**Project:** Project 1, BIOS 6623

**Report:** Descriptive Statistics & Bayesian Analysis

**Investigator:** Rachel Johnson

**Date:** 9 October 2017

**Introduction**

The goals of this project are to examine the difference in treatment responses of hard drug users and those who don’t report hard drug use in HIV-1 infected homosexual and bisexual men in the Multicenter AIDS cohort study. Outcomes of interest include two laboratory measures—viral load and CD4+ T cell count—and two quality of life scores—aggregate mental score and aggregate physical score from the SF-36.

These measures were taken on men at baseline and throughout the follow-up period of the study, but this analysis aims to examine how these treatment responses differ between users and non-users of hard drugs from baseline values to their responses at the 2 year follow-up time point in the study.

**Methods**

* Introduction: Briefly describe the project (including data received from the investigator) and the scientific hypothesis of interest. Rephrase the scientific hypothesis of interest into testable statistical hypotheses (~.5 page).  Note this is NOT a scientific introduction to a paper and should give information pertinent to the data analysis, not more general biology background.
* Methods: Describe the methods used to clean and analyze the data. Justify and explain your data analysis approach (~ 2 pages).  Should be written in past tense and should not include results.  Do NOT include equations.
* Results: Present results for analyses described in the methods (~1-1.5 pages). Use Tables and Figures as appropriate, including in the text the full interpretation of statistical results for the main findings (i.e. point estimates, confidence bounds, p-values, interpretation of results of test).
* Conclusions: Interpret your results (~.5 to 1 page) in context of scientific question(s). Also discuss any limitations to your analysis that may affect interpretation or that require additional consideration by the investigator.
* Reproducible research information: See below (**Reproducible Research**).

**Results**

**Table 1.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total** | **Hard drugs = Yes** | **Hard drugs = No** |
| **Age at baseline** | 43.26 ± 8.72 | 44.62 ± 9.49 | 43.14 ± 8.65 |
| **BMI at baseline** | 25.21 ± 4.34 | 23.62 ± 3.45 | 25.34 ± 4.39 |
| **Alcohol use at baseline** |  |  |  |
| 13 or fewer drinks per week | 443 (93.07) | 37 (94.87) | 406 (92.91) |
| > 13 drinks per week | 33 (6.93) | 2 (5.13) | 31 (7.09) |
| **Smoking status at baseline** |  |  |  |
| Never/former | 291 (61.13) | 9 (23.08) | 282 (64.53) |
| Current | 185 (38.87) | 30 (76.92) | 155 (35.47) |
| **Marijuana use at baseline** |  |  |  |
| Yes | 194 (40.76) | 12 (30.77) | 182 (41.65) |
| No | 282 (59.24) | 27 (69.23) | 255 (58.35) |
| **Income level at baseline** |  |  |  |
| < $10,000 | 99 (20.8) | 14 (35.9) | 85 (20.24) |
| $10,000 - $40,000 | 196 (41.18) | 16 (41.03) | 180 (42.86) |
| > $40,000 | 164 (34.45) | 9 (23.08) | 155 (36.9) |
| **Education at baseline** |  |  |  |
| HS or less | 101 (21.22) | 16 (41.03) | 85 (19.45) |
| >HS | 375 (78.78) | 23 (58.97) | 352 (80.55) |
| **Adherence at 2 years** |  |  |  |
| <95% | 50 (10.5) | 1 (2.56) | 49 (11.21) |
| >95% | 426 (89.5) | 38 (97.44) | 388 (88.79) |
| **Baseline log10 viral load** | 4.52 ± 0.92 | 4.52 ± 0.86 | 4.52 ± 0.93 |
| **Baseline CD4+ count** | 373.53 ± 200.46 | 352.18 ± 194.67 | 375.44 ± 201.07 |
| **Baseline SF36 MCS score** | 44.89 ± 13.5 | 42.31 ± 11.22 | 45.12 ± 13.68 |
| **Baseline SF36 PCS score** | 51.04 ± 9.05 | 47.7 ± 8.5 | 51.34 ± 9.05 |

**Table 2.**  This table displays the difference in the four outcomes from baseline to the 2 year mark in the study.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Total** | **Hard drugs = Yes** | **Hard drugs = No** |
| **Difference in log10 viral load** | 0.41 ± 0.37 | 0.39 ± 0.25 | 0.41 ± 0.38 |
| **Difference in CD4+ count** | 169.21 ± 183.2 | 13.43 ± 195.73 | 183.11 ± 175.67 |
| **Difference in SF36 MCS score** | 2.34 ± 12.1 | 3.58 ± 15.07 | 2.23 ± 11.82 |
| **Difference in SF36 PCS score** | -1.55 ± 8.37 | -3.85 ± 8.71 | -1.34 ± 8.32 |

**Conclusion**

https://github.com/BIOS6623-UCD/bios6623-johnsra3/tree/master/Project1

**Code**