

Lab L05 Full rank, Estimability and Contrasts

BIOS6643

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Example 5: Prospective randomized trial

STEPPED-CARE randomized trial. The dataset we will use the class resembles the trial.

- ▶ A behavioral intervention was tested versus usual care in 286 patients with lung or head and neck cancer.
- ▶ Population: low income patients in the Denver area across 5 hospitals
- ▶ Primary outcomes: anxiety, depression and coping skills scores
- ▶ Outcomes were measured at baseline, and at 6, 12 and 24 weeks

```
# Read in data
```

```
dat.step <- read.csv("/Users/juarezce/Documents/OneDrive - The Un
```

```
head(dat.step, 3)
```

```
##   id time   treat time6 time12 time24 cops
##  1  1    0 control     0      0      0    0
##  2  1    6 control     1      0      0    0
##  3  1   12 control     0      1      0    0
```

```
plot_cop <- dat.step %>%
```

```
  ggplot(aes(x = time, y = cops, group = id)) +
```

```
  geom_line(aes(color = treat), alpha = 0.2) +
```

```
  geom_smooth(aes(group = treat, color = treat), method = "lm") +
```

```
  # facet_wrap(~randomize) +
```

Tests for interaction in the Stepped Care data

1. Write a model that includes intervention arm and time as class variables, plus intervention \times time interaction.
2. Provide estimates of means at 6 months for the control and intervention arms.
3. Provide a test for the mean difference at 6 months between the control and intervention arms.
4. Write a test to compare if trends over time differ between intervention/treatment arms.
5. Write a test to compare changes from beginning to end among the 2 treatment arms.

