Student Perspectives on Software Used in an Introductory Statistical Computing Course

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May 19 – 23, 2014

Introduction

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    - Readiness to solve real-world problems
    - Job preparation

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  - SAS and R
  - Data importation, data manipulation, basic descriptive statistics, basic graphical procedures, inference for a single mean
  - Majors of Undergraduate Students: Mathematical Sciences, etc.
  - Majors of Graduate Students: Agricultural Education, Applied Economics and Statistics, Applied Sociology, Economics, Policy Studies, Wildlife and Fisheries Biology, etc.

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- Goal of study: To determine which software programs should be focused upon in the course to best prepare students for their future work

Pre-Course Survey: Format and Participants

Format:

- Students who took course in 2011 and 2012
- Software proficiency and interest
- Computer science, database, and LaTeX exposure and experience

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Participants:

- 41 students took the course in 2011 and 2012
- 34 (82.93%) students consented and completed the survey
- 23 (67.65%) undergraduate student respondents, and 11 (32.35%) graduate student respondents

Post-Course Survey: Format and Participants

Format:

- Students who took the course in 2008 - 2012
- Software proficiency and use
- Software usefulness in current jobs and/or coursework
- Recommendations and what software to focus upon in future semesters

Post-Course Survey: Format and Participants

Format:

- Students who took the course in 2008 - 2012
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Participants:

- 69 total students took the course between 2008 and 2012
- 21 (35.00%) students consented and completed the post-course survey
- 14 (67.67%) undergraduate student respondents, and 7 (33.33%) graduate student respondents

Software Used

Software Used Prior to Course
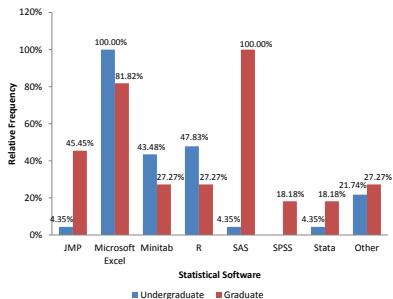
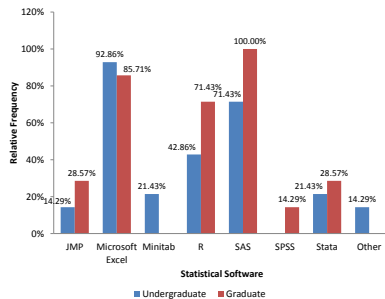*Other*: Undergraduate – MatLab, Maple;
Graduate – Eviews, Alglib.net

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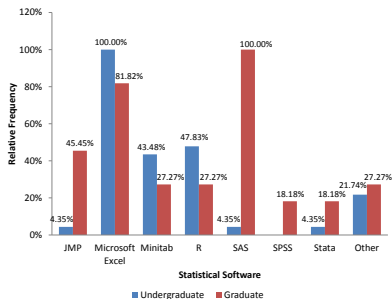
Other: Undergraduate – MatLab, Maple;
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Software Used Since Course

Other: Undergraduate – Winbugs, Mplus
Graduate – (none)
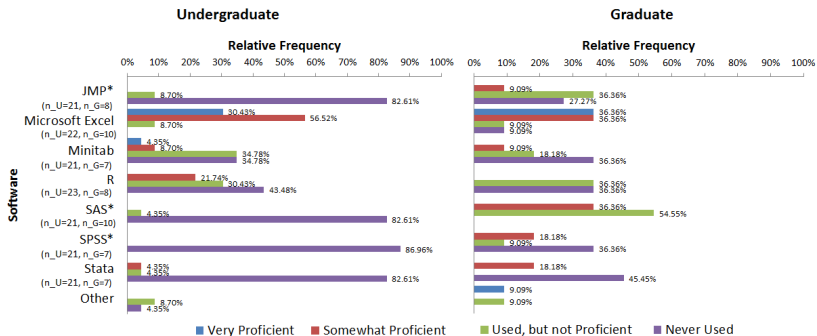
Pre-Course Software Proficiency

Figure: Comparing Proficiency for Undergraduate Students and Graduate Students, Where a * Indicates Significance at $\alpha = 0.05$
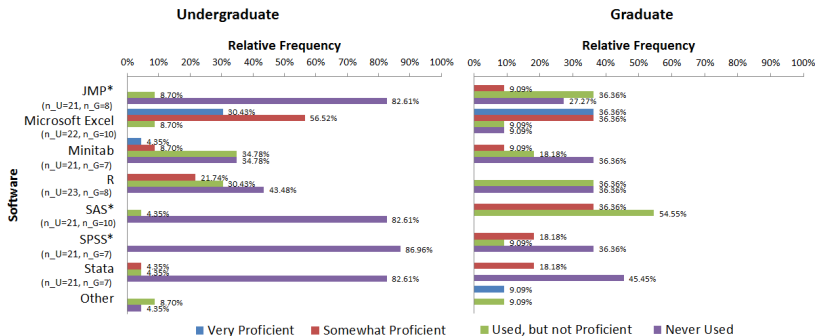
Pre-Course Software Proficiency

Figure: Comparing Proficiency for Undergraduate Students and Graduate Students, Where a * Indicates Significance at $\alpha = 0.05$

Proficiency of graduate students is significantly greater than proficiency of undergraduate students for JMP, SAS, and SPSS.
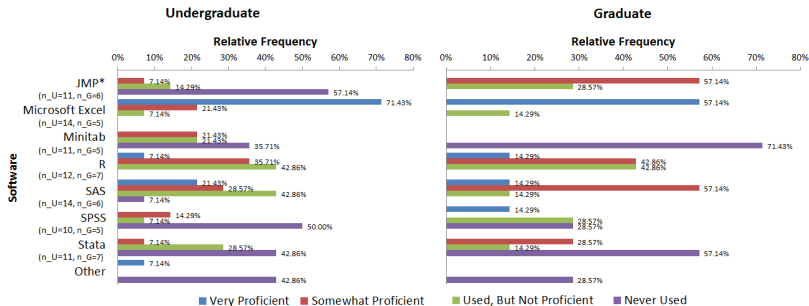
Post-Course Software Proficiency

Figure: Proficiency for Undergraduate and Graduate Students, Where a * Indicates Significance at $\alpha = 0.05$
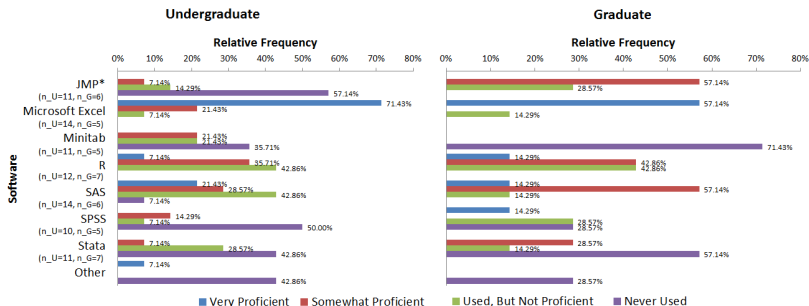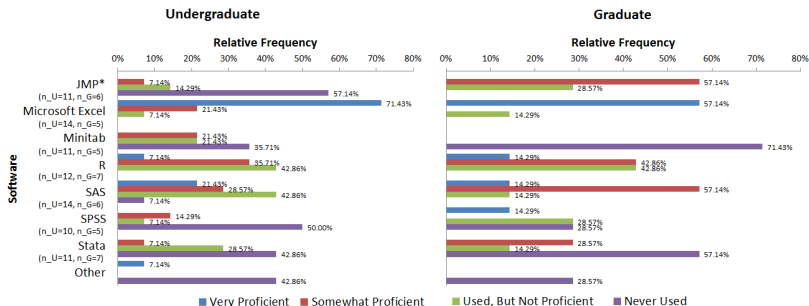
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- There is a significant increase in proficiency from before to after the course for JMP, R, and SAS.
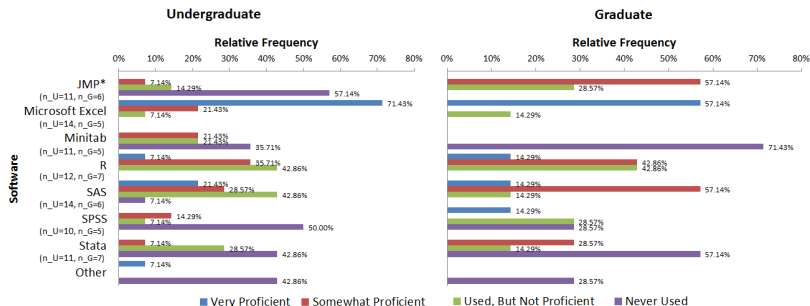
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- There is a significant increase in proficiency from before to after the course for JMP, R, and SAS.
- Undergraduate and graduate students did not significantly differ in their change in proficiency.

Post-Course Software Use in Current Position

"Learning _____ in this course prepared me for its use in my current position."
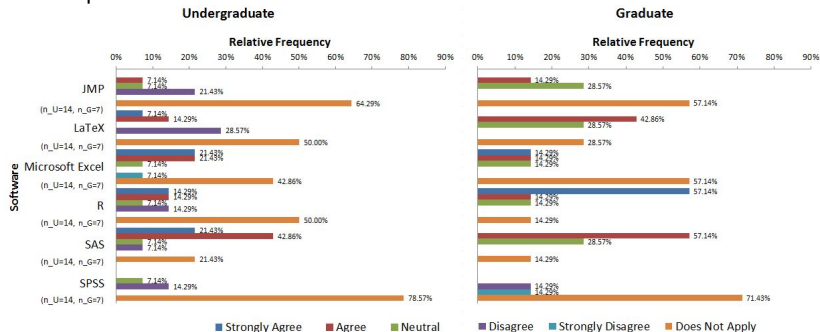

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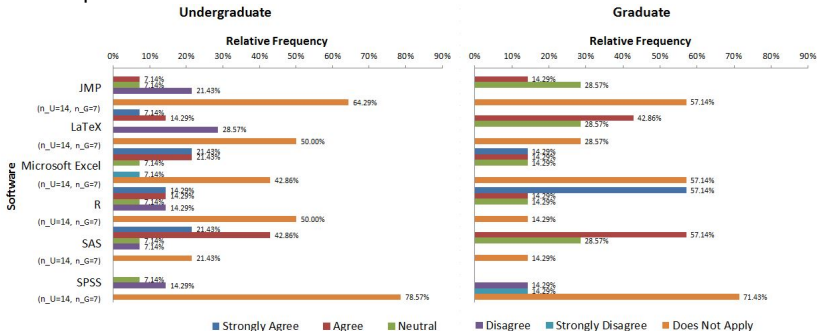"Learning _____ in this course prepared me for its use in my current position."

Figure: Comparing Agreement for Undergraduate Students and Graduate Students, Where a * Indicates Significance at $\alpha = 0.05$

There is not a significant difference in agreement with the benefit of learning a program for their current position between undergraduate and graduate student respondents.

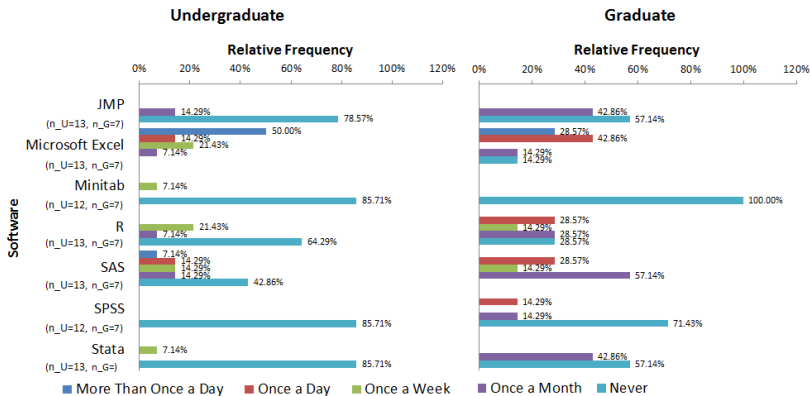# Post-Course Frequency of Software Use

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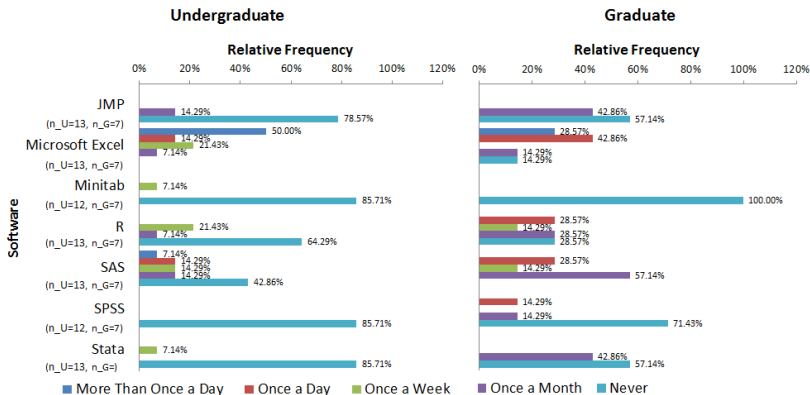
Post-Course Frequency of Software Use

Figure: Comparing Post-Course Frequency of Software Use for Undergraduate Students and Graduate Students, Where a * Indicates Significance at $\alpha = 0.05$

There is not a significant difference between undergraduate and graduate student respondents in frequency of use of software packages.
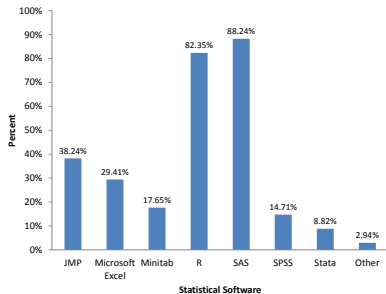
Software Interest and Recommendations

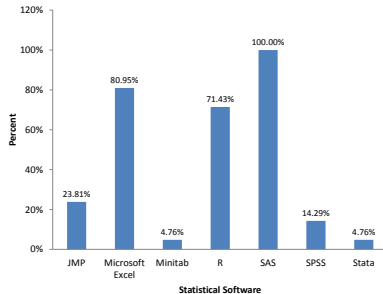Software Learning Preference in Course
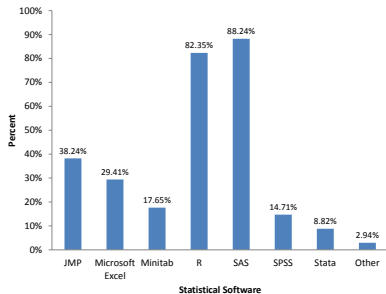
Other: SQL Language

Software Interest and Recommendations

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Software Recommendations for Future Semesters

Other: SQL Language

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Students would be best served if they were taught **SAS, R,** and **Microsoft Excel** in the introductory statistics course.

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- Pre-course survey: Not given to students who took course in 2008 - 2010
- Post-course survey: Not all who were contacted responded to the survey request

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Future Work

- Change wording of question regarding software proficiency, as it may have contributed to high non-response levels for this question.
- Continue to implement the surveys to add to current data