ANOVA_models

David Chen

4/27/2021

```
# Clear environment
rm(list = ls())

# Load packages
library(readxl)
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --

## v ggplot2 3.3.3     v purrr   0.3.4
## v tibble  3.0.5     v dplyr   1.0.3
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.4.0     v forcats 0.5.0

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(broom)
library(knitr)


# Read in data
AS_raw <- read_excel("Data/AlkaSeltzer_Results.xlsx")


# Global options
```

Data cleaning

```
AS <-
  AS_raw %>%
  mutate(Volume = as.factor(Volume))
```

ANOVA model

```
full_aov <-
  aov(Time ~ Temp + Liquid + Volume + Temp:Liquid + Temp:Volume + Liquid:Volume + Temp:Liquid:Volume,
                data = AS)

step_aov <- step(full_aov, trace = FALSE)
```

```
summary(step_aov)
```

```
##             Df Sum Sq Mean Sq F value   Pr(>F)
## Temp         1  50896   50896  206.81 2.32e-09 ***
## Liquid       1   3093    3093   12.57  0.00359 **
## Residuals   13   3199     246
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
step_aov %>%
  tidy() %>%
  kable(digits = 3)
```

term	df	sumsq	meansq	statistic	p.value
Temp	1	50896.488	50896.488	206.809	0.000
Liquid	1	3092.750	3092.750	12.567	0.004
Residuals	13	3199.353	246.104	NA	NA