
SYLLABI-BOOK MAPPING TABLE

Social Research and Statistics

Syllabi	Mapping in Book
Unit I Social Research Nature, objectives, survey and research, steps in social research, research design, hypothesis.	Unit 1: Social Research (Pages: 3-20)
Unit II Sampling and Data Collection Sampling: Purpose, principles, methods, probability and non-probability sampling. Data: Types, sources Tools of data collection: Observation, interview, questionnaire, focus group and case study, measurement and scaling techniques, reliability and validity of scales.	Unit 2: Sampling (Pages: 21-63)
Unit III Processing and Presentation of Data Data processing: Editing, Coding, Classification and Tabulation. Working knowledge in SPSS. Presentation of data: Diagrams and graphs.	Unit 3: Processing and Presentation of Data (Pages: 65-80)
Unit IV Application of Statistical Tests Measures of central tendency: Mean, median and mode. Uses and limitations. Dispersion: Quartile deviation, mean deviation and standard deviation. Uses and limitations. Correlation: Karl Pearson's coefficient of correlation and Spearman's rank correlation. Chi-Square test: Application, uses, limitations.	Unit 4: Application of Statistical Tests (Pages: 81-106)
Unit V Report Writing Preparation of research report: Steps, content and style.	Unit 5: Report Writing (Pages: 107-112)

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INTRODUCTION

Social research pertains to conduction of research on groups from a society by social scientists. The book *Social Research and Statistics* consists of discussion on nature, objectives and scope of social research. It also outlines the methods and techniques used in conducting successful social research. The book is divided into five units.

The first unit discusses the nature, scope and objectives of social research. It also deals with the various steps in social research. Social research pertains to research carried out by social scientists on various facets of society. This unit explains research designs and the act of drawing hypothesis based on scientific phenomena.

The second unit discusses the purpose, principles and methods of sampling. It also outlines the probability and non-probability sampling. The unit further deals with data; its types and sources and details the tools of data collection, like observation, interview, questionnaire, focus group and case study methods. The students will also learn about the measurement and scaling techniques of data and will be able to ascertain reliability and validity of scales.

The third unit deals with the methods of processing and presenting data and analyses the processes of editing, coding, classification and tabulation. It also outlines a working knowledge of SPSS. Finally, it illustrates the utility of diagrams and graphs as tools for presentation of data.

A test that offers a mechanism to make quantitative decisions about one or more than one processes is known as a statistical. This test intends to check for the sufficiency of evidence to reject an inference or hypothesis about the process. This inference is known as null hypothesis. In case the null hypothesis is required to be believed as true, it should not be rejected. If considered true, a null hypothesis is rejected, and the result may be disappointing. The result in such a case would probably indicate the absence of enough data to prove the required theory. The fourth unit also deals with the details of dispersion, correlation and chi-square test.

The last step in the research process is writing the research report. In a way, it is the most crucial step, because it is through the report that the findings of the study are communicated to the readers. The whole research enterprise can be disrupted if the report is not written logically and coherently. The quality of the report depends on many factors such as the writing skills and clarity of thought of the researcher, the ability of the researcher to express thoughts in a logical and sequential manner and the adequate knowledge base of the subject area. The use of statistical procedures reinforces the validity and cogency of the conclusions and arguments of the researcher. The last unit deals with the important methods of writing reports.

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The book has been written in a self-learning manner. Every unit starts with the 'Introduction' that gives a brief outline of the concept to be dealt with. It is followed by the 'Unit Objectives' that lay bare what the students would learn in that unit.

'Summary' and 'Key Terms' are given after every unit to help students recapitulate the concepts. The 'Check Your Progress' and 'Questions and Exercises' sections in each unit help in better understanding of the subject. The 'Further Reading' section creates a research interest in students for further exploration of the topics covered.

UNIT 1 SOCIAL RESEARCH

Structure

- 1.0 Introduction
- 1.1 Unit Objectives
- 1.2 Nature and Objectives of Research
 - 1.2.1 Definitions of Research
 - 1.2.2 Paradigms of Research: Positivism and Interpretivism
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1.0 INTRODUCTION

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1.1 UNIT OBJECTIVES

After going through this unit, you will be able to:

- Define social research
- Discuss the nature and objectives of social research
- Illustrate the relationship between theory and fact
- Analyse various methods of carrying out social research
- Discuss types of research design
- Elaborate on the importance of hypothesis

1.2 NATURE AND OBJECTIVES OF RESEARCH

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The subject matter of sociology is society. Sociologists study man's social behaviour in a variety of contexts. They use a number of methods in social research including 'comparative method', 'participant observer method', 'community studies', etc. Descriptive and explanatory research aims only to describe, in detail, a situation or set of circumstances. On the other hand, action research refers to 'that is done when some reform or change has been introduced. Its purpose is to monitor the effect of the change and to decide whether it has achieved what it was supposed to achieve.'

Many eminent sociologists defined statistics and came out with several definitions. Some of them approached it as 'statistical data', i.e., numerical statement of facts. In this tradition, Prof. Horace Secrist said: 'Statistics may be defined as the aggregate of facts affected to a marked extent by multiplicity of causes, numerically expressed; enumerated or estimated according to a reasonable standard of accuracy, collected in a systematic manner, for a predetermined purpose and place in relation to each other.' In contrast, certain other experts defined it as 'statistical methods', i.e., complete body of the principles and techniques used in collecting and analysing such data. In this genre, Croxton and Cowden said: 'Statistics may be defined as the science of collection, presentation, analysis and interpretation of numerical data.'

In ancient times, the use of statistics was related to the state-craft or the administration of the affairs of the State. As a result of advances in the field, statistics finds ready application in all physical as well as social sciences. Today, there is hardly any field that does not lend itself for application of statistical techniques and principles. It is applied, among others, in social sciences, planning, mathematics, economics, business, biology, astronomy, medical sciences, psychology and education. It extends beyond mere collection of data but involves scientific techniques to analyse it and draw sound inferences from it.

However, it has the following limitations:

1. Statistics is not suited to the study of qualitative phenomenon but only those things which are capable of quantitative measurement.
2. Statistics does not study individuals but deals with an aggregate of objects and group characteristics.
3. Statistical laws are not exact but are based on probability and its results are true only on an average.
4. Statistics is liable to be misused as they can be moulded and manipulated in any manner to suit one's arguments and reasoning. Incomplete data often leads to wrong and misleading conclusions.

Most disciplines undertake research. Research is more of a way of thinking than a set of skills. Research entails critically examining aspects of

the study; making guiding principles for testing particular procedure; developing testing theories, etc.

For any study undertaken to be called a 'research', it should adhere to the following three criteria:

- A set of philosophies guide the research
- Methods, techniques and procedures which have proven reliability and validity are used
- Research has to be objective as well as unbiased

The philosophical orientation of research may stem from one of the two paradigms in research—*positivism* and *interpretivism*. Validity ensures that in a research study correct procedures have been applied to find answers to a question. Reliability refers to quality of a measurement procedure. 'Unbiased and objective' means that the researcher takes each step and draws each conclusion to the best of his/her ability and without introducing own biases and prejudices. (Ranjit Kumar, 1999).

1.2.1 Definitions of Research

Grinnell (1993:4) says 'a research is a structured inquiry that utilizes acceptable scientific methodology to solve problems and creates new knowledge that is generally applicable'.

Burns (1994:2) defines research as 'a systematic investigation to find answers to a problem'.

According to Kerlinger (1986:10), 'scientific research is a systematic, controlled empirical and critical investigation of propositions about the presumed relationship about various phenomena'.

Bulmer (1977:5) states 'sociological research is primarily committed to establishing systematic, reliable and valid knowledge about the social world'.

Ranjit Kumar (1999:7) holds that a research should have the following characteristics. It should be:

- *Controlled*: The concept of control implies that in exploring causal relationship among variables, the study is set in such a way that extraneous factors affect the relationship minimally.
- *Rigorous*: The research must be carried out rigorously and scrupulously and it should be ensured that the procedures followed are relevant, appropriate and justified.
- *Systematic*: This refers to the logical sequence that is undertaken in an investigation.
- *Valid and verifiable*: The conclusions drawn on the basis of findings should bear the imprint of validity and should be verifiable by others.

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- *Empirical*: Conclusions reached during research are based on evidences gathered from real-life experiences and observations.
- *Critical*: The methods employed and procedures used are critically scrutinized. The processes and methods of investigation adopted should be very lucidly stated and explained and should withstand critical scrutiny.

1.2.2 Paradigms of Research: Positivism and Interpretivism

The application of scientific methods practiced in natural sciences like physics and chemistry in researching various areas in social sciences is known as the *positivist approach*. Social scientists maintain absolute objectivity in the methods of study they follow and are concerned only with measurable phenomena. Quantitative approaches like experiments, surveys, etc., are concerned with positivism which stresses on generalizations and reliability. Social research basically wishes to establish scientific laws of society, or causal relationships that are arrived at by testing research hypothesis.

In order to explain human behaviour, social researchers need to be conversant with people's interpretations of social phenomena. This approach is known as *interpretivism*. The methods used in the natural sciences cannot be used without modifications to the social sciences. The perceptions, motivations and experiences of the social actors are explored by the research designs. Qualitative methods like depth interviews, observation studies, etc., that places importance on validity is mostly associated with interpretivism. The motives and intentions that underpin social behaviour are studied by social research.

Theory and facts

Theory and facts (data) are the two most important elements of a scientific work. Without them, a scientific work cannot exist. A theory may be defined as a set of systematically related propositions specifying causal relationships among variables. It is, thus, a statement held as explanation of facts or phenomena. A fact is something which is certain, definite and has no ambiguity. It is self-evident in itself. Facts are the data. A theory is a structure of ideas that explain and interpret facts. Goode and Hatt (1952) hold that theory and facts are interlinked. Facts have two important contributions to theory building.

- *Facts initiate theory*: A theory is made only by a systematic organization and analysis of facts. Without facts, no theory can exist.
- *Facts can lead to the rejection of existing theories and reformulation of new ones*: An existing theory must explain the new observed facts. If it fails to do so, it is reformulated or even rejected.

A theory also has important role to play in the study of facts:

- (i) *Theory predicts facts*: Since theory is a summation of facts, it can predict facts in unobservable areas; for example, since it is known that the introduction of western technology results in a drop in death rate, we may expect the same in any region (which is not yet studied) that the introduction of western technology will produce the same results.
- (ii) *Theory points to gaps in knowledge*: Since theory summarizes and predicts facts, it also points to areas which have not yet been explored.

An instance is Sutherland's study of criminal psychology. While reviewing the existing theories, he found that all of them dealt with crimes committed by lower-class people and not by middle-class people. The theories did not even deal with white-collar crimes. Such a gap would not have been visible if the facts were not organized into a theoretical proposition.

Theory and fact are in constant interaction. Development in one leads to development in another. A scientific work actually depends upon a constant stimulation of facts by theory and of theory by facts.

1.2.3 Objectivity in Social Research

Social scientists are often influenced by their biases, passions, likes and dislikes and preconceived notions. These are seen to interfere with the scientific objectivity that they would need while researching on social sciences. Objectivity is the capacity to represent truthfully and without prejudice, the results of one's research. A social researcher needs to be aware of his personal biases and prejudices and take adequate care that these do not affect the objectivity of the research. Max Weber, an exponent in social research argued, that actually, the thoughts and beliefs of the researchers *should* affect their topics of study. However, the social scientist needs to be value-neutral once the research question has been framed. Objectivity can be attained by sharing the results of research with experts who then may be asked to critically examine them. In his *Logic of Scientific Discovery* (1959), Karl Popper maintained that *confirmation* and *refutation* are the essence of scientific discovery. Social researchers publish their work so that their work can be scrutinized by others. Journals have dedicated teams to decide whether the research material lives up to the standard of the journal and should, therefore, be published. Once a research material is published, other scholars look at it critically, especially when they do not agree with the findings. Some others may wish to replicate the study by changing the strategies and settings to check if the conclusion would remain the same.

Types of sociological researches

Sociologists employ a variety of methods to learn about the social world. These methods are not mutually exclusive. Since each research method has strengths and weaknesses, a good research strategy may use several of them.

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Appelbaum and Chambliss (1997:40) hold that the principal methods of social research include survey and fieldwork.

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CHECK YOUR PROGRESS

1. What are the methods used in social research?
2. List two limitations of statistics.
3. List three criteria for a study to be termed as 'research'.
4. According to Ranjit Kumar, what should the characteristics of research be?

1.3 SURVEY AND RESEARCH

A survey entails administering a precisely worded questionnaire to a group of people in order to determine their characteristics, opinions and behaviours. First, the researcher has to define a *population universe* to which the study applies: this is the group of people about which generalization is to be made. Once the population universe is identified, a *sample*—a subset of cases selected to represent the larger population—must be selected, since it is seldom economically feasible or desirable to interview everyone in a chosen population universe.

Two principal type of sampling are used: *probability* and *non-probability sampling*. In the most common type of probability sampling, termed *random sampling*, everyone in the population universe has an equal chance of being in the sample. In *non-probability sampling*, subjects are deliberately chosen because of their specific characteristics. Once the sample is constructed or drawn, the questionnaire is administered. Questionnaires may contain *open- or close-ended questions*. In *close-ended questions*, the respondents are required to choose only from predetermined alternative responses. In *open-ended questions*, there are no fixed responses to choose from. The respondents are provided with a wide range of opportunities to express a wide range of feelings and opinions.

One of the strengths of survey method is that it permits the researcher to draw conclusions about a large number of people on the basis of a much smaller number of interviews. This is a major advantage in terms of time and money. Surveys also have some weaknesses. Sometimes, surveys can be superficial since in order to be feasible economically, they usually call for brief responses to close-ended questions. Many-a-times, responses are self-serving, just intended to make the interviewee look good in the eyes of the researcher.

1.3.1 Fieldwork

Fieldwork consists of many methods. The most common fieldwork is that of *participant observation*. The researcher becomes a part of the community under study; immerses himself/herself completely in the daily life of the community and participates in the activities of the members of the community but with a sense of detachment. He then attempts to report all his/her findings on every aspect of their lives with a sense of impartiality and disinterestedness. Classical examples of fieldworks are William Whyte's (1915) *Street Corner Society* (1943): *A Study of Italian-American Working-Class Men* and B. Malinowski's *Study of the Tribes of Trobriand Island*.

Sometimes the research strategy requires that the researcher stays at arm's length from the people they are studying, simply observing what is going on. A sociologist studying crowd behaviour at a rally or student participation in a seminar would be an example. The researcher tries to be a 'fly on the wall', invisible and unobtrusive, yet constantly recording what is going on. This technique is called *detached observation*.

Interview is another method of fieldwork. It is a detailed conversation designed to obtain in-depth information about a person. In a *structured interview*, the researcher has a detailed list of specific questions to ask. In the *semi-structured interview*, the researcher has a list of topics to cover that depends on the interview situation itself to determine the course of questioning and the details of the question.

Participatory research is another method under fieldwork. It is designed to involve the subjects of the research in the research process itself, with an eye to empowering them to overcome some difficulty or problem. This research is usually tied with community action. It is conducted when a group or community wants to engage in some form of social change but lacks the expertise to do so. The researcher is invited to become a fully engaged member of the social change process, helping the members of the group to conduct the necessary research and training them in the techniques for doing so.

Another method is *experiment*. In it, we choose two groups—the *experimental group* and the *control group*. An experimental group is one which is exposed to the independent variable. The control group is kept constant—no experiment is carried on it. In the end, we compare both the groups to find out the resultant effects of the experiment.

Working with *available information* is another strategy. This involves working with data collected by other people. Often such data are the only information available. Examples include statistical data, documentary analysis or comparative-historical research (study of several different countries as well as examination of changing historical patterns in a single country).

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APPROACH	WHEN APPROPRIATE
Survey	Basic information about a large population is required and sampling is a feasible strategy.
Interview	In-depth information is desired and direct access to informants is possible.
Detached observation	Information should be gathered but the data gathering should be as unobtrusive as possible.
Participant observation	Firsthand knowledge of the direct experience of subjects is required.
Participatory research	Primary goal is empowerment: training people to acquire the necessary skill to do research themselves.
Experiments	To determine specific causal relationships.
Using the available information	Direct acquisition of data is either not feasible or not desirable.

CHECK YOUR PROGRESS

5. What is 'population universe'?
6. What are the two types of sampling?
7. What is the advantage of a survey?
8. Explain 'detached observation'.

1.4 STEPS IN SOCIOLOGICAL RESEARCH

Ranjit Kumar (1999) brings out the following steps in research process:

1. Formulating a research problem
2. Conceptualizing a research design
3. Constructing a hypothesis
4. Selecting a sample
5. Constructing an instrument for data collection
6. Collecting data
7. Processing data
8. Analysing data and drawing conclusions
9. Writing the research report

Appelbaum and Chambliss (1997) highlight the following steps in a social research:

1. Defining the research question
2. Reviewing the existing literature

3. Selecting the appropriate methods of inquiry
4. Considering the ethical implications
5. Conducting the inquiry
6. Communicating the results to others

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1.5 RESEARCH DESIGN

A research design is a plan or strategy for carrying out research. It specifies the objectives of study and the methods and techniques to be used for achieving the objectives. It, thus, represents a blueprint for collection and analysis of data. William Zikmund (1988:41) describes research design as 'a master plan specifying the methods and procedures for collecting and analysing the needed information'. Martin Bulmer (1977:86) says 'research design is the specification of the problem, conceptual definitions, derivation of hypothesis to be tested and defining of population to be studied'.

A research design has the following functions:

- It offers a scientific approach to research operation and eliminates unnecessary confusion.
- It provides a systematic approach to the research operation so that all steps are executed in the right direction.
- Using it, optimum reliability and efficiency is used.
- It channelizes a researcher's efforts in the right direction and avoids wastage of time and money.
- It leads to more accurate results by minimizing uncertainty and biases.
- It enables a researcher to anticipate potential problems in data collection.
- It helps in giving useful conclusions (in the form of hypothesis, theories, etc.)

A well-crafted research design should involve the following steps:

- Clear definition and specification of the problem/topic to be studied.
- Clear and operational definition of the concepts which are used; for example, in a study of drug abuse, concepts like drugs, drug abuse, withdrawal symptoms and others should be clearly defined.
- Thorough review of literature: to familiarize oneself with existing researches on the topic.
- Framing of hypothesis: to be done precisely and lucidly whereby the relationships among variables that need to be empirically tested are stated unambiguously.
- Clear specification of the sample to be studied.

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- Identification of the methods of data collection (for example: questionnaire, interview, schedule, case-study, survey, etc.)
- Identification of the process of analysing and presenting the data.
- Interpretation of the results to draw useful conclusions.
- Reporting the research finding.

Manheim (1977) says that based on the purpose of research, research designs can be classified into three categories:

- (i) Exploratory research design
- (ii) Descriptive research design
- (iii) Experimental research design

1.5.1 Exploratory Research Design

Exploratory research is carried out when sufficient information is not available about the issue to be studied. The main purpose of exploratory design is to acquire preliminary information about the universe of study so that a more precise investigation can be carried out. According to Sarantakos (1998:128), exploratory research is undertaken for the following reasons:

- *Feasibility*: To find out whether the study on the issue in question is warranted, worthwhile and feasible.
- *Familiarization*: To familiarize the researcher with the social context of the issue.
- *New ideas*: To generate ideas, views and opinions on the research issue which will help in the proper understanding of the problem.
- *Hypothesis*: To formulate a workable hypothesis which can be empirically tested after a detailed study.
- *Operationalization*: To operationalize the concepts by explaining their structure and by identifying indicators.

The exploratory research design should be flexible enough to provide space for approaching the problem from different angles and for exploring all its dimensions. The following method can be used:

- *Review of available literature*: This provides the researcher with an idea of what has already been done on the issue under investigation.
- *Expert surveys*: Involves interviews of experts and competent people who have practical knowledge of the problem. There should be sufficient flexibility in the survey so that the respondents (interviewees) are able to raise those issues which the researcher has not perceived earlier and this helps in enlightening the researcher on many new areas.
- *Case studies*: This is also called 'insight-stimulating study'. It is made use of when there is neither enough guidance nor literature.

Single cases relevant to the issue are selected and studied in order to collect information for the main study.

- *Participant observation*: This involves the process whereby the researcher mixes with the general populace under investigation, participate in all their activities and observe them closely and intently.

Two prominent sociological examples of exploratory research are:

- B. Malinowski's *Study of Tribes of Trobriand Island, Papua New Guinea* (1915).
- *Street Corner Society: The Social Structure of an Italian Slum* by William Foote Whyte (1943).

Both these studies relied on participant observation technique of data collection. Both researchers had an exploratory objective rather than aiming to test a limited set of specific hypothesis. Both Malinowski and Whyte presented in advance only the outlines of their conceptual models and collected a wide range of data from which a number of other hypotheses could be tested.

An exploratory research is carried out as the primary stage of a research, the next stage being descriptive and experimental research designs. Exploratory researches always carry with themselves a set of concepts which help the researcher to look for facts. It is this attribute of exploratory research that distinguishes it from raw empiricism.

1.5.2 Descriptive Research Design

It is undertaken to present an accurate description of a particular social phenomenon. Its main objective is to acquire a detailed knowledge of the subject matter under study or to test a hypothesis under non-controlled conditions. Here, the researcher is familiar with the subject under study. Since the purpose is to get comprehensive information, the research design should be carefully planned.

The first step involves a clear determination of the objectives of study and to scientifically define the concepts used. This is necessary to minimize confusion and biases. The next stage is of *data collection*. This may include any of the standard methods—use of documents, observations, interviews or questionnaires. The relevance of a particular method depends on the objectives of study; for instance, if the objective is to study the attitudes towards family planning, interview method would be useful. The final stage is that of the analysis of data and, then, interpreting it properly to draw relevant conclusions. For this, it is essential that the data are carefully processed. This may include coding the responses, i.e., placing the data according to their categories, tabulating the data and making use of other necessary statistical computations.

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Descriptive research generally forms the second stage of the research, the first stage being exploratory research. Both exploratory and descriptive designs can be placed on a continuum. Exploratory research clarifies the concepts, increases familiarity with the subject area and helps in formulating hypothesis. Once the groundwork is done, descriptive research can be undertaken and a set of hypothesis can be tested. Thus, both exploratory and descriptive researches are complementary to each other.

1.5.3 Experimental Research Design

Experimental research design is used to test the hypothesis of a causal relationship under controlled conditions. In experimental research, the researcher manipulates the independent variable of stimulus and observes its effects on the dependent variable. This outcome is observed by minimizing the effects of external factors which might confound the result.

In an experimental design, we choose two groups: *experimental group* and the *control group*. An experimental group is one which is exposed to the independent variable. The control group is kept constant — no experiment is carried on it. In the end, we compare both the groups to find out the resultant effect of the experiment. To avoid any error, the control groups and experimental groups should be as similar as possible.

However, carrying out an experimental design is not an easy task. It is very difficult to have a perfect match between the control group and the experimental group. Also, controlling of extraneous factors is very difficult.

Keeping this in view, a *modified experimental design* is used. In it, the experimental group also serves as the control group. The experimental group is first measured before introducing the independent variable. After this, the variable is introduced and the changes in the experimental sample measured. This modified design is also called *before-after* experimental design.

The most prominent example of 'before-after' experimental design is the Hawthorne experiment being carried out by E. Mayo on the workers of the Western Electric Company in Chicago (1927–32) out of which the famous Human Relations School emerged in social science. In this study, the relationship between the physical conditions of work (independent variable) and the productivity of the workers (dependent variable) had been examined.

There is another method of carrying out a modified experimental design. In it, two different groups are studied — one which has been exposed to the independent variable and the other which is not exposed to. No controlled experimentation is done; rather, the groups are studied in their natural surroundings.

A classic example is F. Stuart Chapin's 'Study of the Effects of Good Housing upon Former Slum Families Re-Housed in Summer Field Homes of Monopolies (USA)'. In this, Chapin studies the families who have moved

out into the housing project and compared them with those who were left behind in the slums. The left behind families constituted the control sample while those who moved out formed the experimental sample.

The modified experimental design suits sociological research. No doubt, there is always the difficulty of finding two similar groups which are comparable. But, then, every sociological research has to work within a set of limitations.

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CHECK YOUR PROGRESS

9. According to Appelbaum and Chambliss, what are the steps of social research?
10. What is a research design?
11. What are the three classification of research design according to Manheim?
12. List two examples of exploratory design.
13. Why is descriptive research design used?

1.6 HYPOTHESIS

According to Bailey (1982:41), a hypothesis is a proposition stated in a testable form which predicts a particular relationship between two or more variables. Theodorson and Theodorson (1969) in *A Modern Dictionary of Sociology* defines hypothesis as a tentative statement asserting a relationship between two or more variables.

The validity of a hypothesis is tested empirically. Since a hypothesis is put to empirical investigation, it must be free from any ambiguity and must clearly specify the variables to be tested. A statement that lacks the variables or which does not explain how the variables are related to each other is no hypothesis in a scientific sense. A scientific hypothesis should also be objective and free from value-judgments.

Following are a few examples of good and proper hypotheses:

- Unemployment increases crime rate.
- Upper-class people have fewer children than lower-class people.
- Suicide rates vary inversely with social integration.
- Young girls (15–30 years) are more victims of crimes against women than middle-aged women (30–45 years).

Sarantakos (1998) points out the following functions of a hypothesis:

- It guides social research by offering direction to the structure and operation.

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- It tells a researcher how to conduct enquiry, what type of data to be collected and how the data are to be analysed.
- It offers a temporary answer to the research question.
- It facilitates statistical analysis of variables in the context of hypothesis testing.

Goode and Hatt (1952: 67) highlight the following attributes of a good hypothesis:

- *Conceptual clarity*: A hypothesis should consist of clearly defined and understandable concepts.
- *Specificity*: A hypothesis should specifically and precisely explain the relationship between variables. The variables should be such that they can be operationalized.
- *Testability*: A hypothesis should be empirically testable.
- *Availability of techniques*: A hypothesis must be related to available sociological techniques or its validity can never be tested.
- *Theoretical relevance*: A hypothesis should be related to a body of theory. Hypothesis cannot be developed in isolation.

Some social scientists criticize hypotheses by saying that they bias the researchers in data collection and analysis by delimiting their scope of study beforehand. Nevertheless, it cannot be denied that a hypothesis is of great significance. It guides a researcher by helping him to concentrate on important aspect of research and ignore the irrelevant ones.

CHECK YOUR PROGRESS

14. What is a hypothesis?
15. What are the functions of a hypothesis?

1.7 SUMMARY

- Statistics may be defined as the science of collection, presentation, analysis and interpretation of numerical data.
- Statistics has certain limitations, such as: it is not suited to studying qualitative phenomenon and does not study individuals but deals with an aggregate of objects and group characteristics.
- Social research is a systematic investigation and a structured inquiry that utilizes acceptable scientific methodology to solve problems and create knowledge that is generally acceptable.

- Social research has the following characteristics—it is controlled, rigorous, systematic, verifiable, empirical and critical.
- There are two major paradigms of social research: (i) Positivism which involves the application of the methods of natural sciences into social sciences and is mainly utilized in quantitative researches and (ii) interpretivism which gives importance to the subjective meanings and intentions of the actors/subjects under study and is mainly utilized in qualitative study.
- There are several methods of sociological research—survey research, fieldwork, interview, participant observation, participatory research, experiments and use of available data.
- Theory and facts are the two most important elements of scientific research. Facts are the data. A theory is a structure of ideas that explain and interpret facts.
- Objectivity is a crucial element of social research. Max Weber says that though our values may influence us while selecting the research topic, but once the research topic is framed; we should remain value-neutral in studying it.
- A research design is a plan or strategy for carrying out a research. It specifies the objectives of study and the techniques to be used for achieving the objectives. The three main types of research designs are exploratory, experimental and descriptive research designs.
- Hypothesis constitutes an important component of social research. It may be defined as a tentative statement asserting the relationship among two or more variables, the validity of which needs to be tested empirically.

1.8 KEY TERMS

- **Social research:** Research conducted by social scientists
- **Statistical data:** Numerical statement of facts
- **Interpretism:** To explain human behaviour, social researchers need to understand the meanings and interpretations that people attach to phenomena in the social world

1.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Sociologists are interested in those aspects of human behaviour that are the result of the social context in which we live. They use a variety of methods in social research including 'comparative method', 'participant observer method', 'community studies', etc.

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2. Statistics has the following limitations:
 - Statistics is not suited to the study of qualitative phenomenon but only those things which are capable of quantitative measurement
 - Statistics does not study individuals but deals with an aggregate of objects and group characteristics
3. For any study undertaken to be called a 'research', it should adhere to the following three criteria:
 - It is undertaken within the framework of a set of philosophies.
 - It uses procedures, methods and techniques that have been tested for their validity and reliability.
 - It is designed to be unbiased and objective.
4. According to Ranjit Kumar, the research has certain characteristics. It should be controlled, rigorous, systematic, valid and verifiable, empirical and critical.
5. First, the researcher has to define a *population universe* to which the study applies: this is the group of people about which generalization is to be made.
6. The types of sampling are: probability and non-probability sampling.
7. One of the strengths of survey method is that it permits the researcher to draw conclusions about a large number of people on the basis of a much smaller number of interviews. This is a major advantage in terms of time and money.
8. Sometimes the research strategy requires that the researcher stays at arm's length from the people they are studying, simply observing what is going on and otherwise remaining detached or disengaged. A sociologist studying crowd behaviour at a rally or student participation in a seminar would be an example. The researcher tries to be a 'fly on the wall', invisible and unobtrusive, yet constantly recording what is going on. This technique is called *detached observation*.
9. Appelbaum and Chambliss (1997) highlight the following steps in a social research:
 - Defining the research question
 - Reviewing the existing literature
 - Selecting the appropriate methods of inquiry
 - Considering the ethical implications
 - Conducting the inquiry
 - Communicating the results to others
10. A research design is a plan or strategy for carrying out a research. It specifies the objectives of study and the methods and techniques to be used for achieving the objectives. It, thus, represents a blueprint for collection and analysis of data. William Zikmund (1988:41) describes

research design as 'a master plan specifying the methods and procedures for collecting and analysing the needed information'.

11. Manheim (1977) says that based on the purpose of research, research designs can be classified into three categories:
 - Exploratory research design
 - Descriptive research design
 - Experimental research design
12. Two prominent sociological examples of exploratory research are:
 - B. Malinowski's *Study of Tribes of Trobriand Island, Papua New Guinea* (1915).
 - *Street Corner Society: The Social Structure of an Italian Slum* by William Foote Whyte (1943).
13. Descriptive research design is undertaken to present an accurate description of a particular social phenomenon. Its main objective is to acquire a detailed knowledge of the subject matter under study or to test a hypothesis under non-controlled conditions. Here, the researcher is familiar with the subject under study. Since the purpose is to get comprehensive information, the research design should be carefully planned.
14. According to Bailey (1982:41), a hypothesis is a proposition stated in a testable form which predicts a particular relationship between two or more variables. Theodorson and Theodorson (1969) in *A Modern Dictionary of Sociology* defines hypothesis as a tentative statement asserting a relationship between two or more variables.
15. Sarantakos (1998) points out the following functions of a hypothesis:
 - It guides social research by offering direction to the structure and operation.
 - It tells a researcher how to conduct enquiry, what type of data to be collected and how the data are to be analysed.
 - It offers a temporary answer to the research question.
 - It facilitates statistical analysis of variables in the context of hypothesis testing.

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1.10 QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are the objectives of social research?
2. Write a note on the characteristics of research as provided by Ranjit Kumar.
3. What are the contributions of facts in theory-building?
4. Why should social scientists be 'value-neutral'?

5. Discuss interview as a part of fieldwork.
6. How is the validity of a hypothesis tested?

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Long-Answer Questions

1. Define social research and write a note on the nature of social research.
2. Elaborate on the various types of research designs.
3. What is the importance of hypothesis in social research?

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