



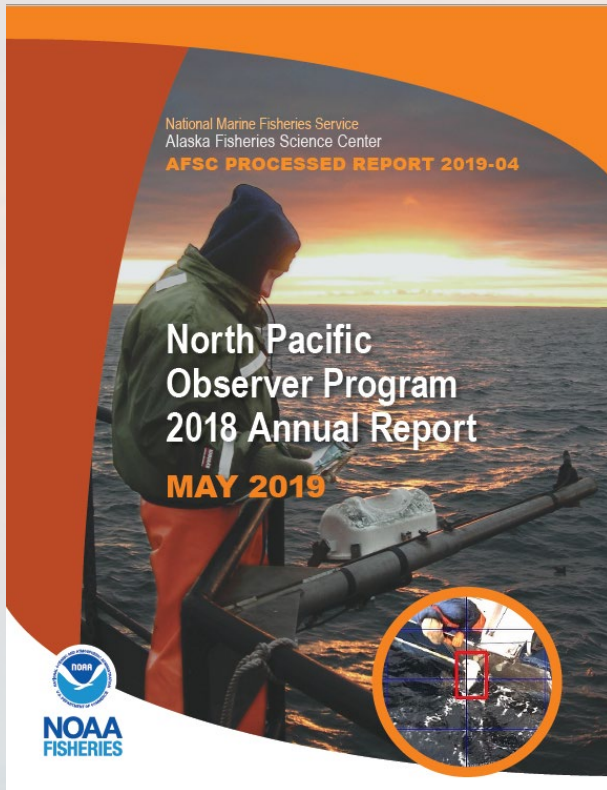
NOAA
FISHERIES

Electronic Monitoring Information: 2018 Annual Report Draft 2020 Annual Deployment Plan

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North Pacific Fishery Management Council
*Joint Plan Team
September 2019
Seattle, WA*



Metric	Observer	EM
Opt in	Auto	Volunteer
n	Fee revenue, cost per day curves (from contract costs and modelled travel expenses)	Set by Council Motion given funding constraints
n_h	Equal Allocation or minimum coverage + optimization algorithm under funding constraints	Required for 30% under funding constraints
Cost per day (2018)	\$1380	\$956-1527
Cost of Program (2019)	\$4.42M (est.)	Unknown
Fee Revenue (for 2019)	\$3.74M	
Fee Revenue (for 2020)	\$2.9M	\$0
Expenditures* (for 2020)	\$4.1M	\$1M

*Need 5.1 (2020) – 5.5M (2023) for minimum coverage (15%) program

EM Regulated program (Hook and Line)

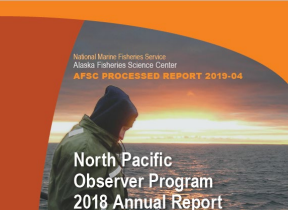
- Selection rates > ODDS

Trawl tendered trips

Table 3-5. -- Number of total vessels (V), sampled vessels (v), total trips (N), sampled trips (n) for each stratum and observer deployment method (vessel and trip-selection) in 2018. The expected coverage and 95% confidence interval columns are expressed as percentages of the total number of trips taken within each stratum. Fleet totals are reported with and without EM data since EM were not used for catch estimation in 2018.

Coverage	Strata	V	v	N	n	Realized coverage	Expected coverage	95% Confidence Interval lower limit	95% Confidence Interval upper limit	Realized meets expected?
Full	FULL	159	159	3,400	3,400	100.0	100.0			Yes
Partial	HAL	364	176	1,990	309	15.5	17.3	14.0	17.2	No
Partial	EM HAL	120	81	767	174	22.7	30.0	19.8	25.8	No
Partial	POT - No Tender	73	53	626	97	15.5	16.2	12.7	18.6	Yes
Partial	POT - Tender	15	7	31	9	29.0	17.4	14.2	48.0	Yes
Partial	TRW - No Tender	76	67	1,864	378	20.3	20.2	18.5	22.2	Yes
Partial	TRW - Tender	18	11	40	14	35.0	16.7	20.6	51.7	No
Gear-based Total		602	364	5,318	981	18.4				
Partial	EM POT - No Tender	17	12*	163	41*	25.2*	30.0	18.7	32.5	Yes
Partial	EM POT - Tender	1	1*	1	1*	100.0*	30.0	2.5	100.0	Yes
Partial	Zero Coverage	361	0	1,725	0	0.0	0.0			Yes
Partial	Zero EM Research	3	0	23	0	0.0	0.0			Yes
Total Fleet (without EM POT)	Total	1084	484	10,630	4,381	41.2% Trips; 44.6% Vessels				

*Values for sampled trips and realized coverage for EM POT strata are based on EM hard drives received, not actual data reviewed. See Table 3-6 for review data.



EM Regulated program (Hook and Line)

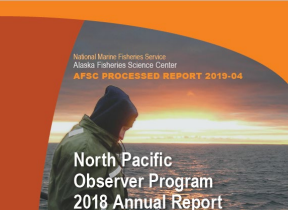
- Selection rates < ODDS

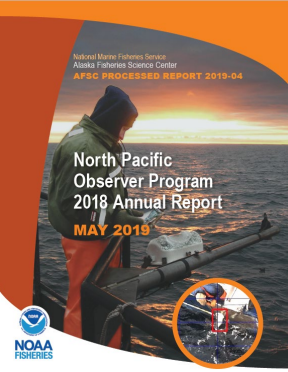
Hook and Line - First time stratum below expected

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EM Regulated program (Hook and Line)

- Selection rates < ODDS

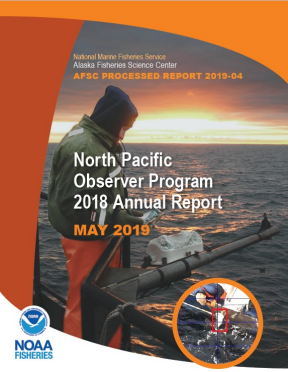
EM

Hard Drives Not reviewed
 65 day review lag (from 5-8)
 (Observer data < 1 hr)



Table 3-6. -- The number of EM hard drives received and reviewed by gear type and month. Totals may differ from Table 3-5 since trip start date was used to define trips here, rather than the landing date used to define trips in Table 3-5.

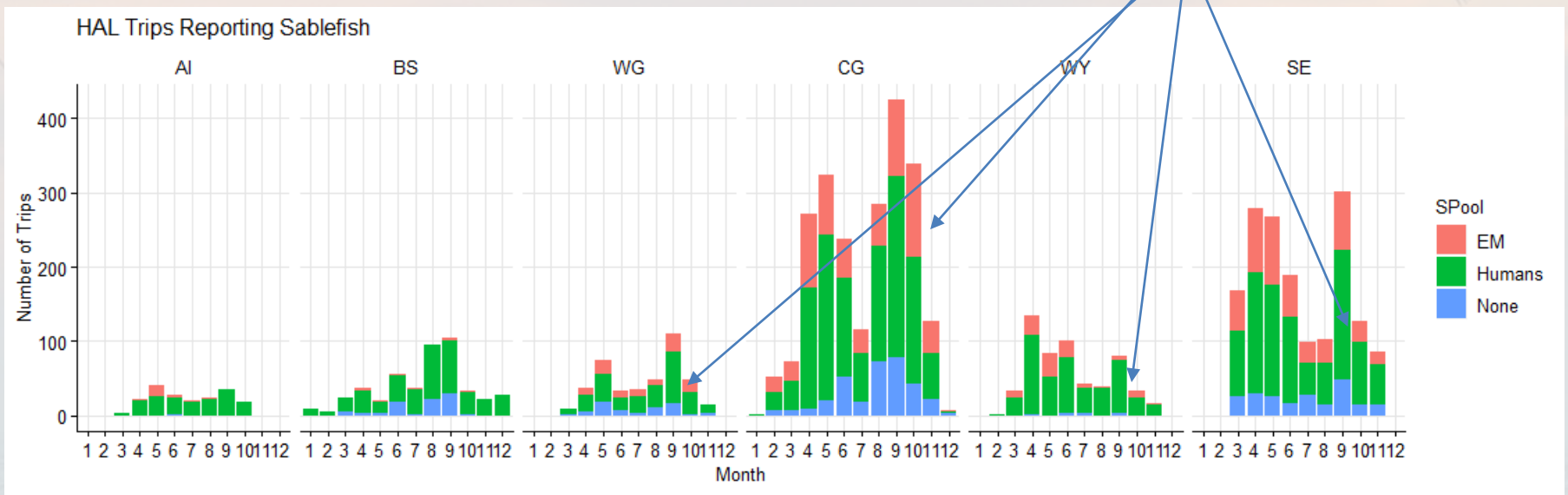
Gear	Data reviewed?	Data												Total
		Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
EM HAL	Yes	3	5	19	42	41	21	10	17	16	0	0	0	174
EM HAL	No	0	0	0	3	2	4	3	5	14	29	2	0	62
EM POT	No	19	2	0	0	1	2	1	1	8	2	2	3	41



EM Regulated program (Hook and Line)

- Temporal inconsistencies
- Hook and Line
EM
Trawl tendered trips

Not Reviewed



In 2019, bycatch rates for the first few months are borrowed until EM video reviews are complete.

The question is how many of the trips have EM review data in CAS? None after Sept

EM History – Current Status

- EM vs. observers tested over a decade for Hook and Line
- Hook and Line Vessels were given option of volunteering into EM prior to start of year since 2013, Pot gears soon thereafter
- Although EM deployed, EM hard drives not necessarily reviewed nor used in Catch Accounting until 2018 for Hook and Line, 2019 for Pot Gear.
- Vessels “opt-in” or “opt-out” of EM prior to the start of each year. Must submit a Vessel Monitoring Plan to NMFS which can be revoked for renewal if an issue arises.
- Fixed gear EM in Alaska is unique in that it does not implement 100% monitoring and uses EM for catch enumeration.
- NMFS cannot effectively design a cost-efficient program since the population of primary sampling units not known in advance and can't require vessels to be monitored by EM.

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EM near future

Expand EM

Increase the number of fixed gear vessels using EM
in the North Pacific

WHAT ARE
YOU
LOOKING AT?

Trawl EFP

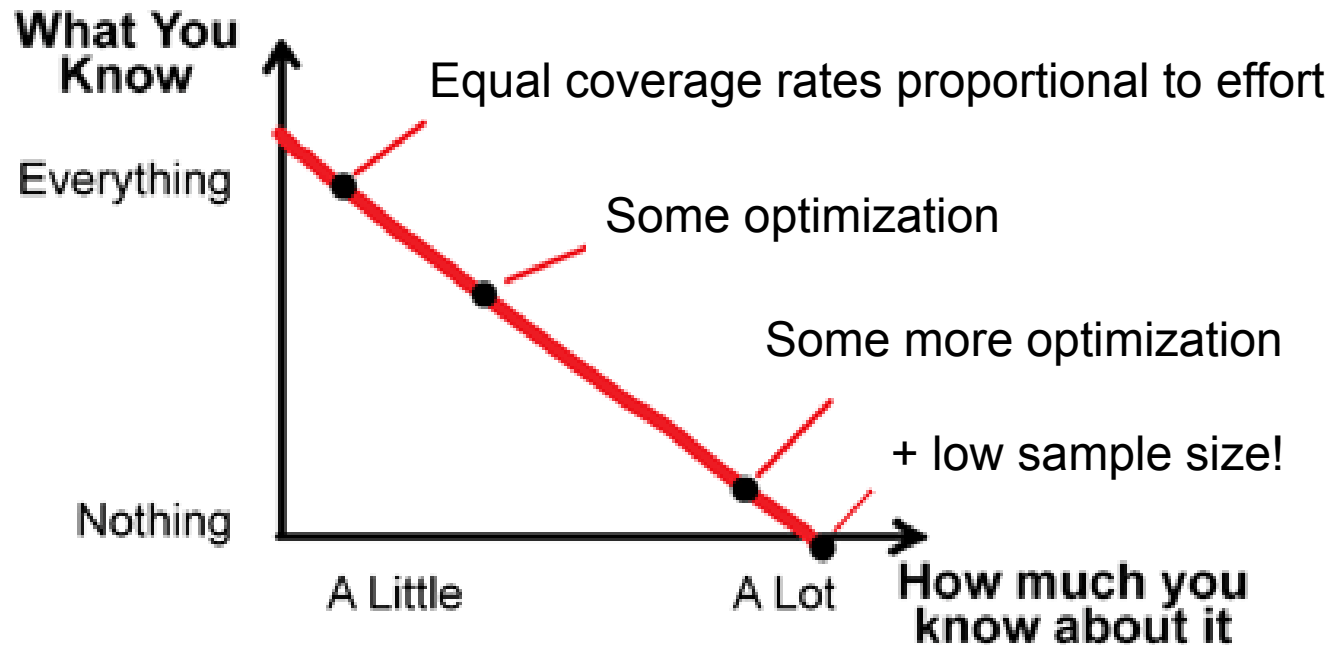
Replace observers on catcher vessels fishing pelagic gear with compliance cameras,
exempted from retention prohibition, monitor catch dockside.

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Scenarios examined

Scenario	Allocation Method	EFP Rate
Trawl EFP Y, Fixed Gear EM Expanded	Equal Rates Afforded	1
Trawl EFP Y, Fixed Gear EM Not Expanded	Equal Rates Afforded	1
Trawl EFP Y, Fixed Gear EM Expanded	Equal Rates Afforded	0.5
Trawl EFP Y, Fixed Gear EM Not Expanded	Equal Rates Afforded	0.5
Trawl EFP N, Fixed Gear EM Expanded	Equal Rates Afforded	0
Trawl EFP N, Fixed Gear EM Not Expanded	Equal Rates Afforded	0
Trawl EFP Y, Fixed Gear EM Expanded	15% + Optimization	1
Trawl EFP Y, Fixed Gear EM Not Expanded	15% + Optimization	1
Trawl EFP Y, Fixed Gear EM Expanded	15% + Optimization	0.5
Trawl EFP Y, Fixed Gear EM Not Expanded	15% + Optimization	0.5
Trawl EFP N, Fixed Gear EM Expanded	15% + Optimization	0
Trawl EFP N, Fixed Gear EM Not Expanded	15% + Optimization	0

What You Know vs How much you know about it



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Gap Analyses

- Methods changed: Now mimics CAS algorithm.
- Each data level -> scores -> distributions among simulations.
- Distributions summarized into Median (Central Tendency) and P25 (risk)
- Scores tallied (+ and -) for each domain to generate bar charts (Bigger = Better)



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Gap Analyses

1. Data available for discard groundfish estimates
2. Data available to generate estimates of counts for EM strata
3. Average weight information available for converting EM count data to EM catch weight































2019 Groundfish Plan Team Subgroup

Biological Data Collections

1. Formed in 2019. Intent was to generate discussion about observer and EM data for users.
 - Generated tables of how otoliths and lengths are used in stock assessments, stomachs used in ecosystem studies.
 - FAQ for assessment authors in development
2. Expected to feed into sample size requirement efforts and future ADP gap analyses (late 2019 or 2020).
3. Generated a lot of discussion (and an action!)

2019 Groundfish Plan Team Subgroup

Biological Data Collections: Trips (N) Vessels (V) Proportion Metric
Tons of 2018 data

	Bering Sea and Aleutian Islands								
	Observers			EM			No Coverage		
	N	V	Proportion MT	N	V	Proportion MT	N	V	Proportion MT
Halibut	180	49	 0.70	23	13	 0.09	526	64	 0.21
Pacific Cod	580	82	 0.92	51	8	 0.07	16	3	0.00
Sablefish	54	14	 0.99	<3	<3	 0.01	<3	<3	0.00
Atka Mackerel	<3	<3	 1.00						
Other Species	<3	<3	 1.00						
Yellowfin Sole	4	<3	 1.00						
	Gulf of Alaska								
Sablefish	966	173	 0.67	417	69	 0.31	79	16	 0.03
Halibut	854	329	 0.58	347	115	 0.26	1067	304	 0.16
Pacific Cod	258	59	 0.72	128	16	 0.24	36	11	 0.03
Rockfish	3	3	 0.85	<3	<3	 0.03	12	3	 0.12
Arrowtooth Flounder	236	31	 1.00						
Atka Mackerel	<3	<3	 1.00						
Flathead Sole	<3	<3	 1.00						
Other Species	<3	<3	 1.00						
Pollock	1273	68	 1.00						
Pollock - Bottom	143	37	 1.00						
Rex Sole	<3	<3	 1.00						
Shallow Water Flatfish	25	11	 1.00						

2019 Groundfish Plan Team Subgroup

Biological Data Collections

1. Looking for PT support of these items:
 1. Re-evaluate EM selection process
 2. Re-evaluate 30% trip selection
 3. Investigate the impact of non review of EM data at end of year:
 4. Evaluate the EM catch estimation routine for fixed gear (weights)
 5. Identify way to explore EM data for users (coming to AKFIN)

Thank you

A serene sunset over the ocean with several birds in flight. The sun is low on the horizon, casting a warm glow across the sky and water. The birds are silhouetted against the bright sky, some in flight and others resting on the water's surface.

- Geoff Mayhew (PSMFC)
- Phil Ganz (AKRO/SF)
- Cindy Tribuzio (ABL/MESA)
- Sandra Lowe (AFSC/REFM)

FOR MORE INFORMATION

[HTTPS://ALASKAFISHERIES.NOAA.GOV/FISHERIES/OBSERVER-PROGRAM](https://alaskafisheries.noaa.gov/fisheries/observer-program)



A serene sunset over the ocean with several birds in flight. The sun is low on the horizon, casting a warm glow across the sky and water. The birds are silhouetted against the light sky, some in flight and others resting on the water's surface.

2020 ADP RESULTS

RESULTS ARE PRELIMINARY UNTIL FORMALLY RELEASED BY NMFS

Scenario

	HAL BSAI			HAL GOA			POT BSAI		POT GOA		TenP BSAI	TenP GOA	TenTR GOA		TRW BSAI	TRW GOA				
TYFY-1-	0.448	0.505	0.368	0.741	0.639	0.765	0.737	0.581	0.738	0.650	0.615	0.643	0.812	0.000	0.791	0.788	0.750	0.801	0.589	Discards Min + Opt MED
TYFY-0.5-	0.445	0.500	0.355	0.739	0.636	0.763	0.736	0.578	0.737	0.649	0.614	0.643	0.792	0.000	0.783	0.779	0.735	0.797	0.562	
TYFN-1-	0.458	0.500	0.368	0.743	0.639	0.765	0.739	0.587	0.745	0.660	0.615	0.643	0.792	0.000	0.783	0.780	0.735	0.796	0.562	
TYFN-0.5-	0.453	0.495	0.355	0.741	0.636	0.764	0.739	0.587	0.745	0.656	0.615	0.643	0.792	0.000	0.775	0.770	0.706	0.791	0.536	
TNFY-	0.439	0.490	0.342	0.735	0.628	0.760	0.736	0.576	0.737	0.648	0.610	0.643	0.792	0.643	0.771	0.785	0.699	0.789	0.518	
TNFN-	0.443	0.488	0.336	0.738	0.629	0.760	0.737	0.570	0.740	0.651	0.615	0.643	0.792	0.571	0.784	0.757	0.684	0.785	0.500	
TYFY-1-	0.000	0.013	0.286	0.000	0.001	0.000	0.000	0.021	0.000	0.000	0.064	0.343	0.052	0.615	0.000	0.000	0.003	0.000	0.022	Discards Min + Opt P25
TYFY-0.5-	0.000	0.015	0.301	0.000	0.001	0.000	0.000	0.022	0.000	0.000	0.064	0.346	0.073	0.646	0.000	0.000	0.006	0.000	0.035	
TYFN-1-	0.000	0.014	0.264	0.000	0.001	0.000	0.000	0.011	0.000	0.000	0.067	0.318	0.071	0.649	0.000	0.000	0.003	0.000	0.035	
TYFN-0.5-	0.000	0.017	0.282	0.000	0.001	0.000	0.000	0.015	0.000	0.000	0.053	0.315	0.101	0.679	0.000	0.000	0.010	0.000	0.056	
TNFY-	0.000	0.020	0.320	0.000	0.001	0.000	0.000	0.022	0.000	0.000	0.068	0.350	0.118	0.035	0.000	0.000	0.015	0.000	0.072	
TNFN-	0.000	0.027	0.318	0.000	0.001	0.000	0.000	0.024	0.000	0.000	0.046	0.342	0.146	0.048	0.000	0.000	0.028	0.000	0.103	
TYFY-1-	0.455	0.515	0.382	0.745	0.648	0.769	0.754	0.616	0.755	0.677	0.635	0.643	0.792	0.000	0.776	0.772	0.713	0.791	0.545	Discards Equal Rates MED
TYFY-0.5-	0.450	0.510	0.368	0.742	0.642	0.766	0.749	0.606	0.750	0.669	0.625	0.643	0.792	0.000	0.773	0.768	0.706	0.790	0.527	
TYFN-1-	0.462	0.510	0.368	0.745	0.646	0.768	0.751	0.610	0.755	0.674	0.625	0.643	0.792	0.000	0.772	0.767	0.699	0.788	0.527	
TYFN-0.5-	0.456	0.500	0.368	0.743	0.641	0.765	0.746	0.599	0.750	0.668	0.625	0.643	0.792	0.000	0.770	0.764	0.699	0.788	0.518	
TNFY-	0.441	0.495	0.342	0.737	0.630	0.761	0.740	0.587	0.741	0.654	0.615	0.643	0.792	0.598	0.768	0.762	0.691	0.788	0.509	
TNFN-	0.447	0.480	0.355	0.738	0.631	0.761	0.739	0.581	0.743	0.656	0.625	0.643	0.792	0.580	0.764	0.758	0.691	0.786	0.491	
TYFY-1-	0.000	0.010	0.261	0.000	0.001	0.000	0.000	0.010	0.000	0.000	0.039	0.283	0.095	0.674	0.000	0.000	0.009	0.000	0.052	Discards Equal Rates P25
TYFY-0.5-	0.000	0.012	0.279	0.000	0.001	0.000	0.000	0.012	0.000	0.000	0.045	0.301	0.107	0.690	0.000	0.000	0.012	0.000	0.063	
TYFN-1-	0.000	0.008	0.263	0.000	0.000	0.000	0.000	0.010	0.000	0.000	0.032	0.288	0.122	0.674	0.000	0.000	0.014	0.000	0.070	
TYFN-0.5-	0.000	0.015	0.273	0.000	0.001	0.000	0.000	0.009	0.000	0.000	0.041	0.290	0.119	0.705	0.000	0.000	0.016	0.000	0.075	
TNFY-	0.000	0.019	0.315	0.000	0.001	0.000	0.000	0.018	0.000	0.000	0.058	0.332	0.129	0.038	0.000	0.000	0.017	0.000	0.081	
TNFN-	0.000	0.018	0.304	0.000	0.001	0.000	0.000	0.008	0.000	0.000	0.050	0.332	0.136	0.046	0.000	0.000	0.021	0.000	0.103	

Trip Target

Difference ■ Worse ■ No Change ■ Better

Scenario	EM_HAL BSAI		EM_HAL GOA		EM_POT BSAI		EM_POT GOA		Avg Wgt Min + Opt MED
	Halibut	Pacific Cod	Halibut	Pacific Cod	Pacific Cod	Sablefish	Pacific Cod	Sablefish	
TYFY-1	0.521	0.729	0.593	0.729	0.680	0.539	0.506	Avg Wgt Min + Opt MED	
TYFY-0.5	0.517	0.727	0.592	0.729	0.679	0.539	0.504		
TYFN-1	0.512	0.732	0.598	0.730	0.694	0.537	0.522		
TYFN-0.5	0.512	0.731	0.593	0.730	0.694	0.537	0.513		
TNFY	0.511	0.725	0.587	0.727	0.679	0.538	0.504		
TNFN	0.500	0.729	0.593	0.728	0.694	0.537	0.504		
TYFY-1	0.000	0.000	0.001	0.000	0.000	0.000	0.000	Avg Wgt Min + Opt P25	
TYFY-0.5	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TYFN-1	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TYFN-0.5	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TNFY	0.000	0.000	0.002	0.000	0.000	0.000	0.000		
TNFN	0.000	0.000	0.002	0.000	0.000	0.000	0.000		
TYFY-1	0.528	0.731	0.598	0.731	0.688	0.548	0.529	Avg Wgt Equal Rates MED	
TYFY-0.5	0.523	0.729	0.593	0.730	0.688	0.548	0.522		
TYFN-1	0.512	0.733	0.601	0.731	0.704	0.542	0.531		
TYFN-0.5	0.512	0.731	0.598	0.730	0.694	0.542	0.522		
TNFY	0.513	0.726	0.587	0.728	0.681	0.542	0.510		
TNFN	0.500	0.729	0.593	0.728	0.694	0.537	0.513		
TYFY-1	0.000	0.000	0.001	0.000	0.000	0.000	0.000	Avg Wgt Equal Rates P25	
TYFY-0.5	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TYFN-1	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TYFN-0.5	0.000	0.000	0.001	0.000	0.000	0.000	0.000		
TNFY	0.000	0.000	0.002	0.000	0.000	0.000	0.000		
TNFN	0.000	0.000	0.002	0.000	0.000	0.000	0.000		
FY	0.637	0.810	0.792	0.808	0.795	0.790	0.754	Discards EM MED	
FN	0.607	0.806	0.795	0.805	0.796	0.784	0.750		
FY	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Discards EM P25	
FN	0.000	0.000	0.000	0.000	0.000	0.000	0.000		

Difference ■ Worse ■ No Change ■ Better