

A NEW CLASSIFICATION OF SAMPLING ESTIMATORS

Naila Bashir¹ and Munir Ahmad²

¹ Lahore College for Women University, Lahore, Pakistan
Email: nailamjad2007@gmail.com

² National College of Business Administration & Economics
Lahore, Pakistan. Email: drmunir@ncbae.edu.pk

ABSTRACT

In this paper a new classification of sampling estimators has been done. These estimators are all those estimators, which are developed up till 2013 at National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan. The classification is based on Mathematical Subject Classification 2010.

KEY WORDS

Classification; Mathematics Subject Classification; coding; identifier.

1. INTRODUCTION

Classification is to group a set of objects having the same characteristic in a meaningful, systematic and standard format. The main purpose of classification is to help users to find the items of their interest as readily as possible. It will be highly useful for users as well as for classifiers to know the whole classification system and also to know all the classifications of their interest. A system used to classify the items enclosed by Mathematical Reviews (MR) and Zentralblatt fur Mathematik (Zbl) is known as Mathematics Subjects Classification (MSC). It is a printed document in which mathematical items are classified in a way so as it attracts the attention of all those who have interest in it. MSC is an ordered structure with three levels, in which first level is two digits number which is an identifier of the discipline, second level is a Latin letter describing the specific area under the discipline and third one again is a two digits number usually corresponding to a specific kind of Mathematical object or research area. The main advantage of classification is that the codes may be included in the paper, or the place where the cross-reference is given so that classifier may see which classification is the most suitable for the paper at hand.

There is no literature review regarding classification of estimators, as no one has worked on this topic previously. However, the classification of all mathematics areas was categorized by the editorial staff of Mathematical Reviews (MR) and Zentralblatt fur Mathematik (Zbl) in 1991 named Mathematics Subject Classification. It used three levels of structure. The MSC revised in 2000 and 2010. According to MSC 2010, Combinatorics have the code 05-XX while Probability Theory and Stochastic Process displayed with the code 60-XX. Statistics was given code 62-XX and sampling theory,

sample survey was allotted code 62D05, and others related with sampling were marked the code 62D99 in Mathematical Subject Classification.

2. CLASSIFICATION

In this section the sampling estimators proposed by different authors at National College of Business Administration & Economics, Lahore have been classified in different groups based on essential resemblance. Here the estimators of other authors have also been involved from all over the world, but the mostly are used as mentioned above. The estimators have been classified here in such a sense so that it may attract the attention of all those who have interest in it.

The procedure by which a description of an item or activity supplied as a survey response is matched to a coded category is known as coding. The sampling estimators are coded in such a way that these should represent the subject of statistics where it contains some contribution. As the classification should function both concerned with specific subject areas and those accustomed enough with subjects to apply their results and methods elsewhere, inside or outside the subjects. So the same have been adopted here in the classification of the sampling estimators. The codes which have been allotted here to the classified items are according to the criteria of Mathematics Subject Classification. As mentioned in previous chapters the scheme of MSC is of three levels. First level is the identifier of the subject containing two digits code. Second level codes are single Latin letter which represent the specific area of the first level defined subject and the third level codes are also two digits showing specific kind of objects or a research area or a well-known problem. Statistics is the main subject under which we have sampling theory and then sampling estimators. Statistics has the primary level 62 in MSC 2010; sampling theory has allotted 62Dxx code. In this chapter as mentioned earlier the estimators are so classified and the codes are also given to it then according to its nature with the first two levels 62D.

Classification as given in the table is:-

Table 3.1
Classification of Sampling Estimators

Codes	Title
62D06	Probability Proportional to size Sampling
62D07	Classical Estimators
62D08	Single-Phase Sampling
62D09	Two-Phase Sampling
62D10	Multi-Phase Sampling
62D11	Shrinkage Estimators
62D12	Randomized Response Model
62D13	Calibration Estimators
62D14	Adaptive Sampling

All estimators classified above in the table have some sub estimators which are also proposed time to time.

Table 3.2
Detail list of Classification of Sampling Estimators

Codes	Title
62D06	<ul style="list-style-type: none"> • Probability Proportional to size Sampling ✓ 62D061 Sampling With Replacement ✓ 62D062 Sampling Without Replacement
62D07	<ul style="list-style-type: none"> • Classical Estimators
62D08	<ul style="list-style-type: none"> • Single-Phase Sampling ✓ 62D081 Auxiliary Variables ✓ 62D082 Auxiliary Attributes ✓ 62D0821 Single Auxiliary Attribute ✓ 62D0822 Two Auxiliary Attributes ✓ 62D0823 Multi Auxiliary Attributes
62D09	<ul style="list-style-type: none"> • Two-Phase Sampling ✓ 62D091 Single Auxiliary Variable ✓ 62D092 Multi- Auxiliary Variables ✓ 62D0921 No Information Case ✓ 62D0922 Partial Information Case ✓ 62D0923 Full Information Case ✓ 62D093 Auxiliary Attributes ✓ 62D0931 Single Auxiliary Attribute ✓ 62D0932 Two Auxiliary Attributes ✓ 62D0933 Multi Auxiliary Attributes
62D10	<ul style="list-style-type: none"> • Multi-Phase Sampling ✓ 62D101 No information case ✓ 62D102 Partial information case ✓ 62D103 Full information case
62D11	<ul style="list-style-type: none"> • Shrinkage Estimators ✓ 62D111 Single Auxiliary Variable
62D12	<ul style="list-style-type: none"> • Randomized Response Model
62D13	<ul style="list-style-type: none"> • Calibration Estimators
62D14	<ul style="list-style-type: none"> • Adaptive Sampling ✓ 62D141 Exponential Estimators

3. CONCLUSION

It is concluded that the classification of estimators under Mathematics Subject Classification will be helpful for researchers as well as for users to find the estimators of their interest at one platform.

REFERENCES

1. American Mathematical Society (2009). *Mathematics Subject Classification 2010*. <http://www.ams.org/msc/pdfs/classifications2010.pdf>