

2009-10

BS

Applying statistical analysis to problems [Student Learning Outcome-53300]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Critical Thinking Skills, Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to define a problem from an outside area and translate it into an accurately formulated statistical problem. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

There will be a faculty-reviewed assessment for projects in various upper-level courses including STA4502, STA4664, and STA4702. The assessment will be used to evaluate students' ability to communicate in writing how a solution to a real-world problem made be approached statistically. Method(s): Project Evaluation and Written Report or Essay.

Results:

The average score on the component of translating a real-world problem into a statistical problem was 82.4% among the seven statistics majors in STA3024. This was in line with the class average which included many more non-majors. Three of the statistics majors scored above 80% for this element and two were right at 80% and one was below 80%. The one student was far below 80% and skewed the average dramatically. The student replicated as study that had already been completed, and thus the statistical translation was also already done.

Improvements Made or Action Plan Based on Analysis of Results:

The project guidelines in STA3024 are such that students are provided a great latitude in selecting a problem to work on so that it fits his or her interests. For the majority of students this works as they are likely very interested in the topic that they are using. For some students this latitude does not provide enough direction. Therefore, some adjustments will be made to the project guidelines so that students have the option to choose a more narrowly-focused project.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We need a standard in the assessment section against which we can interpret your results. Please include this and resubmit. The rest of the submission is fine.

Performing comprehensive data analysis [Student Learning Outcome-53298]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to perform a comprehensive data analysis consisting of multiple investigations and interpretations of a data set. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

There will be a faculty-reviewed assessment for projects in various upper-level courses including STA4502, STA4664, and STA4702. The assessment will be used to evaluate students' ability to select appropriate statistical tools as well as create and organize a complete statistical analysis Method(s): Class Performance or Presentation.

Results:

Seven statistics majors were enrolled in our first two offerings of STA 3024 and all were able to successfully complete the compressive data analysis required in the course project. The average score was 90% among all statistics majors. Six out of the seven (85.7%) scored above 80% mastery on the comprehensive data analysis.

Improvements Made or Action Plan Based on Analysis of Results:

The rubric used to evaluate the course project did not have a specific category for this item. Consequently an overall score was used as a proxy to assess it which includes additional items address in some of the later learning objectives. We plan to refine the rubric results so that the measure of performance on this item only involves rubric elements which directly relate to putting together a comprehensive analysis.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

SACS requires that you establish a standard in the assessment section. What is your goal?

Applying statistical analysis to problems [Student Learning Outcome-53300]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Critical Thinking Skills, Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to define a problem from an outside area and translate it into an accurately formulated statistical problem. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

There will be a faculty-reviewed assessment for projects in various upper-level courses including STA4502, STA4664, and STA4702. The assessment will be used to evaluate students' ability to communicate in writing how a solution to a real-world problem made be approached statistically. Method(s): Project Evaluation and Written Report or Essay.

Results:

The average score on the component of translating a real-world problem into a statistical problem was 82.4% among the seven statistics majors in STA3024. This was in line with the class average which included many more non-majors. Three of the statistics majors scored above 80% for this element and two were right at 80% and one was below 80%. The one student was far below 80% and skewed the average dramatically. The student replicated as study that had already been completed, and thus the statistical translation was also already done.

Improvements Made or Action Plan Based on Analysis of Results:

The project guidelines in STA3024 are such that students are provided a great latitude in selecting a problem to work on so that it fits his or her interests. For the majority of students this works as they are likely very interested in the topic that they are using. For some students this latitude does not provide enough direction. Therefore, some adjustments will be made to the project guidelines so that students have the option to choose a more narrowly-focused project.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We need a standard in the assessment section against which we can interpret your results. Please include this and resubmit. The rest of the submission is fine.

Writing statistical decisions (non-technical) [Student Learning Outcome-53301]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills, Critical Thinking Skills, Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to compose a statistical decision in a manner that is appropriate for and understandable by non-technical audiences. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

There will be a faculty-reviewed assessment of projects in various upper-level courses including STA4502, STA4664, and STA4702. The assessment will be used to evaluate students' ability to take the results of the statistical solution to a problem and produce actionable recommendations written in a non-technical way. Method(s): Project Evaluation and Written Report or Essay.

Results:

All (100%) of the seven statistics majors in STA3024 adequately provided a non-technical written description of the statistical results found in their project study. The score on this component of the rubric was 97.1%. It was felt the high average was a consequence of every assignment given through the course of the semester requiring several interpretations to be made in everyday language.

Improvements Made or Action Plan Based on Analysis of Results:

Due to the high performance on this outcome, only small modifications are necessary. The action plan will be to provide even more opportunities to provide interpretations of statistical results by including more of such questions on assignments and classroom activities.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We need a standard in the assessment section against which we can interpret your results. Please include this and resubmit. The rest of the submission is fine.

Writing statistical analyses of problems [Student Learning Outcome-53299]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to produce a written explanation of a complex problem from a discipline outside of statistics in a manner that explains the essence of the problem in a non-technical way. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

There will be a faculty-reviewed assessment for projects in various upper-level courses including STA4502, STA4664, and STA4702. The assessment will be used to evaluate students' ability using written communications to break down discipline-specific issues in a conceptual way. Method(s): Project Evaluation and Written Report or Essay.

Results:

Six out of seven (85.7%) students successfully produced a non-technical written description of their project problems and goals. The average score on the problem definition component of the project was 85%. Most students performed this task at a very high level. The one student who was unsuccessful did not even attempt this item in the project. We feel the student was capable of doing a good job but did not choose to do so.

Improvements Made or Action Plan Based on Analysis of Results:

We feel students may need to see more examples of non-technical problem descriptions so that they will know more clearly what may be expected of them. We will introduce some examples of various written problems to the students in the class. The aim is to provide good models of descriptions.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We need a standard in the assessment section against which we can interpret your results. Please include this and resubmit. The rest of the submission is fine.

Presenting statistical analysis orally [Student Learning Outcome-53302]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills, Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to logically discuss the elements of a statistically analysis in an oral presentation to an audience. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

This will be based on a standard grading rubric used in courses that require an oral presentation. Oral presentations are given in various upper-level courses including STA4664 and STA4702. Method(s): Class Performance or Presentation and Project Evaluation.

Results:

All (100%) of the seven statistics majors in STA 3024 effectively presented a summary of the element of their project's statistical analysis to the class audience verbally. Their average score on the oral presentation elements for the majors was 94.2%. The lowest component of this score average was the "accurate but concise explanation of techniques used" element. It is felt this could be improved upon with more practice.

Improvements Made or Action Plan Based on Analysis of Results:

The current project in STA3024 only provides one opportunity for students to verbally communicate some statistical findings. To help improve the oral communication outcome, some ways of adding in more opportunities for students to speak about data analysis will be explored. One approach will be to add a smaller project in the middle of the course so that students will have one more opportunity for oral presentation.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please edit the student learning outcome section for spelling of statistically vs statistical. We need a standard in the assessment section against which we can interpret your results. Please include this and resubmit. The rest of the submission is fine.

Presenting statistical conclusions (non-technical) [Student Learning Outcome-53303]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to interpret the conclusions of a statistical study in an oral presentation in such a way that non-technical audiences may understand it. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

This will be based on a standard grading rubric used in courses that require an oral presentation. Oral presentations are given in various upper-level courses including STA4664 and STA4702. Method(s): Class Performance or Presentation and Project Evaluation.

Results:

The seven statistics majors in STA3024 all (100%) were able to explain project results in non-technical terms. The average score on the pertinent rubric elements was 93.5 which was far above the class average on the whole. Students seem to excel in providing motivation for their study as well as providing supporting visual aids. One area that lagged was the discussion of limitations of the current study and future directions where just five out of the seven (71.4%) scored at an 80% or higher. Those that scored poorly spent very little time or none at all on this element.

Improvements Made or Action Plan Based on Analysis of Results:

One impediment to presenting full project details is the time constraint on oral presentations due to the the number of students in the class and the complexity of the project. Ideally, smaller sections would allow more time for students but as the size of this class seems to be growing this may be an impractical solution. The immediate plan would then be to slant the oral presentation more to the conceptual side of presenting the results and allow the written report to go into more of the details. Therefore, the presentation guidelines will be altered to reflect a less technical, more conceptual oral discussion.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

SACS requires that you establish a standard in the assessment section. Other than that, the submission is good.

Using statistical software [Student Learning Outcome-53304]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of core undergraduate courses, the student will be able to apply modern statistical software to implement statistical methods, analyze data, and solve problems. This will be assessed upon completion of core undergraduate courses.

Assessment and Evaluation Process:

We will use faculty-reviewed course embedded data analysis assignments requiring the use of statistical software. Projects and other course embedded assignments in courses such as STA4502, STA4664, and STA4702 will be used to assess students' ability to use statistical software to analyze data and solve problems. Method(s): Problem-Solving Exercise and Project Evaluation.

Results:

Six out of the seven (85.7%) statistics majors in STA 3024 scored at 80% or higher in the application of statistical software component. Because the focus of the course is the use of software in handling and analyzing data, most of the students have the skill set at the time of the project to excel in this facet of the project. One student skewed the results as the required tasks were not all completed in that case. It was believed that the student chose just to not put in the time for successful completion. One area that students tended to have more difficulty with was efficient software coding.

Improvements Made or Action Plan Based on Analysis of Results:

To address efficiency of software coding, more examples will be presented throughout the course to expose students different scenarios. This will open up more options for students to apply when attacking the typical unfamiliarity that arise when analyzing their project data.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We need a standard against which to interpret your results. Please provide and resubmit. The rest of the submission is fine. Thanks.

MS Statistics

Ability to communicate statistical analyses [Student Learning Outcome-53294]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills

Define Outcome:

Upon completion of the course of instruction, the student will be able to express statistical results and inferences in writing and orally to both technical and non-technical audiences.

Assessment and Evaluation Process:

Communication skills are analyzed through written and oral work required of all students in the statistics MS program and is assessed through their performance in two required courses, STA 5166 and STA 5167. In these courses, each student must give a 30 minute presentation on a relevant statistical topic. A written project to accompany this presentation is also required.

90% of students will be successful by receiving a score of 76% or better in these courses. Method(s): Class Performance or Presentation and Project Evaluation.

Results:

In the fall of 2009, 88% of students taking STA 5166 met these criteria. In the spring of 2010, 100% of students taking STA 5167 met the criteria.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to assess the ability of students in our programs to communicate statistical concepts and results through their performance in these courses.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

We know it is impossible to improve upon a 100% success rate but we also know you are working hard to retain your excellent results. Please provide a few examples of the specific actions you are taking in STA 5166 and STA 5167 to ensure your continuing success. SACS requires us to demonstrate continuous improvement through specific actions.

Increase the number of US MS students [Program Outcome-53295]

Start Date: 08-25-09

End Date: 08-06-10

Define Outcome:

We seek to continue to increase the percentage of US students and US minority students in the MS programs in Statistics through our recruiting efforts.

Assessment and Evaluation Process:

We will determine growth as evidenced by department assessment.

Results:

10 out of 12 students admitted to our graduate programs in the fall of 2009 were U.S. residents while only two of these were minority students.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to target U.S. students for recruitment in our programs and will particularly emphasize recruitment of U.S. minority students.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please provide a standard against which we can interpret your obviously good results. Did you meet or exceed your expectations? What were they? Inclusion of previous years' data would also suffice. Please also provide examples of your recruitment strategies for US candidates and for US minority candidates.

MS Biostatistics

Ability to communicate statistical analyses [Student Learning Outcome-53312]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Communication Skills

Define Outcome:

Upon completion of the course of instruction, the student will be able to express statistical results and inferences in writing and orally to both technical and non-technical audiences.

Assessment and Evaluation Process:

Communication skills are analyzed through written and oral work required of all students in the statistics MS program. Each student must write two projects in each of STA 5106 and STA 5107 (Computational Statistics I and II) and give an oral presentation on a relevant statistical topic in STA 5107. Students must pass these courses to obtain an MS in biostatistics.

90% of students will pass these courses with a score of 76% or better. Method(s): Class Performance or Presentation and Project Evaluation.

Results:

In the fall of 2009, 100% of the students taking STA 5106 received a score of 76% or better; in the spring of 2010, 92% of students taking STA 5107 received a score of 76% or better.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to require our students to take these courses that require them to demonstrate an ability to communicate statistical results and concepts effectively.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please provide specific examples of actions you are taking to ensure student success on this outcome. We know you are working hard to keep your candidates learning the material.

Increase the number of US MS students [Program Outcome-53313]

Start Date: 08-25-09

End Date: 08-06-10

Define Outcome:

We seek to continue to increase the percentage of US students and US minority students in the MS programs in Biostatistics through our recruiting efforts.

Assessment and Evaluation Process:

We will determine growth as evidenced by department assessment.

Results:

Our goal to increase the number of US Masters students encompasses both the MS in Statistics and the MS in Biostatistics so our overall results and action plans will be the same.

10 of the 12 students admitted to our graduate programs in the fall of 2009 were U.S. residents and two were minority.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to target U.S. students for admission to our graduate programs and will particularly emphasize recruiting U.S. minority students into our programs.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please provide a standard against which we can interpret your obviously good results. Did you meet or exceed your expectations? What were they? Please also provide examples of your recruitment strategies for US candidates and for US minority candidates.

PHD Statistics

Statistical methods [Student Learning Outcome-53290]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Critical Thinking Skills, Content/Discipline Knowledge & Skills

Define Outcome:

By the end of the course of instruction, the student will be able to generate modern graduate level methods and theory, including using software and writing code in various computer languages, to resolve issues and solve problems within the discipline. In addition, students should be able to develop new statistical and computational methods.

Assessment and Evaluation Process:

Students are expected to expound on modern methods and theory within the PhD thesis. These works will be evaluated by individual faculty, committee, or both to determine the competency and scholarly innovation achieved by PhD students. Students must also pass the department's PhD written qualifying exam.

80% of the PhD students will be successful in passing the PhD written qualifying examination. Method(s): Faculty Committee Evaluation of Dissertation, Thesis or Treatise, and Faculty Designed Comprehensive or Capstone Examination and Assignment.

Results:

100% of the students who attempted to defend their dissertations successfully passed; and all students who took the PhD qualifying exam passed that exam.

Improvements Made or Action Plan Based on Analysis of Results:

To ensure completion of essay exams and dissertation defenses in a timely manner, three years ago we instituted specific milestones for the PhD students to adhere to. (1) PhD students must pass with a B- or better in 7 specific courses from our department by the end of the 3rd semester.

(2) PhD students must pass the written PhD exam by the end of the 3rd year of graduate study.

(3) PhD students must pass the essay exam by the end of the 4th year of graduate study.

Students who meet these milestones are on track for successful defense of dissertation sometime in their 5th year.

We will keep the milestone system outlined above.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Approval

For next year's submission, please convert B- to a percentage. SACS does not allow us to use letter grades as assessment methods.

Increase the number of US PhD students [Program Outcome-53292]

Start Date: 08-25-09

End Date: 08-06-10

Define Outcome:

We seek to continue to increase the percentage of US students and US minority students in the PhD programs in Statistics through our recruiting efforts.

Assessment and Evaluation Process:

We will determine growth as evidenced by department assessment.

Results:

10 of 12 graduate students admitted to our programs in the fall of 2009 were U.S. residents and two were from minority groups.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to target U.S. students for admission to our programs and will particularly emphasize the recruitment of minority students.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please provide a standard against which we can interpret your obviously good results. Did you meet or exceed your expectations? What were they? Please also provide examples of your recruitment strategies for US candidates and for US minority candidates.

PHD Biostatistics

Statistical methods [Student Learning Outcome-53308]

Start Date: 08-25-09

End Date: 08-06-10

Outcome Type: Critical Thinking Skills, Content/Discipline Knowledge & Skills

Define Outcome:

Upon completion of the course of instruction, the student will be able to generate modern graduate level methods and theory, including using software and writing code in various computer languages, to resolve issues and solve problems within the discipline. In addition, students should be able to develop new statistical and computational methods.

Assessment and Evaluation Process:

Students are expected to expound on modern methods and theory within the PhD thesis. These works will be evaluated by individual faculty, committee, or both to determine the competency and scholarly innovation achieved by PhD students. Students must also pass the department's PhD written qualifying exam. 80% of the PhD students will be successful in passing the PhD written qualifying examination. Method(s): Faculty Committee Evaluation of Dissertation, Thesis or Treatise, and Faculty Designed Comprehensive or Capstone Examination and Assignment.

Results:

Both our PhD in Statistics and in Biostatistics have the same assessment and evaluation process for this goal, so the results and action plan will be the same for both.

For the third year in a row, 100% of the students who attempted to defend their dissertations successfully passed; and 100% of students who attempted the PhD qualifying exam passed the examination.

Improvements Made or Action Plan Based on Analysis of Results:

To ensure completion of essay exams and dissertation defenses in a timely manner, we instituted two years ago some specific milestones for the PhD students to adhere to. In the past, such goals were not explicit and delayed graduation for some students. Now all PhD students are aware of the milestones and are held accountable to them. Current students are regularly reminded of these milestones through department email and annual evaluations. New students are first made aware of the milestones during the department's new graduate student orientation sessions.

Example milestones we use are:

- (1) PhD students must pass with a B- or better in 7 specific courses from our department by the end of the 3rd semester.
- (2) PhD students must pass the written PhD exam by the end of the 3rd year of graduate study.
- (3) PhD students must pass the essay exam by the end of the 4th year of graduate study.

Students who meet these milestones are on track for successful defense of dissertation sometime in their 5th year.

We will continue this process of tracking student process.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Approval

For next year's submission, please convert B- to a percentage. SACS does not allow us to use letter grades as assessment methods.

Increase the number of US PhD students [Program Outcome-53309]

Start Date: 08-25-09

End Date: 08-06-10

Define Outcome:

We seek to continue to increase the percentage of US students and US minority students in the PhD programs in Statistics through our recruiting efforts.

Assessment and Evaluation Process:

We will determine growth as evidenced by department assessment.

Results:

Our goal to increase the number of US PhD students encompasses both the PhD in Statistics and the PhD in Biostatistics so our overall results and action plans will be the same.

10 of the 12 students admitted to our programs in the fall of 2009 were U.S. residents; two were minority.

Improvements Made or Action Plan Based on Analysis of Results:

We will continue to target U.S. students for admission to our graduate programs and will particularly emphasize the recruitment of U.S. minority students.

TECHNICAL REVIEW COMMENTS

Reviewer: Kayce Morton

Date: Feb-01-2011

Status: Marked for Resubmission

Please provide a standard against which we can interpret your obviously good results. Did you meet or exceed your expectations? What were they? Please also provide examples of your recruitment strategies for US candidates and for US minority candidates.