

# MEMO

**To:** Sociology-Anthropology Faculty  
**From:** Scott Vollum  
**Re:** “Fourth Round” (Spring 2016) Assessment of Sociology and Criminology Methods & Analysis Courses: Findings & Suggested Feedback Mechanism  
**Date:** August 24, 2016

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## ***Brief overview of department’s Sociology/Criminology assessment strategy***

In the course of the 2006-2007 academic year, the department’s assessment committee worked to develop learning objectives for three key areas of the disciplines of Sociology and Criminology: methods, theory and inequality. The committee also initiated a plan to assess, on an ongoing basis, one of these three areas every academic year, beginning with methods.

Our two-course methods sequence was first assessed in the Spring 2007 semester. In 2010 we assessed our methods courses for the second time, this time administering both a pre- and post-test to better ascertain change over the course of the semester. In 2013, we again used a pre- and post-test approach but added several items to the instrument to fill in gaps identified in the 2010 assessment process. The items from 2007 & 2010 remained, allowing us to directly compare results across years. To inform departmental faculty on how students fared across sections of Sociology 2155 (Introduction to Research Methods and Analysis) and Sociology 3155 (Quantitative Research Methods and Analysis), the assessment committee presented the findings from the Spring 2007, Spring 2010 and Spring 2013 assessment to the entire faculty at our departmental retreats in the respective years. In subsequent semesters, we specifically reminded (or in some cases, introduced) instructors teaching Sociology 2155 or Sociology 3155 of our findings and noted subject areas in which students are most likely to struggle. We continue to share these reports with these instructors and encourage reflection on the results.

This prior Spring (2016), we again assessed our methods courses (for the fourth time) again employing both pre- and post-tests. Two sections of SOC 2155 and two sections of SOC 3155 were included in this assessment. This memo reports the findings of the assessment committee in regard to this Spring 2016 assessment, comparing results to the 2007, 2010 and 2013 student cohorts where applicable. As is discussed in more detail at the end of this memo, findings from this assessment are expected to be used by faculty who teach either or both of these classes to place an emphasis on subject areas where student knowledge is relatively weak and could use some improvement.

## ***Methods assessment strategy***

During the Spring 2007 semester, the committee developed a distinct assessment instrument for each of the two courses. At a couple of different points during Spring 2007, the committee solicited feedback on draft instruments from those faculty teaching either Sociology 2155 or Sociology 3155 during that semester. These instruments remained the same from 2007 to 2010, but in 2013 several items were

added to each instrument (five new items to the SOC 2155 instrument and four new items being added to the SOC 3155 instrument). No items from 2007 and 2010 were removed, maintaining an ability to compare across cohorts. These new items were developed and incorporated based on discussion amongst those on the committee and those faculty who teach these courses. We believe that these items added to the reliability and content validity of the overall assessment measure as well as the measure of particular components/goals of these courses. For 2016, based on discussion amongst those on the assessment committee and those who teach either SOC 2155 or 3155, the instrument remained unchanged.

The 2007 and 2010 assessment instruments contained 20 items each. The 2013 and 2016 versions contained 25 items for SOC 2155 and 24 items for SOC 3155.<sup>1</sup> All items are multiple-choice, with four choices each. They are “stand-alone” instruments – that is, they are *not* a component of a more exhaustive exam (e.g., a final exam) given by the course instructor. Individual instructors informed their students that the results of these “assessment exams” would be used for assessment purposes only – that students’ score on this instrument would not affect their course grade.

These instruments originally were administered by instructors of each of the six sections of these two courses at the end of the Spring 2007 semester. In the Spring 2010, Spring 2013 and Spring 2016 semesters, these instruments were administered by the instructor at both the beginning of the semester (i.e., first week) and the end of the semester (i.e., the fourteenth or fifteenth week). Assessing students’ knowledge at the beginning and end of the semester facilitated before and after comparisons, whereby we can gauge the progress of the 2010, 2013 and 2016 cohorts from the beginning to the end of the semester.<sup>2</sup> Below, we also make comparisons in findings across cohorts (i.e., between the 2007 group and the post-tests of the 2010, 2013 & 2016 groups).

For the 2007, 2010 & 2013 rounds of assessment, students answered these questions using computer “bubble” answer sheets so that the instruments could be scored electronically by ITSS. The assessment committee received from ITSS electronic files containing students’ responses. For 2016, students answered the questions directly on the paper instrument and data were entered directly into a spreadsheet by the assessor (Scott Vollum). SPSS statistical software was then used to detect and analyze patterns in responses (e.g., index scores and percentage of students choosing the correct response across items and for each of several topical areas and learning objectives).

All items were recoded into binary variables denoting whether the question was answered correctly (coded "1") or incorrectly (coded "0"). For analyses, summary index scores were constructed by obtaining the average of correct answers across all relevant items (all items for the overall measure and select items for each specific topical, course objective area). This average was then multiplied by 100, resulting in an index score that also represents the percentage of correct answers. This was done for each of the three assessment periods allowing direct comparison across the respective cohorts.

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<sup>1</sup>Appendices A and B contain the specific items from the 2013 SOC 2155 and SOC 3155 instruments, respectively.

<sup>2</sup> Comparing pre-test findings across years enable us to document any changes in the baseline aptitude of our students. To the extent that, for example, UMD admissions standards become more lax, it is important to recognize that assessment findings may be negatively affected by this factor, which of course is beyond the control of instructors.

## ***Findings***

Following are key findings based on students' scores on the instruments for each of the two courses, presented in relation to the learning objectives that were identified for each course.

### **Sociology 2155**

The UMD course catalog description for Sociology 2155 (Introduction to Research Methods and Analysis) is as follows:

*Principles/practice of research design, sampling, data collection including field observation/surveys. Data management, analysis, and reporting of quantitative/qualitative data. Ethics/administration in sociological research. Introduction to SPSS statistical software. Lab*

In Spring of 2016, across the two sections of Sociology 2155, 61 students took the pre-test, 41 completed the post-test, and 38 completed both tests; of these 38, 18 (47.4%) were Criminology majors, 6 (15.8%) were Sociology majors, 4 (10.5%) were Sociology/Criminology double majors, and 10 (26.3%) indicated they had a different major, were "undecided" or did not report their major.

Based in large part on the catalog's description for this course, the assessment committee identified the following learning objectives for this course:

Understand the uses and limitations of standard methodological approaches in field such that a student will be able to

- (a) identify the purpose of sampling
- (b) demonstrate how to interpret basic graphs and bivariate tables
- (c) demonstrate knowledge of the various modes of observation
- (d) compare and contrast basic methodological approaches
- (e) demonstrate knowledge of the various types of information (qualitative vs. quantitative)

All five of the above objectives were reflected by at least two items contained in the assessment instrument for this course. Appendix A exhibits the assessment instrument for SOC 2155 and indicates with which objective each item is associated as well as the percentage of correct responses by individual item for each cohort year. The following table shows the summary index scores (also representing % of correct answers) for each objective category for the 2016, 2013 & 2010 pre- and post-tests, and the 2007 post-test.

Objective	# of Items	2016		2013		2010		2007
		<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Post-Test Only</i>
A	2	58.6	87.8*	53.4	81.3	37.5*	84.3	80.1
B	2	69.8	69.5	60.3	80.4	25.7*	71.6	69.3
C	4	41.8	45.1	39.7	49.1	19.9*	58.3	50.6
D	10	48.8	61.0*	50.7	60.5	22.5*	73.1**	62.8
E	7	56.7	63.1*	54.4	62.0	30.9*	67.5	71.6
<b>Total</b>	<b>25</b>	<b>52.3</b>	<b>61.9*</b>	<b>51.0</b>	<b>62.4</b>	<b>25.9*</b>	<b>69.7**</b>	<b>65.0</b>

\*Significantly different ( $p < .05$ ) from 2016 pre-test

\*\*Significantly different ( $p < .05$ ) from 2016 post-test

The first thing to note from this table is that, as was the case in 2013, students in the 2016 cohort appear to have come into SOC 2155 with a better base-line understanding of the material than those in the 2010 cohort. Overall and in regard to each specific course objective, pre-test scores in 2016 were significantly higher than those in 2010.

Students exhibited significant overall growth from the beginning of SOC 2155 to the end, with overall post-test score being higher than the pre-test score (61.0 vs. 52.3, respectively). Contrary to 2013 and 2010 (where students exhibited significant growth for all objectives), however, students in 2016 only exhibited significant growth for three of the five objectives. There was no significant increase in scores for objectives B ("demonstrate how to interpret basic graphs and bivariate tables") & C ("demonstrate knowledge of the various modes of observation").

The overall post-test score for 2016 was lower than for the 2013 and 2010 cohorts, the difference being statistically significant in the latter case. It appears that 2013 and 2010 students came out of this course with a better understanding of the material, overall, than those in 2016. The most notable exception is for Objective A ("identify the purpose of sampling") where the 2016 cohort scored higher on the post-test than those in 2013 and 2010. The 2016 cohort also scored higher than the 2013 cohort on the post-test for Objectives D ("compare and contrast basic methodological approaches") and E ("demonstrate knowledge of the various types of information (qualitative vs. quantitative)").

Focusing specifically on the 2016 cohort, students fared best on the post-test in regard to Objective A (nonprobability sampling and the purpose of survey research) with 87.8% correct answers on the associated items<sup>3</sup>. This was in contrast to scores for the other four objectives where scores were relatively low and change from the pre-test small. As was the case in 2013 and 2010, students performed worst on the items associated with Objective C ("knowledge of different modes of observation such as experimental design, survey research and field research") for which only 45.1% of questions were answered correctly on the post-test.

<sup>3</sup> See Appendix A for a complete list of items along with statistics for percentage correct on each.

## **Sociology 3155**

The UMD course catalog description for Sociology 3155 (Quantitative Research Methods and Analysis) is as follows:

*Descriptive statistics. Measures of central tendency, deviation, association. Inferential statistics focusing on probability and hypothesis testing. T-tests, Chi-square tests, analysis of variance, measures of association, introduction to statistical control. Statistical software (SPSS) used to analyze sociological data. Lab.*

Across the two sections of SOC 3155, 30 students took the pre-test, 24 completed the post-test, and 23 completed both tests; of these 23, 18 (78.3%) were Criminology majors, 1 (4.3%) was a Sociology major, and 4 (17.4%) were Sociology-Criminology double-majors.

The assessment committee identified the following five learning objectives for this course:

Understand the uses and limitations of standard statistical procedures in the field such that a student will be able to

- (a) interpret basic statistical methods by describing quantitative data, including measures of central tendency, dispersion and association
- (b) explain the purpose of sampling
- (c) identify basic sampling procedures
- (d) apply standard inferential procedures (t-tests, chi square, etc.) to make valid generalizations from samples to populations
- (e) identify criteria necessary to establish causation and spuriousness

Four of the above objectives (A, B, D, E) were reflected by at least two items contained in the assessment instrument for this course. Appendix B exhibits the assessment instrument for SOC 3155 and indicates with which objective and topic area each item is associated as well as the percentage of correct responses by individual item for each cohort year. The following table shows the summary index scores (also representing % of correct answers) for each objective category for the 2016, 2013 & 2010 pre- and post-tests, and the 2007 post-test.

Sociology 3155:

Objective	# of Items	2016		2013		2010		2007
		<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Post-Test Only</i>
A	4	61.7	68.8	61.7	75.4	61.9	62.3	62.8
B	4	62.5	62.5	57.5	62.7	60.8	66.7	64.6
D	14	39.1	45.2*	33.0	48.9	42.7	45.1	48.7
E	2	43.3	54.2*	54.6	62.3	78.5*	80.4	68.3
<b>Total</b>	<b>24</b>	<b>47.1</b>	<b>52.8*</b>	<b>43.7</b>	<b>56.7</b>	<b>51.9</b>	54.6	<b>55.7</b>

\*Significantly different (p < .05) from 2016 pre-test

Contrary to what was found for SOC 2155, several pre-test scores including the overall score were lower in 2016 than in 2010, continuing the trend noticed in the 2013 cohort. However, the only significantly lower score was for Objective E which deals with criteria of causality and causal relationships. Notably, the 2016 cohort scored higher than the 2013 cohort on the overall pre-test and on those for Objectives B (sampling) & D (inferential statistics). These findings suggest these are increased strengths of SOC 2155 but that some attention may be needed in terms of instruction on causality and causal relationships in that course.

In line with what has been consistently found in prior cohorts, the 2016 cohort's post-test scores were lowest for the items related to Objective D, which deals with more advanced material (i.e., inferential statistics). Whereas the percentage correct for the 14 items under Objective D (45.2%) was lower than the overall percentage correct (52.8%), the percentage correct for each of the other three categories was higher than this overall percentage.

Comparing the 2016 post-test results to findings from the prior cohorts, it is noteworthy that the 2016 cohort's post-test performance on items related to Objectives A (68.8% correct responses), D (45.2% correct) and E (54.2% correct) were lower than those from 2013. There was virtually no difference between the 2013 and 2016 cohort for Objective B. Overall, this suggests a potentially greater deficiency in meeting learning objectives with the 2016 cohort when compared to the prior assessment.

Pre- to post-test comparisons within the 2016 cohort reveal mixed results but, overall, reasons to be optimistic. There was a significant increase in scores overall, and for Objectives D & E in 2016. It's important to recall that in 2010 there were no significant increases in scores from pre- to post-test for any of the specific objectives; only the overall post-test measure was found to be statistically higher than that for the pre-test in 2010. However, in comparison to 2013, in which all post-test scores were significantly higher than pre-test scores, 2016 results were not as strong.

We also broke down the 24 items into six categories based on more specific topic areas. Below is a table indicating this breakdown, along with a summary of students' scores for each of these refined categories. The following table shows that students tended to score better on items dealing with most basic subject matter (Topic area 1: Univariate Analysis)<sup>4</sup> and not nearly as well on items pertaining to more complex statistical concepts, inferential statistics and specific statistical techniques (Areas 2-6).<sup>5</sup> For example, the percentage of correct responses for the items pertaining to t-tests, ANOVA & Chi-Square (41.7%, the lowest among the topic areas) were 27.1 percentage points lower than the percentage for the items pertaining to univariate analysis (68.8%, the highest among the topic areas). That being said, the only topic area for which a statistically significant increase from pre- to post-test occurred in 2016 was Area 4 (t-test; ANOVA) suggesting important student growth in that area of inferential statistics. Finally, post-test scores for the 2016 cohort were, overall, lower than those in 2013 with no real difference between the two cohorts for Topic Areas 2 & 3.

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<sup>4</sup> Of this instrument's 24 items, students did best (96% correct answers) on Topic Area 1 item #8 (See Appendix B).

<sup>5</sup> Students were most likely (96% *incorrect* answers) to get item # 10 under Area 5 wrong (See Appendix B). It is notable that this was a marked decline in correct responses on this item in comparison to prior years' cohorts.

Topic Area	# of Items	2016		2013		2010		2007
		<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Pre-Test</i>	<i>Post-Test</i>	<i>Post-Test Only</i>
1. Univariate Analysis (e.g., mean, sd)	4	61.7	68.8	61.7	75.4	61.9	62.3	62.8
2. "General" hypothesis testing (e.g., definition of null hypothesis)	6	45.6	52.1	38.3	51.8	51.5	59.3	63.1
3. "General" inferential statistics (e.g., defin. of "sample statistics")	5	46.7	55.8	41.6	55.8	49.9	52.6	53.9
4. Specific inferential techniques (t-test; ANOVA)	3	28.9	41.7*	33.3	48.5	40.8	52.0	46.3
5. Specific inferential technique (Chi Square)	3	44.4	41.7	32.5	50.3	45.6	34.6	41.1
6. Other (multivariate analysis & nonprobability sampling)	3	52.2	50.0	55.4	57.9	58.5	67.7	62.2

\*Significantly different ( $p < .05$ ) from 2016 pre-test

### ***Implications of findings and suggested feedback mechanism***

As has historically been the case, students performed better overall on the Sociology 2155 instrument than the Sociology 3155 instrument. In terms of pre-test/post-test comparison, outcomes for Sociology 2155 are positive, with significant increases in scores overall and across three of the five measured objectives. However, there was no overall improvement in comparison to the prior (2007, 2010 & 2013) cohorts, with scores on most objectives being lower than in 2010 and some being lower than in 2013 (particularly Objectives B & C). The post-test score for Objective A was higher in 2016 than in other years, indicating that instruction regarding sampling may have improved since our last assessment of research methods.

Regarding Sociology 3155, in contrast to the findings for the 2013 cohort, there were only significant within-cohort improvements in pre- to post-test scores for two of the four objectives and one topic area for 2016. Moreover, post-test scores were consistently lower in 2016 in comparison to 2013. This may be cause for increased attention to the curriculum and instruction of SOC 3155, with particular attention focused on the areas in which students exhibited lower scores than in prior years.

There are some reasons to be hopeful about as a results of this year's assessment. It is a good sign that, for both Sociology 2155 and 3155, a pre-test to post-test improvement in scores was observed for some of the course objectives and topic areas measured. Nevertheless, the results certainly indicate that there are some areas of concern and that efforts toward improvement are needed. For Sociology 2155, based on pre/post results and comparison to prior cohorts, there is need for improvement on objectives B and C. These are objectives concerned with the more fundamental research methods concepts such as understanding/interpreting graphs and tables and knowledge of the different modes of observation. It's important to note that the areas identified in 2013 as needing attention were areas on which students performed better in terms of pre/post change (Objectives D & E, in particular). For Sociology 3155, results reveal the most substantial weaknesses coming in fundamental notions or principles underlying inferential statistics. Students seem to indicate a solid growth in their understanding of most of the more technical statistical material (e.g., specific statistical techniques, univariate statistics, measures of central tendency, etc.), with the areas of concern centering around the deeper philosophical principles of statistical analysis (e.g., hypothesis testing and the null hypothesis, causal relationships, etc.).

In regard to both core courses, these findings suggest that effort toward improvement, where it is needed, would be best focused on the broader underpinnings of social research and statistical analysis. This would include the fundamental breakdown of different observational/methodological approaches and types of "data," the philosophy behind hypothesis testing and inferential statistics, and the notions of causal relationships and the criteria by which they are established in the social sciences.

The findings, overall, give some reason to be pleased and optimistic that the current approach to these classes is working, but also illuminate some areas where improvements can be made. It is the assessment committee's hope that findings from this assessment will prompt instructors to reflect on how they approach some of the subject matter in these courses, with the result of adopting new pedagogical strategies and/or devoting more class time to particular subject areas in an effort to strengthen student knowledge in those areas. It is also the assessment committee's intention to examine the instruments' items and determine whether some should be removed and/or new ones should be incorporated. This is particularly true in regard to items where post-test scores were below chance, in which case we need to assess whether the questions and associated answers are somehow confusing or poorly worded.

It is important to note that the data for 2016 were subject to some limitations that may have impacted the findings. First, sample sizes were substantially lower in 2016 due to a variety of scheduling and staffing reasons<sup>6</sup>. This certainly impacted the likelihood of finding statistical significance in the pre- to post-test comparisons and therefore contributed to the findings of less pre/post-test changes than in 2013. Second, the instructor of the two sections of SOC 2155 was, as it turned out, not particularly equipped to be teaching this class or the material therein. This faculty member is not returning to UMD, but this revelation does indicate that we must pay more careful attention to who teaches this course in the future.

Despite these and some other noteworthy caveats to our assessment approach,<sup>7</sup> it does seem that these instruments have helped to (re)confirm strengths and deficiencies in students' knowledge. Thus, there is the potential for those who teach either or both Sociology 2155 and Sociology 3155 collectively to use this information to reexamine their teaching strategies to promote enhanced knowledge of this subject matter. We will evaluate the effectiveness of this feedback mechanism by looking for changes in students' scores the next time these instruments are administered (i.e., as currently scheduled, in the 2018-2019 Academic Year).

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<sup>6</sup> Results were from only two sections of each class and only a single instructor for each section of each class. This compares to three sections of each class in 2013, with two different faculty teaching at least one section of each course.

<sup>7</sup> The results reported herein are likely at least partially a function of the assessment process. For example, students were not given the opportunity to study or prepare for the questions that the assessment instruments contained; having the opportunity to study would most likely have improved their scores, arguably especially in regard to items dealing with broader philosophical underpinnings which tend to be covered earlier in the semester. It also might be the case that some students might not have put forth as much effort to answer items correctly as they would have if their score on the assessment instrument affected their course grade. Finally, these instruments by their nature cannot assess students' knowledge of how to use SPSS or to apply methodological and analytical techniques in a research paper.