

**Disproportionate Impact of Students Assessed with the Computerized Placement
Test (CPT) and Placed in Math and English Courses
at
Los Medanos College**



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Prepared by
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Los Medanos College adopted the Computerized Assessment Test in the Fall of 1999. Since then, using a consequential validity approach, three validity studies have been conducted to test the accuracy of the cut off scores. Findings from the consequential validity approach have suggested that the cut off scores are accurate (See: Validating the Cut Scores of the Computerized Placement Test (CPT) at Los Medanos College, Fall 1999, Spring 2000, and Fall 2000). The next level of validity is to test for disproportional impact. The purpose of disproportional research study is to answer the following research question: *“Does placement into different levels of skill courses differ significantly for students in particular age, gender, or ethnic groups based on an assessment instrument...?”* (Matriculation Resource Manual, 1998, Design 12, page 12.1). Disproportional impact is defined to occur when:

“The percentage of persons from a particular racial, ethnic, gender, age, or disability group who are directed to a particular service or placement based on an assessment instrument, method or procedure is significantly different than the representation of that group in the population of persons being assessed and that discrepancy is not justified by empirical evidence demonstrating that the assessment instrument, method or procedure is a valid and reliable predictor of performance in the relevant educational setting.”

In this study, disproportional differences by ethnicity, gender and age are examined for students assessed and enrolled in the recommended course for English 10S, 90 and 70; and for students assessed and enrolled in math 1, 25 and 30. By examining the percentage of most students assessed and placed at a given course level, other groups of students are compared to that base, expecting those proportions not to differ for more than 20% points from the comparison group. (The comparison group will be the group with the greatest number of students in that sample)

The samples: To increase the sample sizes, data for Fall 1999, Spring 2000, and Fall 2000 were combined yielding two samples sized of: 592 – 630 students for English (students who assessed and enrolled in the recommended course) and 539 – 569 students for math.

Findings for English Level by Ethnicity

English 10S:

The findings for English 10S indicate that there were disproportional differences when controlling for ethnicity for all ethnic groups. While the percentage of Caucasian students eligible for English 10S is 41%, the corresponding figures for Latinos is 18.5%, a percent difference of -22.6% points. All ethnic groups had proportions of minus 20% points from the group of students with the largest sample (Caucasians in this case).

Table 1. Students Assessed and Recommended to Enroll into English 10S by Ethnicity

| Ethnicity | Tested | | ENGL 10S | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 263 | 44.4% | 108 | 41.1% | | 68% |
| Hispanic | 146 | 24.7% | 27 | 18.5% | -22.6% | 70% |
| American Indian | 13 | 2.2% | 2 | 15.4% | -25.7% | 67% |
| Asian/ Pac Islander | 23 | 3.9% | 4 | 17.4% | -23.7% | 80% |
| Black | 89 | 15.0% | 14 | 15.7% | -25.3% | 75% |
| Filipino | 43 | 7.3% | 7 | 16.3% | -24.8% | 30% |
| Others, non-white | 15 | 2.5% | 9 | 60.0% | 18.9% | 33% |
| | 592 | 100% | 171 | 28.9% | | 67% |

English 90: No disproportional differences were found or this level of English.

Table 2. Students Assessed and Recommended to Enroll into English 90 by Ethnicity

| Ethnicity | Tested | | ENGL 90 | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 263 | 44.4% | 97 | 36.9% | | 75% |
| Hispanic | 146 | 24.7% | 45 | 30.8% | -6.1% | 69% |
| American Indian | 13 | 2.2% | 3 | 23.1% | -13.8% | 100% |
| Asian/ Pac Islander | 23 | 3.9% | 8 | 34.8% | -2.1% | 20% |
| Black | 89 | 15.0% | 26 | 29.2% | -7.7% | 50% |
| Filipino | 43 | 7.3% | 14 | 32.6% | -4.3% | 86% |
| Others, non-white | 15 | 2.5% | 1 | 6.7% | -30.2% | 100% |
| | 592 | 100% | 194 | 32.8% | | 70% |

English 70:

As for English 70, there was a higher proportion of American Indian, African American, and Filipino students assessing in English 70 compared to the base group. While the percentage of eligible Caucasian students for English 70 was 17.5%, the corresponding figures for American Indians was 46.2%, for African Americans was 38.2% and for Filipinos was 39.5%.

Table 3. Students Assessed and Recommended to Enroll into English 70 by Ethnicity

| Ethnicity | Tested | | ENGL 70 | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 263 | 44.4% | 46 | 17.5% | | 67% |
| Hispanic | 146 | 24.7% | 51 | 34.9% | 17.4% | 71% |
| American Indian | 13 | 2.2% | 6 | 46.2% | 28.7% | - |
| Asian/ Pac Islander | 23 | 3.9% | 4 | 17.4% | -0.1% | 57% |
| Black | 89 | 15.0% | 34 | 38.2% | 20.7% | 21% |
| Filipino | 43 | 7.3% | 17 | 39.5% | 22.0% | 100% |
| Others, non-white | 15 | 2.5% | 3 | 20.0% | 2.5% | - |
| | 592 | 100% | 161 | 27.2% | | 61% |

Findings for English Level by Gender

No disproportional differences were found in any of the courses when controlling by gender.

Table 4. Students Assessed and Recommended to Enroll into English 10S by Gender

| Gender | Tested | | ENGL 10S | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 368 | 58.2% | 106 | 28.8% | | 71.6% |
| Male | 264 | 41.8% | 75 | 28.4% | -0.4% | 62.0% |
| | 632 | 100% | 181 | 28.6% | | 67% |

Table 5. Students Assessed and Recommended to Enroll into English 90 by Gender

| Gender | Tested | | ENGL 90 | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 368 | 58.2% | 130 | 35.3% | | 77% |
| Male | 264 | 41.8% | 81 | 30.7% | -4.6% | 59% |
| | 632 | 100% | 211 | 33.4% | | 70% |

Table 6. Students Assessed and Recommended to Enroll into English 70 by Gender

| Gender | Tested | | ENGL 70 | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 368 | 58.2% | 91 | 24.7% | | 69% |
| Male | 264 | 41.8% | 76 | 28.8% | 4.1% | 59% |
| | 632 | 100% | 167 | 26.4% | | 61% |

Findings for English Level by Age Group: No disproportional differences were found for any English course when controlling for age group.

Table 7. Students Assessed and Recommended to Enroll into English 10S by Age Group

| Age Group | Tested | | ENGL 10S | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 197 | 31.3% | 55 | 27.9% | 2.9% | 69% |
| 20-24 | 220 | 34.9% | 55 | 25.0% | | 68% |
| 25-29 | 52 | 8.3% | 22 | 42.3% | 17.3% | 25% |
| 30-34 | 48 | 7.6% | 15 | 31.3% | 6.3% | 71% |
| 35-39 | 47 | 7.5% | 12 | 25.5% | 0.5% | 75% |
| 40 or older | 66 | 10.5% | 22 | 33.3% | 8.3% | 82% |
| | 630 | 100% | 181 | 28.7% | | 70% |

Table 8. Students Assessed and Recommended to Enroll into English 90 by Age Group

| Age Group | Tested | | ENGL 90 | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 197 | 31.3% | 75 | 38.1% | 6.3% | 72% |
| 20-24 | 220 | 34.9% | 70 | 31.8% | | 88% |
| 25-29 | 52 | 8.3% | 13 | 25.0% | -6.8% | 50% |
| 30-34 | 48 | 7.6% | 20 | 41.7% | 9.8% | - |
| 35-39 | 47 | 7.5% | 14 | 29.8% | -2.0% | 100% |
| 40 or older | 66 | 10.5% | 19 | 28.8% | -3.0% | 0% |
| | 630 | 100% | 211 | 33.5% | | 73% |

Table 9. Students Assessed and Recommended to Enroll into English 70 by Age Group

| Age Group | Tested | | ENGL 70 | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 197 | 31.3% | 50 | 25.4% | -3.7% | 67% |
| 20-24 | 220 | 34.9% | 64 | 29.1% | | 67% |
| 25-29 | 52 | 8.3% | 13 | 25.0% | -4.1% | 50% |
| 30-34 | 48 | 7.6% | 9 | 18.8% | -10.3% | 75% |
| 35-39 | 47 | 7.5% | 15 | 31.9% | 2.8% | 67% |
| 40 or older | 66 | 10.5% | 15 | 22.7% | -6.4% | 100% |
| | 630 | 100% | 166 | 26.3% | | 67% |

Findings for Math Level by Ethnicity

Math 1:

Disproportional differences between African American students and Caucasians were found for math 1. While 60% of Caucasian students were eligible for math 1, the corresponding figure for African American students was 92%, a difference of 32% points.

Table 10. Students Assessed and Recommended to Enroll into Math 1 by Ethnicity

| Ethnicity | Tested | | Math 1 | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 242 | 45.2% | 146 | 60.3% | | 54% |
| Hispanic | 135 | 25.2% | 99 | 73.3% | 13.0% | 48% |
| American Indian | 13 | 2.4% | 7 | 53.8% | -6.5% | - |
| Asian/ Pac Islander | 20 | 3.7% | 13 | 65.0% | 4.7% | 39% |
| Black | 75 | 14.0% | 69 | 92.0% | 31.7% | 23% |
| Filipino | 37 | 6.9% | 28 | 75.7% | 15.3% | 49% |
| Others, non-white | 13 | 2.4% | 6 | 46.2% | -14.2% | 25% |
| | 535 | 100% | 368 | 68.8% | | 46% |

Math 25:

Marginal disproportional differences were found between African American and Filipino students in reference to Caucasian students for math 25. While 25% of Caucasian students were eligible for math 25, only 7% of African American students were eligible, a difference of 18% points. The corresponding figure for Filipinos was 5%, a difference of 19% points.

Table 11. Students Assessed and Recommended to Enroll into Math 25 by Ethnicity

| Ethnicity | Tested | | Math 25 | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 242 | 45.2% | 60 | 24.8% | | 78% |
| Hispanic | 135 | 25.2% | 18 | 13.3% | -11.5% | 91% |
| American Indian | 13 | 2.4% | 2 | 15.4% | -9.4% | 0% |
| Asian/ Pac Islander | 20 | 3.7% | 3 | 15.0% | -9.8% | 50% |
| Black | 75 | 14.0% | 5 | 6.7% | -18.1% | 33% |
| Filipino | 37 | 6.9% | 2 | 5.4% | -19.4% | 60% |
| Others, non-white | 13 | 2.4% | 2 | 15.4% | -9.4% | - |
| | 535 | 100% | 92 | 17.2% | | 66% |

Math 30: No disproportional impact greater than 20 points in percent was found for Math 30 for any ethnic group.

Table 12. Students Assessed and Recommended to Enroll into Math 30 by Ethnicity

| Ethnicity | Tested | | Math 30 | | Percent Difference from larger group | Success Rate |
|---------------------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| White | 242 | 45.2% | 36 | 14.9% | | 62% |
| Hispanic | 135 | 25.2% | 18 | 13.3% | -1.5% | 58% |
| American Indian | 13 | 2.4% | 4 | 30.8% | 15.9% | 0% |
| Asian/ Pac Islander | 20 | 3.7% | 4 | 20.0% | 5.1% | 50% |
| Black | 75 | 14.0% | 1 | 1.3% | -13.5% | 50% |
| Filipino | 37 | 6.9% | 7 | 18.9% | 4.0% | 43% |
| Others, non-white | 13 | 2.4% | 5 | 38.5% | 23.6% | 100% |
| | 535 | 100% | 75 | 14.0% | | 56% |

Findings for Math Level by Gender

No disproportional impact greater than 20% points was found for Math 1, Math 25 or Math 30 when controlling for gender.

Table 13. Students Assessed and Recommended to Enroll into Math 1 by Gender

| Gender | Tested | | Math 1 | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 333 | 58.2% | 248 | 74.5% | | 50% |
| Male | 236 | 41.8% | 141 | 59.7% | -14.7% | 38% |
| | 569 | 100% | 389 | 68.4% | | 46% |

Table 14. Students Assessed and Recommended to Enroll into Math 25 by Gender

| Gender | Tested | | Math 25 | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 333 | 58.2% | 37 | 11.1% | | 79% |
| Male | 236 | 41.8% | 58 | 24.6% | 13.5% | 72% |
| | 569 | 100% | 95 | 16.7% | | 66% |

Table 15. Students Assessed and Recommended to Enroll into Math 30 by Gender

| Gender | Tested | | Math 30 | | Percent Difference from larger group | Success Rate |
|--------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| Female | 333 | 58.2% | 48 | 14.4% | | 74% |
| Male | 236 | 41.8% | 37 | 15.7% | 1.3% | 32% |
| | 569 | 100% | 85 | 14.9% | | 56% |

Findings for Math Level by Age Group:

Disproportional differences between the tested and eligible population was found for Math 1 for students 35-39 years of age. No other differences were found in the other math level courses.

Table 16. Students Assessed and Recommended to Enroll into Math 1 by Age Group

| Age Group | Tested | | Math 1 | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|------------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 178 | 31.4% | 112 | 62.9% | -4.1% | 53% |
| 20-24 | 212 | 37.4% | 142 | 67.0% | | 52% |
| 25-29 | 49 | 8.6% | 33 | 67.3% | 0.4% | 48% |
| 30-34 | 40 | 7.1% | 30 | 75.0% | 8.0% | 50% |
| 35-39 | 39 | 6.9% | 35 | 89.7% | 22.8% | 57% |
| 40 or older | 49 | 8.6% | 35 | 71.4% | 4.4% | 55% |
| | 567 | 100% | 387 | 68.3% | | 53% |

Table 17. Students Assessed and Recommended to Enroll into Math 25 by Age Group

| Age Group | Tested | | Math 25 | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 178 | 31.4% | 26 | 14.6% | -3.3% | 67% |
| 20-24 | 212 | 37.4% | 38 | 17.9% | | 70% |
| 25-29 | 49 | 8.6% | 11 | 22.4% | 4.5% | 100% |
| 30-34 | 40 | 7.1% | 7 | 17.5% | -0.4% | 75% |
| 35-39 | 39 | 6.9% | 3 | 7.7% | -10.2% | 100% |
| 40 or older | 49 | 8.6% | 10 | 20.4% | 2.5% | 67% |
| | 567 | 100% | 95 | 16.8% | | 69% |

Table 18. Students Assessed and Recommended to Enroll into Math 30 by Age Group

| Age Group | Tested | | Math 30 | | Percent Difference from larger group | Success Rate |
|---------------|------------|-------------|-----------|--------------|--------------------------------------|--------------|
| | N | % | N | % | | |
| 19 or younger | 178 | 31.4% | 40 | 22.5% | 7.4% | 62% |
| 20-24 | 212 | 37.4% | 32 | 15.1% | | 31% |
| 25-29 | 49 | 8.6% | 5 | 10.2% | -4.9% | 100% |
| 30-34 | 40 | 7.1% | 3 | 7.5% | -7.6% | - |
| 35-39 | 39 | 6.9% | 1 | 2.6% | -12.5% | - |
| 40 or older | 49 | 8.6% | 4 | 8.2% | -6.9% | 100% |
| | 567 | 100% | 85 | 15.0% | | 59% |

Discussion:

This study addressed the question: “Does placement into different levels of skill courses differ significantly for students in particular age, gender, or ethnic groups based on an assessment instrument?”

The results indicated that when controlling for ethnicity disproportional impact was found for all ethnic groups in English 10S. The proportion of Caucasian students eligible for English 10S was 41.1%. It is expected that the proportion of eligible students from other ethnic groups not to differ for more than 20 points of percent – Table 1. Disproportional impact was also found for African Americans and Filipinos in English 70 – Table 3.

Disproportional impact was also found in math 1 for African Americans (by 31.7% points from reference group), in math 25 for Filipinos and African Americans (by 18% and 19% points difference); and in math 1 for students between the ages of 35-39 years old (by 22.8% point difference).

According to the “Standards, Policies and Procedures for the Evaluation of Assessment Instruments Used in California Community Colleges,” **when disproportional impact is found on any such group, the institution needs to develop a plan to address it.**