

Salmon Permits for 2018

All data is taken from the permit_records and harvest_records sheets in the original excel document. First we'll check counts:

```
## [1] "Date"
```

mailing	count
0	15218
1	1660
2	1658
9	5198
total	23734

```
## [1] 24707.19
```

So we have 6171 estimated non-respondents with mailing = 9. Note: There are 9 permits that have mailing status = 9 and have harvest reported.

Next, to get w_{hat} , I found the proportion of those with mailing = 1 or 2 that reported fishing. I did this overall, not by fishery.

w_{hat}
0.6845597

For all of those that had mailing = 2 and reported their harvest, I found the average number of salmon taken at each fishery.

```
## # A tibble: 6 x 6
##   species `FISH CREEK` `KASILOF DIPNET` `KASILOF GILLNET` KENAI UNKNOWN
##   <chr>      <dbl>      <dbl>      <dbl>      <dbl>      <dbl>
## 1 chum      0.0131      0.0158      0      0.0199      0.
## 2 coho      0.0746      0.0249      0      0.0222      4.52e-4
## 3 flounder  0.000904    0.0339      0.00769 0.0922      1.81e-3
## 4 king      0.000452    0      0.00362 0.000452    4.52e-4
## 5 pink      0.0448      0.161      0.00136 0.460      1.99e-2
## 6 red       0.833      4.72      0.550    7.18      1.74e-1
```

Then I multiplied that dataframe by the estimated number of nonrespondents that fished ($w_{\text{hat}} \times 7663$) resulting in:

```
##           FISH CREEK KASILOF DIPNET KASILOF GILLNET KENAI
## chum      55.385130      66.84412      0.000000      84.032611
## coho     315.122290     105.04076      0.000000     93.581771
## flounder   3.819664     143.23740     32.467145    389.605740
## king       1.909832       0.00000     15.278656     1.909832
## pink     189.073374     679.90021      5.729496    1942.299205
## red    3519.820486    19938.64670    2324.265616   30312.854449
##           UNKNOWN
## chum      0.000000
## coho      1.909832
## flounder   7.639328
## king       1.909832
```

```
## pink      84.032611
## red       733.375511
```

Then we add the above dataframe to the known totals below to get total estimated harvest:

```
##          FISH CREEK KASILOF DIPNET KASILOF GILLNET  KENAI UNKNOWN
## chum          185          335          5    428        6
## coho          1844          744          2    533       22
## flounder        6          771         112   2188       27
## king           3           6          114     5        8
## pink           800          3192         16  10004       22
## red          18422          93844        14206 166912     2804
```

Just about a match. Need to account for vendor issue, and count blank reports as non-respondents.

```
##          FISH CREEK KASILOF DIPNET KASILOF GILLNET  KENAI UNKNOWN
## chum      18.224223      16.36918      0.000000  18.560117  0.000000
## coho      48.820926      21.00228      0.000000  17.126797  1.205019
## flounder   1.703769      17.48536      8.763834  39.263489  4.820075
## king       1.205019       0.00000      4.170216   1.205019  1.205019
## pink       37.004020      74.83220      3.615057 115.453749 18.793464
## red       254.290383     609.90824     199.699036 617.289883 99.254522
```

And the reported totals were:

```
## # A tibble: 5 x 7
##   fishery      red king coho pink chum flounder
##   <chr>      <int> <int> <int> <int> <int>   <int>
## 1 FISH CREEK    14902     1  1529   611   130     2
## 2 KASILOF DIPNET  73905     6   639  2512   268    628
## 3 KASILOF GILLNET 11882    99     2    10     5     80
## 4 KENAI       136599     3   439  8062   344   1798
## 5 UNKNOWN       2071     6    20   138     6    19
```