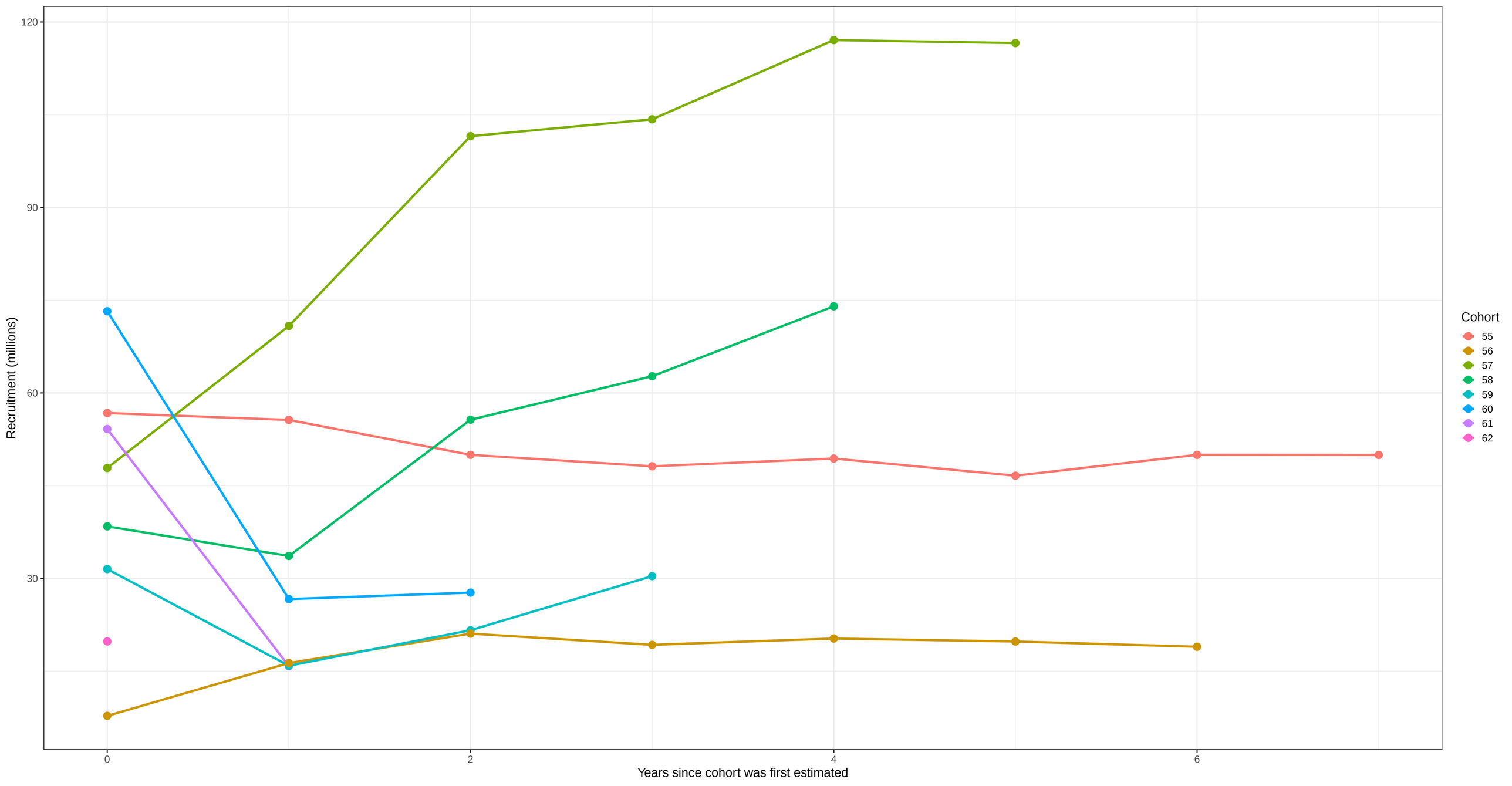
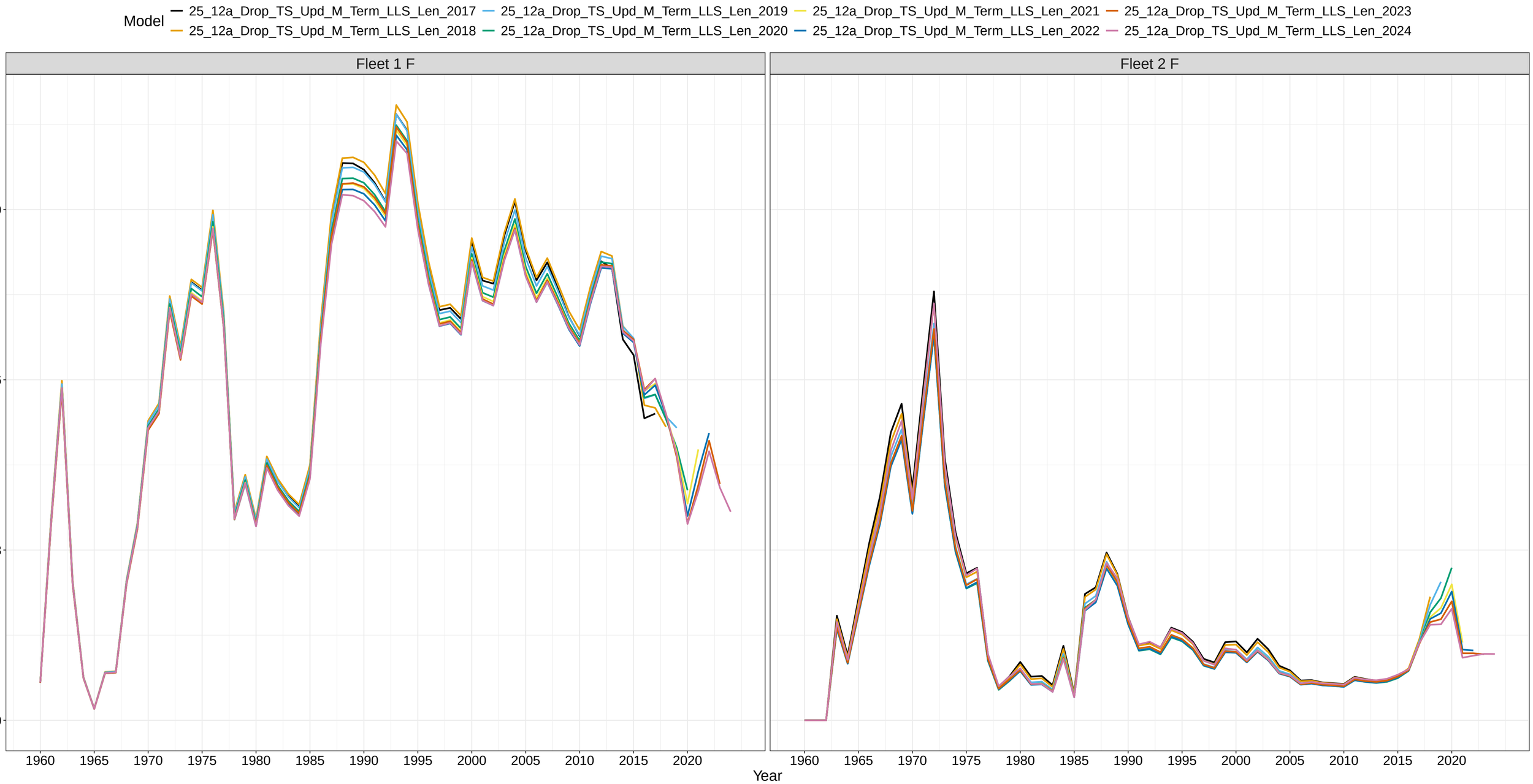
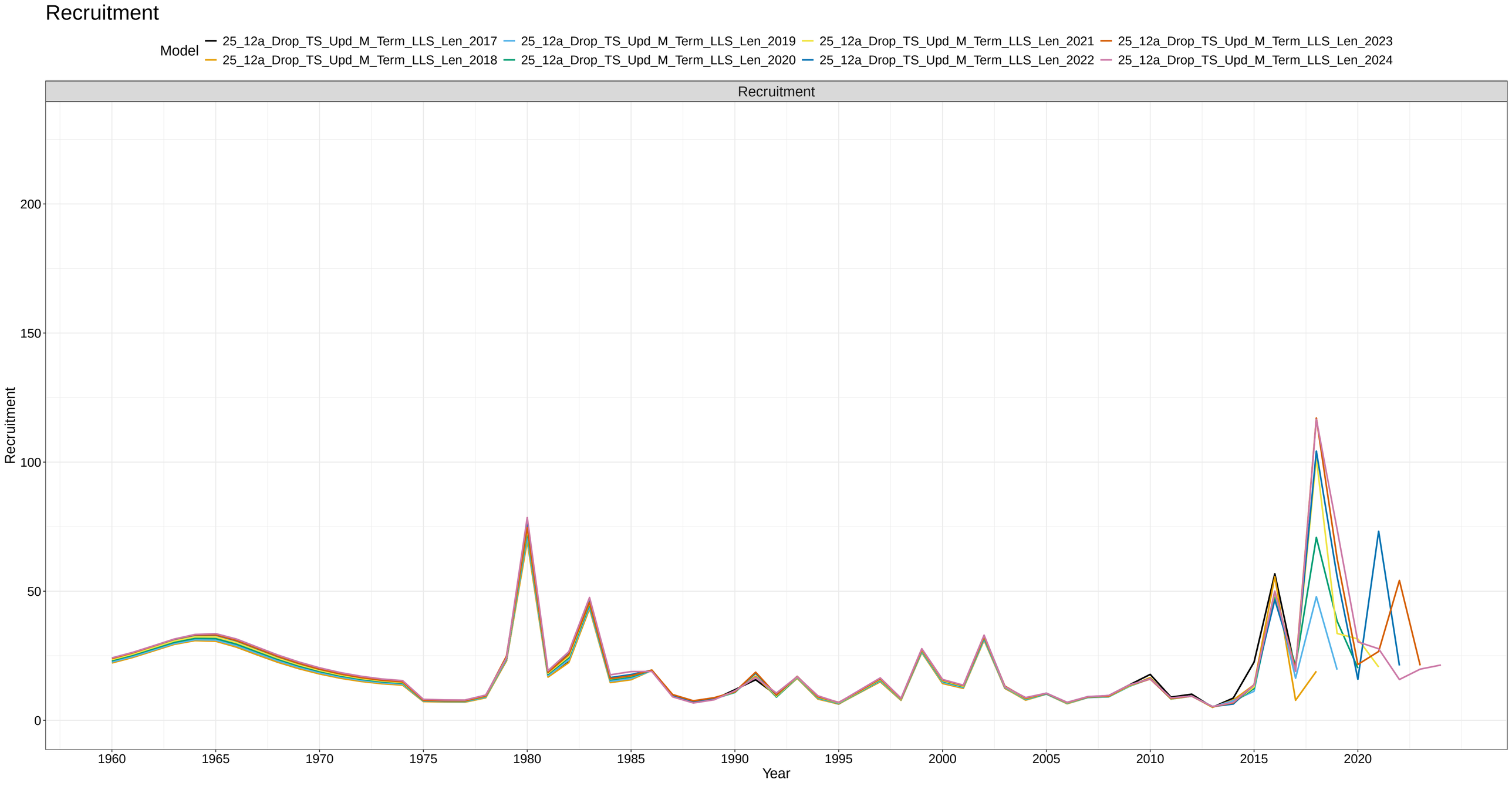
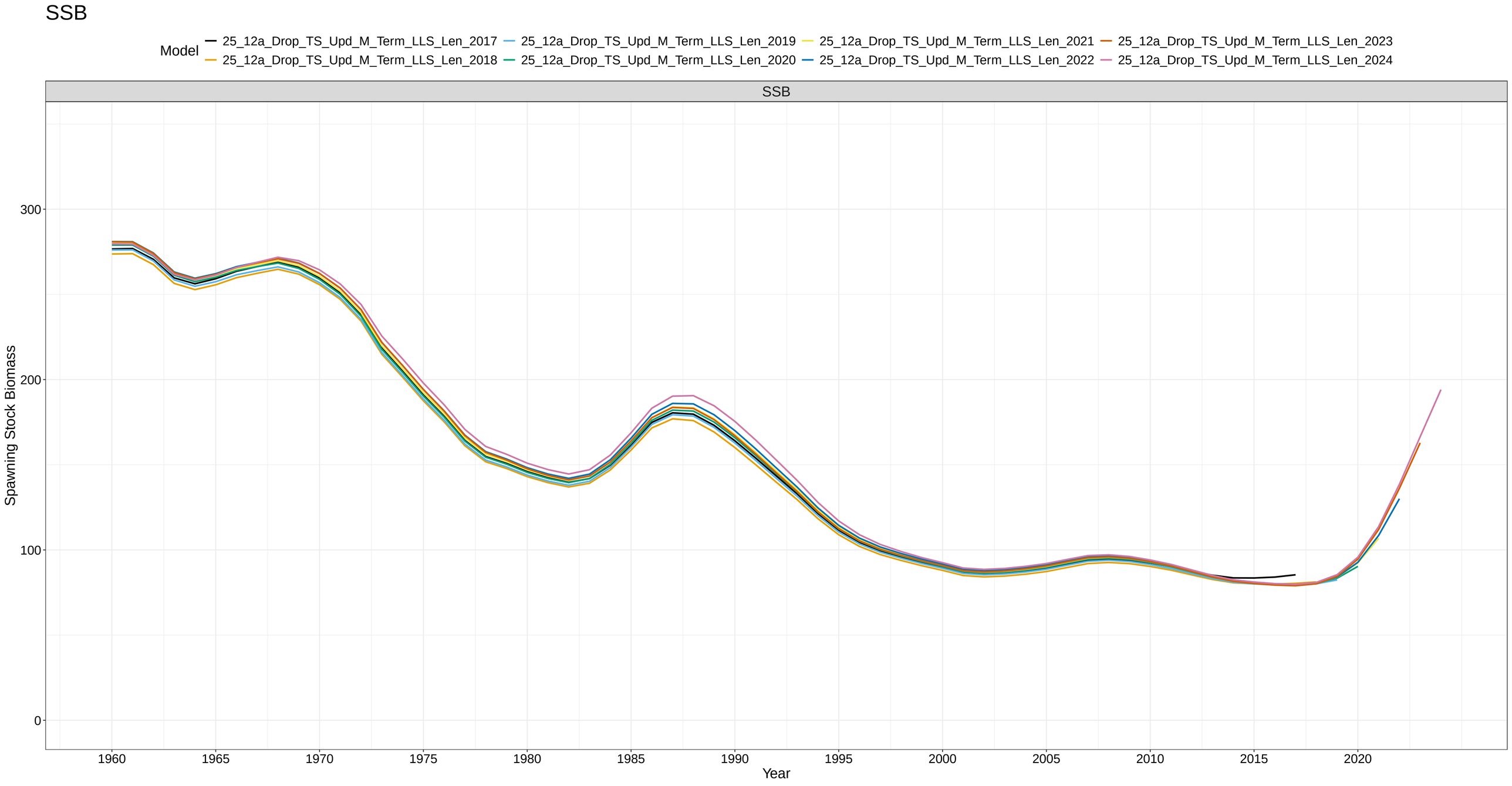

120
90
60
30
Recruitment (millions)
0
2
4
6
Years since cohort was first estimated
Cohort
55
56
57
58
59
60
61
62

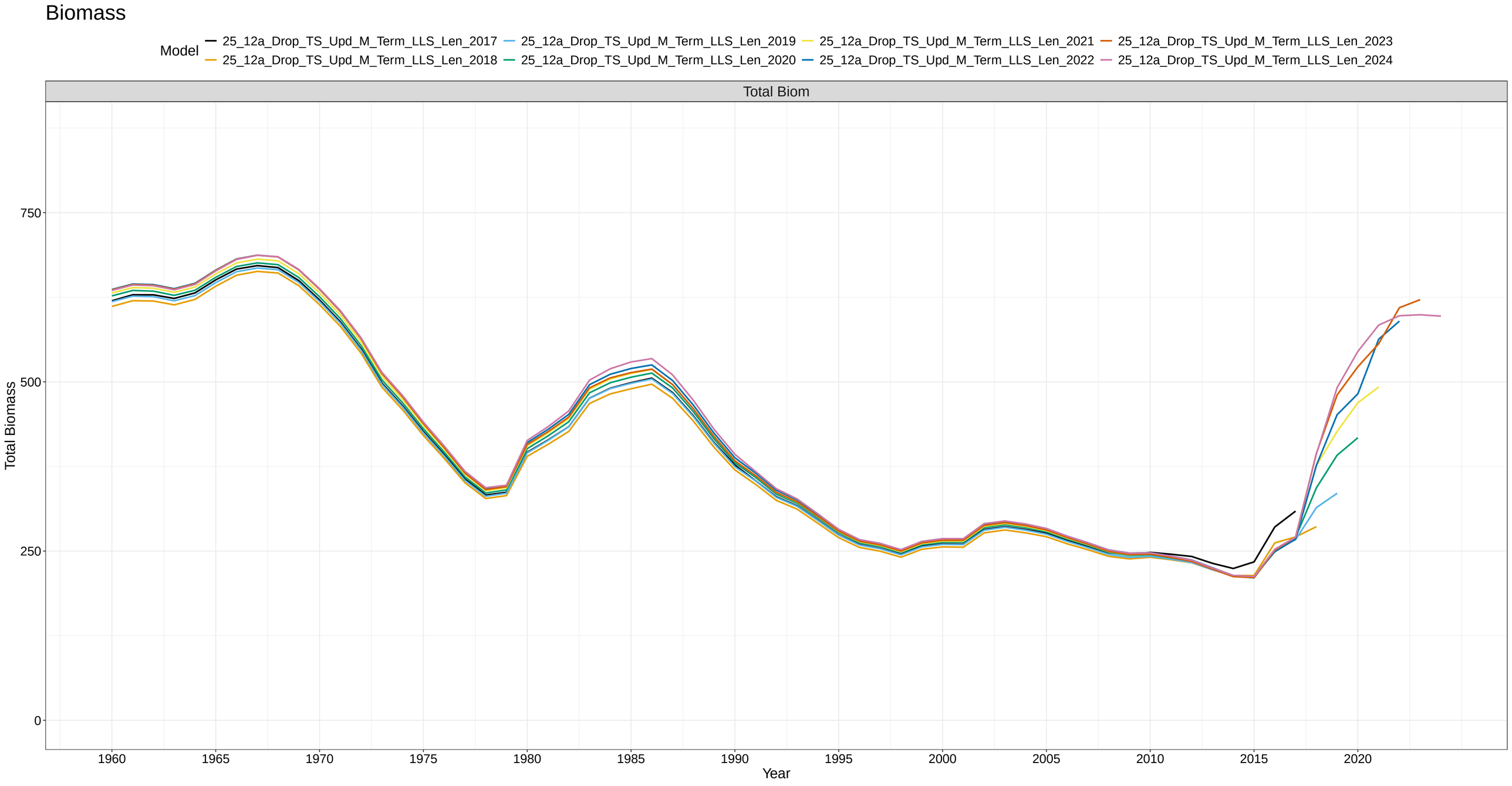
Fishing Mortality




Recruitment
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Recruitment
Recruitment
0
50
100
150
200
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year

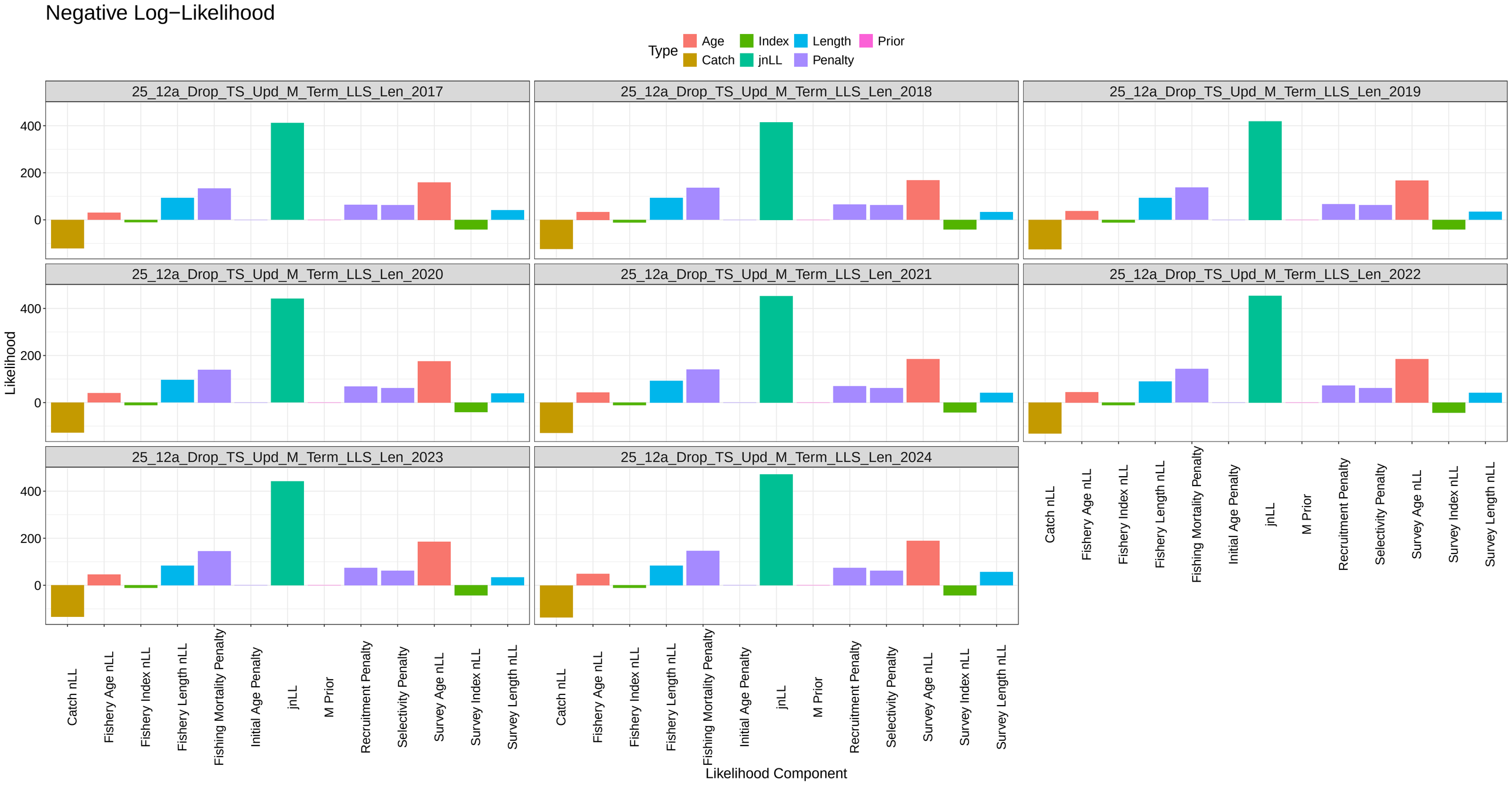

SSB
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
SSB
Spawning Stock Biomass
0
100
200
300
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year

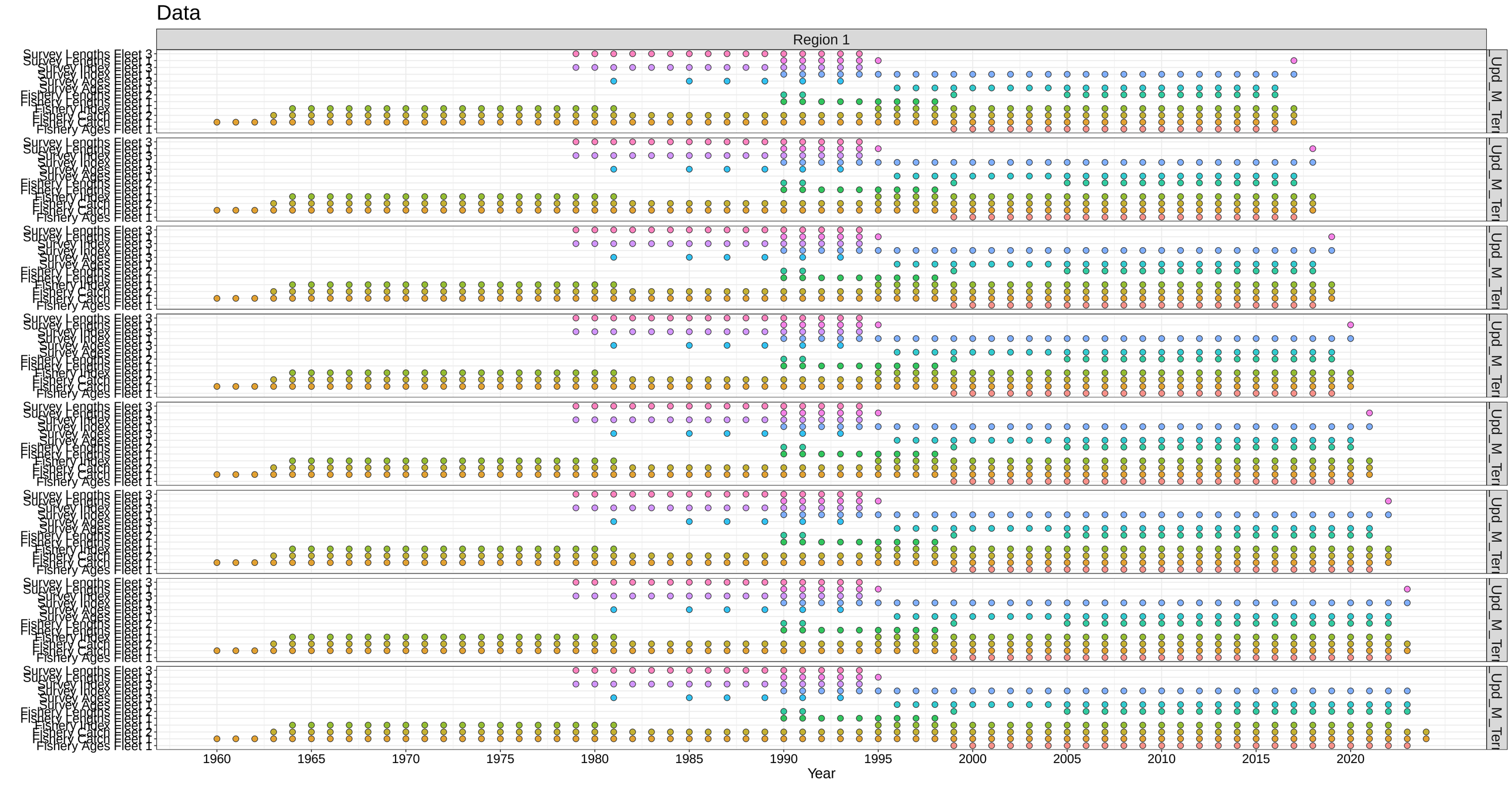
Biomass


Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Total Biom
Total Biomass
0
250
500
750
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year

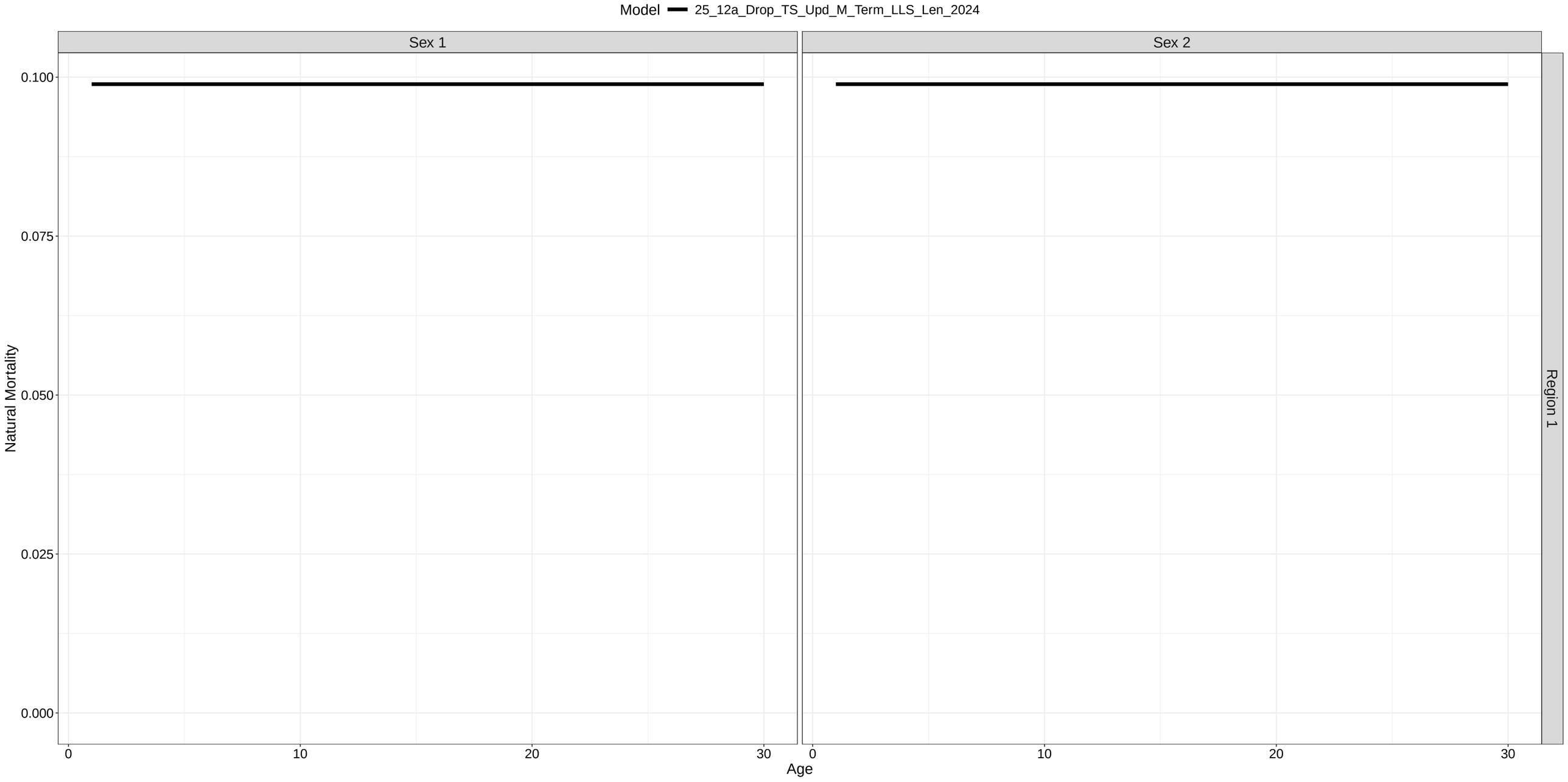
	Model	Region	Terminal_SSB	Terminal_F	Catch_Advice	B_Ref_Pt	F_Ref_Pt	B_over_B_Ref	F_over_F_Ref
1	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024	1	194.09067	0.04842486	39.55329	126.6058	0.08308	1.53303	0.58289
2	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023	1	162.85172	0.05327176	40.24009	124.8299	0.08084	1.30459	0.65900
3	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022	1	130.04134	0.06292911	37.49353	120.3788	0.07970	1.08027	0.78958
4	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021	1	106.81199	0.06142769	27.20730	118.7149	0.07922	0.89973	0.77542
5	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020	1	90.34164	0.06741375	20.58192	112.7751	0.08071	0.80108	0.83522
6	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019	1	82.38668	0.07595225	15.75453	104.4144	0.07955	0.78904	0.95472
7	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018	1	81.20414	0.07347096	13.01856	106.6135	0.07936	0.76167	0.92583
8	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017	1	85.40514	0.06781555	15.15226	102.2478	0.08143	0.83528	0.83280

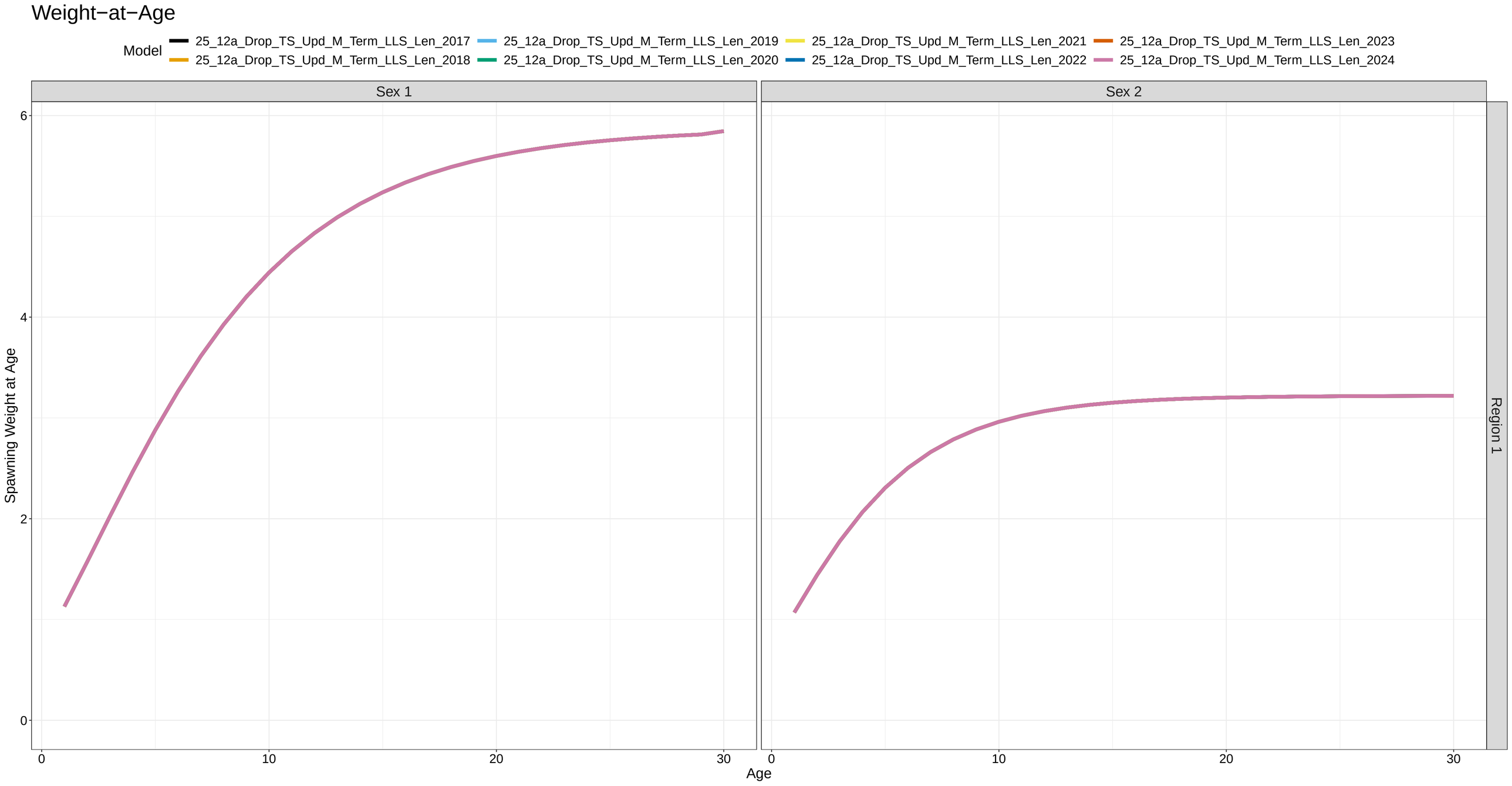
	Model	jnLL	M Prior	Recruitment Penalty	Selectivity Penalty	Catch nLL	Fishing Mortality Penalty	Survey Index nLL	Fishery Index nLL	Initial Age Penalty	Survey Age nLL	Fishery Age nLL	Survey Length nLL	Fishery Length nLL
1	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024	471.8339	−0.2370537	74.67764	61.83381	−136.2188	146.9955	−42.64644	−10.95465	0.2847093	189.5774	48.50805	56.40044	83.61323
2	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023	442.2603	−0.3431141	73.95769	62.07383	−134.1059	145.0248	−43.03196	−11.12735	0.2762889	185.8012	45.62272	34.36180	83.75037
3	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022	453.7680	−0.3554037	72.93068	62.17505	−131.9507	143.1323	−43.44714	−11.70614	0.2632523	184.8849	44.98098	42.23939	90.62077
4	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021	452.7951	−0.5482125	70.46691	62.24126	−129.7935	141.3147	−41.65631	−11.56106	0.2499159	184.6319	43.38332	41.43397	92.63219
5	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020	441.4901	−0.6873658	68.59837	62.36052	−127.6498	139.6276	−40.28205	−11.54533	0.2432857	176.0043	40.12874	38.63923	96.05265
6	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019	419.2575	−0.8372367	66.36592	62.31552	−125.4962	137.6213	−40.22456	−11.97924	0.2397440	167.0812	36.86589	34.13898	93.16609
7	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018	415.1183	−0.9758313	64.94703	62.19357	−123.3279	135.6676	−40.82708	−11.24761	0.2344624	167.9151	33.70739	33.20237	93.62910
8	25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017	411.9730	−0.9270910	63.98233	62.13638	−121.1917	133.7800	−40.30161	−10.13634	0.2484718	159.4107	30.52211	40.94759	93.50214


Negative Log−Likelihood
Type
Age
Index
Length
Prior
Catch
jnLL
Penalty
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Likelihood
400
200
0
Catch nLL
Fishery Age nLL
Fishery Index nLL
Fishery Length nLL
Fishing Mortality Penalty
Initial Age Penalty
jnLL
M Prior
Recruitment Penalty
Selectivity Penalty
Survey Age nLL
Survey Index nLL
Survey Length nLL
Likelihood Component

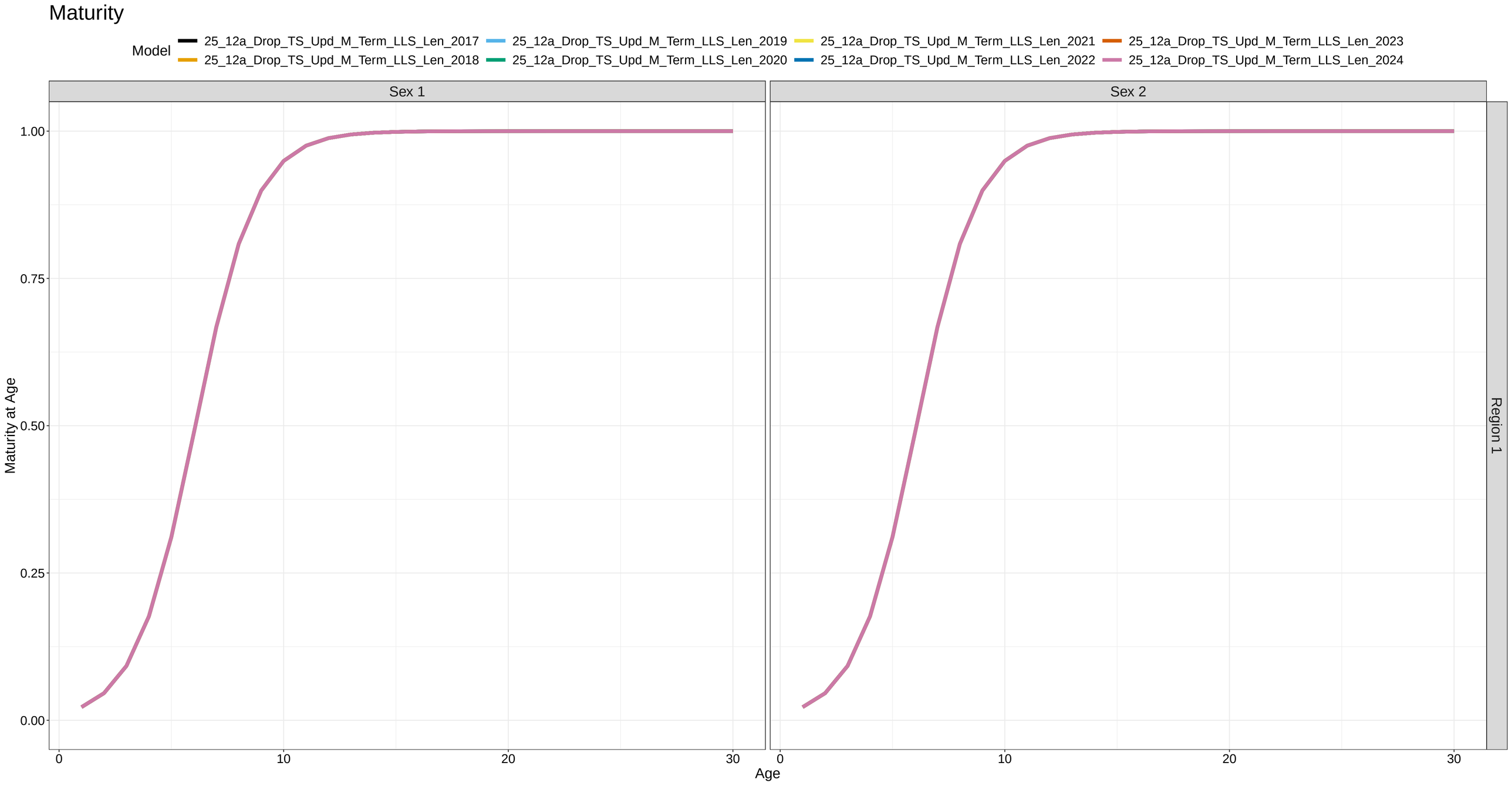

Data
Region 1
Survey Lengths Fleet 3
Survey Lengths Fleet 1
Survey Index Fleet 3
Survey Index Fleet 1
Survey Ages Fleet 3
Survey Ages Fleet 1
Fishery Lengths Fleet 2
Fishery Lengths Fleet 1
Fishery Index Fleet 1
Fishery Catch Fleet 2
Fishery Catch Fleet 1
Fishery Ages Fleet 1
Upd_M_Terr
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year

Natural Mortality

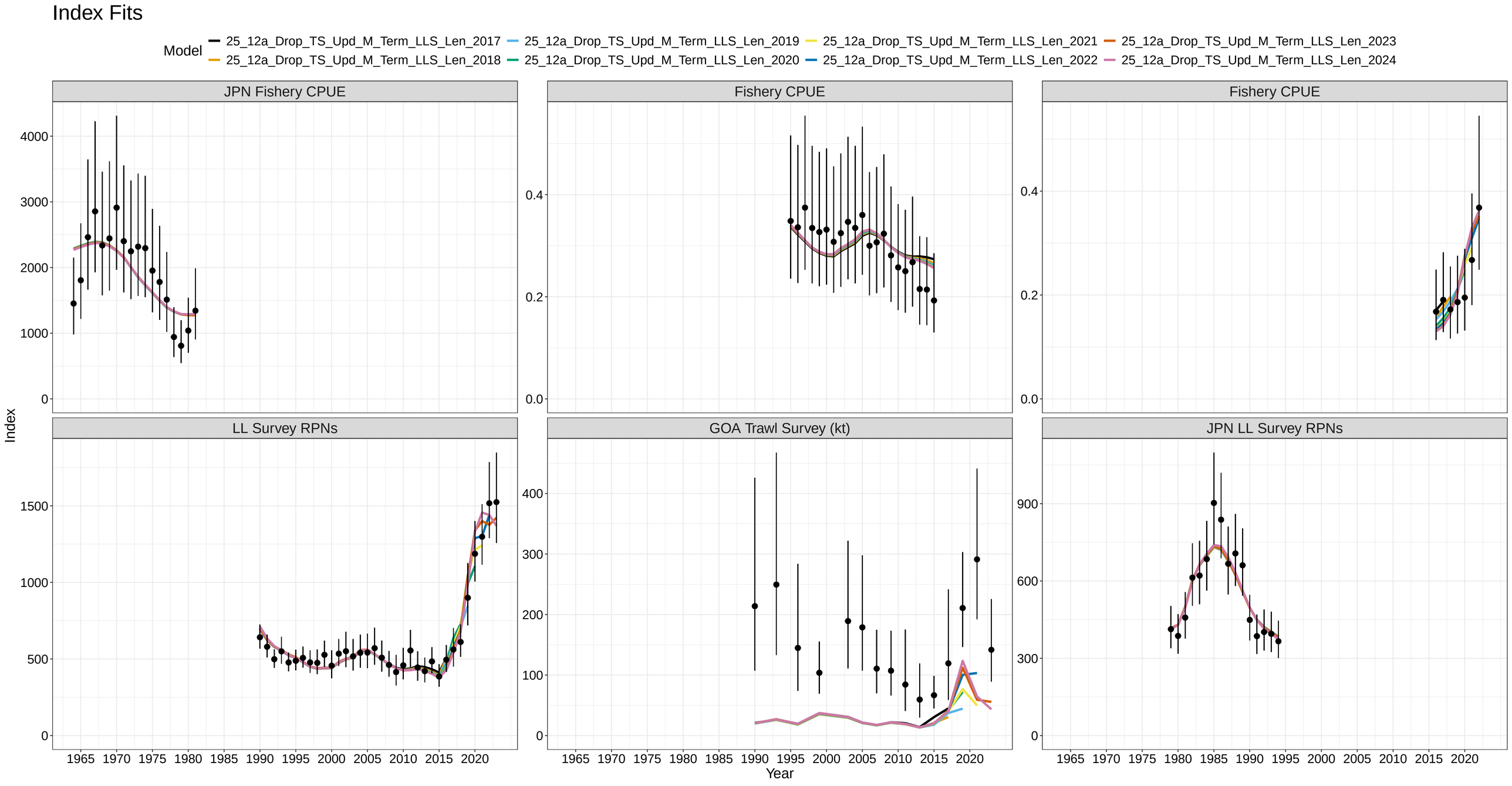



Weight−at−Age
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Sex 1
Sex 2
Region 1
Spawning Weight at Age
0
2
4
6
0
10
20
30
Age

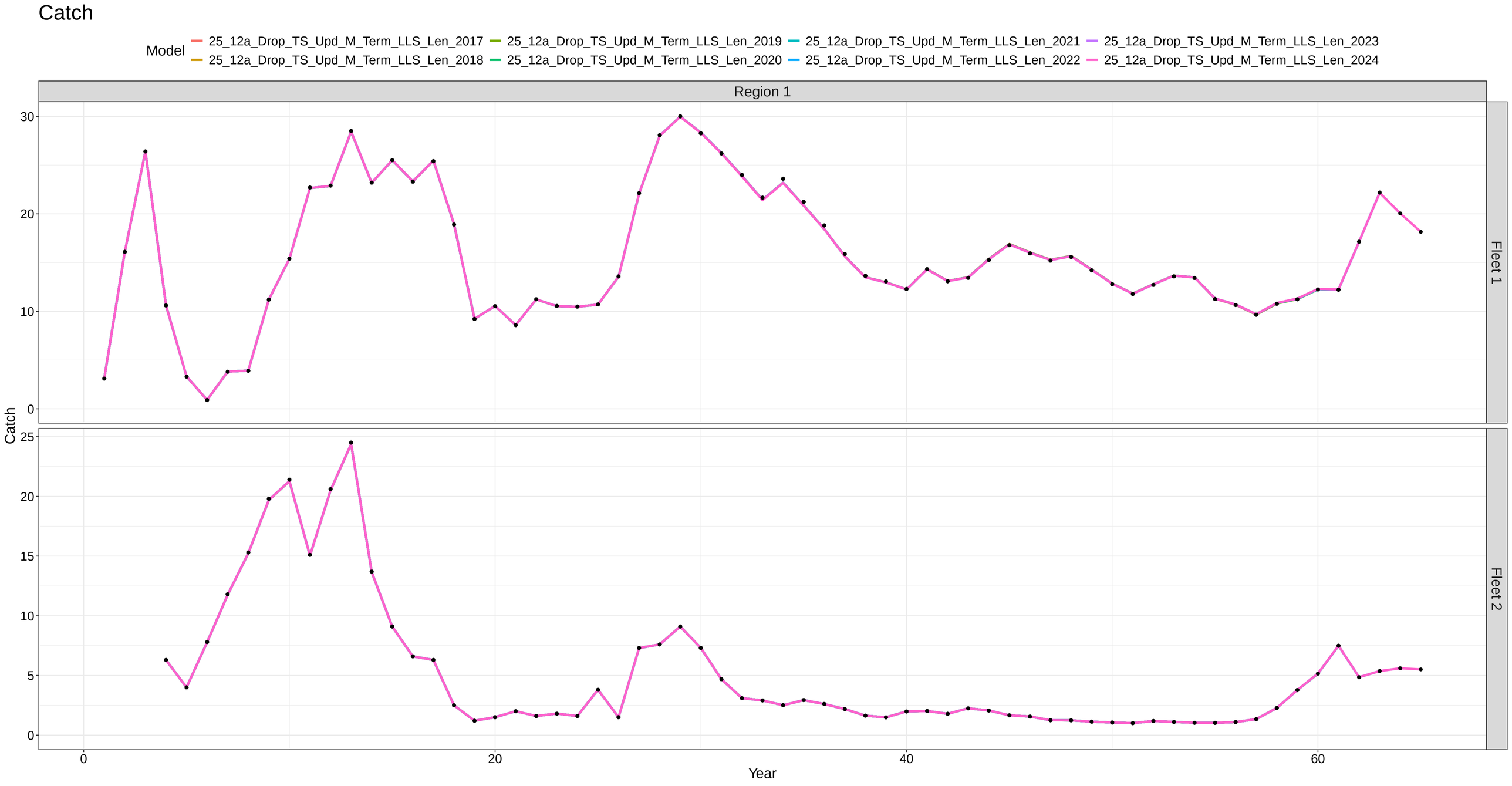
Maturity

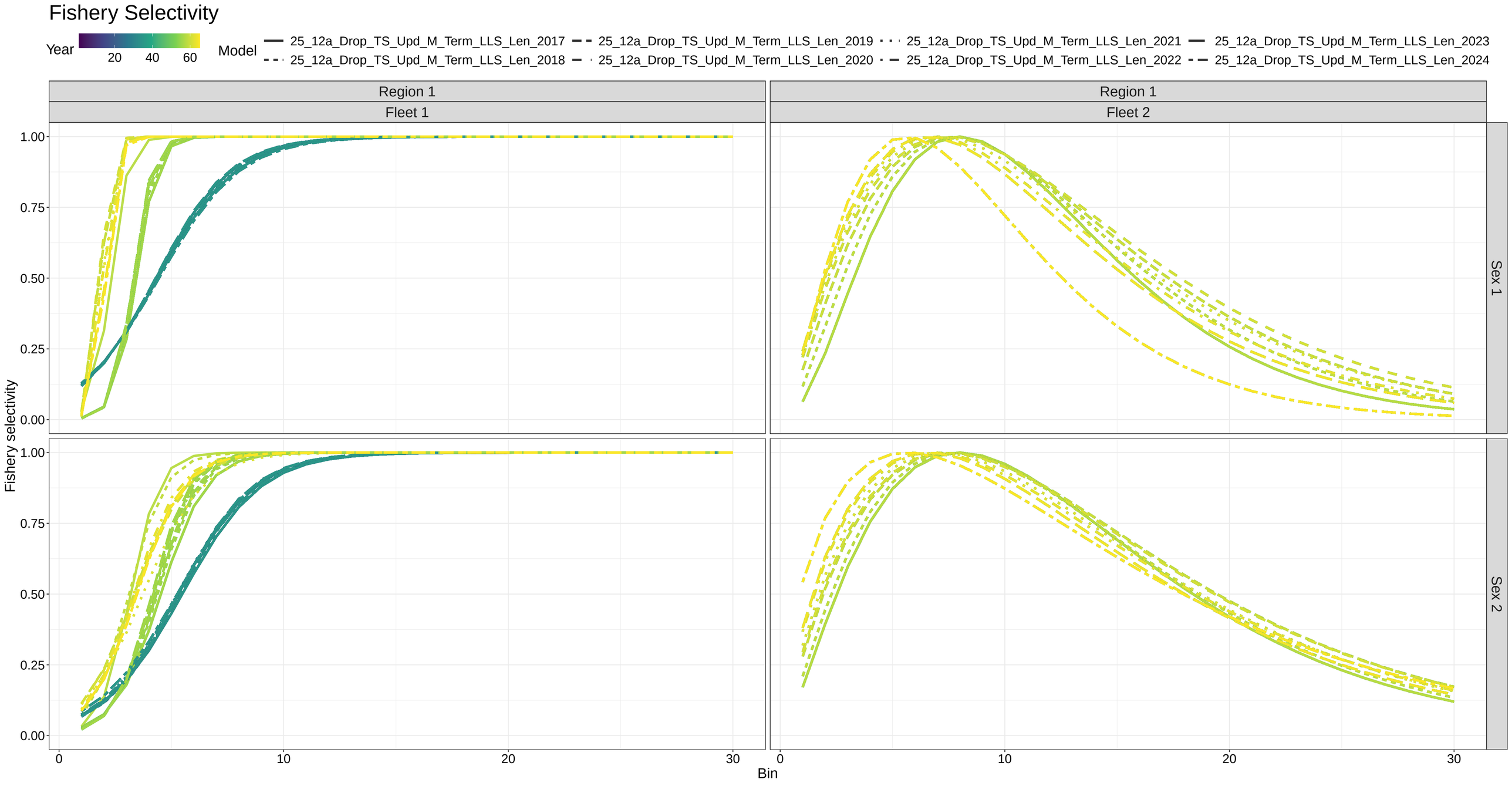

Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Sex 1
Sex 2
Region 1
Maturity at Age
1.00
0.75
0.50
0.25
0.00
0
10
20
30
Age

Index Fits

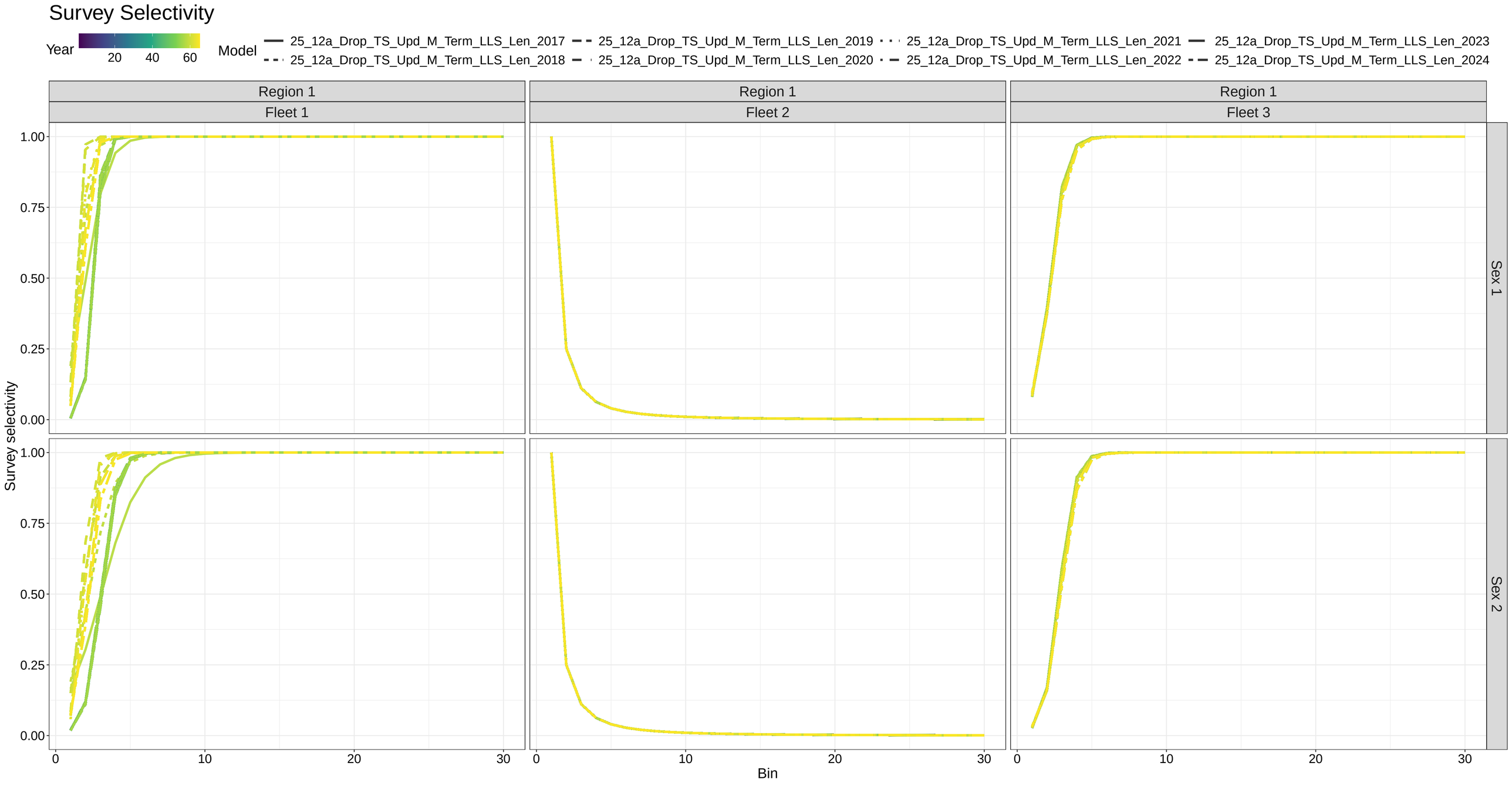

Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
JPN Fishery CPUE
Fishery CPUE
Fishery CPUE
LL Survey RPNs
GOA Trawl Survey (kt)
JPN LL Survey RPNs
Index
Year

Catch

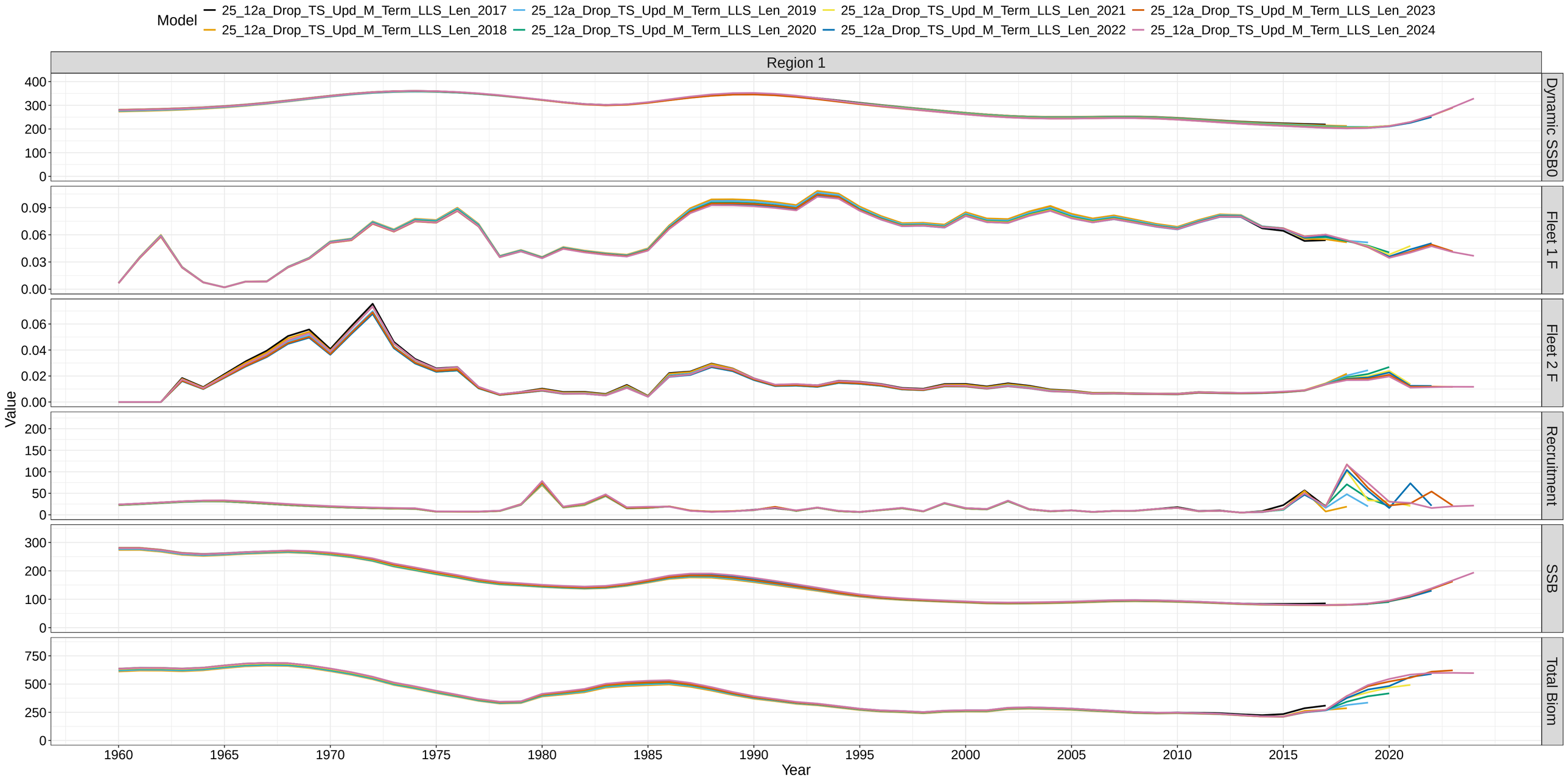

Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Region 1
Fleet 1
Fleet 2
Catch
Year
0
10
20
30
5
15
25
40
60


Fishery Selectivity
Year
20
40
60
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Region 1
Fleet 1
Region 1
Fleet 2
Sex 1
Sex 2
Fishery selectivity
1.00
0.75
0.50
0.25
0.00
0
10
20
30
Bin

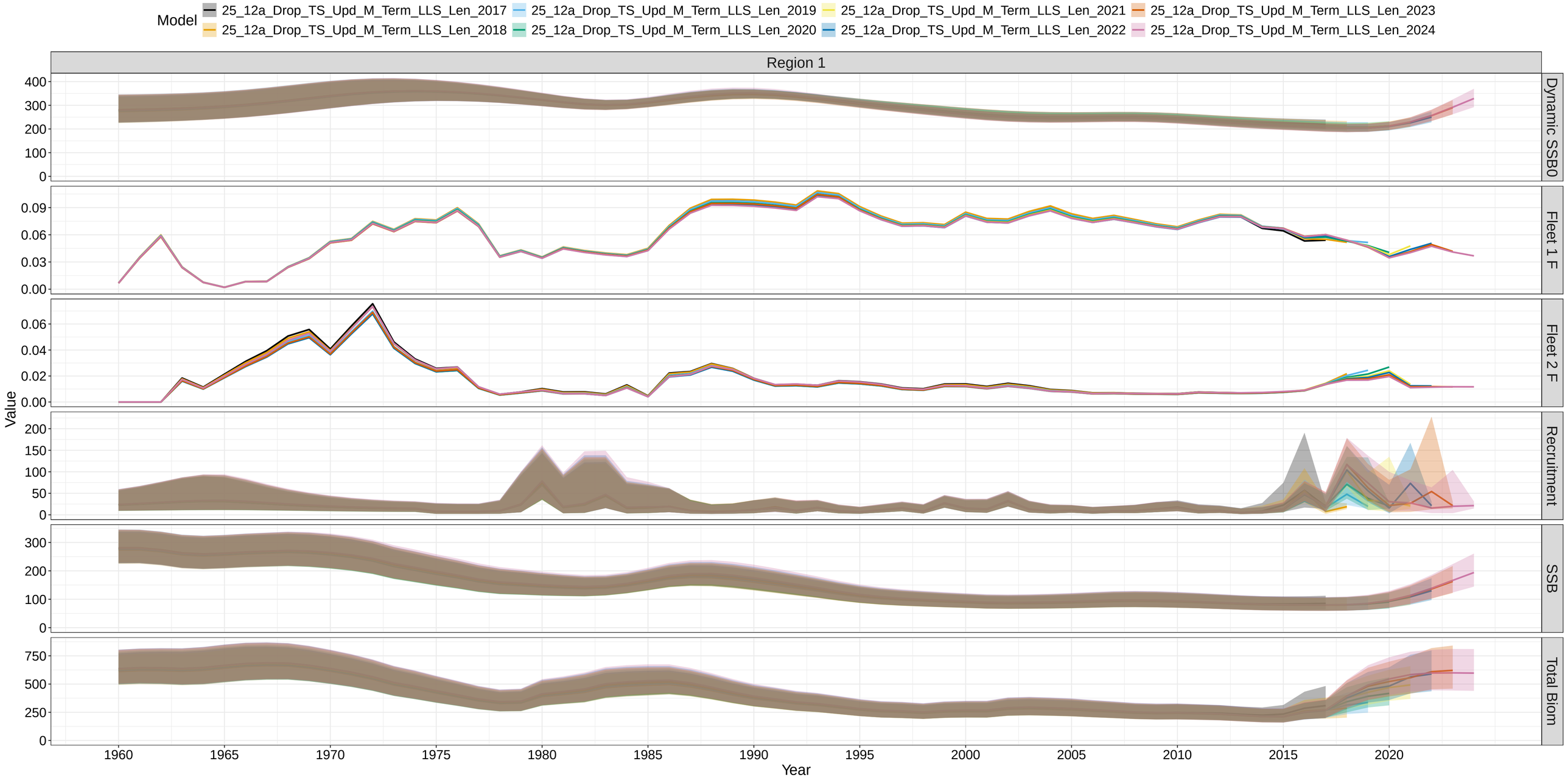
Survey Selectivity



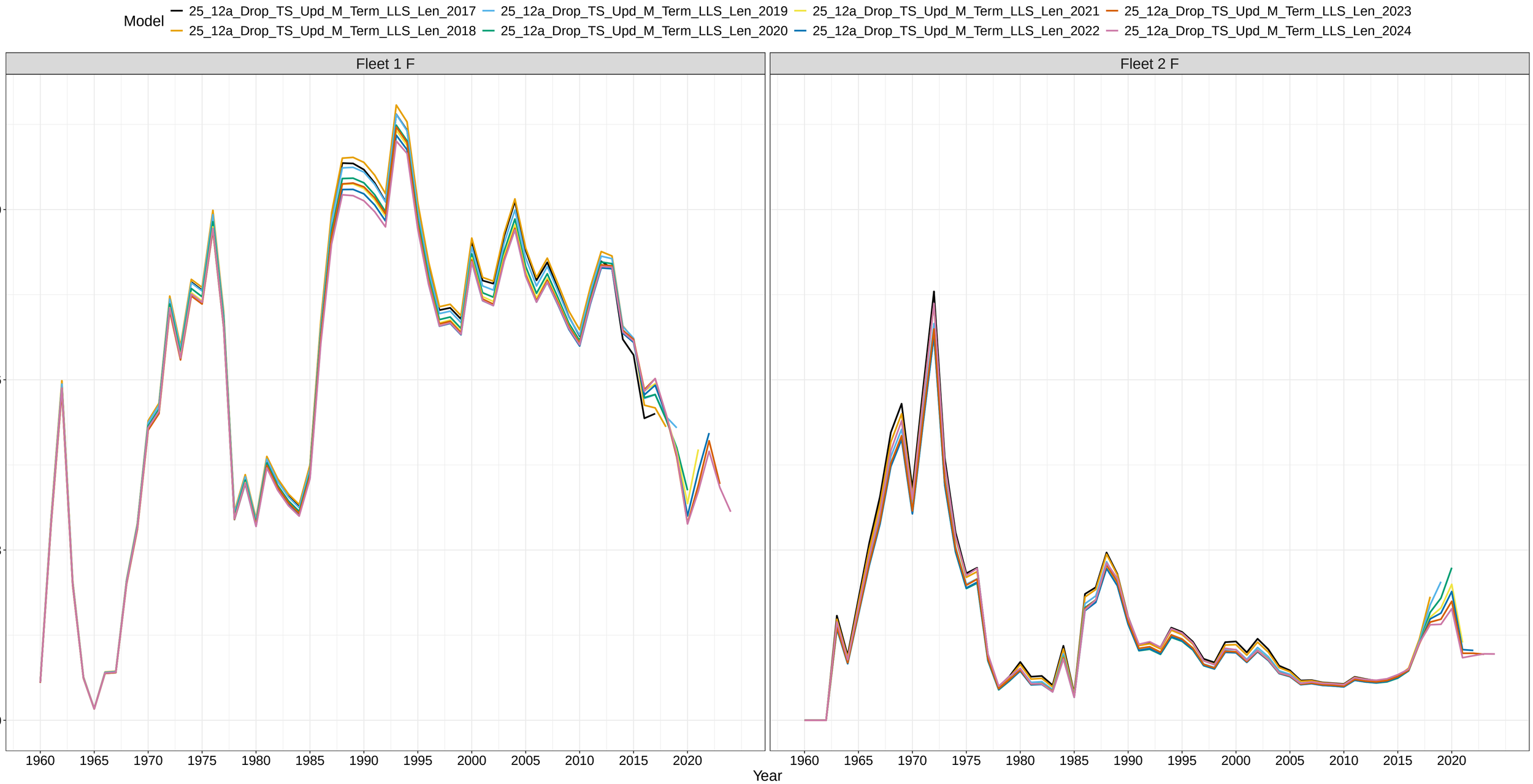
Time Series Plots

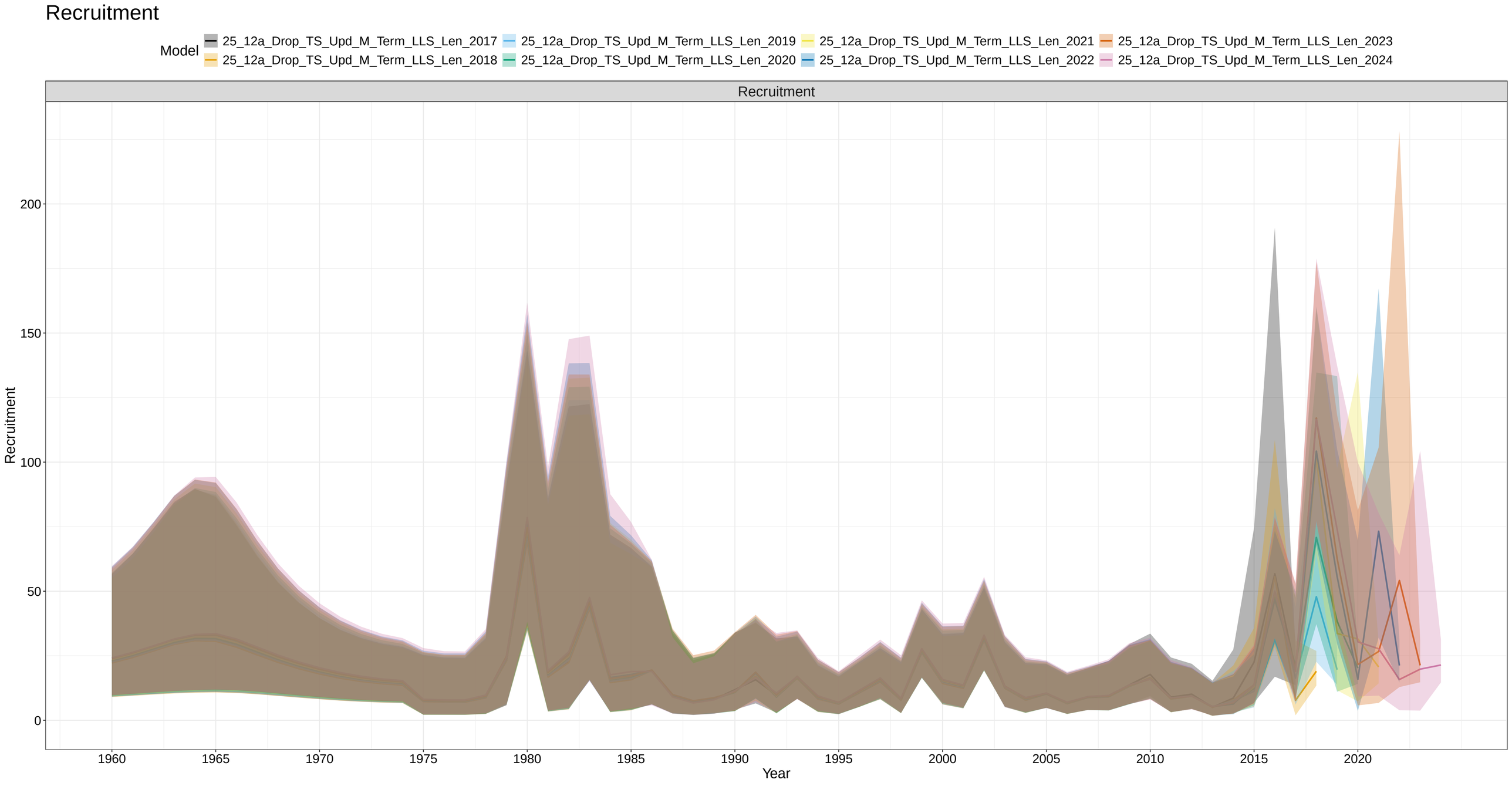


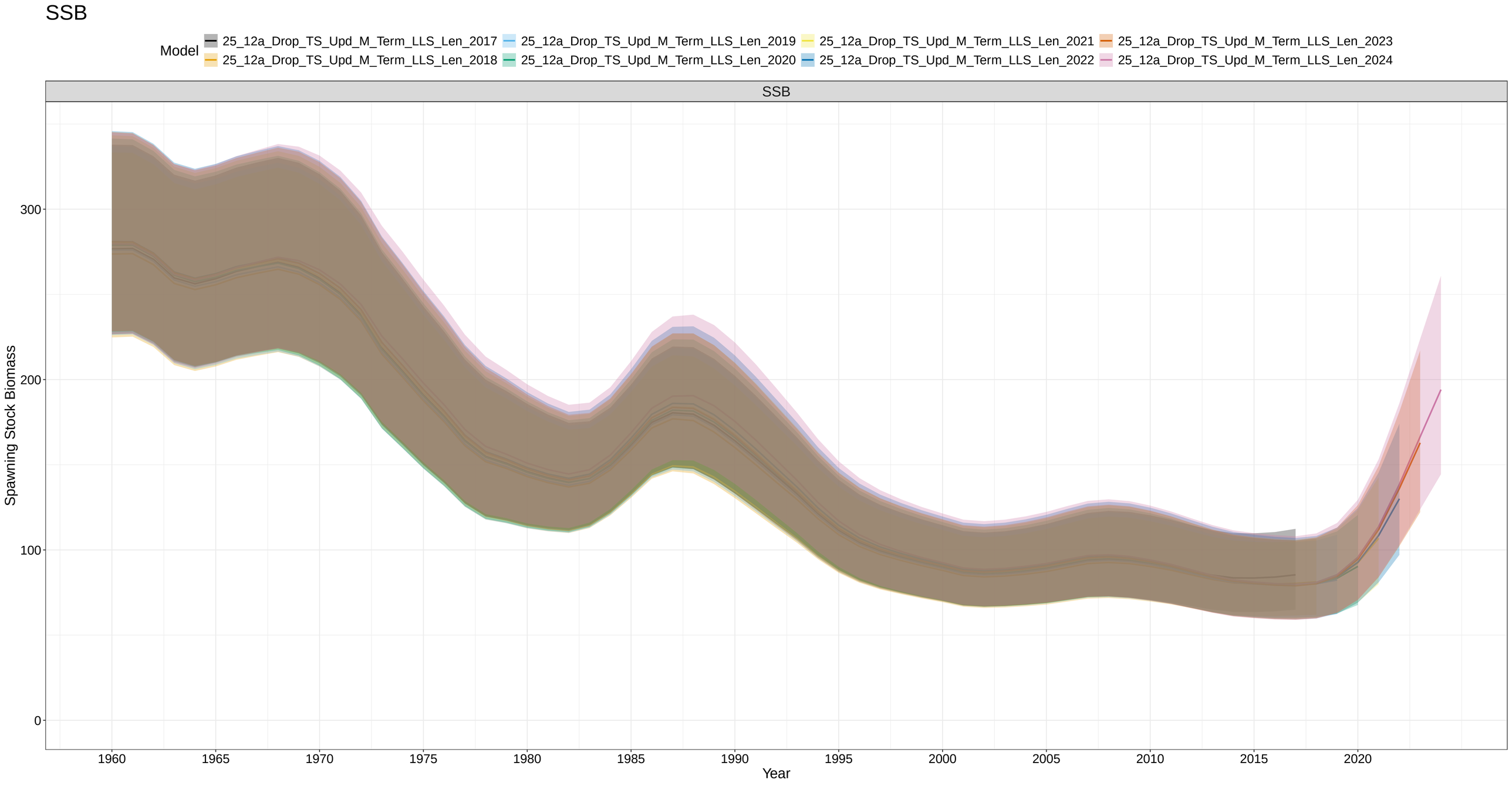
Time Series Plots



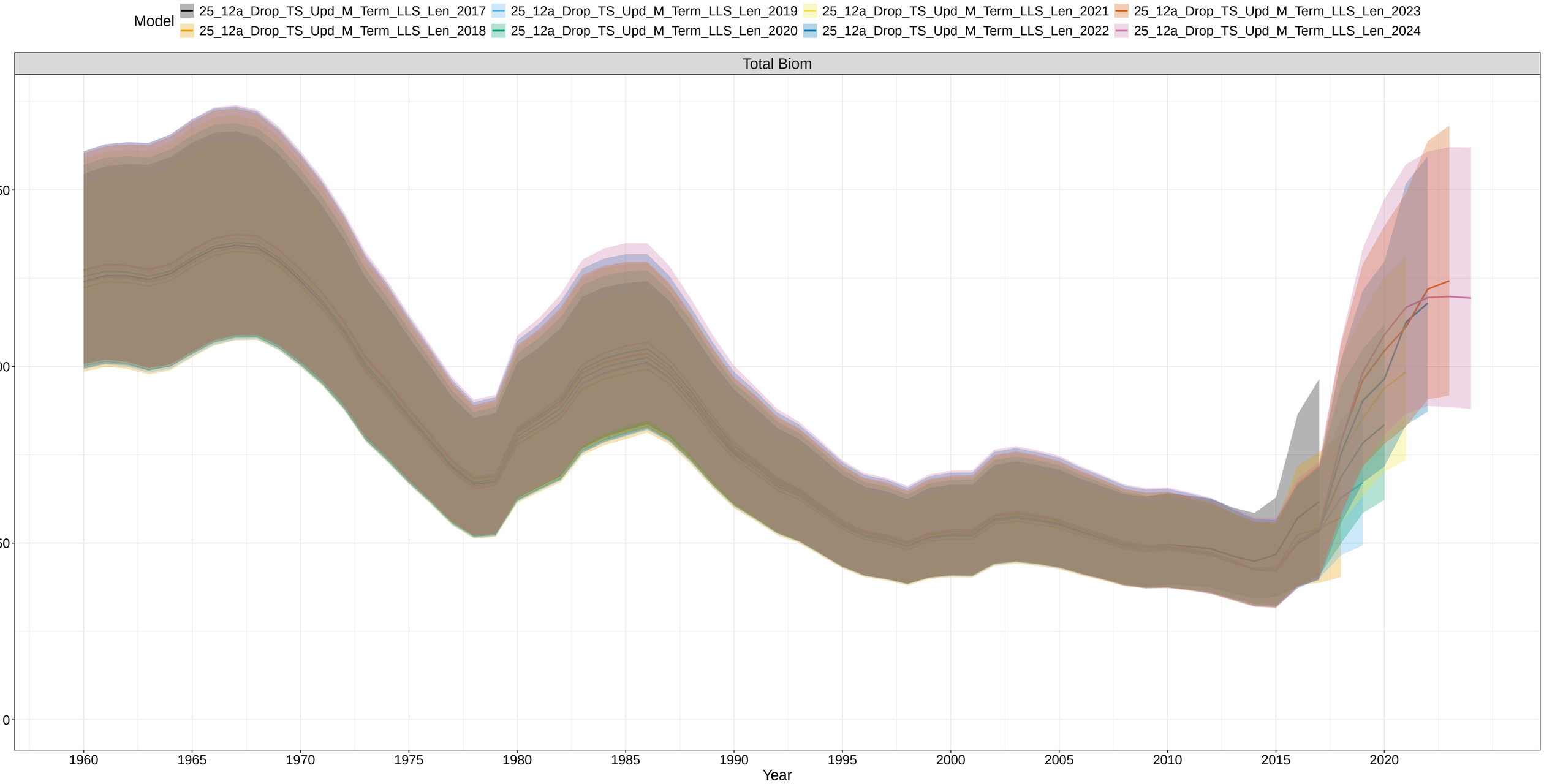
Fishing Mortality




Recruitment
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Recruitment
Recruitment
0
50
100
150
200
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year


SSB
Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
SSB
Spawning Stock Biomass
0
100
200
300
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year

Biomass


Model
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2017
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2018
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2019
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2020
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2021
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2022
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2023
25_12a_Drop_TS_Upd_M_Term_LLS_Len_2024
Total Biom
Total Biomass
0
250
500
750
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
2020
Year