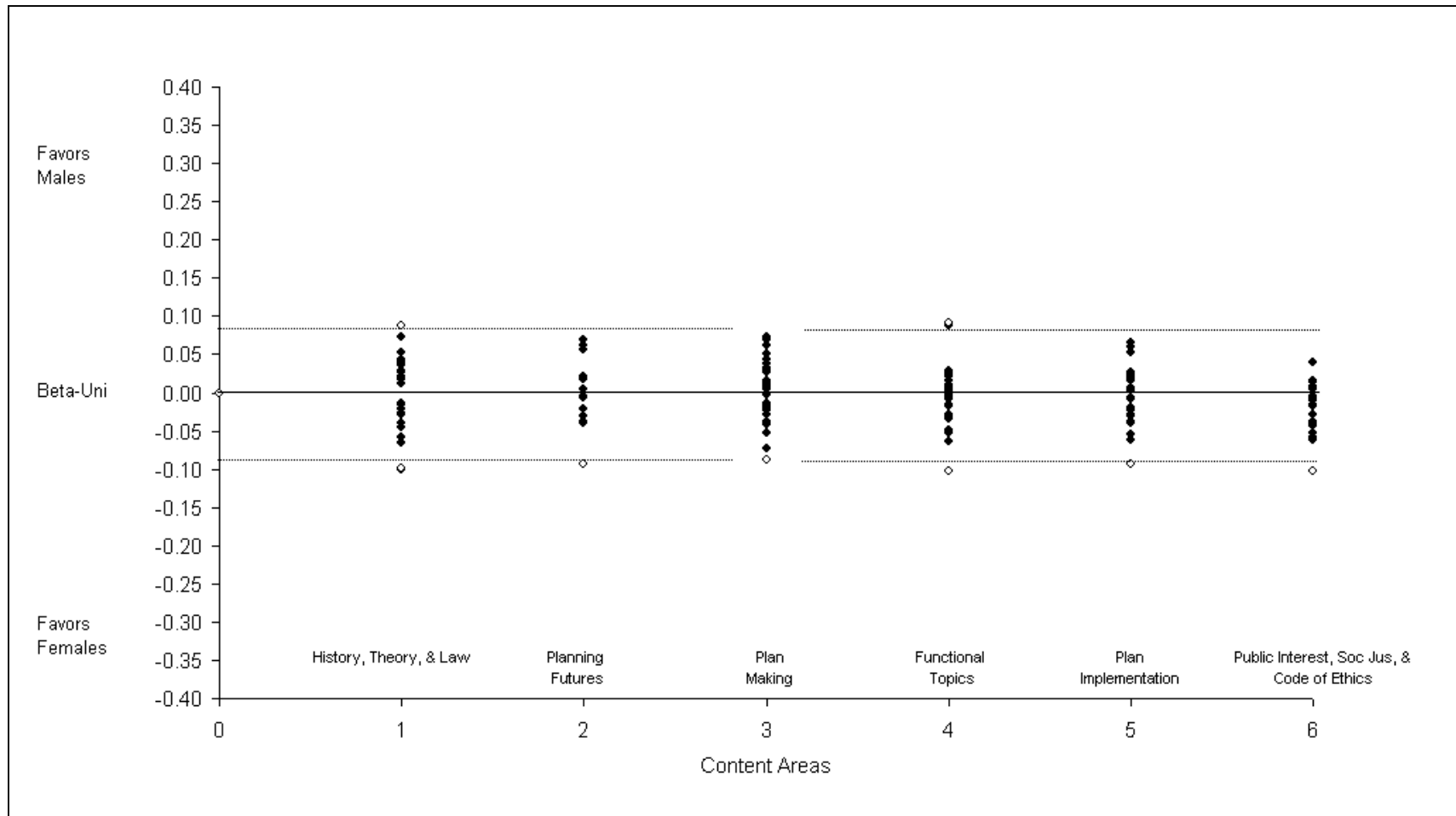
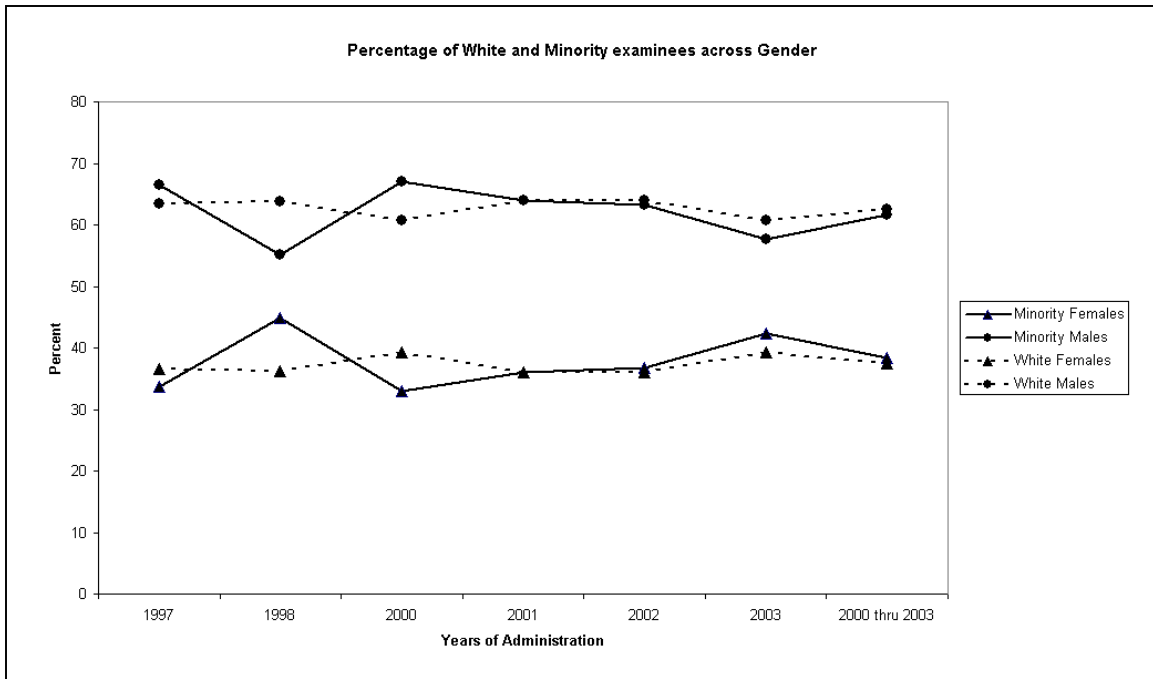


Figure 15. Differential bundle analysis for males and females: 2002 administration

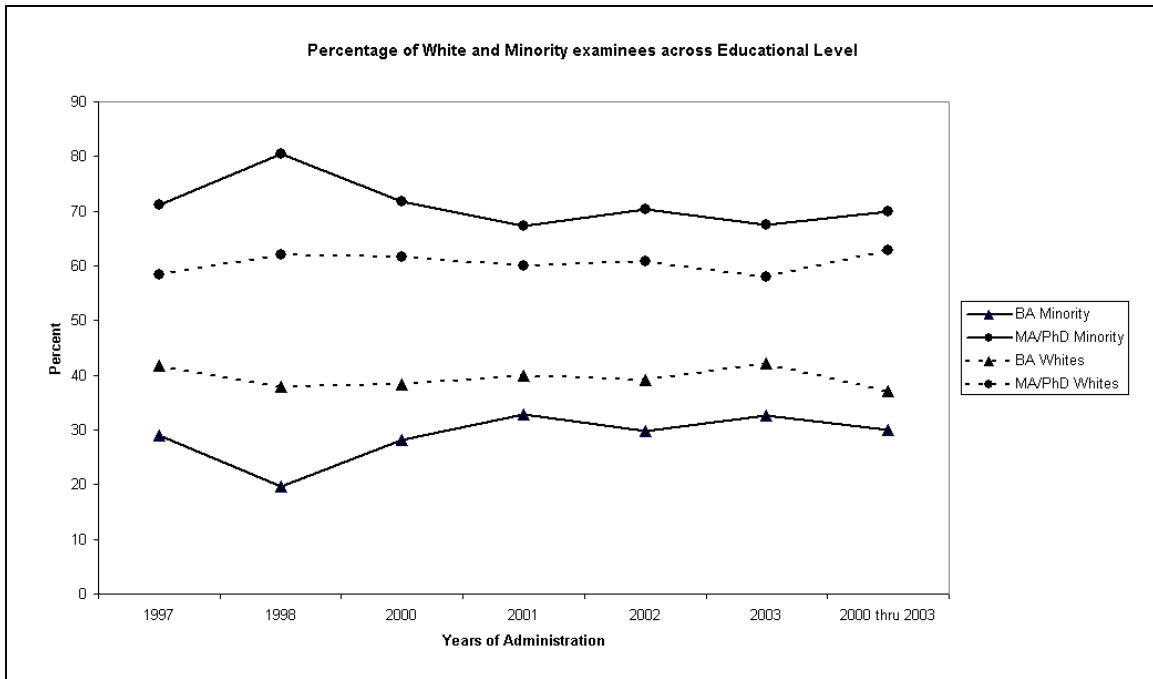


Appendix A

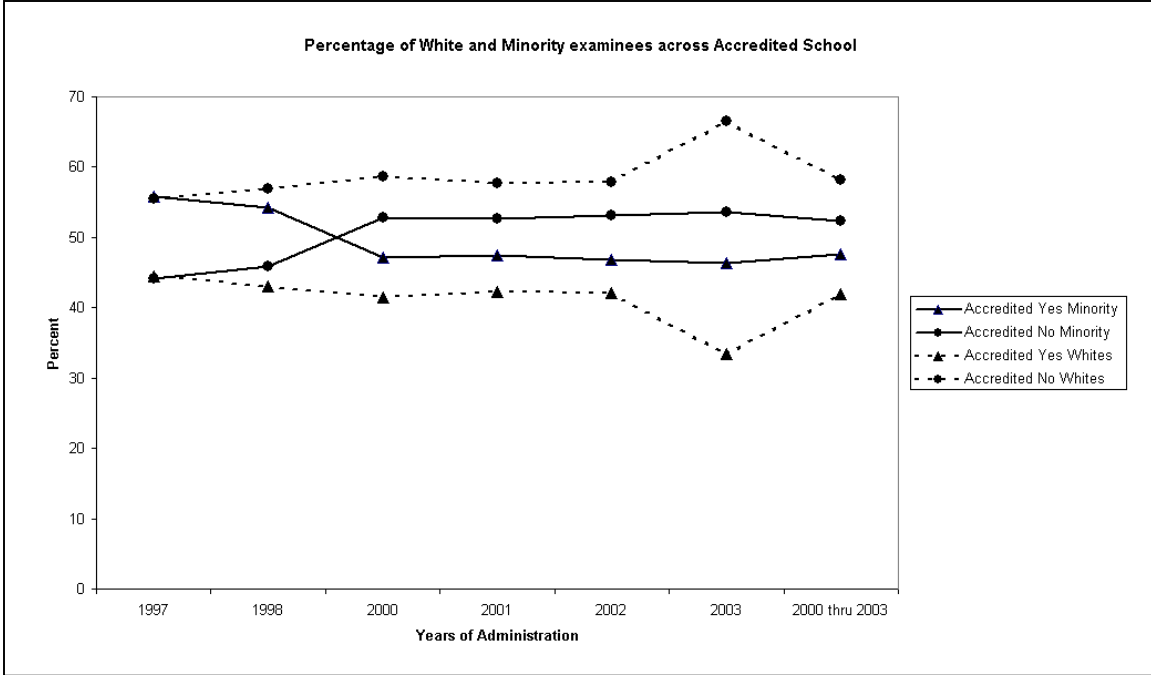
Graphs showing percentage of White and Minority examinees across different study variables



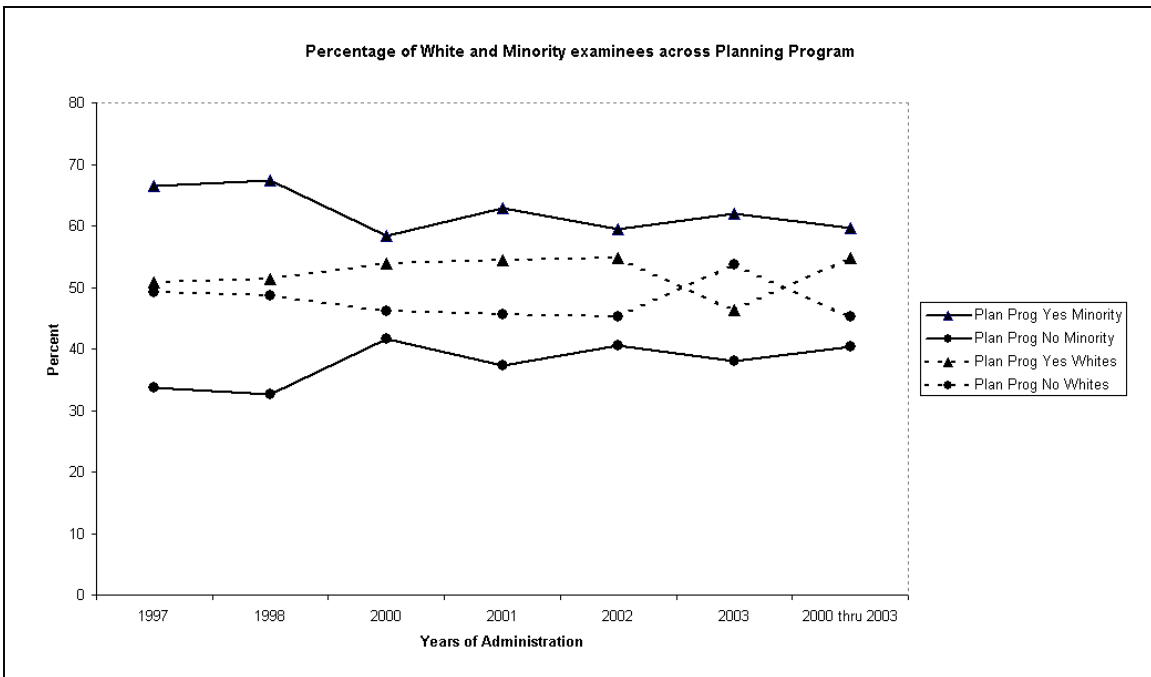
1. Percentage of White and Minority examinees across gender



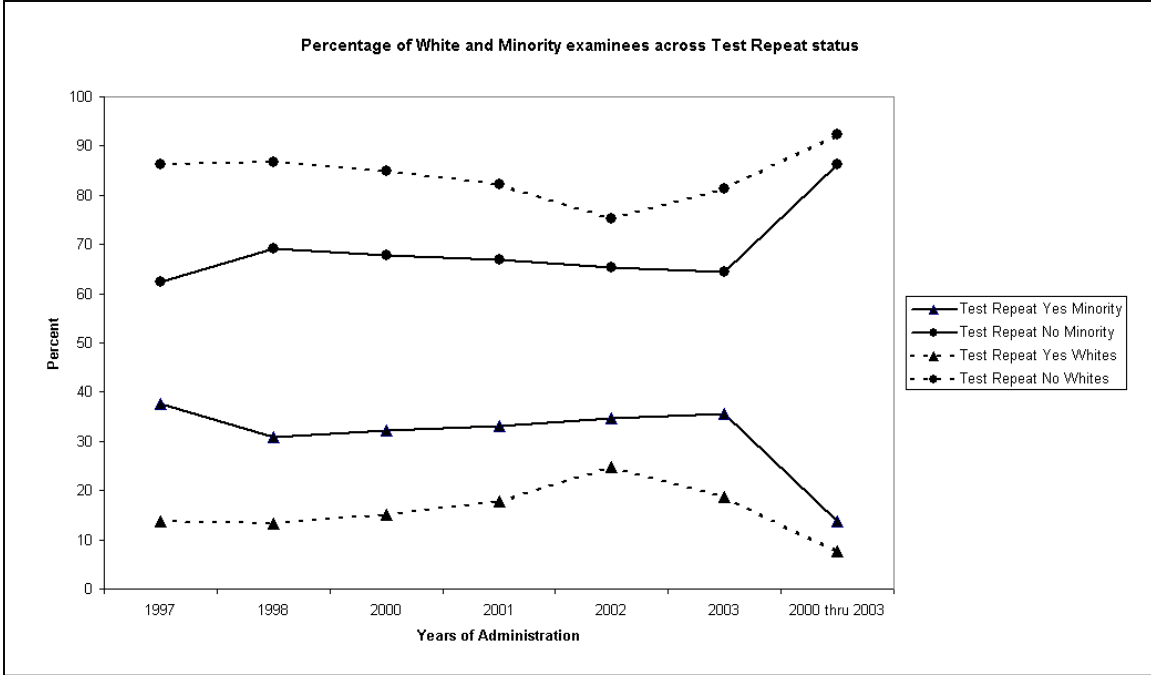
2. Percentage of White and Minority examinees across educational level



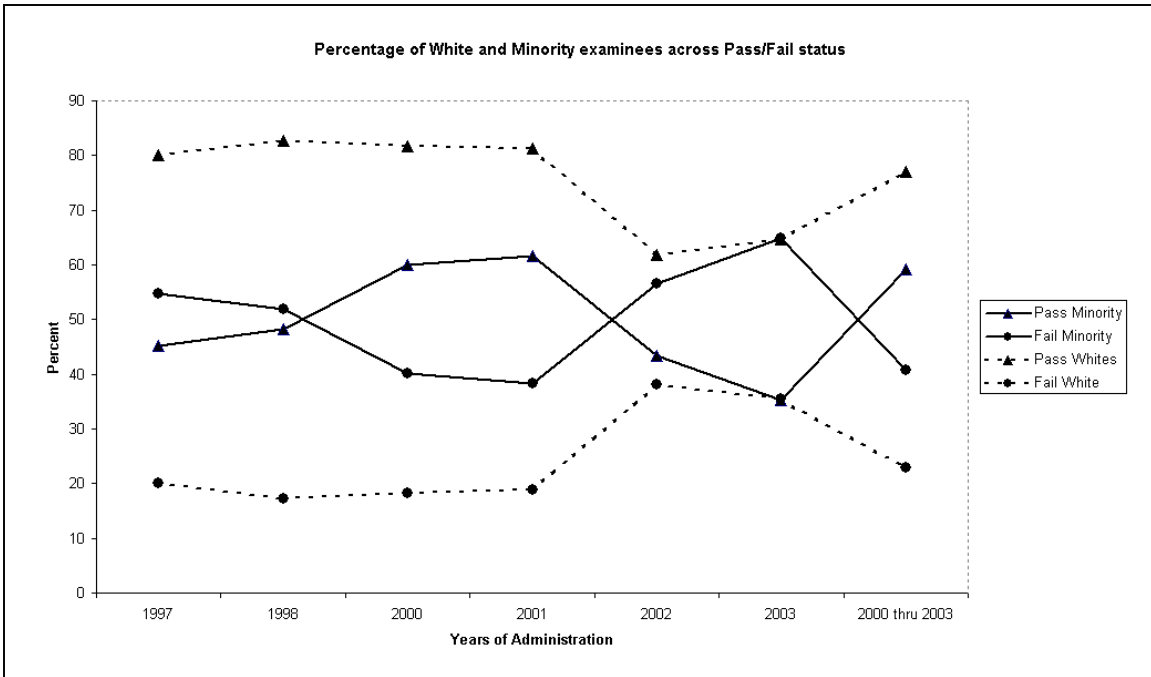
3. Percentage of White and Minority examinees across accredited school



4. Percentage of White and Minority examinees across planning program



5. Percentage of White and Minority examinees across test repeat status



6. Percentage of White and Minority examinees across pass/fail status



Appendix B

Cross-Classification of Pass/Fail Status by Race in Each Historically Black College and University (% of Row). Test repeaters, which constituted 43 % of the original data, are not included.

| Historically Black College & University | Race | Pass (%) | Fail (%) |
|---|----------|-----------|----------|
| <u>Accredited Schools</u> | | | |
| Alabama A&M University | Minority | 1 (10%) | 9 (90%) |
| | White | 15 (88%) | 2 (12%) |
| Howard University | Minority | 1 (100%) | 0 (0%) |
| | White | 3 (60%) | 2 (40%) |
| University of the District of Columbia | Minority | 8 (62%) | 5 (38%) |
| | White | 28 (93%) | 2 (7%) |
| Baltimore Morgan State University | Minority | 2 (33%) | 4 (67%) |
| | White | 17 (81%) | 4 (15%) |
| Jackson State University | Minority | 5 (83%) | 1 (17%) |
| | White | 46 (98%) | 1 (2%) |
| <u>Non-Accredited Schools</u> | | | |
| TX-Houston | | NA | NA |
| West Virginia University | | NA | NA |



Appendix C

Three way cross tabulation of Pass/Fail by Minority/White/ by Historically Black Colleges and Universities/Other Colleges and Universities. Test repeaters, which constituted 43 % of the original data, are not included.

| Frequency Percent Row Pct Col Pct | 0 | 1 | Total |
|--|-------------------------------|--------------------------------|---------------|
| 0 | 19 12.18 52.78 63.33 | 17 10.90 47.22 13.49 | 36 23.08 |
| 1 | 11 7.05 9.17 36.67 | 109 69.87 90.83 86.51 | 120 76.92 |
| Total | 30 19.23 | 126 80.77 | 156 100.00 |

Historically Black Colleges and Universities

| Frequency Percent Row Pct Col Pct | 0 | 1 | Total |
|--|--------------------------------|---------------------------------|----------------|
| 0 | 161 8.69 38.33 39.56 | 259 13.98 61.67 17.91 | 420 22.67 |
| 1 | 246 13.28 17.17 60.44 | 1187 64.06 82.83 82.09 | 1433 77.33 |
| Total | 407 21.96 | 1446 78.04 | 1853 100.00 |

Others Colleges and Universities

| Frequency Percent Row Pct Col Pct | 0 | 1 | Total |
|--|--------------------------------|---------------------------------|----------------|
| 0 | 198 8.68 46.59 29.91 | 227 9.95 53.41 14.02 | 425 18.63 |
| 1 | 464 20.34 25.00 70.09 | 1392 61.03 75.00 85.98 | 1856 81.37 |
| Total | 662 29.02 | 1619 70.98 | 2281 100.00 |

Missing School Information

Note: Columns in the cross tabulations indicate Pass/Fail Status (Pass = 1, Fail = 0)
 Rows in the cross tabulations indicate race membership (Whites = 1, 0 = Minorities)
 Total number of examinees are reported in the right hand bottom corner of each table.



Appendix D

All Accredited Schools (1997 thru 2003, test repeaters, which constituted 43 % of the original data, are not included.)

| School Name | Race | Pass (%) | Fail (%) |
|---|----------|-----------|-----------|
| AL_Normal_Alabama A&M University | Minority | 1 (10.0) | 9 (90.0) |
| | White | 15 (88.2) | 2 (11.8) |
| | Total | 16 (59.3) | 11 (40.7) |
| AZ_Tempe_Arizona state University | Minority | 3 (50.0) | 3 (50.0) |
| | White | 12 (75.0) | 4 (25.0) |
| | Total | 15 (68.2) | 7 (31.8) |
| AZ_Tucson_University of Arizona | Minority | 3 (50.0) | 3 (50.0) |
| | White | 13 (86.7) | 2 (13.3) |
| | Total | 16 (76.2) | 5 (23.8) |
| CANADA_BC_ Univ of Northern British Columbia | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (66.7) | 1 (33.3) |
| | Total | 2 (66.7) | 1 (33.3) |
| CANADA_MB_ Univ of Manitoba Master of City Planning 1952 - Present | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CANADA_NS_Dalhousie Univ Master of Urban & Rural Planning 1981 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 2 (100.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| CANADA_NS_Nova Scotia Coll Art/Design - Canada | Minority | 1 (100.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |
| CANADA_NS_Nova Scotia College of Art and Design Bachelor of Design in Environmental Planning 1981 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| CANADA_ON_ Queen's Univ Master of Urban & Regional Planning 1973 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_ON_Ryerson Polytechnic Univ Bachelor of Applied Arts (Urban & Regional Planning) 1973 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (66.7) | 1 (33.3) |
| | Total | 2 (66.7) | 1 (33.3) |
| CANADA_ON_ Univ of Guelph | Minority | 1 (50.0) | 1 (50.0) |
| | White | 5 (100.0) | 0 (0.0) |
| | Total | 6 (85.7) | 1 (14.3) |



| | | | |
|---|----------|------------|-----------|
| CANADA_ON_Univ of Guelph Master of Science (Rural Planning & Development) 1983 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| CANADA_ON_Univ of Waterloo | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_ON_Univ of Windsor Honours Bachelor of Arts (Planning) 1990 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_ON_York Univ Master in Environmental Studies (Planning) 1970 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| CANADA_PQ_McGill Univ Master of Urban Planning 1974 - Present | Minority | 4 (100.0) | 0 (0.0) |
| | White | 4 (80.0) | 1 (20.0) |
| | Total | 8 (88.9) | 1 (11.1) |
| CANADA_PQ_Universite Laval Maitrise en aménagement du territoire et developpement regional 1984 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_QC_Univ De Montreal | Minority | 0 (0.0) | 0 (0.0) |
| | White | 4 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| CANADA_QC_Univ Du Quebec | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CANADA_QC_Universite Laval Maitrise | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| CANADA_SK_Univ of Saskatchewan | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| CANADA_SK_Univ of Saskatchewan Bachelor of Arts in Regional & Urban Development Program (Planning Option) 1989 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CA_Berkeley_Univ of California, Berkeley Master of City Planning Sept 1960 - Present | Minority | 13 (81.3) | 3 (18.7) |
| | White | 19 (100.0) | 0 (0.0) |
| | Total | 31 (91.4) | 3 (8.6) |
| CA_Fresno_California State Univ, Fresno Master of City & Regional Planning Sept 1970 – June 1982 | Minority | 1 (100.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |



| | | | |
|--|----------|------------|-----------|
| CA_Irvine_Univ of California, Irvine Master of Urban & Regional Planning Jan 1998 - Present | Minority | 2 (100.0) | 0 (0.0) |
| | White | 4 (100.0) | 0 (0.0) |
| | Total | 6 (100.0) | 0 (0.0) |
| CA_Los Angeles_Univ of California, Los Angeles Master of Arts in Urban Planning Sept 1971 - Present | Minority | 7 (77.8) | 2 (22.2) |
| | White | 11 (100.0) | 0 (0.0) |
| | Total | 18 (90.0) | 2 (10.0) |
| CA_Los Angeles_Univ of Souther California Master of Planning Sept 1967 - Present | Minority | 9 (64.3) | 5 (35.7) |
| | White | 6 (85.7) | 1 (14.3) |
| | Total | 15 (71.4) | 6 (28.6) |
| CA_Pomona_California State Ploy University | Minority | 10 (52.6) | 9 (47.4) |
| | White | 19 (79.2) | 5 (20.8) |
| | Total | 29 (67.4) | 14 (32.6) |
| CA_San Jose_San Jose State Univ Master of Urban Planning Sept 1972 - Present | Minority | 1 (50.0) | 1 (50.0) |
| | White | 10 (90.9) | 1 (9.1) |
| | Total | 11 (84.6) | 2 (15.4) |
| CA_San Luis Obispo_California Poly State University | Minority | 8 (50.0) | 8 (50.0) |
| | White | 37 (90.2) | 4 (9.8) |
| | Total | 45 (78.9) | 12 (21.1) |
| CO_Denver_Univ of Colorado, Denver Master of Urban & Regional Planning Sept 1975 - Present | Minority | 7 (87.5) | 1 (12.5) |
| | White | 22 (84.6) | 4 (15.4) |
| | Total | 29 (85.3) | 5 (14.7) |
| Canada_AB_University of Calgary | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| Canada_BC_University of British Columbia | Minority | 1 (100.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| Canada_On_University of Toronto | Minority | 1 (100.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| Canada_On_University of Waterloo | Minority | 3 (100.0) | 0 (0.0) |
| | White | 4 (80.0) | 1 (20.0) |
| | Total | 7 (87.5) | 1 (12.5) |
| DC_Washington, DC_George Washington Univ Master of Urban & Regional Planning Sept 1969 – Dec 1995 | Minority | 1 (100.0) | 0 (0.0) |
| | White | 3 (60.0) | 2 (40.0) |
| | Total | 4 (66.7) | 2 (33.3) |
| DC_Washington, DC_Univ of the District of Columbia | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |



| | | | |
|---|----------|------------|-----------|
| FL_Coral Gables_Univ of Miami Master of Urban & Regional Planning July 1981 - Dec 1991 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (66.7) | 1 (33.3) |
| | Total | 2 (66.7) | 1 (33.3) |
| FL_Fort Lauderdale_Florida Atlantic Univ Master of Urban & Regional Planning Jan 1995 - Present | Minority | 3 (42.9) | 4 (57.1) |
| | White | 9 (69.2) | 4 (30.8) |
| | Total | 12 (60.0) | 8 (40.0) |
| FL_Gainesville_Univ of Florida Master of Arts in Urban & Regional Planning Sept 1965 - Present | Minority | 2 (66.7) | 1 (33.3) |
| | White | 26 (81.3) | 6 (18.7) |
| | Total | 28 (80.0) | 7 (20.0) |
| FL_Tallahassee_Florida State Univ Master of Science in Planning Sept 1965 - Present | Minority | 9 (81.8) | 2 (18.2) |
| | White | 40 (87.0) | 6 (13.0) |
| | Total | 49 (86.0) | 8 (14.0) |
| GA_Atlanta_Georgia Institute of Technology Master of City Planning Sept 1969 - Present | Minority | 7 (58.3) | 5 (41.7) |
| | White | 28 (93.3) | 2 (6.7) |
| | Total | 35 (83.3) | 7 (16.7) |
| HI_Honolulu_Univ of Hawaii at Manoa Master of Urban & Regional Planning July 1981 - Present | Minority | 6 (85.7) | 1 (14.3) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 8 (88.9) | 1 (11.1) |
| IA_Ames_Iowa State Univ | Minority | 4 (66.7) | 2 (33.3) |
| | White | 31 (72.1) | 12 (27.9) |
| | Total | 35 (71.4) | 14 (28.6) |
| IA_Iowa City_Univ of Iowa Master of Arts or Master of Science in Urban & Regional Planning 1970 - Present | Minority | 2 (50.0) | 2 (50.0) |
| | White | 16 (94.1) | 1 (5.9) |
| | Total | 18 (85.7) | 3 (14.3) |
| IL_Champaign_Univ of Illinois | Minority | 4 (66.7) | 2 (33.3) |
| | White | 32 (100.0) | 0 (0.0) |
| | Total | 36 (94.7) | 2 (5.3) |
| IL_Chicago_Illinois Institute of Technology Master of City & Regional Planning Sept 1970 - 1980 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (66.7) | 1 (33.3) |
| | Total | 2 (66.7) | 1 (33.3) |
| IL_Chicago_Univ of Illinois at Chicago Master of Urban Planning & Policy June 1979 - Present | Minority | 6 (85.7) | 1 (14.3) |
| | White | 21 (87.5) | 3 (12.5) |
| | Total | 27 (87.1) | 4 (12.9) |
| IL_Southern Illinois University, Master of City and Regional Planning, Sept 1973 - Oct 1977 and April 1979 - May 1985 (recognized) | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| IN_Muncie_Ball State Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 20 (83.3) | 4 (16.7) |
| | Total | 21 (84.0) | 4 (16.0) |



| | | | |
|---|----------|------------|-----------|
| KS_Lawrence_ Univ of Kansas Master of Urban Planning July 1983 - Present | Minority | 4 (66.7) | 2 (33.3) |
| | White | 18 (85.7) | 3 (14.3) |
| | Total | 22 (81.5) | 5 (18.5) |
| KS_Manhattan_Kansas State Univ Master of Regional & Community Planning Sept 1961 - Present | Minority | 3 (60.0) | 2 (40.0) |
| | White | 5 (83.3) | 1 (16.7) |
| | Total | 8 (72.7) | 3 (27.3) |
| LA_New Orleans_ Univ of New Orleans Master of Urban & Regional Planning Sept 1976 - Present | Minority | 0 (0.0) | 3 (100.0) |
| | White | 20 (83.3) | 4 (16.7) |
| | Total | 20 (74.1) | 7 (25.9) |
| MA_Amherst_ Univ of Massachusetts - Amherst Master of Regional Planning Sept 1978 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 16 (84.2) | 3 (15.8) |
| | Total | 17 (85.0) | 3 (15.0) |
| MA_Cambridge_Harvard Univ Master of Urban Planning Sept 1923 - Aug 1984 Jan 1996 - Present | Minority | 4 (80.0) | 1 (20.0) |
| | White | 11 (100.0) | 0 (0.0) |
| | Total | 15 (93.8) | 1 (6.2) |
| MA_Cambridge_Massachusetts Institute of Technology | Minority | 5 (62.5) | 3 (37.5) |
| | White | 16 (88.9) | 2 (11.1) |
| | Total | 21 (80.8) | 5 (19.2) |
| MD_Baltimore_Morgan State Univ Master of City & Regional Planning Sept 1973 - Present | Minority | 1 (20.0) | 4 (80.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 2 (28.6) | 5 (71.4) |
| MD_College Park_ Univ of Maryland at College Park Master of Community Planning Sept 1978 - Present | Minority | 1 (50.0) | 1 (50.0) |
| | White | 12 (92.3) | 1 (7.7) |
| | Total | 13 (86.7) | 2 (13.3) |
| MI_Ann Arbor_ Univ of Michigan Master of Urban Planning Sept 1968 - Present | Minority | 10 (100.0) | 0 (0.0) |
| | White | 13 (81.2) | 3 (18.8) |
| | Total | 23 (88.5) | 3 (11.5) |
| MI_Detroit_Wayne State Univ Master of Urban Planning Sept 1975 - June 1985 Jan 1996 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 4 (80.0) | 1 (20.0) |
| | Total | 5 (83.3) | 1 (16.7) |
| MI_Ypsilanti_Eastern Michigan Univ Bachelor of Science/Major in Urban & Regional Planning Jan 1998 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 9 (90.0) | 1 (10.0) |
| | Total | 9 (90.0) | 1 (10.0) |
| MI_east Lansing_Michigan State Univ | Minority | 2 (40.0) | 3 (60.0) |
| | White | 20 (83.3) | 4 (16.7) |
| | Total | 22 (75.9) | 7 (24.1) |
| MN_Minneapolis_ Univ of Minnesota Master of Urban and Regional Planning July 1982 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 13 (100.0) | 0 (0.0) |
| | Total | 13 (100.0) | 0 (0.0) |



| | | | |
|---|----------|------------|----------|
| MS_Oxford_Univ of Mississippi Master of Urban & Regional Planning Jan 1968 - June 1986 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| NC_Chapel Hill_Univ of North Carolina at Chapel Hill Master of Regional Planning Sept 1969 - Present | Minority | 5 (83.3) | 1 (16.7) |
| | White | 46 (97.9) | 1 (2.1) |
| | Total | 51 (96.2) | 2 (3.8) |
| ND_Fargo_North Dakota State Univ Master of City & Regional Planning Sept 1979 - Aug 1984 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 4 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| NE_Lincoln_Univ of Nebraska - Lincoln master of Community & Regional Planning Sept 1978 - Present | Minority | 2 (50.0) | 2 (50.0) |
| | White | 8 (80.0) | 2 (20.0) |
| | Total | 10 (71.4) | 4 (28.6) |
| NJ_New Brunswick_Rutgers, The State Univ of New Jersey Master of City & Regional Planning Jan 1968 - Present | Minority | 3 (60.0) | 2 (40.0) |
| | White | 16 (84.2) | 3 (15.8) |
| | Total | 19 (79.2) | 5 (20.8) |
| NM_Albuquerque_Univ of New Mexico Master of Community & Regional Planning Sept 1987 - Present | Minority | 3 (60.0) | 2 (40.0) |
| | White | 7 (87.5) | 1 (12.5) |
| | Total | 10 (76.9) | 3 (23.1) |
| NY_Albany_State Univ of New York (SUNY), Albany Master of Regional Planning Jan 1999 - Present | Minority | 2 (100.0) | 0 (0.0) |
| | White | 11 (68.7) | 5 (31.3) |
| | Total | 13 (72.2) | 5 (27.8) |
| NY_Brooklyn_Pratt Institute Master of Science in City & Regional Planning Sept 1962 - Present | Minority | 1 (50.0) | 1 (50.0) |
| | White | 3 (60.0) | 2 (40.0) |
| | Total | 4 (57.1) | 3 (42.9) |
| NY_Buffalo_State Univ of New York (SUNY), Buffalo Master of Urban Planning Sept 1988 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 22 (81.5) | 5 (18.5) |
| | Total | 22 (81.5) | 5 (18.5) |
| NY_Ithaca_Cornell Univ Master of Regional Planning Sept 1959 - Present | Minority | 3 (75.0) | 1 (25.0) |
| | White | 15 (100.0) | 0 (0.0) |
| | Total | 18 (94.7) | 1 (5.3) |
| NY_New York_Columbia Univ Master of Science in Urban Planning Sept 1945 - Present | Minority | 5 (71.4) | 2 (28.6) |
| | White | 11 (100.0) | 0 (0.0) |
| | Total | 16 (88.9) | 2 (11.1) |
| NY_New York_Hunter College of the City of New York Master of Urban Planning Sept 1969 - Present | Minority | 4 (100.0) | 0 (0.0) |
| | White | 4 (44.4) | 5 (55.6) |
| | Total | 8 (61.5) | 5 (38.5) |



| | | | |
|---|----------|------------|-----------|
| NY_New York_New York Univ Master of Urban Planning Sept 1961 - Present | Minority | 3 (42.9) | 4 (57.1) |
| | White | 11 (73.3) | 4 (26.7) |
| | Total | 14 (63.6) | 8 (36.4) |
| OH_Cincinnati_ Univ of Cincinnati | Minority | 7 (63.6) | 4 (36.4) |
| | White | 29 (87.9) | 4 (12.1) |
| | Total | 36 (81.8) | 8 (18.2) |
| OH_Cleveland_Cleveland State Univ Master of Urban Planning, Design & Development Jan 1998 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 2 (40.0) | 3 (60.0) |
| | Total | 3 (50.0) | 3 (50.0) |
| OH_Columbus_Ohio State Univ Master of City & Regional Planning Sept 1961 - Present | Minority | 7 (70.0) | 3 (30.0) |
| | White | 30 (85.7) | 5 (14.3) |
| | Total | 37 (82.2) | 8 (17.8) |
| OK_Norman_ Univ of Oklahoma Master of Regional & City Planning Sept 1957 - June 1988 Oct 1991 - | Minority | 2 (66.7) | 1 (33.3) |
| | White | 15 (100.0) | 0 (0.0) |
| | Total | 17 (94.4) | 1 (5.6) |
| OR_Eugene_ Univ of Oregon Master of Community & Regional Planning Sept 1970 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 14 (93.3) | 1 (6.7) |
| | Total | 15 (93.7) | 1 (6.3) |
| OR_Portland_Portland State Univ_Master of Urban & Regional Planning July 1980 - Present | Minority | 0 (0.0) | 4 (100.0) |
| | White | 15 (88.2) | 2 (11.8) |
| | Total | 15 (71.4) | 6 (28.6) |
| PA_Philadelphia_ Univ of Pennsylvania Master of City Planning Sept 1969 - Present | Minority | 5 (55.6) | 4 (44.4) |
| | White | 15 (83.3) | 3 (16.7) |
| | Total | 20 (74.1) | 7 (25.9) |
| PA_Pittsburgh_ Univ of Pittsburgh Master of Urban & Regional Planning Sept 1964 - Dec 2000 | Minority | 1 (33.3) | 2 (66.7) |
| | White | 8 (100.0) | 0 (0.0) |
| | Total | 9 (81.8) | 2 (18.2) |
| PA_University Park_Pennsylvania State Univ, Capitol Campus Master of Regional Planning Sept 1972 - June 1985 | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| PR_San Juan_ Univ of Puerto Rico Master in Planning Sept 1977 - Present | Minority | 0 (0.0) | 2 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| RI_Kingston_ Univ of Rhode Island Master of Community Planning Sept 1965 - Present | Minority | 3 (75.0) | 1 (25.0) |
| | White | 12 (85.7) | 2 (14.3) |
| | Total | 15 (83.3) | 3 (16.7) |
| SC_Clemson_Clemson Univ Master of City & Regional Planning Dec 1972 - Present | Minority | 0 (0.0) | 0 (0.0) |
| | White | 21 (80.8) | 5 (19.2) |
| | Total | 21 (80.8) | 5 (19.2) |



| | | | |
|---|----------|------------|-----------|
| TN_Knoxville_Univ of Tennessee, Knoxville Master of Science in Planning Sept 1978 - Present | Minority | 1 (25.0) | 3 (75.0) |
| | White | 10 (76.9) | 3 (23.1) |
| | Total | 11 (64.7) | 6 (35.3) |
| TN_Memphis_Univ of Memphis Master of City & Regional Planning July 1981 - Present | Minority | 1 (100.0) | 0 (0.0) |
| | White | 6 (100.0) | 0 (0.0) |
| | Total | 7 (100.0) | 0 (0.0) |
| TX_Arlington_Univ of Texas at Arlington Master of City & Regional Planning May 1978 - Present | Minority | 2 (40.0) | 3 (60.0) |
| | White | 11 (91.7) | 1 (8.3) |
| | Total | 13 (76.5) | 4 (23.5) |
| TX_Austin_Univ of Texas at Austin Master of Science in Community & Regional Planning Sept 1969 - Present | Minority | 5 (83.3) | 1 (16.7) |
| | White | 20 (100.0) | 0 (0.0) |
| | Total | 25 (96.2) | 1 (3.8) |
| TX_College Station_Texas A&M Univ Master of Urban Planning Jan 1968 - Present | Minority | 2 (40.0) | 3 (60.0) |
| | White | 18 (85.7) | 3 (14.3) |
| | Total | 20 (76.9) | 6 (23.1) |
| US_AK_Fairbanks_Univ of Alaska Fairbanks | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_AZ_Tempe_Arizona State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_AZ_Tucson_Univ of Arizona | Minority | 1 (100.0) | 0 (0.0) |
| | White | 8 (88.9) | 1 (11.1) |
| | Total | 9 (90.0) | 1 (10.0) |
| US_CA_Berkeley_Univ of California - Berkeley | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CA_Irvine_Univ of California - Irvine | Minority | 0 (0.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |
| US_CA_Los Angeles_Univ of California - Los Angeles | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CA_Northridge_California State Univ - Northridge | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| US_CA_Pomona_California State Poly Univ - Pomona | Minority | 0 (0.0) | 0 (0.0) |
| | White | 11 (100.0) | 0 (0.0) |
| | Total | 11 (100.0) | 0 (0.0) |



| | | | |
|--|----------|-----------|-----------|
| US_CA_Riverside_Univ of California - Riverside | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CA_Rohnert Park_Sonoma State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| US_CA_San Luis Obispo_California Poly State Univ - San Luis | Minority | 1 (100.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| US_CA_Santa Barbara_Univ of California Santa Barbara | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CO_Boulder_Univ of Colorado - Boulder | Minority | 0 (0.0) | 0 (0.0) |
| | White | 5 (100.0) | 0 (0.0) |
| | Total | 5 (100.0) | 0 (0.0) |
| US_CO_Greeley_Univ of Northern Colorado | Minority | 0 (0.0) | 0 (0.0) |
| | White | 6 (100.0) | 0 (0.0) |
| | Total | 6 (100.0) | 0 (0.0) |
| US_CT_New Haven_Southern Connecticut Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CT_New Haven_Yale Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_FL_Boca Raton_Florida Atlantic Univ - Boca Raton | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 5 (50.0) | 0 (50.0) |
| US_FL_Tallahassee_Florida State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 6 (85.7) | 1 (14.3) |
| | Total | 6 (85.7) | 1 (14.3) |
| US_FL_Tampa_Univ of Tampa | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_GA_Atlanta_Gerogia State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 3 (33.3) | 2 (66.7) |
| US_IA_Ames_Iowa State Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |



| | | | |
|---|----------|-----------|-----------|
| US_IA_Iowa City_Univ of Iowa | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_IL_Carbondale_Southern Illinois Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| US_IL_Chicago_Roosevelt Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| US_IN_West Lafayette_Purdue Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |
| US_KY_Bowling Green_Western Kentucky Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 4 (80.0) | 1 (20.0) |
| | Total | 4 (80.0) | 1 (20.0) |
| US_LA_New Orleans_Univ of New Orleans | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MA_Cambridge_Harvard Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MA_Worcester_Worcester Polytechnic Institute | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_ME_Orono_Univ of Maine | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_MI_Allendale_Grand Valley State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_MI_Marquette_Northern Michigan Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MI_Ypsilanti_Eastern Michigan Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MO_Springfield_Southwest Missouri State Univ | Minority | 2 (100.0) | 0 (0.0) |
| | White | 4 (100.0) | 0 (0.0) |
| | Total | 6 (100.0) | 0 (0.0) |



| | | | |
|---|----------|------------|-----------|
| US_NC_Charlotte_Univ of North Carolina - Charlotte | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_NC_Cullowhee_Western Carolina Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 4 (100.0) | 0 (0.0) |
| | Total | 4 (100.0) | 0 (0.0) |
| US_NJ_Princeton_Princeton Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_NJ_Rutgers Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| US_NM_Albuquerque_Univ of New Mexico | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_NY_Albany_State Univ of New York - Albany | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_NY_New York_Hunter College | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_NY_New York_New York Univ | Minority | 1 (100.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| VA_Blacksburg_Virginia Polytechnic Institute & State Univ Master of Urban & Regional Planning Sept 1961 - Present | Minority | 3 (60.0) | 2 (40.0) |
| | White | 17 (100.0) | 0 (0.0) |
| | Total | 20 (90.9) | 2 (9.1) |
| VA_Charlottesville_Univ of Virginia | Minority | 6 (66.7) | 3 (33.3) |
| | White | 32 (86.5) | 5 (13.5) |
| | Total | 38 (82.6) | 8 (17.4) |
| VA_Richmond_Virginia Commonwealth Univ Master of Urban & Regional Planning Sept 1977 - Present | Minority | 1 (50.0) | 1 (50.0) |
| | White | 12 (85.7) | 2 (14.3) |
| | Total | 13 (81.2) | 3 (18.8) |
| WA_Seattle_Univ of Washington | Minority | 5 (83.3) | 1 (16.7) |
| | White | 23 (100.0) | 0 (0.0) |
| | Total | 28 (96.5) | 1 (3.5) |
| WA_Spokane_eastern Washington | Minority | 0 (0.0) | 1 (100.0) |
| | White | 19 (90.5) | 2 (9.5) |
| | Total | 19 (86.4) | 3 (13.6) |



| | | | |
|--|----------|-----------|----------|
| WI_Madison_Univ of Wisconsin - Madison Master of Science in Urban & Regional Planning July 1962 - Present | Minority | 2 (100.0) | 0 (0.0) |
| | White | 22 (84.6) | 4 (15.4) |
| | Total | 24 (85.7) | 4 (14.3) |
| WI_Milwaukee_Univ of Wisconsin - Milwaukee Master of Urban Planning Sept 1974 - Present | Minority | 8 (88.9) | 1 (11.1) |
| | White | 17 (73.9) | 6 (26.1) |
| | Total | 25 (78.1) | 7 (21.9) |



All Schools receiving Non-Accredited and Non-Planning degree (1997 thru 2003, Note: Test repeaters, which constituted 43 % of the original data, are not included.

| School Name | Race | Pass (%) | Fail (%) |
|--|----------|-----------|-----------|
| AZ_Tempe_Arizona state University | Minority | 0 (0.0) | 1 (100.0) |
| | White | 3 (60.0) | 2 (40.0) |
| | Total | 3 (50.0) | 3 (50.0) |
| AZ_Tucson_University of Arizona | Minority | 1 (100.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 2 (66.7) | 1 (33.3) |
| CANADA_BC_ Univ of Northern British Columbia | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CANADA_ON_ Queen's Univ - Ontario | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CANADA_ON_ Univ of Guelph | Minority | 0 (0.0) | 1 (100.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (33.3) | 2 (66.7) |
| CANADA_ON_ Univ of Ottawa | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_QC_ McGill Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| CANADA_QC_ Univ De Montreal | Minority | 0 (0.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |
| CANADA_QC_ Univ Du Quebec | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CANADA_QC_ Universite Laval Maitrise | Minority | 0 (0.0) | 0 (0.0) |
| | White | 3 (100.0) | 0 (0.0) |
| | Total | 3 (100.0) | 0 (0.0) |
| CANADA_SK_ Univ of Saskatchewan | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 2 (100.0) |
| | Total | 0 (0.0) | 3 (100.0) |
| CA_Irvine_ Univ of California, Irvine | Minority | 0 (0.0) | 1 (100.0) |
| | White | 1 (25.0) | 3 (75.0) |
| | Total | 1 (20.0) | 4 (80.0) |



| | | | |
|--|----------|-----------|-----------|
| CA_Los Angeles_Univ of California | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| CA_Los Angeles_Univ of Southern California | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (33.3) | 2 (66.7) |
| | Total | 1 (33.3) | 2 (66.7) |
| CO_Denver_Univ of Colorado, Denver | Minority | 0 (0.0) | 2 (100.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (33.3) | 2 (66.7) |
| FL_Fort Lauderdale_Florida Atlantic Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| IN_Muncie_Ball State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| KS_Manhattan_Kansas State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| LA_New Orleans_Univ of New Orleans | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| MD_College Park_Univ of Maryland at College Park | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| MI_Ann Arbor_Univ of Michigan | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| MI_Ypsilanti_Eastern Michigan Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 3 (100.0) |
| | Total | 0 (0.0) | 3 (100.0) |
| MN_Minneapolis_Univ of Minnesota | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| ND_Fargo_North Dakota State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| NJ_New Brunswick_Rutgers, The State Univ of New Jersey | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| OR_Portland_Portland State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |



| | | | |
|--|----------|-----------|-----------|
| PA_Philadelphia_Univ of Pennsylvania | Minority | 1 (100.0) | 0 (0.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_AZ_Tempe_Arizona State Univ | Minority | 0 (0.0) | 2 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| US_AZ_Tucson_Univ of Arizona | Minority | 1 (33.3) | 2 (66.7) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 1 (33.3) | 2 (66.7) |
| US_CA_Long Beach_California State Univ - Long Beach | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 2 (100.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| US_CA_Pomona_California State Poly Univ - Pomona | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (33.3) | 4 (66.7) |
| | Total | 2 (33.3) | 4 (66.7) |
| US_CA_Rohnert Park_Sonoma State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (66.7) | 1 (33.3) |
| US_CA_San Diego_San Diego State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_CA_Santa Barbara_Univ of California Santa Barbara | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_CO_Boulder_Univ of Colorado - Boulder | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (50.0) | 2 (50.0) |
| | Total | 2 (50.0) | 2 (50.0) |
| US_CO_Boulder_Univ of Northern Colorado | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| US_FL_Boca Raton_Florida Atlantic Univ - Boca Raton | Minority | 0 (0.0) | 1 (100.0) |
| | White | 1 (33.3) | 2 (66.7) |
| | Total | 1 (25.0) | 3 (75.0) |
| US_FL_Tampa_Univ of Tampa | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_GA_Atlanta_Gerogia State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 4 (80.0) | 1 (20.0) |
| | Total | 4 (80.0) | 1 (20.0) |



| | | | |
|---|----------|-----------|-----------|
| US_IA_Ames_Iowa State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 2 (100.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| US_IL_Chicago_Roosevelt Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_IL_Governor's State | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_IN_Bloomington_Indiana Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_IN_West Lafayette_Purdue Univ | Minority | 0 (0.0) | 3 (100.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (20.0) | 4 (80.0) |
| US_KY_Bowling Green_Western Kentucky Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 2 (100.0) | 0 (0.0) |
| | Total | 2 (100.0) | 0 (0.0) |
| US_LA_New Orleans_Univ of New Orleans | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_MA_Boston_Boston Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MA_Cambridge_Massachusetts Institute of Technology | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |
| US_MA_Medford_Tufts Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_ME_Orono_Univ of Maine | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 3 (100.0) |
| | Total | 0 (0.0) | 3 (100.0) |
| US_MI_Allendale_Grand Valley State Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_MO_Springfield_Southwest Missouri State Univ | Minority | 0 (0.0) | 1 (100.0) |
| | White | 0 (0.0) | 0 (0.0) |
| | Total | 0 (0.0) | 1 (100.0) |



| | | | |
|--|----------|-----------|-----------|
| US_MS_Oxford_Univ of Mississippi | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_MT_Missoula_Univ of Montana | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| US_NE_Lincoln_Univ of Nebraska | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (50.0) | 1 (50.0) |
| | Total | 1 (50.0) | 1 (50.0) |
| US_NJ_Rutgers Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 2 (100.0) |
| | Total | 0 (0.0) | 2 (100.0) |
| US_NV_Reno_Univ of Nevada | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| US_NY_Queen's_Queen's Univ - New York | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| VA_Blacksburg_Virginia Polytechnic Institute & State University | Minority | 0 (0.0) | 0 (0.0) |
| | White | 0 (0.0) | 1 (100.0) |
| | Total | 0 (0.0) | 1 (100.0) |
| VA_Richmond_Virginia Commonwealth Univ | Minority | 0 (0.0) | 0 (0.0) |
| | White | 1 (100.0) | 0 (0.0) |
| | Total | 1 (100.0) | 0 (0.0) |