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Statistics — Vocabulary and symbols —

Part 4:
Survey sampling

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Partie 4: Échantillonnage d'enquête

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Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 69, *Applications of statistical methods*, Subcommittee SC 1, *Terminology and symbols*.

ISO 3534 consists of the following parts, under the general title *Statistics — Vocabulary and symbols*:

— *Part 1: General statistical terms and terms used in probability*

— *Part 2: Applied statistics*

— *Part 3: Design of experiments*

— *Part 4: Survey sampling*

Introduction

Survey sampling is essentially a strategy of planning for the collection of information on a population. In cases where all entities in the population can be listed, statistical methodologies of sampling without replacement play a key role. The design of a survey and its implementation depends on the type of questions to be addressed, the degree of generality to be attached to the conclusions, and ultimately, the resources available for conducting the survey and analysis of the results.

Political polls, customer satisfaction surveys, and personal interviews are pervasive in modern society as mechanisms to provide decision makers with information to formulate or to adjust their strategies. The news media frequently reports results from sampling efforts that typically address a country's pulse with regard to political leadership. This is by no means a recent phenomenon as sampling (especially census work) has occurred for thousands of years. Survey sampling as a general methodology and finite population sampling as its rigorous theoretical basis are the subject areas of this part of ISO 3534.

The methodology of survey sampling consists of a process of selecting a sample of items from a population, measuring these items, and then estimating population characteristics based on the results from the sample. Reference [4] has defined the concept of a survey with the following description.

1) A survey concerns a set of items comprising the population.

2) A survey involves a population having one or more measurable properties.

3) A survey has an objective to describe the population according to one or more parameters defined in terms of these properties.

4) A survey requires operationally a representation of the population (frame) such as a list of items in order to facilitate the measurements on individual items.

5) A survey is applied to a subset of items from the frame that are selected according to a sampling design consisting of a sample size and a probability mechanism for selection.

6) A survey proceeds via extracting measurements of the items in the sample.

7) A survey needs an associated estimation process to obtain parameter estimates for the population.

This brief introduction by no means captures all of the subtleties and advancements in survey sampling that have evolved over the centuries and especially in the past several decades with improved computational capabilities. Advancements have progressed in tandem with real applications.

Some definitions in this part of ISO 3534 are adopted from ISO 3534-1:2006 or ISO 3534-2:2006. If the adopted definition is identical with the original one, reference in square brackets is added to the definition and if some differences exist, they are noted.

Statistics — Vocabulary and symbols —

Part 4:
Survey sampling

1 Scope

This part of ISO 3534 defines the terms used in the field of survey sampling and can be used in the drafting of other International Standards.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3534-1:2006, *Statistics — Vocabulary and symbols — Part 1: General statistical terms and terms used in probability*

ISO 3534-2:2006, *Statistics — Vocabulary and symbols — Part 2: Applied statistics*

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in ISO 3534-1:2006 and ISO 3534-2:2006 and the following apply.

3.1 General terms

3.1.1
population
totality of items under consideration

[SOURCE: ISO 3534-1:2006, 1.1]

Note 1 to entry: A population can be real and finite, real and infinite, or completely hypothetical. Of particular interest in this part of ISO 3534 is a *finite population* (3.1.2). Much of the field of *sample survey* (3.1.20) concerns finite populations. The term population has superceded the term universe in usage. Population should be construed to involve a fixed point in time, as populations can evolve over time.

3.1.2
finite population
population (3.1.1) which consists of a limited number of items

Note 1 to entry: *Survey sampling* (3.1.21) concentrates solely on applications with a finite number of items in the population. The number of items could be very large (for example, hybrid automobiles in Europe, artefacts in a museum, sheep in New Zealand) but their number is finite. The number of items in the population is generally denoted as N. The specific value of N may or may not be known explicitly prior to conducting the survey.

EXAMPLE 1   The registry of citizens of a country is an example of a finite population with a known size.