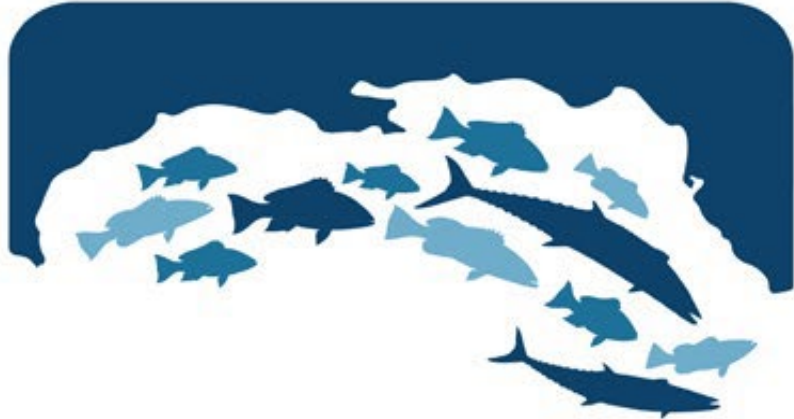


Mid-year Quota Changes in the Red Snapper and Grouper/Tilefish Individual Fishing Quota Programs



GULF
COUNCIL

February 2026

Outline

Overview of IFQ programs

Single species share categories: Red snapper, Gag, Red grouper

Quotas over time

Mid-year quota changes

Monthly Landings

Monthly Allocation Prices

Monthly Ex-vessel Prices

Preliminary results

Overview

Red snapper IFQ (RS IFQ): January 2007

Grouper/Tilefish IFQ (GT IFQ): January 2010

More than 90% of RS IFQ vessels also harvesting GT IFQ species

GT IFQ Category	Species
Gag (GG)	Gag
Red Grouper (RG)	Red grouper
Deep-water Grouper (DWG)	Snowy grouper
	Speckled hind
	Warsaw grouper
	Yellowedge grouper
Other Shallow-water Grouper (SWG)	Black grouper
	Scamp
	Yellowfin grouper
	Yellowmouth grouper
Tilefishes (TF)	Blueline tilefish (grey)
	Golden tilefish
	Goldface tilefish

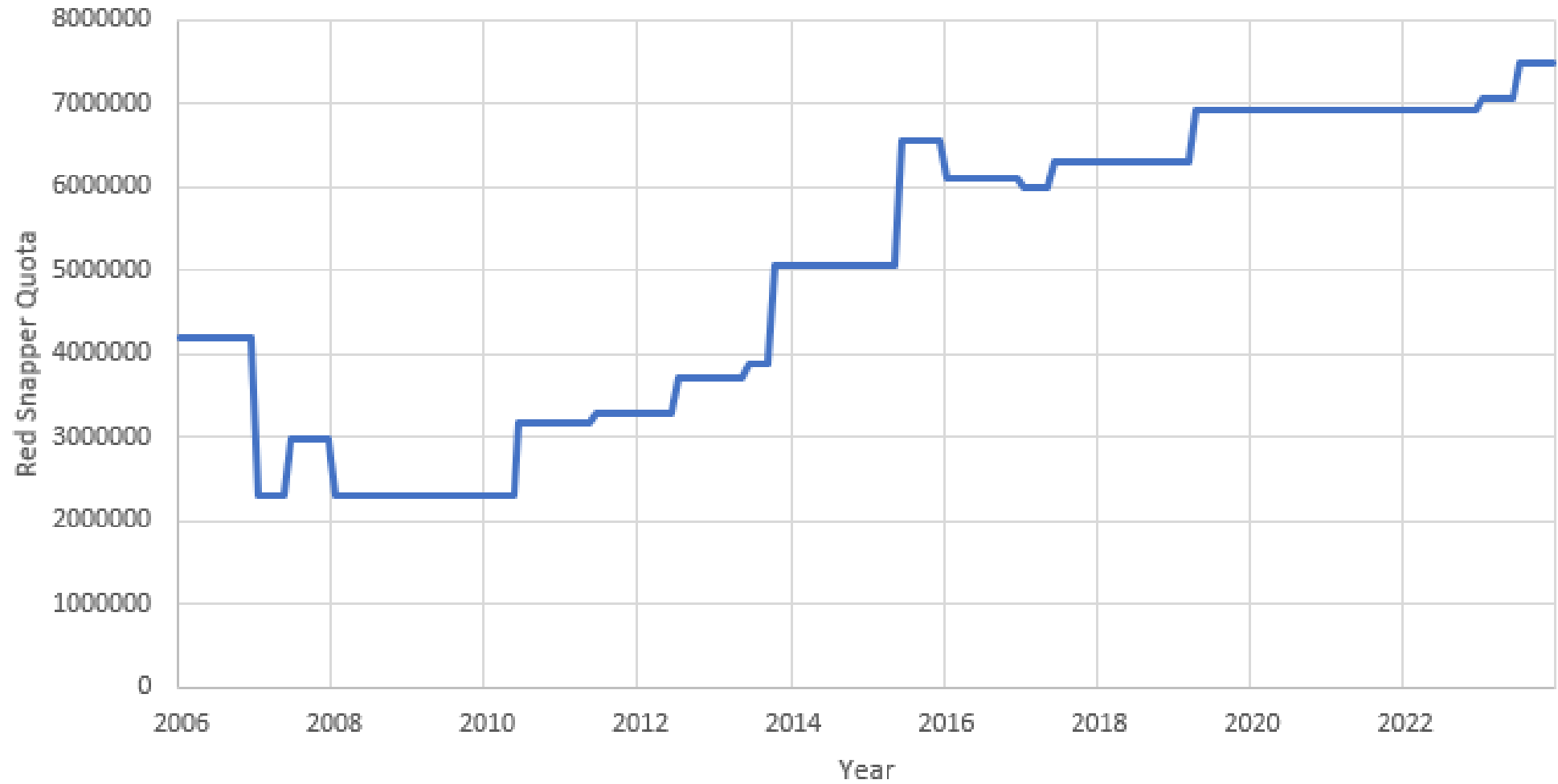
[Red Snapper Annual Report](#)

[Grouper-Tilefish Annual Report](#)

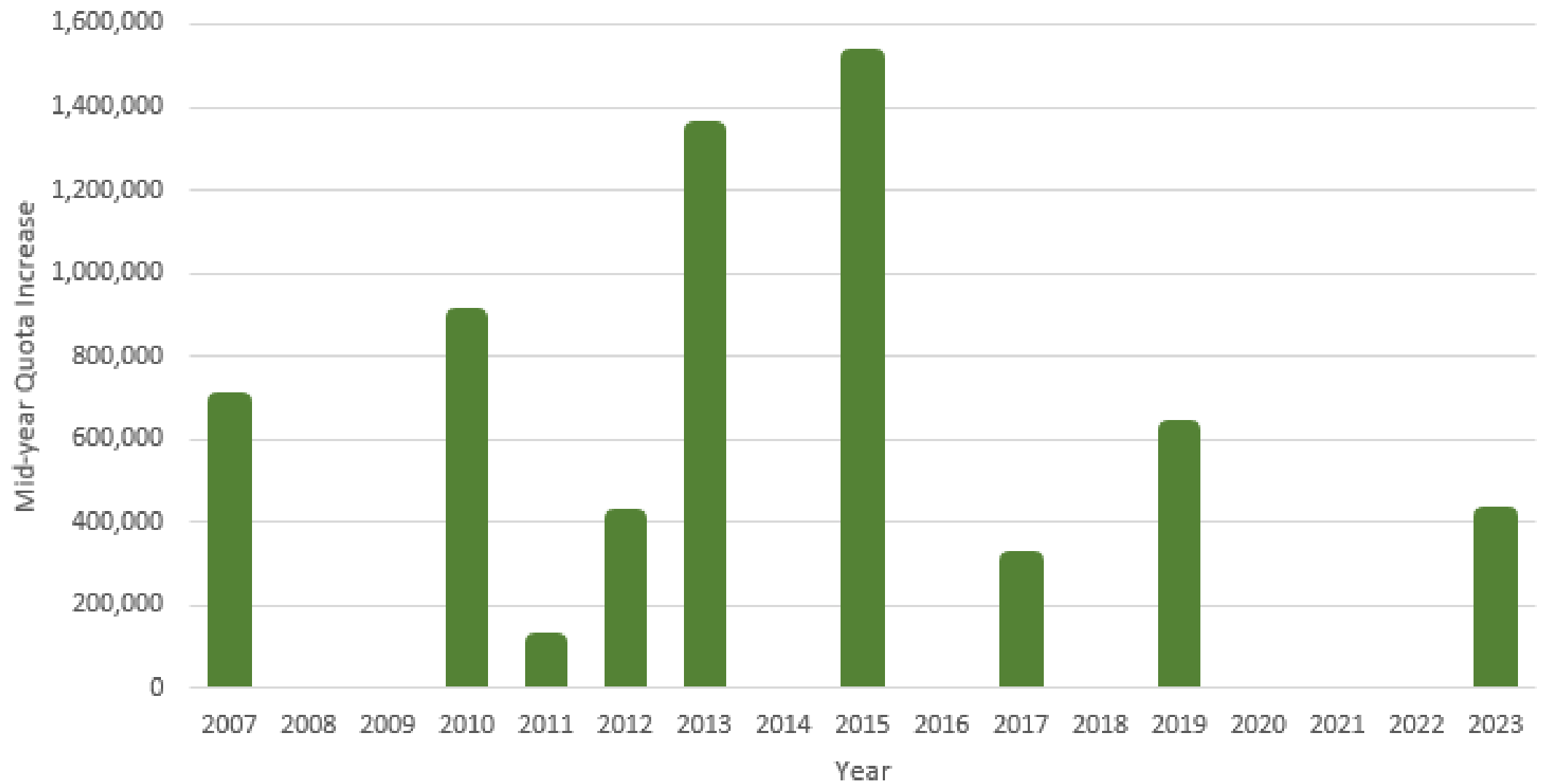
Red Snapper Allocation Holders by Share Status

Year	Total	With Shares	Without Shares
2007	596	554 (93%)	42 (7%)
2008	547	497 (91%)	50 (9%)
2009	530	474 (89%)	56 (11%)
2010	598	461 (77%)	137 (23%)
2011	589	439 (75%)	150 (25%)
2012	599	438 (73%)	161 (27%)
2013	598	421 (70%)	177 (30%)
2014	606	399 (66%)	207 (34%)
2015	635	397 (63%)	238 (37%)
2016	639	385 (60%)	254 (40%)
2017	639	388 (61%)	251 (39%)
2018	650	377 (58%)	273 (42%)
2019	624	346 (56%)	277 (44%)
2020	644	339 (53%)	305 (47%)
2021	625	342 (55%)	282 (45%)
2022	619	336 (54%)	283 (46%)
2023	624	352 (56%)	272 (44%)

Commercial Red Snapper Quota (2006-2023)

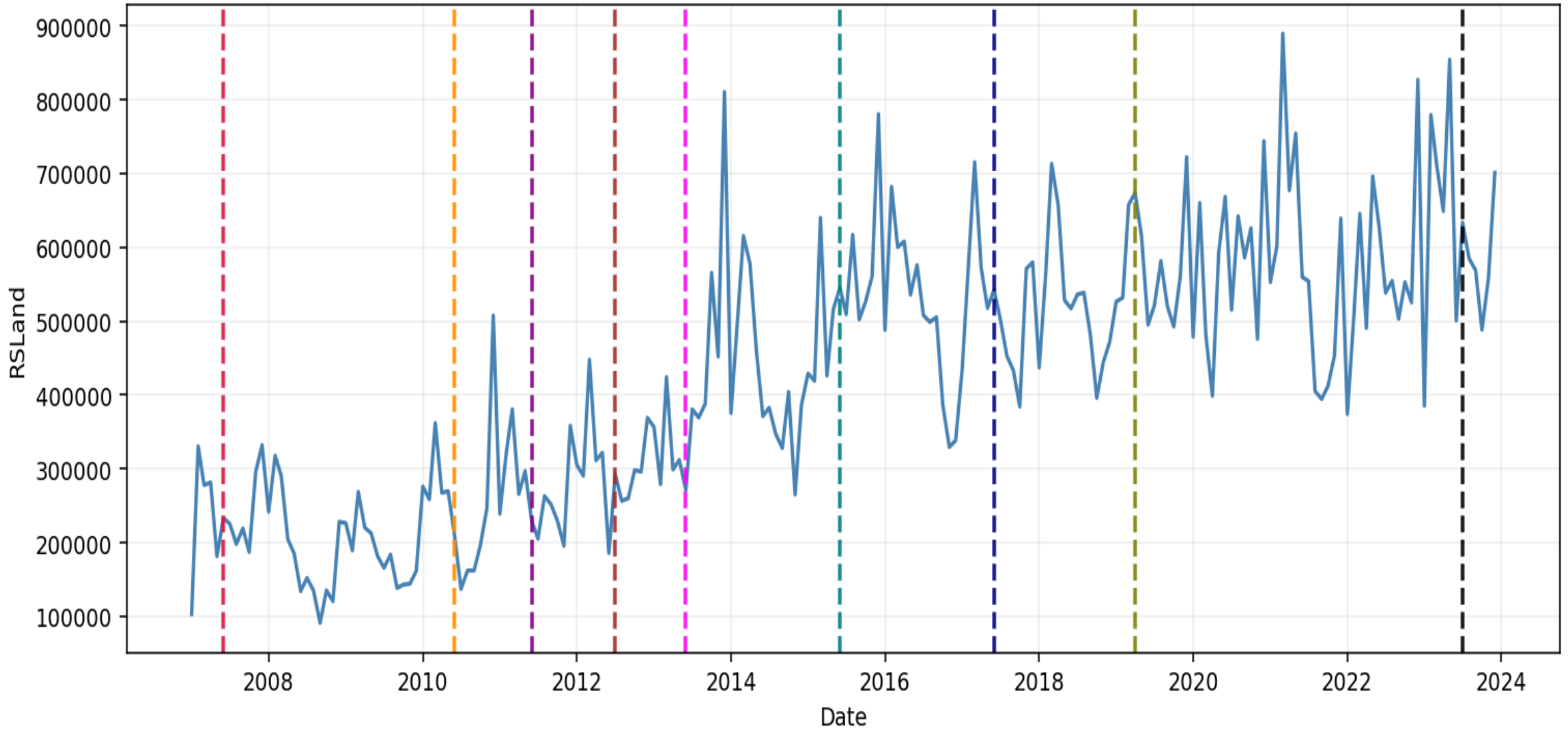


RS Mid-year Quota Increases



Commercial Red Snapper Monthly Landings

RSLand (level) with event markers



Events: mid-year quota increases

Commercial Red Snapper Monthly Ex-vessel Prices

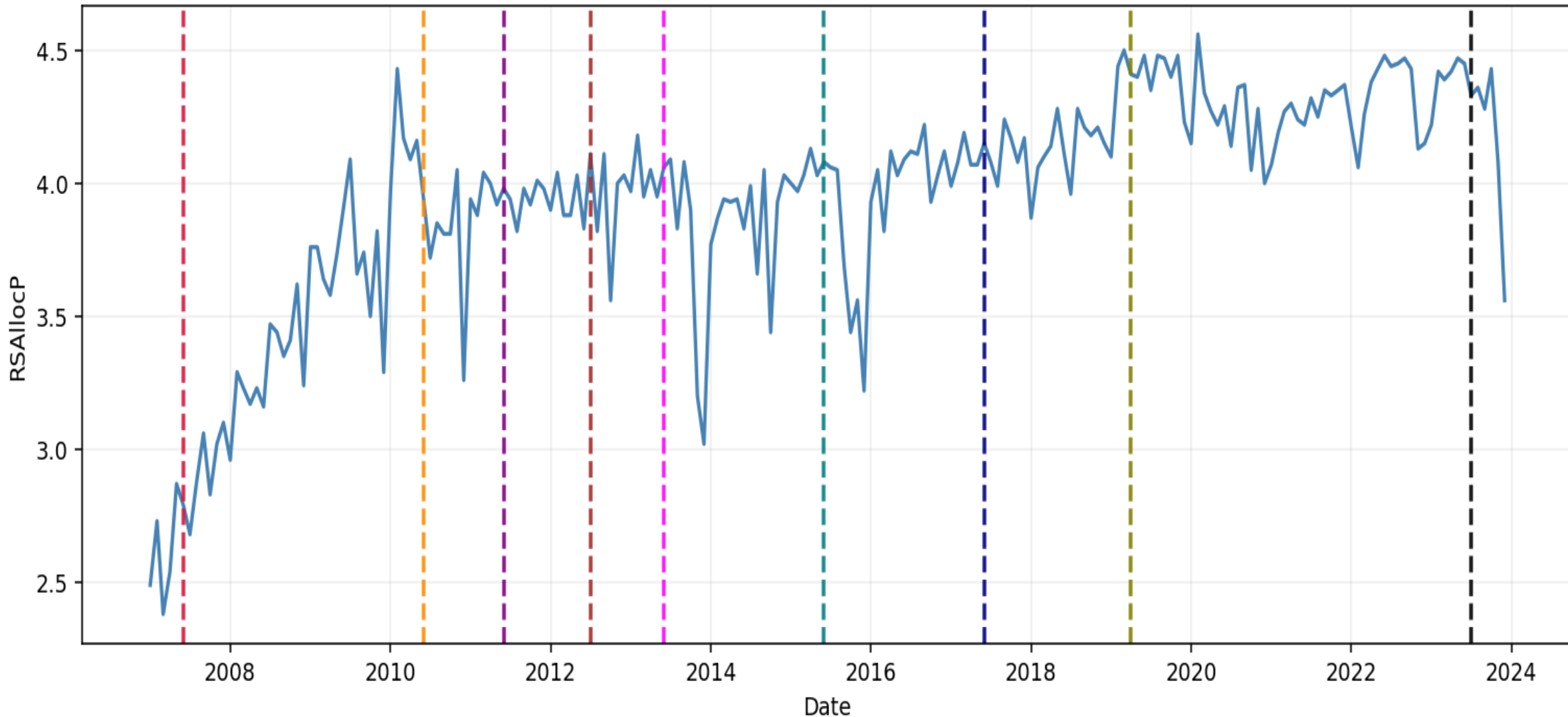
RSExvP (level) with event markers



Prices are in \$2023 per pound gutted weight

Commercial Red Snapper Monthly IFQ Allocation Prices

RSAllocP (level) with event markers



Prices are in \$2023 per pound gutted weight

Red Snapper Model Selection

Estimate Impact of Mid-year quota increases on the snapper allocation price (RSAllocP)

Diagnostic tests suggest that annual allocation and ex-vessel prices are non-stationary series

First-differences are stationary but show autocorrelation at lag (12)

SARIMAX (**S**easonal **A**uto**R**egressive **I**ntegrated **M**oving **A**verage with **eX**ogenous regressors)

SARIMAX AR (1) to account for persistence and include known explanatory factors

Use level values rather than first-differences to compute elasticities

Red Snapper Model Selection

Dependent variable

Monthly Allocation Price

Explanatory variables

Monthly Ex-vessel price

Mid-year quota increase events included as block variables

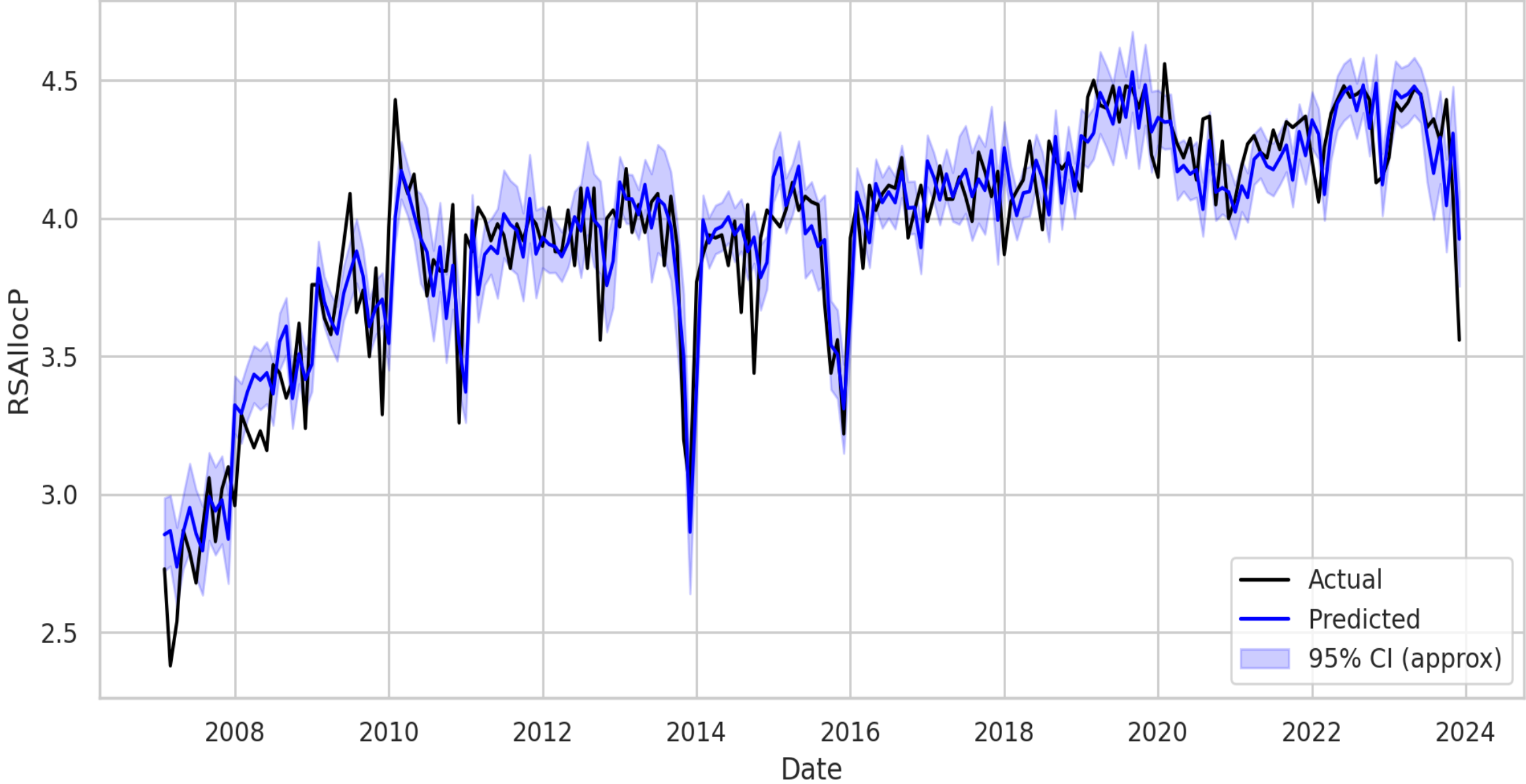
Monthly Dummy variables

Lagged Monthly Allocation Price

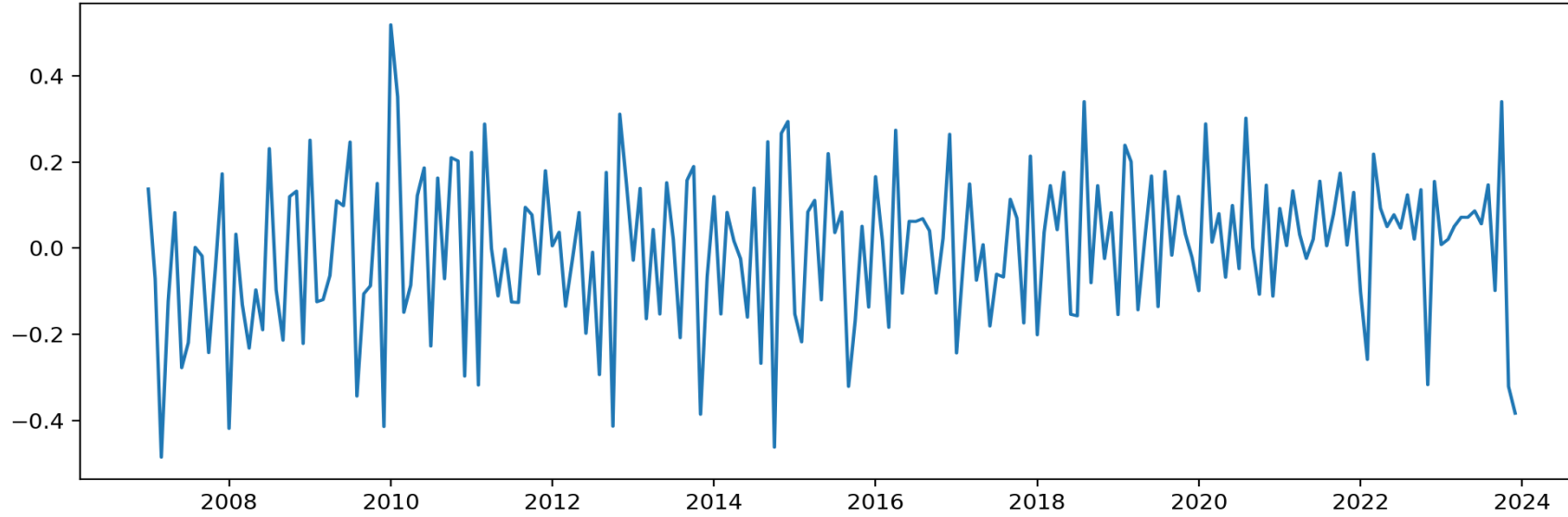
Red Snapper Model Results

Term	Coef	Std Err	z	p-value	Sig
*intercept	0.229183	0.095335	2.404	0.016218	**
*RSEvp	0.438114	0.07891	5.552	0.0	***
RSJun07	0.070078	0.089174	0.786	0.431952	
*RSJun10	-0.235202	0.125218	-1.878	0.060334	*
RSMay11	0.144951	0.609625	0.238	0.812059	
RSJun12	0.275836	0.296269	0.931	0.351836	
RSMay13	-0.03591	0.175781	-0.204	0.838129	
RSJun15	-0.160973	0.128905	-1.249	0.211749	
*RSJun17	0.24325	0.132789	1.832	0.066974	*
RSApr19	0.129956	0.188169	0.691	0.489795	
RSJul23	-0.136244	0.276189	-0.493	0.621801	
*Month_2	0.142036	0.045467	3.124	0.001784	***
Month_3	0.075858	0.05762	1.317	0.187998	
Month_4	0.062386	0.085014	0.734	0.463056	
Month_5	0.085874	0.101933	0.842	0.399533	
Month_6	0.061346	0.105342	0.582	0.560333	
Month_7	0.023713	0.101216	0.234	0.814767	
Month_8	-0.028629	0.091115	-0.314	0.75336	
Month_9	0.045879	0.08482	0.541	0.588578	
Month_10	-0.106033	0.07455	-1.422	0.154938	
Month_11	-0.023668	0.061978	-0.382	0.702555	
*Month_12	-0.133251	0.04961	-2.686	0.007232	***
*ar.L1	0.818481	0.040299	20.31	0.0	***
*sigma2	0.031292	0.003549	8.817	0.0	***

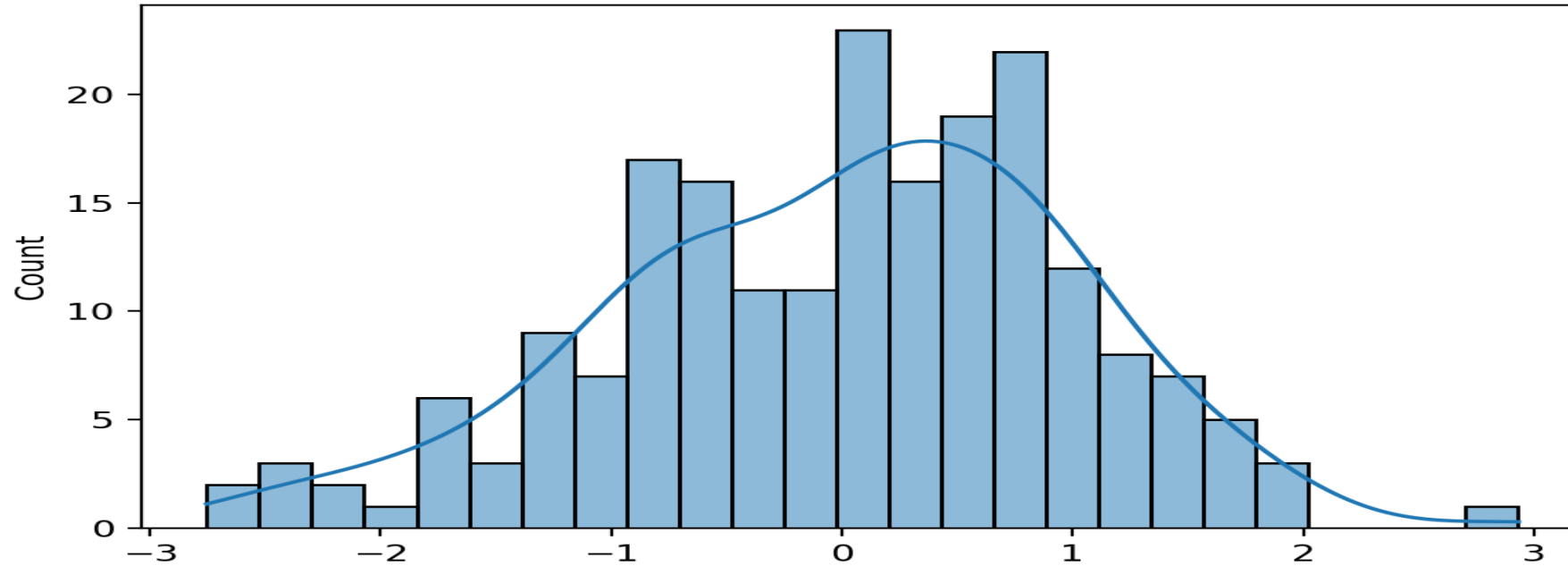
RSAllocP: Actual vs Predicted with Approximate 95% CI



Residuals over time (month-dummy model)



Standardized residual histogram (month-dummy model)



Elasticity

Responsiveness of Allocation Prices to Changes in Ex-vessel Prices

(E = 0.68 computed at the means)

For every 1% change in the ex-vessel price, there is a 0.68% change in the allocation price

Granger Causality

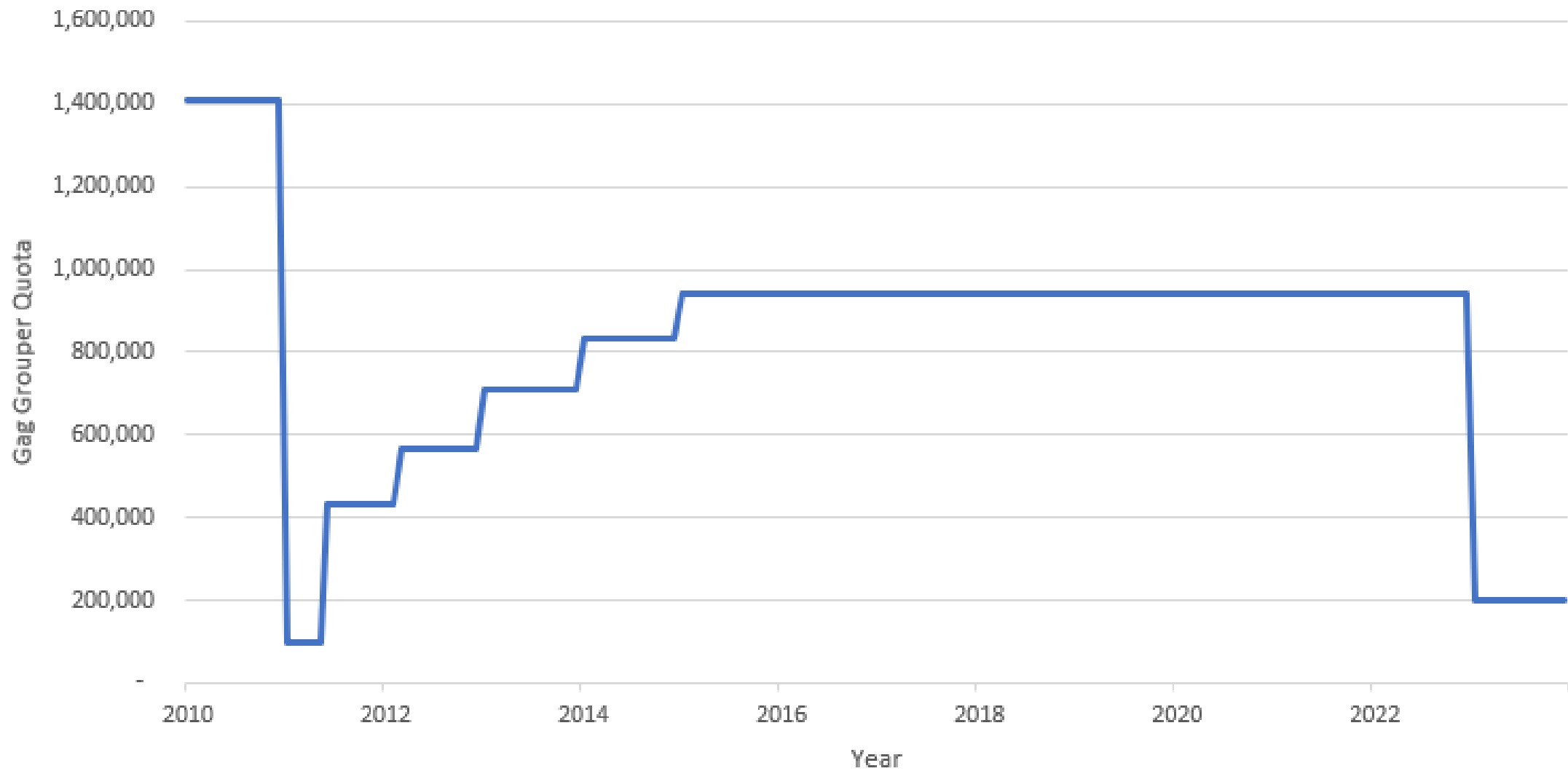
Past values of **Ex-vessel Price** contain information that helps predict **Allocation Price**; this information is not already contained in past values of **Allocation Price** alone.

Ex-vessel Price Granger-causes **Allocation Price**
with strongest evidence at lag 1 ($p=0.000615$).

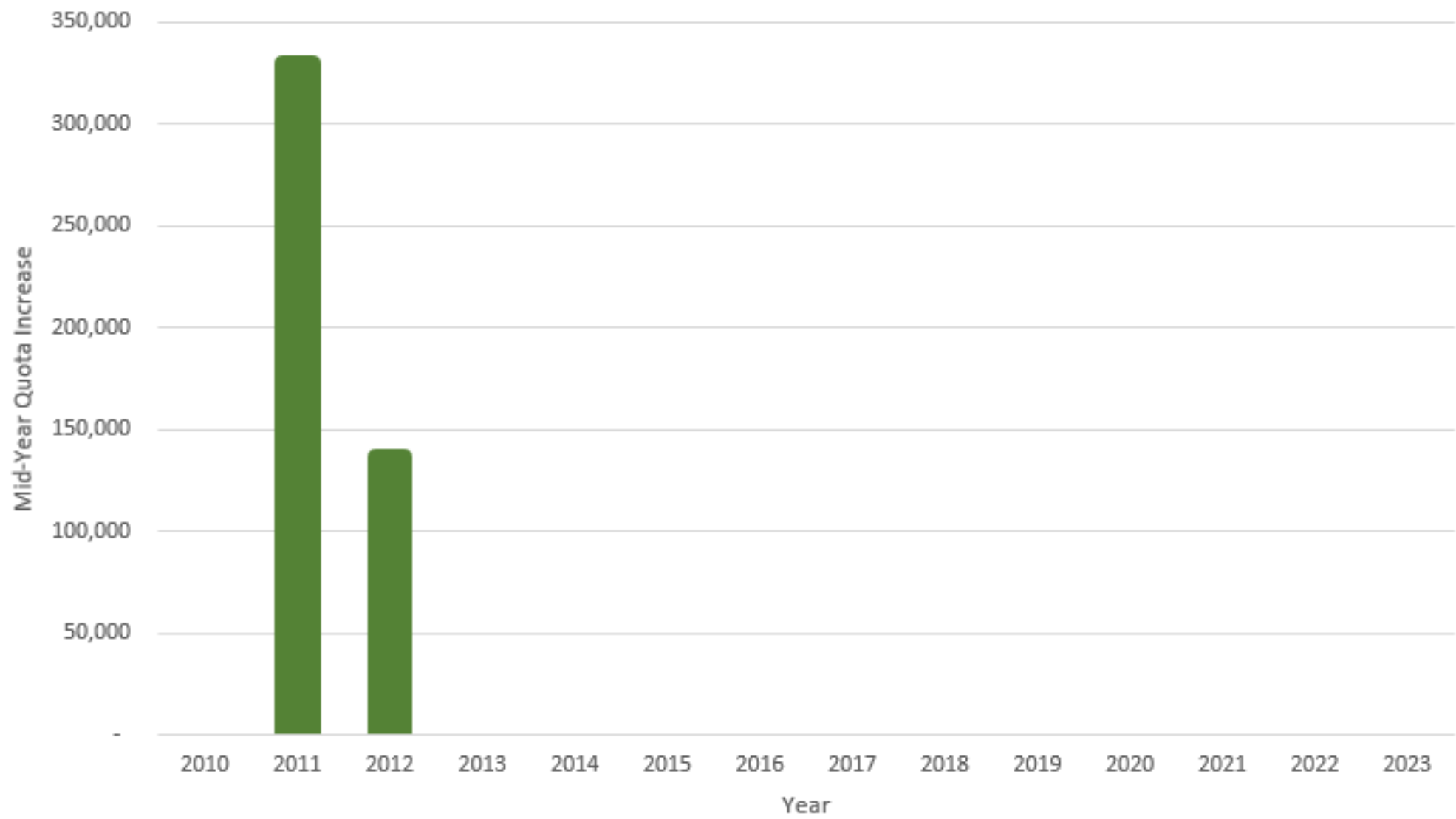
Gag Allocation Holders by Share Status

GG	N	With shares	Without Shares
2010	789	740 (94%)	49 (6%)
2011	767	694 (90%)	73 (10%)
2012	743	645 (87%)	98 (13%)
2013	716	595 (83%)	121 (17%)
2014	726	580 (80%)	146 (20%)
2015	753	560 (74%)	193(26%)
2016	752	560 (74%)	192 (26%)
2017	767	556 (72%)	211 (28%)
2018	756	556 (74%)	200 (26%)
2019	715	513 (72%)	202 (28%)
2020	736	509 (69%)	227 (31%)
2021	727	501 (69%)	226 (31%)
2022	690	491 (71%)	199 (29%)
2023	634	449 (71%)	185 (29%)

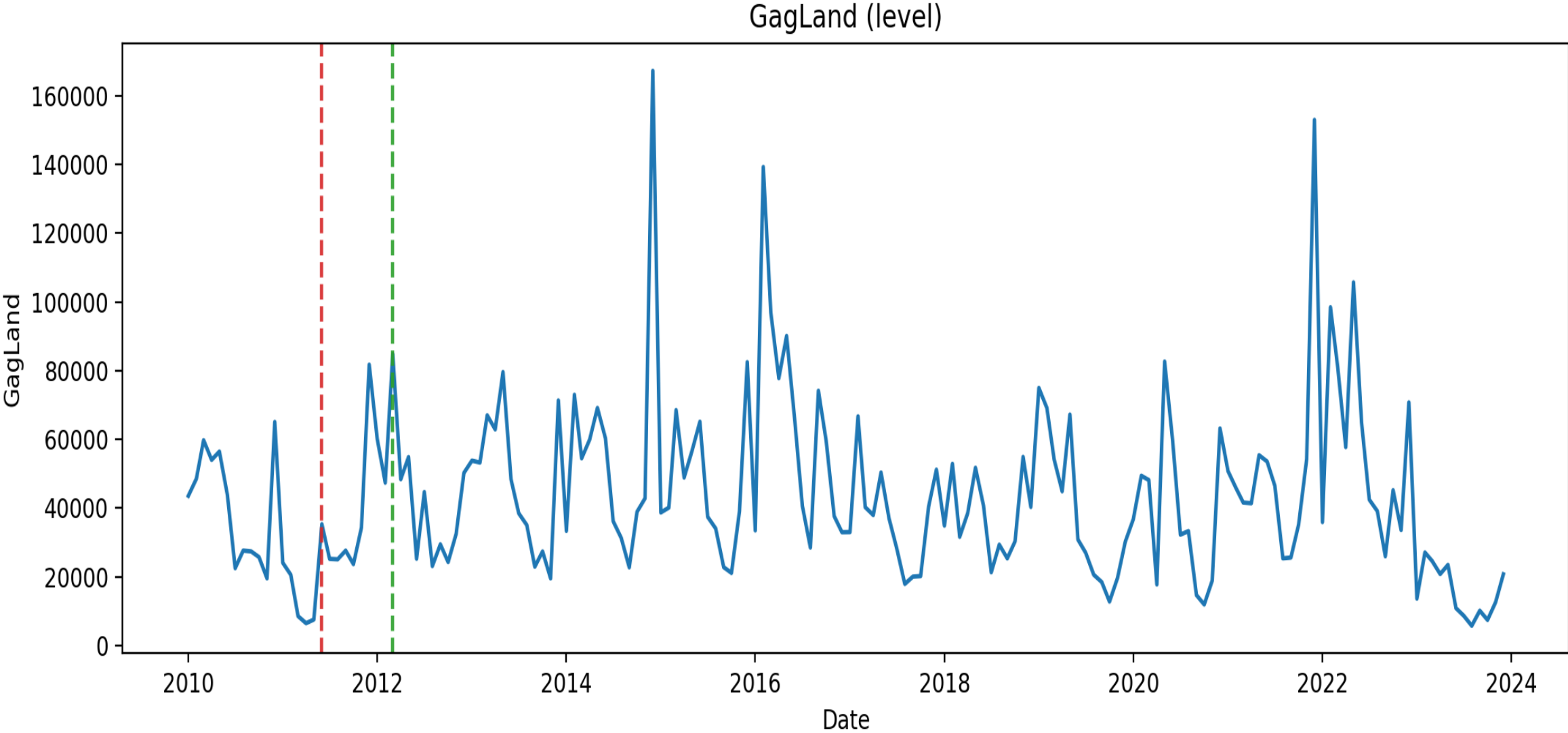
Commercial Gag Grouper Quota (2010-2023)



GG Mid-year Quota Increases

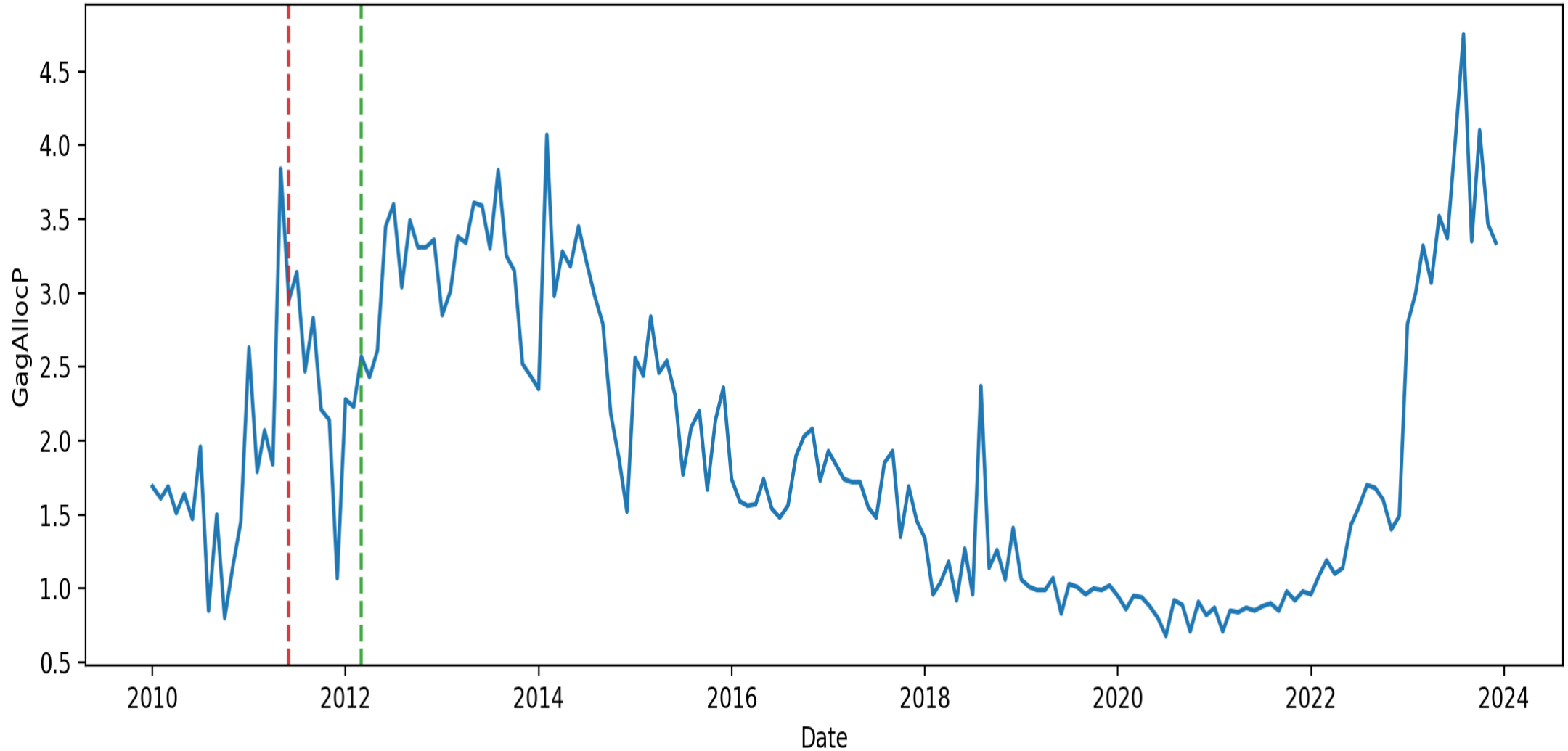


Commercial Gag Monthly Landings



Commercial Gag Monthly Allocation Prices

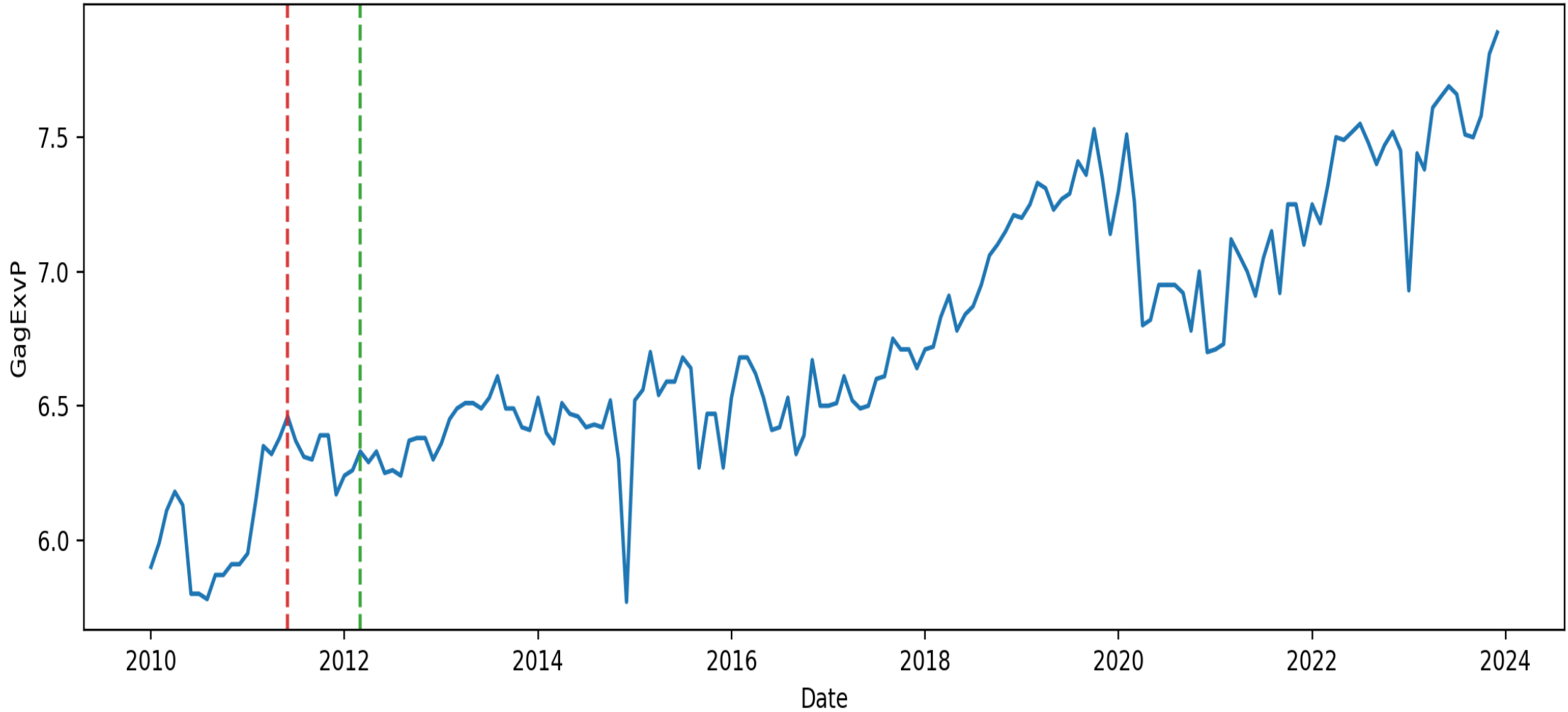
GagAllocP (level)



Prices are in \$2023 per pound gutted weight

Commercial Gag Monthly Ex-vessel Prices

GagExvP (level)



Prices are in \$2023 per pound gutted weight

Gag Results

Dependent variable

Monthly Allocation Price

Explanatory variables

Monthly Ex-vessel price

Mid-year quota increase events included as block variables

Monthly Dummy variables

Lagged Monthly Allocation Prices (t_{-1} and t_{-2})

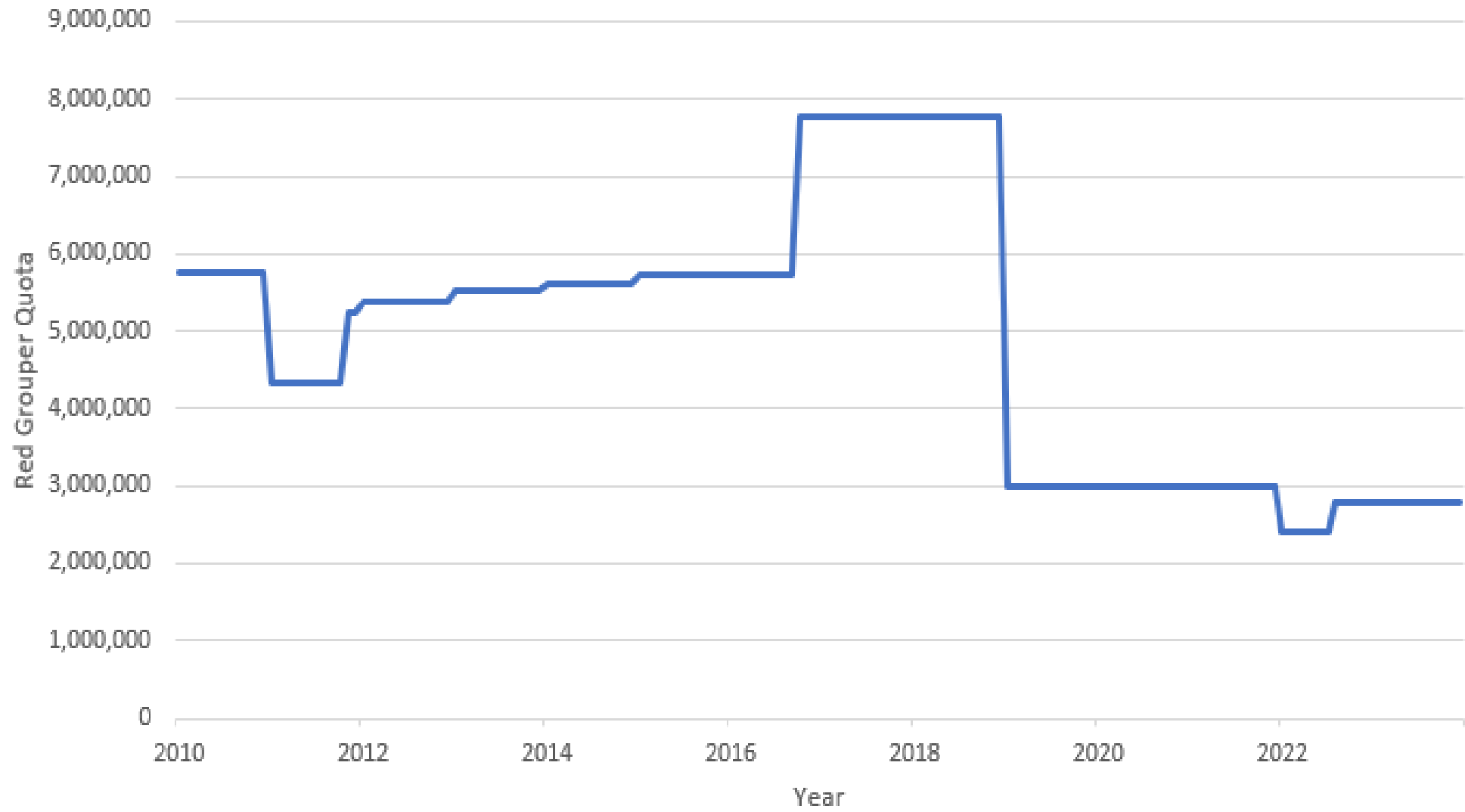
For all models estimated, including a SARIMAX AR (2), the monthly ex-vessel price, the mid-year quota changes, and the monthly dummy variables were not significant.

Only the lagged allocation price variables (t_{-1} and t_{-2}) were statistically significant

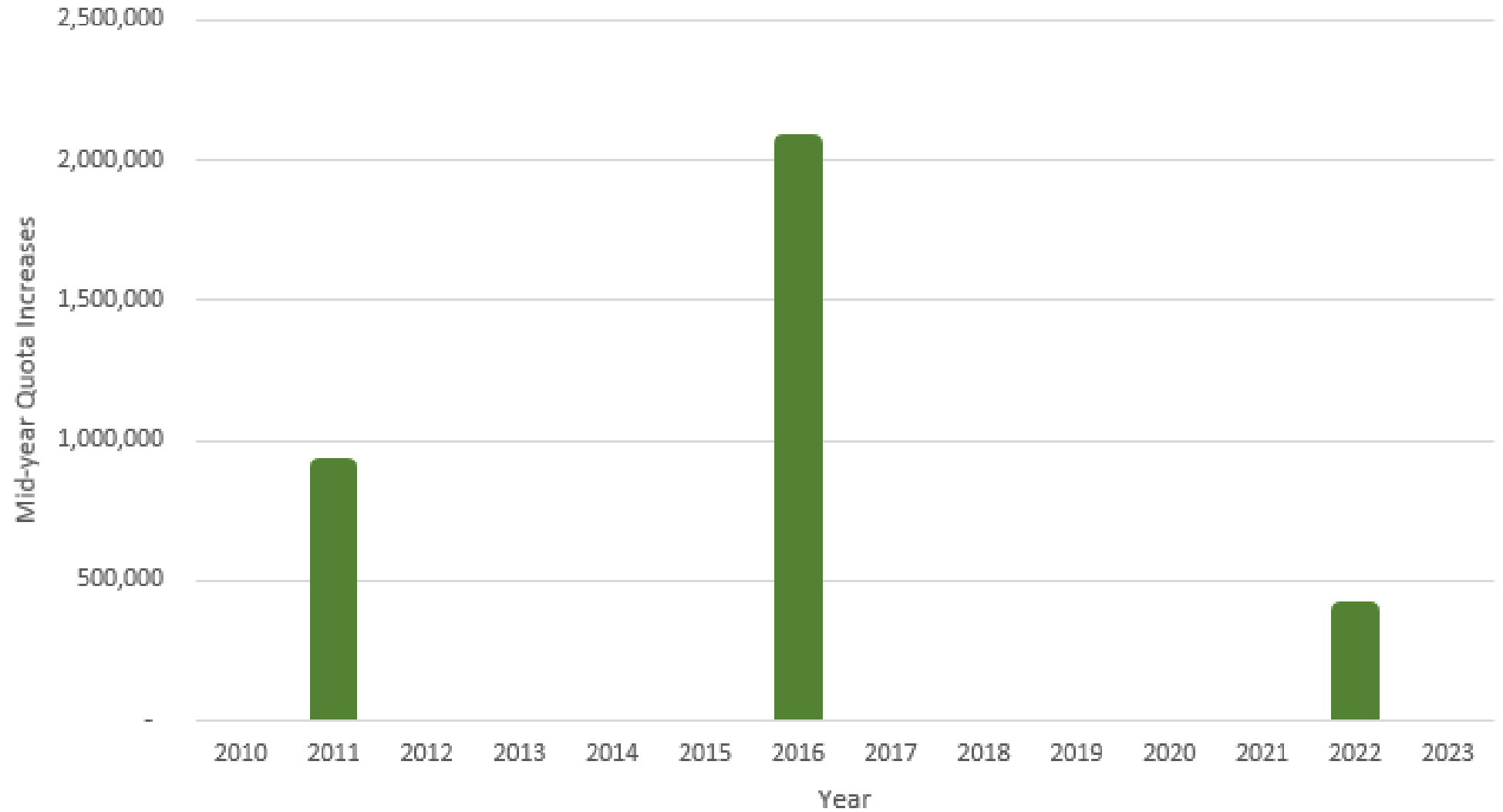
Red Grouper Allocation Holders by Share Status

RG	N	With shares	Without Shares
2010	744	690 (93%)	54 (7%)
2011	739	675 (91%)	64 (9%)
2012	715	605 (85%)	110 (15%)
2013	683	563 (82%)	120 (18%)
2014	689	544 (79%)	145 (21%)
2015	716	522 (73%)	194 (27%)
2016	723	543 (75%)	180 (25%)
2017	750	525 (70%)	225 (30%)
2018	755	543 (72%)	212 (28%)
2019	687	494 (72%)	192 (28%)
2020	694	486 (70%)	208 (30%)
2021	689	480 (70%)	209 (30%)
2022	658	479 (73%)	179 (27%)
2023	669	450 (67%)	219 (33%)

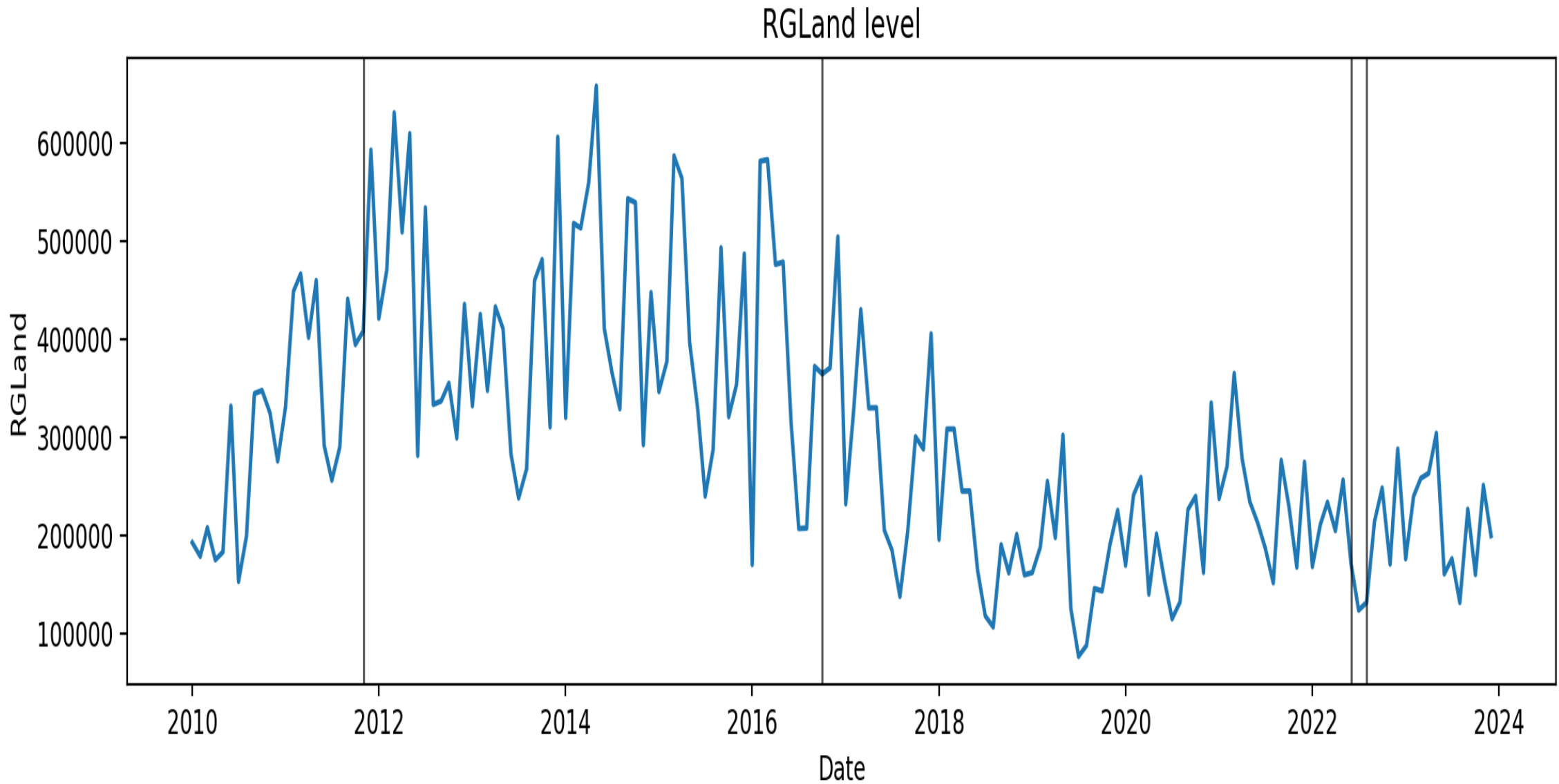
Commercial Red Grouper Quota (2010-2023)



RG Mid-year Quota Increases

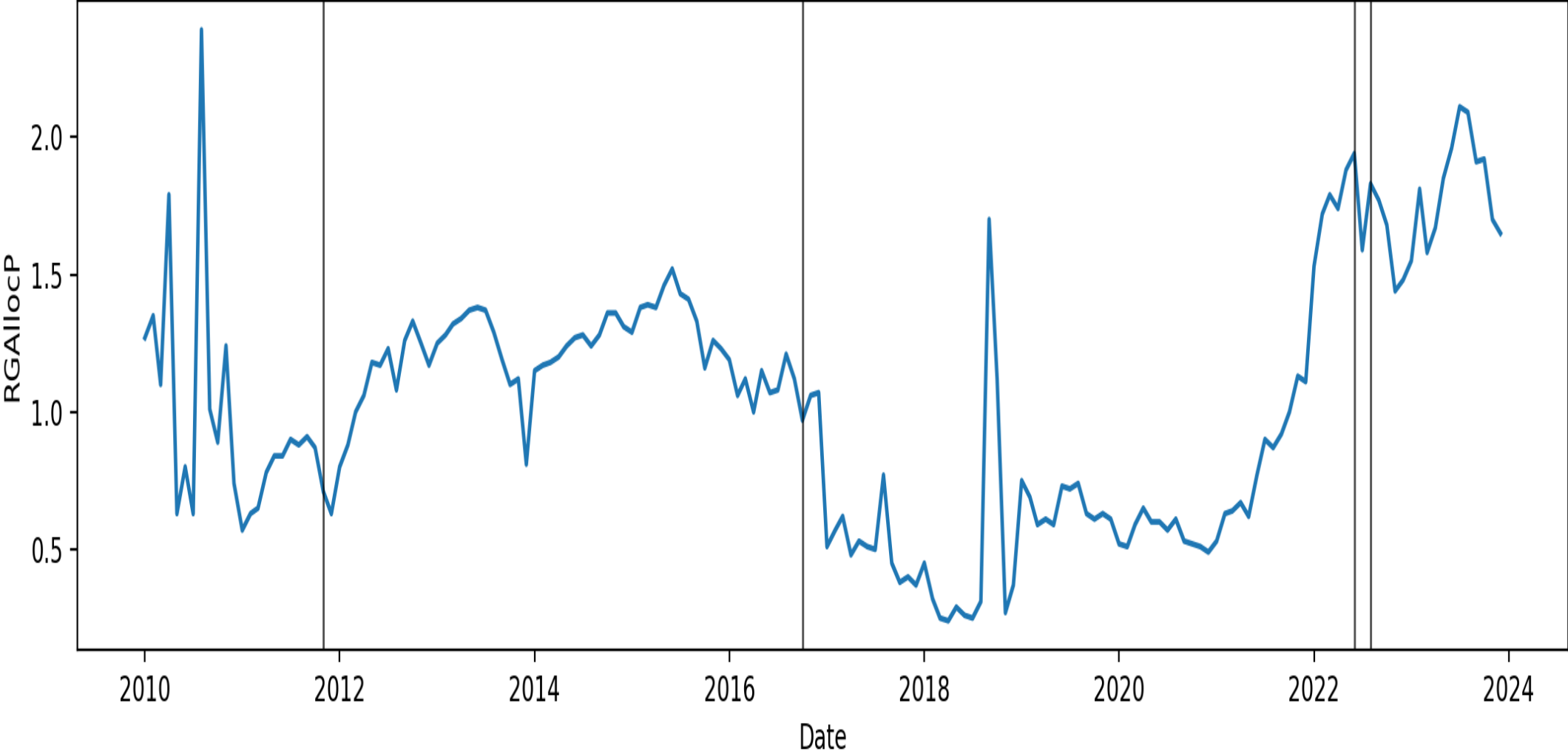


Commercial Red Grouper Monthly Landings



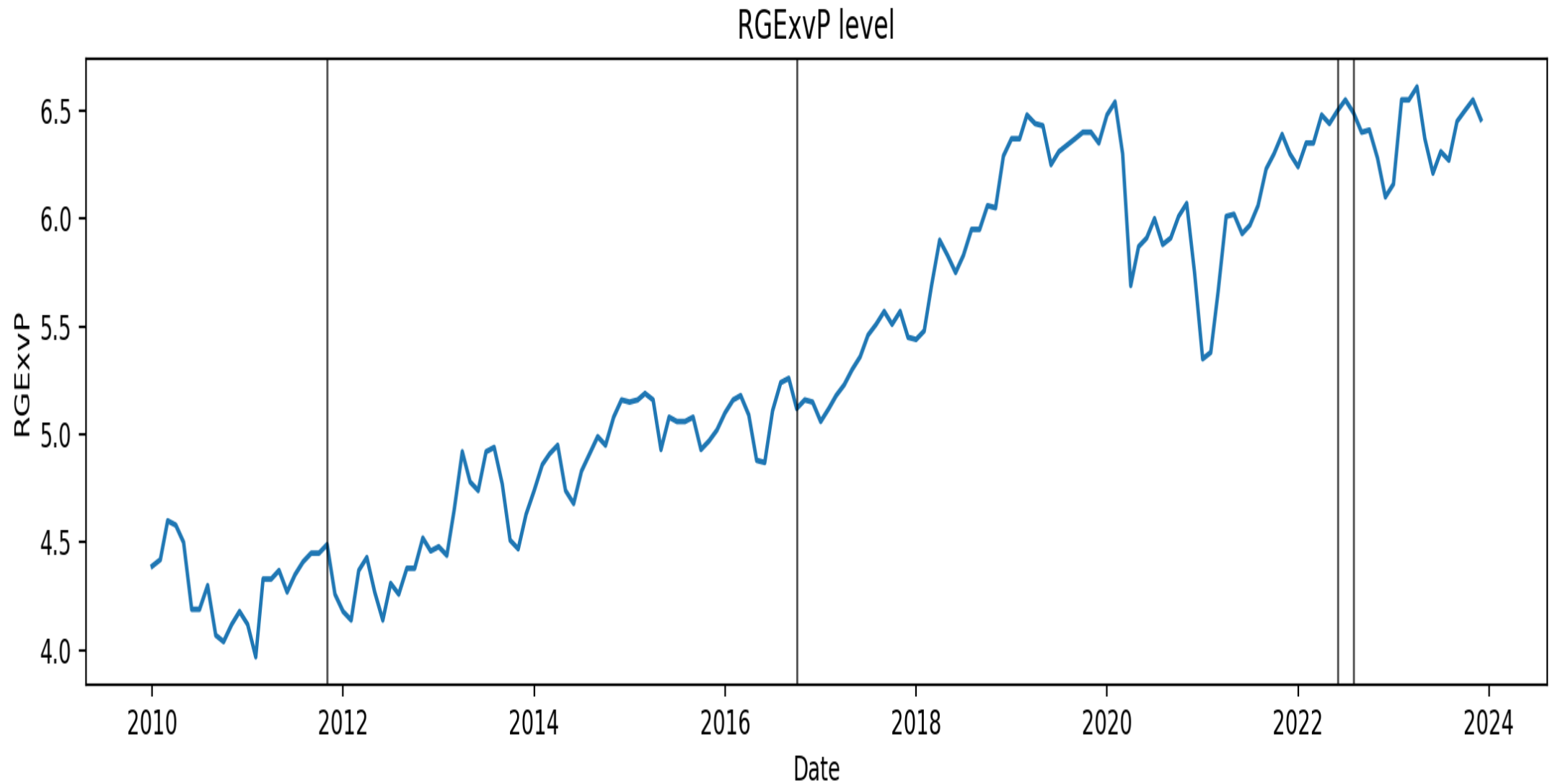
Commercial Red Grouper Monthly Allocation Prices

RGAllocP level



Prices are in \$2023 per pound gutted weight

Commercial Red Grouper Monthly Ex-vessel Prices



Prices are in \$2023 per pound gutted weight

Red Grouper Results

Dependent variable

Monthly Allocation Price

Explanatory variables

Monthly Ex-vessel price

Mid-year quota increase events included as block variables

Monthly Dummy variables

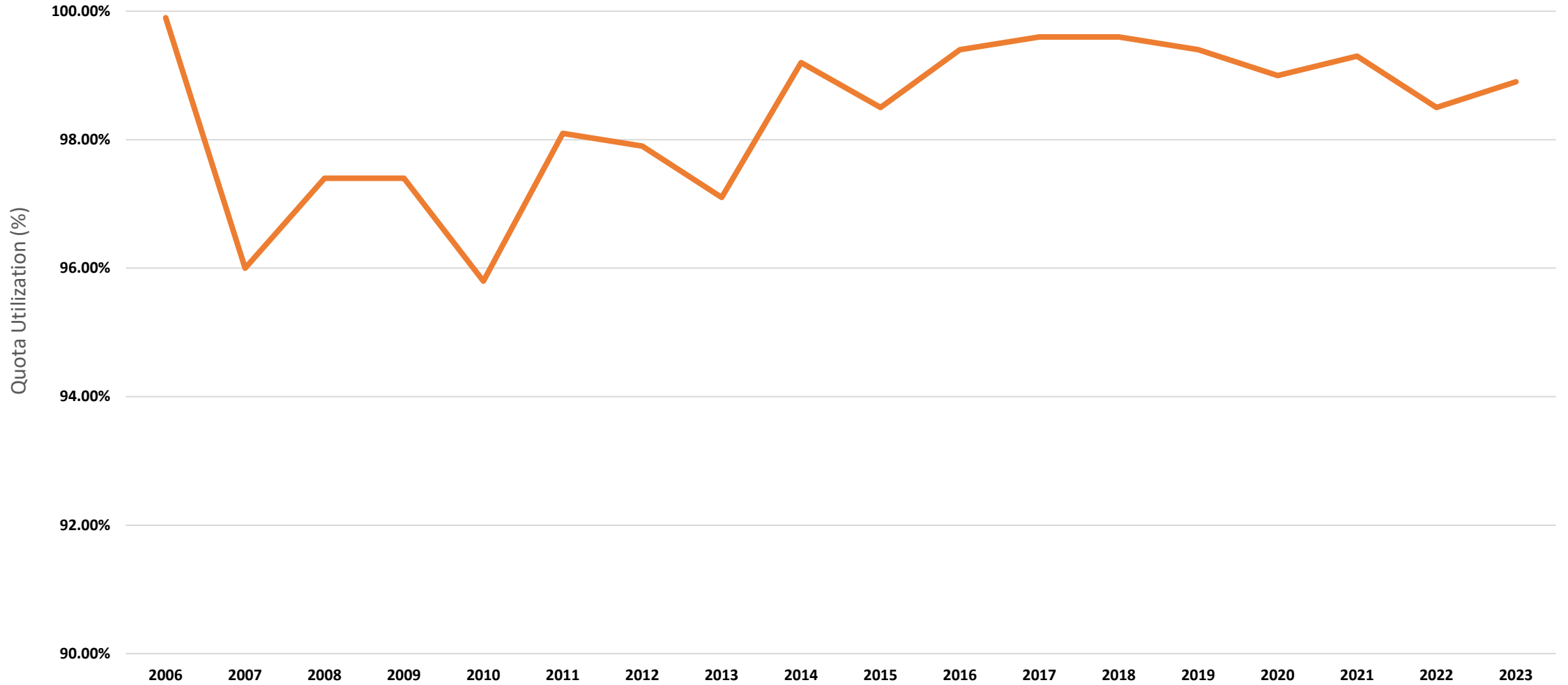
Lagged Monthly Allocation Prices (t_{-1} and t_{-2})

For models estimated, including a SARIMAX AR (2), the monthly ex-vessel price, the mid-year quota changes, and the monthly dummy variables were not significant. (Similar findings for gag models)

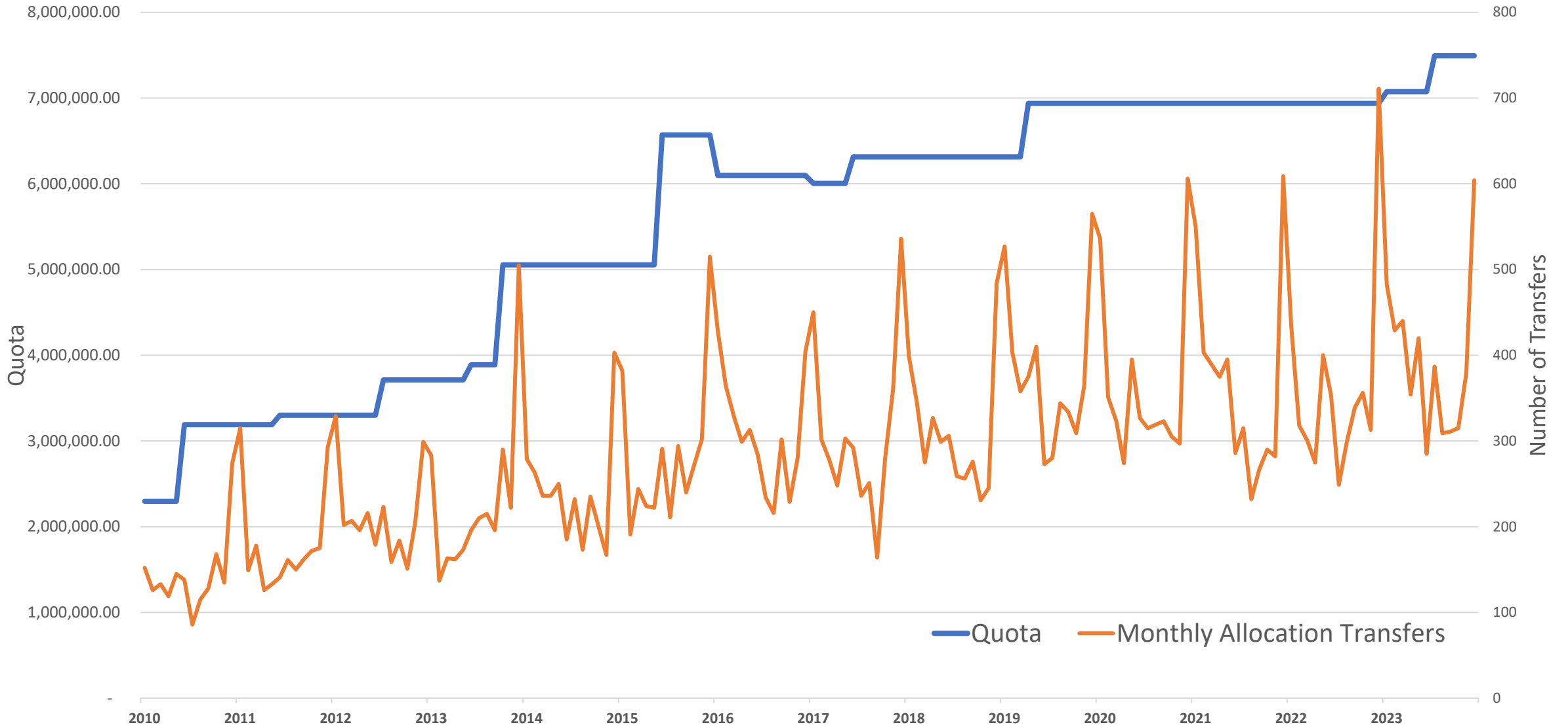
Only the lagged allocation prices (t_{-1} and t_{-2}) were statistically significant

Additional Slides

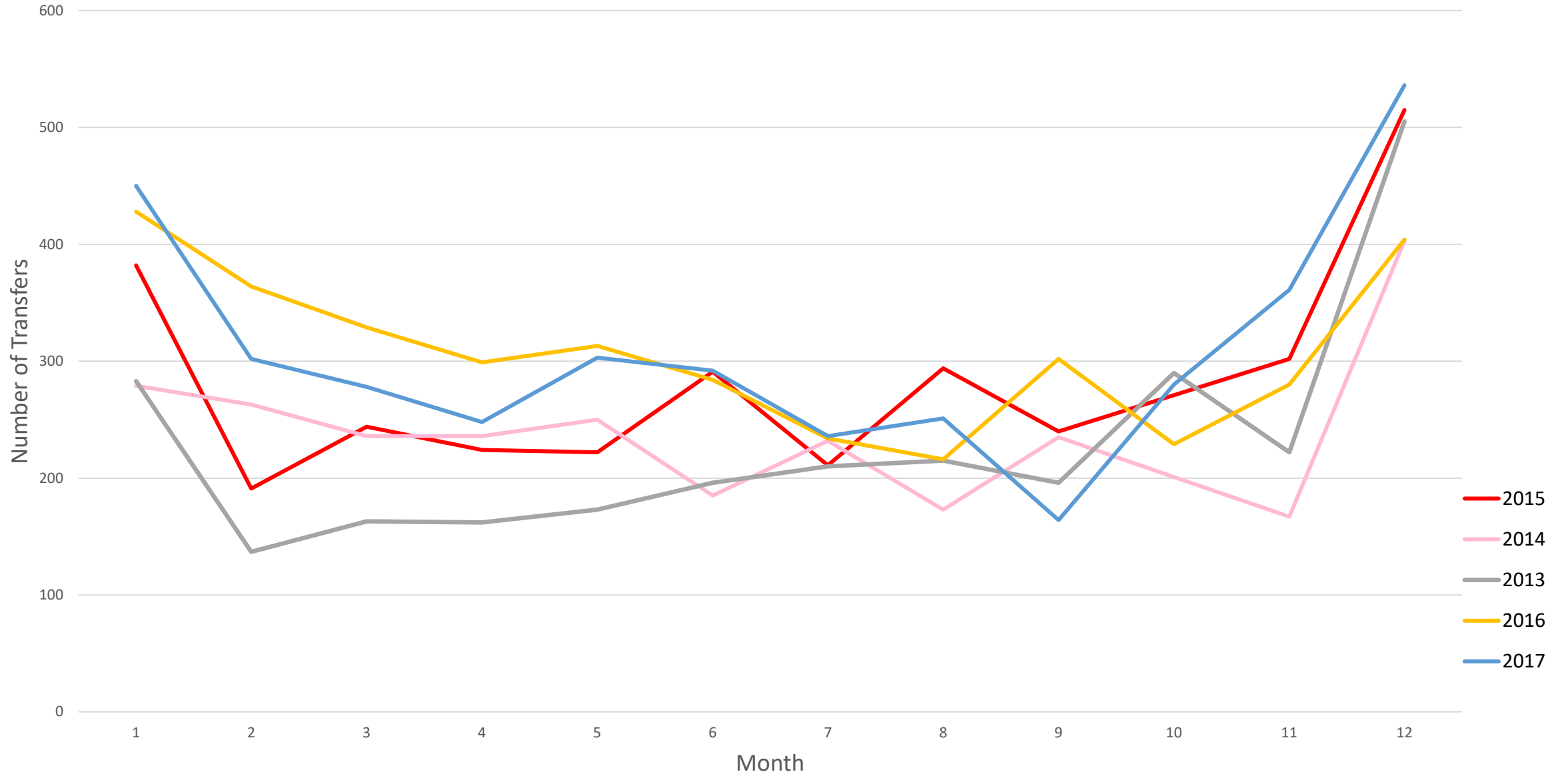
Red Snapper Quota Utilization (2006-2023)



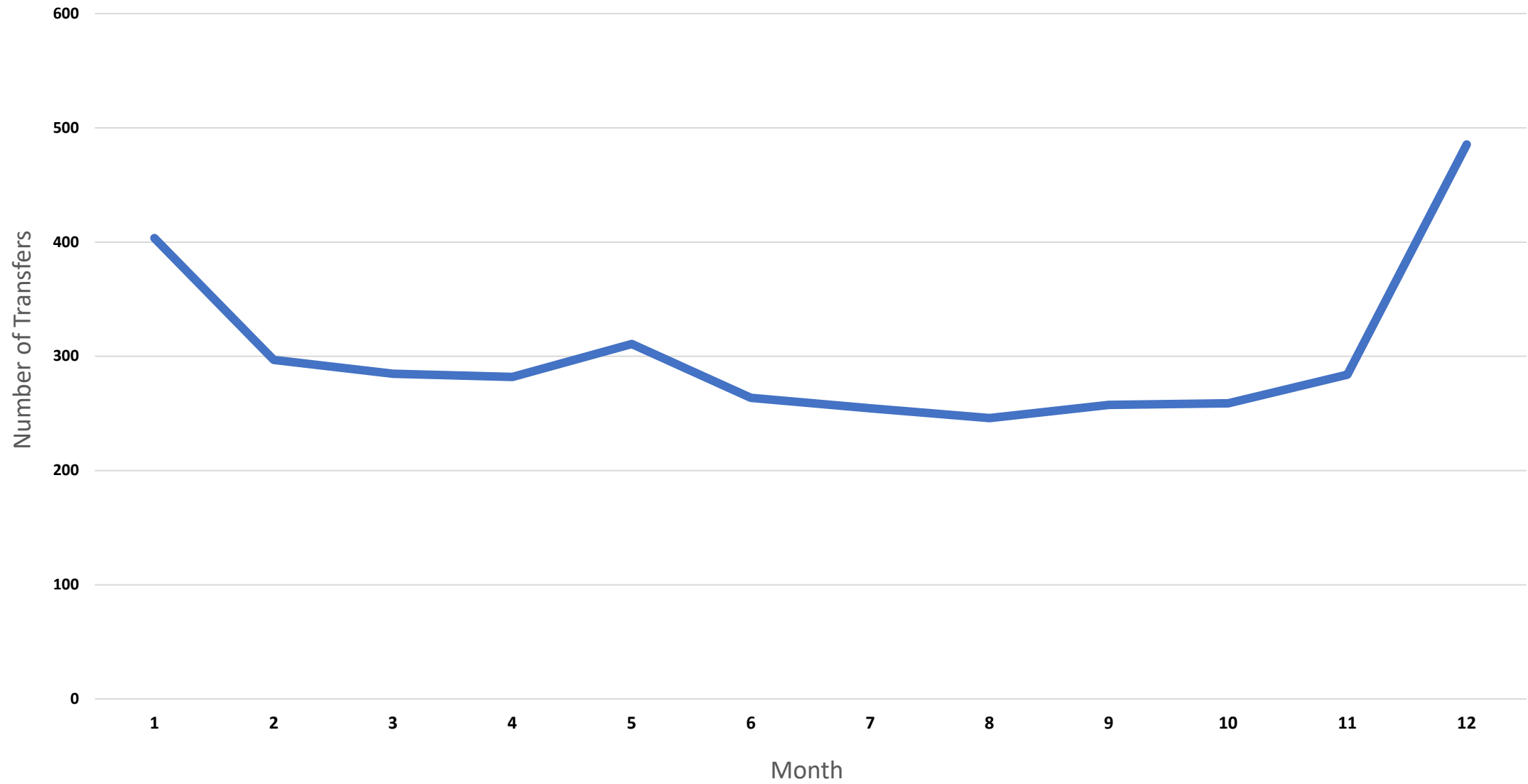
Red Snapper Quota and Monthly Number of Allocation Transfers (2010-2023)



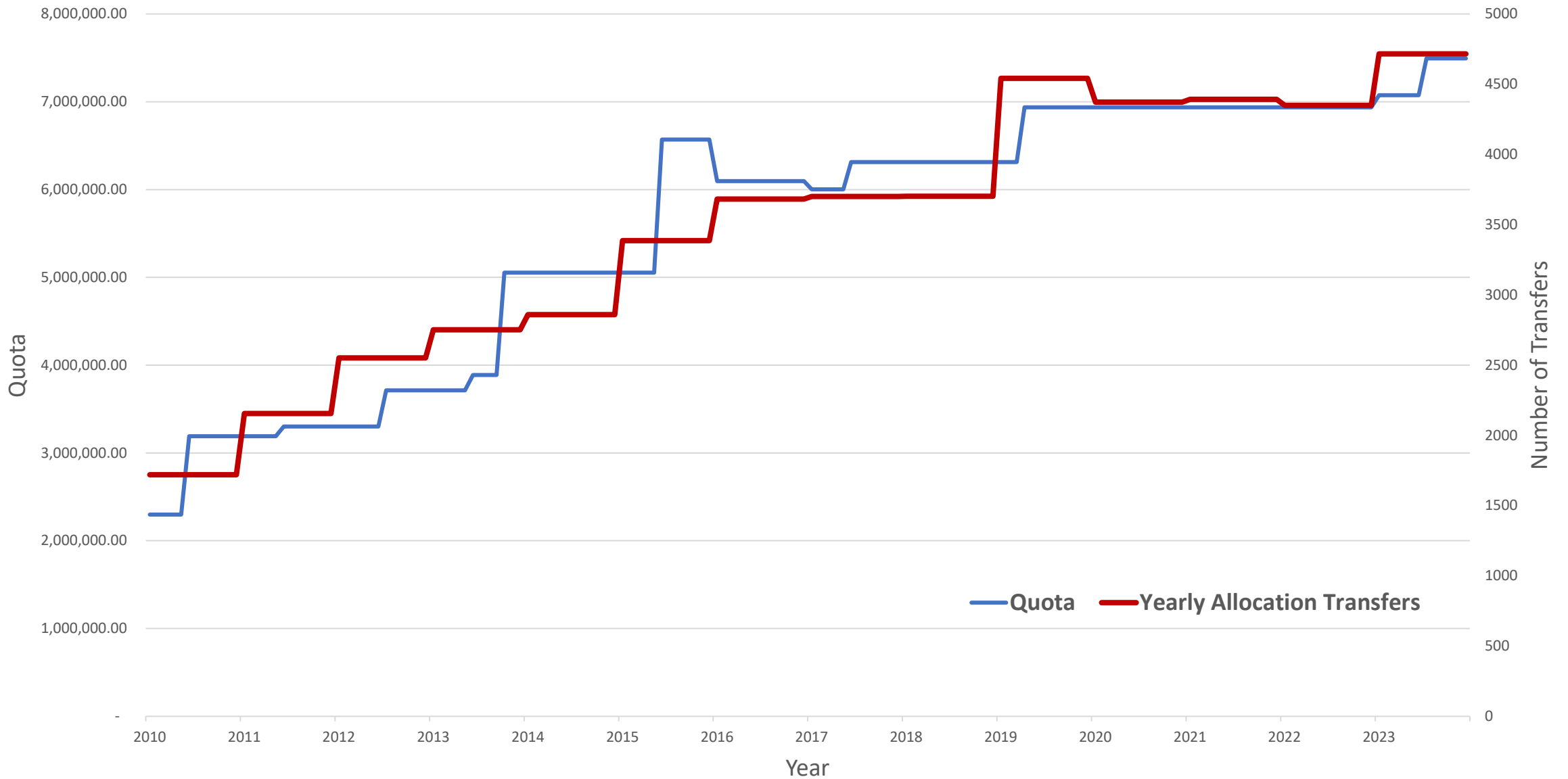
Red Snapper Monthly Number of Allocation Transfers



Average (2010-2025) Red Snapper Allocation Transfers by Month

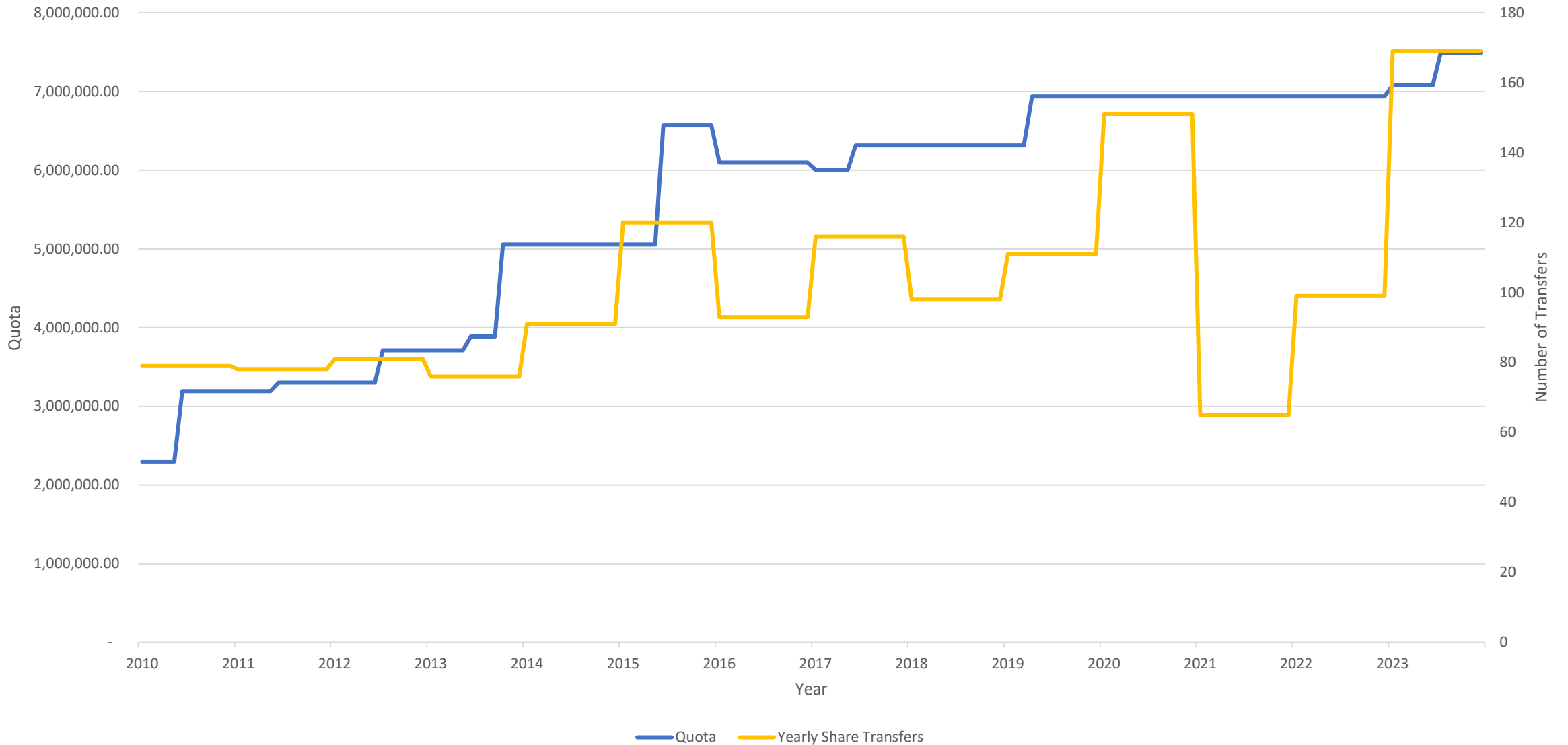


Red Snapper Quota and Allocation Transfers

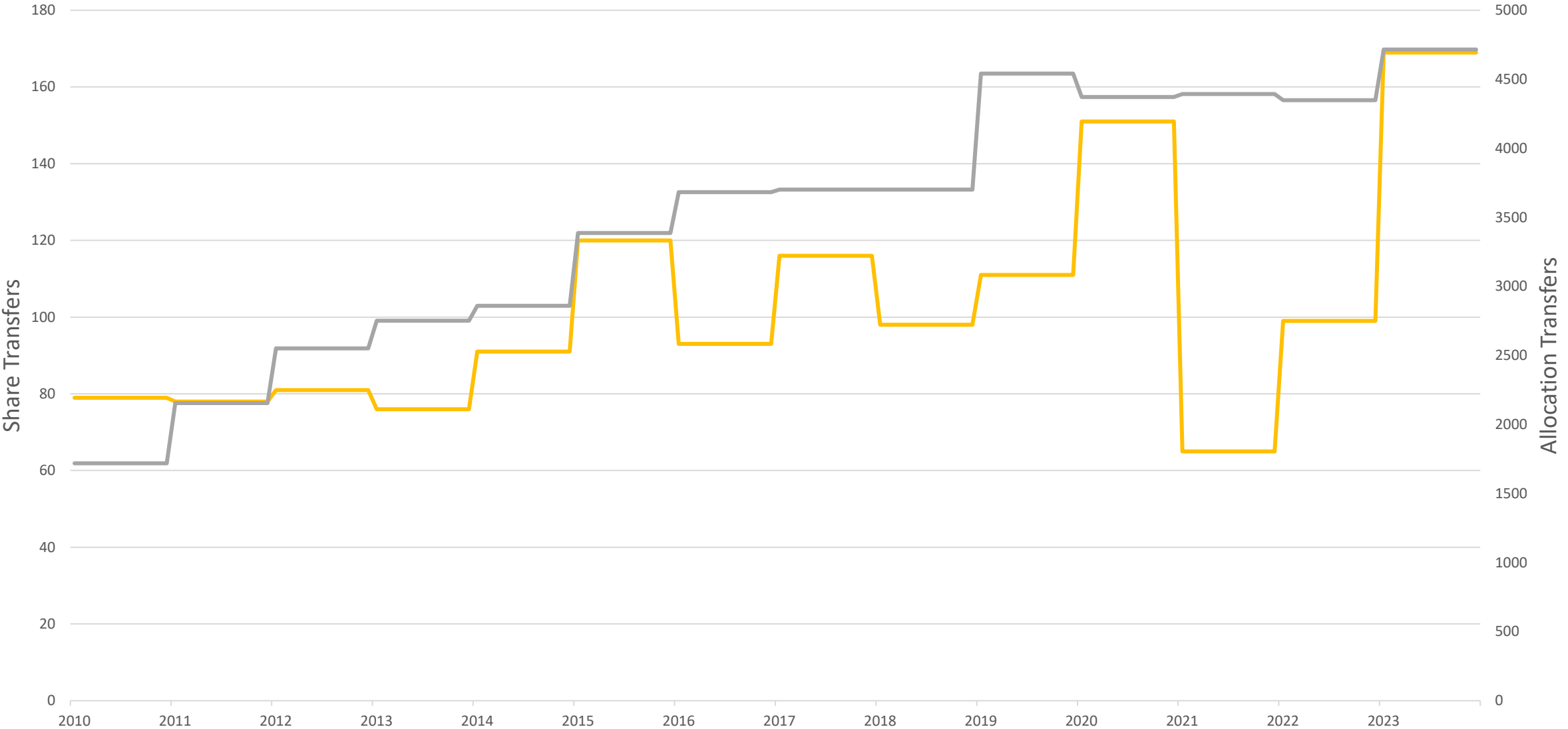


Red Snapper

Red Snapper Quota and Numbers of Share Transfers

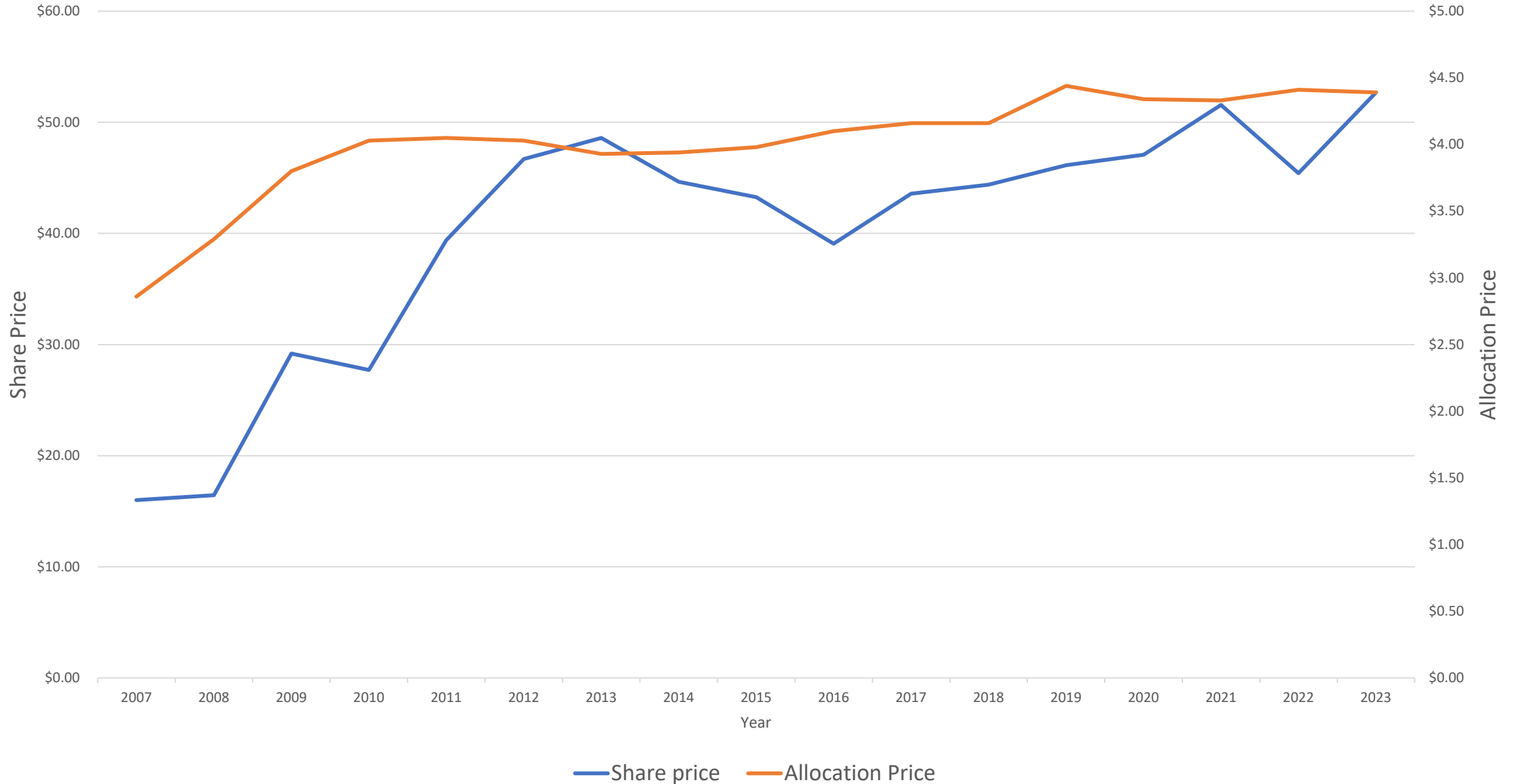


Red Snapper Numbers of Share and Allocation Transfers



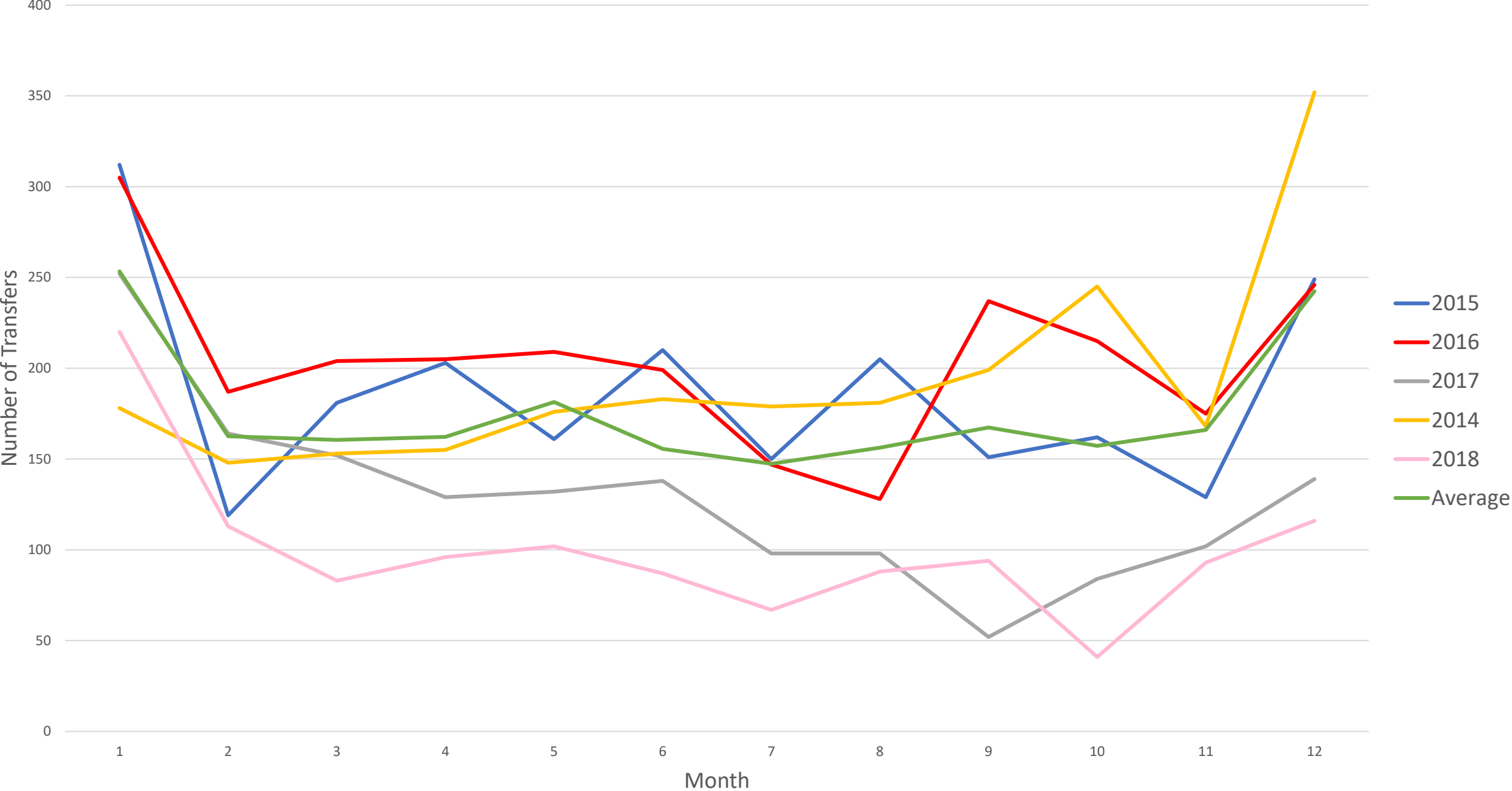
— Yearly Share Transfers — Yearly Allocation Transfers

RS Inflation-adjusted Average Share and Allocation Transfer Price/lb

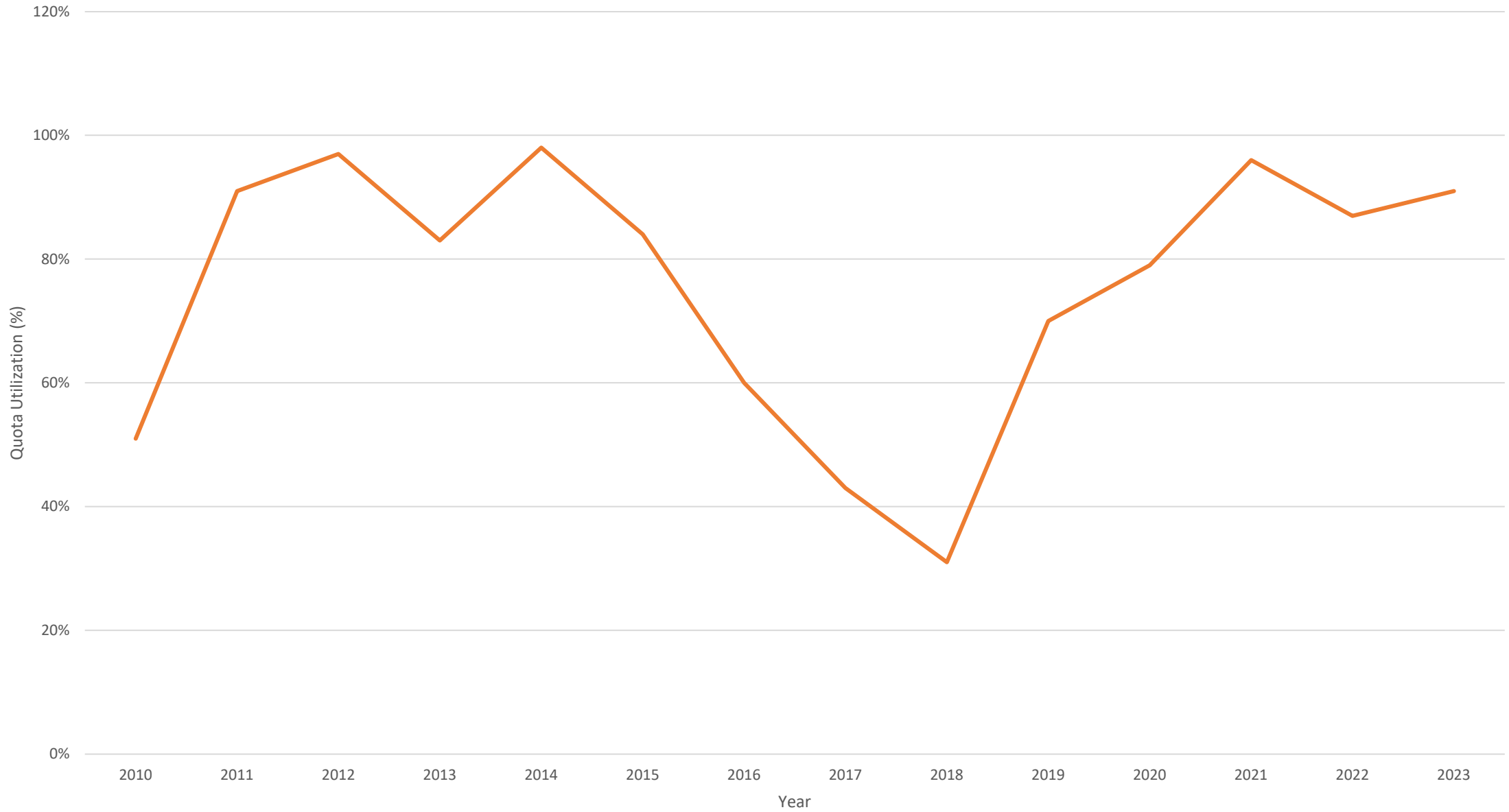


Red Grouper

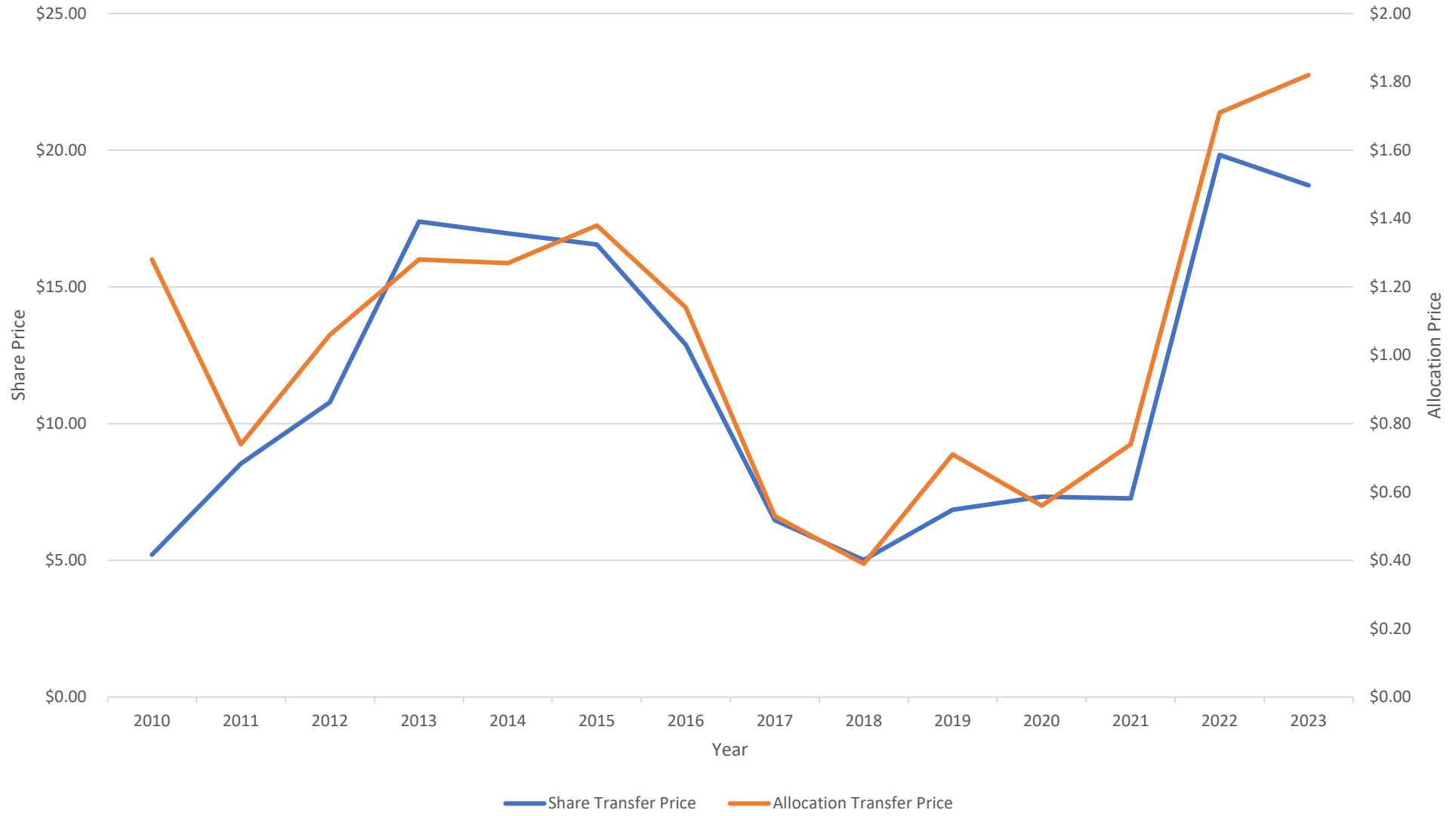
Red Grouper Monthly Number of Allocation Transfers



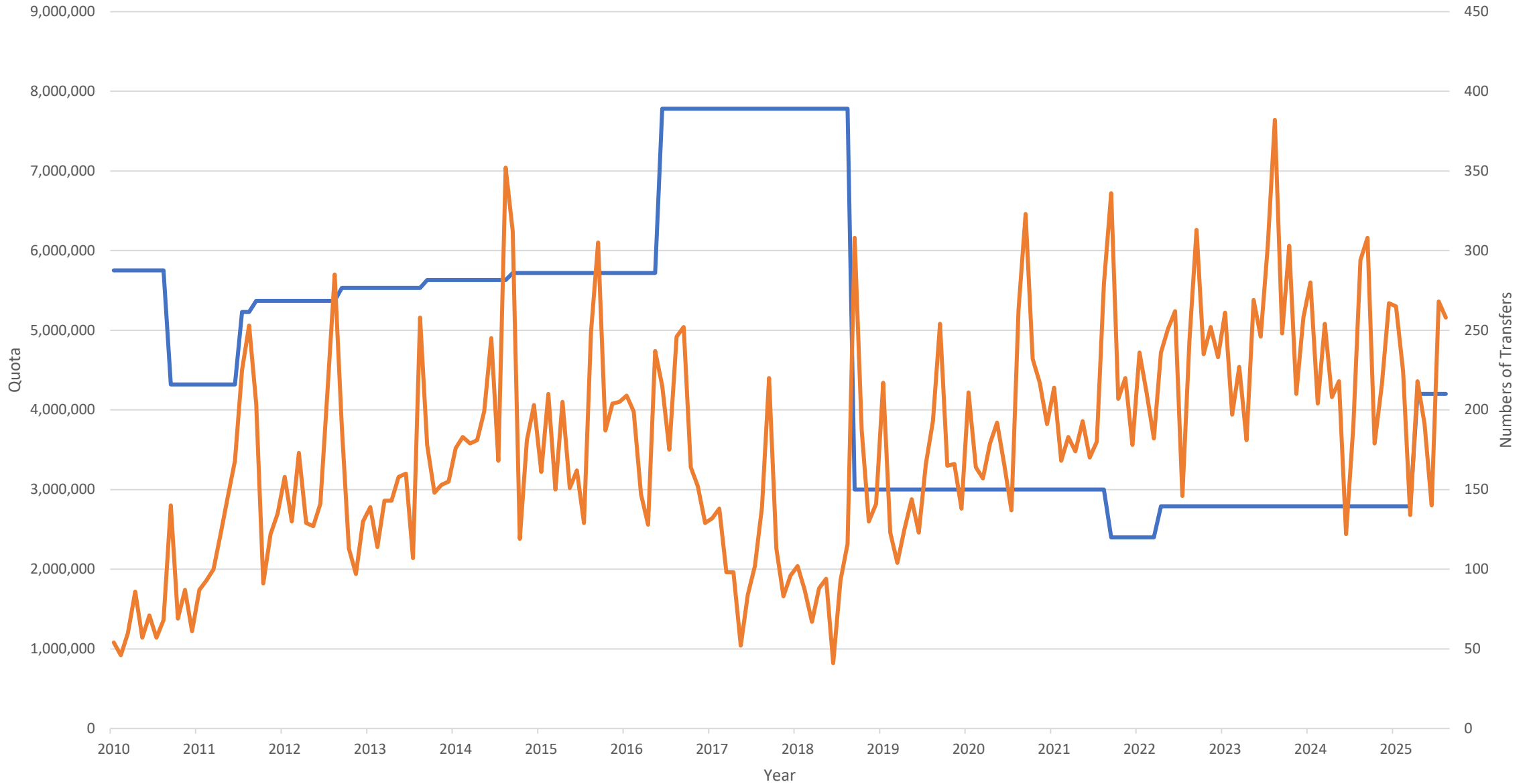
RG Quota Utilization (2010-2023)



RG Inflation-adjusted Average Share and Allocation Transfer Price/lb

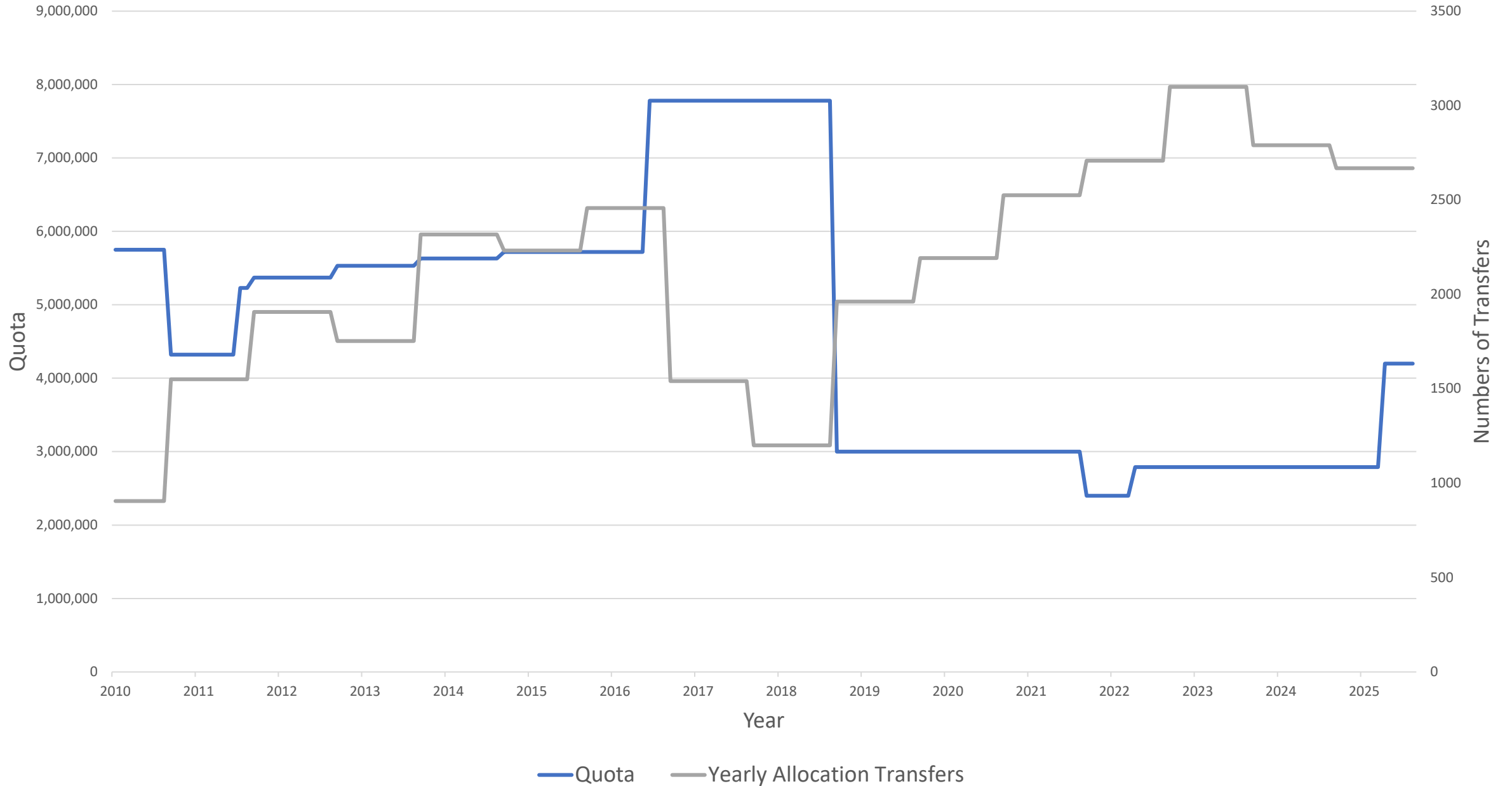


Red Grouper Quota and Monthly Numbers of Allocation Transfers

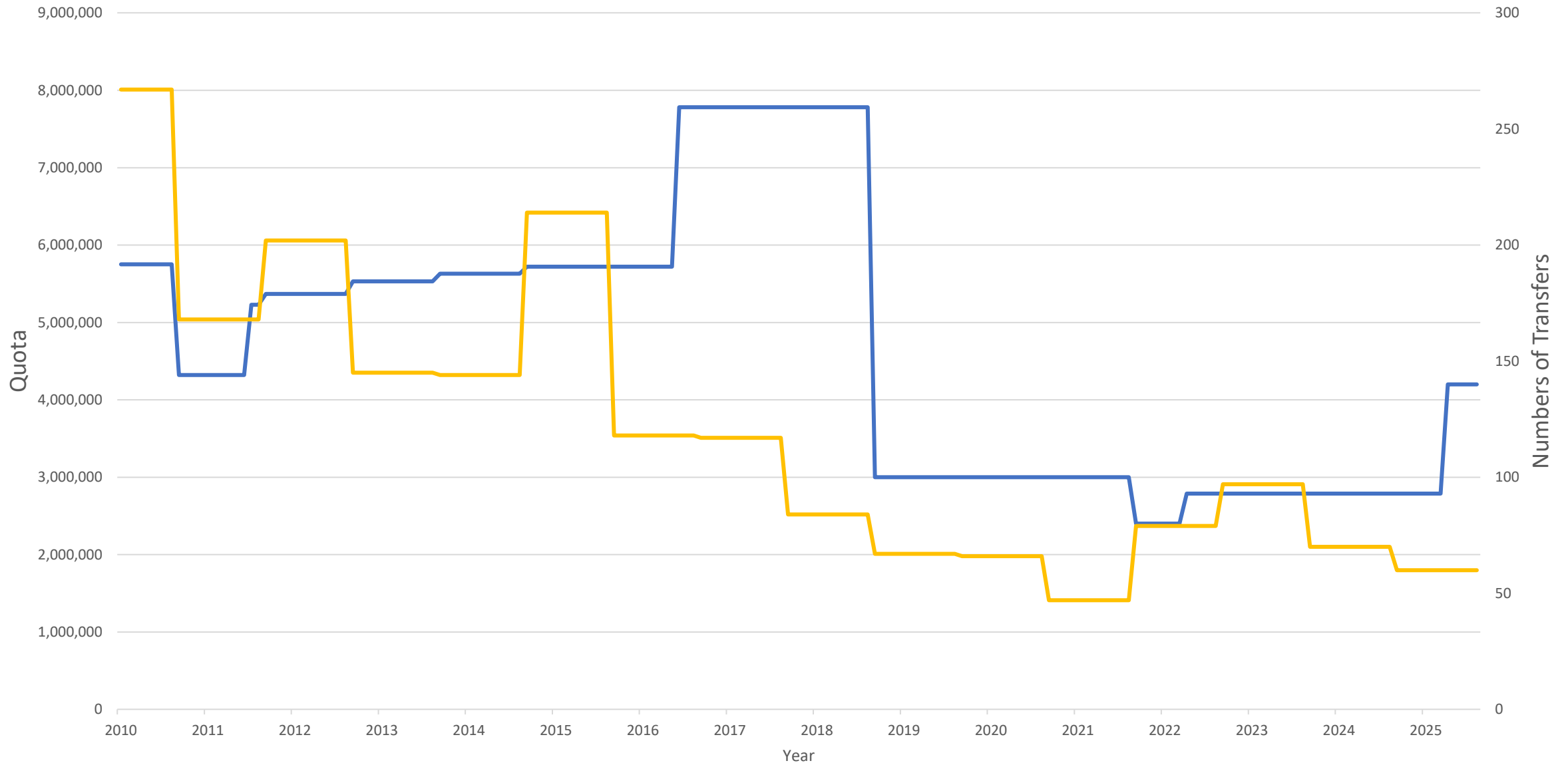


— Quota — Allocation Transfers

Red Grouper Quota and Numbers of Allocation Transfers

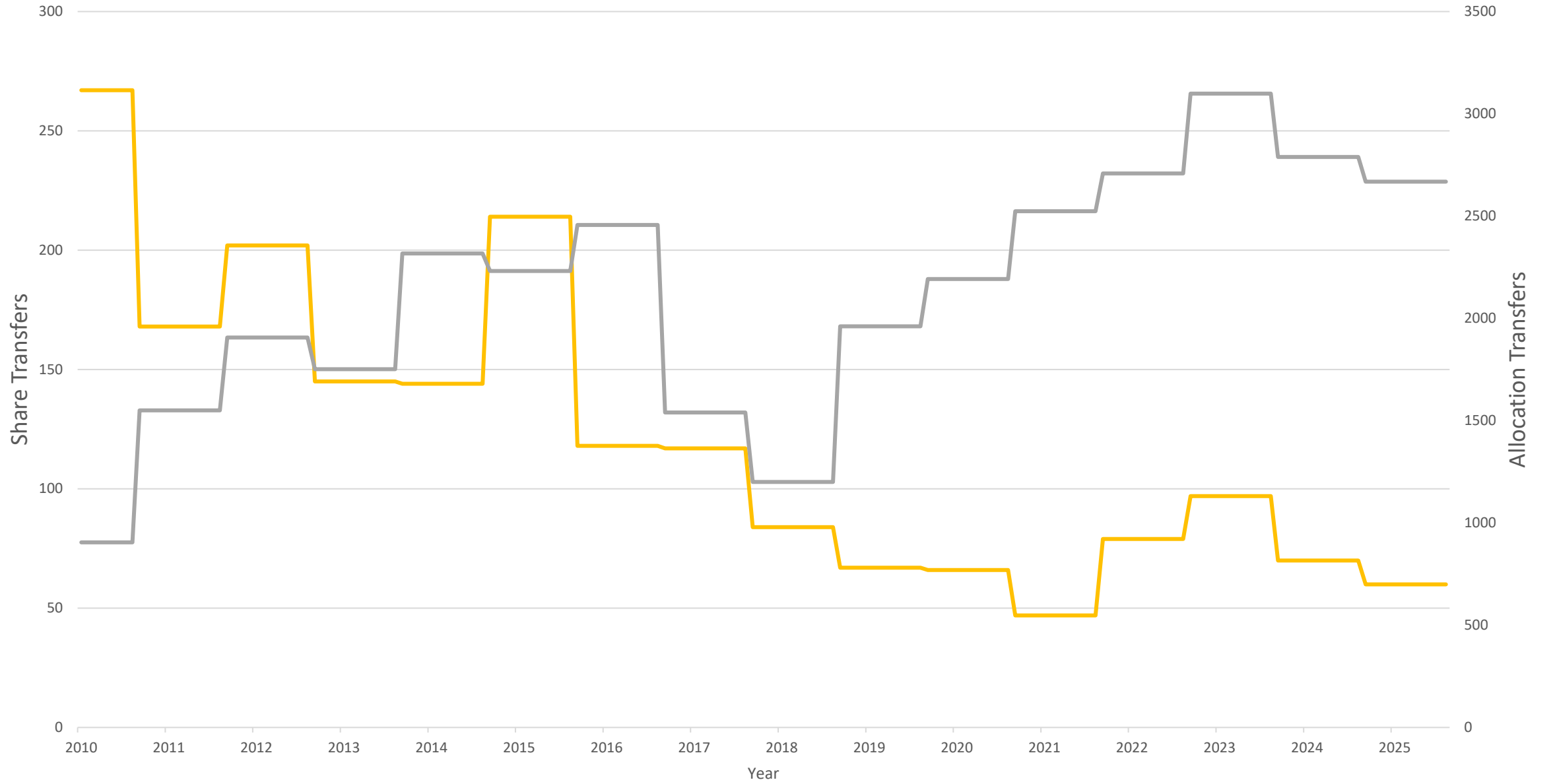


Red Grouper Quota and Numbers of Share Transfers



— Quota — Yearly Share Transfers

Red Grouper Numbers of Share and Allocation Transfers



— Share Transfers Yearly — Allocation Transfers Yearly