Create Tables from the Fisheries Economics of the US (FEUS) Report

Emily Markowitz (Emily.Markowitz AT NOAA.gov / EmilyMarkowitz-NOAA)

2020-12-30

Productivity Output Analysis

Purpose: Construct the FEUS Commerical Fisheries state and national tables and output them to csv files

```
PKG <- c(# devtools::install_github("emilymarkowitz-NOAA/FishEconProdOutput", force = TRUE)
         "FishEconProdOutput",

         #Seperating species by taxonomic group
         "taxize",  # install.packages("remotes"); remotes::install_github("ropensci/taxize")

         # Data Managment
         "tidyverse",
         "filesstrings",
         "data.table",
         "plyr",
         "rlist",

         # #RMarkdown
         "rmarkdown",
         "ggpubr",
         "kableExtra",

         #Excel File Management
         "xlsx",
         "readxl"
)

for (p in PKG) {
  if(!require(p,character.only = TRUE)) {
    install.packages(p)
    require(p,character.only = TRUE)}
}
```

1. Set your Directories where you will save everything.

```
#######DIRECTORIES############
dir.in<-getwd()
#Local Directories
dir.output<-paste0(dir.in, "/output/")
dir.create(dir.output)
dir.data<-paste0(dir.in, "/data/")
dir.out<-paste0(dir.output, Sys.Date(), "/")
dir.create(dir.out)
dir.parent<-dirname(dir.in)

dir_outputtables<-paste0(dir.out, "outputtables/")
dir.create(dir_outputtables)

date00<-paste0(Sys.Date())
```

2. Load example data

```
###IMPORT DATA#####
counter<-0
landings_data<-FishEconProdOutput::land
kable(head(landings_data))
```

	Year	Pounds	Dollars	category	TsnState	Region	abbvreg
5	2001	613	750	Shellfish	83677Oregon	Pacific	Pac
6	2003	172	119	Shellfish	83677Oregon	Pacific	Pac
7	2006	131	131	Shellfish	83677North Carolina	South Atlantic	SA
14	2005	15	30	Shellfish	83677Maryland	Mid-Atlantic	MA
15	2004	3	2	Shellfish	83677New Jersey	Mid-Atlantic	MA
16	2006	37	28	Shellfish	83677New Jersey	Mid-Atlantic	MA

3. Set up folders and knowns

```
# Define what regions we are interested in
reg_order = c("National", "North Pacific", "Pacific", "Western Pacific (Hawai`i)",
              "New England",
              "Mid-Atlantic", "South Atlantic", "Gulf of Mexico")

reg_order_abbrv = c("US", "NP", "Pac", "WP", "NE", "MA", "SA", "GOM")

# Create Lists (in FEUS this makes more sense)
ProdOutputPI_Raw<-list()
ProdOutputPI_Print<-list()
ProdOutputQ_Raw<-list()
ProdOutputQ_Print<-list()
ProdOutputUS_Raw<-list()
ProdOutputUS_Print<-list()

# Define Category
category0 = "category"

# Define Years
maxyr<-max(landings_data$Year)
yr <- minyr <- minyr.data<-as.numeric(paste0(floor((maxyr-24)/10),
                              ifelse(substr(maxyr, start = nchar((maxyr-24)),
                                            stop = nchar((maxyr-24)))>=5, 6, 1))) #of data going into the a
  nalysis
minyr.ProdOut<-maxyr-19 # That will be shown in the analysis
baseyr<-as.numeric(paste0(floor(maxyr/10),
                          ifelse(substr(maxyr, start = nchar(maxyr),
                                        stop = nchar(maxyr))>=5, 5, 0))) #Will change every 5 years, e.g.,
   maxyr 2019 = byr 2015; maxyr 2020 = byr 2020; maxyr 2021 = byr 2020

# Folder name for output
folder<-"T567_ProdOutput"
titleadd = paste0(minyr.ProdOut, "To", maxyr, "_FSFEUS")
counter<-0

# Define Directories
dir_analyses = paste0(dir_outputtables, folder)
dir.create(dir_analyses)
```

4. Run Analysis

```
OutputAnalysis(landings_data = landings_data,
               category0 = category0,
               baseyr = baseyr,
               titleadd = titleadd,
               dir_analyses = dir_analyses,
               skipplots = T,
               reg_order = reg_order,
               reg_order_abbrv = reg_order_abbrv)
#> [1] "National"
#> [1] "North Pacific"
#> [1] "Pacific"
#> [1] "Western Pacific (Hawai`i)"
#> [1] "New England"
#> [1] "Mid-Atlantic"
#> [1] "South Atlantic"
#> [1] "Gulf of Mexico"
#> [1] "Create spreadsheets"
#> [1] "Create plots"
```

5. Create FEUS Tables

```
place <- st <- "United States"
divideby = 1e6
print(paste0("---", place))
#> [1] "---United States"
area = "us"
reg <- place
xreg<-0
xstate<-0
folder<-"T567_ProdOutput"
Date0 = Sys.Date()
folderpattern = "FSFEUS"

aa<-list.files(path = paste0(dir_analyses),
               pattern = paste0(minyr.ProdOut, "To", maxyr, "_FSFEUS"),
               full.names = TRUE)
```

5.1: Table 5. Regional Törnqvist Price Index, 1996-2018 (`baseyr` = 1)

```
bb<-list.files(path = paste0(aa, "/outputtables/"), full.names = TRUE, pattern = "000_All")
bb<-bb[grep(pattern = gsub(pattern = "\\.", replacement = "", x = category0), x = bb)]

######******Table 5: Regional Price Index###############
webtool.T<-"commProdOutputPI"

a<-data.frame(Year = minyr.ProdOut:maxyr)
for (i in 1:length(reg_order)){
  temp<-read.xlsx(bb[grep(pattern = "_AllData", x = bb)], reg_order[i])
  temp<-temp[temp$Year %in% c(minyr.ProdOut:maxyr) &
               temp$cat %in% "Total", ]
  a0<-data.frame(temp[,names(temp) %in% "PI_CB"])
  names(a0)<-reg_order[i]
  a<-cbind.data.frame(a, a0)
}

a$Footnotes<-NA
temp.code<-a

a[,reg_order]<-round(x = a[,reg_order], digits = 2)

temp_Print <- a

ProdOutputPI_Raw<-temp.code

ProdOutputPI_Print<-temp_Print

save(ProdOutputPI_Raw,
     file = paste0(dir_outputtables, #folder,
                   '/ProdOutputPI_Raw.rdata'))

save(ProdOutputPI_Print,
     file = paste0(dir_outputtables, #folder,
                   '/ProdOutputPI_Print.rdata'))

ProdOutputPI_Print$Footnotes<-NULL
kable(ProdOutputPI_Print)
```

Year	National	North Pacific	Pacific	Western Pacific (Hawai`i)	New England	Mid-Atlantic	South Atlantic	Gulf of Mexico
1999	0.61	0.60	0.47	0.78	0.61	0.52	0.59	0.80
2000	0.64	0.64	0.49	0.85	0.61	0.54	0.66	0.93
2001	0.59	0.58	0.45	0.84	0.56	0.49	0.64	0.84
2002	0.55	0.53	0.43	0.75	0.56	0.50	0.58	0.70
2003	0.58	0.59	0.46	0.81	0.59	0.51	0.57	0.65
2004	0.63	0.70	0.50	0.82	0.62	0.52	0.59	0.66
2005	0.71	0.74	0.53	0.88	0.75	0.67	0.63	0.73
2006	0.78	0.83	0.56	0.90	0.92	0.66	0.64	0.65
2007	0.80	0.91	0.65	0.89	0.77	0.65	0.73	0.77
2008	0.92	1.14	0.72	0.95	0.73	0.69	0.73	0.86
2009	0.77	0.89	0.66	0.93	0.65	0.68	0.71	0.68
2010	0.91	1.10	0.72	1.01	0.74	0.73	0.74	0.87
2011	1.04	1.28	0.89	1.08	0.82	0.78	0.79	0.96
2012	1.05	1.27	0.93	1.23	0.82	0.83	0.86	0.89
2013	1.09	1.25	0.89	1.12	0.87	0.93	0.99	1.17
2014	1.07	1.13	0.96	1.02	0.95	0.99	1.02	1.29

Year	National	North Pacific	Pacific	Western Pacific (Hawai`i)	New England	Mid-Atlantic	South Atlantic	Gulf of Mexico
2015	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2016	1.06	1.11	1.02	1.11	0.99	0.98	0.96	1.07
2017	1.03	1.07	1.06	1.05	0.93	0.96	1.02	1.00
2018	1.14	1.30	1.05	1.13	0.92	0.95	1.06	1.07

5.2: Table 6. Regional Real Landing Törnqvist Values, 1996-2018 (2015 $ Million)

```
######******Table 6###############

a<-data.frame(Year = minyr.ProdOut:maxyr)
for (i in 1:length(reg_order)){
  temp<-read.xlsx(bb[grep(pattern = "_AllData", x = bb)], reg_order[i])
  temp<-temp[temp$Year %in% c(minyr.ProdOut:maxyr) &
               temp$cat %in% "Total", ]
  a0<-data.frame(temp[,names(temp) %in% "Q_CB"])
  names(a0)<-reg_order[i]
  a<-cbind.data.frame(a, a0)
}



a$Footnotes<-NA
temp.code<-a

a[,reg_order]<-round(x = a[,reg_order]/1e6, digits = 2)
for (i in 1:length(reg_order)){
  a[,i]<-prettyNum(x = a[,i], big.mark = ",")
}
temp_Print <- a

ProdOutputQ_Raw<-temp.code

ProdOutputQ_Print<-temp_Print

save(ProdOutputQ_Raw,
     file = paste0(dir_outputtables, #folder,
                   '/ProdOutputQ_Raw.rdata'))

save(ProdOutputQ_Print,
     file = paste0(dir_outputtables, #folder,
                   '/ProdOutputQ_Print.rdata'))

ProdOutputQ_Print$Footnotes<-NULL
kable(ProdOutputQ_Print)
```

Year	National	North Pacific	Pacific	Western Pacific (Hawai`i)	New England	Mid-Atlantic	South Atlantic	Gulf of Mexico
1,999	7,925.76	3,237.45	995.01	163.73	1,372.7	874.29	330.26	975.53
2,000	7,652.09	2,782.8	1,031.59	160.49	1,451.42	823.74	311.89	1042.56
2,001	7,436.78	2,773.35	1,000.3	128.59	1,494.97	894.42	266.45	916.56
2,002	7,582.75	2,803.48	1,022.21	138.47	1,576.58	846.15	296.7	900.79
2,003	7,860.5	3,037.26	1,157.31	128.95	1,489.53	867.18	273.39	943.28
2,004	8,008.36	3,211.12	963.51	140.02	1,631.46	952.32	275.55	851.74
2,005	7,609.02	3,247.18	854.37	160.41	1,548.18	832.37	217.24	730.11

Year	National	North Pacific	Pacific	Western Pacific (Hawai`i)	New England	Mid-Atlantic	South Atlantic	Gulf of Mexico
2006	7,539.53	3,098.07	888.89	147.48	1,581.67	722.94	221.57	907.76
2007	7,173.29	3,095.49	757.34	170.47	1,377.65	765.25	209.9	800.26
2008	6,712.85	2,849.74	698.05	177.98	1,334.42	741.02	215.43	700.56
2009	6,885.84	2,702.71	821.72	152.68	1,437.56	771.17	207.59	859.91
2010	6,879.21	2,771.42	863.92	166.43	1,515.16	825.15	209.8	616.16
2011	7,310.12	2,912.82	899.47	168.79	1,569.24	855.61	192.34	781.50
2012	7,153.09	2,831.29	829.95	182.03	1,718.81	765.22	178.49	801.28
2013	7,067.73	2,998.89	1,013.3	192.13	1,523.36	586.21	155.58	728.14
2014	6,930.19	2,944.72	872.83	198.09	1,446.35	583.52	175.17	737.21
2015	6,968.71	3,206.74	629.88	206.74	1,400.7	597.16	189.02	738.47
2016	6,935.66	2,898.55	741.12	211.8	1,483.34	646.39	187.4	837.22
2017	7,188.51	3,146.48	743.87	221.27	1,533.05	613.03	180.98	808.79
2018	6,667.61	2,686.15	722.23	210.33	1,631.74	588.01	146.43	805.92

5.3: Table 7. National Nominal Landing Values ($ Million), Törnqvist Price Index, (2015 = 1), and Real Landing Törnqvist Values (2015 $ Million), 1996-2018

```
######******Table 7###############

a<-data.frame(Year = minyr.ProdOut:maxyr)
temp<-read.xlsx(bb[grep(pattern = "_AllData", x = bb)],
                reg_order[1])
temp<-temp[temp$Year %in% c(minyr.ProdOut:maxyr), ]
a<-data.frame(temp[,names(temp) %in% c("Year", "cat", "PI_CB", "Q_CB", "v")])

a<-dplyr::rename(a,
                 PI = paste0("PI_CB"),
                 Q = paste0("Q_CB"),
                 V = "v")

# temp.code
a.pi<-spread(a[!(names(a) %in% c("V", "Q"))], cat, PI)
names(a.pi)[-1]<-paste0(names(a.pi)[-1], "_PI")
a.q<-spread(a[!(names(a) %in% c("PI", "V"))], cat, Q)
names(a.q)[-1]<-paste0(names(a.q)[-1], "_Q")
a.v<-spread(a[!(names(a) %in% c("PI", "Q"))], cat, V)
names(a.v)[-1]<-paste0(names(a.v)[-1], "_V")

b<-left_join(a.pi, a.q, by = c("Year"))
b<-left_join(b, a.v, by = c("Year"))



b<-b[,match(x = c("Year",
                  names(b)[grep(pattern = "_V", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "_PI", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "_Q", x = names(b), ignore.case = T)]),
            names(b))]

b<-b[,match(x = c("Year",
                  names(b)[grep(pattern = "fin", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "Shell", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "Total", x = names(b))]),
            names(b))]

temp.code<-b
temp.code$Footnotes<-NA



# temp_Print
b<-a
b$PI<-round(x = b$PI, digits = 2)
b$Q<-prettyNum(x = round(x = b$Q/1e6), digits = 2, big.mark = ",")
b$V<-prettyNum(x = round(x = b$V/1e6), digits = 2, big.mark = ",")



b.pi<-spread(b[!(names(b) %in% c("V", "Q"))], cat, PI)
names(b.pi)[-1]<-paste0(names(b.pi)[-1], "_PI")
b.q<-spread(b[!(names(b) %in% c("PI", "V"))], cat, Q)
names(b.q)[-1]<-paste0(names(b.q)[-1], "_Q")
b.v<-spread(b[!(names(b) %in% c("PI", "Q"))], cat, V)
names(b.v)[-1]<-paste0(names(b.v)[-1], "_V")

b<-left_join(b.pi, b.q, by = c("Year"))
```

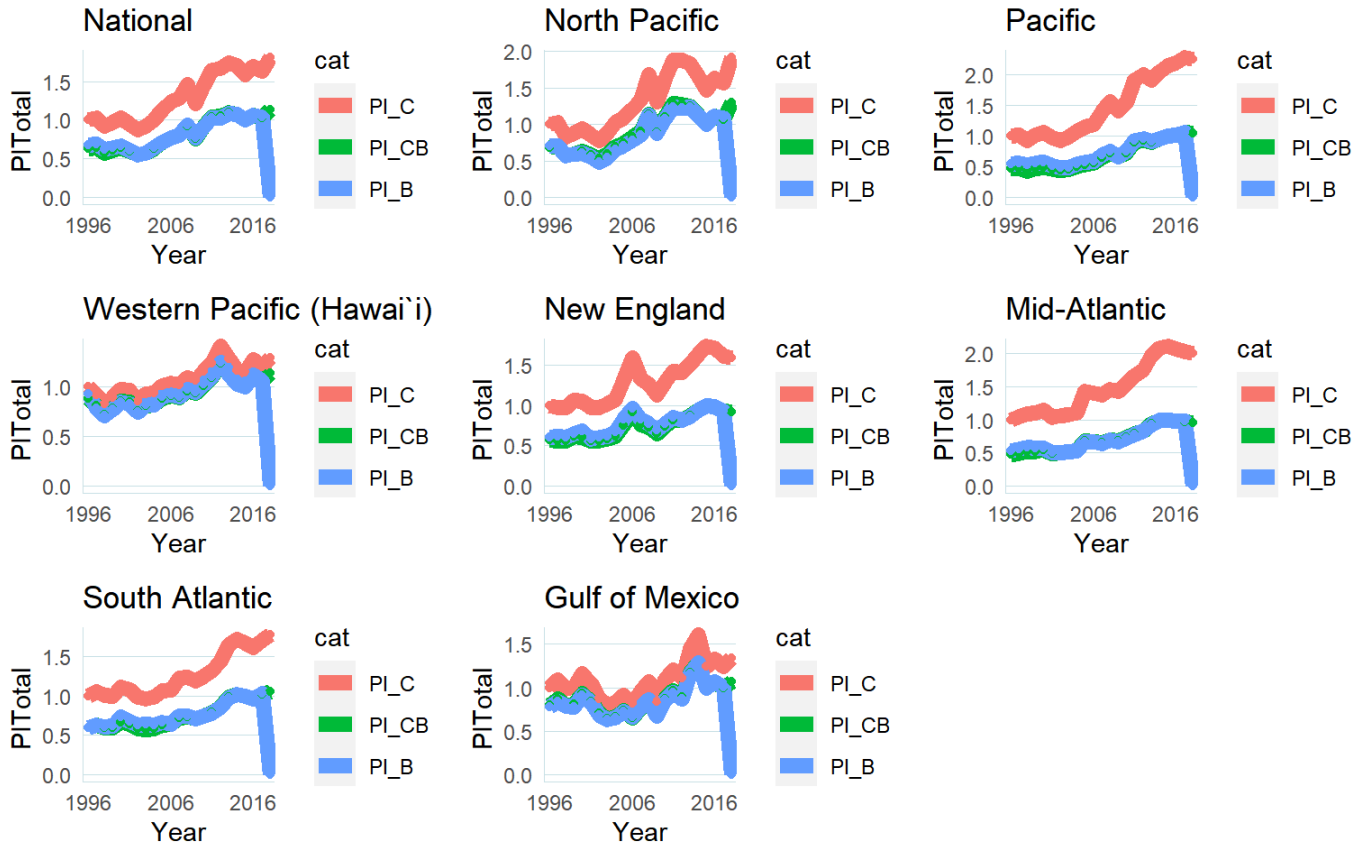
```
b<-left_join(b, b.v, by = c("Year"))

b<-b[,match(x = c("Year",
                  names(b)[grep(pattern = "_V", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "_PI", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "_Q", x = names(b), ignore.case = T)]),
            names(b))]

b<-b[,match(x = c("Year",
                  names(b)[grep(pattern = "fin", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "Shell", x = names(b), ignore.case = T)],
                  names(b)[grep(pattern = "Total", x = names(b))]),
            names(b))]

temp_Print<-b
temp_Print$Footnotes<-NA

ProdOutputUS_Raw<-temp.code

ProdOutputUS_Print<-temp_Print

save(ProdOutputUS_Raw,
     file = paste0(dir_outputtables, '/ProdOutputUS_Raw.rdata'))

save(ProdOutputUS_Print,
     file = paste0(dir_outputtables, '/ProdOutputUS_Print.rdata'))

ProdOutputUS_Print$Footnotes<-NULL
kable(ProdOutputUS_Print)
```

Year	Finfish_V	Finfish_PI	Finfish_Q	Shellfish_V	Shellfish_PI	Shellfish_Q	Total_V	Total_PI	Total_Q
1999	1,478	0.612	429	3,334	0.615	486	4,812	0.617	926
2000	1,502	0.642	349	3,420	0.655	293	4,922	0.647	652
2001	1,378	0.592	346	3,020	0.595	081	4,398	0.597	437
2002	1,247	0.542	324	2,894	0.555	247	4,141	0.557	583
2003	1,399	0.582	421	3,128	0.585	427	4,527	0.587	861
2004	1,631	0.662	466	3,436	0.625	531	5,067	0.638	008
2005	1,739	0.732	381	3,675	0.705	214	5,414	0.717	609
2006	1,958	0.892	209	3,898	0.735	336	5,855	0.787	540
2007	1,917	0.872	194	3,854	0.784	969	5,771	0.807	173
2008	2,109	1.052	013	4,063	0.874	696	6,172	0.926	713
2009	1,699	0.861	982	3,574	0.734	917	5,273	0.776	886
2010	2,058	1.032	007	4,199	0.864	880	6,257	0.916	879
2011	2,497	1.172	135	5,079	0.985	183	7,576	1.047	310
2012	2,456	1.202	040	5,052	0.985	131	7,508	1.057	153
2013	2,524	1.212	078	5,212	1.044	995	7,735	1.097	068
2014	2,283	1.102	080	5,153	1.064	852	7,436	1.076	930
2015	2,177	1.002	177	4,792	1.004	792	6,969	1.006	969
2016	2,262	1.102	062	5,119	1.054	876	7,382	1.066	936
2017	2,334	1.052	220	5,047	1.024	968	7,381	1.037	189
2018	2,390	1.231	944	5,181	1.094	732	7,570	1.146	668

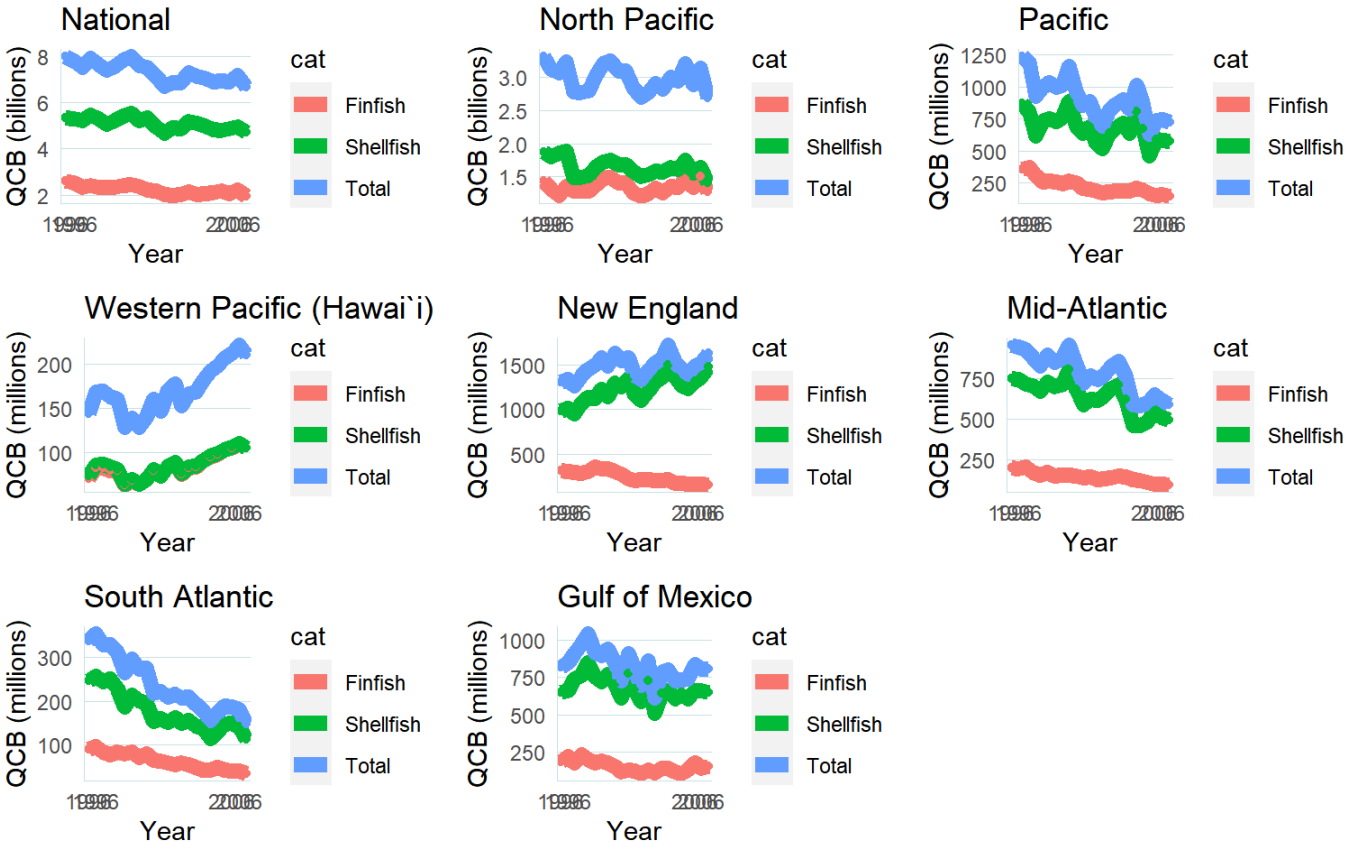
6. Figures

Here are a few figures that come out of this analysis!

```
aa<-list.files(path = paste0(dir_analyses),
               pattern = paste0(minyr.ProdOut, "To", maxyr, "_FSFEUS"),
               full.names = TRUE)

bb<-list.files(path = paste0(aa, "/figures/"), full.names = TRUE, pattern = "AllFiguresGrid")

load(bb)

gridfigures.list$`000_All_byr2015_categoryPI_Total`
```




```
gridfigures.list$`000_All_byr2015_categoryQ_CB_Q`
```


National
QCB (billions)
8
6
4
2
Year
cat
Finfish
Shellfish
Total
North Pacific
QCB (billions)
3.0
2.5
2.0
1.5
Year
cat
Finfish
Shellfish
Total
Pacific
QCB (millions)
1250
1000
750
500
250
Year
cat
Finfish
Shellfish
Total
Western Pacific (Hawai`i)
QCB (millions)
200
150
100
Year
cat
Finfish
Shellfish
Total
New England
QCB (millions)
1500
1000
500
Year
cat
Finfish
Shellfish
Total
Mid-Atlantic
QCB (millions)
750
500
250
Year
cat
Finfish
Shellfish
Total
South Atlantic
QCB (millions)
300
200
100
Year
cat
Finfish
Shellfish
Total
Gulf of Mexico
QCB (millions)
1000
750
500
250
Year
cat
Finfish
Shellfish
Total