"STEP-WISE GROUP TESTING IN THE PRESENCE OF TEST ERROR"

by

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0.4 SUMMARY OF CONTENT

This study is divided into five chapters. Chapter one introduces the basic concepts in group screening designs. The chapter also has literature review that highlights the progress made over the years in the area of group screening by other authors. The scope of work in the study is also introduced with the assumptions that will be made and notations used.

Group testing without errors in decision is introduced in chapter two. In this section it is assumed that each group test or individual test yields a correct decision. The Dorfman and the Sterrett procedures are introduced. The Dorfman procedure involves testing the group-factor and if found to be defective, all the items are tested individually. If the group-factor is non defective all the items are passed as non defective without further testing. The expected number of runs required to classify all the items in a group-factor as either defective or non defective is also enumerated. The Sterrett procedure is introduced in section 2.3. The procedure is discussed briefly and the expected number of runs required to classify all the items in the group-factor calculated.

The study on group testing in the presence of test error using the Dorfman procedure is undertaken in chapter three. A brief description of the test procedure is given in the introduction. The test procedure in this study involves obtaining two good readings before one defective reading. The test procedure is undertaken with the assumption that the group-factor contains one defective item, two defective

items and so on until the case when the group is assumed to contain n defective items. Since each group test will yield a defective group reading, all the items in the group have to be tested

In chapter four we study the Step-Wise group testing in the presence of test error. In this chapter, the test procedure involves the factors being randomly divided into 'g' groups called group-factors. These group-factors are then tested for significance. If a group factor is declared defective in the first test, testing of the items is done individually until the first defective item is found. The remaining items in the group are pooled together and a group test performed. If the pooled group test is significant, then items are tested one by one until the defective item in the pool is reached and the remaining items pooled again. This procedure is continued until the group test yields two good readings before a defective reading is obtained. This procedure will be called the modified step-wise group-screening procedure herein referred to as the procedure. If the group test yields two good readings before a defective reading is obtained then the group is passed as non defective and all the items in it passed as good without further inspection.

In chapter five the results from simulated data are obtained and tabulated. The results obtained are compared to the results obtained by Patel and Manene[11]. The results are discussed also in this chapter.

Finally, we have the appendix with the testing scheme in the form of a diagram and bibliography detailing the source of reference materials used for this study.