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EVALUATION OF INTERVIEWER CHARACTERISTICS AND ANALYSIS ON INTERVIEWER EFFECT IN TDHS-2013

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This is to certify that we have read and examined this thesis and in our opinion it fulfills the requirements in scope and quality of a thesis for the degree of Master of Arts in Social Research Methodology.

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SUMMARY

Recently, while being few in numbers, there have been studies focusing on survey quality and discussing sources of survey errors. Studies in the literature have emphasized on relatively controllable sampling errors, instead of non-sampling errors, which are costly to determine and difficult to control.

This thesis aims to reveal profiles of data collection staff candidates involved in 2013 Turkey Demographic and Health Survey (TDHS-2013) recruitment process. This process consisted of different stages, in which the candidates filled in various forms. In order to reach the aim of this study, a special data set named "TDHS-2013 Data Collection Staff data" (hereafter, "staff data set") was constructed using these forms. Descriptive analyses are carried out using nationally representative household and women data sets from the TDHS-2013 along with the staff data set. Moreover, pre and post processes of the fieldwork are compared by means of certain information obtained from recruitment forms. Furthermore, effects of interviewer characteristics on both number of completed interviews and interviewer performance are considered. Additionally, results of interviews, response rates and completion rates, along with sample provinces and assignments of the staff, are evaluated on the basis of data collection staff for household interviews and women interviews.

Results indicate that information on the candidates should be gathered fully and kept updated to carry out further analyses in detail. The constructed staff data set let us examine the profiles of all applicants for the TDHS-2013 fieldwork, and evaluate the relation between interviewer characteristics and their performances. However, the constructed staff data set with the available information of interviewers was not suitable to make assessments regarding the attitudes, behaviors, and expectations of interviewers. Additionally, calculated calendar ratios on displacement of child birth dates imply that there is a potential interview bias on child birth date information. We expect this study will be a starting point for further studies analyzing interviewer profile, and investigating for a relation between data collection staff and survey estimates.

ÖZET

Günümüzde araştırma kalitesi üzerine odaklanan ve araştırma hatası kaynaklarını ele alan çalışmalar oldukça azdır. Literatürdeki çalışmalar, belirlenmesi ve kontrol edilmesi zor ve maliyetli olan örneklem dışı hatalar yerine görece kontrol edilebilir olan örneklem hataları üzerinde durulmuştur.

Bu tezde, 2013 Nüfus ve Sağlık Araştırması (2013 TNSA) işe alım sürecine dahil olan saha personeli adaylarının profili ortaya çıkarılmaya çalışılmıştır. İşe alım süreci, saha personeli adaylarının çeşitli formlar doldurduğu adımlardan oluşmaktadır. Amaca yönelik olarak bu formlar yardımıyla "2013 TNSA Saha Personeli Veri Seti" oluşturulmuştur. Bu veri seti ile ulusal düzeyde temsiliyeti olan hanehalkı ve kadın veri setleri kullanılarak betimleyici analizler yapılmıştır. Ayrıca saha personeli işe alım formlarından elde edilen bazı bilgiler aracılığıyla araştırmanın saha öncesi ve sonrası karşılaştırılabilmiştir. Görüşmecilerin tamamladıkları görüşme sayıları ve performansları üzerine etki eden özellikleri de çalışma kapsamında incelenmiştir. Bununla birlikte, 2013 TNSA kapsamında gerçekleşen görüşmelerin sonuçları, cevaplama ve tamamlama oranları, örneklem illeri ve saha personelinin görevleriyle birlikte hanehalkı ve kadın görüşmeleri için saha personeli bazında değerlendirilmiştir.

Sonuçlar, detaylı ileri analizlerin yapılabilmesi için saha personeli ve adaylarının bilgilerinin güncel ve eksiksiz olarak alınması gerekliliğini ortaya koymaktadır. Personel veri seti, 2013-TNSA saha çalışması için başvuran adayların profilini ve görüşmeci özellikleri ile performansları arasındaki ilişkiyi değerlendirmeye imkan tanımıştır. Ancak, personel veri seti görüşmecilerin tutum, davranış ve beklentilerini değerlendirmeye yönelik bilgiler içermemektedir. Ayrıca doğum tarihi değişimine dayanarak hesaplanan takvim oranları, çocukların doğum tarihi bilgisi üzerinde görüşmeci yanlılığı olabileceğini göstermektedir. Bu çalışmanın görüşmeci profilini analiz etme ve saha personelinin özellikleri ile araştırma sonuçları arasında bağ kurabilme konularında sonraki çalışmalar için kaynak oluşturması beklenmektedir.

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ABBREVIATIONS

ABPRS	Address Based Population Registration System
CAPI	Computer Assisted Personal Interview
CATI	Computer Assisted Telephone Interview
HUIPS	Hacettepe University Institute of Population Studies
ICC	Intra-Interviewer Correlation Coefficient
MSE	Mean Square Error
NUTS	Nomenclature D'unités Territoriales Statistiques / Statistical Classification of Territorial Units
TDHS	Turkey Demographic and Health Survey
TSE	Total Survey Error
TURKSTAT	Turkish Statistical Institute

CHAPTER 1

INTRODUCTION

There is an ongoing demand around the world for statistical estimates and parameters about social, economic, political and cultural structure of the countries. In order to understand today's world and make plans for the future there is a need for more accurate information for governments and institutions. Understanding statistical information about social events and making inferences from that information are essential for policy makers, planners and researchers who are intend to make decisions for the future.

In some cases information can be obtained from censuses (called complete enumeration) or registration systems of the countries. Censuses with long period of time, high cost, time consuming, heavy workload and depthless data and registration systems with not updated regularly, inadequate and unreliable data creates a need for detailed, in depth and high quality data. Sample surveys which focus on selecting and observing a part of the population, gathering data from that population and making inferences about the whole population based on a sample are compensating this requirement. Sample surveys which satisfy realization, randomization, and representativeness have many advantages versus censuses and registration systems in terms of cost, speed, timeliness, feasibility, quality and accuracy.

Sample surveys that obtain data about a large range of matters in many areas are main sources of information for planners, managers and researchers. In fact surveys are even used to evaluate census or survey quality of countries. For instance, 2010 Census Quality Survey was conducted by U.S. Census Bureau to develop most effective census questionnaire (Bentley et al. 2011). Meanwhile it should be noted that countries with access to good sampling frame and improved technology are more advantageous than developing countries with less advanced technology and insufficient skilled staff within the survey context (Biemer and Lyberg 2003).

There are several international organizations that conduct internationally comparable surveys for data collection or analyse survey data. Some of these organizations are International Monetary Fund (IMF), the United Nations (UN), International Labour Office (ILO) and Food and Agricultural Organization (FAO), and many universities across the world. On the other hand, Section on Survey Research Methods (SRM) of the American Statistical Association (ASA), the International Association of Survey Statisticians (IASS) of the International Statistical Institute (ISI) and the American Association for Public Opinion Research (AAPOR) are among organizations that support survey work and help to conduct surveys (Biemer and Lyberg 2003).

Moreover ICF International implements The Demographic and Health Surveys (DHS) Program projects in over 90 countries across the world. Projects which are included in DHS Program collects nationally representative data on fertility, family planning, maternal and child health. United Nations International Children's Emergency Fund (UNICEF) is another organization that assists countries in order to conduct Multiple Indicator Cluster Surveys (MICS) that aim to observe the situation of children and women for 21 years. Apart from the demographic surveys, there are many social surveys which focus on various topics such as crime trends, economic and social events and role of women under the United Nations roof.

A part of the population that is called as sample consist units of analysis that can be households, individuals, companies, schools etc. Sample must be defined based on content, units, extent, and time (Kish 1965). These units are determined in parallel with the main survey objectives. Some surveys that comprise different concepts and structures may provide information about diverse population groups. As long as survey sample is selected properly and survey mechanism works correctly it is possible to make inferences about the population based on survey results and calculate sampling errors due to selecting a sample instead of whole population for statistics.

Survey process covers designing, collecting, processing and analysing procedures that are not separated from each other distinctly. It must be known that there is no absolute truth on choice of mode, questionnaire design, interviewer training, data collecting, data editing, and so on. If one or more steps are not performed properly the study cannot be called survey. Survey design is a whole process that is supplied with previous experiences, theories, advantages and disadvantages of alternative design choices. In this respect main objective of a good survey design is to maximize survey quality as soon as possible within the constraints of the survey.

Survey process and evaluation of survey quality have been attractive areas for survey methodologists and statisticians during the last decades. Measuring and controlling survey quality consistently is a substantial issue in order to understand the survey process and determine degree of survey quality. The accuracy of survey estimates can be evaluated in the sense of total survey error which is a measure of quantifying the level of error associated with survey process. All survey stages contribute to quantity of total survey error certainly. In this manner, total survey error can be a sign for the survey data quality. Total survey error is also a tool for comparing alternative sampling designs to best choice for researchers.

Total survey error is composed of sampling errors and non-sampling errors. Sampling errors can be controlled indirectly thanks to increasing sample size. However controlling the non-sampling errors is not easy as much as sampling errors. To reduce non-sampling errors accurate planning and careful survey design, interactive with knowledge and theories of many disciplines such as statistics, sociology and physiology are needed (Biemer and Lyberg 2003). Hence non-sampling errors should be considered with causes and results when trying to explain different types of non-sampling errors by statistical models and methods. Although error types are rarely estimated in practice, most important types should be estimated to evaluate survey quality properly.

Although survey quality dimensions changes from an international organization to another international organization accuracy, timeliness, accessibility and completeness are common quality dimensions for evaluating social surveys. Interviewer who plays a critical role on survey estimates has an influence on accuracy and timeliness in surveys which require interviewer for detailed and in depth information, while all other dimensions have an influence on survey data quality. The fact is that interviewer assisted modes have larger bias than others since interviewer has an effect on respondents and responses directly (Biemer and Lyberg 2003). But variance is smaller because of obtaining assistance provided by interviewer.

All quality related components which may have an effect on survey quality should be considered within the broad perspective when evaluating data quality. Indeed, mean of survey interest in a particular assignment is a function of not only potential interviewer bias but also geographic area where included in. Hence interviewer variance could be only estimated for interpenetrated sample designs[1].

Main role of interviewer is to gain cooperation with the sample unit which refers to both finding a sample unit and getting participation. As a task of interviewer, finding someone at home is a substantial issue today with regard to time and cost. Besides that survey response rates which affect survey estimates directly continue to decline (Groves and Peytcheva 2008). Consent and participation process is a substantial issue that is improved by doorstep interaction strategies (Morton-Williams 1993; Campanelli et al. 1997). After contact with sample unit persuading respondent to survey participation is quite hard for interviewers. Interviewers have an influence on respondents' willingness to participate that can be consciously or subconsciously is inevitable (Korbmacher J. M. 2014). Consent process should be dealt distinctly in the point of interviewer and social theory.

[1] Interpenetrated sample design refers to assignment method where interviewers are assigned randomly to sample units. Interpenetrated assignment method, which is crucial to estimate errors generated by interviewers, is crucial in order to measure interviewer variance in a survey.

In order to assurance high data quality interviewer needs to understand questions and should awake to difficulties that may be encountered with the respondents. Probing and clarifying of questions have an influence on survey estimates. Expectations on survey response may be arisen from different probing and clarifying techniques. Interviewers are also responsible for maintaining motivation of respondents to the survey in terms of data quality (Blom and Korbmacher 2013; Schaeffer et al. 2010; Groves et al. 2009). When considered from this point of view all tasks of interviewer is prone to making mistakes.

There has been debate on standardized and conversional interviewing approaches in order to obtain more accurate information from respondents (Fowler and Mangione 1990; Suchman and Jordan 1990). Combination of these views may be ideal in terms of necessary notions such as cost and time. Not only interviewing techniques but also socio-demographic and other characteristics of interviewers may have an influence on survey estimates or response time.

Furthermore, workload and payment are other factors that affect survey interviewer directly. Considering relation between sample size and workload on per interviewer increasing number of interviews may result in better precisions but higher cost of recruitment, training and supervising. When deciding number of interviews for the survey sample not only interviewer variance but also cost and logistic concerns should be considered. Optimal size should be determined with taking all survey constraints into account. If survey results such as mean and response rates that come from assignments significantly different from each other difference can be due to something related to interviewer performance (Biemer and Lyberg 2003).

Not only interviewer roles in a survey and possible errors that occur when performing that roles but also determining magnitude of the errors in a controlled manner are main study areas in survey methodology within the context of survey interviewer. Additional interviewer surveys that collect data about ability, behavior and attitude of interviewers is quite valuable in order to evaluate interviewer variability

(Durrant et al. 2010). Furthermore, it should be noted that not only quantitative studies but also qualitative studies will be useful to understand interviewer variability as a social phenomenon. However, it has been mainly focused on quantitative measures within this thesis.

The evaluation of interviewer error is a post survey quality measure. In practice, most survey variance estimates do not take interviewer into consideration due to lack of information though it is crucial to understand interviewer variance especially for face to face surveys. Face to face interviewing is very important due to being a cognitive process between interviewer and respondent, because heterogeneity among interviewers in face to face interview is quite stronger than other interview types. Since it requires a social interaction between interviewer and respondent social desirability bias[1] (or called prestige bias) may appear mostly on sensitive questions in face to face interviewing. Evaluation of interviewer variability for U.S. Census Bureau was resulted in altering main data collection method from face to face interviewing to mail (Hansen et al. 1961).

It has been stated that interviewer training methods to attain cooperation with respondents are efficient ways for interviewer quality control (Groves and McGonagle 2001). Training should include all possible situations that could happen at the fieldwork besides probing and clarifying of questions and giving feedback techniques. Interviewer training length is another factor that it should have optimal duration (Fowler and Mangione 1990).

Indeed, mode of administration, methods of recruitment, training, supervising and monitoring, interviewing approaches and interviewing environment are crucial survey settings when evaluating survey interviewer. Afterwards, when making

[1] Social desirability is a type of bias resulted from hiding real ideas of respondents and desiring to be viewed favorably to others. For a study that focuses on social desirability bias (or called prestige bias), see Fisher (1993).

inferences about the survey quality interviewer error should be seen as a quality indicator such as non-response rate and sampling errors for survey interests.

There are many surveys which have been conducted in countries around the world by statistical offices, several organizations, and institutions in various fields. Demographic and Health Surveys (DHS) are widespread surveys around the world which focus on collecting representative data about demographic, health and socioeconomic characteristics of the survey sample. Providing high-quality data to decision makers and future planners of countries such that beneficial for survey countries and developing survey methodology are among main objectives of the Demographic and Health Surveys. DHS which have been conducted by Hacettepe University Institute of Population Studies are the main source of representative data about demographic and health characteristics of Turkey since 1968 as a unique series.

Since 1968, Turkey Demographic Surveys have presented information about not only non-response rates and sampling errors for selected variables but also completeness of reporting for missing information and percentage of eligible women interviewed for data quality. It should be noted, however, that the interviewer gap in survey quality assessments of Turkey Demographic and Health Surveys with regard to characteristics and effect of interviewers still exists.

It is known that there is a continuing interest on understanding the response process and survey quality in survey methodology today. Quality of survey data and investigating sources of total survey error are valuable topics for studies focus on social survey methodology. Sources of the total survey error can cause bias and/or variability on survey estimates. This thesis focuses on survey quality as a whole and more specifically, on the characteristics of survey interviewers and their impact on the survey indicators of the survey quality and performance. The thesis has three main objectives: The first one is to assess the profiles of interviewers who took parts in the 2013 Turkey Demographic and Health Survey (TDHS-2013) through some characteristics of interviewers starting from application process to the field work. The

second one is to evaluate possible interviewer effect on the survey indicators and interviewer characteristics on their survey performances. The third objective of this first study in Turkey is to bring forward recommendations on the application and selection processes of the survey interviewers. By doing so, the thesis will provide new evidence on the contribution of interviewers in the survey quality on the basis of Turkey, and thus will fill the gap in the literature.

Different forms which were prepared for and applied to field staff recruiting process of Turkey Demographic and Health Survey 2013 (TDHS-2013) constitutes the data of this study. It has been tried to evaluate interviewer profile of TDHS-2013 starting from this point of view in this thesis. By doing so, it is aimed to give some advices that will be beneficial for further interviewer assisted surveys as well as Turkey Demographic and Health Surveys at the end of the study. Obtaining survey quality with regard to both interviewer components of the survey and other error sources is emphasized during the thesis.

The thesis consists of six chapters, and the contents of the chapters are as follows:

The introduction chapter reviews survey concept briefly. Process, quality, and evaluation of the survey are mentioned within the context of interviewer. Additionally, main objectives, expectations and importance of this study are presented in this chapter.

Second chapter is devoted to the conceptual framework and literature review that begins with a short history of the evolution of survey process. In this chapter, survey quality is described by quality dimensions of some statistical organizations across the world in order to provide a framework for this thesis. Crucial definitions, statements, and explanations are given also in this chapter. Literature review that focuses on survey components, survey quality dimensions, total survey error and its components is presented in this chapter. Lastly, nature of a survey, meaning of quality

in the context of survey, steps of a survey, and possible types of error related to quality during the survey process is described.

The third chapter focuses mainly on interviewer component of the survey. Association between quality and interviewer is presented by providing some examples from background studies on interviewer effect on gaining cooperation and survey estimates. Afterwards, evaluation of the survey and related indicators within the context of interviewer is stated.

In the fourth chapter, the methodologies are demonstrated beginning with some methods to evaluate interviewer within the context of survey quality. After that, stages of the TDHS-2013 survey process and description of the main sources of data for this study –The 2013 Turkey Demographic and Health Survey staff data and main survey data – are stated. Additionally, definitions of the TDHS-2013 recruitment forms and data entry process to construct "TDHS-2013 Staff Data" are introduced as well as key variables for descriptive and regression analyses. Afterwards, regression models used in this study are stated. At the end of the chapter, limitations of the specific and main data sets are presented.

The fifth chapter discusses the results of descriptive and regression analyses. Firstly, recruitment process of TDHS-2013 is described so that results which are related to recruitment process could be interpreted based on the process. Secondly, demographic and other characteristics of data collection staff candidates from application process of TDHS-2013 to fieldwork are given. Afterwards, some comparative results associated with personal interview and fieldwork, and recruitment forms are presented. Finally, some measures to evaluate interviewer performance at the fieldwork are indicated with tables in Appendix A. Second section of this chapter involves that results of the regression models and their descriptive tables of models in Appendix B.

Finally, Chapter 6 concludes the study and discussion of the results. This chapter also presents some advices for further interviewer assisted surveys as well as Turkey Demographic and Health Surveys (TDHS). Additionally, new approaches and techniques that are associated with interviewer recruiting, training, planning the fieldwork teams are presented in final chapter. Application and interview forms which collects necessary information of applicants are suggested for recruitment process of further surveys. New approaches and methods will allow researchers to assess survey interviewers and their effect on survey interests. Moreover, new suggestions about gaining cooperation with the sample unit and increasing response rates for the surveys in order to reduce survey error within the context of interviewer are proposed for interviewer training process.

CHAPTER 2

CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW OF SURVEY CONCEPT

In this chapter, background studies and required concepts on survey concept, survey process, survey quality, and possible survey errors will be mentioned. First of all, a brief history of survey concept and its stages will be stated. Afterwards, survey quality dimensions of different organizations will be presented, studies along with definitions and statements associated with survey quality and its determinants will be stated.

2.1 SURVEY CONCEPT

Survey and research are used as interchangeable concepts in the literature. However, it is known that "survey research" is distinguished from other research types in terms of describing specific aspects of a given population and investigating the relationships among these aspects, requiring data collected from people and selecting a part of the population from which findings refer to entire population (Kraemer 1991).

It is known that the term research comprises the term survey, though survey and research have the same meaning most of the time. As used in the literature, research and survey concepts will be used interchangeable in this thesis.

2.1.1 A Brief History of Survey

Fundamentals of the survey concept that are based on mathematical statistics and probability theory trace to biblical times. It is known that survey sampling has been used to gather information for centuries (Stephan 1948), but there is no evidence about existence of survey sampling until 1900s. However in order to estimate population size, some estimation methods related to survey concept such as political

arithmetic were used in some European countries (England, France, Belgium etc.) between 1650 and 1800 (Tanur 1992; Bellhouse 1998).

In the late nineteenth century, sample survey was only necessary for complete enumeration (or called census). In these years, it was discussed that relation between statistical theory and survey design with representativeness concern even on the mixed purposive and random selection (Kiear 1897; Bowley 1913). However sampling idea from finite populations was developed by Tschuprow (1923) and Neyman in the 1920s for the first time. Neyman (1934), who introduced crucial statistical survey terms such as sampling error, confidence intervals, ratio estimation and two phase sampling design, presented his prosperous work named "On the Two Different Aspects of the Representative Method: The Method of Stratified Sampling and the Method of Purposive Selection" which emphasizes on random sampling. This study is the source of inspiration for Fisher's random experimental design that has a major role on survey sampling. After that milestone in survey methodology Mahalanobis, Cochran, Yates and Hansen contribute to survey design with their valuable studies (Biemer and Lyberg 2003).

Early statisticians did not focus on models of social interaction between interviewers and respondents, validity of survey estimates and other survey dimensions that contribute to bias (Biemer and Lyberg 2003). Considering effect of question wording on survey interests is studied firstly by Muscio (1917). Similarly, scale concept which is used widely today for frequencies of statistics was introduced by Likert (1932) and developed between 1920 and 1950. On the other hand, various questionnaire designs and their possible effects were discussed in 1940s.

2.1.2 Survey Concept

According to House et al. (2004) survey is described as a "telescope on society" to make inferences about social events and understand society. Similarly, Heeringa et al. (2010) reported that surveys are main tools for looking at modern society. The

American Statistical Association's Section on Survey Research Methods has published series named "What Is a Survey?" that comprises survey steps and crucial issues when conducting a survey (Scheuren 2005). Survey methodologists have defined *survey* diversely in the literature. Survey term is widely defined as a tool for collecting information from well-defined subpopulations (Bethlehem 2009). Sample survey is a large fraction of the quantitative information which is about economy and community of the countries (Fuller 2009).

Survey term is widely defined as a tool for collecting information from well-defined subpopulations. Sample must be defined based on content, units, extent, and time (Kish 1965). These dimensions should be specified at the beginning of the survey. Survey is generally defined as a sequence of studies that must be conducted as follows (Dalenius 1985):

1) A survey deals with set of concepts that concern a population,
2) The population at issue has one or more measurable characteristics,
3) Regarding to measurable characteristics the main aim of the survey is to identify population by indicators,
4) A frame is needed to make observations in the sample and make inferences about the whole population,
5) Sample units are selected from the sample frame keeping to sampling design and probability based sample selection,
6) Observations are made properly,
7) Finally estimation process is applied and parameters are produced in line with the survey objectives.

Survey research is conducted to answer some questions, to find a way out possible problems, to evaluate requirements, to follow trends over the time, to identify and describe key concepts with content and amount (Isaac and Michael 1971).

Sample surveys play a crucial role for obtaining information about social, cultural, economic and political structure of the communities. Sample surveys provide making inferences about population based on estimates of a part of the population. This part of the population to be observed, which is called *sample*, should overlap with the population about which information is wanted.

2.1.3 Survey Types

There are several types of surveys and survey populations (Lyberg and Cassel 2001). Survey types are shaped by dimensions of the research. The dimensions of social research are as follows:

Table 2.1.1 The Dimensions of Social Research

Dimension of Research	***Major Types***
How research is used	Basic, applied
Purpose of the study	Exploratory, descriptive, explanatory
The way time enters in	Cross-sectional, longitudinal (time series, panel, cohort)
Technique for collecting data	
For Quantitative Data	Experiments, surveys, content analysis, existing statistics studies
For Qualititative Data	Field research, historical comparative research

Source: Neuman 2002

Applied research is conducted to identify specific concerns and possible problems and propose solution suggestions. This type of research is generally carried out by health care organizations, government offices and educational institutions of countries. Conversely, basic research type is usually conducted by scientific community. When carrying out the basic research, main aim is to contribute to existing basic and theoretical knowledge.

Considering the purpose of a study, exploratory study draws a general picture of possible concerns so that social interests can be understood comprehensively. It focuses on constituting new hypotheses and ideas in order to explain and describe concerns. Descriptive and explanatory researchers have similar properties. Descriptive studies provide quite detailed information about people with regard to social interests

by describing steps. Explanatory research focuses on explaining the underlying reasons of possible concerns. It tries to answer “why” question about social events.

Besides previous categories of the researches, most surveys around the world have been classified according to time dimension. Cross-sectional surveys which aim to measure characteristics and attitudes of the population are conducted at one point in time whereas longitudinal surveys are conducted with same objective over a period of time. Cross sectional surveys have many advantages in terms of cost and facility compared to longitudinal ones.

Longitudinal surveys are usually performed in order to follow interests of survey units over time. National statistical institutes of countries around the world provide information which is called national statistics about population to future planners, organizations and researchers through national longitudinal surveys. These surveys are more complex but more powerful in many aspects. Panel studies are the main powerful tools to follow individuals over time. This facility allows researchers to interpret interchange in social events by following same individuals in time. Well-designed panel studies are very substantial to understand interchange in survey interests which results from time dimension.

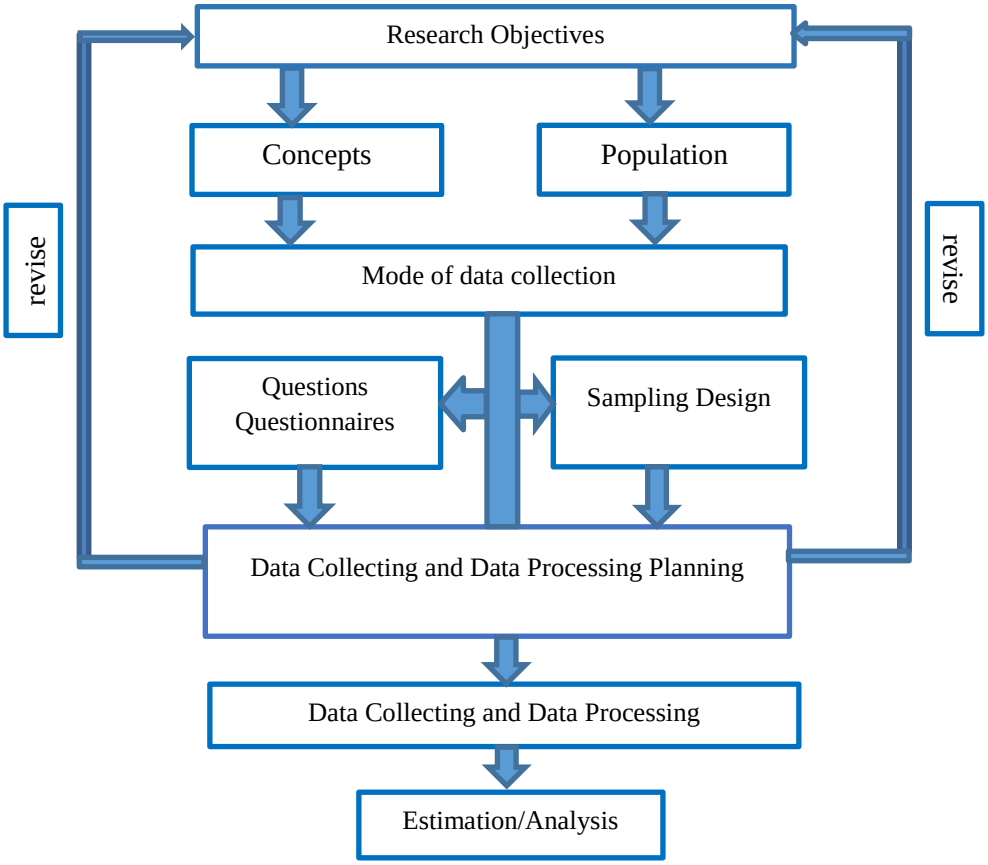
Similar to panel studies cohort analysis is another method to understand interchange in social events over time. Sample from panel studies, cohort analysis focuses on following a cohort over time. An example of the cohort is people born in the same year which is called “*birth cohort”*.

Case studies are interested in examining social interests in depth. It has been tried to investigate social events from few observations in case studies. Obtained data at the end of the case studies is quite extensive and detailed.

2.1.4 Survey Process

Survey process comprises steps from research objectives to data analyses and interpretation of survey outputs.

Figure 2.1.1 Survey Process



Source: Biemer and Lyberg 2003

Survey objectives

Determining research objectives is the first and a major step of any survey process. Survey questions should be addressed along with survey objectives, as survey objectives are mainly determined by research questions. Following survey steps should

be based on survey objectives properly. Specification error may occur when the survey objectives fail to answer survey questions.

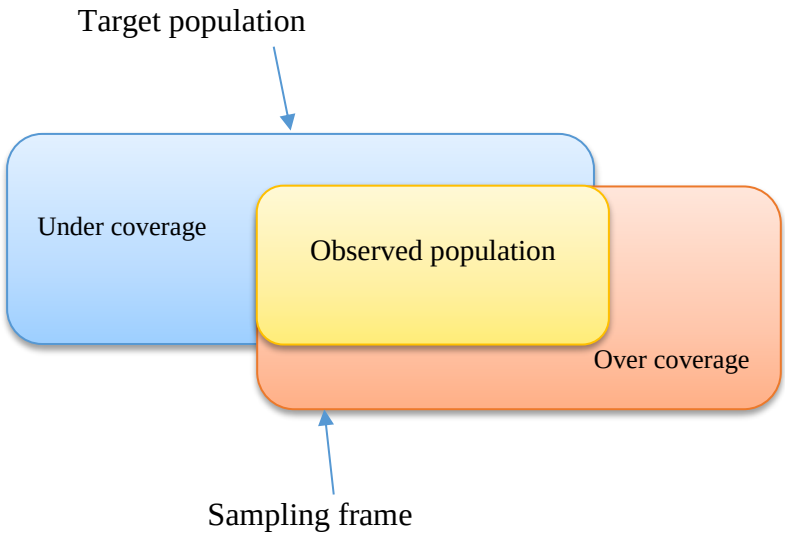
Defining target and frame population

Defining target population within the whole population is the next step of survey processes. Target population is a group of people or units that inferences about the population will be made based on. In other words, population which should be examined is called target population (Bethlehem 2009). Target population of the survey can be households, individuals, women, students, companies etc. Target population constitutes a finite set. Main properties of the target population are to exist within a specific time and to be observable (Groves et al. 2004). At the beginning of the survey process, defining target population properly and carefully is very important in terms of sampling and questionnaire design.

After determining target population of the survey, specifying a frame is required. Sampling frame is a list of all elements where sample is selected from (Groves et al. 2004). Surely, quality of frame has an effect on survey quality. Elements of the frame list should include contact information such as updated and detailed address, telephone number or mail address, to be able to contact with the sample unit.

Under coverage and over coverage can be still remained as sample related problems. Under coverage consists of units that are not covered by the frame due to lack of registration while over coverage consists of units that are not covered by the target population. Under coverage and over coverage problems can cause biased survey estimates. Therefore, specifying target population and sampling frame of the survey have high importance on survey quality.

Figure 2.1.2. Target Population and Sampling Frame



Source: Bethlehem 2009

Mode of administration

Determining mode of administration of the survey has effects on survey steps to follow. When determining mode of administration whether interviewer is needed or not and possible non-response error should be considered necessarily.

Many survey methodologists have focused on mode of administration of the survey by comparing modes and response rates (Schwarz 1991; Bowling 2005; Tipping et al. 2010; Groves 2002; Kreuter 2008; De Leeuw 2005). Researchers have tried to find the best mode for the survey in these studies. It has been reported that instability across responses is due to survey mode (Dillman and Christian 2005). Depending on mode of data collection, whether interviewer is used in modes or not has an influence on survey estimates. For instance, changes between telephone and mail surveys in terms of respondent reports can be compared (Beebe et al. 2005). Sensitive questions have high risks considering margin of error especially for face to face interview assisted surveys. The impact of data collection mode on highly sensitive questions has been assessed by Tourangeau and Smith (1998).

Mode alternatives are based on paper-pen, mail, telephone and e-mail. Paper-pen modes are convenient for self-administered interviewing or interviewer-assisted (called face to face) interviewing. Some surveys are using primary and secondary modes combination which is called mixed mode. The underlying reason for this approach is widely to maximize survey response rate. Indeed, mode of administration depending on data collection method can be evaluated according to type of technology used (Fuchs et al. 2000). When computer assisted interview is used for gathering data, interviewer uses technology supplied by survey organization. This situation may require more interviewer training in terms of degree, duration and type. CAPI (Computer Assisted Personal Interview) interviewers should be trained properly about access to internet and handling of the laptop computer which are associated with data quality directly.

Although there is an increasing demand of using technology for data collection complexity of the computer assisted methods may cause various types of errors such as programming errors, and hardware problems. On the other hand, using technology can reduce measurement error by editing checks and making easier to implement complex questionnaires.

Mode of data collection should be determined before developing survey questionnaire since different modes may be needed for different designs. For instance clustered sample design is usually required for face to face methods. Clustering is an operation that reduces survey cost considerably. Similarly telephone and mail required sample is widely distributed geographically and cheaper than face to face surveys. Furthermore, providing quality for centralized telephone surveys is quite easy. However, there are some disadvantages on obtaining list of telephone numbers or available e-mail addresses.

Face to face interviewing is mostly used for detailed and in depth information. However, existence of interviewer in data collection process may have an effect especially on highly sensitive questions. In these cases mail or telephone surveys may

be preferred or one should think of using cards to gather required information on sensitive questions. Timing is another dimension that should be considered in process of mode decision. For instance mail questionnaires may not be answered in a short span of time. As a consequence, cost, topic of the survey, survey design and time are the main determinants of mode selection.

Developing the Questionnaire

After determining mode of questionnaire, developing questionnaire comes to mind firstly. Questionnaires should include all questions that are based on the survey objectives. Indeed, variables covered by data sets correspond to questions in the questionnaire. Developed questionnaires should allow creating new data sets from raw data at the post survey processing. Mode of administration and defined target population are the main determinants of questionnaire design.

Sampling Design

According to Kish (1965) sampling design should be considered in parallel with survey objectives, which are core concepts of the survey. In general sampling design depends on all stages of the survey process.

Sampling design includes sample selection and estimation in order to make inferences about the whole population based on that sample. Sample selection is a process that comprises rules and procedures through some members of selected sample called sampling frame. In other words, sampling frame is a list of the target population members. Selection of sample has high importance to make inferences about whole population. Sample selection bias with its undesirable results has been an attractive field for many survey methodologists until today (Duan et al. 1983; Heckman 1979; Winship and Mare 1992; Vella 1998; Leung and Yu 1994; Das, Newey and Vella 2002). In these studies, researchers have tried to clarify sample selection bias by various models and their combinations. Estimation is defined as sample statistics calculation process.

Sampling design is influenced by determined survey objectives. In this stage determining the sample frame has high importance. Sampling design may also cover the combination of lists that can be maps or any other tools used to select a sample. Listing of units is used in order to identify and select sample units from listed units. Sampling plan may also involve dividing sample to homogenous subgroups that are called *strata* to improve the selection. This approach is used for getting better precisions on survey estimates without considerable increase on cost. Economic aspect of that process should be evaluated with sampling and non-sampling errors.

Sample mean of statistics is used for the estimation of true population values. However, each sampling design has an indispensable standard error, namely survey error, which is the difference between true population value and sample mean. This difference represents the sampling fluctuation. Basic approach for the optimal sampling design is choosing the sample which has the smallest standard error. Actually, survey design should be taken with best sampling design into account.

Randomization is an important factor that has an impact on representativeness. Sample which is selected for the survey must be representative. Non-random sample selection leads to biased results when making inferences on social events. In sampling design literature haphazard selection, expert choice, quota sampling and sampling of moving population, which are known as non-probability sampling methods, do not have representativeness concern. Desired selection approach is probability sampling in which every unit in the sample has a known and non-zero probability of selection (Kish 1965). Probability sampling is applied so that statistical inferences for population values can be based on variability in the measurement concern which is known standard error.

According to Kish (1965) there is a classification of the probability selection methods with five alternatives.

Table 2.1.2 A Classification of Probability Selection Methods

I.	*Epsem*: equal probability of all elements (a) Equal probabilities at all stages (b) Equal overall probabilities form all elements obtained through compensating unequal probabilities at several stages	*Unequal probabilities* for different elements; ordinarily compensated with inverse weights (a) Caused by irregularities in selection frames and procedures (b) Disproportionate allocation designed for optimum allocation
II.	*Element Sampling*: single stage, sampling unit contains only one element	*Cluster sampling*: sampling units are clusters of elements (a) One-stage cluster sampling (b) Subsampling or multistage sampling (c) Equal clusters (d) Unequal clusters
III.	*Unstratified Selection*: sampling units selected from entire population	*Stratified Selection:* separated selections from partitions, or strata, of population
IV.	*Random selection* of individual sampling units from entire stratum or population	*Systematic selection* of sampling units with selection interval applied to list
V.	*One-phase Sampling:* final sample selected directly from entire population	*Two-phase (or Double) Sampling*: final sample selected from first phase sample, which obtains information for stratification or estimation

Source: Kish 1965

Kish (1965) also stated that combination of these probabilistic methods may be used as an efficient sample selection methods.

Final phase of the sampling design is to determine the ideal sample size. Not only sample selection, but also size determination is crucial for the sample. Ideal sample size and its determinants for surveys have been studied by several researchers (Walter 1998; Kadam and Bhalerao 2010; Singh and Masuku 2014). In most situations, controlling the sample size is quite difficult. Initially, obtaining information about sample or controlling procedures may be problematic. Moreover, non-response factor, types of survey variables and some subgroups may be other sources of the variance. We have only limited control on sample size determination. Cost, non-response, empty lists, household size, type of survey variables and prevalence of the survey interests influence sample size, as well as type of variables and precision level of estimates.

Data Collecting and Data Processing

Data collection and its processing are other main steps in survey processing. These steps cover field work of the survey, collecting the data, converting the data to specified formats, and editing data both by computer and manually. Data collecting and editing also involves some corrections such as inappropriate marks, inconsistent or out of range responses, possible errors that may occur in data entry and similar operations depending on mode of data collection. Edited data sets should allow users to analyse and estimate statistics simply.

Another process associated with the data collecting and processing is to test questionnaire and data entry. The aim of this operation is to determine problems related questions, response categories or data entry. This operation which is called as pre-test is a crucial step that must be included in survey process to recognize problems and solve them.

Some types of Computer Assisted Personal Interview (CAPI) and Computer Assisted Telephone Interview (CATI), which are called as “self-administrated” may

not be required interviewer. So whole or a part of the data collection process is conducted by respondents.

Another issue that is covered by data collecting and processing is hiring of interviewers for interviewer required survey types. Interviewers who are recruited for field work of the survey are trained before data collection process. Interviewer who is the main part of the data collection and cooperating respondent is major component of this study.

Project staff has crucial roles in data processing as well as other survey stages. Project team should always monitor the data collecting process and foresee potential problems. They should also provide feedback to supervisors about way of field work of the survey.

Estimation and Data Analysis

Before the data analysis, weighting procedure is needed for data sets because of unequal probabilities of selected sample units and non-response factor. Weighting is a substantial operation so that sample observations could get better estimates for the whole population. Survey questions and corresponding objectives should be considered with survey estimates that resulted from statistical analyses.

Data collecting is mainly influenced by survey interviewers who have a main role on gathering data. O'Muircheartaigh (1998, 1999) has introduced roles of interviewers and respondent to survey methodology literature and studied standardized and conversational interviewing approaches. Monitoring and evaluating interviewer simultaneously at fieldwork of a survey is necessary for survey data quality. Project staff has many crucial roles especially on data collecting process. In addition to that, it should be noted that interviewers are under the managers' control permanently (Groves and Couper 1998).

2.2 SURVEY QUALITY AND SURVEY ERRORS

2.2.1 Survey Quality

From the historical perspective, requirement for better data quality that is directly influenced from survey errors, and how to improve it were studied by many researchers (Deming 1944; Juran 1980; Taguchi 1986; Crosby 1980). Problem of quality control has been an interesting field for survey statisticians for years. Control chart and spiral of progress were introduced to survey quality literature in order to evaluate survey process (Deming 1944; Juran and Gryna 1980). Related to data quality, Taguchi (1986) dealt with an experimental design where variation is focused, Crosby (1980) reported that there are avoiding behaviours which affect quality and Ishikawa (1982) presented seven tools for quality control. New ideas related to customer orientation and team work rather than top-down management have been produced to control quality (Brackstone 1999; Scheuren 2001).

Unfortunately quality term is still a vague concept although the most general definition of survey quality is "fitness for use" (Juran and Gryna 1980). Fitness for use is a wide-ranging concept that includes many characteristics within the survey context such as accuracy, timeliness, richness of detail, accessibility of the data and level of confidentially protection. In same study another definition of quality was given regarding design quality and conformance quality (Juran and Gryna 1980). Definition of survey quality varies among studies in the literature. Different descriptions can be found in Hansen et al. 1963; Groves 1989; Biemer and Trewin 1997; Biemer and Stokes 1989; Biemer and Lyberg 2003; Groves et al. 2004; and Morganstein and Marker 1997.

Although cost of the survey is not directly associated with survey quality, it plays a crucial role on survey procedures particularly in alternative designs. Large numbers of statistical organizations have published documents about their survey quality dimensions. Each statistical organization uses different approaches and

methods for quality measuring based on diverse survey types (Biemer and Lyberg 2003).

According to Eurostat (2000) survey quality is composed of six dimensions:

- relevance of statistical concept,
- accuracy of estimates,
- timeliness and punctuality in disseminating results,
- accessibility and clarity of the information,
- comparability,
- coherence and completeness.

Similarly Statistics Canada emphasizes on relevance, accuracy, timeliness, accessibility, interpretability, and coherence related to survey quality while Statistics Sweden uses content, accuracy, timeliness, comparability-coherence and availability-clarity.

Survey process and evaluation of survey quality have drawn a great attention in last decades. Close relation between measurement errors associated with surveys and survey quality has been covered by many studies until today (Anderson et al. 1979; Groves 1989; Lesser and Kalsbeek 1992, Biemer and Trewin 1997).

Survey quality is a function of survey error. Level of survey error is determined by total survey error (TSE) which is a basic tool for quality assessment. TSE also allows providing information about choosing the best method for the survey. On the other hand, determining sources of the TSE is another issue that should be taken into consideration. After that rates and structures of errors and quality indicators should be used for survey quality assessment.

2.2.2 Survey Errors

It is widely known that survey quality determinants are specified by proxies of survey error types. For instance, non-response rate is a proxy of non-response error.

Non-response error, which occurs when respondents are unable or reluctant to participate in a survey, constructs a large part of the total survey error. Survey non-response has been indicated as an indicator of survey quality (Groves 2002). Non-response models and applications for Turkey's demographic surveys have been evaluated with detailed approaches (Ayhan 1981; Ayhan 1998). Non-response components are related to survey non-participation strongly. Covariates of non-response factor has been examined comprehensively for two-stage national survey (household and individual level) (Türkyılmaz and Ayhan 2012). At the end of the study number of visits, region, being a usual resident and working status among variables that are included in models have been found as significant covariates of response which was taken as a binary variable.

By 1940s, sampling error was not equivalent to total survey error completely which represents survey quality. In 1940s, Hansen and colleagues at the U.S. Bureau of the Census introduced a model called U.S. Census Bureau model to deal with the response errors as a type of survey error. The U.S. Bureau approach based on proportions of total variance due to response errors is known as reliability ratio. Measurement errors causing variability and bias on population estimate has been showed in studies (D'Orazio 2010). This model specifies error of a survey estimate as mean square error (Hansen et al. 1963; Bailar and Dalenius 1969). To investigate reliability of responses latent class model which has an assumption of equal probabilities of misclassification is convenient for categorical survey variables (Biemer 2004).

Total survey error is composed of sampling errors which are rooted from drawing a sample instead of entire population and non-sampling errors which are based on steps related to survey process. First of all specifying components of the error is needed in order to investigate survey error. Researchers have studied effects of non-sampling errors on survey estimates using statistical methods and models (Assael and

Keon 1982; Groves and Lyberg 2010). Non-sampling errors due to survey process should be considered with causes and results simultaneously.

Survey quality is influenced by several factors in survey processes. For instance, sample size is a factor that affects data quality in terms of sampling design. Because, if an estimate of the survey interest is based on few observations of the sample, it is possibly unreliable and useless.

In surveys, some issues about survey quality should be analysed in depth for data quality, as survey quality is directly associated with data quality. The accuracy of survey estimates can be evaluated in the sense of total survey error which is a measure of quantifying the level of error related survey process. In the most general sense the difference between the survey estimate and true population value is called total survey error. Total survey error is unknown due to obscurity of the true population value. However, it may be approximated by using some methods. Actors who contribute to survey error could be interviewers, respondents or project team.

Survey process has many components that are linked each other. Depending on that total survey error is composed of sampling errors which are rooted from drawing a sample instead of entire population and non-sampling errors which is related data collecting and data processing. Furthermore non-sampling errors could arise from the respondent, interviewer, data entry and refusals to get participation. In other words non-sampling errors are unintentional errors whereas sampling errors are intentional.

Increasing sample size may be compensating operation for sampling errors. However, it may result in increase on non-sampling errors since more interviewers and cost might be needed. Moreover interviewers who are less experienced may be recruited or quality control systems may not work properly because of overloading. Hence balance between error types should be provided in order to minimize total survey error.

To achieve minimizing total survey error determining sources of errors is needed. There are five major sources of non-sampling errors:

- Specification error which covers survey concepts, objectives and data elements,
- Frame error which covers omissions, inclusions and duplications,
- Non-response error which covers within unit, whole unit and item,
- Measurement error which covers information systems, settings, mode of data collection, respondents, interviewers and survey instruments,
- Processing error which covers editing, data entry, coding, weighting and tabulation.

Non-sampling errors can also be classified as variable errors and systematic errors. Variable error which inspires variance is closely associated with data reliability. Data reliability is the ratio of variation in the true population values divided by total variation. If there are no variable errors there is a perfect reliability on data. Systematic errors generally lead to bias on linear estimates such as proportions and means. Actually total survey error is sum of the two components: variance and bias. Apart from linear estimates both systematic errors and variable errors may lead to bias. Errors may be divided into two components as positive and negative errors. Magnitude of positive or negative errors leads to an influence on average measure of interest. Average value may be larger or less than true population value depending on magnitude of the positive or negative errors.

Surely, both systematic and variable errors have an effect on data accuracy. Survey process decisions may be influenced by survey cost, mode of administration and other survey constraints. While determining the survey quality, cost and timeliness should be considered simultaneously. As it mentioned previously, quantifying total survey error which implies comparability of alternative survey designs and minimizing it are important control tools in that process.

There are several methods to estimate the total survey error. Mostly used is mean square error (MSE). MSE is a representation of total error which contains all sources of errors on particular of interest. It is a measure that summarizes the effects

of variable and systematic errors. MSE is also sign of the survey data accuracy that should be interpreted carefully.

Mode of administration directly affects MSE. Whereas, self-administered mode decreases bias because of absence of interviewer variable error is expected to be higher since interpreting the questions varies from respondent to respondent.

As a proxy of error components, quality determinants can be used when estimating the MSE. For instance non-response rate is a proxy of non-response bias component of the mean square error. MSE comprises several bias and variance related to systematic and variable errors.

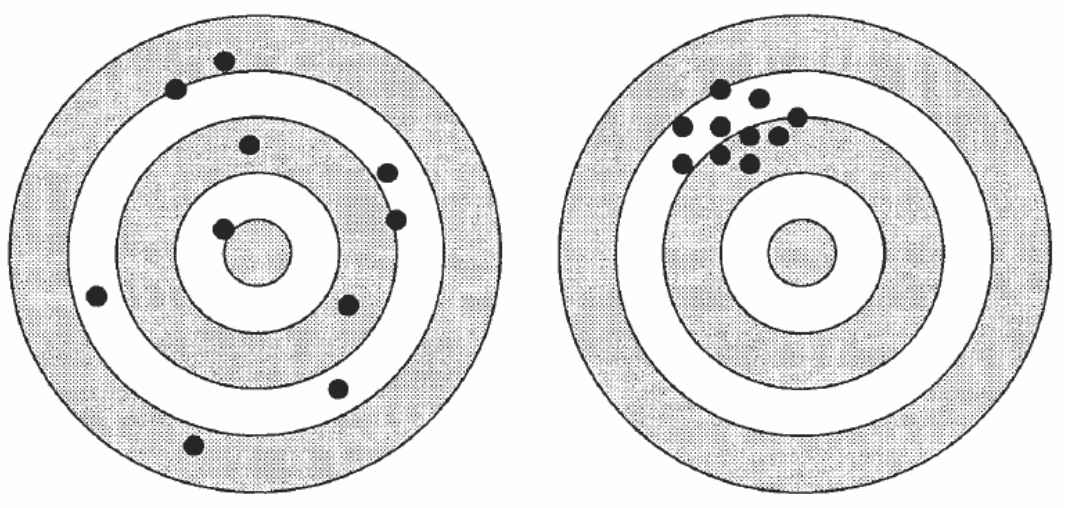
$$MSE = (Bias)^2 + Variance$$

Bias could be calculated by taking average value from repeated observations on survey estimates and subtracting it from the true population value. Variance can be calculated by subtracting average survey estimates from repetitive observations, too. Expanded form of mean square error formula presented above is expressed as the following:

$$MSE = (B_{SPEC} + B_{NR} + B_{FR} + B_{MEAS} + B_{DP})^2 + Var_{SAMP} + Var_{MEAS} + Var_{DP}$$

where B_{SPEC} represents specification bias, B_{NR} represents nonresponse bias, B_{FR} represents frame bias, B_{MEAS} represents measurement bias, B_{DP} represents data processing bias, Var_{SAMP} represents sampling variance, Var_{MEAS} represents measurement variance and Var_{DP} represents data processing variance.

Figure 2.2.1 Systematic and Variable Error Estimation (bull's eye illustration)



Source: Biemer and Lyberg 2003

(a) Large variance and small bias (b) Large bias and small variance

Systematic and variable errors conceive bias and variance respectively. As illustrated in Figure 2.2.1, estimating close to a target of bull's eye, which represents true population parameter is desired (analogy of the Marksman and the Target). The closeness between the target and survey estimates specifies variance or bias. This variance and bias creates the total survey error.

When sample observations are not close to each other, the variance is high. However, when mean of estimates are close to target, bias is smaller (Figure 2.2.1 (a)). Conversely, when sample estimates are close to each other, variance is smaller and bias is larger (Figure 2.2.1 (b)).

CHAPTER 3
ROLES, EFFECT, AND LIABILITIES OF INTERVIEWER

In this chapter, we focus on background studies and concepts about survey interviewers, who have a crucial role for the interviewing process. The relation between the quality of a survey and its interviewer, as well as the interviewer effect and evaluation of interviewer performance are other points that will be presented. To the best of our knowledge, there is no study in Turkey on evaluating qualities of survey interviewer within the context of survey process and its quality. Hence, we hope that this thesis will light the way for future studies.

The chapter is organised as follows: Firstly, we argue about importance and role of interviewers on survey quality. Then, role of interviewers, possible errors caused by them, and interviewer effect on survey estimates is discussed. The chapter ends with introducing several methods related to evaluation of interviewer performance.

3.1 INTERVIEWING AND INTERVIEWER

Interviewing is a principal method to collect detailed social survey data, and interviewer, who surely has influence on survey estimates, is the main actor of this process. Data collection methods such as mail, e-mail, or self-administered paper-pen based questionnaires are sent to respondents, who are asked to fill them without an interviewer. However, interviewer is a crucial part of the survey process for most data collection methods. Some survey concepts require face to face interviewing for detailed and in depth information, trustworthiness, and higher response rates. Asking and probing questions, making clarifications, giving feedbacks, formulating the responses, recording the answers, behaviours, attitudes, and other characteristics of the interviewer may influence survey data. Relation between interviewer and respondent is vital if one is to understand the interviewer effect especially on response rates and

response time. Due to all of these reasons, interviewers play a critical role particularly in social survey processes.

Williams (1942) stated that some instructions for survey interviewer at the National Opinion Research Center (NORC) in the U.S. In 1946, at a conference in the U.S. picture for ideal interviewer profile was drawn as a 37 years old, married, politically moderate woman who is able to understand and follow instructions (Biemer and Lyberg 2003). As it is mentioned in survey concept previously, interaction of interviewer and respondent has not been of interest to statisticians until 1968. Cannell and Khan (1968) were the first ones to use the coding schemes to explain this interaction. Interviewer concept and diverse findings can be found in survey literature (Cialdini 1984; Groves and Couper 1998).

Interviewers have considerable effects on surveys, especially when face to face interviewing method is used. Computer assisted surveys such as CATI (Computer assisted telephone interviewing) and CAPI (Computer assisted personal interviewing) have lower error terms compared to face to face interviewing in terms of skipping questions. As in CATI/CAPI surveys, the software used for interviewing doesn't allow skipping the questions, or a specific part of the questionnaire. However, interviewers may still commit errors such as false entry or skipping. As interviewers have varying characteristics, interviewer variance on unit non-response basis is usually higher in face to face surveys when compared to telephone interviews (Davis et al. 2010)

3.1.1 Roles of Interviewer

Interviewer, respondent, and instrument are main determinants of an interviewing process. Several studies on survey methodology were interested in roles of the interviewer within the context of survey interests' quality (Feldman et al. 1951-52; Hanson and Marks 1958). Especially face to face interviewing is quite flexible in terms of returning refusals and assisting interviewing process. Hence, interviewer assisted surveys are prone to have errors because of interviewer's duties. Delivering survey questions to respondent and recording answers accurately on the questionnaire are among the duties of the interviewer, and all of these are problematic issues.

Interviewer's role is not only to read questions to the respondent(s), to follow instructions properly, and to record answers on survey instrument(s) correctly. The roles of interviewer mostly start with finding a sample unit. After that, a table, which gives information about the contact status (such as: could the interviewer make contact with the sample unit, and how many times did the interviewer called the sample unit before receiving an answer) between the interviewer and the sample unit, is formed (Kulka and Weeks 1988; Greenberg and Stokes 1990). After that, cooperating with the sample unit is another significant issue that can be improved by doorstep interaction strategies (Campanelli et al. 1997; Morton-Williams 1993). In telephone surveys first seconds may be seen as a doorstep interaction, too.

Selecting eligible respondent(s) from the survey unit is another duty of interviewer. Eligible person is selected by Kish method which is developed in 1949, or by birthday methods (Oldendick et al. 1988) in order to making an unbiased selection among eligible individuals. Everyone who are eligible for the target population is specified depending on a survey criteria, such as age and gender in Kish method. After that, using random selection, respondent is selected from all eligible individuals for the survey based on grids (from Kish table[1]). Aim of any selection procedure is to achieve total randomness for selecting representative respondents for a survey.

It should be noted that it is the interviewer who introduces the objectives of the survey to the respondent(s), detect any concern, and find time and environment for the sample members to be interviewed. At the beginning of the field work, interviewers may create list of units that are essential for the sample frame. Another role of interviewer is to find the sample unit physically. Specifying the address of a sample unit and finding respondent is a difficult part especially for moving populations.

During the face to face interviews, interviewer asks questions to respondent, probes and clarifies them, and answers properly when necessary. In this step, interviewers may have an influence on survey estimates because of incorrect probing

[1] Kish grid serves selecting eligible persons within the sample unit with equal probability. For a study focuses on Kish grid, see Nemeth (2002).

or clarifying techniques. There is a debate on two types of interviewing techniques in the literature. In standardized view, interviewers read questions word by word. Other activities such as probing and providing feedback are given in very standardized and general forms to respondents so that each interviewers' influence on responses is the similar, and as simple as possible. Aim of this is to reduce measurement errors which contribute to non-sampling error by standardized attitudes and behaviors of the interviewers. However, it is a troublesome task in practice. On the other hand, conversational interviewing approach allows interviewer to behave more freely and helps the respondent in response formulation. This approach focuses on reducing measurement errors arising from not only the interviewer but also the respondent. Then, he or she records answers accurately on survey instrument(s).

Another task of the interviewer is to train the respondent during the interview (Groves 2004; Fowler 1991). Interviewers are expected to keep the respondents motivated during the interview to receive better quality data (Blom and Korbmacher 2013; Schaeffer et al. 2010; Groves et al. 2009).

3.1.2 Interviewer Errors and Their Sources

Not only survey interviewing techniques and mode of administration, but also attitudes and behaviours of interviewers, characteristics of interviewer, interviewer-respondent rapport, expectations, preferences, and experience of interviewer may have an influence on survey estimates.

Many terms such as interviewer variability, interviewer variance, correlated interviewer error, intra-interviewer correlation, interviewer effect, and interviewer design effect have been used in survey literature to describe errors rooted from interviewers. All of these terms refer to variability of systematic bias of the interviewer. In general, interviewer variance, which is originated from the unobserved characteristics of the interviewer, results in variability between survey estimates depending on specified interviewers.

Interviewer errors are associated with both systematic and variable errors. Interviewers may make observations and assessments related directly to sample units

during the interview. These observations may result in systematic errors. Errors that vary from interviewer to interviewer are known as variable errors.

Characteristics of interviewer, such as age, race, gender, social class, educational level, experience, and expectations may have an impact on responses obtained from respondents. For instance well-educated interviewers may influence respondents who are relatively less-educated. Similarly, well-dressed interviewers may affect responses more than interviewers who look modest for a household income or wealth surveys. Expectations of interviewer have an influence on responses, too. Respondents may not want to answer some questions or interviewers may skip some questions easily due to their respective expectations. This can be associated with social desirability bias.

Interviewing approach affects responses considerably. Ideally, interviewers should adhere to questionnaire according to the standardized approach. Standardization is used to reduce interviewer error by limiting interviewer attitudes, beliefs and behaviors that possibly affect survey responses. Interviewer error originates from not only interviewers but also questionnaires. Lower values of intra-interviewer correlation (ICC), which is a sign of interviewer contribution coefficient, are generally associated with demographic characteristics and other items. On the other hand, higher values of coefficient are mostly related to either open-ended questions, sensitive questions, or in-depth questions that need probing and clarifying.

There are several factors associated with survey design that affect magnitude of interviewer error. Better questionnaire designs and interviewing and training techniques are crucial to control TSE. Training should include all possible situations that could happen at the fieldwork. Attention should be paid to interviewer training as field work of the survey is exposed to various situations even though it is planned beforehand. Training process should also provide guidelines on asking, probing, clarifying and so on. For all of these reasons, analysing interviewer profile and effect of social surveys is quite valuable.

3.2 INTERVIEWER EFFECT

Interviewers contribute to total survey error diversely, and their errors have been investigated widely in survey methodology. Until 1920s, studies that have focused on interviewer variability are only associated with observational studies. Variety among interviewers who have different opinions about social phenomenon is illustrated by Rice (1929).

Many researchers have studied survey interviewing techniques, mode of administration, interviewers' attitudes, behaviours and expectations, matching characteristics of interviewer and respondent, response rates and interviewer-respondent rapport, experience and preferences of interviewer, behavior coding and actual data to identify and explain interviewer effect (Gubrium and Holstein 2001; Turner et al. 1998; Cannell et al. 1981; Lyberg and Kasprzyk 1991; De Leeuw and Collins 1997; Dijkstra and Van der Zouwen 1987; Rice 1929). In these studies concepts that are associated with respondent, interviewer and survey have had the main focus. For instance, interviewer variance in survey can be illustrated as a function of training and experience (Freeman and Butler 1976; Fowler and Mangione 1990). Besides, the differences between respondents who are prone to answer questions reluctantly and unreluctantly lead to bias (Sakshaug et al. 2010, 2013).

Most of the studies have dealt with whether the respondents' both demographic and social characteristics are determinants of the willingness to the survey participation or not, as recent studies have shown that interviewers affect respondents' decisions either directly or indirectly (Korbmacher 2014; Sakshaug et al. 2012).

Each interviewer cooperates with respondents in a different way. There are several studies concerning how to identify interviewer characteristics that have an influence on survey cooperation. Researchers have tried to explain interviewer variation in refusal rates, which is complementary with response rates with multilevel cross-classified logistic models (Durrant et al. 2010; Pickery et al. 2001; Olson and Peytchev 2007; Loosveldt and Beukkens 2014). It is also known that matching characteristics of interviewer and respondent helps to obtain higher response rates (Moormanet al. 1999).

Interviewer has a central role on measurement error variance of a survey. Measurement error linked to interviewer can be related to demographic or social characteristics of interviewer. For instance gender of interviewer as a fixed effect is obviously may affect responses (Kane and Macauley 1993; Flores-Macias and Lawson 2008). Nealon (1983) has studied interviewer's gender effect on survey items and examined female and male patterns. Some studies (Ballou and de Boc 1980) have claimed that female respondents have answered questions feministly to male interviewers rather than female interviewers especially on questions about women roles and rights.

Similarly, previous studies (Williams 1964; Schuman and Converse 1971; Hatchett and Schuman 1975; Wilson and Olesen 2002) have shown that races of interviewer, and respondent are important determinants of various survey responses particularly on sensitive questions. Studies which analyse demographic characteristics of interviewers have generally found that age also is a significant variable. According to studies, higher the respondent's age is, larger interviewer variance is observed. (Berk and Bernstein 1988). Besides that, education, employment, political interest, expectations from future, attitudes and beliefs, and experience are other characteristics that were included in most analyses.

Experience of the interviewer, and its effects on the survey have been the main focus of many studies. There are diverse streams in the literature about experience of interviewer. The earliest is that more experienced interviewers achieve higher cooperation rates (Durbin and Stuart 1951). Interviewers with more experience and more confidence have more tendency to get higher cooperation rates (Groves and Fultz 1985; Hansen 2007; Groves and Couper 1998, Pickery et al. 2002, Hox et al. 2002). Accordingly, Stevens and Bailar (1976) have compared non response rates for interviewers with different experience levels. At the end of the study, researchers have concluded that response rates for less experienced interviewers are lower than more experienced ones. Researchers have made interpretations on this result as having bias or skipping some questions. This behavior of interviewers generates refusal and bias naturally. It should also be noted that less experienced interviewers are neutral to both questions and answers.

In experience focused studies, effect of experience has been found to be negatively or positively significant depending on the way experience is defined. According to Sala et al. (2012) one is considered as experienced once he/she participates in surveys rather than job experience. On the other hand, Korbmacher and Schröder (2013) labels an interviewer as experienced once he/she participates in surveys for a required number of interviews is reached. Researchers have found positive effect especially when experience is defined in terms of the number of previous interviews (Sala et al. 2012). It has been hypothesized that there is a curvilinear relation between interviewer performance and experience although there is no empirical evidence (Groves and Couper 1998). Being confident, along with having experience, allows interviewers to achieve higher cooperation rates. It is found that, interviewers that reassured the respondents achieve higher response rate. (Morton-Williams 1993).

From 1990, there has been a debate on difference between standardized and conversational interviewing approaches both provided by interviewer (Schuman and Jordan 1990; Beatty 1995). Some researchers argued that questions to the respondent by interviewer should be presented in standardized manner (Fowler and Mangione 1990). Conversely, others adopted more interactive, and conversational approaches (Suchman and Jordan 1990). Conversational interviewing is more convenient when respondents are reluctant to answer questions, and it is an efficient method for most situations (Dykema et al. 1997). Also it has been stated that standardized approach and conversational approaches are the same when questions are easy to answer (Schober and Conrad 1997). In essence, both approaches have the same goal, which is to obtain as accurate as possible data from respondents.

Association between interviewer expectations and respondent behaviors was found to be weak in most studies (Singer and Kohnke-Aguire 1979).

There are some studies that benefit from additional interviewer surveys in order to estimate interviewer effect on survey estimates (Sala et al. 2012; Sakshaug et al. 2013). These additional surveys help to correlate interviewer with survey process. Similarly Durrant et al. (2010) used a survey conducted with interviewers employed

by the UK Office for National Statistics (ONS) in 2001 (Interviewer Attitude Survey, IAS), which collects data on socio-demographic characteristics, work backgrounds, interviewing strategies, behaviors and attitudes, persuasion of reluctant persons, working at different times and travel preferences. In this study, contrary to previous studies (Groves and Couper 1998; Hox et al. 2002), multilevel analyses instead of bivariate or interviewer-level analyses are used. Other characteristics of the interviewer such as age, gender, race, educational level, attitudes, income, usage of social networks, and their expectations about response rates have been included in analyses of studies.

Interpenetrated sample design refers to assignment method where interviewers are assigned randomly to sample units. Interpenetrated assignment method, which is crucial to estimate errors generated by interviewers, supervisors, and individuals who contribute to survey units, was firstly introduced by Indian statistician Mahalanobis (1946). He was also the first one to introduce error estimates for collecting agricultural data (Biemer and Lyberg 2003). Several studies have focused on clustering effects within the interviewer assignment concerning interpenetrated assignment method (Kish 1965; Groves 1989; O'Muircheartaigh and Campanelli 1999). If data collected during the fieldwork is to be unbiased, the randomness of interviewer-respondent assignments should be ensured. Hence the assignment method is crucial in order to measure interviewer variance in a survey. Studies have shown that the clustering effect obtained from samples in different regions may be based on the varying probing techniques, or interviewing techniques used by these interviewers (O'Muircheartaigh and Campanelli 1998).

Responses given by the respondents to any specific interviewer tend to be similar, even though geographical characteristics may vary among these respondents. Error type due to this clustering effect is known as systematic geographical error, and it depends on interviewer. Regarding to clustering effect, interviewer assignments should be selected at random in order to estimate intra interviewer correlation coefficient (ICC), which is a measure of interviewer variability. Interpenetrated subsamples with travel costs and complexity of field supervision should be analysed

in depth to describe interviewer effect on clustered face to face interviewing. However, interpenetrated sample design is not required for telephone or mail surveys.

Although there is a lack of attention on ICC, it has been used in the survey literature as a useful indicator to identify and describe interviewer variance in total variance. Many results of the surveys with average ρ_{int} values according to mode of data collection are presented to emphasize interviewer effect on survey mode (Groves 1989). Hansen et al. (1961) used ICC to assess the interviewer variability estimates of 1950 U.S. Census of Population and Housing. It has been found that many survey items have high correlation coefficient because of interviewers. Recently, Korbmacher J.M. (2014) has concluded that interviewer variance level with ICC is 36% for the German part of the SHARE (Survey of Health, Aging and Retirement). Determinants of this effect were analyzed by multilevel statistical models. Experience and expectations of interviewers on getting respondents' consent to participate in surveys have been found as the main indicator of interviewer variance.

Another determinant of interview effect is based on the time spent during an interview. Statistical models focusing on response times for the whole questionnaire or some sections of it can help to make inference on interviewer effect. Minato (2014) has been interested in para-data which includes survey contact history and survey questionnaire administration outcomes by Cox proportional hazards model. The results of this study showed that the effects of interviewers are significantly different from each other based on posterior probability distributions.

Several strategies to reduce interviewer effect on survey process as the following:

- Interviewers should be recruited in accordance with their interpersonal skills, ability of persuasion, ability of making contact with another person, matching characteristics of interviewers and subsamples in which they work.
- Experience should be taken into consideration for interviewer assessment. There are several studies about whether interviewers who have more experience get high response rates or not (Groves and McGonagle 2001; Campanelli et al. 1997).

- Interviewer candidates with high level of confidence and communication skills should be preferred firstly.
- Training should cover objectives of the survey, such as interviewing process, probing and clarifying techniques, and giving feedback techniques.
- Interviewers' performances should be monitored during the field work. Feedback, may it be positive or negative, should be given on time.

Undoubtedly, not only determining interviewer variability but also addressing causes of interviewer effect is a crucial subject to understand interviewer related design factors. Reducing and controlling interviewer effect in surveys are only possible with determining sources of the errors.

3.2.1 Evaluation of Interviewer Performance

Evaluation process of interviewer during the field work is an essential part of the survey directly effecting data quality. Monitoring and evaluating interviewer performance at the field work helps to identify potential problems related to survey components such as instrument(s) or field team(s). Non-response rates, distribution of workload, and some statistics are known as performance measures, which define the quality of interviewing process for both computer-assisted and paper-pen based surveys. For paper-pen based surveys, review of question forms, completeness and whether answers are within response ranges or not are among other survey quality dimensions. For computer assisted surveys, keystrokes and trace files help to evaluate interviewer performance.

Interviewer variation is mainly effected by following four features of interviewers: question delivery, probing, giving feedback, and timing.

Table 3.2.1 Basic behaviors that have an influence on interviewer variation

Question Delivery	Reading questions as worded	***Giving Feedback***	Delivering feedback appropriately
	Minor wording changes		Delivering feedback inappropriately
	Major wording changes		Failing to deliver feedback
	Failing to read questions		
Probing Behavior	Probing appropriately	***Timing***	Reading too fast or too slow
	Probing inappropriately		Timing between items too fast
	Failing to repeat		Timing between items too slow

Source: Biemer and Lyberg 2003

There are several methods to evaluate the interviewer performance. Re-interview, verification, re-contact, observation, audio-recording, monitoring, review of questionnaires, performance and production measures, keystroke/trace file analysis, test of knowledge or practice are among these methods. These methods mainly focus on new or less experienced interviewers in order to assess interviewer properly.

Among interviewer evaluation methods, re-interview and verification re-contacts are widely used. Re-interviewing comprises of randomly selecting a small sample of respondents, re-contacting them after the original interview and conducting new interviews. Re-interviewing also allows making an assessment about not only interviewers but also non-sampling errors such as respondent selection, whether proxy is used or not, missing information about housing units or the likes of it etc. After re-interviewing, accurate survey responses are determined by using verification procedure.

In addition to re-interview and verification, there are several applicable methods to observe behaviours of the respondent and to evaluate performance of interviewer. Another similar approach, called verification re-contact, focuses on

making contact via telephone with a small sample of respondents. Aim of re-contact is to only verify the conducted interviews rather than asking all survey questions to the respondent. Another one of the methods is called monitoring by supervisor, in which the supervisor accompanies the interviewer during the interview process and observes their behaviours.

Call monitoring is another method to evaluate interviewers, and it is used for centralized telephone interviews. Conducted interviews may be recorded using tape or laptops with audio recording technology installed. By using this method, detailed and reliable information could be gathered.

CHAPTER 4
METHODOLOGY

Hiring and training of data collection staff, and planning fieldwork teams are fundamental stages for a survey. Data collection staff, especially interviewers, have important roles in gathering reliable data during face to face surveys. As it has been mentioned in previous chapters, interviewers are main actors of interview process with the respondents in social surveys. In this thesis, an effort is made to determine the general profile of TDHS-2013 data collection staff candidates based on application, personal interview, training, and finally fieldwork process.

In this chapter, firstly, well known measurement oriented methods to evaluate data collection staff is studied alongside with their limitations. Afterwards, the survey design, and interviewer recruitment steps of the 2013 Turkey Demographic and Health Survey are stated comprehensively in the second part of the section. Data sources with data entry processes, methods, and variables used for the analyses, and limitations of this study are described at the end of the chapter. TDHS-2013 staff data set, which is a special data set, is used as the main data set for this thesis. The key variables used for both descriptive analyses, and regression analyses are introduced in the same part. Finally, limitations during the study that are mainly related to TDHS-2013, main and special data sets are explained while the main goal is to identify and properly address the profile of data collection staff of TDHS-2013 and interviewer effect on completed interviews.

4.1 METHODS TO EXPLAIN INTERVIEWER VARIANCE

As it has been mentioned in the previous chapter, interviewers, who are essential part of the survey process, may add bias to sample observations. Interviewer's perception, background characteristics such as survey experience and language ability, or attitude towards the respondent may remarkably influence the responses given by survey respondents. In view of total survey error components (see 2.2.2), the interviewer variability is mainly associated with non-response and measurement

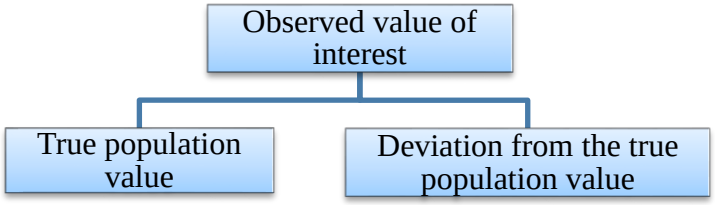
errors. Interviewer effect may lead to an increase in variance of sample observations, which further leads to an increase in population statistics, such as means, proportions, and totals, obtained from sample. Adjusting interviewer effect on survey interests due to non-standardization or other undesirable factors by using various methods has been an attractive field for survey statisticians (Fowler et al. 1990, Beatty 1995).

The assessment of interviewer error is a post survey quality measure when evaluating survey quality. This measure is expected to be smaller in cross sectional surveys compared to longitudinal surveys. In practice, most survey variance estimates do not take interviewer component into consideration even though it is crucial to understand the interviewer variance of a survey. Determining interviewer variance is a quite difficult task since total survey error components are not determined wholly. Additionally, it is not possible to calculate following indicators for the TDHS-2013 due to lack of information on true values and magnitude of total survey error.

- **Deviation from True Population Value**

Determining not only the interviewer variance but also its effect on population parameters, are substantial parts of the survey quality assessment. The following formula demonstrates the sample observations simply:

Figure 4.1.1 Illustration of Deviation from the True Population Value



$$y_i = \mu + e_i, \qquad i = 1, \dots, n$$

where y_i infers observation from the i-th sample member, μ infers true population value, e_i indicates deviation from the true population value and n indicates sample

size. It is expected that the sum of deviations from the true population value is approximately zero:

$$\sum_{i=1}^{n} e_i \approx 0$$

An observation from k-th unit in the j-th interviewer's subsample y_{jk} can be demonstrated as the following alternatively:

$$y_{jk} = \mu + b_j + \varepsilon_{jk}$$

where j represents index of interviewers, k refers unit in the assignment, b_j indicates the systematic interviewer error (bias) of j-th interviewer and ε_{jk} represents deviation of y_{jk} from $\mu + b_j$.

This model assumes that interviewers contribute same constant bias for all responses obtained from sample units. This might not be possible completely in practice. In other words, a particular interviewer may add bias to some responses rather than all responses obtained from particular respondent within the assignment. Moreover this model is applicable for only continuous variables such as age, weight or income.

Obviously, characteristics and attitudes of interviewers and respondents, and probing and clarifying techniques have an influence on responses inevitably. Indeed, this model is used as an useful tool to simplify and demonstrate interviewer variability on sample observations. When evaluating survey quality, it can be used to determine magnitude of interviewer effect on survey responses roughly, as long as true population values of the survey interests are known completely.

- **Intra-Interviewer Correlation Coefficient (ICC)**

The most widely used mathematical measure of interviewer effect which is defined by Kish (1965) is called intra-interviewer correlation coefficient (ICC) as follows:

$$\rho_{int} = \frac{\boldsymbol{between\ interviewer\ variance}(\sum b_j^2)}{\boldsymbol{between\ interviewer\ variance + within\ interviewer\ variance}}$$

ρ_{int} intra-interviewer correlation coefficient draws a picture of interviewer contribution to the survey. As it has been understood from the formulation above, it demonstrates that how much variance is interviewer specific in the total variance.

In other words ρ_{int} shows the correlation between two observations that come from the particular interviewer's assignment. On that sense interviewer effect can also be described as correlation between responses that is known as interviewer error.

- **Interviewer Design Effect ($deff_{int}$)**

Interviewer design effect is a demonstration of the variation which is originated from interviewers. According to Kish (1965), the amount of that variation is denoted by $deff_{int}$ as the following:

$$deff_{int} = 1 + (m-1)\rho_{int}$$

where m is the average interviewer workload that refers to number of interviews. $(m-1)\rho_{int}$ illustrates that increase in the total variance because of the interviewers. From this aspect, it resembles to the rate of homogeneity (*roh*) between clusters and its effect in the sample (Kish, 1965). ρ_{int} value is so small and different from zero significantly (Groves, 1989).

As it is understood from the mathematical formula of interviewer effect, it is an increasing function of interviewer workload, hence, its value may be quite high even though correlation coefficient is small. Survey responses are influenced from amount of $deff_{int}$ definitely. If interviewer design effect value is larger than 1, then mean of the survey interest attains the same variance value.

Effective sample size, which takes interviewer into consideration for the survey interest is calculated using the missing information caused by interviewer as follows:

$$n_{eff} = {}^{n}/_{deff_{int}}$$

where n is the sample size without interviewer effect concern.

4.2 2013 TURKEY DEMOGRAPHIC AND HEALTH SURVEY (TDHS-2013)

Since 1968, Hacettepe University Institute of Population Studies have been conducting demographic surveys periodically in Turkey and the 2013 Turkey Demographic and Health Survey (TDHS-2013) is the 10th of quinquennial demographic surveys.

2013 Turkey Demographic and Health Survey provides nationally representative data about levels, patterns and trends on fertility, nutrition, family planning, maternal and child health and child and infant mortality (HUIPS 2014). Survey results are presented beneath headers such as the national level, type of place of residence (urban-rural)[1], five regions of the country named West, South, Central, North and East regions, and the 12 Nomenclature of Territorial Units for Statistics (NUTS1) statistical regions[2] and seven largest metropolitan cities level of Turkey.

4.2.1 Survey Process of THDS-2013

Sampling Design of TDHS-2013

A weighted, multistage, stratified cluster sampling design approach is applied to TDHS-2013 sampling design. The main aim of the TDHS-2013 sampling design is to assure that obtain acceptably accurate survey estimates about demographic characteristics and health indicators for various survey domains.

The questionnaire part of THDS-2013 consists of two parts: The Household

[1] Type of place of residence is categorized as urban and rural areas. Urban area is defined as settlements with a population size at least 10,000 and rural area is defined as settlements with a population size at most 10,000 regardless of administrative status.

[2] Turkey is divided into 81 provinces administratively. In the late 2002, 81 provinces of Turkey were projected as regions of NUTS 3 level to adopt to the European standards by Turkey State Planning Institute and Turkish Statistical Institute. After that, by aggregating 81 provinces to 26 sub-regions NUTS 2 level is designed statistically. Finally NUTS 1 statistical regions classification were formed as 12 regions.

Questionnaire targeting the whole population, and the Individual Questionnaire targeting the women aged 15-49. This age group is selected as is, since it corresponds to women in the reproductive age according to DHS. These target populations are provided by selecting representative sample of households.

The target sample size of the TDHS-2013 was chosen to be 14,496 households in 81 provinces in Turkey. In total, 642 clusters were selected for the TDHS-2013 sample. In order to ensure the representativeness property of clusters within each of the five regions of the Turkey, 25 households for urban segments and 15 households for rural segments are selected.

In order to determine sample frame, initial information on all settlements in Turkey was obtained from the 2012 Address-Based Population Registration System (ABPRS-2012). The system covers full addresses of all households in Turkey in terms of quarter, area, avenue/street, building and door numbers. Sample selection began with the classification of settlements in Turkey with 36 strata. After that, blocks as primary sampling units from each stratum were selected with systematic selection by TURKSTAT. Although address information was obtained from this database, mapping and listing operation were conducted by TDHS-2013 listing staff to verify that information. While 25 households were selected for a cluster from urban blocks, 18 households were selected for a cluster from rural blocks.

Questionnaire Development of TDHS-2013

Two types of survey questionnaires, named the Household Questionnaire and the Individual Questionnaire, were used in TDHS-2013 to gather information from the survey sample.

The Household Questionnaire was used to enumerate all usual members and visitors, and gather information from them. Objectives of the Household Questionnaire are to collect data about demographic and social characteristics of

household members, as well as basic housing characteristics for Turkish households, and to determine whether the women residents are eligible for the women interview or not.

The women questionnaire collects information about background characteristics, migration and marriage history, pregnancy, fertility preferences, knowledge and use of birth control, antenatal and postnatal care, breastfeeding, women's work and status and husbands from women aged 15-49.

Four day pretest was conducted in June 2013 in order to finalize the questionnaire design. By doing so, logical sequences, wording errors, appropriateness and meaningfulness of the questions were reviewed. Fieldwork of the pretest was carried out in Ankara, both in central area and in villages, with 161 completed household interviews and 225 completed women interviews. After taking results of the pretest into consideration, questionnaires were finalized.

Recruitment Steps and Training Process of TDHS-2013 Fieldwork

There are five positions for the TDHS-2013 data collection process:

- supervisor,
- field editor,
- measurer,
- interviewer,
- staff who are responsible for data entry.

Advertisements of these positions were sent to all universities in Ankara and announced at HUIPS web site. Candidates of data collection staff applied for data collection staff positions by filling *TDHS-2013 Field Work Application Form*. Candidates who were found to be appropriate, were invited to personal interview at HUIPS. Attending candidates were grouped to four teams and interviewed by the HUIPS academic staff by using *TDHS-2013 Fieldwork Interview Form*. Candidates who met the requirements for the TDHS-2013 data collection staff positions were accepted to the TDHS-2013 training program at the end of the personal interviews.

All candidates who were invited to training program were either university students or graduates. Previous survey experience was not among the key criteria for the fieldwork positions although the regarding information was collected by both application form and interview form. In other words, having experience was evaluated to have no effect during recruitment process. The objective of that is to eliminate any possible bias which resulting from previous survey experiences of individuals.

Training program for the field staff was conducted in between 26th of August and 6th of September, in 2013. First two weeks were allocated to training in-class, which covered general demographic issues for Turkey: mother and child health, family planning, health and nutrition etc. Moreover, training program included questionnaire training covering the following instructions: Skipping questions, wording, providing suitable environment for the interviews, social interaction with the respondent, probing and clarifying techniques when necessary, interviewing techniques with standardized and conversational manner, and recording answers accurately. Many materials such as manuals for data collection staff were used during the training program. Afterwards, classroom training period, a pilot study that covers three days, was conducted in both urban and rural areas of Ankara. Observing performances of candidates in classroom training and pilot study, members for main data collection team of the TDHS-2013 were picked. Furthermore, additional training programs were conducted for supervisors, field editors, and measurers.

Assignment of data collection staff to sample units was performed randomly.

While doing so, interpenetrated sample design was adhered. However, in order to maintain consistency between the language abilities and fieldwork regions of the staff, some limitations on the assignment of the staff were imposed. Furthermore, while the fieldwork was in process, swaps between staff in different regions were performed, and additional staff to specific regions were provided according to needs in regions of the fieldwork. These limitations hindered the total randomness of the assignment of the staff to regions.

Supervisors who are responsible for the team and organization were assigned. Measurers, as the name suggests, were responsible for measuring weight and height of children of women aged 15-49 who were specified for the survey. Editors were responsible for verifying and correcting survey questionnaires interoperated with interviewers. Interviewers were to make contact with respondents, have interviews with the respondents, and fill in the questionnaires accurately. Roles of interviewers have been discussed in Chapter 3 comprehensively.

Data Collection Process of TDHS-2013

Data collection process of the 2013 Turkey Demographic and Health Survey was conducted between 16 September 2013 and 31 January 2014. Fieldwork included a break due to a religious holiday in Turkey. 10 teams and 13 teams were assigned to subsamples before and after the break, respectively. Each team is composed of a supervisor, a measurer, 1-2 field editors, and 4-5 female interviewers at the beginning of the field work. HUIPS academic staff visited teams during the field work. They observed field teams in order to assure data quality and detect any problems related to field work. Interviews were completed successfully in 641 specified clusters of 642 selected clusters for the TDHS-2013.

4.3 DATA SOURCE

A special data set of TDHS-2013 data collection staff for this thesis is created by 2013 Turkey Demographic and Health Survey (TDHS-2013) data collection staff forms that are collected during application, personal interview and fieldwork preference processes. Additionally, 2013 Turkey Demographic and Health Survey (TDHS-2013) household and women data sets, which are nationally representative data, are used for the analyses.

2013 Turkey Demographic and Health Survey (TDHS-2013) staff data, includes demographic and social characteristics of both candidates and main data collection staff of THDS-2013 from application to field work process.

TDHS-2013 main data includes information on ID numbers of data collection staff who made contact with sample units, result codes of households and individual interviews, start and end of interview time (hour-minute), and date of interview (year-month-day) as well as housing, demographic and health characteristics of a sample unit.

4.3.1 Definition of the TDHS-2013 Data Collection Staff Forms

Three types of form prepared by HUIPS in order to be used for the recruitment process for the data collection staff of TDHS-2013 were used as main data source for this study. While *TDHS-2013 Fieldwork Application Form* was filled by applicants electronically, *TDHS-2013 Fieldwork Interview Form* was filled by jury members personally. Jury members were selected among Institute academic staff. The last type of forms, *TDHS-2013 Fieldwork Preference Form* was filled by data collection staff candidates at the end of the training process.

TDHS-2013 Fieldwork Application Form (Figure 4.3.1) includes personal information about applicants such as date of birth, place of birth, contact information,

graduation status (student, or graduated from any university), survey experience, language ability (Arabic and Kurdish), and availability during the field work.

TDHS-2013 Fieldwork Interview Form (Figure 4.3.2) gives detailed information about candidates who were found appropriate at the end of the application process. Apart from the TDHS-2013 Fieldwork Application Form, it gathers some background characteristics of candidates such as educational statuses, information about social insurance and scholarship, health problems, previous survey experience at HUIPS, at TURKSTAT, at private Corporations and other universities, main reason for TDHS-2013 participation, computer knowledge, language abilities, and availability for going anywhere covered within the field work. Furthermore, these forms provide information about jury members' opinions and comments about their general impressions of candidates, such as their maturity and appropriateness for the job. Additionally, possible positions among data collection staff positions according to jury for each candidate are noted down in these forms.

TDHS-2013 Fieldwork Preference Form (Figure 4.3.3) was prepared by HUIPS for candidates who completed their training processes. It collects information on candidates' teammate preferences, region of work preferences, and their availability, i.e., whether or not they ask to be excused for some days, during the field work.

Figure 4.3.1 TDHS-2013 Fieldwork Application Form

APPLICATION NUMBER: ☐☐☐

2013 TURKEY DEMOGRAPHIC AND HEALTH SURVEY
FIELD WORK APPLICATION FORM

Name and Surname:		PHOTOGRAPH
Father's Name:		
Date of Birth:		
Place of Birth:		
TR-Identity Number:		
Address:		
Phone Number:		
e-mail:		

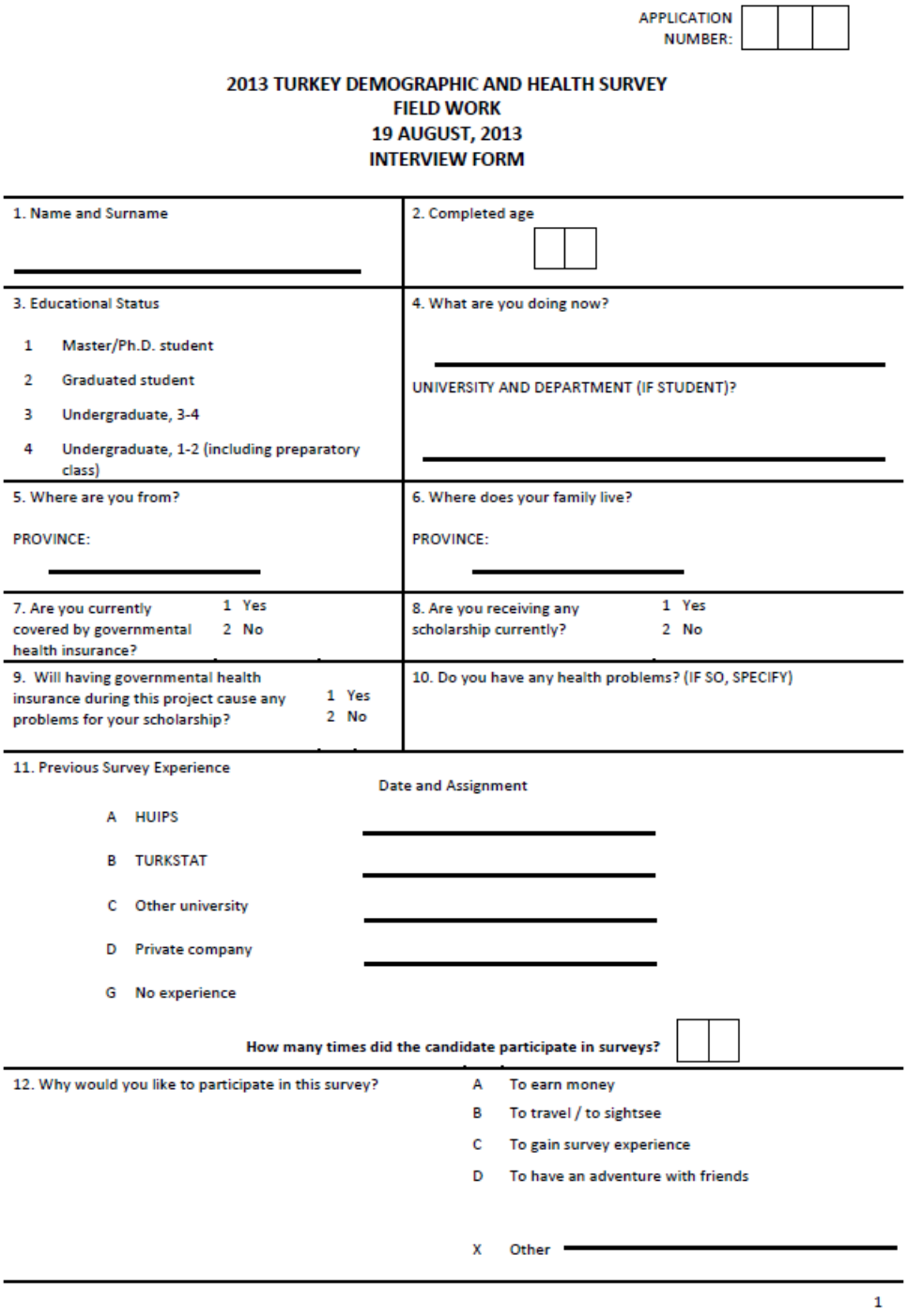
Graduation Status:	☐ Student ☐ Graduated	
Continued / Graduated University	University	
	Faculty / Institute	
	Department	

Participated Surveys	**Survey Title**	**Institution**	**Date**
	1.		
	2.		
	3.		
	4.		
	5.		

Languages	**Kurdish**	**Arabic**
	☐ None	☐ None
	☐ Less	☐ Less
	☐ Good	☐ Good

Is there any excuse that will constitute an impediment for your work in provinces selected for field work in between September and December? If so, when and for what reason?

Figure 4.3.2 TDHS-2013 Fieldwork Interview Form-Page 1



APPLICATION NUMBER: ☐☐☐

2013 TURKEY DEMOGRAPHIC AND HEALTH SURVEY
FIELD WORK
19 AUGUST, 2013
INTERVIEW FORM

1. Name and Surname _____	2. Completed age ☐☐
3. Educational Status 1 Master/Ph.D. student 2 Graduated student 3 Undergraduate, 3-4 4 Undergraduate, 1-2 (including preparatory class)	4. What are you doing now? _____ UNIVERSITY AND DEPARTMENT (IF STUDENT)? _____
5. Where are you from? PROVINCE: _____	6. Where does your family live? PROVINCE: _____
7. Are you currently covered by governmental health insurance? 1 Yes 2 No	8. Are you receiving any scholarship currently? 1 Yes 2 No
9. Will having governmental health insurance during this project cause any problems for your scholarship? 1 Yes 2 No	10. Do you have any health problems? (IF SO, SPECIFY)

11. Previous Survey Experience

	Date and Assignment
A HUIPS	_____
B TURKSTAT	_____
C Other university	_____
D Private company	_____
G No experience	

How many times did the candidate participate in surveys? ☐☐

12. Why would you like to participate in this survey?

A To earn money
B To travel / to sightsee
C To gain survey experience
D To have an adventure with friends
X Other _____

1

Figure 4.3.2 TDHS-2013 Fieldwork Interview Form-Page 2

APPLICATION NUMBER: ☐☐☐

13. Computer ability	14. Well known languages	YES	NO
1 Programming	Kurdish	1	2
2 Data Entry	Arabic	1	2
3 Familiar	English	1	2
4 No experience	Other		

15. Do you need accommodation during the training?
1 YES
2 NO

16. Excuse status during the survey
1 No excuse
2 One day
3 Few days
4 Week +

If there is an excuse, when and for what reason?

17. Exact date for last working day:
1 No due date
2 Mid-October
3 Mid-December
7 Other

18. Can candidate travel to eveywhere?
1 Everywhere
2 Only Ankara
3 Not going to Southeast
7 Other

19. Is there anyone such that without whom the candidate refuses to participate?
1 Yes (who?)
2 No

GENERAL IMPRESSION (WEARING, TALKING)	1 POSITIVE 2 AVERAGE 3 NEGATIVE
MATURITY	1 MATURE 2 AMBIGUOUS 3 IMMATURE
YOUR IDEA	1 RELIABLE, SHOULD WORK 2 DIFFICULT TO DECIDE 3 UNEMPLOYABLE
SUGGESTED FIELD WORK ASSIGNMENT IF HE/SHE IS TO WORK	1 MAY BE A SUPERVISOR 2 MAY BE A FIELD EDITOR 3 MAY BE AN INTERVIEWER 4 MAY HELP FOR DATA ENTRY IN CENTER 5 UNDECIDED 6 SHOULD DEFINETELY BE REFUSED

NOTES:

2

Figure 4.3.3 TDHS-2013 Fieldwork Preference Form

TDHS-2013 FIELD WORK PREFERENCE FORM

Name, Surname:	Place of birth:			
Residential province of his/her family:	Known language:	Kurdish	Y	N
		Arabic	Y	N

Your preferences below will be tried to consider when time to organize field work teams. However it does not mean that being together friend(s) who are written and/or going place where you want.

1. If any, individual(s) that the participant prefers to go with: (WRITE THREE PERSON MOST; ALSO SPECIFY, IF THERE IS ANYONE WANT TO GO WITH; IF THERE IS NOT ANY PARTICULAR PREFERENCE, YOU CAN LEAVE BLANK).

1. _____
2. _____
3. _____

2. Please fill in the blanks with "MOST", for 3 regions where you desire the most, "MAY GO", for other regions where you may go, and, "CANNOT GO", for at most 2 regions where you cannot go.

(IT SHOULD BE SIGNED ALL BLANKS)

1 İstanbul, Thrace	
2 İzmir, Aegean, Marmara	
3 West Mediterranean (Antalya and nearby)	
4 East Mediterranean (Adana and nearby)	
5 Central Anatolia	
6 East and Southeast Anatolia	

3. Please fill in the blanks based on your circumstances.

a. I can work until date _____ at the field work consistently, after that I can break due to _____.
b. I can work until date _____, I must only be in _____, on date _____ due to _____
c. Other (SPECIFY):
_____
_____
_____

4.3.2 Data Entry and Data Processing

As it has been mentioned above, TDHS-2013 data collection staff forms are the main sources of TDHS-2013 staff data set. Before the data entry process, ID numbers of candidates and main data collection staff were regenerated to compensate missing information. Another aim to do so is to ensure that ID numbers of three personal forms are consistent for the same individual with the thought that merging separated data files by ID numbers for further analyses.

Data from the TDHS-2013 Fieldwork Application Form, TDHS-2013 Fieldwork Interview Form, and TDHS-2013 Fieldwork Preference Form were entered into and edited on a computer by using the Census and Survey Processing System 5.0 (CsPro 5.0) software package. Editing process covers data cleaning, and computing variables, both from existing variables, and variables which includes the option named “other”. Similarly, recoding operation is applied to some variables of the data set at the end of the entry process. Totally, 382 HUIPS TDHS-2013 Fieldwork Application Form, 167 HUIPS TDHS-2013 Fieldwork Interview Form, and 139 HUIPS TDHS-2013 Fieldwork Preference Form data were entered to data files.

CsPro software which is designed for the census and survey data is developed by MEASURE partners, the U.S. Bureau of the Census, ICF International’s DHS Program, and SerPro S.A. The software allows its users to make range checks, skip irrelevant questions, and check for inconsistencies in order to obtain more accurate data. These qualities are the reasons why it is selected CsPro 5.0 software package for the study.

Firstly, the three raw staff data sets were prepared based on their dictionaries. Forms for data entry were prepared based on dictionary files. Recoding process for some interests was carried out at the end of the data entry. Finally staff data sets were converted from CsPro 5.0 to IBM SPSS (Statistical Package for the Social Sciences) 21 data sets separately. Three different data sets were merged into a data file that is

used for this study. All analyses are performed using IBM SPSS 21.

4.4 VARIABLES

In order to describe and explain characteristics of the TDHS-2013 data collection staff candidates, a number of variables in TDHS-2013 staff data set and TDHS-2013 main data set were used. Some variables which were included in data were used for the analyses directly whereas some others were constructed or recoded. In this part, variables needed for descriptive analyses and regression analyses are explained.

As a substantial demographic variable, **"age"** is obtained from both TDHS-2013 Fieldwork Application Form and TDHS-2013 Fieldwork Interview Form. Application forms collect "date of birth" of candidates whereas Interview forms gather information on the completed age. Considering accuracy and reliability, completed age variable was regenerated using date of birth information of applicants. Completed age was calculated for all applicants based on application date (August, 2013) with the Century Month Code (CMC) method. Completed age that is obtained from TDHS-2013 Interview form was taken into consideration for the cases without date of birth information on their application forms. As all applicants are aged between 15 and 42, the variable **"completed age in five years**" is constructed accordingly. This variable was recoded and has four categories as ***"15-19", "20-24", "25-29"*** and ***"30 and over"***.

The variable of **"place of birth-five regions"** has six categories which are ***"West"***, ***"South"***, ***"Central"***, ***"North"***, ***"East",*** and ***"abroad".*** This variable was recoded from place of birth information obtained from all forms which were used in recruitment process. Eighty one provinces taken from place of birth information on forms were arranged into different five parts of the country.

"Status of graduation" variable in data set has two categories: ***"student"*** and ***"graduated"***. *"Student"* refers to being a student at any university, at the time form is filled, regardless of the degree, and *"graduated"* refers to being graduated from any university and being received a diploma. Apart from "status of graduation", **"educational status"** variable specifies levels of education of candidates participated in personal interview participants. Categories of "educational status" variable are ***"MA/PhD student"***, ***"graduated from any university***", ***"student at university-class 3-4"***, and ***"student at university-class 1-2-prep class".***

The variable **"university type"** was recoded from faculty information that is obtained from application forms. This variable has three categories, which are ***"faculty"***, ***"vocational high school"***, and ***"graduate/institute"***. **"Department"** variable describes background of the candidates. This variable was constructed by converting information on specific department to well-known fields of study. This variable has main five categories as ***"natural and applied sciences"***, ***"educational sciences"***, ***"social sciences"***, ***"economics and administrative sciences"***, and ***"health sciences"***.

"Candidate status" variable was constructed from result codes of applications, personal interviews and training processes. "Result of application" determines ***"elimination at the application process"*** variable. Result codes of application and participation to personal interview determine "participation status to personal interview for invited candidates". "Result of interview" specifies ***"elimination at the end of personal interview"***. "Result of interview" and "participation to training" determine "participation status to training program for invited candidates". Finally, candidates with at least one assignment at the data collection process of TDHS-2013 are called as ***"data collection staff of TDHS-2013"***.

"Data collection staff positions" variable was computed using information on identification numbers in main data sets and documents associated with the

fieldwork. Main data sets provide identification numbers of supervisors, editors, interviewers, and staff for data entry, whereas documents provide identification numbers of measurers.

"Region-desired to go" variable is constructed from information collected from TDHS-2013 Fieldwork Preference Form. Firstly, applicants indicated their preference order for the regions of the field work, which are İstanbul-Thrace, Aegean, West Mediterranean, East Mediterranean, Central Anatolia, Black Sea, and East Anatolia. The available options were "cannot go", "may go", and "most"; first of which was recoded as "no", and the remaining two were recoded as "yes" while the variable was created. After that, "region-wanted to go" was constructed based on five regions. İstanbul-Thrace and Aegean is classified as ***"West"***, West Mediterranean and East Mediterranean is classified as ***"South"***, Central Anatolia is classified as ***"Central"***, Black Sea is classified as ***"North"***, and East Anatolia is classified as ***"East"***.

One of the objectives of this thesis is to evaluate performance of data collection staff during the fieldwork. Data collection staff specific performance indicators such as **"number of completed interviews"**, **"average time of an interview", "number of days which were spent for interviews"**, and **"status of metropolitan interviewer"** are calculated at the level of household and women. On the other hand, **"number of interviews above mean or not**" are obtained from main data sets of TDHS-2013, both at the level of household and women, and type of settlement.

Result codes in household and women data sets determine **"number of completed interviews"**. On the other hand, a variable for duration of an interview, named **"average time of a household/women interview"**, was constructed with information on start time and end time (hour-minute) of household and women interviews in the main data sets. Break time (in minutes) was subtracted from

calculated duration for women. **"Number of days interviews conducted"**, which was assigned for interviews, was calculated based on **"date of interviews** (year-month-day)**"** in main data sets. "**Number of interviews per day"** was calculated with the help of interviewer specific **"number of days interviews conducted"** and **"total number of interviews"**. **"Number of interviews above mean or not"** at the level of place of settlement was calculated using **"type of place of residence"** and interviewer specific result codes of interviews. Lastly, **"status of metropolitan interviewer**" was constructed using provinces where interviews were conducted. There are seven large metropolitan cities in Turkey, namely İstanbul, Ankara, İzmir, Bursa, Adana, and Gaziantep, where population is above one million (TDHS-2013, 2014).

One of the possible indicators of performance is interviewer specific completion rate. For this purpose, both household and individual level completion rates for interviewers were calculated separately, and were added to TDHS-2013 staff data set. Calculations were made using main data sets of TDHS-2013. Rates were separately calculated at the level of interviewer identification, result of interviewer, and provinces of field work.

"Mean number of household members" and **"mean number of children aged under five"** variables were calculated from main data sets of TDHS-2013. One can indirectly relate these variables with performance indicators.

TDHS-2013 Household data includes **"result of household interview"** variable with categories ***"completed"*** (C), ***"no household member/no competent member at home"*** (HP), ***"entire household absent for extended period of time"*** (HA), ***"postponed***" (P), ***"refused"*** (R), ***"dwelling vacant or address not a dwelling"*** (DV), ***"dwelling destroyed"*** (DD), ***"dwelling not found"*** (DNF), ***"partially completed"*** (PC), and ***"other"*** (O). Based on response categories, interviewer specific household completion is calculated as follows:

$$Household\ Response\ Rate = \frac{C}{C + HP + P + R + DNF + PC}$$

$$Household\ Completion\ Rate = \frac{C}{C + HP + HA + P + R + DV + DD + DNF + PC + O}$$

Similarly, TDHS-2013 women data set includes **"result of individual interviewer"** variable with ***"completed"*** (EWC), ***"not at home"*** (EWNH), ***"postponed"*** (EWP), ***"refused"*** (EWR), ***"partially completed"*** (EWPC), ***"respondent incapacitated"*** (EWI), and ***"other"*** (EWO) categories. Interviewer specific eligible women completion rate is calculated as:

$$Eligible\ Women\ Response\ Rate = \frac{EWC}{EWC + EWNH + EWP + EWR + EWPC + EWI + EWO}$$

$$= Eligible\ Women\ Completion\ Rate$$

Response rates are calculated based on definitions of Demographic and Health Surveys (DHS) for household and women's individual response rates (Rutstein and Rojas 2006).

Table 4.4.1 Constructed variables to be used in analyses

Variable name	Categories	Number	Percentage
Candidate status	(1) Eliminated at the end of application	79	20.4
	(2) Did not participate to personal interview	134	34.5
	(3) Eliminated at the end of personal interview	20	5.2
	(4) Did not participate to training	1	0.3
	(5) Eliminated at the end of training	7	1.8
	(6) Did not participate to the main fieldwork though called	5	1.3
	(7) Main data collection staff	136	35.1
Data collection staff positions	(1) Only Editor	1	0.7
	(2) Only Measurer	1	0.7
	(3) Only Interviewer	26	18.3
	(4) Only Data Entry	4	2.8
	(5) Supervisor & Interviewer	1	0.7
	(6) Field Editor & Measurer	2	1.4
	(7) Field Editor & Interviewer	58	40.8
	(8) Field Editor & Data Entry	3	2.1
	(9) Measurer & Interviewer	3	2.1
	(10) Interviewer & Data Entry	4	2.8
	(11) Supervisor & Field Editor & Interviewer	18	12.7
	(12) Supervisor & Field Editor & Data Entry	1	0.7
	(13) Field Editor & Measurer & Interviewer	8	5.6
	(14) Field Editor & Measurer & Data Entry	1	0.7
	(15) Field Editor & Interviewer & Data Entry	7	4.9
	(16) Measurer & Interviewer & Data Entry	3	2.1
	(17) Supervisor & Field Editor & Interviewer & Data Entry	1	0.7
Age in five years	(1) 15-19	8	2.1
	(2) 20-24	216	55.7
	(3) 25-29	129	33.2
	(4) 30 and over	29	7.5
Place of birth-5 regions	(1) West	15	9.0
	(2) South	22	13.2
	(3) Central	66	39.5
	(4) North	16	9.6
	(5) East	44	26.3
	(6) Abroad	4	2.4
Gender	(1) Female	274	71.7
	(2) Male	108	28.3

Table 4.4.1 Constructed variables to be used in analyses (continued)

Variable name	Categories	Number	Percentage
Ever participated any survey	(0) No	224	58.6
	(1) Yes	158	41.4
Survey experience (in number of surveys)	(0) did not participate any survey	225	58.9
	(1) 1	65	17.0
	(2) 2	41	10.7
	(3) 3 and over	51	13.4
Year of last participated survey	(1) did not participate any survey	224	60.4
	(1) 2004-2009	19	5.1
	(2) 2010	15	4.0
	(3) 2011	27	7.3
	(4) 2012	40	10.8
	(5) 2013	46	12.4
Survey experience-Institution-HUIPS	(0) No	162	97.0
	(1) Yes	5	3.0
Survey experience-Institution-TURKSTAT	(0) No	164	98.2
	(1) Yes	3	1.8
Survey experience-Institution-other university	(0) No	129	77.2
	(1) Yes	38	22.8
Survey experience-Institution-private corporation	(0) No	135	80.8
	(1) Yes	32	19.2
Graduation status	(1) Student	172	45.4
	(2) Graduated from any university	207	54.6
University type	(1) Faculty	314	82.6
	(2) Vocational high school	22	5.8
	(3) Graduate	44	11.6
Department	(1) Natural and Applied Sciences	99	26.1
	(2) Educational Sciences	21	5.5
	(3) Social Sciences	179	47.2
	(4) Economics and Administrative Sciences	72	19.0
	(5) Health Sciences	8	2.1
Educational status	(1) Master/Ph.D. Student	19	11.4
	(2) Graduated student	95	57.2
	(3) University 3-4	36	21.7
	(4) University 1-2- Preparatory class	16	9.6
Kurdish	(0) None	255	66.8
	(1) Less	51	13.4
	(2) Good	68	17.8

Table 4.4.1 Constructed variables to be used in analyses (continued)

Variable name	Categories	Number	Percentage
Arabic	(0) None	341	89.3
	(1) Less	23	6.0
	(2) Good	8	2.1
Excuse	(0) None	118	70.7
	(1) One day	21	12.6
	(2) More than one day	16	9.6
	(3) More than a week	4	2.4
Health problem	(0) No	157	94.0
	(1) Yes	5	3.0
Working status	(0) Not working	156	94.5
	(1) Working	9	5.5
Need for accommodation	(0) No	141	84.4
	(1) Yes	19	11.4
Social Insurance	(0) No	137	84.6
	(1) Yes	25	15.4
Scholarship	(0) No	157	96.9
	(1) Yes	5	3.1
Computer ability	(1) Programming	9	10.0
	(2) Data Entry	19	11.2
	(3) Familiar	144	85.2
	(4) no ability	3	1.8
Reason(s) of TDHS-2013 participation	(1) Earning money	44	26.0
	(2) Travelling	27	16.0
	(3) Gaining experience	85	50.3
	(4) Adventure with friends	0	0.0
	(5) Other	76	45.0
Fieldwork regions	(1) West	8	6.6
	(2) South	9	7.4
	(3) Central	15	12.4
	(4) North	34	28.1
	(5) East	55	45.5
General Impression	(1) Positive	149	91.4
	(2) Neither positive nor negative	14	8.6
	(3) Negative	0	0.0
Opinion	(1) Reliable	147	91.3
	(2) Difficult to decide	13	8.1
	(3) Should not be employed	1	0.6
Maturity	(1) Mature	136	84.5
	(2) Unclear	21	13.0
	(3) Naive	4	2.5

Table 4.4.1 Constructed variables to be used in analyses (continued)

Variable name	Categories	Number	Percentage
Results of household interview	(1) Completed	11794	81.4
	(2) No household member/ no competent member at home	158	1.1
	(3) Entire Household absent for extended period of time	604	4.2
	(4) Postponed	2	0.0
	(5) Refused	647	4.5
	(6) Dwelling vacant or address not a dwelling	1222	8.4
	(7) Dwelling destroyed	7	0.0
	(8) Dwelling not found	29	0.2
	(9) Partially completed	10	0.1
	(10)Other	17	0.1
Results of women interview	(1) Completed	9746	89.9
	(2) Not at home	575	5.3
	(3) Postponed	1	0.0
	(4) Refused	338	3.1
	(5) Partially completed	46	0.4
	(6) Respondent incapacitate	95	0.9
	(7) Other	39	0.4

Continuous variables used in descriptive and regression analyses, household and women completion rates, average time of an interview, number of days interviews conducted, number of interviews per day, mean number of household members, and mean number of children aged under five are not presented in Table 4.4.1.

4.5 DESCRIPTIVE ANALYSES

4.5.1 Data Set

As it has been mentioned in data source part, descriptive analyses start by creating a new data file by merging three different data files that were originated from data collection staff forms. A specific data set contains 382 cases in total. All applications are put to a pre-elimination process. In order to become a data collection staff for the survey, the selected applicants had to participate in an interview, and then take part in training. Failure in the pre-elimination process, the interview or the training would end the application process of the applicant. Furthermore, some of the

applicants did not attend the next step even though they were successful in the previous one. That is why, out of 382 applicants, 169 participated in the interview, 147 took the training, and only 133 were selected to be a member of the data collection staff for the TDHS-2013.

Descriptive analyses present information using tables about characteristics of applicants, and main data collection staff of TDHS-2013 field work. These tables are separately presented for any stage of the process, as well as dividing the applicants into two groups: the group of successful applicants, and the group of unsuccessful applicants. Processes that cover application, personal interview, training, and field work of the survey are examined based on data collection staff characteristics.

After converting to SPSS data file format, some known information about data collection staff and field work, such as main positions, sample regions, and team numbers, were added to the data set by using documents associated with field work. On the other hand, some characteristics such as interviewer specific result codes, duration of interviews, and number of days which were assigned for the interviews are calculated based on the main data sets of TDHS-2013. Afterwards, variables based on the main data sets were added to special data set for the descriptive analyses. Additionally, new variables were created when needed. Crosstabs and frequency tables, which are presented in Chapter 5 in detail, are obtained using the SPSS program.

4.5.2 Method for Descriptive Analyses

As it has been mentioned in the introduction, illustrating different types of tables and figures in order to indicate the characteristics of candidates by data collection staff recruitment steps of TDHS-2013 is among the objectives of this thesis. TDHS-2013 staff data allows not only compare characteristics of candidates but also make comparison on some basic variables such as place of birth, and language abilities of candidates which are obtained from recruitment forms.

Following chapter mainly presents the distribution of candidates, and their basic and additional characteristics by recruitment steps. Crosstabs related to results of interviews, and training processes are also presented in this chapter. Furthermore, a crosstab displaying the association between the data collection groups proposed by jury members at the personal interview stage and the actual data collection groups after they are formed. Lastly, tables demonstrating the performance, i.e., number of houses visited, hours worked per day, completed interviews per day, of data collection staff are presented.

4.6 REGRESSION ANALYSES

4.6.1 Poisson Regression Analysis

Poisson regression analysis is used to realize the association between dependent variable, which is in the form of numeric count data, and explanatory variables. The method is used to analyze the rare events, such as number of children ever born and number of cases of a rare disease, over a period of time. Poisson regression analysis technique is based on maximum likelihood estimation procedures.

When categorical independent variables are considered, Poisson regression analysis is used to notice the percental relation between two such variables, i.e., how a percentage of increase, or decrease, in one of the variables affects the other one. The percentage of increase, or decrease, in one group compared to another group can be determined with Poisson regression analysis. On the other hand, when count data is studied, Poisson regression analysis helps us to interpret how a single unit increase, or decrease, in independent variables causes changes in response variable.

Assumptions of Poisson Regression Analysis:

1) Logarithm of the outcome rate changes linearly with the same increase in the outcome.

2) Changes in the rate depends on multiplication of explanatory variables.

3) Variance of observations is equal to mean.

4) Observations are independent.

The probability density function of Poisson probability distribution is:

$$f(y) = P(Y = y) = \frac{\mu^y e^{-\mu}}{y!}, \qquad Y = 0,1, \dots, \infty, \qquad \mu > 0$$

where is the outcome variable, and is the mean. Note that, mean of all possible observations should be positive. Furthermore, the Poisson distribution satisfies the following equality.

$$E(Y) = Var(Y) = \mu.$$

Dependent variable that refers to the count data cannot take negative values. In other words, count data is bounded from below at zero. As understood from the formula above, the probability function changes depending on the μ parameter.

The natural logarithm of the outcome is written as a linear function of a set of covariates$(x_j, j = 1,2, \dots, n)$ and, regression coefficients $(\beta_j, j = 1,2, \dots, n)$.

$$E(Y_j) = \exp(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n)$$

$$In\{E(Y_j)\} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_n x_n \qquad (4.5.1)$$

where $E(Y_j)$ is the expected value of covariate x_j. The model like (4.5.1) is called

loglinear model.

Poisson distribution is also suitable for modeling rates which change in per unit time, when counts gathered over different time periods. In such circumstances, instead of using (4.5.1.1), we can write

$$In\left\{\frac{E(Y_j)}{t_j}\right\} = \beta_0' + \beta_1' x_1 + \beta_2' x_2 + \cdots + \beta_n x_n$$

where t_j is the exposure variable for those with covariates x_j.

$$In\{E(Y_j)\} = In(t_j) + \beta_0' + \beta_1' x_1 + \beta_2' x_2 + \cdots + \beta_n' x_n$$

The term $In(t_j)$ is named as "offset" variable. It is an adjustment variable that is a feature of log-linear models for counts of events which is either the same for all observations, or different for each observation. Offset variable comes in handy as it takes the duration factor of the event that dependent variable is exposed to into consideration.

Dependent measure of this thesis is a count formed variable. Relation between interviewer characteristics and a count variable is considered within this regression model. Multicollinearity test which is based on variance inflation factor (VIF) values are considered before the logistic regression analysis.

Collinearity gives information on the degree of correlation among explanatory variables. VIF is among methods for detecting collinearity between independent variables. Testing covariates is crucial as collinearity has a direct effect on precision of survey estimates. The perfect collinearity is achieved when a dependent variables is a linear combination of independent variables (Liao et al. 2012). VIF of j^{th}-predictor is computed as

$$VIF_j = \frac{1}{1 - R_j^2}, \quad j = 1, \dots, n$$

where $R_j^2, j = 1, \dots, n$ is the coefficient of determination of j-th covariate.

It could be assumed that when VIF value is greater than 10, it introduces significant multicollinearity. Alternative approach in order to detect multicollinearity is the comparison of VIF_j value and $\frac{1}{1-R^2}$. Multicollinearity is realized, when VIF value is greater than $\frac{1}{1-R^2}$ (Klein 1962).

Moreover, other criteria associated with multicollinearity are tolerance value (roughly less than 0.1), eigenvalue (less than 0.01), condition index (greater than 50), and proportion of variation (greater than 0.8) (Park 2003).

4.6.2 Logistic Regression Analysis

Logistic regression analysis is suitable for binary dependent variables. Logistic model is used for many practical circumstances in real life with the aim of explaining a dependent variable which have two possible results (coded as 1 or 0) and, a set of covariates which are considered to have effects on dependent variable. Maximum likelihood estimation process is carried out to interpret odd ratios estimated from this process. Odds ratios are based on probabilities related to the values of outcome variable (Dayton 1992). The formula of the model is as follows:

$$logit(p) = In\left(\frac{P_j}{1 - P_j}\right) = \beta_0 + \beta_1 X_1 + \cdots + \beta_j X_j$$

Expected value of outcome variable included in logistic model is as follows:

$$P(Y = 1) = E(Y_j) = \frac{1}{1 + exp[-(\beta_0 + \sum_{J=1}^{k} \beta_J x_J)]}$$

Logistic regression model is based on logit of an outcome *p*, which is defined as the natural logarithm of the odds $\frac{p}{1-p}$. Regression coefficients $\beta_j, j = 1, \dots, k$, shows the direction of relation between covariate and logit of dependent variable. On the other hand, the null hypothesis of the model is formed assuming there is no association between dependent variable and explanatory variables. According to results of the logistic regression model, rejecting the null hypothesis means that at least one parameter is not equal to zero and the probability of outcome of interest, in other words exponential function of regression coefficient, is estimated by the model (Peng et al. 2002).

The coefficient of determination or multiple correlation coefficient, denoted by R^2, is a proportion of explained variation by the model which takes its maximum value when all observations are predicted by the model (Nagelkerke 1991). Multiple correlation coefficient provides estimation about how well observations are represented by the model in multiple regression analysis. This outcome is interpreted at the end of the logistic regression in this study.

In this thesis, another interest variable is a dichotomous variable which is which is realized by binary logistic regression tests. In order to understand relation between performances and characteristics of interviewers, binary logistic regression analyses are carried out. Covariates which are included in models consist of both selected variables that are considered to have an effect on dependent variable and control variables. Explanatory variables are tested for multi-collinearity which is mentioned in 4.5.1.

4.6.3 Models in Regression Analyses

Poisson and logistic regression analyses are carried out in order to discuss relation between interviewers' performance measures and characteristics in this thesis.

The first model of Poisson regression analysis is employed in order to understand impact of independent variables including age, place of birth, educational status, background, survey experience, language abilities, whether having at least one household interview in metropolitan provinces in Turkey or not, mean number of household members and average time of a household interview on completed household interviews of each interviewer. Model 2 excludes sample related variables which are mean number of household members and average time of a household interview. Model 3 in Poisson regression models, is based on number of completed women interviews. Interviewer related explanatory variables are the same with the Model 1. Additionally, mean number of children aged under five and average time of a woman interview are considered instead of mean number of household members and average time of a household interview in Model 1. Similar to Model 3, Model 4 excludes mean number of children aged under five and average time of a woman interview. Number of days spent for household and women interviews are used in order to construct "offset" variables mentioned in 4.6.1. Table 4.6.2 summarizes Poisson regression models with dependent and independent variables.

Table 4.6.2 Models in Poisson regression analysis

Poisson Regression Models			
Model 1		**Model 2**	
Dependent Variable	Number of completed household interviews	**Dependent Variable**	Number of completed household interviews
Independent Variables	Age in 2 categories	**Independent Variables**	Age in 2 categories
	Place of birth in 5 regions		Place of birth in 5 regions
	Educational status in 4 categories		Educational status in 4 categories
	Background in 2 categories		Background in 2 categories
	Survey experience in 2 categories		Survey experience in 2 categories
	Language ability-Kurdish in 2 categories		Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories		Language ability-Arabic in 2 categories
	Language ability-English in 2 categories		Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories		Status of metropolitan interviewer in 2 categories
	Mean number of household members		
	Average time of a household interview		
Model 3		**Model 4**	
Dependent Variable	Number of completed women interviews	**Dependent Variable**	Number of completed women interviews
Independent Variables	Age in 2 categories	**Independent Variables**	Age in 2 categories
	Place of birth in 5 regions		Place of birth in 5 regions
	Educational status in 4 categories		Educational status in 4 categories
	Background in 2 categories		Background in 2 categories
	Survey experience in 2 categories		Survey experience in 2 categories
	Language ability-Kurdish in 2 categories		Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories		Language ability-Arabic in 2 categories
	Language ability-English in 2 categories		Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories		Status of metropolitan interviewer in 2 categories
	Mean number of children aged under five		
	Average time of a woman interview		

Moreover, logistic regression analysis is performed to understand relation between interviewer specific performance measures and their determinants. First model is constructed based on receiving 95% response rates on household interviews. Independent variables are the same with Poisson Regression Model 1. Additionally, number of days spent for household interviews are included in the model. Another consideration in logistic regression model is receiving 85% completion rate on household interviews. Model 3 is employed with the same independent variables in Model 1-2 on receiving 85% household completion rate. Lastly, receiving 90% on women completion rate is considered with the same variables in Poisson Regression Model 3. Similar to household based models, number of days spent for women interviews is included in Model 5. All models in logistic regression analysis are employed with both Enter and LR Forward Methods with the aim of specifying actual determinants on specified levels of response and completion rates. Table 4.6.3 presents dependent and independent variables of logistic regression models.

Table 4.6.3 Models in Logistic regression analysis

Logistic Regression Models	
Model 1-2 (with Enter Method & LR Forward Method)	
Dependent Variable	Receiving 95% household response rate
Independent Variables	Age in 2 categories
	Place of birth in 5 regions
	Educational status in 4 categories
	Background in 2 categories
	Survey experience in 2 categories
	Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories
	Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories
	Mean number of household members
	Average time of a household interview
	Number of days spent for household interviews
Model 3-4 (with Enter Method & LR Forward Method)	
Dependent Variable	Receiving 85% household completion rate
Independent Variables	Age in 2 categories
	Place of birth in 5 regions
	Educational status in 4 categories
	Background in 2 categories
	Survey experience in 2 categories
	Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories
	Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories
	Mean number of household members
	Average time of a household interview
	Number of days spent for household interviews
Model 5-6 (with Enter Method & LR Forward Method)	
Dependent Variable	Receiving 90% women completion rate
Independent Variables	Age in 2 categories
	Place of birth in 5 regions
	Educational status in 4 categories
	Background in 2 categories
	Survey experience in 2 categories
	Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories
	Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories
	Mean number of children aged under five
	Average time of a woman interview
	Number of days spent for women interviews

Note that, calculated response rate for women interviews is equal to completion rate for women interviews.

4.7 LIMITATIONS

There are various limitations seen on different stages of this study. Firstly, the constructed data set "TDHS-2013 Data Collection Staff Data" includes small number of cases and has many missing values originated from lack of information on TDHS-2013 recruitment forms. Therefore, interpretations made on data collection staff might tend to be biased.

Secondly, TDHS-2013 doesn't provide information about true values of count data. Interviewer error is directly measured using sample observations and true values for count data. Difference between a sample observation and true value would be a better measure in order to understand interviewer error. True values would be also useful to compare characteristics of interviewer and respondents who refused to have an interview.

One of the limitations is on a respondent level contact history over a finite time period. TDHS-2013 main data sets provide information only about final visit date, identification of interviewer, and result of an interview, even though questionnaire gathers data on first three visits. Lack of respondent level contact history data might prevent the evaluation of interviewer effect on maintaining cooperation with the respondent.

TDHS-2013 recruitment forms collect information about survey experience history of data collection staff candidates. Definition of survey experience varies from one candidate to another on recruitment forms of TDHS-2013. For example, there are forms in which the candidates have declared that they have experience in terms of internships, job trainings, education related projects, etc. While these candidates are marked as experienced we cannot know whether these candidates have the "survey experience" we were asking. Additionally, we also cannot know if the candidates that declared "no survey experience", which were obviously marked as "inexperienced",

have any kind of these aforementioned experience. Therefore, interpretations may be affected by how survey experience is defined.

Another limitation might be related to lack of data of candidates who did not participate in personal interviews, even though being invited. They constitute a great majority of all applicants (Table 5.1.1). If we had selected data collection staff for TDHS-2013 from a larger pool, we would have been able to observe the characteristics of the applicants in each of the recruitment steps in a more detailed way.

Lastly, another limitation is related to lack of data on break time in household interviews. The information on break time during household interviews is not gathered, even though it is collected in women interviews covered in TDHS-2013.

CHAPTER 5

RESULTS

This chapter is divided into five main parts. First part includes an explanation of the recruitment process of the TDHS-2013, which is needed as descriptive interpretations in the chapters to come will be based on this process. The same part presents the distribution of the candidates by recruitment steps and gives detailed information about fieldwork assignments of data collection staff who successfully completed training process.

Tables presenting characteristics of data collection staff candidates from application process to personal interview are presented in the second part. This part gives detailed information related to candidates' characteristics by whether being invited to personal interview or not. On the other hand, a table of characteristics of candidates who did not take part in personal interview although being invited is examined separately. Additionally, a table of participation to TDHS-2013 personal interview (Table 5.2.1) is included in the same part.

The third part contains tables covering the period from personal interview to training process. Information on characteristics of candidates who took part in personal interview, with their corresponding invitation status to training program, are presented. Most of the main and additional characteristics of the candidates are obtained from TDHS-2013 Fieldwork Interview Form, whereas others are obtained from application and fieldwork preference forms.

In the fourth part, field work region assignments of candidates proposed by jury members at the personal interview and final positions of the field staff are compared. Similarly, field regions that each data collection staff desired to go and main sample regions are compared.

Last part presents performance indicators of data collection staff which are shown with their ID numbers, field work positions and field work regions. Interview completion rates are given with all possible result codes of household and women interviews. Performance indicators, as they are directly affected by field work characteristics such as number of household members and number of children aged under five, are given with these basic field work characteristics, so that interpretations could make taking these characteristics into consideration.

Second section of this chapter is presents results of regression analyses. Especially in social surveys, interviewing and interviewer are main components which have an effect on nonresponse. Many studies have dealt with association between attitudes, behaviors, characteristics of interviewer, and refusal or nonresponse bias, and interviewer variance in nonresponse error variance (Durrant et al. 2010; Loosveldt and Koen 2014; West and Olson 2010; West et al. 2013). In the light of these studies, it can be said that increasing response rates with quality data is an important measure, when evaluating survey quality. In this thesis, interests are "number of completed interviews" and "completion rate" for each interviewer. Models included these variables, and their explanatory variables are studied using Poisson and Logistic regression analyses.

First of all, this study focus on descriptive findings predominantly, presented in previous section whereas the section aims to reveal association between performance of interviews, which are assumed to measure with number of completed interviews and completion rates, and selected characteristics of interviewer.

5.1 RESULTS OF DESCRIPTIVE ANALYSES

5.1.1 Recruitment Process of TDHS-2013 Data Collection Staff

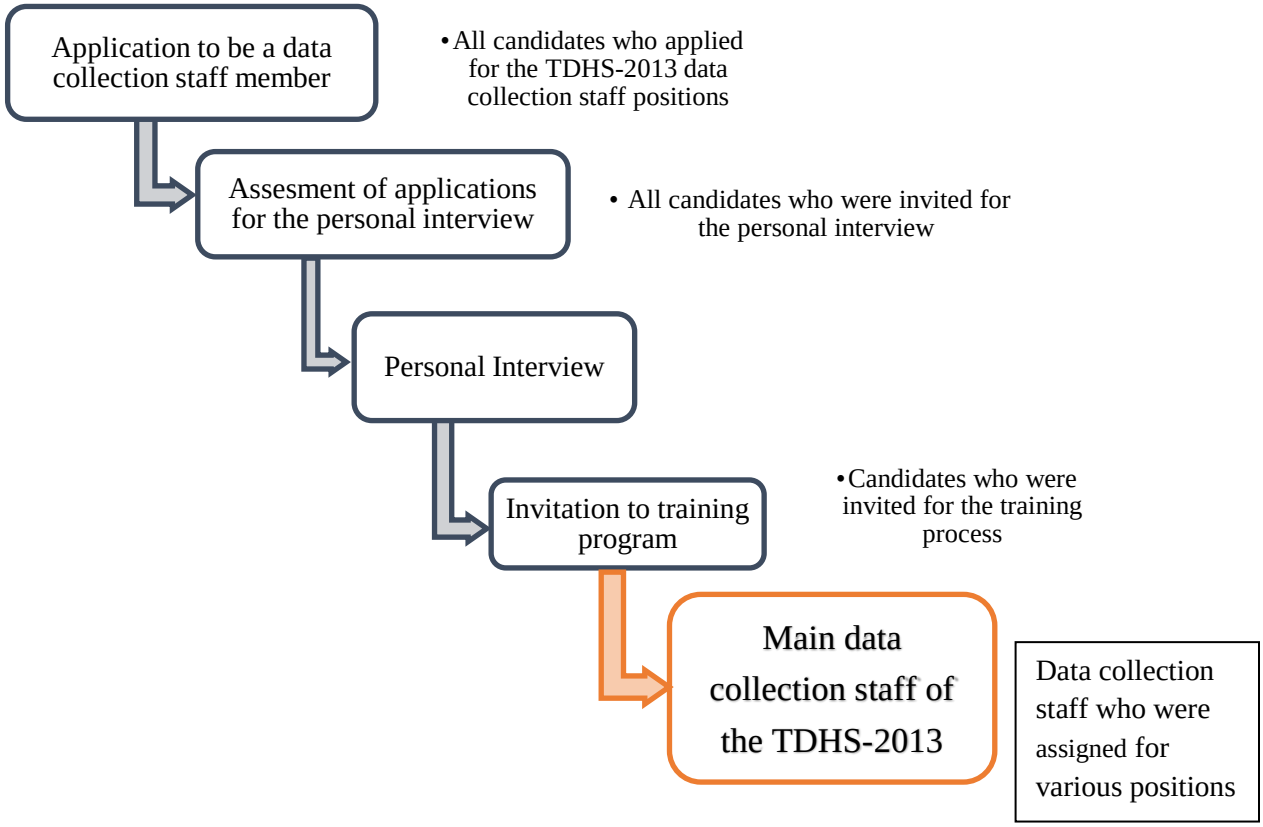
For any candidate, the recruitment process of data collection staff begins with an online application. Candidates who want to take part in any part of the Turkey

Demographic and Health Survey-2013, which includes both field work and data entry process, filled an application form electronically and sent it to the e-mail address of TDHS-2013. All applications were evaluated by academic staff of Hacettepe University Institute of Population Studies. Some main criteria such as completed age, educational level, previous survey experience, and language ability of candidates were considered primarily.

Accepted candidates were invited to personal interviews that were conducted by jury members who are among HUIPS academic staff. Jury members individually evaluated all interviews. On the other hand, jury members filled TDHS-2013 Fieldwork Interview Forms according to demographic and background characteristics of candidates during the interview. Interviews which were assessed successfully based on measures needed for TDHS-2013 field work were invited to training program of the TDHS-2013.

At the end of the training stage, which includes both in-class training and pilot study of the survey, some candidates were assigned as TDHS-2013 data collection staff with various positions such as supervisor, editor, measurer, interviewer, and data entry staff. Data collection staff was divided into teams which were determined based on features associated with the survey and sample regions. Figure 5.1.1 represents a brief explanation of the recruitment process of data collection staff.

Figure 5. 1. 1 Illustration of Data Collection Staff Recruitment Steps



5.1.1.1 Recruitment Steps and Data Collection Staff Positions

Table 5.1.1 shows that distribution of data collection staff candidates by recruitment steps beginning from application to field work. In other words, this table demonstrates that distribution of data collection staff candidates for the TDHS-2013 field work according to recruitment steps, as classified in Figure 5.1.1.

According to Table 5.1.1, 35.1% of the applicants that were successful in the pre-elimination process did not attend their interviews. The common characteristics of this group of applicants, as well as the possible reasons for their absence from the interview, are presented thoroughly in the second part.

Out of 382 applicants, 136 were accepted to the main data collection staff for the TDHS-2013 fieldwork, yielding a 35.6% acceptance rate. In the course of the recruitment process, 79 applicants out of 382 (20.7%) were eliminated during the application process, and as a result, they were not invited to personal interview. 20 candidates (5.2%) were eliminated during the personal interviews based on varying measures. 7 candidates (1.8%) were eliminated during the training process. Finally, TDHS-2013 recruitment process ended with 136 successful applicants out of 382. Later, five project assistants and one research assistant from HUIPS were added to the group to finally form a group of 142. This information obtained from main data sets of TDHS-2013. Main data sets include registered identification of data collection staff.

Table 5.1.1 also gives information about participation to personal interview, training program and main field work, which are separately presented in detail by tables in following sections according to characteristics of candidates.

Table 5.1.1 Number of data collection staff candidates

Percent distribution of the data collection staff candidates by recruitment steps, TDHS-2013

Data collection staff candidate status	Percentage	Number
Eliminated during the application process	20.7	79
Did not attend to the personal interview even though being invited	35.1	134
Eliminated at the end of the personal interview	5.2	20
Did not attend to the training process even though being invited	0.3	1
Eliminated during training	1.8	7
Did not attend to the main fieldwork even though being invited	1.3	5
Main data collection staff of TDHS-2013[1]	35.6	136
Total	**100.0**	**382**

[1]Data collection staff do not include five project assistants of TDHS-2013 and one research assistant from HUIPS.

Table 5.1.2 presents the distribution of data collection staff positions for the TDHS-2013 fieldwork. As previously mentioned, there are five data collection staff

positions for the fieldwork: supervisors, editors, measurers, interviewers, and data entry staff. Each team assigned for the fieldwork of TDHS-2013 includes a supervisor, a male measurer, and one to two field editors, and four to five female interviewers. These positions have been described in Chapter 4.

As observed from Table 5.1.2, staff for data entry consists of both individuals who worked as any other positions of data collection staff and ones who only worked for data entry. Some members of various teams worked in more than one position during the fieldwork, whereas they were assigned to only one position at the beginning of the field work. Major percentage belongs to the staff who worked as field editors, and interviewers (40.8%). Project assistants and the research assistant worked as either a supervisor, a field editor, or an interviewer.

Table 5.1.2 Number of data collection staff positions

Percent distribution of field staff by survey positions, TDHS-2013

Fieldwork position	Percentage	Number
Only Editor	0.7	1
Only Measurer	0.7	1
Only Interviewer	18.3	26
Only Data Entry	2.8	4
Supervisor-Interviewer	0.7	1
Field Editor-Measurer	1.4	2
Field Editor-Interviewer	40.8	58
Field Editor-Data Entry	2.1	3
Measurer-Interviewer	2.1	3
Interviewer-Data Entry	2.8	4
Supervisor-Field Editor-Interviewer[1]	12.7	18
Supervisor-Field Editor-Data Entry	0.7	1
Field Editor-Measurer-Interviewer	5.6	8
Field Editor-Measurer- Data Entry	0.7	1
Field Editor-Interviewer-Data Entry	4.9	7
Measurer-Interviewer-Data Entry	2.1	3
Supervisor-Field Editor-Interviewer-Data Entry	0.7	1
Total	**100.0**	**142**

[1]Supervisor-Field Editor-Interviewer category includes five project assistants of TDHS-2013 and one research assistant from HUIPS.

5.1.2 Descriptive Results for the Period of Application and Personal Interview

Tables in section 5.1.2 exhibits participation to interview among applicants that were successful in pre-elimination process, hence, invited to interviews.

Table 5.1.3 presents percentages and frequencies of candidates' participation to personal interview by the application results. Considering the percentage of candidates who did not take part in personal interview, although they were invited after the pre-elimination, drew attention. 134 candidates (44.2% among candidates who were invited to interview) did not take part in interview, whereas 79 candidates were eliminated during the application process. As a result, 169 candidates participated in their personal interview of TDHS-2013, whereas 303 candidates were invited.

Some of the applicants who did not take part in interview, although being invited, justified their absence with either educational reasons, employment tests, or health and childcare problems. On the other hand, some applicants provided no specific excuse.

Table 5.1.3 Participation to personal interview by application result

Percent distribution of participants and nonparticipants of interview by application result, TDHS-2013

	Nonparticipants		**Participants**		**Total**	
Application result	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Not invited to interview	100.0	79	0.0	0	100.0	79
Invited to interview	44.2	134	55.8	169	100.0	303
Total	**55.8**	**213**	**44.2**	**169**	**100.0**	**382**

Table 5.1.4 represents main characteristics of candidates who did not participate in interview according to nonparticipation status. The first column represents the characteristics of candidates who did not take part in personal interview despite being invited, while the second column presents all nonparticipants of

personal interview regardless of application process result.

Characteristics of these two groups are obtained from TDHS-2013 Fieldwork Application Form. According to Table 5.1.4, one may conclude that women graduated from faculty, aged 20-24, born in Central region of Turkey, without survey experience, interested in social sciences constitute the largest group within people that did not participate in the interview despite being invited. This pattern resembles to all candidates who did not take part in interview including nonparticipants due to elimination at the end of application process. Most nonparticipants of the TDHS-2013 personal interview regardless of the application result, stated that they do not know Kurdish, or Arabic (64.3%, and 86.4%, respectively) whereas some candidates stated that they have little Kurdish, or Arabic (11.3%, and 7.5%, respectively). Remaining percentages refer to candidates who stated that they have good control on Kurdish, or on Arabic (20.7%, and 1.4%, respectively).

Findings show that there is no significant difference between candidates who did not participate the interview while being invited, and nonparticipants who were eliminated during the application process.

Table 5.1.4 Characteristics of TDHS-2013 personal interview nonparticipants

Percent distribution of personal interview nonparticipants by nonparticipation status, TDHS-2013

	Nonparticipants of personal interview even though being invited		All nonparticipants regardless of the application result	
	Percentage	**Number**	**Percentage**	**Number**
Gender				
Female	72.4	97	70.9	151
Male	27.6	37	29.1	62
Age groups				
15-19	3.7	5	3.3	7
20-24	57.5	77	59.6	127
25-29	32.1	43	27.2	58
30 and over	6.7	9	9.9	21
Place of birth-5 regions				
West	17.2	23	22.1	47
South	9.7	13	9.9	21
Central	41.0	55	35.7	76
North	6.7	9	5.6	12
East	23.0	31	24.4	52
Abroad	0.7	1	0.9	2
Missing	1.5	2	1.4	3
Survey experience				
No	67.9	91	62.4	133
Yes	32.1	43	37.6	80
Number of survey experience				
Did not participate in any survey	67.9	91	61.9	133
1	11.2	15	15.5	33
2	11.2	15	10.8	23
3 and over	9.7	13	11.3	24
Graduation status				
Student	38.1	51	46.0	98
Graduated from university	61.2	82	52.6	112
University type				
Faculty	84.3	113	84.0	179
Vocational high school	6.7	9	5.6	12
Graduate	8.9	11	9.9	21
Missing	0.7	1	0.5	1

Table 5.1.4 Characteristics of TDHS-2013 personal interview nonparticipants (continued)

Percentage distribution of personal interview nonparticipants by nonparticipation status, TDHS-2013

	Nonparticipants of personal interview though they were invited		All nonparticipants regardless of the application result	
	Percentage	**Number**	**Percentage**	**Number**
Department				
Natural and Applied Sciences	27.6	37	30.5	65
Educational Sciences	6.7	9	4.7	10
Social Sciences	41.8	56	43.2	92
Economics and Administrative Sciences	19.4	26	18.8	40
Health Sciences	3.7	5	2.3	5
Missing	0.7	1	0.5	1
Kurdish				
None	69.4	93	64.3	137
Less	11.2	15	11.3	24
Good	18.7	25	20.7	44
Missing	0.7	1	3.8	8
Arabic				
None	91.0	122	86.4	184
Less	5.2	7	7.5	16
Good	2.2	3	1.4	3
Missing	1.5	2	4.7	10
Excuse				
No	79.1	106	65.7	140
Yes	20.9	28	34.3	73
Total	**100.0**	**134**	**100.0**	**213**

Table 5.1.5 presents the differences between candidates by application result. As expected, female candidates aged 20-24 constitute the major parts of both all applicants, and applicants who were invited to personal interview. Candidates' place of birth based on 5 regions by invitation status is also presented in Table 5.2.3. Central, East, and West regions constitute major parts of the all applicants' places of birth (approximately 37%, 23 %, and 18%, respectively). This pattern is similar to the pattern of candidates who were invited to interview (40.3%, 22.1% and 14.5%, respectively). After the interview stage, the patterns change so that the applicants invited to training are born in West, Central, or East regions (30.4%, 26.6%, and 26.6%, respectively).

Approximately 60% of the applicants have no survey experience. Similarly, 60.1% of the candidates invited to interview have no relevant survey experience. On the other hand, 53.2% of candidates who have at least one survey experience were eliminated during the application process. Survey experience is not a main criterion for participating in the TDHS-2013 data collection staff. Traditionally, for surveys conducted by HUIPS, candidates who previously have no survey experience have more advantage, which is also true for TDHS-2013. It is believed that non-experienced candidates create less bias on survey interests than others.

Being graduated from or being a student at a university is key criterion for data collection staff recruitment of TDHS-2013. Students and graduates constitute 45%, and 54.2% of the whole data collection staff candidates, respectively. Most of the candidates who were invited to personal interview have graduated from university (58.4%). It may be resulted from overlapping exam period of the universities and field work period of the survey. Academic backgrounds of candidates invited to interview, are mostly associated with social sciences (45.6%). Natural and applied sciences, economics and administrative sciences, educational sciences and health sciences follow social sciences. All applicants from health sciences were invited to personal interview (8 candidates, 2.6%).

Applicants who have an excuse during the field work stated it on application form. While most applicants stated that they have no excuse (75.4%), applicants who stated that they have an excuse during the fieldwork gave a reason for that. Reasons are mostly job-related and education-related examinations.

Table 5.1.5 Characteristics of data collection staff applicants, TDHS-2013

Percent distribution of data collection staff applicants by application result, TDHS-2013

	Not Invited to Interview		Invited to Interview		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Gender						
Female	68.4	54	72.6	220	71.7	274
Male	31.6	25	27.4	83	28.3	108
Age groups						
15-19	2.6	2	2.0	6	2.1	8
20-24	65.4	51	55.5	166	57.6	217
25-29	16.7	13	37.5	112	33.2	125
30 and over	15.4	12	5.0	15	7.2	27
Missing	1.3	1	1.3	4	1.3	5
Place of birth-5 regions						
West	30.4	24	14.5	44	17.8	68
South	10.1	8	13.2	40	12.6	48
Central	26.6	21	40.3	122	37.4	143
North	3.8	3	7.9	24	7.1	27
East	26.6	21	22.1	67	23.0	88
Abroad	1.3	1	1.3	4	1.3	5
Missing	1.3	1	0.7	2	0.8	3
Student or Graduate						
Student	59.5	47	41.3	125	45.0	172
Graduate	38.0	30	58.4	177	54.2	207
Missing	2.5	2	0.3	1	0.8	3
University type						
Faculty	83.5	66	81.8	248	82.2	314
Vocational high school	3.8	3	6.3	19	5.8	22
Graduate	12.7	10	11.2	34	11.5	44
Missing	0.0	0	0.7	2	0.5	2
Department						
Natural and Applied Sciences	35.4	28	23.4	71	25.9	99
Educational Sciences	1.3	1	6.6	20	5.5	21
Social Sciences	45.6	36	47.2	143	46.9	179
Economics and Administrative Sciences	17.7	14	19.1	58	18.8	72
Health Sciences	0.0	0	2.6	8	2.1	8
Missing	0.0	0	1.0	3	0.8	3
Survey experience						
No	53.2	42	60.1	182	58.6	224
Yes	46.8	37	39.9	121	41.4	158

Table 5.1.5 Characteristics of data collection staff applicants, TDHS-2013 (continued)

Percentage distribution of data collection staff applicants by application result, TDHS-2013

	Not Invited to Interview		Invited to Interview		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Number of participated surveys						
Did not participate in any survey	53.2	42	60.4	183	58.9	225
1	22.8	18	15.5	47	17.0	65
2	10.1	8	10.9	33	10.7	41
3 and over	13.9	11	13.2	40	13.4	51
Kurdish						
None	55.7	44	69.6	211	66.8	255
Less	11.4	9	13.9	42	13.4	51
Good	24.1	19	16.2	49	17.8	68
Missing	8.9	7	0.3	1	2.1	8
Arabic						
None	78.5	62	92.1	279	92.1	341
Less	11.4	9	4.6	14	4.6	23
Good	0.0	0	2.6	8	2.6	8
Missing	10.1	8	0.7	2	0.7	10
Excuse of absence						
No	43.0	34	83.8	254	75.4	288
Yes	57.0	45	15.8	48	24.3	93
Missing	0.0	0	0.3	1	0.3	1
Total	**100.0**	**79**	**100.0**	**303**	**100.0**	**382**

As it has been mentioned, previous survey experience of the candidates is an important criterion for the data collection staff recruitment. Table 5.1.6 displays survey experience status of applicants and year of the last survey experience of the candidates who have stated that they have at least one survey experience, by application result.

Candidates who stated that they have no survey experience constitute major part of the candidates who were invited to interview (60.1%). It can be also observed that 12.2% of the candidates who applied for the TDHS-2013 field work data collection staff positions, have at least one survey experience at some time in 2013 which is the year TDHS-2013 field work took place. Approximately, eleven percent of the applicants have at least one survey experience in 2012.

Table 5.1.6 Survey experience of applicants

Survey experience status and year of the previous survey experience by invitation status to interview, TDHS-2013

	Not Invited to Interview		Invited to Interview		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Survey experience						
No	53.2	42	60.1	182	58.6	224
Yes	46.8	37	39.9	121	41.4	158
Year of the survey experience[1]						
did not participate in any survey	53.2	42	60.1	182	58.6	224
2004-2009	10.3	8	3.8	11	5.1	19
2010	2.5	2	4.3	13	3.9	15
2011	10.1	8	6.3	19	7.1	27
2012	11.4	9	10.2	31	10.5	40
2013	11.4	9	12.2	37	12.0	46
Missing	1	1.3	10	3.3	11.0	29
Total	**100.0**	**79**	**100.0**	**303**	**100.0**	**382**

[1]Year of the survey experience represents year of the last survey experience of applicants.

5.1.3 Descriptive Results for the Period of Personal Interview and Training

Personal interviews were held with eight groups off applicants on August 13, and six groups of applicants on August 23. TDHS-2013 Fieldwork Interview Form gathers information on candidates' demographic, social, and background characteristics. Applicants that were deemed successful by the jury members were invited to the training program of the TDHS-2013 fieldwork. Table 5.1.7 displays candidates' participation status to training program by interview result.

It could be observed from Table 5.1.7 that 20 candidates were eliminated during the interview process among 169 interview participants (11.8%). As a result of that 149 (88.2%) candidates were invited to training process of the TDHS-2013. On the other hand, only one candidate did not participate in training program, although being successful in the interview.

Table 5.1.7 Participation status of TDHS-2013 candidates to training program

Percent distribution of the candidates who participated in to training program by interview result, TDHS-2013

	Participated in training		Total	
	Percentage	**Number**	**Percentage**	**Number**
Interview result				
Not invited to training program	0.0	0	11.8	20
Invited to training program	**100.0**	148	88.2	149
Total	**100.0**	**148**	**100.0**	**169**

Table 5.1.8 presents basic characteristics of candidates such as demographic, educational, occupational, and computer, and language abilities by invitation status to the training program. 70.5% of the female applicants were deemed successful during the interviews, hence, were invited to the training program. On the other hand, 44 male candidates were invited to training program to potentially fulfill the roles of being a supervisor, a measurer, or a field editor.

Considering interview participants' place of birth, highest percentage refers to Central region among regions (37.6%). East follows that region by 28.2%. More than half of the candidates (53.3%) who were invited to training program were not students at the time of the interviews. This could be linked with the overlapping of TDHS-2013 field work period and examination period of the universities. Backgrounds of the data collection staff candidates who were invited to training program are mostly related to social sciences. Approximately ninety percent of the candidates who were invited to training program was not working at interview time. It can be concluded that, the reason for not having any kind of social insurance (81.2%) may be related with the working status of the applicants.

During the interviews, most candidates (85.2%) stated that they are familiar with using personal computers. Sixteen candidates were invited to training program among nineteen participants who had data entry experience previously. It might be concluded that, having data entry experience had an important role for selection of the applicants for the TDHS-2013 data entry staff.

Arabic is an important criterion for interview participants. All eight participants who stated to know Arabic, were invited to training program.

Table 5.1.8 Basic characteristics of interview participants

Percent distribution of TDHS-2013 interview participants by invitation status to training program, TDHS-2013

	Not Called Training		Called Training		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Gender						
Female	90.0	18	70.5	105	72.8	123
Male	10.0	2	29.5	44	27.2	46
Age groups						
15-19	5.0	1	0.0	0	0.6	1
20-24	65.0	13	51.0	76	52.7	89
25-29	25.0	5	44.3	66	42.0	71
30 and over	5.0	1	4.7	7	4.7	8
Place of birth-5 regions						
West	10.0	2	8.7	13	8.9	15
South	25.0	5	11.4	17	13.0	22
Central	50.0	11	37.6	56	39.1	66
North	0.0	0	10.7	16	9.5	16
East	10.0	2	28.2	42	26.0	44
Abroad	0.0	0	2.7	4	2.4	4
Missing	5.0	1	0.7	1	1.2	2
Educational status						
MA/PhD Student	5.0	1	12.1	18	11.2	19
University 3-4	10.0	2	9.4	14	9.5	16
University 1-2-prep. class	35.0	7	19.5	29	21.3	36
Graduated	45.0	9	57.7	86	56.2	95
Missing	5.0	1	1.3	2	1.8	3
Student						
No	40.0	8	55.0	82	53.3	90
Yes	55.0	11	44.3	66	45.6	77
Missing	5.0	1	0.7	1	1.2	2
Department						
Natural and Applied Sciences	20.0	4	20.1	30	20.1	34
Educational Sciences	5.0	1	6.7	10	6.5	11
Social Sciences	45.0	9	52.3	78	51.5	87
Economics and Administrative Sciences	20.0	4	18.8	28	18.9	32
Health Sciences	5.0	1	1.3	2	1.8	3
Missing	5.0	1	0.7	1	1.2	2
Working status						
Not working	85.0	17	93.3	139	92.3	156
Working	10.0	2	4.7	7	5.3	9
Missing	5.0	1	2.0	3	2.4	4

Table 5.1.8 Basic characteristics of interview participants (continued)

Percent distribution of TDHS-2013 interview participants by invitation status to training program, TDHS-2013

	Not Called Training		Called Training		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Working status						
Not working	85.0	17	93.3	139	92.3	156
Working	10.0	2	4.7	7	5.3	9
Missing	5.0	1	2.0	3	2.4	4
Social insurance						
Yes	15.0	3	14.8	22	14.8	25
No	80.0	16	81.2	121	81.1	137
Missing	5.0	1	4.0	6	4.1	7
Scholarship						
Yes	5.0	1	2.7	4	3.0	5
No	90.0	18	93.3	139	92.9	157
Missing	5.0	1	4.0	6	4.1	7
Computer ability[1]						
Programming	10.0	2	4.7	7	10.0	9
Data entry	15.0	3	10.7	16	11.2	19
Familiar	65.0	13	87.9	131	85.2	144
No experience	10.0	2	0.7	1	1.8	3
Known languages						
Kurdish						
Yes	15.0	3	16.8	25	16.6	28
No	80.0	16	81.9	122	81.7	138
Missing	5.0	1	1.3	2	1.8	3
Arabic						
Yes	0.0	0	5.4	8	4.7	8
No	95.0	19	93.3	139	93.5	158
Missing	5.0	1	1.3	2	1.8	3
English						
Yes	20.0	4	22.8	34	22.5	38
No	65.0	13	59.7	89	60.4	102
Missing	15.0	3	17.4	26	17.2	29
Other language[2]						
Yes	10.0	2	2.7	4	3.6	6
No	85.0	17	94.6	141	93.5	158
Missing	5.0	1	2.0	4	3.0	5
Total	**100.0**	**20**	**100.0**	**149**	**100.0**	**169**

[1] Computer knowledge column percent can exceed 100 percent because of being more than one computer ability of the candidates. Missing information for that variable is about 3.6 percent among interview participants.
[2]Other language ability covers Farsi, German and French.

Table 5.1.9 shows additional characteristics of interview participants that were obtained from TDHS-2013 interview form by invitation status to training. Results indicate that 92.9 percent of interview participants do not have any health problems. Findings also show that most of the candidates (69.8%) do not have any excuse during the fieldwork. Approximately 12 percent of the candidates stated that only "one day" excuse, which generally refers to educational examinations or occupational excuses. Candidates who were not invited to training program stated one day, or more than one day excuses (10.0 and 25.0, respectively).

In personal interview of the TDHS-2013 fieldwork, reasons why for applying to the TDHS-2013 were asked to all participants. According to their statements, "gaining experience" is the most common answer. Other reasons can be listed as "hearing from someone or somewhere", "closeness to professional field", "making contact with individuals", "gaining prestige", "hearing from internet/social media", "women related reasons", "learning something", "being a part of team work", "institute and survey related reasons", and to know people from Hacettepe University. During the personal interviews, fieldwork preferences were filled according to participants' statements. Approximately 91 percent of the participants stated that they can go anywhere included in field work regions.

Table 5.1.9 Additional characteristics of the TDHS-2013 interview participants

Percent distribution of TDHS-2013 personal interview participants by invitation status to training program, TDHS-2013

	Not Invited to Training		Invited to Training		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Health problem						
No	85.0	17	94.6	140	92.9	157
Yes	10.0	2	2.0	3	3.0	5
Missing	5.0	1	4.0	6	4.1	7
Excuse						
None	40.0	8	73.8	110	69.8	118
One day	10.0	2	12.8	19	12.4	21
More than one day	25.0	5	7.4	11	9.5	16
More than a week	0.0	0	2.7	4	2.4	4
Missing	25.0	5	3.4	5	5.9	10
Need dormitory during training						
No	75.0	15	84.6	126	83.4	141
Yes	15.0	3	10.7	16	11.2	19
Missing	10.0	2	4.7	7	5.3	9
Reason(s) for TDHS-2013 participation[1]						
Earning money	20.0	4	26.8	40	26.0	44
Travelling	30.0	6	14.1	21	16.0	27
Gaining experience	50.0	10	50.3	75	50.3	85
Adventure with friends	0.0	0	0.0	0	0.0	0
Other[2]	55.0	11	43.6	65	45.0	76
Preference for field region						
Everywhere	85.0	17	91.9	137	91.1	154
Only Ankara	0.0	0	0.7	1	0.6	1
Not SouthEast	10.0	2	2.7	4	3.6	6
Other	0.0	0	1.3	2	1.2	2
Missing	5.0	1	3.4	5	3.6	6
Total	**100.0**	**20**	**100.0**	**149**	**100.0**	**169**

[1] Reason(s) of TDHS-2013 participation column percent can exceed 100 percent, because of being more than one reason. Missing information for that variable belongs to 17 interview participants. 15 cases of that belong to candidates who were invited to training program of the TDHS-2013.

[2]Hearing from someone or somewhere, making contact with individuals, women related reasons, hearing from internet/social media, being a part of team work, gaining prestige are among other reasons.

Survey experience of personal interview participants by invitation status to training program is shown in Table 5.1.10 also allows making an assessment of the candidates' previous survey experiences. This information covers whether having any survey experience or not, number of survey attended, and the institution survey was conducted by. HUIPS refers to Hacettepe University Institute of Population Studies, TURKSTAT refers to Turkish Statistical Institution, and "other university" refers to universities other than Hacettepe University.

Most of the interview participants have no survey experience (52.1%). Forty nine percent of the candidates who were invited to training program have not any survey experience. Five individuals who had HUIPS experience, 2 individuals who had TURKSTAT experience, 37 individuals who had an experience in other universities, and 30 candidates who had experience in private institutions, among applicants who stated previous survey experience, were invited to training program.

Table 5.1.10 Survey experience of interview participants

Percent distribution of interview participants by invitation status to training program, TDHS-2013

	Not Invited to Training		Invited to Training		Total	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
Survey experience						
No	49.0	15	49.0	73	52.1	88
Yes	50.3	4	50.3	75	46.7	79
Missing	0.7	1	0.7	1	1.2	2
Number of survey experience						
None	75.0	15	49.7	74	52.7	89
1	10.0	2	24.2	36	22.5	38
2	5.0	1	9.4	14	8.9	15
3 and over	5.0	1	16.1	24	14.8	25
Missing	5.0	1	0.7	1	1.2	2
Survey experience-Institution[1]						
HUIPS	0.0	0	3.4	5	3.0	5
TURKSTAT	5.0	1	1.3	2	1.8	3
Other university	5.0	1	24.8	37	22.5	38
Private Institution	10.0	2	20.1	30	18.9	32
Total	**100.0**	**20**	**100.0**	**149**	**100.0**	**169**

[1] Percentages of research experience-institution is obtained from candidates who stated his/her any survey experience institution is HUIPS, TURKSTAT, any other university or any private institution. Missing information for that variable belongs to 2 interview participants.

Table 5.1.11 shows the opinions of the jury members about data collection staff candidates who participated in personal interview. Most candidates had a positive effect on jury members (88.2%). Similarly, jury members concluded that interview participants are mostly mature and reliable (80.5%, and 87%, respectively). Eleven applicants out of fourteen with neither a negative nor a positive effect on jury members, sixteen applicants out of twenty one with maturity found as unclear, and nine applicants out of thirteen who were determined as "difficult to decide" were invited to the training program. Findings show that jury members had a positive attitude when deciding on which applicants to invite to training program. Furthermore, findings show that opinions of jury members about personal interview participants were taken into consideration mostly when assigning candidates to data collection staff positions. Findings show that opinions of jury members about personal interview participants were taken into consideration mostly when assigning candidates to data collection staff positions.

Table 5.1.11 Opinion of jury members about interview participants

Percent distribution of interview participants by invitation status to training program, TDHS-2013

	Invited to Training		**Not Invited to Training**		**Total**	
	Percentage	**Number**	**Percentage**	**Number**	**Percentage**	**Number**
General impression						
Positive	80.0	16	89.3	133	88.2	149
Neither positive nor negative	15.0	3	7.4	11	8.3	14
Missing	5.0	1	3.4	5	3.6	6
Maturity						
Mature	65.0	13	82.6	123	80.5	136
Unclear	25.0	5	10.7	16	12.4	21
Naive	5.0	1	2.0	3	2.4	4
Missing	5.0	1	4.7	7	4.7	6
Opinion						
Reliable	75.0	15	88.0	132	87.0	147
Difficult to decide	20.0	4	6.0	9	7.7	13
Should not be employed	0.0	0	0.7	1	0.6	1
Missing	5.0	1	4.7	7	4.7	8
Total	**100.0**	**20**	**100.0**	**149**	**100.0**	**169**

5.1.4 Comparative Results for Data Collection Staff and Fieldwork

In this section, some comparative results about interview and fieldwork, and consistency tables about recruitment forms of TDHS-2013 are presented. Results indicate differences between proposed data collection staff positions for applicants at the interviews and main data collection staff positions at the fieldwork. Moreover, "desired region to go" that obtained from Fieldwork Preference Form allows to make a comparison on "desired region" and "main fieldwork region" of data collection staff. Other comparisons in this section are made on information of data collection staff on recruitment forms.

5.1.4.1 Comparison of Fieldwork Related Indicators

Table 5.1.12 gives a comparison between data collection staff positions that were proposed by jury members during the interviews and main positions of the data collection staff. This table allows assessing the association between positions that were proposed and assigned. Nine data collection staff whose one of the preferred assignments is "supervisor at the fieldwork" were proposed for the position at the personal interview among thirty-five supervisor proposals. Similarly ninety-four data collection staff who preferred to be an interviewer at the interview worked as an interviewer at the fieldwork of the TDHS-2013. Eight data collection staff whose one of preferred assignments is "measurer" were proposed for the position at the personal interview among ten measurer proposals. Data collection staff who had at least one interview at the field work was accepted as "interviewer" in this table. Two candidates who were considered as "should not work" by jury members worked as a measurer, field editor, interviewer, and data entry member. Similarly, five candidates who were considered as "undecided" by jury members worked at the fieldwork in various positions.

Table 5.1.12 Comparison between proposed and main positions of data collection staff

Percent distribution of data collection staff by proposed and main data collection staff positions, TDHS-2013

Proposed position	Supervisor		Editor		Interviewer		Data Entry		Undecided		Should not work		Measurer		Total	
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count
Assignment at survey																
Supervisor	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Field Editor	2.9	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.7	1
Measurer	2.9	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.7	1
Interviewer	2.9	1	13.3	4	24.2	23	13.0	3	0.0	0	0.0	0	0.0	0	18.7	25
Data Entry	2.9	1	0.0	0	1.1	1	4.3	1	0.0	0	0.0	0	0.0	0	2.2	3
Supervisor-Field Editor	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Supervisor-Interviewer	2.9	1	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.7	1
Supervisor-Data Entry	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Field editor-Measurer	0.0	0	3.3	1	0.0	0	0.0	0	20.0	1	0.0	0	0.0	0	1.5	2
Field Editor-Interviewer	37.1	13	36.7	11	53.7	51	39.1	0	0.0	0	0.0	0	0.0	0	43.3	58
Field Editor-Data Entry	2.9	1	6.7	2	0.0	0	4.3	1	20.0	1	0.0	0	0.0	0	2.2	3
Measurer-Interviewer	0.0	0	0.0	0	2.1	2	8.7	2	0.0	0	0.0	0	30.0	3	2.2	3
Measurer-Data Entry	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Interviewer-Data Entry	2.9	1	6.7	2	4.2	4	13.0	3	0.0	0	0.0	0	0.0	0	3.0	4
Supervisor-Field Editor-Interviewer	20.0	7	10.0	3	4.2	4	0.0	0	20.0	1	0.0	0	20.0	2	9.0	12

Table 5.1.12 Comparison between proposed and main positions of data collection staff (continued)

Percent distribution of data collection staff by proposed and main data collection staff positions, TDHS-2013

Proposed position	Supervisor		Editor		Interviewer		Data Entry		Undecided		Should not work		Measurer		Total	
	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count
Supervisor-Field Editor-Interviewer	20.0	7	10.0	3	4.2	4	0.0	0	20.0	1	0.0	0	20.0	2	9.0	12
Supervisor-Field Editor-Data Entry	2.9	1	3.3	1	0.0	0	4.3	1	0.0	0	0.0	0	0.0	0	0.7	1
Supervisor-Interviewer-Data Entry	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Field Editor-Measurer-Interviewer	11.4	4	10.0	3	2.1	2	4.3	1	20.0	1	0.0	0	20.0	2	6.0	8
Field Editor-Measurer-Data Entry	0.0	0	0.0	0	0.0	0	4.3	1	0.0	0	0.0	0	0.0	0	0.7	1
Field editor-Interviewer-Data Entry	5.7	2	6.7	2	5.3	5	0.0	0	0.0	0	50.0	1	0.0	0	5.2	7
Measurer-Interviewer-Data Entry	2.9	1	3.3	1	2.1	2	4.3	1	20.0	1	50.0	1	30.0	3	2.2	3
Supervisor-Field Editor-Interviewer-Data Entry	0.0	0	0.0	0	1.1	1	0.0	0	0.0	0	0.0	0	0.0	0	0.7	1
Total	**100.0**	**35**	**100.0**	**30**	**100.0**	**95**	**100.0**	**23**	**100.0**	**5**	**100.0**	**2**	**100.0**	**10**	**100.0**	**134**

[1] Main data collection staff positions were determined based on main data sets of the TDHS-2013. Data collection staff, household and, women data sets were considered simultaneously, when deciding data collection staff positions.

Even though each main data collection staff member has a specific and pre-assigned position, some of these members were assigned additional tasks. For example, a pre-assigned supervisor could fulfill the tasks of an editor, or an interviewer. Considering data collection staff positions are "supervisor", "field editor", "measurer", "interviewer" and "staff for data entry", Table 5.1.13 demonstrates the number of staff members that fulfill at least one of these positions and allows to make a comparison between "at least one main data collection staff position" at the field work and proposed data collection staff positions at the personal interview.

According to Table 5.1.13, nine data collection staff worked at least one as "supervisor" among thirty-four supervisor proposals. Out of ten measurer proposals at the interview, eight data collection staff worked at least one as "measurer". As it has been observed in Table 5.1.12, ninety-four data collection staff had at least one interview among ninety-four interview proposals at interview.

Table 5.1.13 Comparison between proposed and at least one main position of data collection staff

Percent distribution of data collection staff by proposed and at least one main data collection staff positions, TDHS-2013

Main field assignment	Supervisor		Field Editor		Measurer		Interviewer		Staff for Data Entry		Total	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Proposed field assignment at fieldwork[1]												
Supervisor	26.5	9	85.3	29	17.6	6	88.2	30	17.6	6	100.0	34
Editor	13.3	4	76.7	23	16.7	5	86.7	26	26.7	8	100.0	30
Interviewer	5.3	5	67.0	63	6.4	6	100.0	94	12.8	12	100.0	94
Data Entry	4.5	1	59.1	13	22.7	5	86.4	19	31.8	7	100.0	22
Undecided	20.0	1	80.0	4	60.0	3	60.0	3	40.0	2	100.0	5
Should not work	0.0	0	50.0	1	50.0	1	100.0	2	100.0	2	100.0	2
Measurer	20.0	2	40.0	4	80.0	8	100.0	10	30.0	3	100.0	10
Total	11.5	15	71.8	94	13.7	18	93.1	122	15.3	20	100.0	131

"Proposed field assignments at interview" row percent can exceed 100 percent because of being more than one field assignment of data collection staff.

In their fieldwork preference forms, applicants specified their respective preferred regions to go and work. Applicants stated their preferences by filling the blanks with “none”, “probable” and “most” options. Sample regions in TDHS-2013 Fieldwork Preference Form are İstanbul-Thrace, Aegean, West Mediterranean, East Mediterranean, Central Anatolia, Black Sea, and East Anatolia. These regions were categorized as traditional regions of Turkey: West, South, Central, North and East with “yes” and “no” categories. Categories titled as “Probable” and “Most” were merged into “yes” category.

Table 5.1.14 presents crosstab of regions that the applicants desired to go, and their assigned main field regions. Most of the data collection staff who had no preference among the regions were assigned to East region. On the other hand fifty-five candidates worked in East, thirty-four candidates worked in North, fifteen candidates worked in Central, nine candidates worked in South, and eight candidates worked in West regions.

Table 5.1.14 Comparison between desired regions by data collection staff candidates and their main sample regions

Percent distribution of data collection staff by wanted and main sample regions, TDHS-2013

Main regions[1]	West		South		Central		North		East		Total	
Desired Regions	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
West	8	6.7	9	7.6	15	12.6	34	29.0	53	44.5	119	100.0
South	8	6.7	9	7.6	15	12.6	34	29.0	53	44.5	119	100.0
Central	3	4.0	6	8.0	8	10.7	24	32.0	34	45.3	75	100.0
North	8	7.2	8	7.2	15	13.5	32	29.0	48	43.2	111	100.0
East	3	3.1	9	9.3	9	9.3	30	31.0	46	47.4	97	100.0
Total	8	6.6	9	7.4	15	12.4	34	28.1	55	45.5	121	100.0

[1]“Main regions” were determined based on team lists before break due to religious holiday in Turkey.

Language ability of candidates was among criteria when specifying fieldwork regions of data collection staff. Table 5.1.15 presents information on language ability of data collection staff and their fieldwork regions. Kurdish ability plays a major role in determining data collection staff who were considered to go field work provinces in East region.

Table 5.1.15 Language ability and field work regions

Percent distribution of data collection staff by language ability and their fieldwork regions, TDHS-2013

Known languages	Kurdish		Arabic		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Fieldwork Regions						
West	1	5.0	2	28.6	8	6.7
South	2	10.0	2	28.6	8	6.7
Central	1	5.0	0	0.0	15	12.5
North	3	15.0	0	0.0	34	28.3
East	13	65.0	3	42.9	55	45.8
Total	20	100.0	7	7.4	120	100.0

Fieldwork Preference Form also collected data on collection staff identification and their friends who are wanted to go with candidate. Table A.5 demonstrates that ID numbers of friends of candidates' who were wanted to go fieldwork with that candidate according to team numbers before break due to religious holiday in Turkey. Findings show that only five candidates and their one friend who were wanted to go with went to fieldwork together. Other friends who were wanted to go with that candidates went to fieldwork either with other teams or, eliminated at the end of training process or, worked as data entry staff.

5.1.4.2 Comparison of Recruitment Forms

Recruitment forms used for data collection staff candidates collect some basic information such as place of birth and language ability. Table 5.1.16 demonstrates a comparison between all recruitment forms with candidates' place of birth. Tables were constructed on training participants because of all recruitment forms were filled by candidates who took part in training program of TDHS-2013 Fieldwork. Differences are may be originated from vagueness of place of birth and place of residence.

Table 5.1.16 Candidates' place of birth with regions

Place of birth of candidates by recruitment form types

	Application form		Interview Form		Preference Form	
	Number	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Region						
West	19	12.8	13	8.8	18	12.2
South	21	14.2	17	11.5	16	10.8
Middle	58	39.2	56	37.8	54	36.5
North	15	10.1	16	10.8	14	9.5
East	32	21.6	41	27.7	34	23
Abroad	3	2.0	4	2.7	3.0	2.0
Missing	0	0.0	1	0.7	9.0	6.1
Total	148	100.0	148	100.0	148	100.0

Table 5.1.17 represents comparison between recruitment forms. Language ability of the candidates was collected with all recruitment forms. Kurdish and Arabic ability was collected with "yes" and "no "categories in personal interview form and fieldwork preference form while "none", "less" and "good" categories in application form. In application form, "less" and "good" categories were merged into "yes" category so that comparison was made properly in Table 5.1.17. Results on language ability are relatively close to each other.

Table 5.1.17 Language ability of training participants

Language ability of training participants by recruitment forms

	Interview Form		Preference Form		Application Form	
	Number	**Percentage**	**Number**	**Percentage**	**Number**	**Percentage**
Kurdish						
No	121	81.8	110	74.3	106	71.6
Yes	25	16.9	29	19.6	42	28.4
Missing	2	1.4	9	6.1	0	0.0
Arabic						
No	138	93.2	131	88.5	136	91.9
Yes	8	5.4	8	5.4	12	8.1
Missing	2	1.4	9	6.1	0	0.0
Total	**148**	**100.0**	**148**	**100.0**	**148**	**100.0**

5.1.5. Possible Signs on Interviewer Performance

Although it is difficult to measure interviewer effect on survey responses completely, some interviewer specific measures draw a frame when evaluating interviewer performance on a survey. Unfortunately, well-known methods to evaluate interviewer performance presented in 4.1 cannot be put to use for TDHS-2013 due to the lack of true values of respondents, as well as various other restrictions.

Interviewer specific completion rates can be considered as one of the performance indicators of data collection staff. By doing so, completion rates of TDHS-2013 data collection staff were calculated for household interviews, and women interviews at the level of teams and individuals, separately. In total, interviews with 11749 out of 14489 selected households, and 9746 out of 10840 eligible women were completed. Completion rates should be interpreted carefully as they are affected by several factors such as operational difficulties, and logistic problems depending on field work regions. Therefore, for each team, tables associated with completion rates are presented along with their field work provinces (Table 5.1.18). On the other hand, field work assignments, and completion rates with results of interviews at the individual level are presented in Appendix A (Table A.1[1] and Table A.2[1]). Data collection staff with interviewer identification in main data sets of TDHS-2013 was treated as "interviewer", regardless of their fieldwork assignment, throughout this study.

One can conclude that performance of teams worked in East and South regions have relatively higher completion rates according to Table 5.1.18. Note that, more accurate interpretation on completion rates could be made based on the individual level table rather than the team level table, as only the former table presents results of interviews and field work assignments.

It can be inferred from Tables A.1[1] and A.2[1] that, interviewers with additional tasks, such as supervising, editing, or measuring, have fewer completed interviews on

[1] Table is presented in Appendix A.

average compared to interviewers without additional tasks, as expected. Additionally, one can conclude from these tables that completion rates vary among data collection staff depending on the field work assignment and total number of completed interviews.

On the other hand, difference between response and completion rates stems from result codes in denominator which are "entire household absent for extended period of time", "dwelling vacant or address not dwelling", "dwelling destroyed", and "other". It is obvious that these codes are under the initiative of data collection staff. Therefore, the difference between response and completion rates may be originated from data collection staff. Making interpretation on completion rates might be preferable.

Table 5.1.18 Household level and individual level response and completion rates

Household and eligible women response and completion rates, according to field work teams and field work provinces

Team Number	Provinces	Household Response Rates	Household Completion Rates	Women Response Rates =Women Completion Rates
1	Düzce-Bartın-Zonguldak-Karabük	92.5	76.4	89.7
2	Erzurum-Gümüşhane-Bayburt	95.9	86.5	87.1
3	Gaziantep-Kilis	93.9	86.8	89.4
4	Çorum-Amasya-Tokat-Sivas	96.3	84.0	85.9
5	Edirne-Kırklareli-Tekirdağ	92.9	81.6	90.8
6	Tunceli-Bingöl-Bitlis-Muş-Van	97.4	85.8	88.8
7	Ağrı-Kars-Ardahan-Iğdır	96.8	90.5	89.6
8	Sinop-Samsun	97.3	87.6	92.3
9	Kırşehir-Nevşehir-Niğde-Aksaray-Kırıkkale	94.6	84.4	91.6
10	Urfa-Hatay	97.2	88.9	92.5
11	Rize-Giresun	89.9	72.3	93.1
12	Kayseri-Yozgat	94.1	81.9	89.2
13	Kahramanmaraş-Elazığ-Adıyaman	94.5	79.8	87.4
14	Kastamonu-Ordu	97.4	86.5	88.5
15	Malatya-Erzincan-Osmaniye	96.0	87.2	93.4
16	Artvin-Trabzon	95.0	76.7	91.5
17	İstanbul	85.4	73.4	86.6
18	Çanakkale-Balıkesir	96.1	81.6	96.3
19	İzmir	91.3	77.7	89.4
20	Aydın-Denizli-Muğla-Afyon	92.7	80.1	92.8
21	Uşak-Kütahya-Manisa-Bilecik-Eskişehir	94.9	85.7	90.9
22	Bursa-Yalova	87.4	73.9	79.3
23	Bolu-Sakarya-Kocaeli-Çankırı	96.0	80.9	90.0
24	Konya-Karaman	94.3	83.3	96.0
25	Burdur-Isparta-Antalya	91.2	78.9	89.0
26	Hatay-Mersin	94.4	82.5	91.5
27	Adana	94.3	85.6	92.0
28	Şırnak-Siirt-Mardin-Diyarbakır-Hakkari-Batman	92.9	84.2	88.8
29	Ankara	92.8	80.8	92.2
Total		93.3	81.4	89.9

Furthermore, average time of an interview, number of completed interviews per day, and number of total interviews per day for each interviewer could be listed among interviewer specific performance indicators. Table A.3[1] and Table A.4[1] present results of average time of an interview, number of days interviews conducted, and number of interviews per day based on household and women interviews for each interviewer.

Average interview time is affected from questionnaire length inevitably. TDHS-2013 Household Questionnaire includes a list that covers information of de jure and de facto population[2]. The collected information is about relationship with head of household, basic demographic characteristics such as age and sex, educational and marital statuses, and eligibility for individual interview. Besides, TDHS-2013 Individual Questionnaire collects information about nutritional status and anthropometric measures of children aged under five. Hence, mean number of household members and mean number of children aged under five, which are considered to affect average time of interviews conducted by any interviewer, are presented in Table A.3[1] and Table A.4[1] along with related performance indicators.

Results in Table A.3[1] and Table A.4[1] are presented based on interviewer identifications. As it has been mentioned previously, a data collection staff who had at least one interview were named "interviewer" regardless of his/her result code. Estimates in these tables were calculated based on all individuals who are named "interviewer". Descriptive results show that interviewer based average time of household interviews and women interviews are 8.6 minutes and 29.6 minutes, respectively. Mean number of days household interviews conducted is 27.7, and mean number of days women interviews conducted is 38.8. Another indicator associated with interviewers' performance is total number of interviews per day. Interviewers had 2.4 household interviews and 2.7 women interviews per day, regardless of result codes.

[1] Table is presented in Appendix A.

[2] De jure population is usual residents who live in selected households whereas de facto population is individuals who stayed in the selected households the night before the interview.

5.1.6. Possible Sign on Interviewer Effect: Displacement of Children Birth Dates

Interviewers tend to shift age of respondents or date of births of alive children of women from eligible groups to ineligible groups in order to reduce their workload. In relation to that, age ratio or age-accuracy index is used for data quality assessments in Multiple Indicator Cluster Surveys (MICS). Similarly, DHS surveys use "calendar age ratio" for data quality assessment.

Many health related questions are asked to eligible women about each of their births that occurred in the last five years before the date of interview in DHS surveys. Interviewers tend to displace years of living births in order to reduce their workload (IRD 1990). Displacement may affect mortality estimates which are based on information collected for the last five calendar years before DHS.

"Calendar year ratio" is calculated based on number of births by calendar year for TDHS-2013 data quality as:

$$calendar\ year\ ratio = \frac{B_x}{\frac{B_{x-1}+B_{x+1}}{2}}.100$$

where B_x refers to number of births in calendar year.

As understood from the formula above, the expected value of the ratio is 100. Table 5.1.19 presents number of living and dead children, and their calendar year ratios for TDHS-2013. Results indicate fewer births than expected in 2008, and more living births than expected in 2007 based on calendar year ratio. A similar pattern is observed in calendar year ratios for total number of living and dead children. The reason for this pattern might be the desire of TDHS-2013 interviewers to reduce their workloads.

Table 5.1.19 Births by calendar years, TDHS-2013

Number of births with calendar year ratio by calendar year

				Calendar year ratio		
Calendar year	**Living children**	**Dead children**	**Total**	**Living children**	**Dead children**	**Total**
2013	561	7	568			
2012	665	10	675			
2011	642	10	652	97.4	95.2	97.4
2010	653	11	664	98.9	122.2	99.3
2009	678	8	686	102.5	69.6	101.9
2008	**670**	**12**	**682**	**97.1**	**133.3**	**97.6**
2007	**702**	**10**	**712**	**104.8**	**76.9**	**104.2**
2006	670	14	684	103.0	82.4	102.5
2005	599	24	623	92.1	137.1	93.3
2004	631	21	652	104.4	100.0	104.2
2009-2013	3198	46	3245			
2004-2008	3273	81	3354			
1999-2003	3241	107	3348			
<1994	3063	264	3327			
Total	15593	655	16248			

Calendar year ratios for living children are calculated for each interviewer who have at least one interview with a woman respondent. Table A.6[1] presents calendar age ratios for living children by interviewer identifications. Two threshold values are considered in order to determine interviewers who may have bias. First one is based on the age ratio being less than 75 and higher than 125, and the second one is the age ratio being less than 97.1 and higher than 104.8. The second threshold value is determined based on calendar year ratios in 2007 and 2008. Table 5.1.20 indicates percentage of interviewers who may have bias on year of births.

[1] Table is presented in Appendix A.

Table 5.1.20 Number of interviewers who may have bias

Interviewers who may have bias on date of births according to two thresholds		
	Interviewers who may have bias on year of birth	
	Number	**Percentage**
calendar ratio-2007 > 125.0 and calendar ratio-2008 < 75.0		
No	51	83.6
Yes	10	16.4
calendar ratio-2007 > 104.8 and calendar ratio-2008 < 97.1		
No	35	57.4
Yes	26	42.6
Total	**61**	**100.0**

Interviewers whose calendar ratio calculated based on less than three observations are not included in the table.

5.2 RESULTS OF REGRESSION ANALYSES

Especially in social surveys, interviewing and interviewer are main components which have an effect on nonresponse. Many studies have dealt with association between attitudes, behaviors, characteristics of interviewers, and refusal or nonresponse bias, and interviewer variance in nonresponse error variance (Durrant et al. 2010; Loosveldt and Beullens 2014; West and Olson 2010; West et al. 2013). In the light of these studies, it can be said that increasing response rates with quality data is an important measure when evaluating survey quality. In this thesis, interests are "number of completed interviews", "response rate, and "completion rate" for each of the interviewers. Models including these variables, and their explanatory variables are studied using Poisson regression analysis and Logistic regression analysis methods excluding data collection staff who were born in abroad, and aged in 30 and over because of small number of cases.

Note that, this study predominantly focuses on descriptive findings presented in the previous section. Furthermore, even though this section aims to reveal the

association between performance of interviews, which are assumed to be measured with number of completed interviews and completion rates, and selected characteristics of interviewers.

5.2.1 Results of Poisson Regression Analyses

The results of Poisson regression analysis, which are performed to understand relation between performances of interviewers by using "number of completed interviews" and explanatory variables are presented and interpreted in this part. However, the dependency of incorporated independent variables, which is called multicollinearity, is considered before interpreting results of the models.

Strongly correlated independent variables can cause changes in parameter estimates, higher than expected standard errors in regression coefficients, unreasonable results, and low significance values in independent variables (Greene 2003). Some measures, such as correlation coefficient of independent variables, variance inflation factor (VIF), and tolerance values, are used to detect multicollinearity in regression models. In this thesis, VIF values are considered to detect multicollinearity among independent variables.

Table B.1[1] provides collinearity statistics of independent variables in the first regression model. Considering VIF values of independent variables, multicollinearity is not observed. Dummy variables, having values either 1 or 0, are produced for each categorical variable involved in the analysis in order to examine multicollinearity. One category of a categorical variable is excluded for detecting multicollinearity. Results of the models should be interpreted based on that specific category.

Another consideration in Poisson regression model is "offset" variable which is defined in 4.5.1. The dependent variable tested in the model is "number of completed

[1] Table is presented in Appendix B.

household interviews", firstly. Considering same number of completed household interviews for different interviewers, different number of days could be spent for the interviews (see Table A.1[1]). While calculating offset variable, natural logarithm of "total number of days that were spent for household interviews" was used to adjust this effect for each interviewer.

According to outputs of the Poisson regression model, ninety-three cases are employed in the model. Percentages of categorical variables in model, which are determined by regression analysis, are presented with reference categories in Table B.2[2]. This table illustrates descriptive results based on small number of cases. Therefore, results of regression analysis should be interpreted carefully.

In addition to some basic characteristics of interviewers, control variables named "mean number of household members" and "average time of a household interview" are involved in the analysis. These variables are selected with the thought of having an effect on dependent variable, systematically. Table 5.2.1 provides results of Poisson regression analysis for the first model with independent variables involved in the analysis. The model is carried out for all data collection staff who worked in fieldwork of the TDHS-2013. The model is significant according to the significance test ($p\ value = 0.000$).

"Age" is associated with the dependent variable, number of completed household interviews, significantly. Considering relation between age groups, the percent change in the incident rate of "completed household interviews" for data collection staff aged 20-24 is 8%, when compared to the staff aged 25-29.

Looking at incidence ratios for number of completed household interviews, staff whose place of birth in Central region have more tendency to have household

[1] Table is presented in Appendix A.

[2] Table is presented in Appendix B.

interviews completely, compared to staff whose place of birth in East region. The incident rate for the staff whose place of birth in Central is 1.126 times compared to the staff whose place of birth in East region.

Educational status of the staff is a mainly emphasized concern in recruitment processes of surveys. It is obvious that MA/PhD students, and graduated students from any university have higher tendency on having completed household interviews, than university students in class prep-1-2. The percent change in the incident rate of "completed household interviews" for the staff who are MA/PhD students is 38% and for the staff who are graduated from any university is 31%, compared to students in university 1-2-prep classes. Background of the staff in the framework social science is not a significant variable on number of completed household interviews. In other words, it can be concluded that staff who are interested in social science do not create any positive or negative difference on the dependent variable.

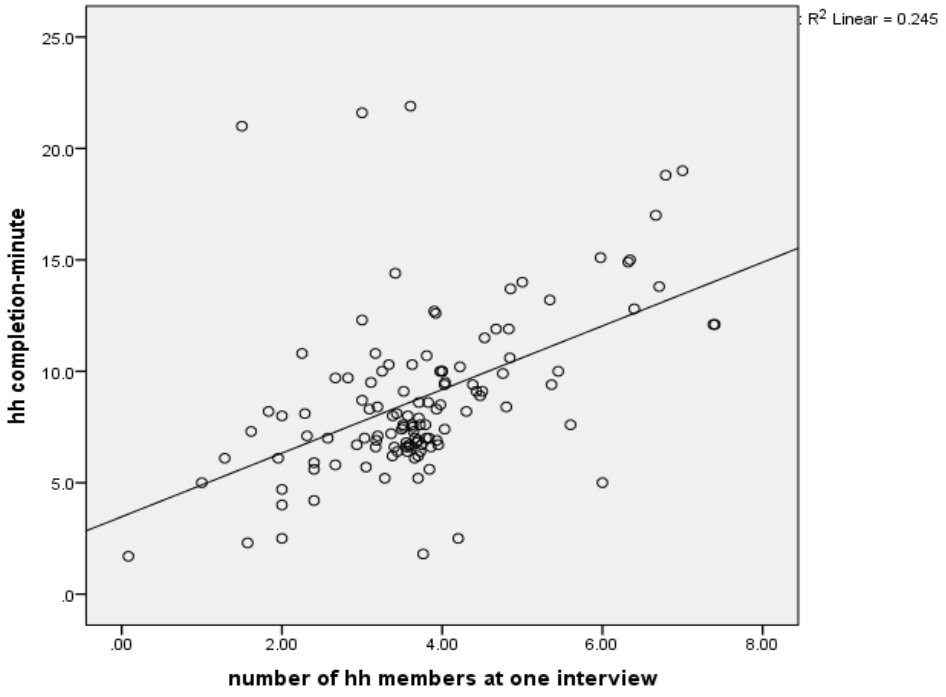
Similar to background of the staff, significance values of language ability (i.e. Kurdish, Arabic, and English) are not statistically significant. Similarly, having at least one household interview in metropolitan areas of Turkey, is not a significant variable on number of completed household interviews.

Looking at survey experience of the staff, staff who has never participated in survey, have not higher incidence risk on the number of completed household interviews, when compared to staff who has ever participated in survey. The incident rate for the non-experienced staff is 0.94 compared to staff who have at least one survey experience.

Control variables named "mean number of household members" and "average time of a household interview" are involved in the analysis in order to observe effect of these variables on number of completed household interviews. It is expected that, number of household interviews affected by both average completion time directly and, mean number of household members indirectly. Number of household members

may be affected by average time of a household interview because of recording information on characteristics of household members in the list of TDHS-2013 Household Questionnaire. However, the variables “average time of a household interview” and, “mean number of household members” are not highly correlated linearly contrary to expectation. Relation between variables with regression line is illustrated in Figure 5.2.1.

Figure 5.2.1. Correlation of Average Time of a Household Interview and Mean Number of Household Members



Mean number of household members is not a significant variable on dependent variable, unexpectedly. As we mentioned in previously, we expect negative relation between mean number of household members and number of completed household interviews. This result may be originated from either logistic problems in the fieldwork, or interrupting of the household interviews. Unfortunately, we do not know break time for household interviews in comparison with women interviews.

The variable "average time of a household interview" is possibly non deterministic, though its significance value is 0.000. The percent change in the incidence rate of number of completed interviews is an increase of 2% for every additional minute in average time.

Table 5.2.1 Results of Poisson Regression Analysis for Model 1

Results of Poisson regression analysis on number of completed household interviews by selected variables: Model 1

Variables in the model	Standard errors	Significance	Exp (B)
Age (reference: 25-29)			
20-24	0.0245	0.002*	**1.081**
Place of birth-five regions (reference: East)			
West	0.0503	0.087	0.917
South	0.0494	0.154	0.932
Central	0.0320	0.000*	**1.126**
North	0.0410	0.213	1.052
Educational status (reference: university student in class prep-1-2)			
MA/PhD student	0.0557	0.000*	**1.384**
Graduated from any university	0.0550	0.000*	**1.309**
University student in class 3-4	0.0653	0.082	1.120
Working status (reference: working)			
Not working	0.0490	0.086	1.088
Social science (reference: yes)			
No	0.0269	0.062	0.951
Ever participated survey (reference: yes)			
No	0.0251	0.011*	**0.938**
Kurdish (reference: no)			
Yes	0.0389	0.082	0.935
Arabic (reference: no)			
Yes	0.0510	0.309	1.053
English (reference: no)			
Yes	0.0274	0.409	1.023
Metropolitan interviewer (reference: yes)			
No	0.0270	0.890	1.004
Mean number of household members	0.0073	0.575	1.004
Average time of household interview	0.0049	0.000*	**1.024**
Intercept	0.0946	0.000*	**1.572**

Number of cases of variables involved in Table 5.2.1 are presented in Table B.2.

In Model 2, control variables are excluded from the Model 1. Significant model employed in order to observe whether any effects of control variables or not.

Differently from the Model 1, staff whose place of birth in West and South regions have less incident rate on completed household interviews when compared to staff whose place of birth in East region. Incident rates for the staff whose place of birth in West and South regions are 0.89 and 0.90, respectively (see Table 5.2.2).

Looking at incident of the variables age, educational status, and status of survey participation remained as significant variables, in line with the Model 1.

Table 5.2.2 Results of Poisson Regression Analysis for Model 2

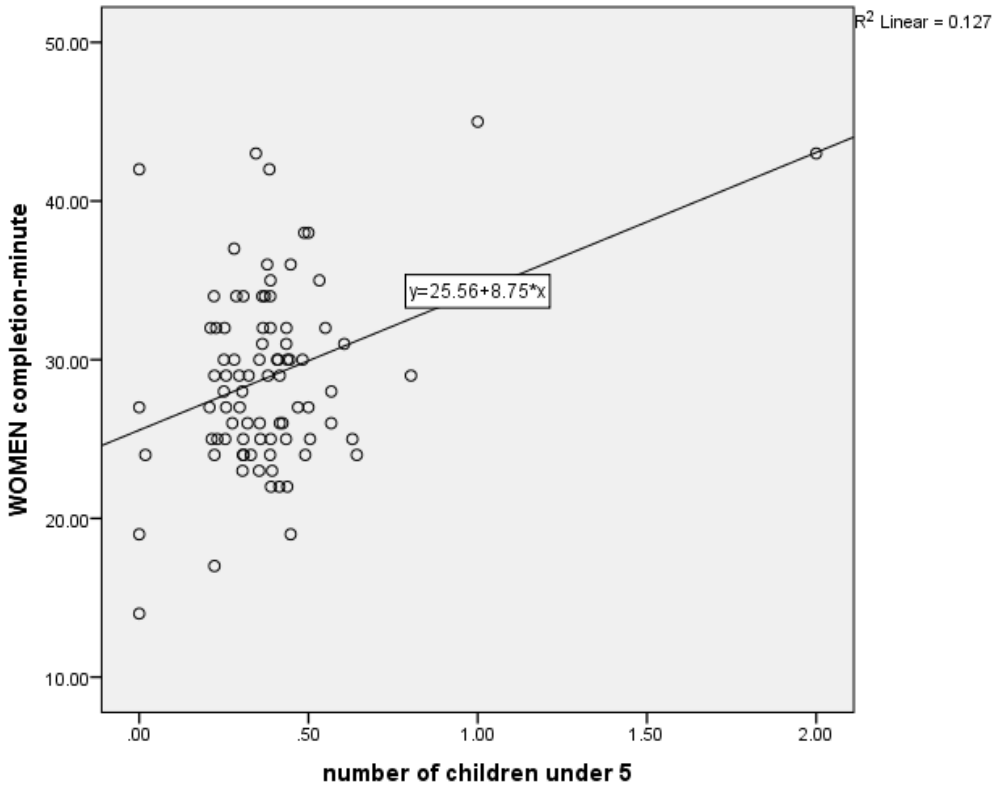
Results of Poisson regression analysis on number of completed household interviews by selected variables: Model 2

Variables in the model	Standard errors	Significance	Exp (B)
Age (reference: 25-29)			
20-24	0.0244	0.002*	**1.078**
Place of birth-five regions (reference: East)			
West	0.0497	0.017*	**0.888**
South	0.0489	0.033*	**0.901**
Central	0.0314	0.004*	**1.095**
North	0.0405	0.580	1.023
Educational status (reference: university student in class prep-1-2)			
MA/PhD student	0.0541	0.000*	**1.312**
Graduated from any university	0.0540	0.000*	**1.259**
University student in class 3-4	0.0648	0.203	1.086
Working status (reference: working)			
Not working	0.0488	0.179	1.068
Social science (reference: yes)			
No	0.0265	0.279	0.972
Ever participated survey (reference: yes)			
No	0.0248	0.001*	**0.924**
Kurdish (reference: no)			
Yes	0.0385	0.365	0.966
Arabic (reference: no)			
Yes	0.0502	0.873	1.008
English (reference: no)			
Yes	0.0272	0.311	1.028
Metropolitan interviewer (reference: yes)			
No	0.0261	0.219	1.033
Intercept	0.0741	0.000*	**2.061**

Similar analysis on “number of completed household interviews” could be employed for “number of completed women interviews”. “Children aged under-five” and “average time of a women interview” are selected as control variables in addition

to interviewer characteristics. Information about nutritional status and anthropometric measures is collected for children aged under five in TDHS-2013. Therefore, it is expected that "mean number of children under five" for each interviewer may have an effect on average time of a woman interview. However, the correlation between these variables is not high, as illustrated with a linear line in Figure 5.2.2.

Figure 5.2.2. Correlation of Average Time of a Women Interview and Mean Number of Children Aged Under Five



Multicollinearity analysis is also performed for "number of completed women interviews" and related independent variables. There is not a matter of

multicollinearity, as VIF values of the variables are smaller than 10 (See, Table B.3[1]). Additionally, descriptive results for Poisson Regression Model 3 are presented in Table B.4[1]. The significant Model 3 includes 69 cases for the analysis on "number of completed women interviews". Offset variable is computed with taking natural logarithm of "number of days spent for women interviews".

Regression results are presented in Table 5.2.3. Survey experience is a significant variable on "number of completed women interviews". The incident rate for the staff who has never participated in surveys is 0.94 compared to the staff who have ever survey experience. Effect of survey experience on completed women interviews is similar to completed household interviews. Data collection staff with no survey experience have less incidence rate on the number of completed women interviews, when compared to the staff who have any survey experience. This unexpected results may be explained with content of survey estimates rather than completion of interview.

Language ability-Arabic is another significant variable on the number of completed interviews based on small number of cases (see Table B.4[1]). The percent change in the incident rate of "number of completed women interviews" is an increase of %83 for each additional children aged under five. This is most probably resulted from willingness of women who have children aged under five in Turkey to complete their interviews.

[1] Table is presented in Appendix B.

Table 5.2.3 Results of Poisson Regression Analysis for Model 3

Results of Poisson regression analysis on number of completed women interviews by selected variables: Model 3

Variables in the model 6.1.3	Standard errors	Significance	Exp (B)
Age (reference: 25-29)			
20-24	0.0294	0.945	1.002
Place of birth-five regions (reference: East)			
West	0.0551	0.596	0.971
South	0.0600	0.995	1.000
Central	0.0363	0.682	0.985
North	0.0464	0.496	0.969
Educational status (reference: university students in class prep-1-2)			
MA/PhD student	0.0641	0.362	0.943
Graduated from any university	0.0620	0.531	0.962
University student in class 3-4	0.0694	0.818	0.984
Working status (reference: working)			
Not working	0.0536	0.046*	**1.113**
Social science (reference: yes)			
No	0.0328	0.050	1.066
Ever participated survey (reference: yes)			
No	0.0288	0.031*	**0.940**
Kurdish (reference: no)			
Yes	0.0447	0.768	0.987
Arabic (reference: no)			
Yes	0.0631	0.024*	**0.867**
English (reference: no)			
Yes	0.0358	0.054	0.933
Metropolitan interviewer (reference: yes)			
No	0.0320	0.317	0.968
Mean number of children aged under five			
	0.1153	0.000*	**1.827**
Average time of a women interview	0.0031	0.535	0.998
Intercept	0.1313	0.000*	**2.198**

Number of cases of variables involved in Table 6.1.3. are presented in Table B.4.

In Poisson Regression Model 4, control variables are excluded from the Model 3. Working status, survey experience, language ability-Arabic, and language ability-English become significant variables, when control variables are excluded.

It can be concluded from Table 5.2.4, the incident rate for the staff who are not working is 1.131 times compared to staff who are working. As expected, staff who are not working have more tendency to have completed women interviews. The incident

rate for the staff who had no survey experience is 0.92. It can be concluded that, non-experienced staff have less tendency to have completed women interviews. Similar to household interviews, this result may be associated with content of survey estimates. Language ability-English has become significant based on small number of cases when control variables excluded from the Poisson Regression Analysis Model 3.

Table 5.2.4 Results of Poisson Regression Analysis for Model 4

Results of Poisson regression analysis on number of completed household interviews by selected variables: Model 4

Variables in the model 6.1.1.3	Standard errors	Significance	Exp (B)
Age (reference: 25-29)			
20-24	0.0289	0.677	0.988
Place of birth-five regions (reference: East)			
West	0.0546	0.581	0.970
South	0.0601	0.988	1.001
Central	0.0359	0.837	0.993
North	0.0464	0.336	0.956
Educational status (reference: university students in class prep-1-2)			
MA/PhD student	0.0621	0.063	0.891
Graduated from any university	0.0597	0.109	0.909
University student in class 3-4	0.0693	0.888	0.990
Working status (reference: working)			
Not working	0.0530	0.021*	**1.131**
Social science (reference: yes)			
No	0.0314	0.121	1.050
Ever participated survey (reference: yes)			
No	0.0286	0.003*	**0.919**
Kurdish (reference: no)			
Yes	0.0441	0.762	0.987
Arabic (reference: no)			
Yes	0.0627	0.007*	**0.843**
English (reference: no)			
Yes	0.0320	0.000*	**0.876**
Metropolitan interviewer (reference: yes)			
No	0.0316	0.503	0.979
Intercept	0.0827	0.000*	**2.808**

5.2.2 Results of Logistic Regression Analyses

As it has been mentioned at the beginning of the chapter, other interests are "response rate" and "completion rate" for interviewers, within the context of performance. A binary outcome variable is constructed based on the "response rate on household interviews", firstly. Independent variables that are considered to have an effect on performance rates are the same in Poisson regression analyses. Additionally, "number of days which were spent for household interviews" involved in the Logistic regression models. First binary outcome variable is considered as:

$$f(x) = \begin{cases} 0, & household\ \ response\ rate < 0.95 \\ 1, & household\ \ response\ rate \geq 0.95 \end{cases}$$

Reference categories for the Logistic regression Model 1 are determined based on descriptive results presented in Table B.5. The model is significant for the selected independent variables ($p\ value = 0.006$). Logistic regression Model 1 explains approximately 53% of the variation in relative risks of "household response rate".

Table 5.2.5 demonstrates results of the Logistic Regression Model 1. "Number of days which were spent for household interviews" and "average time of a household interview" are significant variables on receiving 95% household response rate. Considering odds ratios for these variables, it can be concluded that the odds ratio on receiving 95% response rate on household interviews increases with a unit increase in average time of a household interview whereas decreases with a one unit increase in number of days that were spent for household interviews. Odds ratios of average time of a household interview and number of days which were spent for household interviews are 1.367 and 0.956, respectively. This result is probably originated from reluctance of interviewers with increasing days spent for the fieldwork. This model is carried out with the "enter" method of Logistic regression analysis in SPSS.

Table 5.2.5 Results of Logistic Regression Analysis for Model

Results of logistic regression analysis on household response rate by selected independent variables: Logistic Regression Model 1

Independent variables	Exp(B)	Significance value
Age (reference= 25-29)		
15-24	2.314	0.201
Place of birth-five regions(reference=South)		0.198
West	0.760	0.830
Central	7.157	0.068
North	1.827	0.614
East	0.932	0.949
Educational status (reference=MA/PhD student)		0.411
Graduated from any university	1.031	0.976
University student in class 3-4	0.247	0.270
University student in class prep-1-2	2.397	0.557
Social science (reference=yes)		
No	0.827	0.791
Ever participated survey (reference=No)		
Yes	1.967	0.296
Working status (reference=working**)**		
Not working	0.423	0.533
Language ability-Kurdish (reference=no)	0.213	0.155
Yes		
Language ability-Arabic (reference=yes)		
No	6.160	0.239
Language ability-English (reference=no)		
Yes	0.420	0.236
Metropolitan interviewer (reference=yes)		
No	2.542	0.190
Average time of a household interview	**1.367**	0.032*
number of days spent for household interviews	**0.956**	0.007*
Mean number of household members	1.061	0.542
Constant	0.333	0.727

R^2 (Nagelkerke): 0.526

Logistic Regression Model 2 is performed with Forward: LR method in order to determine significant variables on household response rate with 95% boundary. The model is completed with two steps. In Model 1, average time of a household interview is only one significant variable on the dependent variable. One minute increase in average time of a household interview has around 42% odds ratio on the incidence of

receiving 95% response rate on household interviews. The result may be interpreted within the interruption of interview. Interrupted household interviews are completed in shorter period of time inevitably, when compared to completed interviews.

In step 2, "number of days which were spent for household interviews" is involved in addition to "average time of a household interview". One day increase in the number of days spent for household interviews have an effect on receiving 95% completion rate with %39 odds ratio. It is obvious that, as number of days spent for interviews increases response rates decreases. As expected, the results are in line with this view. Finally, the model specified determinants of receiving 95% response rate: "number of days spent for household interviews", and "average time of a household interview".

Table 5.2.6 Results of Logistic Regression Analysis for Model 2

Results of logistic regression analysis on household response rate by selected independent variables: Logistic Regression Model 2

Independent variables	**Exp(B)**	**Significance**	**R^2 (Nagelkerke)**
Step 1			0.231
Average time of a household interview	**1.421**	0.001*	
Constant	**0.100**	0.008*	
Step 2			0.331
Average time of a household interview	**0.971**	0.005*	
Number of days spent for household interviews	**1.392**	0.003*	
Constant	0.366	0.301	

Similar analysis on "response rates on household interviews" could be performed on "completion rates on household interviews". Second binary outcome variable is considered as:

$$g(x) = \begin{cases} 0, & household\ \ completion\ rate < 0.85 \\ 1, & household\ \ completion\ rate \geq 0.85 \end{cases}$$

Table B.6 [1] shows descriptive results for the reference categories for the Logistic Regression Model 3. According to outputs of the model, model is not significant (significance value = 0.121). Therefore, Forward: LR method is used to determine explanatory variables on "receiving 85% completion rate on household interviews". The model is completed with two steps.

Different from the previous models, being metropolitan interviewer have an effect on the receiving 85% completion rate of household interviews. Staff who have no household interview in metropolitan areas of Turkey, have higher odds ratio on number of completed household interviews. The odds of receiving 85% completion rate for household interviews for interviewers who have no household interviews in metropolitan regions of Turkey is 4.07. This can be explained with higher nonresponse in metropolitan provinces in Turkey compared to other regions. Number of completed household interviews affect household level nonresponse, directly.

Table 5.2.7 Results of Logistic Regression Analysis for Model 4

Results of logistic regression analysis on household completion rate by selected independent variables: Logistic Regression Model 4

Independent variables	**Exp(B)**	**Significance**	**R^2 (Nagelkerke)**
Step 1			0.338
Average time of a household interview	**1.611**	0.000*	
Constant	**0.026**	0.000*	
Step 2			0.419
Average time of a household interview	**1.512**	0.001*	
Metropolitan interviewer (reference=yes)			
No	4.073	0.006	
Constant	**0.022**	0.000*	

Similar analysis is applied on receiving 90% completion rate on women interviews. Reference categories for the Logistic regression Model 5, are selected

[1] Table is presented in Appendix B.

according to Table B.6. The dichotomous variable for completion rate of women interviews as:

$$h(x) = \begin{cases} 0, & women\ completion\ rate < 0.90 \\ 1, & women\ \ completion\ rate \geq 0.90 \end{cases}$$

Results for the regression model with “enter” method of logistic regression analysis are presented in Table 5.2.8 The significant model explains 37% of the total variation. Survey experience, being metropolitan interviewer for women interviews, and average time of a woman interview significant variables on receiving 90% completion rate of women interviews. One minute increase in average time of a woman interview increases the probability of receiving 90% completion rate for women interviews with 20% odds ratio. This may be explained with increase in average time of a woman interview cause completion of woman interviews. In contrast to previous models, staff who has ever participated any survey have less tendency on receiving 90% completion rate for women interviews, when compared to the staff who have no survey experience. The odds ratio for the staff who have at least one survey experience is 0.14.

Table 5.2.8 Results of Logistic Regression Analysis for Model 5

Results of logistic regression analysis on women completion rate by selected independent variables: Logistic Regression Model 5

Independent variables	Exp(B)	Significance value
Age (reference= 25-29)		
15-24	1.095	0.901
Place of birth-five regions(reference=South)		0.890
West	3.363	0.547
Central	1.487	0.822
North	0.849	0.929
East	1.724	0.770
Educational status (reference= University student in class 3-4)		0.649
MA/PhD student	5.190	0.213
Graduated from any university	3.316	0.287
University student in class prep-1-2	3.564	0.424
Social science (reference=no)		
Yes	1.536	0.604
Ever participated survey (reference=No)		
Yes	**0.140**	0.017*
Working status (reference=not working**)**		
Working	0.304	0.426
Language ability-Kurdish (reference=yes)	0.300	0.318
No		
Language ability-Arabic (reference=yes)	0.733	0.858
No		
Language ability-English (reference=no)	0.966	0.969
Yes		
Metropolitan interviewer (reference=no)	**0.131**	0.044*
Yes		
Average time of a women interview	**1.201**	0.019*
number of days spent for women interviews	1.013	0.563
Mean number of children aged under five	0.075	0.128
Constant	0.081	0.494
R^2 (Nagelkerke): 0.370		

Table 5.2.9 presents the results of the model derived from LR Forward Method. This model explains only around 9% of the change in probabilities on receiving 90% completion rate on women interviews. Average time of a woman interview is only one significant variable on receiving 90% completion rate for women interviews.

Table 5.2.9 Results of Logistic Regression Analysis for Model 6

Results of logistic regression analysis on household completion rate by selected independent variables: Logistic Regression Model 6			
Independent variables	**Exp(B)**	**Significance**	**R^2 (Nagelkerke)**
Step 1			0.088
Average time of a women interview	**1.105**	0.049*	
Constant	0.117	0.136	

CHAPTER 6

CONCLUSION AND DISCUSSION

Evaluating survey process in terms of ensuring better data quality has been an attractive field of inquiry for survey statisticians especially in the last decades. The problem of evaluating survey quality, and improving it have been frequently studied by many researchers since 1940s.

The term survey quality stands for “fitness for use” that covers the concepts of accuracy, timeliness, richness of detail, comparability and accessibility of the data, and level of confidentially protection within the context of survey. As a close relation between total survey error and survey quality have exhibited by many studies (Bethlehem 2009; Thompson 2012; Biemer and Lyberg 2013). Survey quality can be considered as a significant function of total survey error. Therefore, rates, ratios, and percentages associated with the sampling and non-sampling errors of the survey should be considered when evaluating quality.

Inevitably, all stages covered in survey process contribute to total survey error. However, data collection staff of the survey have a profound effect on survey quality. Interviewers, who interact with the respondents in person, are main actors of interviewing and consequently related bias components. Variance of interviewer, namely interviewer variability, on survey estimates can be originated from not only mode of administration but also characteristics, attitudes, expectations, preferences, and behaviors of interviewers.

Interviewer variance, which is usually rooted from unobserved characteristics of interviewers, is associated with both systematic and variable errors. Systematic errors might be resulted from direct observations of interviewers on sample units, whereas variability is originated from differences between interviewers. Moreover, interviewer characteristics, such as age, gender, social class, survey experience, and educational level may both affect response rates and cause bias on estimates. More

clearly, either respondents may not be willing to answer survey questions, or interviewers may tend to skip questions due to their expectations or some cases both.

In the light of previous body of literature dealing with relation between survey quality and survey interviewer, importance of analysing interviewer profile, and their possible effects on survey results, this thesis focuses on the profile of 2013 Turkey Demographic and Health Survey data collection staff applicants from the beginning of the application process to the fieldwork. Furthermore, it investigates performance related indicators and analyses related to interviewer characteristics. Additionally, displacement of children's birth date is evaluated within the context of interviewer bias.

The main aims of this study are to reveal characteristics of TDHS-2013 applicants during the recruitment process, to derive some performance measures for TDHS-2013 main data collection staff, and to emphasize on possible effects of the staff characteristics on these measures.

One of the main findings is the mere existence of non-participants of the personal interviews covered in recruitment process even though being invited. The possible reason for this is that TDHS-2013 fieldwork is a continuous process that lasts around 3 months, when job-related and educational-related examinations come across. Other main finding is related to missing values originated from lack of information on TDHS-2013 recruitment forms. It should be noted that interpretations about the data collection staff in this study may be influenced by the existence of many missing values as well as number of cases which is relatively small.

Descriptive analyses evaluate recruitment process of TDHS-2013. Results indicate that women graduated from university, aged 20-24, born in Central region of Turkey, without survey experience, and interested in social sciences constitute the largest group within applicants. This pattern is also seen for non-participants of the personal interview. This expected result is possibly associated with the receiving fieldwork advertisements to applicants who mostly live in Ankara and/or university student in Ankara. In addition to these characteristics, women who are not working, without any social insurance or scholarship, familiar to computers, lacking language

abilities in terms of Kurdish and Arabic, stated "to gain experience" as a reason for their TDHS-2013 participation, and also stated that they could go anywhere within the fieldwork regions constitute the largest group of personal interview participants.

Another important finding is data staff members having additional tasks during the fieldwork, even though each having pre-assigned positions they had additional tasks during the fieldwork. Results show that most of the data collection staff who had at least one interview in any time during the fieldwork also edited at least one questionnaire. This is due to expectation of HUIPS from field editors to have at least one interview in order to have a full knowledge of questionnaires.

Besides, this thesis covers comparative results, some of which are associated with proposed and final fieldwork positions, and desired and final sample regions of main data collection staff, while some others are related to same information categories in different recruitment forms. Results show most data collection staff who were proposed for a specific position for the fieldwork, worked as the same position in main fieldwork. Also, language ability of data collection staff and their main fieldwork regions are compared in this thesis. More than half of the data collection staff who knows Kurdish were assigned to provinces in East region. As a comparison of the recruitment forms, region of place of birth and language ability of the candidates are used. Small number of cases differ in the recruitment forms for these information.

Furthermore, performance indicators are calculated for each member of data collection staff within the framework of descriptive results of this thesis. Response and completion rates are calculated for household and women interviews for each member of the staff. Some control variables, such as mean number of household members, mean number of children aged under five, fieldwork assignments, and fieldwork provinces which should be considered along with completion and response rates, have been added to descriptive results. Average time of a household interview and a woman interview, number of completed interviews per day, and number of total interviews per day for each interviewer are considered as interviewer specific performance indicators.

In addition to descriptive results mentioned above, "displacement of children birth dates" based on calendar year ratios has been evaluated in terms of possible

interviewer bias for the fifth and sixth calendar years preceding the survey. The calendar year ratios have been calculated for each interviewer in order to determine interviewers who might have had bias on “date of birth information” coming from their women interviews. Number of interviewers who might have had bias on this estimate varies according to specified thresholds.

Performance indicators, namely number of completed interviews, response and completion rates for household and women interviews, are main interests for the Poisson and logistic regression analyses. Poisson regression analysis is preferred over other methods to explain relation between number of completed interviews and interviewer characteristics based on incidence rate ratios. Whereas, logistic regression analysis is chosen to explain relation between response and completion rates and interviewer characteristics based on odds ratios. Control variables that are presented in descriptive results are used in regression analyses, too.

Results of Poisson regression models indicate that women aged 20-24 rather than women aged 25-29, women whose place of birth is Central region instead of East region, interviewers who are MA/Phd students or who are graduated from university compared to university students have more tendency to have completed household interviews. Additionally, experience of data collection staff is included in all models in order to observe its effect. Results show that data collection staff who have never participated in a survey have less ratios on incidence of completed household interviews, when compared to the staff who have at least one survey experience.

Variables that appears as significant in the models for number of completed household interviews are mostly not significant in the models for number of completed women interviews. This difference may be rooted from the fact that respondents mostly agree on women interviews are being able to complete after household interviews are completed. Therefore, models related to number of completed women interviews may not reveal the difference between completion and other possible interview results with the help of interviewer characteristics. However, an interesting result associated with number of completed women interviews is based on “mean number of children aged under five”. The variables are calculated for each interviewer

with at least one-woman interview. Results show that as the average number of children aged under five among the interviewed women for each interviewer increases, the tendency to have more completed women interviews also increases. This may be related to willingness of women to tell their birth histories in the last five years preceding the survey. Furthermore, effect of working status of interviewers is also observed on number of completed women interviews.

Logistic regression analyses focused on specified response and completion rates of interviewers indicate effect of the fieldwork related variables, namely average time of an interview or number of days which were spent for the interviews calculated for each interviewer, rather than interviewer characteristics. Also, having at least one interview in metropolitan provinces in Turkey has become significant variable on household level completion rate. This might be associated with higher level of nonresponse in metropolitan provinces.

There is an ongoing need for in depth quality assessments when evaluating survey outputs. Survey quality assessments within the framework of data collection staff has been a neglected aspect in Turkey. In the light of the findings, several suggestions both in technical manner and applied manner can be made for further data collection staff assessments when evaluating quality of surveys. In relation to that, more detailed data of data collection staff and survey estimates that cover information of the staff are crucial in order to make accurate analyses on interviewer characteristics.

In relation to technical suggestions, recruitment forms collecting not only information on interviewer characteristics, but also information on attitudes, behaviors, and expectations of data collection staff will allow making further analyses. Additionally, questions which are designed to measure interviewers′ interests to the fieldwork should be added in these forms as well as their previous survey experiences. Recruitment forms should be well-designed so that analyses on data collection staff could be made properly. Recruitment form suggestions that will be beneficial for further interviewer assisted surveys as well as TDHS were prepared according to these purposes (see Appendix C).

Findings also reveal necessity of standardization of recruitment forms. Any applicant should be given only one identification number that is used in any relevant form including information about that specific applicant. All required information on recruitment forms such as “survey experience” and “computer ability” should be defined properly in order to make more accurate interpretations. Information of applicants should be stored not only in paper but also in computer based records which is crucial in order to make accurate analysis. Additionally, number of open-ended questions should be reduced as far as possible.

In relation to analysing survey interviewers, a person level contact history over a finite time period is crucial in order to explain variance between interviewers. Therefore, person level contact history data should be covered in main data sets of surveys as well as TDHS. Another important finding is related to calculated average time of an interview for interviewers. Average interview time is a fluctuating variable in TDHS. Therefore, sections that are not changeable in terms of respondent characteristics should be preferred for time related interviewer studies. Future studies that focus on some survey measures such as age of women, age of children and duration of interview will light to explain bias based on both field staff and field team.

To bring applicable forward recommendations which are related to survey interviewers are among objectives of this study. Suggestions can vary according to steps included in survey process.

Firstly, fieldwork advertisements should be received universities both in Ankara and in cities other than Ankara in order to observe interviewer variability resulted from different regions. In this step, another advice associated with the fieldwork time can be given. Fieldwork period should be determined under the survey constraints, surely. However periods of exams in universities and other education related examinations and fieldwork of the survey should be taken into consideration when deciding the fieldwork period.

Strategies, especially when applied in staff recruitment processes, are crucial in terms of data quality and reducing interviewer bias on survey estimates. Interpersonal skills, ability of persuasion and making contact with another person,

matching characteristics of interviewers and sample units should be considered in the selection process. Applicants who have high level of confidence and communication skills should be preferred with the thought of getting higher response rate.

Individuals who knows Kurdish and Arabic fluently should be kept in personal interviews in order to specify applicants who know these languages properly. Language ability should be measured by these individuals instead of applicants' own statements.

Training the data collection staff before the fieldwork of the survey is a manageable process. Therefore, appropriate probing and clarifying techniques for open-ended and sensitive questions, adhering to written questions when asking, and generating no bias on responses should be among main emphasized issues during the training process. Note that, survey questions should be firstly discovered by candidates. Additionally, doorstep interaction strategies in terms of gaining cooperation with the sample unit should be emphasized during the training. Necessity of maintaining respondent motivation should be explained as part of training. This process should be covered all possible situations which may be experienced during the fieldwork. As a last part of the training, pilot study which is performed at the end of the training should be evaluated accurately in order to specify data collection staff.

Performances of data collection staff should be monitored continuously during the fieldwork by visiting. This is required for both controlling the fieldwork and maintaining the motivation of the data collection staff. Additionally, interviewer's observations about the interview which are collected in women questionnaire of TDHS-2013 should be gathered with closed questions rather than open ended questions. This may be useful to evaluate interviewers' observations about the interview properly.

Interviews with the data collection staff in qualitative manner will be useful when evaluating data collection staff within the context of post survey quality assessments. Comments and observations of the field staff, and evaluation of their own performances during the fieldwork should be gathered after the fieldwork so that more accurate analyses could be performed on survey interviewers. Comparable quantitative

and qualitative studies will be valuable for further studies in order to understand association between survey quality and data collection staff. Additionally, revisiting to interviewed households and evaluation of the interviewers with the household members may be useful in order to identify ideal interviewer profile for further studies.

Consequently, this thesis provides contributions to the existing data quality related studies. Secondly, to the best of our knowledge, it is the first study in Turkey which aims to emphasize interviewer characteristics and derive performance measures in terms of quality assessments. Hence, the thesis provides new evidence on the contribution of interviewers in the survey quality on the Turkey basis. We have mainly focused on 2013 Turkey Demographic and Health Survey. However, suggestions on recruitment process and further studies can be applied for other interviewer assisted social surveys.

This study reveals necessity of examining interviewer characteristics, deriving performance measures of interviewers, and comparability of survey results and interviewer characteristics when assessing survey quality related indicators. It is expected that this thesis will fill the gap in the literature and light the way for future studies.

REFERENCES

ANDERSON, R., J. KASPER and M. FRANKEL. "Total survey error: Applications to improve health surveys." Jossey-Bass Publishers, San Francis, 1979.

ASSAEL, H. and J. KEON. "Nonsampling vs. sampling errors in survey research." *The Journal of Marketing*, 1982: 114-123.

AYHAN, H. O. "Sources of Nonresponse Bias in 1978 Turkish Fertility Survey." Turkish Journal of Population Studies, 2-3, 1981: 104-148.

AYHAN, H. O. "Survey Nonresponse Models and Applications in Turkey." In Official Statistics in a Changing World, Stockholm, Statistics Sweden Press, 1998: 155-158.

BAILAR, B.A. and T. DALENIUS. "Estimating the response variance components of the US Bureau of the Census' survey model." *Sankhyā: The Indian Journal of Statistics, Series B*, 1969: 341-360.

BARON, R. A. "Interviewers' Moods and Evaluations of Job Applicants: The Role of Applicant Qualifications." *Journal of Applied Social Psychology, 23(4),* 1993: 253-271.

BALLOU, J. and F. K. DEL BOCA. "Gender interaction effects on survey measures in telephone interviews." *In annual meeting of the American Association of Public Opinion Research*, Mason, Ohio, 1980.

BEATTY, P. "Understanding the standardized/non-standardized interviewing controversy." *Journal of Official Statistics*, *11*(2), 1995: 147.

BEEBE, T. J., M. E. DAVERN, D. D. MCALPINE, K. T. CALL, T. H. ROCKWOOD. "Increasing response rates in a survey of Medicaid enrollees: the effect of a prepaid monetary incentive and mixed modes (mail and telephone)." *Medical Care*, *43*(4), 2005: 411-414.

BELLHOUSE, D. R. "London Plague Statistics in 1665." *Journal of Official Statistics*, *14*(2), 1998: 207.

BENTLEY, M., J. M. HILL, C. REISER, S. STOKES and A. MEIER. "2010 Census Quality Survey Final Report." United States Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau, 2011.

BERK, M. L. and A. B. BERNSTEIN. "Interviewer characteristics and performance on a complex health survey." *Social Science Research*, *17*(3), 1988: 239-251.

BETHELEM, J. “Applied survey methods: A Statistical Perspective.” John & Wiley Sons, Vol. 558, 2009.

BIEMER, P. P., L. STOKES. “The Optimal Design of Quality Control Samples to Detect Interviewer Cheating.” *Journal of Official Statistics*, Vol. 5, No. 1, 1989:23-40.

BIEMER, P. P. and D. TREWIN. “A review of measurement error effects on the analysis of survey data.” *Survey measurement and process quality*, 1997: 601-632.

BIEMER, P. P. and L. E. LYBERG. “Introduction to Survey Quality.” John Wiley & Sons, Inc., Hoboken, New Jersey, 2003.

BIEMER, P. P. “An analysis of classification error for the revised Current Population Survey employment questions.” *Survey Methodology, 30*(2), 2004: 127-140.

BLOM, A. G. and KORBMACHER J. M. “Measuring Interviewer Characteristics Pertinent to Social Surveys: A Conceptual Framework.” Survey Methods: Insights from the Field, 2013.

BOWLEY, A. L. “Working-class households in reading.” *Journal of the Royal Statistical Society, 76*(7), 1913: 672-701.

BOWLING, A. “Mode of questionnaire administration can have serious effects on data quality.” Journal of public health, 27 (3), 2005: 281-291.

BRACKSTONE, G. “Managing Data Quality in a Statistical Agency.” *Survey Methodology, Vol. 25, No. 2*, 1999: 139-149.

CANNEL, C. and R. KHAN. “Interviewing.” The Handbook of Social Psychology, Vol. 2, Addison-Wesley, Reading, MA, 1968: 526-595.

CANNEL, C. F., P. V. MILLER, L. OKSENBERG. “Research on Interviewing Techniques.” American Sociological Association, Sociological Methodology, Vol. 12, 1981:389-437.

CAMPANELLI, P., P. STURGIS and S. PURDON. “Can you hear me knocking? and investigation into the impact of interviewers on survey response rates.” National Centre for Social Research, 1997.

CIALDINI, R. B. “Influence: The new psychology of modern persuasion.” New York: Quill, 1984.

COCHRAN, W. G. “Sampling techniques.” 3rd Edition, John Wiley & Sons, 1977.

CROSBY, P. B. “Quality is free: The art of making quality certain.” Signet, 1980.

DALENIUS, T. “Elements of Survey Sampling.” Swedish Agency for Research Cooperation with Developing Countries, Stockholm, Sweden, 1985.

DAS, M., W. K. NEWEY and F. VELLA. “Nonparametric estimation of sample selection models.” *The Review of Economic Studies*, *70*(1), 2003: 33-58.

DAVIS, R. E., M. P. COUPER, N. K. JANZ, C. H. CALDWELL and K. RESNICOW, “Interviewer effects in public health surveys.” *Health education research, 25(1),* 2010:14-26.

DAYTON, C. M. “Logistic Regression Analysis.” 1992.

DEMING, W. E. “Some principles of Shewhart methods of quality control.” *Mechanical Engineering*, *66*(2), 1944.

DEMING, W. E. “Out of the crisis.” Massachusetts Institute of Technology, Center for advanced engineering study, Cambridge, MA, 1986: 510.

DIJKSTRA, W. and J. VAN DER ZOUWEN. “Styles of interviewing and the social context of the survey-interview.”, *Social information processing and survey methodology*, 200-211, Springer New York, 1987.

DILLMAN, D. A. and L. M. CHRISTIAN, “Survey mode as a source of instability in responses across surveys.” *Field methods, 17*(1), 2005: 30-52.

D’ORAZIO, M., M. DI ZIO, M. SCANU. “Old and new approaches in statistical matching when samples are drawn with complex survey designs.” *Proceedings of the 45th “Riunione Scientifica della Societa’Italiana di Statistica”,* Padova, 2010: 16-18.

DUAN, N., W. G. MANNING, C. N. MORRIS and J. P. NEWHOUSE. “A comparison of alternative models for the demand for medical care.” *Journal of business & economic statistics*, *1*(2), 1983: 115-126.

DURBINS, J. and A. STUART. “Differences in response rates of experienced and inexperienced interviewers.” *Journal of the Royal Statistical Society. Series A (General), 114*(2), 1951: 163-206.

DURRANT G. B., R. M. GROVES, L. STAETSKY and F. STEELE. “Effects of Interviewer Attitudes and Behaviors on Refusal in Household Surveys.” Public Opinion Quarterly, 2010.

DYKEMA, J., J. M. LEPKOWSKI and S. BLIXT. "The effect of interviewer and respondent behavior on data quality: Analysis of interaction coding in a validation study." *Survey measurement and process quality*, 1997: 287-310.

EUROSTAT, "Assessment of the Quality in Statistics." General Standard Report, April 4-5, Luxembourg, 2000.

FELDMAN, J. J., H. HYMAN and C. W. HART. "A field study of interviewer effects on the quality of survey data." Public Opinion Quarterly, 15(4), 1951: 734-761.

FISHER, R. J. "Social desirability bias and the validity of indirect questioning." *Journal of consumer research*, 20(2), 1993: 303-315.

FLORES-MACIAS, F. and C. LAWSON. "Effects of interviewer gender on survey responses: Findings from a household survey in Mexico." International Journal of Public Opinion Research, 20(1), 2008: 100-110.

FOWLER JR, F. J. and T. W. MANGIONE. "Standardized survey interviewing: Minimizing interviewer-related error." Vol. 18., Sage, 1990.

FOWLER JR, F. J. "Reducing Interviewer-Related Error Through Interviewer Training, Supervision, and Other Means." *Measurement errors in surveys*, 1991: 259-278.

FREEMAN J. and E. W. BUTLER. "Some sources of interviewer variance in surveys." *Public Opinion Quarterly*, *40*(1), 1976: 79-91.

FULLER, W. A. "Measurement error models." John Wiley & Sons, Vol. 305, 2009.

FUSCH, V. R. "The future of health economics." *Journal of Health Economics*, *19*(2), 2000: 141-157.

GREENBERG, B. S. and S. L. STOKES (1990). "for a Telephone Survey." Journal of Official Statistics, 6(4), 1990: 421-435.

GREENE, W. H. "Econometric analysis." Pearson Education India, 2003.

GROVES, R. M. and N. H. FULTZ. "Gender effects among telephone interviewers in a survey of economic attitudes." *Sociological Methods & Research*, 14(1), 1985: 31-52.

GROVES, R. M. "Survey costs and survey errors." New York, 1989.

GROVES, R. M. and M. COUPER. "Nonresponse in Household Interview Surveys." Wiley-Interscience, New York, 1998.

GROVES, R. M. and K. A. MCGONAGLE. “A Theory-Guided Interviewer Training Protocol Regarding’ Survey Participation.” *Journal of Official Statistics*, *17*(2), 2001: 249.

GROVES, R. M. “Survey nonresponse.” Vol. 326, Wiley-Interscience, 2002.

GROVES, R. M. “Survey errors and survey costs.” Vol. 536, John Wiley & Sons, 2004.

GROVES, R. M., P. STANLEY and S. DIPKO. “The role of topic interest in survey participation decisions.” Public Opinion Quarterly, 68.1, 2004: 2-31.

GROVES, R. M. and E. PETYCHEVA. “The Impact of Nonresponse Rates on Nonresponse Bias, A Meta-Analysis.”, *Public Opinion Quarterly, 72(2),* 2008: 167-189.

GROVES, R. M., F. J. FOWLER, M. P. COUPER, J. M. LEPKOWSKI, E. SINGER and R. TOURANGEAU. “Survey Methodology.” A John Wiley & Sons, Inc., Publication, 2009.

GROVES, R. M. and L. LYBERG. “Total survey error: Past, present and future.” *Public Opinion Quarterly, 74(5),* 849-879.

GROVES, R. M. and M. P. COUPER. “Nonresponse in household interview surveys.” John Wiley & Sons, 2012.

GUBRIUM, J. F. and J. A. HOLSTEIN. “From the individual interview to the interview society.” *Postmodern interviewing*, 2003: 21-50.

HANSEN, M., W. HURWITZ and M. BERSHAD. “Measurement Errors in Censuses and Surveys.” Bulletin of the Statistical Institute, Vol. 38, No. 2, 1961: 359-374.

HANSEN, M. H., W. N. HURWITZ and L. PRITZKER. “The estimation and interpretation of gross differences and the simple response variance.” Bureau of the Census, 1963.

HANSEN, M. H., T. DALENIUS and B. J. TEPPING. “The development of sample surveys of finite populations.” In *A Celebration of Statistics*, Springer New York, 1985: 327-354.

HANSEN, K. M. “The effects of incentives, interview length, and interviewer characteristics on response rates in a CATI-study.” *International Journal of Public Opinion Research*, *19*(1), 2007: 112-121.

HANSON, R. H. and E. S. MARKS. “Influence of the Interviewer on the Accuracy of Survey Results.” Journal of American Statistical Association, 53 (283), 635-655.

HATCHETT, S. and H. SCHUMAN. “Race of Interviewer Effects upon White Respondents.” *Public Opinion Quarterly*, *39*(4), 1975: 523-528.

HECKMAN, J. J. “Statistical models for discrete panel data.” Department of Economics and Graduate School of Business, University of Chicago, 1979.

HEERINGA S. G., B. T. WEST, and P. A. BERGLUND. “Applied Survey Data Analysis.” Chapman and Hall, CRC Press, Boca Raton, 2010.

HOUSE, S. J., F. T. JUSTER, R. L. KAHN, H. SCHUMAN and E. SINGER. “A Telescope on Society.” The University of Michigan Press, 2004.

HOX, J., E. DE LEEUW, M. P. COUPER, R. M. GROVES, W. DE HEER, V. KUUSELA and J. MARTIN. “The influence of interviewers’ attitude and behavior on household survey nonresponse: An international comparison.” *Survey nonresponse*, 2002: 103-120.

HUIPS, “Turkey Demographic and Health Survey 2013.” Ankara, 2014.

INSTITUTE FOR RESOURCE DEVELOPMENT. “An Assessment of DHS-I Data Quality.” DHS Methodological Reports, No. 1., Maryland, 1990.

ISAAC, S. and W. B. MICHAEL. “Handbook in research and evaluation.” 1971.

ISHIKAWA, K. “Guide to quality control.” Asian Productivity Organization, 1982.

JAPEC, L. “Quality Issues in Interview Surveys-Some Contributions.” *Bulletin de méthodologie*, 2006.

JURAN, J. M. and F. M. GRYNA. “Quality Planning and Analysis.” McGraw-Hill, New York, 1980.

KADAM, P. and S. BHALERAO. “Sample size calculation.” *International journal of Ayurveda research*, *1*(1), 2010: 55.

KAHN, R. L. and C. F. CANNEL. “Interviewing.” *International encyclopedia of the social sciences*, *8*, 1968: 149-161.

KANE, E. W. and L. J. MACAULAY. “Interviewer gender and gender attitudes.” Public Opinion Quarterly, 57(1), 1-28.

KISH, L. “Survey Sampling.” John & Wiley Sons, 1965.

KIAER, A. “Proceedings.” *Bulletin of the International Statistical Institute,* 1897.

KLEIN, L. R. “Introduction to econometrics.” Prentice Hall, 1962.

KORBMACHER, J. M. and M. SCHROEDER. “Consent when linking survey data with administrative records: the role of the interviewer.” In *Survey Research Methods,* Vol. 7, No. 2, 2013: 115-131.

KORBMACHER, J. M. “Interviewer Effects on Respondents’ Willingness to Provide Blood Samples in SHARE.” SHARE Working Paper Series, 20-2014, 2014.

KRAEMER, K. L. “The information systems research challenge.” Vol. III: Survey Research Methods, Harvard University Graduate School of Business Administration.

KREUTER, F., S. PRESSER and R. TOURANGEAU. “Social desirability bias in CATI, IVR, and Web surveys the effects of mode and question sensitivity.” *Public Opinion Quarterly, 72(5),* 2008: 847-865.

KRUMPAL, I. “Determinants of social desirability bias in sensitive surveys: a literature review.” *Quality & Quantity, 47*(4), 2013: 2025-2047.

KULKA, R. A. and M. F. WEEKS. “Toward the development of optimal calling protocols for telephone surveys: a conditional probabilities approach.” *Journal of Official Statistics, 4*(4), 1988: 319-332.

LEEUW, E. D., J. J. HOX and G. SNIJKERS. “The effect of computer-assisted interviewing on data quality.” *Journal of the Market Research Society, 37*(4), 1995: 325-344.

LEEUW, E. D. and M. COLLINS. “Data collection methods and survey quality: an overview.” *Survey measurement and process quality,* 1997: 197-220.

LEEUW, E. D. “To mix or not to mix data collection modes in surveys.” *Journal of official statistics, 21(2),* 2005: 233.

LESSER, V. M. and W. D. KALSBEEK. “Non-sampling error in surveys.” Wiley, 1992.

LEUNG, S. F. and S. YU. “On the choice between sample selection and two-part models.” *Journal of econometrics, 72*(1), 1996: 197-229.

LIAO, D. and R. VALLIANT. “Variance inflation factors in the analysis of complex survey data.” *Survey Methodology, 38*(1), 2012: 53-62.

LIKERT, R. “A technique for the measurement of attitudes.” *Archives in Psychology*, 140, 1932: 1-55.

LOOSVELDT, G. and B. KOEN. “A Procedure to Assess Interviewer Effects on Nonresponse Bias.” *SAGE Open*, *4*(1), 2014.

LYNN, P. “The impact of incentives on response rates to personal interview surveys: Role and perceptions of interviewers.” *International Journal of Public Opinion Research*, 2001.

LYBERG, L. and D. KASPRZYK. “Data collection methods and measurement error: an overview.” *Measurement errors in surveys*, 1991: 235-257.

LYBERG, L. and C. M. CASSEL. “Sample Surveys: The field.” *International Encyclopedia of the Social & Behavioral Sciences*, *20*, 2001: 13475-13480.

LYBERG, L. E., P. P. BIEMER, M. COLLINS, E. D. DE LEEUW, C. DIPPO, N. SCHWARZ and D. TREWIN. “Survey measurement and process quality.” Vol. 999, John Wiley & Sons, 2012.

MAHALANOBIS, P. C. “Recent experiments in statistical sampling in the Indian Statistical Institute.” *The Indian Journal of Statistics (1933-1960)*, *20*(3/4), 1958: 329-398.

MINATO, H. “Interviewer Effects on Survey Questionnaire Response Times: A Hierarchical Bayesian Analysis of Multivariate Survival Paradata.” American Statistical Association, JSM Proceedings, Survey Research Methods Section, 2014.

MOORMAN, P., B. NEWMAN, R. MILLIKAN, C. K. TSE, D. SANDLER. “Participation rates in a case-control study: The impact of age, race, and race of interviewer.” *Annals of epidemiology*, *9*(3), 1999: 188-195.

MORGANSTEIN, D. and D. A. MARKER. “Continuous quality improvement in statistical agencies.” *Survey measurement and process quality*, 1997: 475-500.

MORTON-WILLIAMS, J. “Interviewer approaches.” Aldershot: Dartmouth, 1993.

MUSCIO, B. “The influence of the form of a question.” *British Journal of Psychology, 1904-1920*, *8*(3), 1917: 351-389.

NAGELKERKE, N. J. “A note on a general definition of the coefficient of determination.” *Biometrika*, *78*(3), 1991: 691-692.

NEALON, J. “The effects of male vs. female telephone interviewers.” In *Proceedings of the Survey Research Methods Section of the American Statistical Association,* 1983: 139-41.

NEMETH, R. “Respondent selection within the household-A modification of the Kish grid. *In Meeting of Young Statisticians*, 2002: 51.

NEUMAN, L. W. “Social Research Methods: Qualitative and quantitative approaches.” Allyn & Bacon, 2002.

NEYMAN, J. “On the two different aspects of the representative method: the method of stratified sampling and the method of purposive selection.” *Journal of the Royal Statistical Society, 97*(4), 1934: 558-625.

OLDENDICK, R. W., G. F. BISHOP, S. B. SORENSON and A. J. TUCHFARBER. “A comparison of the Kish and last birthday methods of respondent selection in telephone surveys.” *Journal of Official Statistics, 4*(4), 1988: 307-318

OLSON, K. M. and A. PEYTCHEV. “Effect of Interviewer Experience on Interviewer Pace and Interviewer Attitudes.” *Public Opinion Quarterly, 71*(2), 2007: 273-286.

O’MUIRCHEARTAIGH, C. and P. CAMPANELLI. “The Relative Impact of Interviewer Effects and Sample Design Effects on Survey Precision.” *Journal of the Royal Statistical Society: Series A (Statistics in Society), 161(1),* 1998: 63-77.

O’MUIRCHEARTAIGH, C. and P. CAMPANELLI. “A multilevel exploration of the role of interviewers in survey non-response.” *Journal of the Royal Statistical Society: Series A (Statistics in Society), 162*(3), 1999: 437-446.

PARK, H. M. “Multicollinearity in Regression Models.” Jeeshim and KUCC625, 2003.

PENG, C. Y., K. L. LEE and G. M. INGERSOLL. “An introduction to logistic regression analysis and reporting.” *The journal of educational research, 96*(1), 2002: 3-14.

PICKERY, J., G. LOOSVELDT, and A. CARTON. “The effects of interviewer and respondent characteristics on response behavior in panel surveys a multilevel approach.” *Sociological Methods & Research, 29*(4), 2001: 509-523.

RICE, S. A. “Contagious bias in the interview: A methodological note.” *American Journal of Sociology,* 1929: 420-423.

RUTSTEIN, S. O., G. ROJAS. “Guide to DHS statistics.” *Calverton, MD: ORC Macro,* 2006.

SAKSHAUG, J. W., T. YAN and R. TOURANGEAU. “Nonresponse error, measurement error, and mode of data collection: Tradeoffs in a multi-mode survey of sensitive and non-sensitive items.” *Public Opinion Quarterly, 74*(5), 2010: 907-933.

SAKSHAUG, J. W., M. P. COUPER, M. B. OFSTEDAL and D. R. WEIR. “Linking survey and administrative records mechanisms of consent.” *Sociological Methods & Research*, *41*(4), 2012: 535-569.

SAKSHAUG, J. W., V. TUTZ and F. KREUTER. “Placement, wording, and interviewers: Identifying correlates of consent to link survey and administrative data.” *Survey Research Methods*, Vol. 7, No. 2, 2013: 133-144.

SALA, E., J. BURTON and G. KNIES. “Correlates of Obtaining Informed Consent to Data Linkage Respondent, Interview, and Interviewer Characteristics.” *Sociological Methods & Research, 41*(3), 2012: 414-439.

SANDEN N. V. and D. STEEL. “Optimal Estimation of Interviewer Effects for Binary Response Variables through Partial Interpenetration.” Centre for Statistical and Survey Methodology, University of Wollongong, Working Paper 04-08, 2008.

SCHAEFFER, N. C., J. DYKEMA and D. W. MAYNARD. “Interviewers and interviewing.” *Handbook of survey research,* 2010: 437-70.

SCHEUREN, F. “What is a Survey?.” American Statistical Association, 2005.

SCHEUREN, F. “How important is accuracy?.” In *Proceedings of Statistics Canada Symposium,* 2001.

SCHOBER, M. F. and F. G. CONRAD. “Does conversational interviewing reduce survey measurement error?.”*Public opinion quarterly,* 1997: 576-602.

SCHWARZ, N., F. STRACK, H. J. HIPPLER, G. BISHOP. “The impact of administration mode on response effects in survey measurement.” *Applied Cognitive Psychology, 5(3),* 1991: 193-212.

SCHUMAN, H. and J. M. CONVERSE. “The effects of black and white interviewers on black responses in 1968.”*Public opinion quarterly, 35*(1), 1971: 44-68.

SINGER, E. and L. KOHNKE-AGUIRRE. “Interviewer expectation effects: A replication and extension.” *Public Opinion Quarterly, 43*(2), 1979: 245-260.

SINGH, A. S. and M. B. MASUKU. "Sampling techniques & determination of sample size in applied statistics research: An overview." *International Journal of Economics, Commerce and Management, 2*(11), 2014: 1-22.

STEPHAN, F. F. "History of the uses of modern sampling procedures." *Journal of the American statistical Association, 43*(241), 1948: 12-39.

STATISTICS CANADA. "Statistics Canada Quality Guidelines." Ottowa, Canada, 1998.

STATISTICS SWEDEN. "Projektarbete vid SCB" (in Swedish), Stockholm, Sweden, 1999.

STEVENS, J. A. and B. BAILAR. "The relationship between various interviewer characteristics and the collection of income data." In *annual meeting of the American Statistical Association, Boston, MA*, 1976.

SUCHMAN, L. and B. JORDAN. "Interactional troubles in face-to-face survey interviews." Journal of the American Statistical Association, 85 (409), 1990: 232-241.

TAGUCHI, G. "Introduction to quality engineering: designing quality into products and processes." Asian Productivity Organization, 1986.

TANUR, J. M. "Questions about questions: Inquiries into the cognitive bases of surveys." Russell Sage Foundation, 1992.

THOMPSON, S. K. "Sampling." John & Wiley Sons, 2012.

TIPPING, S., S. HOPE, K. PICKERING, B. ERENS, M. A. ROTH and J. S. MINDELL. "The effect of mode and context on survey results: Analysis of data from the Health Survey for England 2006 and the Boost Survey for London." BMC medical research methodology, 10(1), 2010.

TOURANGEAU, R. and T. W. SMITH. "Collecting sensitive information with different modes of data collection." *Computer assisted survey information collection*, 1998: 431-454.

TSCHUPROW, A. A. "On the Mathematical Expectation of the Moments of Frequency Distributions in the Case of Correlated Observations." Metron 2, 1923: 461-493, 646-683.

TURNER, C. F., B. H. FORSYTH, J. M. O'REILLY, P. C. COOLEY, T. K. SMITH, S. M. ROGERS, H. G. MILLER. "Automated self-interviewing and the survey measurement of sensitive behaviors." *Computer assisted survey information collection*, 1998: 455-473.

TURKYILMAZ, S. and O. AYHAN. “Covariates of Unit Nonresponse Error Based On Proxy Response From Household Surveys.” İstatistik Araştırma Dergisi, Cilt 9, V 1., Ankara, 2012.

WALTER, S. D., M. ELIASZIW and A. DONNER. “Sample size and optimal designs for reliability studies.” *Statistics in medicine*, *17*(1), 1998: 101-110.

WEST, B. T., F. KREUTER and U. JAENICHEN. ““Interviewer” Effects in Face-to-Face Surveys: A Function of Sampling, Measurement Error, or Nonresponse?.” Journal of Official Statistics, Vol. 29, No. 2, 2013: 277-297.

WEST, B. T. and K. OLSON. “How Much of Interviewer Variance Is Really Nonresponse Error Variance?.” Public Opinion Quarterly, Vol. 74, No. 5, 2010: 1004-1026.

WILLIAMS, D. “Basic instructions for interviewers.” *The Public Opinion Quarterly*, *6*(4), 1942: 634-641.

WILLIAMS JR, J. A. “Interviewer-respondent interaction: A study of bias in the information interview.” Sociometry, 1964:338-352.

WILLIAMS, E. “Experimental comparisons of face-to-face and mediated communication: A review.” *Psychological Bulletin*, *84*(5), 1977: 963.

WILSON, D. C. and E. P. OLESEN. “Perceived race of interviewer effects in telephone interviews.” In *57th AAPOR/WAPOR conference, St. Pete Beach*, 2002.

WINSHIP, C. and R. D. MARE. “Models for sample selection bias.” *Annual review of sociology*, 1992: 327-350.

VELLA, F. “Estimating models with sample selection bias: a survey.” *Journal of Human Resources*, 1998: 127-169.

YATES, F. “Sampling Methods for Censuses and Surveys.” Charles Griffin and Co., London, 1949.

APPENDIX A

ADDITIONAL TABLES OF DESCRIPTIVE ANALYSES

Table A.1 Results of household interviews

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
301	field editor-interviewer	3	0	0	0	0	0	0	0	0	0	3	1.00	1.00
303	interviewer-field editor	161	3	11	0	5	9	0	0	0	0	189	0.95	0.85
304	data entry-interviewer-field editor	1	0	1	0	0	0	0	0	0	0	2	1.00	0.50
305	measurer-interviewer-field editor	6	0	0	0	0	0	0	0	0	0	6	1.00	1.00
306	interviewer	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
307	interviewer-data entry	1	1	0	0	0	0	0	0	0	0	2	0.50	0.50
309	interviewer-field editor	155	0	6	0	4	6	0	0	0	0	171	0.97	0.91
310	interviewer-field editor	132	4	6	0	2	25	0	0	0	0	169	0.96	0.78
311	interviewer-field editor	205	3	2	0	20	26	0	0	1	0	257	0.90	0.80
312	interviewer-field editor	121	2	3	0	6	9	0	0	0	0	141	0.94	0.86
313	field editor-interviewer	91	3	1	0	1	3	0	0	0	0	99	0.96	0.92
314	interviewer-field editor	244	1	20	0	7	20	0	0	0	0	292	0.97	0.84
315	interviewer	66	0	4	0	2	0	0	0	0	0	72	0.97	0.92
316	supervisor-interviewer-field editor	7	0	9	0	2	4	0	0	0	0	22	0.78	0.32
320	field editor-interviewer	14	1	0	0	0	1	0	0	0	0	16	0.93	0.88

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
322	measurer-interviewer-field editor	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
323	interviewer-field editor	58	0	0	0	1	4	0	0	0	0	63	0.98	0.92
324	interviewer	122	1	3	0	3	3	0	0	0	0	132	0.97	0.92
325	field editor-interviewer	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
326	supervisor-interviewer-field editor	21	0	0	0	1	0	0	0	0	0	22	0.95	0.95
328	measurer-data entry-interviewer	10	0	0	0	0	2	0	1	0	0	13	0.91	0.77
329	interviewer-field editor	201	9	12	0	19	29	0	0	0	0	270	0.88	0.74
331	interviewer-field editor	169	3	3	0	20	13	0	0	0	0	208	0.88	0.81
332	interviewer-field editor	177	2	1	0	0	6	1	0	0	0	187	0.99	0.95
333	interviewer-field editor	57	0	2	0	0	5	0	1	0	0	65	0.98	0.88
334	Interviewer-field editor	254	1	18	0	26	25	0	1	1	0	326	0.90	0.78
335	interviewer	67	0	0	0	1	3	0	0	0	0	71	0.99	0.94
336	field editor-interviewer	55	0	4	0	3	11	0	0	0	0	73	0.95	0.75
337	interviewer-data entry	84	2	2	0	1	1	0	0	0	0	90	0.97	0.93
338	interviewer-field editor	197	7	4	0	8	27	0	1	0	0	244	0.92	0.81

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
339	field editor-data entry-interviewer	0	0	2	0	0	0	0	0	0	0	2	*	0.00
340	interviewer	161	8	3	0	2	15	0	0	0	0	189	0.94	0.85
341	interviewer-data entry	53	0	1	0	0	4	0	0	0	0	58	1.00	0.91
342	Interviewer-field editor	174	3	12	0	19	30	0	2	0	0	240	0.88	0.73
343	supervisor-data entry-field editor	11	0	0	0	2	0	0	0	0	0	13	0.85	0.85
345	field editor-interviewer	7	0	0	0	0	0	0	0	0	0	7	1.00	1.00
346	interviewer-field editor	95	0	3	0	1	2	0	0	0	0	101	0.99	0.94
347	interviewer	74	1	3	0	2	4	0	0	0	0	84	0.96	0.88
348	interviewer	63	0	2	0	0	2	0	0	1	3	67	1.00	0.94
349	interviewer-field editor	243	1	23	0	27	26	0	1	0	0	325	0.89	0.75
350	interviewer	166	3	10	0	5	17	0	0	0	0	201	0.95	0.83
351	field editor-interviewer	79	0	2	0	0	0	0	0	0	0	81	1.00	0.98
352	measurer-interviewer	3	0	0	0	0	0	0	0	0	0	3	1.00	1.00
353	interviewer-field editor	237	7	24	0	17	24	0	0	0	0	309	0.91	0.77
354	interviewer-data entry	63	3	3	0	2	2	0	0	0	0	73	0.93	0.86
355	interviewer-field editor	207	1	23	0	28	43	0	0	1	0	303	0.87	0.68
356	interviewer	79	2	4	0	1	4	0	0	0	0	90	0.96	0.88

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
358	interviewer	75	0	2	0	0	4	0	0	0	1	82	1.00	0.91
360	interviewer-field editor	207	4	20	0	13	29	0	0	0	0	273	0.92	0.76
361	interviewer	120	1	6	0	2	7	0	1	0	0	137	0.97	0.88
362	field editor-interviewer	16	0	0	0	0	0	0	0	0	0	16	1.00	1.00
363	interviewer-field editor	124	0	1	0	0	0	0	0	0	0	125	1.00	0.99
364	interviewer-field editor	131	2	11	1	4	10	0	0	0	0	159	0.95	0.82
367	supervisor-interviewer-field editor	10	0	1	0	9	0	0	0	0	0	20	0.53	0.50
368	interviewer	175	3	2	0	3	11	0	1	0	0	195	0.96	0.90
369	field editor-interviewer	3	0	1	0	0	0	0	0	0	0	4	1.00	0.75
371	interviewer	164	1	5	0	2	4	0	0	0	0	176	0.98	0.93
372	interviewer	183	8	5	0	3	10	0	0	0	0	209	0.94	0.88
373	field editor-measurer-interviewer	7	1	0	0	0	4	0	1	0	0	13	0.78	0.54
374	interviewer-field editor	155	0	6	0	3	16	0	0	0	0	180	0.98	0.86
375	interviewer-field editor	86	0	3	0	2	3	0	0	0	0	94	0.98	0.91
376	interviewer-field editor	136	4	6	0	11	21	0	0	0	0	178	0.90	0.76
377	interviewer-data entry-field editor	61	1	4	0	0	1	0	0	0	0	67	0.98	0.91

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
378	supervisor-interviewer-field editor	20	0	10	0	18	26	1	1	0	1	77	0.51	0.26
379	field editor-data entry-interviewer	5	0	0	0	0	2	0	0	0	0	7	1.00	0.71
380	interviewer-field editor	163	0	2	0	6	13	0	0	0	0	184	0.96	0.89
381	interviewer-field editor	192	2	8	1	2	11	1	0	0	0	217	0.97	0.88
382	field editor-interviewer	21	1	0	0	2	9	0	0	1	0	34	0.84	0.62
383	supervisor-interviewer	0	0	0	0	0	0	0	0	0	2	2	*	0.00
384	measurer-interviewer-field editor	7	0	0	0	0	0	0	0	0	0	7	1.00	1.00
385	measurer-interviewer-field editor	4	0	0	0	0	0	0	0	0	0	4	1.00	1.00
386	measurer-data entry-interviewer	15	0	2	0	0	1	0	0	0	0	18	1.00	0.83
388	measurer-interviewer-field editor	13	0	0	0	0	0	0	0	0	0	13	1.00	1.00
389	interviewer-field editor	254	1	16	0	16	17	0	0	0	0	304	0.94	0.84
390	interviewer-field editor	144	1	16	0	7	12	0	0	0	1	181	0.95	0.80
391	interviewer-field editor	82	0	3	0	3	2	0	1	1	0	92	0.94	0.89

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
392	supervisor-interviewer-field editor	21	1	12	0	11	53	1	4	0	1	104	0.57	0.20
393	interviewer-field editor	181	6	6	0	3	15	0	0	1	0	212	0.95	0.85
394	measurer	6	0	0	0	0	0	0	0	0	0	6	1.00	1.00
395	field editor-interviewer	9	0	0	0	1	1	0	0	0	0	11	0.90	0.82
396	interviewer-data entry-field editor	68	0	2	0	0	5	0	0	0	0	75	1.00	0.91
397	interviewer-data entry	140	3	4	0	13	39	0	2	0	0	201	0.89	0.70
398	interviewer-field editor	177	0	4	0	6	15	0	0	0	0	202	0.97	0.88
399	interviewer	115	0	5	0	10	15	0	0	0	0	145	0.92	0.79
400	interviewer-field editor	239	3	11	0	15	29	0	0	2	1	300	0.92	0.80
401	supervisor-interviewer-field editor	160	0	6	0	10	12	0	0	0	0	188	0.94	0.85
403	supervisor-interviewer-field editor	2	0	0	0	5	0	0	0	0	0	7	0.29	0.29
404	field editor-interviewer	36	0	1	0	1	7	0	0	0	0	45	0.97	0.80
405	interviewer-data entry-field editor	5	0	2	0	0	1	0	0	0	0	8	1.00	0.63
406	supervisor-interviewer-field editor	2	0	0	0	0	0	0	0	0	0	2	1.00	1.00

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
407	supervisor-field editor-interviewer	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
408	measurer-interviewer	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
409	field editor-data entry-interviewer	4	0	1	0	0	2	0	0	0	0	7	1.00	0.57
410	measurer-interviewer	3	0	0	0	0	0	0	0	0	0	3	1.00	1.00
411	interviewer-field editor	138	1	4	0	3	6	0	0	0	0	152	0.97	0.91
412	interviewer-field editor	129	3	5	0	4	8	0	0	0	0	149	0.95	0.87
413	interviewer-field editor	242	1	11	0	25	40	0	0	0	0	319	0.90	0.76
415	interviewer-field editor	222	1	8	0	23	40	1	0	1	0	296	0.90	0.75
416	field editor-interviewer	13	0	2	0	0	1	0	0	0	0	16	1.00	0.81
417	interviewer	72	2	2	0	0	1	0	0	0	0	77	0.97	0.94
418	interviewer-field editor	148	1	9	0	6	5	0	2	0	1	172	0.94	0.86
419	interviewer	62	1	3	0	1	3	0	0	0	0	70	0.97	0.89
420	interviewer	103	0	3	0	3	8	0	0	0	0	117	0.97	0.88
421	interviewer-field editor	263	0	18	0	8	13	0	0	0	0	302	0.97	0.87
422	interviewer	213	4	20	0	6	20	0	0	0	0	263	0.96	0.81
423	interviewer-field editor	182	2	8	0	10	19	0	0	0	1	222	0.94	0.82

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
424	interviewer-field editor	116	2	2	0	2	8	0	0	0	0	130	0.97	0.89
426	interviewer	103	0	1	0	2	5	0	1	0	0	112	0.97	0.92
427	interviewer	129	2	8	0	3	13	1	0	0	1	157	0.96	0.82
429	interviewer	136	1	6	0	23	21	0	0	0	0	187	0.85	0.73
430	supervisor-data entry-interviewer-field editor	1	0	0	0	0	0	0	0	0	0	1	1.00	1.00
431	measurer-data entry-field editor	32	1	3	0	1	0	0	0	0	0	37	0.94	0.86
432	interviewer	53	0	0	0	0	3	0	0	0	0	56	1.00	0.95
433	interviewer	87	1	5	0	4	5	0	0	0	0	102	0.95	0.85
434	measurer-interviewer-field editor	17	0	1	0	0	1	0	0	0	0	19	1.00	0.89
435	interviewer-field editor	56	0	4	0	1	0	0	0	0	0	61	0.98	0.92
436	interviewer	128	1	2	0	6	14	0	0	0	1	152	0.95	0.84
437	interviewer-field editor	154	6	8	0	8	21	0	0	0	0	197	0.92	0.78
438	interviewer	164	0	12	0	13	30	0	3	0	0	222	0.91	0.74
439	interviewer-field editor	264	3	12	0	29	44	0	0	0	0	352	0.89	0.75
440	interviewer	136	0	5	0	4	3	0	0	0	0	148	0.97	0.92
441	measurer-interviewer-field editor	2	0	1	0	0	0	0	0	0	0	3	1.00	0.67

Table A.1 Results of household interviews (continued)

Number of households, number of interviews, household level completion rates, and field work assignments of data collection staff according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	No Household member/ no competent member at home	Entire Household absent for extended period of time	Postponed	Refused	Dwelling vacant or address not a dwelling	Dwelling destroyed	Dwelling not found	Partially completed	Other	Total	Household Response Rate	Household Completion Rate
482	interviewer	2	0	0	0	0	0	0	0	0	0	2	1.00	1.00
901	supervisor-interviewer-field editor	31	2	3	0	12	16	0	0	0	2	66	0.69	0.47
902	supervisor-interviewer-field editor	8	0	0	0	0	1	0	0	0	0	9	1.00	0.89
904	supervisor-interviewer-field editor	19	3	4	0	6	26	1	3	0	0	62	0.61	0.31
905	supervisor-interviewer-field editor	9	2	9	0	6	14	0	2	0	1	43	0.47	0.21
906	supervisor-interviewer-field editor	11	0	5	0	0	3	0	0	0	0	19	1.00	0.58
909	supervisor-interviewer-field editor	4	0	0	0	0	1	0	0	0	0	5	1.00	0.80
Total		11794	158	604	2	646	1222	7	29	10	17	14489	0.93	0.81

*Household completion rate for the data collection staff is undefined according to calculation.

Table A.2 Results of women interviews

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
303	interviewer-field editor	132	7	0	2	0	0	0	141	0.94
309	interviewer-field editor	135	10	0	5	0	0	0	150	0.90
310	interviewer	77	3	0	3	0	0	0	83	0.93
311	interviewer-field editor	224	9	0	5	0	2	2	242	0.93
312	interviewer-field editor	96	2	0	4	2	0	3	107	0.90
313	field editor-interviewer	63	2	0	0	0	1	0	66	0.95
314	interviewer-field editor	188	5	0	4	0	3	0	200	0.94
315	interviewer	67	4	0	2	0	2	0	75	0.89
320	field editor-interviewer	0	1	0	0	0	0	1	2	0.00
321	interviewer-field editor	163	8	0	12	1	1	0	185	0.88
323	interviewer-field editor	39	0	0	2	1	1	0	43	0.91
324	interviewer	121	6	0	0	2	2	0	131	0.92
328	measurer-data entry-interviewer	14	0	0	0	0	0	0	14	1.00
329	interviewer-field editor	200	7	0	3	2	0	0	212	0.94
331	interviewer-field editor	136	5	0	6	1	0	0	148	0.92
332	interviewer-field editor	123	3	0	0	1	1	1	129	0.95
333	interviewer-field editor	74	4	0	1	2	0	1	82	0.90
334	interviewer-field editor	196	21	0	11	0	4	4	236	0.83
335	interviewer	76	5	0	2	0	0	0	83	0.92

Table A.2 Results of women interviews (continued)

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
336	field editor-interviewer	52	4	0	2	0	1	0	59	0.88
337	interviewer-data entry	81	5	0	1	0	2	0	89	0.91
338	interviewer-field editor	132	7	0	8	1	1	0	149	0.89
339	field editor-data entry-interviewer	2	0	0	0	0	0	0	2	1.00
340	interviewer	120	5	0	2	1	1	0	129	0.93
341	interviewer-data entry	39	6	0	0	0	0	0	45	0.87
342	interviewer-field editor	149	12	0	10	1	7	0	179	0.83
343	supervisor-data entry-field editor	0	3	0	2	0	0	0	5	0.00
346	interviewer-field editor	126	14	0	0	0	1	0	141	0.89
347	interviewer	78	2	0	3	0	1	0	84	0.93
348	interviewer	84	8	0	0	0	2	0	94	0.89
349	interviewer-field editor	201	32	0	13	1	1	1	249	0.81
350	interviewer	140	5	0	1	0	1	0	147	0.95
351	field editor-interviewer	114	13	0	6	0	1	0	134	0.85
353	interviewer-field editor	188	21	0	7	0	0	1	217	0.87
354	interviewer-data entry	61	1	0	1	0	1	0	64	0.95
355	interviewer-field editor	177	22	0	8	4	2	0	213	0.83
356	interviewer	68	5	0	2	0	0	0	75	0.91
357	interviewer	1	0	0	0	0	0	0	1	1.00
358	interviewer-field editor	66	2	0	1	1	1	2	73	0.90
360	interviewer	161	14	0	5	1	0	0	181	0.89

Table A.2 Results of women interviews (continued)

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
361	field editor-interviewer	103	6	0	5	1	0	1	116	0.89
362	interviewer-field editor	14	0	0	0	0	1	0	15	0.93
363	interviewer-field editor	170	7	0	3	0	3	0	183	0.93
364	supervisor-interviewer-field editor	124	5	0	0	1	1	0	131	0.95
368	interviewer	149	7	0	4	0	0	0	160	0.93
371	interviewer	109	12	0	3	0	1	0	125	0.87
372	interviewer	157	5	0	7	0	3	0	172	0.91
374	interviewer-field editor	116	5	0	5	0	0	0	126	0.92
375	interviewer-field editor	77	8	0	0	0	1	0	86	0.90
376	interviewer-field editor	137	5	0	10	1	3	0	156	0.88
377	interviewer-data entry-field editor	71	3	0	1	0	0	0	75	0.95
378	supervisor-interviewer-field editor	0	1	0	0	0	0	0	1	0.00
379	field editor-data entry-interviewer	6	0	0	0	0	0	0	6	1.00
380	interviewer-field editor	92	4	0	3	2	1	0	102	0.90
381	interviewer-field editor	154	12	0	3	2	1	0	172	0.90
382	field editor-interviewer	1	0	0	0	0	0	0	1	1.00
387	measurer-data entry-interviewer	1	0	0	0	0	0	0	1	1.00
389	interviewer-field editor	222	11	0	8	0	2	0	243	0.91
390	interviewer-field editor	113	3	0	2	0	0	0	118	0.96
391	interviewer-field editor	64	4	0	3	0	0	3	74	0.86

Table A.2 Results of women interviews (continued)

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
392	supervisor-interviewer-field editor	38	4	0	13	0	0	2	57	0.67
393	interviewer-field editor	118	5	0	0	2	1	0	126	0.94
394	measurer	1	0	0	0	0	0	0	1	1.00
395	field editor-interviewer	0	2	0	0	0	0	0	2	0.00
396	interviewer-data entry-field editor	53	3	0	9	0	1	2	68	0.78
397	interviewer-data entry	128	7	0	7	0	1	1	144	0.89
398	interviewer-field editor	136	10	0	5	0	2	0	153	0.89
399	interviewer	87	1	0	5	1	0	0	94	0.93
400	interviewer-field editor	177	2	0	2	1	2	1	185	0.96
401	supervisor-interviewer-field editor	129	4	0	0	0	0	0	133	0.97
402	supervisor-data entry-interviewer-field editor	9	1	0	2	0	0	0	12	0.75
404	field editor-interviewer	16	1	0	0	0	1	0	18	0.89
410	measurer-interviewer	0	0	0	0	0	0	1	1	0.00
411	interviewer-field editor	122	9	0	2	2	1	1	137	0.89
412	interviewer-field editor	90	2	0	2	2	2	0	98	0.92
413	interviewer-field editor	128	3	0	4	0	2	0	137	0.93
415	interviewer-field editor	189	23	0	5	0	3	2	222	0.85
416	field editor-interviewer	27	7	0	2	0	0	0	36	0.75
417	interviewer	62	3	0	3	0	1	0	69	0.90

Table A.2 Results of women interviews (continued)

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
418	interviewer-field editor	153	8	0	3	0	1	2	167	0.92
419	interviewer	55	2	0	1	0	0	1	59	0.93
420	interviewer	74	6	0	1	1	0	0	82	0.90
421	interviewer-field editor	179	9	0	11	0	1	0	200	0.90
422	interviewer	156	6	0	10	2	1	0	175	0.89
423	interviewer-field editor	156	6	0	15	0	4	0	181	0.86
424	interviewer-field editor	106	3	1	1	1	2	2	116	0.91
426	interviewer	107	8	0	1	0	3	0	119	0.90
427	interviewer	88	4	0	0	0	1	0	93	0.95
429	interviewer	105	5	0	11	0	0	0	121	0.87
430	supervisor-data entry-interviewer-field editor	0	1	0	0	0	0	0	1	0.00
432	interviewer	44	1	0	2	0	0	0	47	0.94
433	interviewer	75	0	0	4	0	0	0	79	0.95
434	measurer-interviewer-field editor	0	2	0	0	0	0	0	2	0.00
435	interviewer-field editor	71	6	0	1	1	2	1	82	0.87
436	interviewer	94	1	0	1	0	3	0	99	0.95
437	interviewer-field editor	114	4	0	6	0	1	0	125	0.91
438	interviewer	156	3	0	2	1	1	0	163	0.96
439	interviewer-field editor	230	13	0	10	1	0	1	255	0.90
440	interviewer	160	12	0	1	2	0	2	177	0.90
441	measurer-interviewer-field editor	1	0	0	0	0	0	0	1	1.00

Table A.2 Results of women interviews (continued)

Number of eligible women, number of interviews, individual level completion rates, and data collection staff assignments according to interviewer identification

Interviewer identification	Data collection staff assignment	Completed	Not at home	Postponed	Refused	Partially completed	Respondent incapacitated	Other	Total	Women response rates=Women completion rates
902	supervisor-interviewer-field editor	12	0	0	0	0	1	0	13	0.92
904	supervisor-interviewer-field editor	24	4	0	4	0	0	0	32	0.75
905	supervisor-interviewer-field editor	11	2	0	0	0	0	0	13	0.85
906	supervisor-interviewer-field editor	17	1	0	1	0	0	0	19	0.89
909	supervisor-interviewer-field editor	4	0	0	0	0	0	0	4	1.00
Total		9746	575	1	338	46	95	39	10840	89.9

Table A.3 Some performance indicators of household interviews

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
301	field editor-interviewer	10.3	3.0	1.00	1.00	3.33
303	interviewer-field editor	8.0	58.0	3.26	2.88	3.57
304	data entry-interviewer-field editor	2.5	2.0	1.00	1.00	2.00
306	interviewer	4.0	1.0	1.00	1.00	2.00
307	interviewer-data entry	5.0	1.0	2.00	1.00	6.00
327	measurer-data entry-interviewer	9.6	4.0	3.25	2.50	3.15
482	interviewer	21.0	2.0	1.00	1.00	1.50
305	measurer-interviewer-field editor	8.2	2.0	3.00	3.00	1.83
309	interviewer-field editor	6.6	47	3.64	3.37	3.86
310	interviewer-field editor	7.0	35	4.83	3.88	3.03
311	interviewer-field editor	10.6	70	3.67	2.97	4.84
312	interviewer-field editor	6.9	42	3.36	2.95	3.70
313	field editor-interviewer	7.2	43.0	2.30	2.22	3.36
314	interviewer-field editor	7.4	77.0	3.79	3.21	3.50
315	interviewer	9.9	21.0	3.43	3.14	4.76
316	supervisor-interviewer-field editor	2.3	10.0	2.20	1.17	1.57
320	field editor-interviewer	7.3	12.0	1.33	1.27	3.64
321	interviewer-field editor	8.3	68.0	3.51	3.08	3.93
322	measurer-interviewer-field editor	19.0	1.0	1.00	1.00	7.00
323	interviewer-field editor	14.4	22.0	2.86	2.64	3.41
324	interviewer	13.7	46.0	2.87	2.65	4.85
325	field editor-interviewer	5.0	1.0	1.00	1.00	1.00

Table A.3 Some performance indicators of household interviews (Continued)

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
326	supervisor-interviewer-field editor	7.0	17.0	1.29	1.31	2.57
329	interviewer-field editor	5.6	68.0	3.97	3.09	3.84
331	interviewer-field editor	8.6	54.0	3.85	3.31	3.71
332	interviewer-field editor	6.6	58.0	3.22	3.05	3.17
333	interviewer-field editor	12.1	20.0	3.25	2.85	7.40
334	interviewer-field editor	6.6	72.0	4.53	3.58	3.59
335	interviewer	13.2	21.0	3.38	3.19	5.34
336	field editor-interviewer	6.4	37.0	1.97	1.62	3.73
337	interviewer-data entry	9.4	23.0	3.91	3.65	4.38
338	interviewer-field editor	8.4	55.0	4.44	3.58	3.19
340	interviewer	6.2	59.0	3.20	2.73	3.38
341	interviewer-data entry	21.9	20.0	2.90	2.65	3.60
342	Interviewer-field editor	9.3	74	3.24	2.55	3.68
343	supervisor-data entry-field editor	8.3	12.0	1.08	1.00	3.09
345	field editor-interviewer	8.1	7.0	1.00	1.00	2.29
346	interviewer-field editor	18.8	43.0	2.35	2.21	6.79
347	interviewer	9.4	21.0	4.00	3.52	5.36
348	interviewer	12.8	22.0	3.05	2.86	6.40
349	interviewer-field editor	6.4	69.0	4.71	3.74	3.56
350	interviewer	7.0	56.0	3.59	3.13	3.80
351	field editor-interviewer	13.8	36.0	2.25	2.19	6.71
352	measurer-interviewer	9.7	3.0	1.00	1.00	2.67
353	interviewer-field editor	6.6	65.0	4.75	3.76	3.55
354	interviewer-data entry	8.6	22.0	3.32	2.86	3.83

Table A.3 Some performance indicators of household interviews (Continued)

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
355	interviewer-field editor	6.7	66.0	4.59	3.23	3.74
356	interviewer	7.6	22.0	4.09	3.59	3.72
358	interviewer	10.0	22.0	3.73	3.41	3.97
360	interviewer-field editor	7.5	69.0	3.96	3.14	3.63
361	interviewer	12.7	46.0	2.98	2.67	3.90
362	field editor-interviewer	9.1	15.0	1.07	1.07	4.50
363	interviewer-field editor	15.1	48.0	2.60	2.58	5.98
364	interviewer-field editor	8.9	41.0	3.88	3.20	4.47
367	supervisor-interviewer-field editor	4.2	12.0	1.67	1.00	2.40
368	interviewer	7.0	58.0	3.36	3.02	3.83
369	field editor-interviewer	5.8	3.0	1.33	1.50	2.67
371	interviewer	8.1	59.0	2.98	2.78	3.43
372	interviewer	6.2	62.0	3.37	3.16	3.70
373	field editor-measurer-interviewer	4.7	11.0	1.18	1.00	2.00
374	interviewer-field editor	10.3	54.0	3.33	2.92	3.63
375	interviewer-field editor	12.6	25.0	3.76	3.58	3.92
376	interviewer-field editor	8.2	60.0	2.97	2.43	4.30
377	interviewer-data entry-field editor	15.0	21.0	3.19	2.90	6.34
378	supervisor-interviewer-field editor	2.5	34.0	2.26	1.33	4.20
379	field editor-data entry-interviewer	8.4	6.0	1.17	1.25	4.80
380	interviewer-field editor	8.7	56.0	3.29	2.96	3.00
381	interviewer-field editor	7.9	49.0	4.43	3.92	3.71
382	field editor-interviewer	6.1	19.0	1.79	1.40	1.95

Table A.3 Some performance indicators of household interviews (Continued)

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
383	supervisor-interviewer	0.0	1.0	2.00		0.00
384	measurer-interviewer-field editor	6.1	4.0	1.75	1.75	1.29
385	measurer-interviewer-field editor	10.8	3.0	1.33	1.33	2.25
386	measurer-data entry-interviewer	5.9	9.0	2.00	1.67	2.40
388	measurer-interviewer-field editor	7.3	11.0	1.18	1.18	1.62
389	interviewer-field editor	7.6	71.0	4.28	3.58	3.79
390	interviewer-field editor	7.6	57.0	3.18	2.62	3.63
391	interviewer-field editor	9.1	23.0	4.00	3.57	4.43
392	supervisor-interviewer-field editor	1.8	29.0	3.59	1.75	3.76
393	interviewer-field editor	5.7	49.0	4.33	3.69	3.05
394	measurer	10.8	5.0	1.20	1.20	3.17
395	field editor-interviewer	9.5	9.0	1.22	1.29	3.11
396	interviewer-data entry-field editor	11.5	21.0	3.57	3.24	4.53
397	interviewer-data entry	9.5	59.0	3.41	2.64	4.04
398	interviewer-field editor	6.4	46.0	4.39	3.85	3.44
399	interviewer	8.0	51.0	2.84	2.50	3.38
400	interviewer-field editor	5.2	70.0	4.29	3.57	3.70
401	supervisor-interviewer-field editor	7.6	55.0	3.42	2.91	3.51
402	supervisor-data entry-interviewer-field editor	10.0	10.0	1.30	1.14	3.25

Table A.3 Some performance indicators of household interviews (Continued)

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
403	supervisor-interviewer-field editor	1.7	3.0	2.33	1.00	0.08
404	field editor-interviewer	5.1	24.0	1.88	1.71	1.97
405	interviewer-data entry-field editor	5.6	5.0	1.60	1.25	2.40
406	supervisor-interviewer-field editor	8.0	2.0	1.00	1.00	2.00
407	supervisor-field editor-interviewer	14.0	1.0	1.00	1.00	5.00
408	measurer-interviewer	10.0	1.0	1.00	1.00	4.00
409	field editor-data entry-interviewer	21.6	4.0	1.75	1.33	3.00
410	measurer-interviewer	17.0	3.0	1.00	1.00	6.67
411	interviewer-field editor	8.5	40.0	3.80	3.45	3.98
412	interviewer-field editor	9.1	44.0	3.39	3.07	3.52
413	interviewer-field editor	6.7	75.0	4.25	3.32	2.93
415	interviewer-field editor	7.0	70.0	4.23	3.22	3.66
416	field editor-interviewer	12.1	9.0	1.78	1.44	7.38
417	interviewer	10.2	23.0	3.35	3.13	4.22
418	interviewer-field editor	11.9	55.0	3.13	2.79	4.83
419	interviewer	10.7	16.0	4.38	2.82	3.81
420	interviewer	9.4	41.0	2.85	2.58	4.03
421	interviewer-field editor	6.6	78.0	3.87	3.46	3.40
422	interviewer	7.5	73.0	3.60	3.09	3.52
423	interviewer-field editor	6.7	63.0	3.52	2.98	3.95
424	interviewer-field editor	11.9	43.0	3.02	2.76	4.67
426	interviewer	7.6	37.0	3.03	2.78	5.60
427	interviewer	6.9	44.0	3.57	2.93	3.18

Table A.3 Some performance indicators of household interviews (Continued)

Average time of a household interview, number of days household interviews conducted, number of household interviews per day, and mean size of household members by interviewer identification

Interviewer identification	Field assignment	Average time of a household interview (minute)	Number of days household interviews conducted	Number of household interviews per day	Number of completed household interviews per day	Mean number of household members
429	interviewer supervisor-data entry-interviewer-field editor	6.8	56.0	3.34	2.62	3.55
430	measurer-data entry-field editor	10.0	1.0	1.00	1.00	4.00
431	interviewer	7.1	24.0	1.54	1.39	2.31
432	interviewer measurer-interviewer-field editor	5.2	15.0	3.73	3.53	3.28
433	interviewer	6.7	22.0	4.64	3.95	3.59
434	interviewer-field editor	9.7	12.0	1.58	1.55	2.82
435	interviewer	14.9	19.0	3.21	2.95	6.32
436	interviewer interviewer-field editor	7.4	43.0	3.53	3.05	3.19
437	interviewer	7.1	46.0	4.28	3.35	4.03
438	interviewer interviewer-field editor	6.9	69.0	3.22	2.52	3.93
439	interviewer	6.1	77.0	4.57	3.52	3.66
440	measurer-interviewer-field editor	10.0	46.0	3.22	2.96	5.45
441	supervisor-interviewer-field editor	12.3	3.0	1.00	1.00	3.00
901	supervisor-interviewer-field editor	5.7	23.0	2.87	1.00	2.52
902	supervisor-interviewer-field editor	8.1	27.0	0.33	1.55	3.25
904	supervisor-interviewer-field editor	3.0	32.0	1.94	1.14	5.84
905	supervisor-interviewer-field editor	2.4	19.0	2.26	1.36	4.11
906	supervisor-interviewer-field editor	5.2	14.0	1.36	1.13	3.82
909	supervisor-interviewer-field editor	7.8	4.0	1.25	1.22	4.75
Total		8.6	27.7	2.4	2.38	3.14

Table A.4 Some performance indicators of women interviews

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
303	interviewer -field editor	30	54	2.61	2.54	0.25
309	interviewer -field editor	23	45	3.33	3	0.39
310	interviewer	27	32	2.59	2.41	0.21
311	interviewer -field editor	30	70	3.46	3.25	0.44
312	interviewer -field editor	23	39	2.74	2.46	0.35
313	field editor-interviewer	24	36	1.83	1.8	0.22
314	Interviewer -field editor	28	72	2.78	2.69	0.25
315	interviewer	26	21	3.57	3.35	0.57
320	field editor-interviewer	*	2	1	*	*
321	Interviewer -field editor	29	65	2.85	2.59	0.38
323	interviewer -field editor	42	19	2.26	2.05	0.38
324	interviewer	38	45	2.91	2.69	0.49
328	measurer-data entry-interviewer	33	4	3.5	3.5	0.29
329	interviewer -field editor	26	66	3.21	3.17	0.32
331	interviewer -field editor	34	47	3.15	2.96	0.29
332	interviewer -field editor	32	55	2.35	2.24	0.25
333	interviewer -field editor	28	20	4.1	3.7	0.57
334	interviewer -field editor	24	70	3.37	2.84	0.31
335	interviewer	36	22	3.77	3.45	0.45
336	field editor-interviewer	25	32	1.84	1.63	0.23

Table A.4 Some performance indicators of women interviews (continued)

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
337	interviewer -data entry	30	23	3.87	3.52	0.41
338	interviewer -field editor	30	55	2.71	2.44	0.41
339	field editor-data entry-interviewer	45	1	2	2	1
340	interviewer	26	53	2.43	2.31	0.28
341	interviewer -data entry	34	23	1.96	1.86	0.31
342	interviewer -field editor	29	69	2.59	2.19	0.34
343	supervisor-data entry-field editor	*	4	1.25	*	*
346	interviewer -field editor	37	44	3.2	2.86	0.64
347	interviewer	31	20	4.2	3.9	0.65
348	interviewer	24	21	4.48	4	0.64
349	interviewer -field editor	19	67	3.72	3.09	0.31
350	interviewer	25	53	2.77	2.69	0.31
351	field editor-interviewer	30	39	3.44	2.92	0.48
353	interviewer -field editor	28	61	3.56	3.13	0.47
354	interviewer -data entry	29	21	3.05	3.05	0.3
355	interviewer -field editor	25	67	3.18	2.68	0.25
356	interviewer	29	21	3.57	3.24	0.32
358	interviewer	19	1	1	3	0

Table A.4. Some performance indicators of women interviews (continued)

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
359	interviewer -field editor	34	22	3.32	2.68	0.36
360	interviewer	32	64	2.83	2.44	0.43
361	field editor-interviewer	25	45	2.58	2.29	0.39
362	interviewer -field editor	25	12	1.25	1.27	0.21
363	interviewer -field editor	38	47	3.89	3.62	0.5
364	supervisor-interviewer -field editor	35	42	3.12	3.02	0.53
368	interviewer	22	54	2.96	2.76	0.39
371	interviewer	25	54	2.31	2.1	0.36
372	interviewer	22	55	3.13	2.85	0.41
374	interviewer -field editor	35	49	2.57	2.37	0.39
375	interviewer -field editor	34	25	3.44	3.08	0.22
376	interviewer -field editor	34	60	2.6	2.28	0.39
377	interviewer -data entry-field editor	31	21	3.57	3.38	0.61
378	supervisor-interviewer -field editor	*	1	1	*	0
379	field editor-data entry-interviewer	33	6	1	1	0.67
380	interviewer -field editor	28	49	2.08	1.96	0.3
381	interviewer -field editor	23	49	3.51	3.21	0.31
382	field editor-interviewer	43	1	1	1	2
387	measurer-data entry-interviewer	42	1	1	3.22	0

Table A.4. Some performance indicators of women interviews (continued)

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
389	interviewer -field editor	26	69	3.52	2.26	0.36
390	interviewer -field editor	29	52	2.27	2.78	0.26
391	interviewer -field editor	27	23	3.22	2.29	0.5
392	supervisor-interviewer -field editor	19	21	2.71	2.24	0.45
393	interviewer -field editor	26	46	2.74	2.62	0.42
394	measurer	27	1	1	1	0
395	field editor-interviewer	*	1	2	*	*
396	interviewer -data entry-field editor	24	19	3.58	2.79	0.49
397	interviewer -data entry	27	58	2.48	2.29	0.3
398	interviewer -field editor	28	46	3.33	2.96	0.23
399	interviewer	43	44	2.14	2.07	0.34
400	interviewer -field editor	27	67	2.76	2.68	0.47
401	supervisor-interviewer -field editor	32	49	2.71	2.63	0.39
402	supervisor-data entry-interviewer -field editor	17	7	1.71	1.29	0.22
404	field editor-interviewer	22	16	1.13	1.07	0.44
410	measurer-interviewer	*	1	1	*	*
411	interviewer -field editor	31	40	3.43	3.05	0.43
412	interviewer -field editor	29	41	2.39	2.2	0.22
413	interviewer -field editor	32	64	2.14	2	0.21
415	interviewer -field editor	25	69	3.22	2.78	0.43

Table A.4. Some performance indicators of women interviews (continued)

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
415	interviewer -field editor	25	69	3.22	2.78	0.43
416	field editor-interviewer	25	15	2.4	1.8	0.63
417	interviewer	30	23	3	2.7	0.35
418	interviewer -field editor	30	52	3.21	3	0.44
419	interviewer	24	22	2.68	2.62	0.02
420	interviewer	36	38	2.16	1.95	0.38
421	interviewer -field editor	24	75	2.67	2.42	0.33
422	interviewer	27	72	2.43	2.17	0.26
423	interviewer -field editor	30	60	3.02	2.6	0.41
424	interviewer -field editor	26	40	2.9	2.72	0.42
426	interviewer	25	37	3.22	2.89	0.5
427	interviewer	32	43	2.16	2.1	0.23
429	interviewer	34	49	2.47	2.23	0.37
430	supervisor-data entry-interviewer -field editor	*	1	1	*	*
432	interviewer	31	14	3.36	3.14	0.36
433	interviewer	24	22	3.59	3.57	0.39
434	measurer-interviewer -field editor	*	1	2	*	*
435	interviewer -field editor	29	21	3.9	3.55	0.8
436	interviewer	29	37	2.68	2.54	0.41

Table A.4. Some performance indicators of women interviews (continued)

Average time of a women interview, number of days women interviews conducted, and number of women interviews by interviewer identification

Interviewer identification	Field assignment	Average time of a woman interview (minute)	Number of days women interviews conducted	Number of days women interviews conducted	Number of women interviews per day	Mean number of children aged under five
437	interviewer -field editor	30	44	2.84	2.59	0.28
438	interviewer	32	66	2.47	2.36	0.37
439	interviewer -field editor	24	70	3.64	3.33	0.31
440	interviewer	32	48	3.69	3.4	0.55
441	measurer-interviewer -field editor	14	1	1	1	0
902	supervisor-interviewer -field editor	43	8	1.63	1.5	0.08
904	supervisor-interviewer -field editor	25	21	1.52	1.6	0.63
905	supervisor-interviewer -field editor	38	20	0.65	1.38	0.64
906	supervisor-interviewer -field editor	31	17	1.12	1.33	0.24
909	supervisor-interviewer -field editor	36	3	1.33	1.6	0.25
Total		29.6	38.8	2.65	2.5	0.36

Table A.5 Friends who were desired to go with candidates

ID numbers of field staff, team numbers, and ID numbers of candidates' friends who were wanted to go fieldwork with candidates

ID Number	Team number	Friend ID-1	Friend ID-2	Friend ID-3	Number of friends in candidate's team
301	10	461	373	412	0
303	1	468	409	444	0
305	8	389	497	370	1
309	3	477	438	448	0
310	5	479	505	380	0
311	7	379	406	479	0
312	9	437	433	0	0
314	13	427	443	450	0
315	2	405	472	0	0
316	4	400	502	438	0
320	13	463	411	487	0
322	2	485	374	497	0
323	11	490	446	469	0
324	6	506	497	398	0
326	9	451	488	425	0
329	1	456	418	503	0
331	15	454	0	0	0
332	4	502	385	408	1
333	6	402	504	0	0
334	8	401	504	0	0
335	7	500	415	0	0
336	14	464	439	502	0
337	2	441	384	484	0
338	5	410	379	467	0
339	4	464	0	0	0
340	4	436	502	400	1
341	16	468	372	461	0
343	13	463	387	487	0
344	12	373	370	475	0
346	6	416	392	0	0
347	10	500	439	403	0
348	6	414	0	0	0
349	3	492	0	0	0
350	1	397	456	0	0
351	6	503	0	0	0
354	15	423	396	470	0
355	14	483	0	0	0
356	15	421	396	470	0
360	14	491	386	0	0

Table A.5 Friends who were desired to go with candidates (continued)

ID numbers of field staff, team numbers, and ID numbers of candidates' friends who were desired to go fieldwork with candidates

ID Number	Team number	Friend ID-1	Friend ID-2	Friend ID-3	Number of friends in candidate's team
361	13	382	443	450	0
362	12	375	0	0	0
363	7	491	489	0	0
364	10	499	392	506	0
368	12	437	376	0	0
369	3	395	0	0	0
371	4	408	464	407	1
372	12	433	381	422	0
373	7	477	448	385	0
374	10	415	425	404	0
376	9	405	484	0	0
377	7	471	453	452	0
378	6	427	502	382	0
379	2	468	424	372	1
381	8	390	468	469	0
382	11	497	467	0	0
384	5	427	382	462	0
386	9	471	488	425	0
387	15	453	471	442	0
388	7	452	471	442	0
389	8	399	0	0	0
390	1	397	418	484	0
391	3	466	496	462	0
393	5	469	0	0	0
394	11	370	372	468	0
397	13	387	411	487	0
398	14	404	407	436	0
399	16	494	388	420	0
400	10	457	462	0	0
401	10	406	497	0	0
402	1	372	409	444	0
403	15	396	423	421	0
404	5	455	390	446	0
407	16	502	400	486	0
408	4	455	0	0	0
409	6	412	373	370	0
410	13	435	0	0	0
411	3	438	378	444	0
412	11	501	0	0	0

Table A.5 Friends who were desired to go with candidates (continued)

ID numbers of field staff, team numbers, and ID numbers of candidates' friends who were desired to go fieldwork with candidates

ID Number	Team number	Friend ID-1	Friend ID-2	Friend ID-3	Number of friends in candidate's team
413	5	505	379	0	0
417	12	491	0	0	0
418	7	422	0	0	0
419	9	441	405	456	0
420	2	389	497	374	0
421	13	502	400	473	0
422	13	463	387	411	0
423	9	394	425	451	0
424	2	444	468	429	0
427	11	417	0	0	0
429	16	465	388	420	0
431	1	413	457	466	0
432	5	467	447	485	0
434	14	430	506	392	0
435	6	403	415	502	0
436	4	400	385	443	0
437	11	478	0	0	0
438	1	419	397	0	0
439	8	402	401	0	0
440	3	479	379	0	0
441	6	499	392	430	0
Total					5

Team numbers are specified according to fieldwork before the break due to religious holiday in Turkey.

Table A.6 Calendar year ratios

Calendar year ratios for the years 2007 and 2008, by interviewer identification

	Calendar year ratios	
Interviewer identification	**2007**	**2008**
303	135.6	138.7
309	135.7	119.3
310*	109.4	126.1
311	110.0	53.4
312	102.3	105.9
313*	63.8	121.9
314	129.4	89.0
315*	168.0	24.3
321	131.9	44.3
323*	-	24.3
324	52.4	161.6
328*	0.0	234.7
329	160.4	89.9
331	158.9	96.8
332	99.9	124.2
333	93.0	112.7
334	75.1	114.2
335*	115.7	117.3
336*	211.0	79.4
337*	196.5	120.3
338	106.0	75.9
339*	0.0	200.0
340	34.6	253.6
341*	47.4	57.9
342	90.0	157.1
346	120.6	77.5
347	140.8	63.2
348	48.6	96.3
349	151.2	87.3
350	65.5	216.1
351	59.4	135.3
353	30.8	243.6
354*	64.4	364.9
355*	14.7	369.2
356*	99.4	196.4
358*	59.5	51.0
360	229.2	56.6
361	76.1	186.5
362*	0.0	-
363	93.5	90.6
364	166.5	81.5

Table A.6 Calendar year ratios (continued)

Calendar year ratios for the years 2007 and 2008, by interviewer identification

	Calendar year ratios	
Interviewer identification	**2007**	**2008**
368	133.3	108.3
371	61.5	102.2
372	84.4	141.9
374*	33.7	82.5
375*	634.5	35.5
376	131.2	83.0
377*	116.0	29.2
379*	246.6	81.1
380	194.0	55.5
381	65.7	130.4
382*	-	-
389	89.5	81.8
390	161.8	84.9
391	140.1	97.1
392*	139.7	132.1
393	92.6	52.0
396*	138.4	25.0
397	124.5	136.0
398	42.2	345.7
399	98.3	151.7
400	121.8	79.4
401	65.7	126.9
402*	0.0	119.1
404*	0.0	0.0
411	148.8	79.6
412	90.1	133.9
413	43.5	135.4
415	138.9	101.5
416*	143.5	0.0
417*	83.3	69.2
418	198.0	79.8
419*	116.4	48.6
420	65.5	81.2
421	158.5	72.7
422	189.5	44.3
423	169.8	61.1
424	138.7	82.9
426	110.4	71.3
427	69.3	129.4
429	58.5	137.0
432*	144.5	95.6

Table A.6 Calendar year ratios (continued)

Calendar year ratios for the years 2007 and 2008, by interviewer identification

	Calendar year ratios	
Interviewer identification	**2007**	**2008**
433	107.4	128.7
435	96.4	109.8
436	54.9	140.4
437	165.1	45.1
438	168.3	55.7
439	151.2	55.4
440	84.5	76.0
902*	0.0	-
904*	124.4	57.1
905*	-	0.0
906*	63.0	141.6
909*	-	-
Total	104.8	97.1

*There are less than three weighted observations.

APPENDIX B

ADDITIONAL TABLES OF REGRESSION ANALYSES

Table B.1 Collinearity statistics of the variables for the Poisson Regression Model 1

	Tolerance	VIF	Eigen	Condition Index
Independent variables				
Age				
20-24	0.857	1.167	1.243	2.695
25-29 (reference)				
Place of birth-five regions				
West	0.648	1.543	1.230	2.709
South	0.678	1.475	1.127	2.830
Central	0.487	2.054	1.035	2.953
North	0.600	1.667	0.932	3.113
East (reference)				
Educational status				
MA/PhD student	0.476	2.101	0.763	3.440
Graduated from any university	0.308	3.246	0.556	4.029
University in class 3-4	0.445	2.246	0.470	4.385
University in class prep-1-2 (reference)				
Working status				
Not working	0.824	1.213	0.426	4.603
Working (reference)				
Background				
Not social science	0.722	1.384	0.395	4.780
Social science (reference)				
Ever participated survey				
No	0.788	1.269	0.333	5.205
Yes (reference)				
Language ability-Kurdish				
Yes	0.636	1.573	0.230	6.263
No (reference)				
Language ability-Arabic				
Yes	0.879	1.138	0.104	9.333
No (reference)				
Language ability-English				
Yes	0.785	1.273	0.069	11.435
No (reference)				
Status of metropolitan interviewer				
No	0.649	1.542	0.039	15.230
Yes (reference)				
Mean number of household members	0.845	1.184	0.019	21.950
Average time of household interview	0.701	1.427	0.004	48.538

Table B.2 Independent variables in Poisson regression Model 1

Percent distribution of number of explanatory variables

	Number of cases	Percentage
Age groups		
20-24	46	49.5
25-29*	47	50.5
Place of birth-five regions		
West	9	9.7
South	10	10.8
Central	33	35.5
North	12	12.9
East*	29	31.2
Educational status		
MA/PhD student	14	15.1
Graduated from any university	56	60.2
University student in class 3-4	13	14.0
University student in class prep-1-2*	10	10.8
Working status		
Not working	88	94.6
Working*	5	5.4
Social science		
No	41	44.1
Yes*	52	55.9
Ever participated survey		
No	47	50.5
Yes*	46	49.5
Kurdish	17	18.3
Yes	76	81.7
No*		
Arabic		
Yes	5	5.4
No*	88	94.6
English		
Yes	26	28.0
No*	67	72.0
Metropolitan interviewer		
No	53	57.0
Yes*	40	43.0
Total	93	100.0

*** Reference categories**

Mean number of household members and average time of a household interview are continuous variables involved in the model.

Table B.3 Collinearity statistics of the variables for the Poisson Regression Model 3

	Tolerance	VIF	Eigen	Condition Index
Independent variables				
Age				
20-24	0.696	1.438	1.289	2.706
25-29 (reference)				
Place of birth-five regions				
West	0.615	1.625	1.179	2.829
South	0.695	1.440	1.176	2.833
Central	0.434	2.305	1.009	3.059
North	0.565	1.771	0.898	3.242
East (reference)				
Educational status				
MA/PhD student	0.360	2.778	0.771	3.499
Graduated	0.266	3.758	0.556	4.119
University in class 3-4	0.501	1.997	0.443	4.616
University in class 1-2 (reference)				
Working status				
Not working	0.776	1.289	0.378	4.996
Working (reference)				
Background				
Not social science	0.598	1.673	0.317	5.459
Social science (reference)				
Ever participated survey				
No	0.694	1.441	0.211	6.683
Yes (reference)				
Language ability-Kurdish				
Yes	0.567	1.763	0.165	7.559
No (reference)				
Language ability-Arabic				
Yes	0.776	1.288	0.084	10.630
No (reference)				
Language ability-English				
Yes	0.544	1.838	0.047	14.103
No (reference)				
Status of metropolitan interviewer				
No	0.587	1.704	0.025	19.611
Yes (reference)				
Mean number of children aged under 5	0.681	1.468	0.012	28.086
Average time of a women interview	0.702	1.425	0.003	56.353

Table B.4 Independent variables in Poisson Regression Model 3

Percent distribution of number of explanatory variables

	Number of cases	Percentage
Age groups		
20-24	38	55.1
25-29*	31	44.9
Place of birth-five regions		
West	8	11.6
South	4	5.8
Central	26	37.7
North	9	13
East*	22	31.9
Educational status		
MA/PhD student	13	18.8
Graduated from any university	42	60.9
University student in class 3-4	7	10.1
University student in class prep-1-2*	7	10.1
Working status		
Not working	65	94.2
Working*	4	5.8
Social science		
No	27	39.1
Yes*	42	60.9
Ever participated survey		
No	35	50.7
Yes*	34	49.3
Kurdish	12	17.4
Yes	57	82.6
No*		
Arabic		
Yes	3	4.3
No*	66	95.7
English		
Yes	26	37.7
No*	43	62.3
Metropolitan interviewer		
No	38	55.1
Yes*	31	44.9
Total	69	100

* Reference categories

Mean number of children aged under five, and average time of an individual interview are continuous variables involved in the model.

Table B.5 Independent variables in Logistic Regression Model 1

Percent distribution of number of explanatory variables

	<0.95		>=0.95		Total	
	Number of cases	**Percentage**	**Number of cases**	**Percentage**	**Number of cases**	**Percentage**
Age groups						
20-24	29	47.5	32	52.5	61	100.0
25-29*	21	40.4	31	59.6	52	100.0
Place of birth-five regions						
West	5	45.5	6	54.5	11	100.0
South*	7	58.3	5	41.7	12	100.0
Central	17	38.6	27	61.4	44	100.0
North	7	50.0	7	50.0	14	100.0
East	14	43.8	18	56.3	32	100.0
Educational status						
MA/PhD student*	8	53.3	7	46.7	15	100.0
Graduated from any university	35	53.0	31	47.0	67	100.0
University student in class 3-4	5	25.0	15	75.0	20	100.0
University student in class prep-1-2	2	18.2	9	81.8	11	100.0
Working status						
Not working	47	44.8	58	55.2	105	100.0
Working*	2	33.3	4	66.7	6	100.0
Social science						
No*	25	49.0	26	51.0	51	100.0
Yes	24	39.3	37	60.7	61	100.0
Ever participated survey						
No*	33	56.9	25	43.1	58	100.0
Yes	17	30.9	38	69.1	55	100.0
Kurdish						
Yes*	5	26.3	14	73.7	19	100.0
No	45	48.4	48	51.6	93	100.0
Arabic						
Yes*	4	66.7	2	33.3	6	100.0
No	46	43.4	60	56.6	106	100.0
English						
Yes*	11	40.7	16	59.3	27	100.0
No	33	47.8	36	52.2	69	100.0
Metropolitan interviewer						
No	15	24.2	47	75.8	62	100.0
Yes*	35	68.6	16	31.4	51	100.0
Total	50	44.2	63	55.8	113	100.0

* Reference categories

Table B.6 Independent variables in Logistic Regression Model 3

Percent distribution of number of explanatory variables

	<0.85		>=0.85		Total	
	Number of cases	**Percentage**	**Number of cases**	**Percentage**	**Number of cases**	**Percentage**
Age groups						
20-24	26	42.6	35	57.4	61	100.0
25-29*	23	42.6	31	57.4	54	100.0
Place of birth-five regions						
West*	7	58.3	5	41.7	12	100.0
South	7	58.3	5	41.7	12	100.0
Central	17	38.6	27	61.4	44	100.0
North	7	50.0	7	50.0	14	100.0
East	11	33.3	22	66.7	33	100.0
Educational status						
MA/PhD student*	5	33.3	10	66.7	15	100.0
Graduated from any university	35	51.5	33	48.5	68	100.0
University student in class 3-4	4	20.0	16	80.0	20	100.0
University student in class prep-1-2	4	36.4	7	63.6	11	100.0
Working status						
Not working	43	40.6	63	59.4	106	100.0
Working*	5	71.4	2	28.6	7	100.0
Social science						
No*	23	45.1	28	54.9	51	100.0
Yes	25	39.7	38	60.3	67	100.0
Ever participated survey						
No*	28	48.3	30	51.7	58	100.0
Yes	21	36.8	36	63.2	57	100.0
Kurdish						
Yes*	8	40.0	12	60.0	20	100.0
No	41	43.6	53	56.4	94	100.0
Arabic						
Yes*	3	50.0	3	50.0	6	100.0
No	46	42.6	62	57.4	108	100.0
English						
Yes*	13	46.4	15	53.6	28	100.0
No	31	44.3	39	55.7	70	100.0
Metropolitan interviewer						
No	16	25.0	48	75.0	64	100.0
Yes*	33	64.7	18	35.3	51	100.0
Total	49	42.6	66	57.4	115	100.0

* Reference categories

Table B.7 Independent variables in Logistic Regression Model 5

Percent distribution of number of explanatory variables

	<0.90		>=0.90		Total	
	Number of cases	Percentage	Number of cases	Percentage	Number of cases	Percentage
Age groups						
20-24	15	23.1	50	76.9	65	100.0
25-29*	21	36.8	36	63.2	57	100.0
Place of birth-five regions						
West	2	16.7	10	83.3	12	100.0
South*	6	50.0	6	50.0	12	100.0
Central	12	24.5	37	75.5	49	100.0
North	5	35.7	9	64.3	14	100.0
East	11	31.4	24	68.6	35	100.0
Educational status						
MA/PhD student	1	6.7	14	93.3	15	100.0
Graduated from any university	20	27.8	52	72.2	72	100.0
University student in class 3-4*	10	45.5	12	54.5	22	100.0
University student in class prep-1-2	5	41.7	7	58.3	12	100.0
Working status						
Not working*	33	29.2	80	70.8	113	100.0
Working	2	28.6	5	71.4	7	100.0
Social science						
No*	21	38.2	34	61.8	55	100.0
Yes	15	22.7	51	77.3	66	100.0
Ever participated survey						
No*	20	32.3	42	67.7	42	100.0
Yes	16	26.7	44	73.3	44	100.0
Kurdish						
Yes*	9	40.9	13	59.1	22	100.0
No	27	27.3	72	72.7	99	100.0
Arabic						
Yes*	2	33.3	4	66.7	6	100.0
No	34	29.6	81	70.4	115	100.0
English						
Yes	2	6.9	27	93.1	29	100.0
No*	30	40.0	45	60.0	75	100.0
Metropolitan interviewer						
No*	34	41.0	49	59.0	83	100.0
Yes	2	5.1	37	94.9	39	100.0
Total	36	29.5	86	70.5	122	100.0

APPENDIX C

RECRUITMENT FORM SUGGESTIONS

Figure C.1 A Field Staff Application Form Suggestion-Page 1

FIELD STAFF APPLICATION FORM

Application Number: ☐☐☐

Please provide all required information below.

What is your first name and last name? _____	
In what year and month were you born?	Month: ☐☐ Year: ☐☐☐☐
What age have you completed?	Age: ☐☐
Please use "X", when you are recording your answers.	
What is your province of birth?	_____
What is your province of residence?	_____
What is the highest level you attended? *(Please record only your highest level box.)*	Primary school..... ☐ General secondary school..... ☐ Vocational secondary school..... ☐ General high school..... ☐ Vocational high school..... ☐ University..... ☐ Master's degree..... ☐ Ph. D..... ☐
Did you graduate from this school?	Yes..... ☐ No..... ☐
What is your mother tongue?	Turkish..... ☐ Kurdish..... ☐ Arabic..... ☐ Other _____ ☐ (Please specify)
In addition to your mother tongue, are there any languages can you speak? *(IF YES)* which languages? *(Please, record your all answers.)*	Turkish..... ☐ Kurdish..... ☐ Arabic..... ☐ English..... ☐ Other _____ ☐ (Please specify)

Figure C.1 A Field Staff Application Form Suggestion-Page 2

Have you ever worked in any research including fieldwork? (*please, exclude internships, job trainings, education related projects.*)	Yes..... ☐ No..... ☐
Are you working in a job whether paid or unpaid?	Yes..... ☐ No..... ☐
Is there any excuse which can be obstacle to work in the fieldwork of the survey?	Yes..... ☐ No..... ☐ *(IF YES) PLEASE SPECIFY THE DATE:* _____
(IF YES) What is the main reason for your excuse? *(please, record only main reason.)*	Education related reasons..... ☐ Job related reasons..... ☐ Health related reasons..... ☐ Other _____ ☐ (PLEASE SPECIFY)
Adress:	_____ _____ _____
Phone number:	_____
e-mail:	_____

Figure C.2 A Field Staff Interview Form Suggestion-Page 1

FIELD STAFF INTERVIEW FORM

Application Number: ☐☐☐

What is your name? _____

EDUCATION	
Are you a student?	Yes.....1 No.....0
Which university are (did) you attending (attended)?	_____
What is (was) your department?	_____
OCCUPATION *(IF CANDIDATE IS WORKING-see Application Form)*	
What is your occupation? *(Record the job in detail.)*	_____

SURVEY EXPERIENCE *(IF CANDIDATE HAS SURVEY EXPERIENCE-see Application Form)*

Can you tell me the surveys you have participated in, starting from the last experience? (please, exclude internships, job trainings, and education related projects)

TITLE OF THE SURVEY	INSTITUTION	DURATION	DATE	STATUS
What was the title of the survey?	Which institution conducted this survey?	For how long you participated in?	At which month and year you participated in?	What was your status & assignment in this survey?
_____	_____	MONTH ☐☐ *Record "00" if less than 1 month.*	MONTH ☐☐ YEAR ☐☐☐☐	Interviewer.....A Data entry staff.....B Team leader.....C Other.....D _____ *(Please specify)*
_____	_____	MONTH ☐☐ *Record "00" if less than 1 month.*	MONTH ☐☐ YEAR ☐☐☐☐	Interviewer.....A Data entry staff.....B Team leader.....C Other.....D _____ *(Please specify)*

Figure C.2 A Field Staff Interview Form Suggestion-Page 2

TITLE OF THE SURVEY	INSTITUTION	DURATION	DATE	STATUS
What was the title of the survey?	Which institution conducted this survey?	For how long you participated in?	At which month and year you participated in?	What was your status & assignment in this survey?
_____	_____	MONTH ☐☐ *Record "00" if less than 1 month.*	MONTH ☐☐ YEAR ☐☐☐☐	Interviewer.....A Staff for data entry.....B Team leader.....C Other.....D _____ *(Please specify)*
_____	_____	MONTH ☐☐ *Record "00" if less than 1 month.*	MONTH ☐☐ YEAR ☐☐☐☐	Interviewer.....A Staff for data entry.....B Team leader.....C Other.....D _____ *(Please specify)*

ATTITUDES

There are different reasons for participating in surveys. What is the **main reason** for applying this project for you?	Payment.....1 Interesting work.....2 Socializing.....3 Gaining experience.....4 Having an insight into people's life.....5 Participating scientific research.....6 Research serves society.....7 Other.....8 _____ *(please specify)*

I would like to get your opinion on some aspects of interviewing. Could you tell me whether you agree or disagree with each statement?

	AGREE	DISAGREE	DON'T KNOW/NO IDEA
Explaining, probing and clarifying of questions to the respondent can be needed during the interview.	1	0	8
Survey questions should be asked as worded.	1	0	8
Interviewer can speak more slowly or faster during the interview, if necessary.	1	0	8
Sticking to questionnaire instructions is crucial in terms of data quality.	1	0	8
Information safety about respondents should be considered.	1	0	8
Interviewers should try persuade respondents who are reluctant to answer.	1	0	8
When a respondent refused because he/she is too busy, it is better to assign another interviewer to have an interviewer.	1	0	8
There would be some respondents, who never agree to have an interview during the fieldwork.	1	0	8

Figure C.2 A Field Staff Interview Form Suggestion-Page 3

BEHAVIORS	
Have you ever used any computer based device (PC or tablet PC)?	Yes.....1 No.....0
Do you use social networks in the Internet like Facebook or Twitter?	Yes.....1 No.....0
Do you use the internet for online banking?	Yes.....1 No.....0
Have you ever worked as data entry staff?	Yes.....1 No.....0
If you experience a refusal at the door, how often it would affect your behavior at the next household?	Always .....1 Often .....2 Sometimes .....3 Rarely .....4 Never 5
EXPECTATIONS	
In your opinion, what percentage of respondents will agree to the interview with you?	0-24 (%) .....1 25-49 (%) .....2 50-74 (%) .....3 75-100(%) 4
FIELD PROVINCES	
Can you travel to every province covered in the fieldwork?	Yes.....1 No.....0
(IF CANDIDATE STATED "NO") Which provinces are inappropriate for you?	_____ _____ _____
INFORMATION OF UNAVAILABILITY *(IF CANDIDATE STATED AN EXCUSE-see Application Form)*	
How long does your unavailability continue?	DAY [ ][ ]
What is the start date of your unavailability?	DAY [ ][ ] MONTH [ ][ ]
GENERAL IMPRESSION	
(Please, provide information below.) State your general impression of the candidate.	Very good .....1 Better than moderate .....2 Moderate .....3 Worse than moderate .....4 Very bad .....5 Don't know/Undecided 6

Figure C.2 A Field Staff Interview Form Suggestion-Page 4

In your opinion, is she/he suitable for staff positions?	Yes.....1	No.....0
(IF YES) State your suggested field assignment(s), if he/she is to work?	Supervisor.....A Measurer.....B Editor.....C Interviewer.....D Data entry staff.....E	
NOTES:		

APPENDIX D

ORIGINALITY REPORT

HACETTEPE UNIVERSITY
INSTITUTE OF POPULATION STUDIES
THESIS/DISSERTATION ORIGINALITY REPORT

HACETTEPE UNIVERSITY
INSTITUTE OF POPULATION STUDIES
TO THE DEPARTMENT OF SOCIAL RESEARCH METHODOLOGY

Date:20/09/2016

Thesis Title / Topic: EVALUATION OF INTERVIEWER CHARACTERISTICS AND ANALYSIS ON INTERVIEWER EFFECT IN TDHS-2013

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Student No:	N13226821
Department:	Social Research Methodology
Program:	Social Research Methodology
Status:	☒ Masters ☐ Ph.D. ☐ Integrated Ph.D.

ADVISOR APPROVAL

APPROVED.

Prof. Dr. A. Sinan TÜRKYILMAZ

20/09/16

EVALUATION OF INTERVIEWER CHARACTERISTICS AND ANALYSIS ON INTERVIEWER EFFECT IN TDHS-2013

by Melike Sarac

EVALUATION OF INTERVIEWER CHARACTERISTICS AND ANALYSIS ON INTERVIEWER EFFECT IN TDHS-2013

ORIGINALITY REPORT

%7	%5	%4	%2
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.hips.hacettepe.edu.tr Internet Source	%1
2	dhsprogram.com Internet Source	%1
3	Biemer. "The Evolution of Survey Process Quality", Wiley Series in Survey Methodology, 02/28/2003 Publication	<%1
4	cloudfront.qualtrics.com Internet Source	<%1
5	Iraq Family Health Survey Study Group. "Violence-Related Mortality in Iraq from 2002 to 2006", New England Journal of Medicine, 1/9/2008 Publication	<%1
6	Submitted to TechKnowledge Turkey Student Paper	<%1
7	Biemer. "Errors Due to Interviewers and Interviewing", Wiley Series in Survey Methodology, 02/28/2003	<%1