assignment-4

Gage Clawson

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```r
# read in the lobster traps dataset
lob_traps <- as.data.frame(read_csv("lobster_traps.csv"))
```

```
## Parsed with column specification:
## cols(
##   YEAR = col_integer(),
##   MONTH = col_integer(),
##   DATE = col_character(),
##   FISHING_SEASON = col_character(),
##   SITE = col_character(),
##   SWATH_START = col_character(),
##   SWATH_END = col_character(),
##   TRAPS = col_integer(),
##   OBSERVER = col_integer(),
##   NOTES = col_character()
## )
```

```r
# Read in the lobster size data set and make it tidy

lob_size <- read_csv("lobster_size_abundance.csv")
```

```
## Parsed with column specification:
## cols(
##   YEAR = col_integer(),
##   MONTH = col_integer(),
##   DATE = col_character(),
##   SITE = col_character(),
##   SBC_LTER_TRANSECT = col_integer(),
##   LOBSTER_TRANSECT = col_character(),
##   SIZE = col_integer(),
##   COUNT = col_integer()
## )
```

```r
lob_size1 <- as.data.frame(lob_size)

lob_size2 <- expand.dft(lob_size1, freq = "COUNT") ##expand.dft filters out all count = 0 rows and makes
```

Yes boss

```r
lob_size3 <- mutate(lob_size2, DATE = as.Date(DATE, format = '%d-%b-%y')) # make date formats same for

three_sites <- c("AQUE", "CARP", "MOHK")

lob_traps1 <- mutate(lob_traps, DATE = as.Date(DATE, format = '%m/%d/%y')) %>%
  filter(SITE %in% three_sites, TRAPS != 0) %>%
    expand.dft(freq = "TRAPS")
```

4. Proportions of "legal" lobsters at the 5 sites in 2017 The legal minimum carapace size for lobster is 82.6 mm. What proportion of observed lobsters at each site are above the legal minimum? Does that proportion differ significantly across the 5 sites? Note: We'll be doing chi-square in labs next week, or go ahead with maximum resourcefulness and check out the chisq.test() function on your own!

```
# filter for 2017
# filter for above 82.6 mm

legal_min1 <- lob_size3 %>%
  filter(YEAR == 2017) %>%
  mutate(above_legal = case_when(
    SIZE >= 82.6 ~ 'yes',
    SIZE < 82.6 ~ 'no'
  )) %>%
  count(SITE, above_legal)

total <- c(sum(legal_min1$n[legal_min1$SITE == "AQUE"]), sum(legal_min1$n[legal_min1$SITE == "AQUE"]), a

totaln <- c(51, 16, 526, 179, 476, 130,154, 24, 75, 37)


proportions <- totaln/total

legal_min1["proportions"] <- proportions

legal_min2 <- legal_min1 %>%
  filter(above_legal == "yes")

total_only_5_columns <- c(sum(legal_min1$n[legal_min1$SITE == "AQUE"]), sum(legal_min1$n[legal_min1$SITE

legal_min2["Total_Lobsters"] <- total_only_5_columns


legal_min_final_table <- legal_min2 %>% mutate(props = round(proportions,2)) %>%
  select(SITE, n, Total_Lobsters, props)

kable(legal_min_final_table, col.names = c(" ", "Above Legal Limit Lobsters", "Total Lobsters", "Propor
  kable_styling(latex_options = c( "hold_position"), position = "center") %>%
  row_spec(0, bold = T) %>%
  column_spec(1, bold = T)
```

	Above Legal Limit Lobsters	Total Lobsters	Proportion Above Legal Limit Lobsters
AQUE	16	67	0.24
CARP	179	705	0.25
IVEE	130	606	0.21
MOHK	24	178	0.13
NAPL	37	112	0.33

Based on the obervations from five Long-Term Ecological Research (LTER) Sites in the Santa Barbara Channel:Arroyo Quemado (n= 67) , Naples Reef (n= 112), Mohawk Reef (n= 178), Isla Vista (n= 606), Carpinteria(n= 705),the proportion of observed lobsters that are above the legal minimum carapace size does not differ significantly by site.($\chi^2(4)$= 0.11095, p= 0.9985)