# Data Input calculations for Sablefish model

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| Index | Description |
|  | Country |
|  | Sex |
|  | region |
|  | Length bin |
|  | Age class |
|  | haul |
|  | year |

*Age compositions*

The sampling design for aged otoliths was assumed simple random sample (SRS) within each year and region.

Where, is and

To aggregate age frequencies across areas we use an abundance weighted approach, where the abundance estimated from the survey in region  and year  denoted by  is used,

If we are going to aggregate proportions at age over multiple regions such as in the single area model, we would use

where,  indicates the set of areas that we are aggregating and this is normalized so that it sums to one, which leads to area aggregated estimates

Effective sample size?

*Survey length compositions*

Often, each haul is subsampled for LF measurements. For each haul we calculate the sampling fraction of samples for LF vs the entire haul catch

where,  is the number of fish measured for LF and  are the total number of fish caught in haul . Each length measurement is then scaled by this sampling fraction to derive the length frequency for the entire haul,

where,  is the number of fish in length bin  for haul , and  is the scaled number of fish for that length bin.

To generate region wide LF’s from the survey data, we used the mean estimator

where,  denotes only hauls within region and   indicates the number of hauls in that region.