

## Handout 16: Interpret the slope and intercept of regression model with interactions

```
round(summary(lm(BoxOffice~I(Runtime-90)*Rating, data=movies))$coef,2)
```

##	Estimate	Std. Error	t value	Pr(> t )
## (Intercept)	73.99	7.69	9.62	0.00
## I(Runtime - 90)	2.51	0.53	4.75	0.00
## RatingPG	-14.64	8.53	-1.72	0.09
## RatingPG-13	-56.26	8.12	-6.93	0.00
## RatingR	-61.48	8.04	-7.65	0.00
## I(Runtime - 90):RatingPG	-1.65	0.57	-2.88	0.00
## I(Runtime - 90):RatingPG-13	-0.20	0.54	-0.37	0.71
## I(Runtime - 90):RatingR	-1.75	0.54	-3.25	0.00

Interpret the slope on Runtime in a single sentence:

The model predicts that, among G-rated movies, a one minute increase in runtime is associated with a \$2.51 million increase in box office returns, on average.

Interpret the slope on RatingR in a single sentence:

The model predicts that 90-minute R-rated movies make \$61.48 million less at the box office than 90-minute G-rated movies, on average.

Interpret the interaction term Runtime:RatingR in a single sentence:

The model predicts that a one minute increase in runtime for R-rated movies is associated with \$1.75 weaker box office returns than the same one minute increase for a G-rated movie.

The model predicts that, among R-rated movies, a one minute increase in runtime is associated with a \$760,000 increase in box office returns, on average.

Name (Print and Sign): \_\_\_\_\_