 ISBN: 9789073592421

CPS Paper

Redesigning of the Quarterly Municipal Fisheries Survey in the Philippines

Author: Ms Quindale Caraos

Coauthors: Erniel Barrios, Nikkin Beronilla, Paolo Victor T. Redondo

Submission ID: 762

Reference Number: 762

Presentation File

abstracts/ottawa-2023_21a2e6f7934724005a56b6dc1435cb84.pdf

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Redesigning of QMFS in the Philippines

Brief Description

The Quarterly Municipal Fisheries Survey (QMFS) goal is to determine the total volume and average value of fish unloaded at municipal fish landing facilities each quarter.

In the current sampling design, QMFS uses stratified random sampling of traditional municipal landing centers.

Furthermore, rather than the actual catch of the day, the present QMFS sampling methodology employs data based on the key informant's recall for a monthly catch in a particular quarter, which could contribute to recall bias.

With this, a survey redesign is needed in order to construct a new sampling design that reliably estimates the volume and value of municipal fisheries production.

Abstract

The Quarterly Municipal Fisheries Survey (QMFS) is a nationwide survey conducted by the Philippine Statistics Authority that generates quarterly volume and value of production by species unloaded at municipal fish landing facilities. The old design of QMFS uses stratified random sampling of traditional municipal landing centers. In the old design, there is a non-probabilistic selection of key informants (KIs) per sample landing center (LC) which indicates that not all fishing operators have the chance to be selected. Also, data collected is not based on the actual catch of the day, instead it relies on recall of the KIs for a monthly catch in each quarter for the whole LC which may indicate a bias on the recall. Moreover, the number of fishing days in a month and the total number of fishing boats in each day is not estimated in the survey. Given these limitations, there is a need to revisit the sampling design of QMFS.
After performing sampling experiments and simulations, the new sampling design for QMFS is a two-stage stratified sampling with systematic selection of landing centers in the first stage and systematic selection of boats in the second stage. The sampling rate of landing centers is 10%. If the total boats in a landing center is greater than 10, 10 boats are sampled, otherwise, all boats are sampled. The frequency of data collection is once a day per week where AM unloading is separated from PM unloading. The new sampling design provides estimates that passed the acceptable reliability measures at the provincial level.

Figures/Tables

Table 2 QMFS Old Sampling Design vs New Sampling Design

Table 2. QMFS: Old Sampling Design vs New Sampling Design

	Old Sampling Design	New Sampling Design
Sampling Frame	List of municipal traditional fish landing centers (LCs)	List of municipal traditional fish landing centers (LCs) from Listing of Marine Fish Landing Centers conducted in 2019
Sampling Design	Stratified Random Sampling • Stratification of LCs into 3 strata • Stratification variable: Average Daily Unloadings (ADU) • Simple random selection of LCs per stratum	Two-Stage Stratified Sampling • First stage: Selection of LCs (Systematic) • Second stage: Selection of Boats (Systematic)
Data Collection	Interview 5 key informants (KIs) per sample LC. KIs can be boat operator, technician, fisherman and/or trader	➢ LC sampling rate is 10% ➢ 10 sample boats if total boats is greater than 10, otherwise, complete enumeration ➢ Frequency: one day per week, separate AM and PM unloadings ➢ Sample operators can be boat operator, technician, fisherman and/or trader
Coverage	67 provinces, 31 species and others	First year: all provinces
Frequency	Quarterly	Quarterly

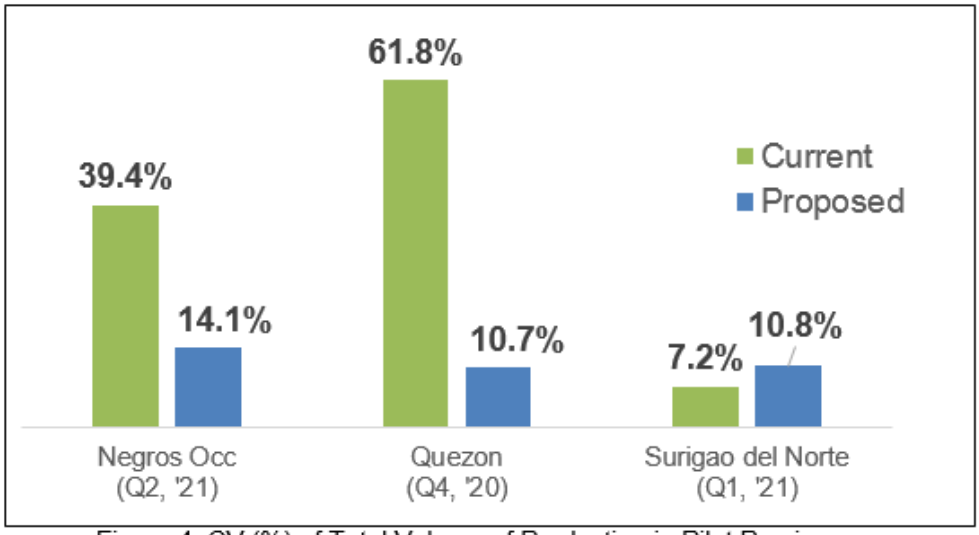

Figure 4. CV (%) of Total Volume of Production in Pilot Provinces