# PRACTICUM 1: S690/X498 FALL 2021

## PROJECT OVERVIEW.

This practicum regards a study from a call center with data containing various health metrics on employees gathered over an eight month period. Of particular interest is in determining what variables affect weight change over this eight month period. For a complete background, read the document "redacted article.PDF" contained in this folder. While there is more health data contained in this document and the provided data set "Practicum 1 Data.xlsx" the sole focus for this analysis is what affects some measure of weight change and in the latter file, the variables of interest are highlighted in either yellow or orange.

## TEAM ASSIGNMENT.

For this practicum, consultants will be randomly assigned to teams of size three. The assignments are made at random. Working as a team is realistic for larger consulting projects as this and working as a team presents its own challenges in terms of coordination and evaluation. At the end of this practicum, consultants will provide peer reviews of their teammates anonymous to those on your team and evaluated by only the professor. Once teams are assigned let the professor know as soon as possible if reassignment is necessary.

## PROJECT COMPONENTS AND AUDIENCE.

This project will include the usual four components of a practicum: a preliminary report, a technical report, an executive summary, and a presentation. The audience/client is assumed to be a managing statistician in the call center. You can assume they have knowledge of graduate level statistics such as being familiar with testing, regression, glm, mixed models, logistic, etc. but have not done any technical work in statistics themselves for some time. The client expects to be informed on what drives weight gain from the analysis for the specific aims (below) in order to enact a program to improve employee health. For the purposes of this practicum, the professor will act as the client and in class and communications the professor will make it clear whether they are the client or the professor.

1. Preliminary Report: this should be a relatively brief document proposing what you plan to provide. It is not a contract so if the analysis takes you in another direction that is perfectly acceptable. It is expected that some preliminary analysis is contained in this document. Nothing beyond descriptive statistics and basic graphics is expected. It is not expected that a complete preliminary analysis is performed at this point.
2. Technical Report: All pertinent methods and results should be described and displayed, and the usual rules for figures and tables apply. Also aesthetic formatting is still required, as are complete sentences. After all, this is a professional document, and this is for the benefit of an external client that is funding the research. Direct cut-and-paste of computer output is unacceptable.

3. Executive Summary: It will be a well-written, well formatted one to two page document explaining the contents of the technical paper using the language of the client translating statistical results to concepts of interest to the client.
4. Presentation: This is your opportunity to truly convince and interact with the client to explain your findings. Plan on a twenty minute presentation highlighting the main points with additional time for question and answer as well as professor feedback following the presentation. It is not required that each team member delivers part of the presentation.

**REQUIRED SOFTWARE.** The client does not require that a particular software must be used. Consultants are free to use whatever software they prefer.

**DUE DATES/COURSE DATES**.

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| Thursday, September 2, 2021 | | 4 | Lecture/discussion Chapters 1-4.<br>Lecture/discussion Chapters 5-7.<br>Assigned Reading Practicum 1<br>Assign Chapters 8-12 |
| Monday, September 6, 2021 | | | Labor Day |
| Tuesday, September 7, 2021 | 3 | 5 | Introduce Practicum 1.<br>Discuss SAPs and assign<br>Lecture/discussion Chapters 5-7. |
| Thursday, September 9, 2021 | | 6 | Lecture/discussion Chapters 5-7.<br>Lecture/discussion Chapters 8-12. |
| Tuesday, September 14, 2021 | 4 | 7 | **Practicum 1 SAP due.**<br>Lecture/discussion Chapters 8-12.<br>Lecture: Presentations.<br>Assign Practicum 1 Technical Report. |
| Thursday, September 16, 2021 | | 8 | Peer review Practicum 1 SAP.<br>P1 technical report Q and A. |
| Tuesday, September 21, 2021 | 5 | 9 | Lecture: Presentations.<br>Lecture: TBD<br>Assign correlation exercise |
| Thursday, September 23, 2021 | | 10 | Lecture: Correlation.<br>Lecture: TBD. |
| Sunday, September 26, 2021 | | | **P1 technical Report Due.** |
| Tuesday, September 28, 2021 | 6 | 11 | P1 Technical Report Peer Review (2 groups).<br>Lecture: TBD. |
| Thursday, September 30, 2021 | | 12 | P1 Technical Report Peer Review (3 groups). |
| Saturday, October 2, 2021 | | | Assign P2 Groups<br>Assign P2 Reading |
| Tuesday, October 5, 2021 | 7 | 13 | **P1 Presentations (2 groups).**<br>P2 Q and A |

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| | | | Assign P2 SAP |
| Thursday, October 7, 2021 | 7 | 14 | **P1 Presentations (3 groups).** |
| Friday, October 8, 2021 | | | Fall Break |

**MATERIALS.**

All associated Practicum 1 materials are located in the Files/Practicum 1 folder on Canvas. The folder includes the following files:

1. Practicum 1 Instructions.PDF: this document.
2. redacted article.PDF: Necessary background information primarily for the purposes of understanding the data with additional information about the goals of the client. Note there is some periphery information not related to this practicum.
3. Practicum 1.xlsx contains the raw data for the practicum. There is more data here than is necessary. Columns that are either necessary for or may be considered in your analysis are highlighted in either yellow or orange.

**SPECIFIC AIMS.**

SA.1 Does total metabolic minutes have an effect on weight gain?

SA.2 Does shift have an effect on weight gain?

**CONSIDERATIONS.**

The methods used to address the specific aims is entirely up to the consultant. In your analysis you will decide what variable, combination of variables, or transformation of variables measure "weight gain." These could include change in weight, change in BMI, binary weight gain Y/N to name a few and of course transformations are acceptable. In your documentation your reasoning for your choice of dependent must be included with support for your choice. Beginning BMI is unknown. The beginning weight can be calculated by body weight at 8 months – pounds gained. Then this value along with the height variable can be used to calculate beginning BMI; note that this calculation differs whether using kg/meters or pounds/inches.

Note that there are missing values for all of the variables you need or may consider for your analyses. Note also that complete records are missing and these can be deleted. It is worth noting that while total_met_min may be missing, some of those values can be imputed by the formula

$$\text{Total\_met\_min} = 8*\text{Vig\_ex\_time} + 4*\text{Mod\_ex\_time} + 3.3*\text{Walk\_ex\_time}$$

Even after this imputation there will be missing values. In any case of missing values it is up to you to determine how to deal with them. The method used must be documented as well as the reasoning behind your choice. There is limited demographic data in the data set; it is up to you whether to include these or not. Again and as always, document your reasoning behind this.