Observers data

Trip_id	Set_id	Year	Quarter	T_catch	Bycatch
1	1	2015	2	9.79	5.67
1	2	2015	2	6.83	4.47
1	3	2015	2	8.34	4.41
3	1	2015	4	40.88	3.31
3	2	2015	4	21.92	3.17
3	3	2015	4	6.18	3.96
4	1	2016	3	34.22	2.85
4	2	2016	3	8.62	4.05
4	3	2016	3	44.90	4.45
6	1	2016	1	23.91	4.53
6	2	2016	1	12.75	5.03
6	3	2016	1	12.61	4.20

Repeat 100 times

Randomly subset trips (%)

Sampled data

Trip_id	Set_id	Year	Quarter	T_catch	Bycatch
1	1	2015	2	9.79	5.67
1	2	2015	2	6.83	4.47
1	3	2015	2	8.34	4.41
4	1	2016	3	34.22	2.85
4	2	2016	3	8.62	4.05
4	3	2016	3	44.90	4.45

Model-based estimator

Ratio estimator