Overview of the Statistical Consulting Center
Fall 2007 - Spring 2012

The Statistical Consulting Center at Florida State University is a research assistance facility for the students, faculty, and staff at FSU. The Center is a function of the graduate program within the Department of Statistics at Florida State University and is primarily run by students pursuing graduate degrees in the program. Consultants are supervised by the Center's faculty director, Steven Ramsier. The Statistical Consulting Center is a free service for members of the FSU community. When requested, clients from outside the FSU community are given at least a one-hour consultation if a consultant is available. The Statistical Consulting Center expanded its services in 2009 by holding walk-in hours to assist clients on a first-come first-serve basis. Currently, the Consulting Center clients consist mostly of graduate students in outside departments requiring statistical assistance with thesis work but have recently been expanding to serve outside faculty research with statistical support. Services include but are not limited to:

- Translating research questions and hypotheses into statistical terms
- Designing sampling procedures
- Choosing appropriate statistical methods
- Interpreting computer output
- Phrasing statistical results
- Referring clients to other statistical help

The most frequent statistical ideas used are t-tests, ANOVA, basic linear regression, logistic regression, Chi-square, factor analysis, power analysis, sample size calculations, and survey data analysis. The Consulting Center is able to advise clients as to the functions of computer packages such as SPSS, SAS, and Excel, but does not perform a client's actual analysis.

Summary of Business Activities

In the academic years 2007-2008 and 2008-2009 the Center was run by two graduate students with one being the lead and the other in an apprentice role. To accommodate the walk-in hours for the 2009-2010 years, the number of consultants was increased to four graduate students and has fluctuated between four and five in subsequent years. With four or five consultants there is generally a lead consultant responsible largely for scheduling and facilitating several appointments, a second experienced consultant who takes the lead in several other appointments, and the remaining consultants responsible mostly for walk-ins but also serve in an apprentice role at many of the appointments.

Consultants had an average of slightly more than three appointments each week, for an annual Center average of about 90 appointments. The demand was relatively consistent across the months, with slight increases at the beginning and end of the semester, and close to important dates such as submission deadlines for research proposals or dissertations.

The task of holding walk-in hours was split up between several of the consultants. There was no appointment required. Clients were allowed to drop in whenever they wanted. Often, based on

client needs, walk-in consultants would suggest that a client make an appointment when sessions required a more in-depth approach. Again, the walk-in activity would experience a spike in demand close to important dates such as submission deadlines for research proposals or dissertations.

Summary of Clients

The majority of appointment clients were Doctoral students seeking assistance for the quantitative aspect of their dissertations. We also met with several Masters students working on their thesis or research project. On occasion, faculty members were provided statistical advice for their research work. Over the five academic years from Fall 2007 to Spring 2012 the Center was able to provide statistical services for clients from a variety of departments from the University community including those listed below:

Anthropology
Art Education
Biology
Chemistry
Communication Disorders
Dance
Engineering
Exercise Science
Educational Psychology and Learning Systems Department
Family and Children Sciences
Family and Consumer Sciences
Fashion Design
General Education
Instructional Systems
Mathematics Education
Meteorology
Music Therapy
Nursing
Nutrition
Oceanography
Physical Education
Physics
Psychology
Public Administration
Public Health
Social Work
Sociology
Sports Management and Recreation Management
Textiles and Consumer Sciences

Typical Consulting Cases

In the spring of 2008, client from School of Public Administration working on her doctoral dissertation came for consulting. Her data involved the operation of health facilities in the state with focus on comparing the differences between Public, Private, For-Profit, and Non-Profit facilities. She has several research questions to be answered and we were able to employ series of Chi-Square tests, One-way ANOVA and Two-way ANOVA procedures to answer those questions. At the end of the semester, she sent an email to inform us that she has been able to defend her dissertation successfully.

In the fall of 2008, a professor from Biology Department was looking for help on her tree project which aims to build a mixed linear regression for growth curve of the long-leaf pines. We first assisted her in the data exploration, including data cleaning, summary tables and plots. Then, we assisted her to model the data in random mixed regression, explaining the statistics knowledge and writing SAS programs.

In the spring of 2009, a Ph.D. candidate from Nutrition Department came for consulting regarding determination of sample size in her research study. The study was an intervention study of diet therapy. Then, based on the design of her research study, we outlined the calculation steps and referred some helpful statistics websites to her.

In the fall of 2009, a Masters student from the Meteorology Department was looking for help with the data analysis portion of his thesis. He had a very large number of variables, so we first assisted him in using principal component analysis to reduce the dimension of his data. Once he had a final data set, he came back to the consulting center for help with logistic regression and cross-validation. We helped him split up his data set, run the regression analysis, and make a ROC curve of both the training and testing data set to evaluate his model, explaining the statistics behind the procedures along the way. We used SAS for the majority of the analysis.

In the spring of 2010, a Doctoral student from the University of Florida College of Nursing, and employee at FSU's Thagard Health Center, came to us for help with her doctoral final project. She had taken a Pre-Intervention and a Post-Intervention survey regarding the seasonal influenza vaccine, and needed assistance analyzing the results, and identifying factors that positively and negatively affected behavior to receive the vaccine. We suggested tests such as Chi-square and t-tests that would help her determine significant relationships. We also helped her handle missing data, format her Excel file so that she could properly import it into SPSS, and showed her how to perform the suggested tests.

In the spring of 2011, a graduate student from the Anthropology Department at FSU came to us for help with his dissertation. The student had data from an archeological dig from 4 different sites. He wanted to perform a cluster analysis in SPSS as well as determine a heterogeneity measure for diversity and determine how to create dendrograms. The student was not very familiar with SPSS and the consultants provided the student with various websites for learning the software as well as assisted the student in importing his data into the software package. The consultants provided alternative, simpler methods to assist the student with his initial problem such as performing a MANOVA. Upon analysis of his data using the MANOVA, the student

wanted a good way to graphically display the significant variation between sites for multiple dependent variables.

In the spring of 2012, a Marriage & Family Therapy student visited our walk in hours in Strozier Library for help on her undergraduate research project. She was studying the "Longitudinal Effects of Corporal Punishment on Disobedience". She wanted to understand how to test ANOVA model assumptions, and how to implement ANOVA in SPSS. We discussed the D'Agostino-Pearson omnibus test of normality, Levine's test of heteroscedasticity, and understanding study and sampling design to control for independence. The dependent variable, disobedience, was a categorical variable on a three point scale, thus allowing for a Logistic Regression model to be utilized. We discussed how one might set up this model, and how to evaluate attributes using chi-square attribute selection.