

2016 eCOTS Virtual Poster Proposal

Title: **Logistic Regression using Excel**

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Brief Abstract: Binary outcomes are a common occurrence in business. Modelling binary outcomes typically involves a logistic curve and Maximum Likelihood Estimation (MLE). Statistical packages normally include logistic regression; Excel does not. Yet Excel is arguably the most common statistical software used in teaching business majors who are estimated to be about 40% of those students who take introductory statistics at four-year colleges.

This virtual poster demonstrates two ways of performing a logistic regression using Excel: (1) Using MLE; (2) Using OLS. The first (MLE) is theoretically justified, but cumbersome in Excel; the second (OLS) is not theoretically justified, but is very easy in Excel. This presentation shows that the OLS-logistic approach is quite close to the MLE-logistic results and notes that the OLS-logistic approach is certainly better than the OLS-linear approach. This presentation argues that the OLS-logistic approach is "good enough" for [business] students who are not taking any future statistics courses.

Connection to Conference Theme of "Changing with Technology": As new technology involving big data increases the emphasis on business analytics, it increases the pressure to teach more foundation-topics in the introductory statistics course. Those introductory statistics courses using Minitab, SPSS or R have easy access to MLE-logistic regression. Those introductory courses using Excel have access to MLE-logistic regression, but it is not an easy access. This presentation provides a way to give business students easy access to logistic regression and thereby lay a foundation for future work in business analytics.

Goal: Those teaching introductory statistics using Excel now have a quick, easy way to introduce logistic regression that is arguably "good enough" for most of their students.

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