

This analysis uses nationally collected landings data for the for theNew Englandregion, downloaded from the NOAA FOSS site <https://foss.nmfs.noaa.gov/apexfoss/f?p=215:200:.....>.

```
## [[1]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[2]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[3]]
## [1] "When back calculated, Q_{i,t} did not equal V_{i,t}/PI_{i,t}"
##
## [[4]]
## [1] "When back calculated, Q_t did not equal V_t/PI_t"
##
## [[5]]
## [1] "When back calculated, ln(Q_t/Q_{t-1}) = did not equal sum( ( frac{R_{i, t} - R_{i, t-1}}{2}) *
##
## [[6]]
## [1] "Out of 54 columns, 76 of species V columns are completely empty, 74 of species Q columns are com
```

Species in Each category by Common Name

```
## $Finfish
## [1] "LAMPREY, SEA " "HAGFISH FAMILY **" "HAGFISHES "
## [5] "SHARK, SAND TIGER " "SHARK, WHITE " "SHARK, PORBEAGLE "
## [9] "SHARK, BIGEYE THRESHER " "SHARK, MAKOS **" "SHARK, SHORTFIN "
## [13] "SHARK, NURSE " "CHAIN DOGFISH " "SHARK, TIGER "
## [17] "SHARK, DUSKY " "SHARK, BULL " "SHARK, SANDBAR "
## [21] "SHARK, SILKY " "SHARK, BLACKTIP " "SHARK, OCEANIC V "
## [25] "SHARK, BLUE " "SHARK, HAMMERHEAD **" "SHARKS **"
## [29] "SHARK, SPINY DOGFISH " "TORPEDO, ATLANTIC " "SKATES **"
## [33] "STINGRAY, ATLANTIC " "RAY,COWNOSE " "STURGEONS **"
## [37] "LADYFISH " "TARPON " "EELS **"
## [41] "EEL, CONGER " "HERRINGS **" "HERRING GENUS *
## [45] "HERRING, BLUEBACK " "SHAD, HICKORY " "ALEWIFE "
## [49] "MENHADEN **" "MENHADEN, ATLANTIC " "SHAD, GIZZARD "
## [53] "ANCHOVY, BAY " "SALMON, PACIFIC **" "TROUT, RAINBOW "
## [57] "SMELTS **" "CAPELIN " "SMELT, RAINBOW "
## [61] "INSHORE LIZARDFISH " "CARPS AND MINNOWS **" "CARP, COMMON "
## [65] "SUCKERS **" "CATFISHES-BULLHEADS, UNCLASSIFIED **" "CATFISHES-BULLH "
## [69] "CATFISH, CHANNEL " "CATFISHES-BULLHEADS, OTHER **" "TOADFISHES **"
## [73] "GOOSEFISH, BLACKFIN " "COD, ATLANTIC " "TOMCOD, ATLANTIC "
## [77] "HAKES, RED AND WHITE **" "HAKE, RED " "HAKE, SPOTTED "
## [81] "CUSK " "HADDOCK " "HAKES, SILVER AL "
## [85] "HAKE, OFFSHORE SILVER " "BROTULA, BEARDED " "GRENADIERS **"
## [89] "KILLIFISH FAMILY **" "MUMMICHOG " "SILVERSIDES **"
## [93] "DORIES **" "BUCKLER DORY " "OPAH "
## [97] "DEALFISH " "TENSPINED STICKLEBACK " "REDFISH, ACADIA "
## [101] "SEAROBINS **" "SEAROBIN, NORTHERN " "SEAROBIN, STRIP "
## [105] "SCULPINS **" "RAVEN, SEA " "LUMPFISH "
## [109] "PERCH, WHITE " "BASS, STRIPED " "BASS, BLACK SEA "
## [113] "GROUPER, SNOWY " "SAND PERCH " "WRECKFISH "
## [117] "PERCH, YELLOW " "TILEFISHES **" "TILEFISH, BLUE "
```

## [121] "TILEFISH, SAND "	"BLUEFISH "	"COBIA "
## [125] "JACK, CREVALLE "	"RUNNER, BLUE "	"BAR JACK "
## [129] "AMBERJACK **"	"RUDDERFISH, BANDED "	"POMPAÑO, FLORIDA "
## [133] "SCAD, ROUND "	"PILOTFISH "	"DOLPHIN GENUS **"
## [137] "SNAPPERS **"	"SNAPPER, RED "	"SNAPPER, DOG "
## [141] "TRIPLETAIL "	"GRUNTS **"	"SCUPS OR PORGIES "
## [145] "SHEEPSHEAD "	"PORGY, RED "	"DRUMS **"
## [149] "SEATROUT, SPOTTED "	"SEATROUT, WEAKFISH "	"SPOT "
## [153] "KINGFISH, NORTHERN "	"CROAKER, ATLANTIC "	"DRUM, BLACK "
## [157] "POMFRETS, UNCLASSIFIED **"	"MULLET, ATLANTIC **"	"MULLET, STRIPED "
## [161] "TAUTOG "	"CUNNER "	"HOGFISH "
## [165] "WOLFFISH, ATLANTIC "	"AMERICAN SAND LANCE "	"BONEFISH "
## [169] "TUNA, SKIPJACK "	"TUNA, LITTLE TUNNY "	"BONITO, ATLANTIC "
## [173] "MACKEREL, ATLANTIC CHUB "	"MACKEREL, ATLANTIC "	"TUNAS **"
## [177] "TUNA, BLUEFIN "	"TUNA, YELLOWFIN "	"TUNA, BLACKFIN "
## [181] "MACKEREL, KING AND CERO **"	"MACKEREL, KING "	"MACKEREL, SPANISH "
## [185] "MACKEREL, FRIGATE "	"SWORDFISH "	"BILLFISHES **"
## [189] "BUTTERFISH, UNCLASSIFIED **"	"HARVESTFISH "	"BUTTERFISH "
## [193] "FLATFISH **"	"FLOUNDER, GULF STREAM "	"FLOUNDER, SUMMER "
## [197] "FLOUNDER, FOURSPOT "	"FLOUNDER, WINDOWPANE "	"FLOUNDER, WITCH "
## [201] "FLOUNDER, WINTER "	"FLOUNDER, YELLOWTAIL "	"HALIBUT, GREENLAND "
## [205] "HOGCHOKER "	"LEATHERJACKETS **"	"TRIGGERFISH, GRAY "
## [209] "PUFFER, NORTHERN "	"ANCHOVIES **"	"SPADEFISHES **"
## [213] "SKATE, LITTLE "	"SKATE, ROSETTE "	"SKATE, BARNDORF "
## [217] "SKATE, THORNEY "	"SKATE, SMOOTH "	"ROUGHY, BIG "
##		
## \$Other		
## [1] "WITHHELD FOR CONFIDENTIALITY "	"SEAWEEDS, OTHER **"	"LAMINARIA **"
## [6] "SEAWEED, KELP **"	"ALGARIA ESCULENTA "	"SEAWEED, ROCKWEED FAMILY **"
## [11] "FUCUS VESICULOSUS "	"SEAWEED, IRISH MOSS "	"PALMARIA PALMATA "
## [16] "BLOODWORMS "	"FINFISH **"	"ROUGHY, BIG "
## [21] "MARLIN, WHITE "	"FLOUNDER, FOURSPOT "	"BROWN ALGAE **"
##		
## \$Shellfish		
## [1] "MOLLUSKS **"	"PERIWINKLES **"	"STROMBILIDAE **"
## [4] "SNAILS (CONCHS) **"	"SNAIL, SLIPPER LIMPET "	"SNAIL, SLIPPER LIMPET "
## [7] "WAVED WHELK "	"WHELK, KNOBBED "	"WHELK, KNOBBED "
## [10] "WHELK, CHANNELED "	"CLAMS OR BIVALVES **"	"CLAM, ATLANTIC SURF "
## [13] "MUSSEL, BLUE "	"SCALLOPS **"	"SCALLOP, BAY "
## [16] "SCALLOP, SEA "	"SCALLOP, BAY "	"OYSTERS **"
## [19] "OYSTER, EUROPEAN FLAT "	"CLAM, ATLANTIC SURF "	"CLAM, ATLANTIC SURF "
## [22] "CLAM, ATLANTIC JACKKNIFE "	"CLAM, STOUT TAGELUS (STUBBY RAZOR/BAMBOO) "	"CLAM, STOUT TAGELUS (STUBBY RAZOR/BAMBOO) "
## [25] "CLAM, QUAHOG **"	"CLAM, NORTHERN QUAHOG "	"QUAHOG, NORTHERN "
## [28] "CLAM, SOFTSHELL "	"SQUIDS **"	"SQUID, SHORTFIN ILLEX "
## [31] "SQUID, SHORTFIN ILLEX "	"OCTOPUS **"	"CRABS **"
## [34] "CRUSTACEANS **"	"CRABS **"	"SHRIMP, MARINE, OTHER **"
## [37] "SHRIMP, MARINE, OTHER **"	"SHRIMP, PENAEID **"	"SHRIMP, NORTHERN "
## [40] "CARIDEA **"	"SHRIMP, NORTHERN "	"CRAB, NORTHERN STONE "
## [43] "CRABS, HERMIT **"	"CRAB, NORTHERN STONE "	"CRAB, SNOW/TANNER **"
## [46] "CRAB, SPIDER **"	"CRAB, SNOW/TANNER **"	"CRAB, JONAH "
## [49] "CRAB, CANCER **"	"CRAB, JONAH "	"CRAB, LADY "
## [52] "CRAB, BLUE "	"CRAB, LADY "	"STARS, OTHER SEA **"
## [55] "SHRIMPS, MANTIS **"	"STARS, OTHER SEA **"	"SEA CUCUMBER, UNCLASSIFIED **"
## [58] "SEA URCHINS, GREEN "	"SEA CUCUMBER, UNCLASSIFIED **"	"CUCUMBER, SEA "

[61] "SHRIMP, BROWN "

"CRAB, DEEPSEA RED "

Where are there negative values?

X	Tsn	Year	State	AFS.Name	Pounds	Dollars	Collection	Confidentiality	category.tax
51314	165647	2014	New Jersey	MUMMICHOG	-321	-4494	Commercial	Public	Actinopteryg
72470	168791	2014	Connecticut	DOLPHINFISH	-1	-2	Commercial	Public	Actinopteryg

Where are there negative values?

X	Tsn	Year	State	AFS.Name	Pounds	Dollars	Collection	Confidentiality
429	11272	2017	Rhode Island	SEAWEED, KELP **	-1	7390	Commercial	Public
6543	79916	2015	New York	MUSSEL, SLIPPERSHELL	-1	NA	Commercial	Public
8386	81495	2010	Maryland	CLAM, QUAHOG **	-29	1506	Commercial	Public
25465	160502	2009	Virginia	SHARK, BONNETHEAD	-5	1011	Commercial	Public
28827	161030	2007	New Jersey	FINFISH **	-8	NA	Commercial	Public
51314	165647	2014	New Jersey	MUMMICHOG	-321	-4494	Commercial	Public
72470	168791	2014	Connecticut	DOLPHINFISH	-1	-2	Commercial	Public
92811	172412	2014	Connecticut	MACKEREL, CHUB	-1	NA	Commercial	Public
111150	551570	2017	Connecticut	SHRIMP, BROWN	-1	229	Commercial	Public