Shrimp Permits

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July 27, 2018

Tables of Counts

First we will look at some tables to get a sense of the data we are starting with.

Counts by mailing status:

mailing	count
0	2224
1	600
2	338
9	279

Counts by combinations of mailing and reporting status:

mailing	status	count
0	BLANK REPORT	2
0	DID NOT FISH	632
0	HARVEST REPORTED	1590
1	BLANK REPORT	2
1	DID NOT FISH	236
1	HARVEST REPORTED	362
2	DID NOT FISH	141
2	HARVEST REPORTED	197
9	NON RESPONDENT	279

Important Quantities in Formulas

*Important: A "noncompliant" household is interpeted as a household with a mailing status of either 2 or 9, and "compliant households" have a mailing status of 0 or 1. I also assumed each household had only one permit and one mailing status.

Next I joined the harvest data and the permit data by permit number. Shrimp and pot days become the totals (sum) for that permit. I did this so I'd have a dataframe with permit number, pot_days, shrimp gallons, mailing status and harvest status all together. The dataframe looks like this:

```
## # A tibble: 3,441 x 6
##    permit pot_days shrimp mailing status           reported_fishing
##     <int>    <dbl>  <dbl>   <int> <fct>                       <dbl>
##  1   1001    0.667    0.1       0 HARVEST REPORTED                1
##  2   1051   NA       NA         1 BLANK REPORT                   NA
##  3   1052   14.7     10.5       1 HARVEST REPORTED                1
##  4   1053   NA        3         1 HARVEST REPORTED                1
##  5   1054    1.33     0.1       0 HARVEST REPORTED                1
##  6   1055    2        1.5       0 HARVEST REPORTED                1
##  7   1101   NA        0         1 HARVEST REPORTED                1
```

```
##  8   1102   NA       NA         1 DID NOT FISH                   NA
##  9   1103   NA       NA         9 NON RESPONDENT                 NA
## 10   1104    5.25     5         1 HARVEST REPORTED                1
## # ... with 3,431 more rows
```

This results in a dataframe with one row per permit in the permit records data sheet. There were 3441 permits in the permit excel sheet, and 2148 in the harvest sheet.

More quantities used in the final formulas:

Estimate	Description	Value_gal	Value_days
Hcf	Total for households with mailing = 0, 1, or 2	20829	39777
hdf	Mean for mailing = 2 AND status = 'HARVEST REPORTED'	8	13
VAR	Variance for mailing = 2 AND status = 'HARVEST REPORTED'	196	477
Hdf	Ndf x hdf	2790	4532

Final Estimates

Estimated.Totals	Standard.Errors
23619.38	256.34
44309.25	386.63