



FOOD and AGRICULTURE ORGANIZATION
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A standard methodology to collect socio-economic data in the Eastern Mediterranean: experience from Egypt, Gaza Strip and Lebanon

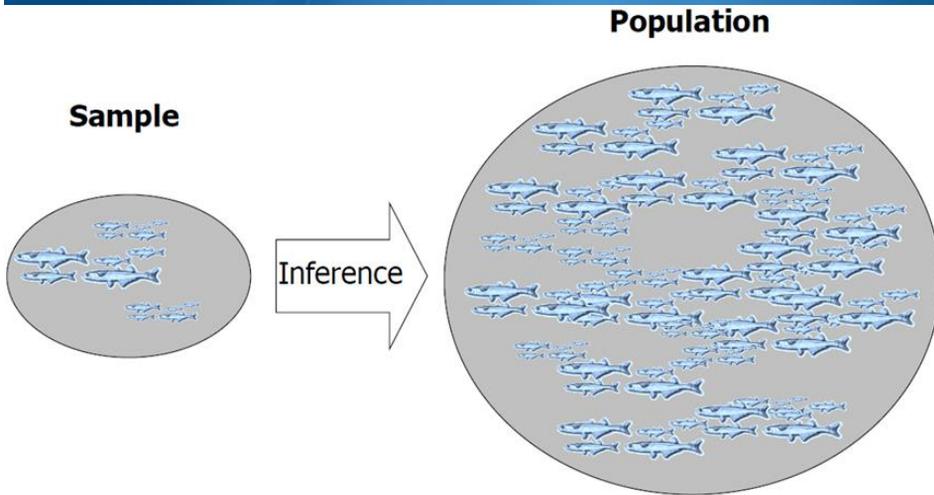
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Fisheries data collection

1. Fishing capacity and characteristics of the fleet
2. Catch and effort (production)
3. Biological characteristics of the exploited resources
4. Socio-economic information of the fishing fleet

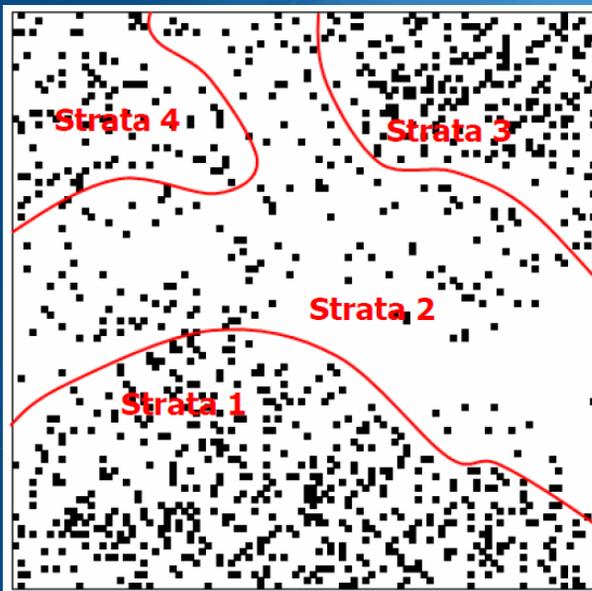


Sampling Design



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Stratification



Sampling within each strata should be **random**

Variance or **Precision** should be estimated for every stratum

Bias should be reduced as much as possible

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The **population** is the **total number of vessels** in the fleet



In this case the **sampling unit** is **the vessel**

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The fishing vessel has to be selected by the **computer!**

This is crucial, in order to reduce **BIAS**.

RANDOM SAMPLING.....Are Humans random?

Advantages of this system

- Does not depend so much on the behavior of the data collector
- Covers every day and month
- The total population is easily known (e.g. good fleet register)
- Can combined all the data collection components, catch, effort, biological socio-economic.
- Simpler statistics, requires less information
- The quality control of the data is relatively simple

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Population: Licensed fishing fleet (Fleet register)

Stratification: GFCM Task I

Polyvalent small-scale vessels with engine < 6 m

Polyvalent small-scale vessels with engine 6 – 12 m

Purse Seine 6 – 12 m (only in Lebanon)

| Population by segment | Egypt | Gaza | Lebanon |
|-----------------------|-------|------|---------|
| Polyvalent < 6m | 30 | 76 | 355 |
| Polyvalent 6 - 12m | 527 | 671 | 1045 |
| Purse Seine 6 - 12m | | | 60 |
| Total Fleet | 557 | 747 | 1460 |

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Polyvalent small-scale vessels with engine 6 – 12 m

| | Egypt | Gaza | Lebanon |
|------------------------|-------|------|---------|
| Population | 527 | 671 | 1045 |
| Sample Size | 80 | 218 | 320 |
| Coverage rate Planned | 15% | 32% | 31% |
| Coverage rate Achieved | 12% | 31% | 26% |

When variance is known the Bethel method can be used.

Sabatella E., Franquesa R. (2003). Manual of fisheries sampling surveys: methodologies for estimations of socio-economic indicators in the Mediterranean Sea. *Studies and Reviews. General Fisheries Commission for the Mediterranean*. No. 73. Rome, FAO. 2003. 37p.

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Notice that there is no minor geographical stratification!

Samples are not selected **by port!**

| Port | Population | Sample |
|-------------|------------|--------|
| BEIRUT | 347 | 48 |
| CHEKKA | 10 | 4 |
| JBEIL | 57 | 8 |
| JOUNIEH | 93 | 19 |
| SAIDA | 271 | 66 |
| SOUR | 71 | 18 |
| TRIPOLI | 611 | 157 |
| Total fleet | 1,460 | 320 |

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Coefficient of variation (C.V).

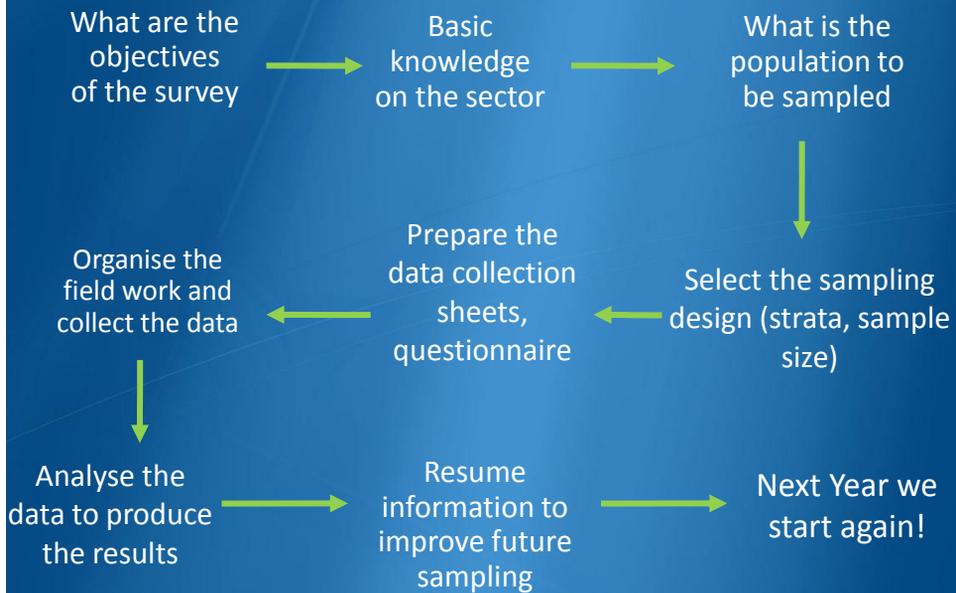
Variance was calculated using a correction factor for finite populations as follows:

| Socio-economic variables | Egypt | Gaza | Lebanon |
|--------------------------|-------|------|---------|
| Energy costs | 14% | 25% | 4% |
| Maintenance costs | 19% | 29% | 7% |
| Operational costs | 22% | 92% | 8% |
| Commercial costs | 22% | 29% | 8% |
| Fixed costs | 27% | 51% | 3% |
| Crew share | 14% | 33% | 5% |

- C.V. in Lebanon is very low indicating high quality data
- Egypt has a relatively medium quality data
- In Gaza the data is of poor quality
- It is extremely important to assess the quality of the data.

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Summary steps



Conclusion

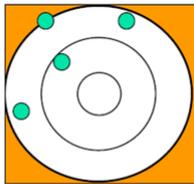
1. The population has to be clearly defined
2. Stratification principally based on the fleet
3. A true random sample
4. Quality of the data should be assessed
5. Review the sampling program annually

Thank you
for your
Attention!

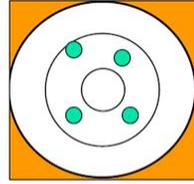
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Quality of the data can be assessed by two methods

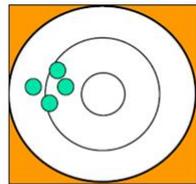
Variance (precision) and bias (accuracy)



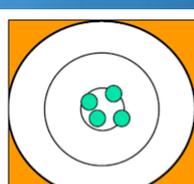
Not accurate and not precise



Accurate but not precise
(Vaguely right)



Precise but not accurate
(Precisely wrong)

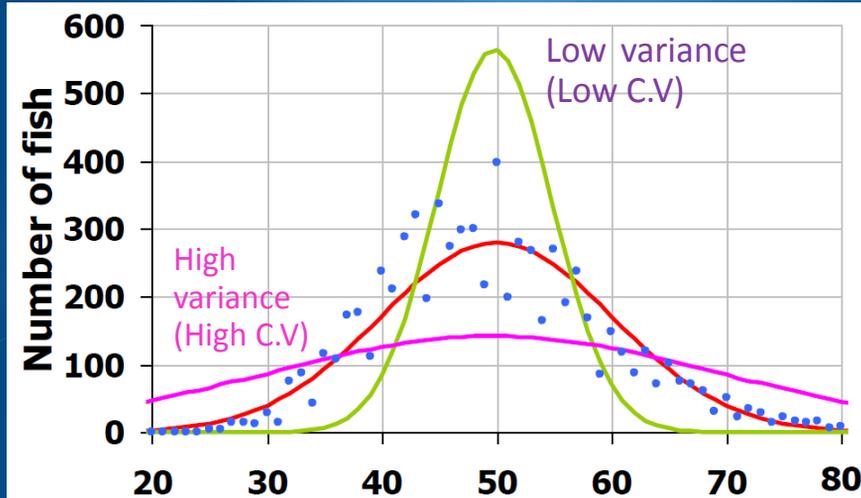


Accurate and precise

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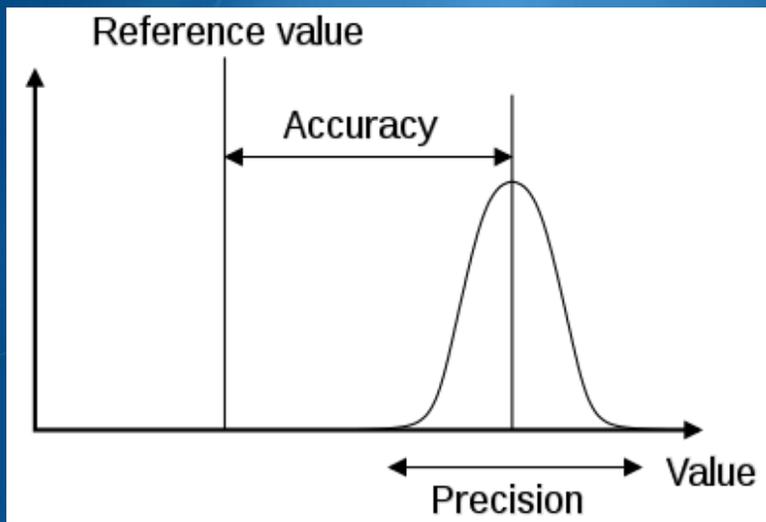
Variance (or Precision):

- Can be measured directly from the observations
- Is a measure of the distribution of the data (e.g. CV)



Bias (accuracy):

- Cannot be estimated from the observation
- Could get an idea from experience!



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