FishR 101 – Functions

Homework

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Contents

Questions:

First, load your libraries!

```r
library(tidyverse)
library(here)
```

NOTE: For this homework, also refer to the PDF version. There are helpful graphics included in the PDF version!

1 If-else statements

1.1 Performance: was this a good trawl?

If the weather is `excellent` or `good`, the peformance of the trawl is `0` if the weather is `fair`, the peformance of the trawl is `1` if the weather is `poor`, the peformance of the trawl is `-1`

Write the following as an:

- if() / if()}else{} / if()}else if(){} statement (whichever you see fit),
- in an ifelse() function,
- using dplyr::if_else(), and
- using dplyr::case_when()

Test your scripts with for the first two bullets (if-else statement, ifelse())

```r
weather <- "good"
```

Test your scripts with for the second - fourth bullet (ifelse(), if_else(), case_when())

```r
dat<-data.frame(weather = c("excellent", "good", "fair", "poor"))
```

Which do you think is the most sensible approach?

2 For loops

2.1 Improve the following code by putting it into a for loop!

Let's use a for loop to estimate the average the result of a roll of a die.

```r
nsides = 6
ntrials = 1000
```

A non-loop version of this for the first variable would be:

```r
trials <- c()
j <- 1
trials <- c(trials, sample(1:nsides,1))
trials
```

```
## [1] 2
```

```
# once you write your loop, you can use the
# following to calcuale the average the result of a roll of a die.
mean(trials)
```

```
## [1] 2
```

```
# NOTE: because we are taking a random sample (sample()) you will not get
# the same answer that I get in the solutions. Here it is important to be
# in the ballpark!
```

3   Extra Credit

Recall this example from the coursework:

```
EBS_haul_table<-read_csv(here::here("data", "ebs_2017-2018.csv"))

# use EBS data to create object "EBS_summary"
EBS_summary<-EBS_haul_table %>%

  # Group by YEAR, STRATUM, COMMON for next command
  dplyr::group_by(YEAR, STRATUM, COMMON) %>%

  # sum WTCPUE across grouped items above
  dplyr::summarise(WTCPUE_sum = sum(WTCPUE, na.rm = TRUE))

unique_yr_strat<-EBS_summary %>%
  dplyr::select("YEAR", "STRATUM") %>%
  distinct()

unique_yr_strat
```

YEAR	STRATUM
2016	10
2016	20
2016	31
2016	32
2016	41
2016	42
2016	43
2016	50
2016	61
2016	62
2016	82
2016	90
2017	10
2017	20
2017	31
2017	32
2017	41
2017	42

YEAR	STRATUM
2017	43
2017	50
2017	61
2017	62
2017	82
2017	90
2018	10
2018	20
2018	31
2018	32
2018	41
2018	42
2018	43
2018	50
2018	61
2018	62
2018	82
2018	90

```
max_5_spp<-NULL
```

Change the the below for loop from the lecture into 4 tidyverse lines with no loop:

YEAR	STRATUM	COMMON	WTCPUE_sum
2016	10	yellowfin sole	8270.9971
2016	10	northern rock sole	5695.8930
2016	10	walleye pollock	3678.9825
2016	10	purple-orange sea star	2135.0254
2016	10	Pacific cod	1069.9581
2016	20	walleye pollock	3272.1949
2016	20	yellowfin sole	2995.1288
2016	20	northern rock sole	1573.0290
2016	20	purple-orange sea star	1111.7657
2016	20	Alaska skate	651.6529
2016	31	yellowfin sole	6987.7037
2016	31	walleye pollock	6387.6332
2016	31	northern rock sole	1529.0222
2016	31	purple-orange sea star	1473.7410
2016	31	Pacific cod	1147.2867
2016	32	flathead sole	231.2736
2016	32	northern rock sole	182.0238
2016	32	walleye pollock	181.3461
2016	32	yellowfin sole	173.4454
2016	32	Pacific cod	156.0103
2016	41	walleye pollock	5809.5501
2016	41	Pacific cod	1940.2173
2016	41	yellowfin sole	1897.3594
2016	41	Alaska plaice	1071.7470
2016	41	purple-orange sea star	817.8331
2016	42	walleye pollock	3109.4800
2016	42	northern rock sole	1779.6211

YEAR	STRATUM	COMMON	WTCPUE_sum
2016	42	yellowfin sole	1272.2309
2016	42	purple-orange sea star	1193.6491
2016	42	sea peach	757.0435
2016	43	walleye pollock	4352.7780
2016	43	Pacific cod	864.4983
2016	43	northern rock sole	286.6371
2016	43	Alaska plaice	247.9447
2016	43	NA	213.2581
2016	50	arrowtooth flounder	442.4001
2016	50	walleye pollock	339.2595
2016	50	flathead sole	336.7788
2016	50	Alaska skate	271.0670
2016	50	Pacific cod	129.2112
2016	61	walleye pollock	8741.4509
2016	61	arrowtooth flounder	1245.6685
2016	61	basketstar	1103.8551
2016	61	flathead sole	839.7586
2016	61	Pacific cod	777.4285
2016	62	walleye pollock	603.7604
2016	62	flathead sole	150.5208
2016	62	arrowtooth flounder	145.6479
2016	62	common mud star	134.3207
2016	62	Pacific cod	125.4868
2016	82	walleye pollock	951.8860
2016	82	snow crab	366.4069
2016	82	Pacific cod	167.6545
2016	82	NA	89.6805
2016	82	Bering flounder	83.3220
2016	90	walleye pollock	478.7841
2016	90	Pacific cod	112.7834
2016	90	Bering flounder	85.2443
2016	90	Alaska skate	79.2127
2016	90	common mud star	65.3541
2017	10	yellowfin sole	9229.6818
2017	10	northern rock sole	5397.6992
2017	10	purple-orange sea star	3204.6859
2017	10	walleye pollock	2384.5302
2017	10	starry flounder	1322.6848
2017	20	yellowfin sole	2810.4195
2017	20	purple-orange sea star	1048.9157
2017	20	northern rock sole	998.8225
2017	20	walleye pollock	894.0786
2017	20	Alaska skate	691.3451
2017	31	walleye pollock	12228.5393
2017	31	yellowfin sole	5761.7659
2017	31	purple-orange sea star	1972.5712
2017	31	northern rock sole	1516.7724
2017	31	flathead sole	1121.9101
2017	32	flathead sole	452.7839
2017	32	walleye pollock	363.1307
2017	32	yellowfin sole	217.8945
2017	32	northern rock sole	194.9375

YEAR	STRATUM	COMMON	WTCPUE_sum
2017	32	Pacific cod	153.0010
2017	41	walleye pollock	3502.5952
2017	41	yellowfin sole	1804.9932
2017	41	snow crab	1359.6618
2017	41	Alaska plaice	1045.5758
2017	41	Pacific cod	609.6824
2017	42	walleye pollock	4975.6179
2017	42	northern rock sole	1639.2966
2017	42	purple-orange sea star	1258.1344
2017	42	yellowfin sole	1082.8765
2017	42	glassy tunicate	942.0433
2017	43	walleye pollock	3358.4324
2017	43	Pacific cod	865.9265
2017	43	northern rock sole	566.5274
2017	43	snow crab	535.8394
2017	43	Alaska plaice	327.4816
2017	50	walleye pollock	1706.6768
2017	50	arrowtooth flounder	661.3773
2017	50	flathead sole	386.0675
2017	50	Alaska skate	307.5858
2017	50	Pacific cod	156.5071
2017	61	walleye pollock	6854.8480
2017	61	basketstar	1170.2248
2017	61	flathead sole	1049.7476
2017	61	arrowtooth flounder	896.0431
2017	61	common mud star	817.4283
2017	62	walleye pollock	725.8025
2017	62	arrowtooth flounder	181.9614
2017	62	common mud star	178.2986
2017	62	Alaska skate	128.8095
2017	62	Pribilof whelk	102.5972
2017	82	snow crab	440.0623
2017	82	walleye pollock	248.2958
2017	82	NA	72.9610
2017	82	Alaska skate	66.6014
2017	82	Pacific cod	62.7416
2017	90	walleye pollock	613.5835
2017	90	snow crab	291.7639
2017	90	Pacific cod	251.0765
2017	90	common mud star	195.1128
2017	90	Alaska skate	131.5369
2018	10	yellowfin sole	4887.8867
2018	10	northern rock sole	3996.8892
2018	10	walleye pollock	3464.0548
2018	10	purple-orange sea star	2318.9443
2018	10	Alaska skate	799.8614
2018	20	yellowfin sole	2250.0418
2018	20	walleye pollock	1120.6034
2018	20	purple-orange sea star	1101.9747
2018	20	northern rock sole	872.6716
2018	20	Alaska skate	565.6394
2018	31	yellowfin sole	4079.7365

YEAR	STRATUM	COMMON	WTCPUE_sum
2018	31	walleye pollock	3512.1291
2018	31	northern rock sole	1092.7833
2018	31	purple-orange sea star	1033.1521
2018	31	arrowtooth flounder	1023.0051
2018	32	flathead sole	255.6195
2018	32	northern rock sole	240.9001
2018	32	yellowfin sole	239.9867
2018	32	arrowtooth flounder	168.9297
2018	32	walleye pollock	168.6543
2018	41	snow crab	3302.1020
2018	41	yellowfin sole	1612.7470
2018	41	walleye pollock	1498.9257
2018	41	Alaska plaice	871.7775
2018	41	Pacific cod	615.4627
2018	42	walleye pollock	2706.9173
2018	42	northern rock sole	1880.8638
2018	42	purple-orange sea star	1452.2931
2018	42	yellowfin sole	1376.2528
2018	42	empty gastropod shells	767.4238
2018	43	walleye pollock	960.5777
2018	43	Pacific cod	632.5127
2018	43	snow crab	620.2743
2018	43	northern rock sole	359.3195
2018	43	Alaska plaice	330.6140
2018	50	arrowtooth flounder	688.0136
2018	50	walleye pollock	664.2226
2018	50	flathead sole	412.2614
2018	50	Alaska skate	357.2267
2018	50	northern rockfish	326.3775
2018	61	walleye pollock	8597.0790
2018	61	basketstar	1165.7772
2018	61	flathead sole	1115.0556
2018	61	common mud star	807.0280
2018	61	arrowtooth flounder	701.8395
2018	62	walleye pollock	274.6222
2018	62	snow crab	156.4226
2018	62	Pacific cod	90.1866
2018	62	arrowtooth flounder	84.4837
2018	62	Pribilof whelk	82.5917
2018	82	snow crab	775.0186
2018	82	walleye pollock	220.0917
2018	82	Pacific cod	86.3806
2018	82	Alaska skate	65.5742
2018	82	NA	59.1838
2018	90	walleye pollock	444.3695
2018	90	snow crab	232.5616
2018	90	common mud star	133.5310
2018	90	arrowtooth flounder	102.7346
2018	90	Pacific cod	80.6713