

# Scientific Research Workshops - A Practical Perspective

**Prepared by Dr. Mona Moustafa Elashry**

**Session5**





مجموعة جامعة  
الجميع الذكية  
للتعليم القابضة

MIDOCEAN  
UNIVERSITY  
BY EVERYONE'S SMART UNIVERSITY

# "Achieving Reliable Results: Effective Sampling Methods and Data Collection Measurement Techniques"

Prepared by

**Dr. Mona Moustafa Elashry**

[www.midocean.ae](http://www.midocean.ae)



## Session Outline

- Sampling Methods
- Data Collection and Measurement Techniques

# Sampling Methods

طرق أخذ العينات

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# Why sample?

❑ Sampling is the process of selecting a few from the many in order to carry out empirical research.

❑ أخذ العينات هو عملية اختيار عدد قليل من الكثير من أجل إجراء البحوث التجريبية.

❑ Sampling is used when it is not possible or practical to include the entire research population in your study, which is usually the case

❑ يتم استخدام أخذ العينات عندما لا يكون من الممكن أو العملي تضمين مجتمع البحث بالكامل في دراستك، وهو ما يحدث عادةً

- ❑ The method of sampling used plays a major role in any research investigation.
- ❑ تلعب طريقة أخذ العينات المستخدمة دورًا رئيسيًا في أي تحقيق بحثي.

❑ You must take care when selecting a sampling technique; there are a number of different approaches to sampling and choice of approach should be influenced largely by the purpose of the investigation.

❑ يجب عليك توخي الحذر عند اختيار تقنية أخذ العينات؛ هناك عدد من الأساليب المختلفة لأخذ العينات وينبغي أن يتأثر اختيار النهج إلى حد كبير بالغرض من التحقيق.

❑ It is totally inappropriate to engage in a small-scale, localized qualitative study then attempt to generalize from the findings.

❑ من غير المناسب تمامًا الانخراط في دراسة نوعية محلية صغيرة الحجم ثم محاولة التعميم من النتائج.

- ❑ A rather simplistic rule of thumb is to assume that **quantitative research** will tend to use probability sampling techniques and **qualitative research** will tend to use purposive sampling.

❑ هناك قاعدة تبسيطية إلى حد ما وهي افتراض أن البحث الكمي سوف يميل إلى استخدام تقنيات أخذ العينات الاحتمالية وأن البحث النوعي سوف يميل إلى استخدام أخذ العينات الهادفة.

❑ Remember that here when we are talking about qualitative research we are talking about in-depth rich pictures, not short detail collected from many in order to add detail to the quantifiable evidence gathered.

❑ تذكر أننا عندما نتحدث هنا عن البحث النوعي فإننا نتحدث عن صور غنية متعمقة، وليس تفاصيل قصيرة تم جمعها من الكثيرين من أجل إضافة تفاصيل إلى الأدلة القابلة للقياس التي تم جمعها.

- ❑ Qualitative research may produce theoretical generalization, which means it is possible to generalize from,
- ❑ for example, a case study to a wider theory based on the findings of the case study.

- ❑ قد ينتج البحث النوعي تعميمًا نظريًا، مما يعني أنه من الممكن التعميم من،
- ❑ على سبيل المثال، دراسة حالة لنظرية أوسع بناءً على نتائج دراسة الحالة.

□ Payne (1990, 23) states that positivist and interpretivist researchers 'may have very different ideological roots but there is a common concern in ensuring that respondents are representative'.

□ يذكر باين (1990، 23) أن الباحثين الوضعيين والتفسيريين "قد يكون لديهم جذور أيديولوجية مختلفة تمامًا ولكن هناك اهتمام مشترك بضمان تمثيل المشاركين".

❑ Your sample selection must be directly related to the type of study you intend to conduct, the research question you are asking, and the type of evidence you need to present in order to respond to that question

❑ يجب أن يكون اختيار العينة مرتبطاً بشكل مباشر بنوع الدراسة التي تنوي إجراؤها، وسؤال البحث الذي تطرحه، ونوع الأدلة التي تحتاج إلى تقديمها للرد على هذا السؤال

- ☐ For example, would you take a random sample of 13–16-year-old teenagers from a particular region if you wanted to investigate their use of the internet?
- ☐ What if, when your random sample was decided, none had ever touched a computer?
- ☐ على سبيل المثال، هل يمكنك أخذ عينة عشوائية من المراهقين الذين تتراوح أعمارهم بين 13 و16 عامًا من منطقة معينة إذا أردت التحقق من استخدامهم للإنترنت؟
- ☐ ماذا لو، عندما تم تحديد عينتك العشوائية، لم يلمس أي منها جهاز كمبيوتر على الإطلاق؟

- ❑ Think carefully about the research question you are asking and the nature of the response you want: do you want to be in a position to make general statements or do you want to provide detailed insight?
- ❑ Your answer will often determine the research method(s) and sampling techniques that are appropriate to accomplish this.
- ❑ فكر جيدًا في سؤال البحث الذي تطرحه وطبيعة الرد الذي تريده: هل تريد أن تكون في وضع يسمح لك بالإدلاء ببيانات عامة أم تريد تقديم رؤية تفصيلية؟
- ❑ ستحدد إجابتك غالبًا طريقة (طرق) البحث وتقنيات أخذ العينات المناسبة لتحقيق ذلك.



# Population and sample

- So how do we go about selecting a sample and what do we select the sample from?

■ إذن كيف يمكننا اختيار العينة ومن ماذا نختار العينة؟

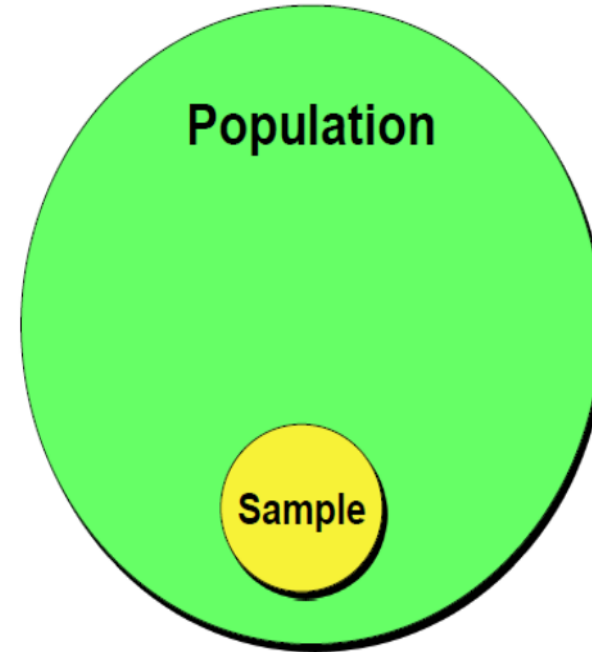
- Your research population is the entire set of individuals about which inference will be made
- مجتمع البحث الخاص بك هو المجموعة الكاملة من الأفراد الذين سيتم الاستدلال عليهم

**Population** – A group that includes all the cases (individuals, objects, or groups) in which the researcher is interested.

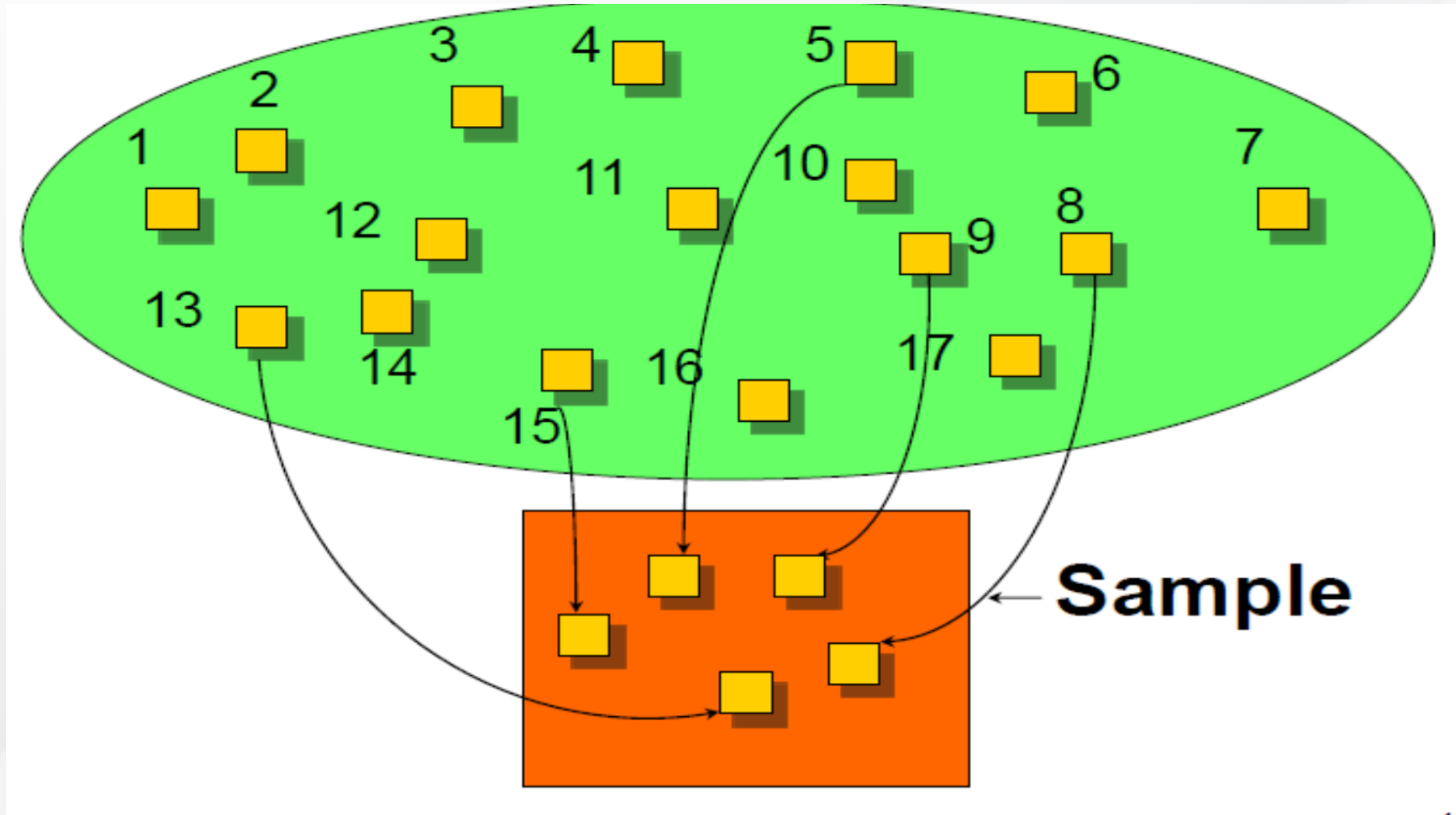
المجتمع – مجموعة تضم جميع الحالات (أفراد، كائنات، أو مجموعات) التي يهتم بها الباحث.

□ **Sample** – A relatively small subset from a population

□ العينة - مجموعة فرعية صغيرة نسبيًا من السكان

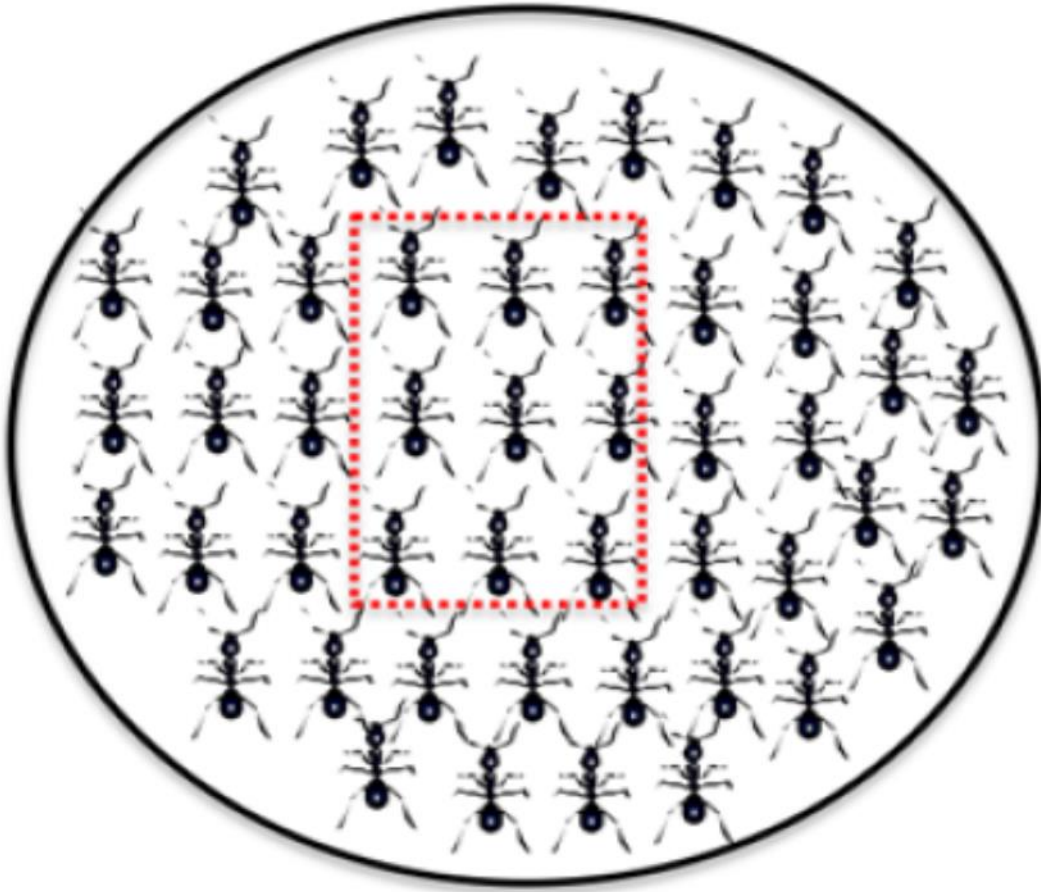


# Population and sample

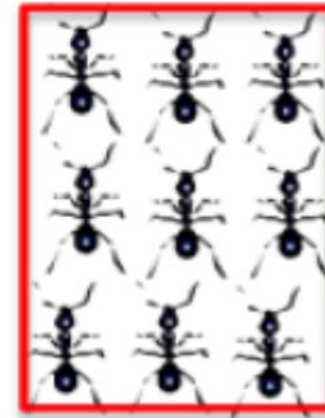


# Population and sample

**Population (N)**



**Sample (n)**



# Population and sample- Relevant Terms

- **An element** is a single member of the population.  
العنصر هو فرد واحد من المجتمع.
- **A subject** is a single member of the sample, just as an element is a single member of the population.  
فالفرد هو عضو واحد في العينة، كما أن العنصر هو عضو واحد في المجتمع.

# Population and sample- Relevant Terms

|                                                   |                                             |
|---------------------------------------------------|---------------------------------------------|
| Who is the target group for the study?            | This is called the <b>study population</b>  |
| Who in the target group should be surveyed?       | This is called the <b>sample</b> .          |
| How many people should be surveyed?               | This is called the <b>sample size</b> .     |
| How should the people to be surveyed be selected? | This is called the <b>sampling method</b> . |

- For example, before a political election opinion polls are used to gauge the general trends that are emerging within the population;

■ على سبيل المثال، قبل الانتخابات السياسية، يتم استخدام استطلاعات الرأي لقياس الاتجاهات العامة التي تظهر بين السكان؛

- these opinion polls are drawn from a small section of the entire population in order to make inferences concerning the likely outcome of the election, when every member of the population should cast their own vote.
- يتم استخلاص استطلاعات الرأي هذه من قسم صغير من إجمالي السكان من أجل التوصل إلى استنتاجات بشأن النتيجة المحتملة للانتخابات، عندما يدلي كل فرد من السكان بصوته الخاص.

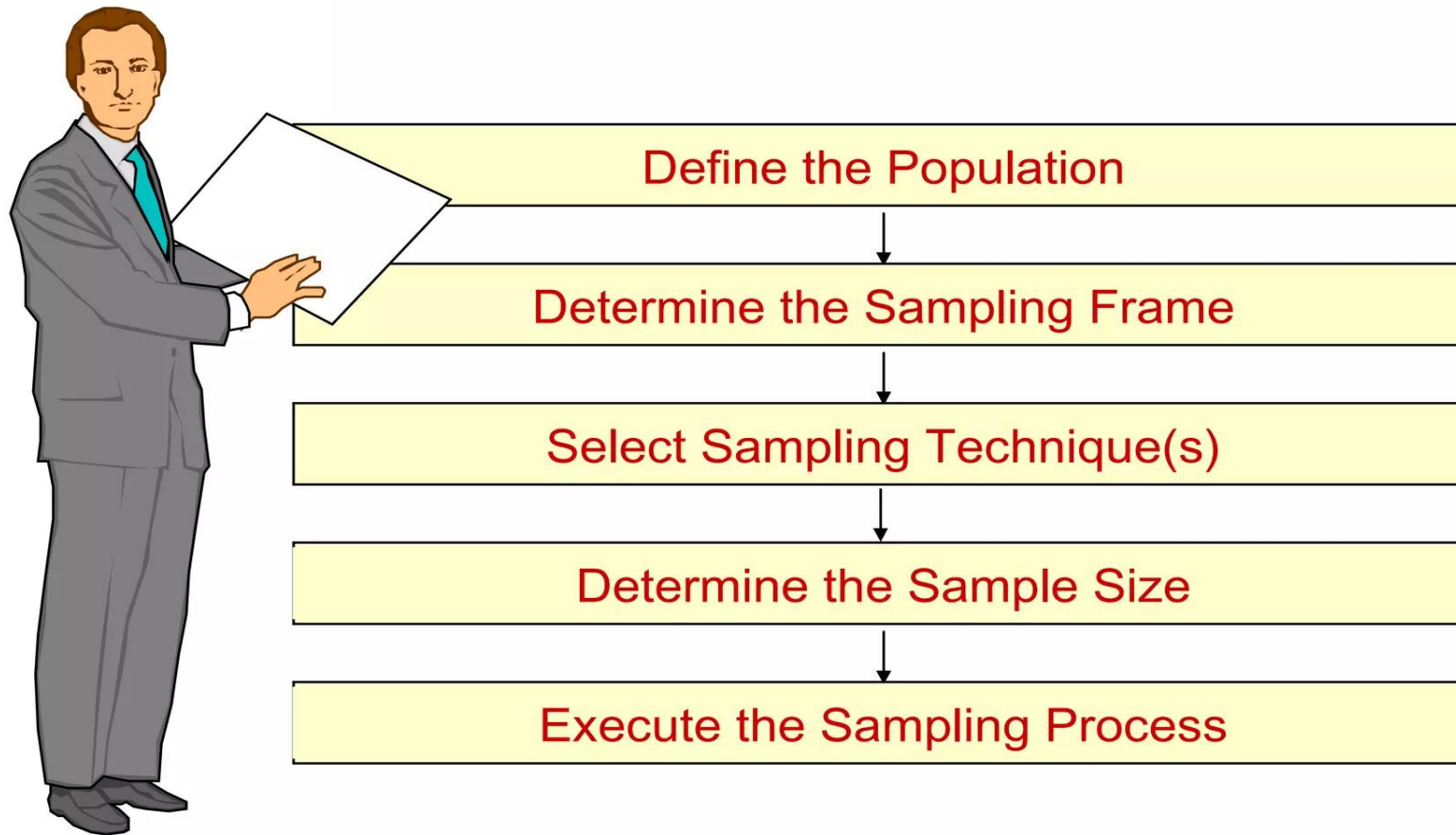
- So, the expressed opinion of a small number of the population is used to infer political preferences within the entire population
- لذلك، يتم استخدام الرأي المعبر عنه لعدد صغير من السكان لاستنتاج التفضيلات السياسية لدى جميع السكان

- This example should also indicate that inferences could sometimes be wrong! Be wary of making exaggerated claims or extended generalizations based on relatively small samples.
- يجب أن يشير هذا المثال أيضًا إلى أن الاستدلالات قد تكون خاطئة في بعض الأحيان! كن حذرًا من تقديم ادعاءات مبالغ فيها أو تعميمات موسعة بناءً على عينات صغيرة نسبيًا.

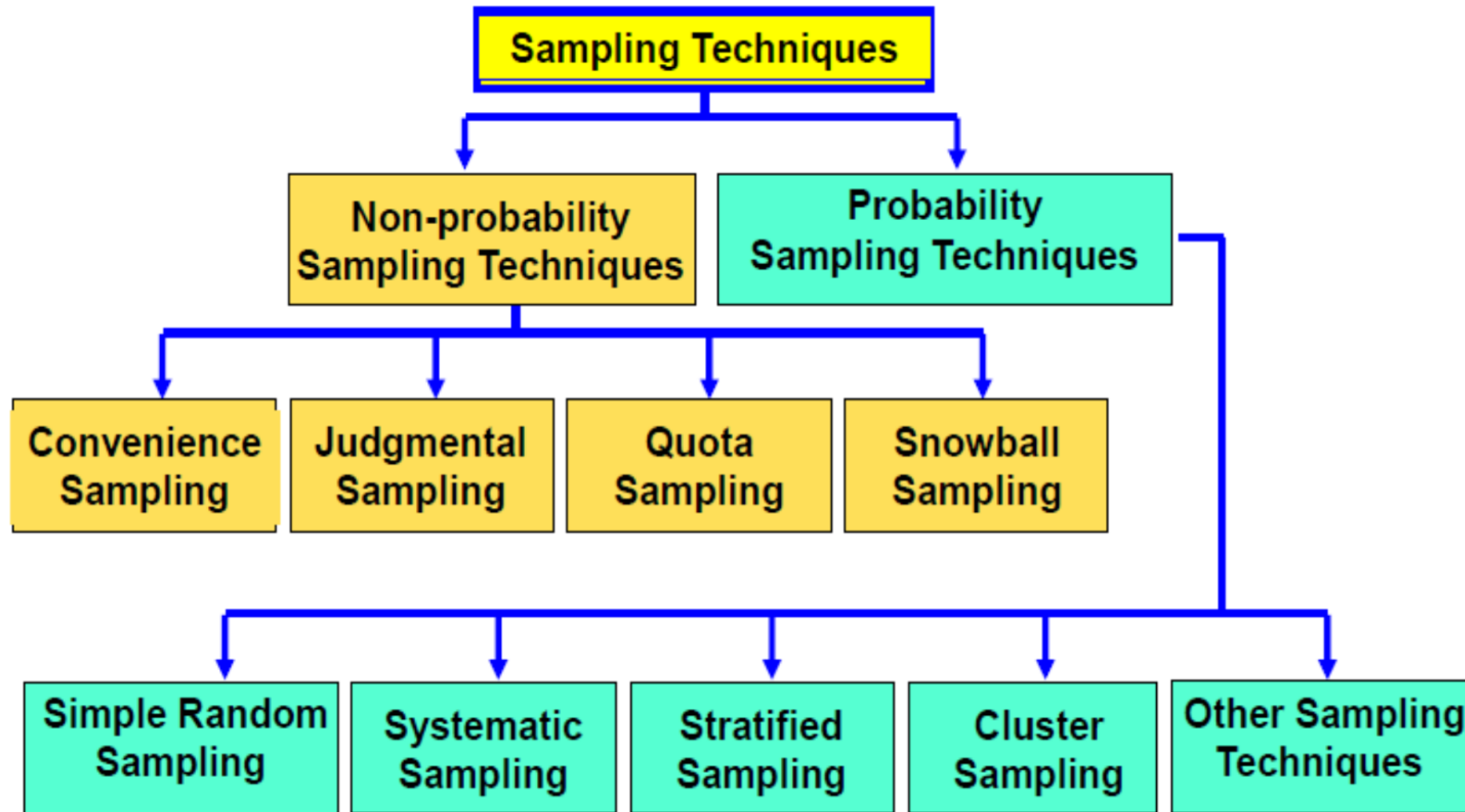


# Sampling Techniques

# The Sampling Design Process

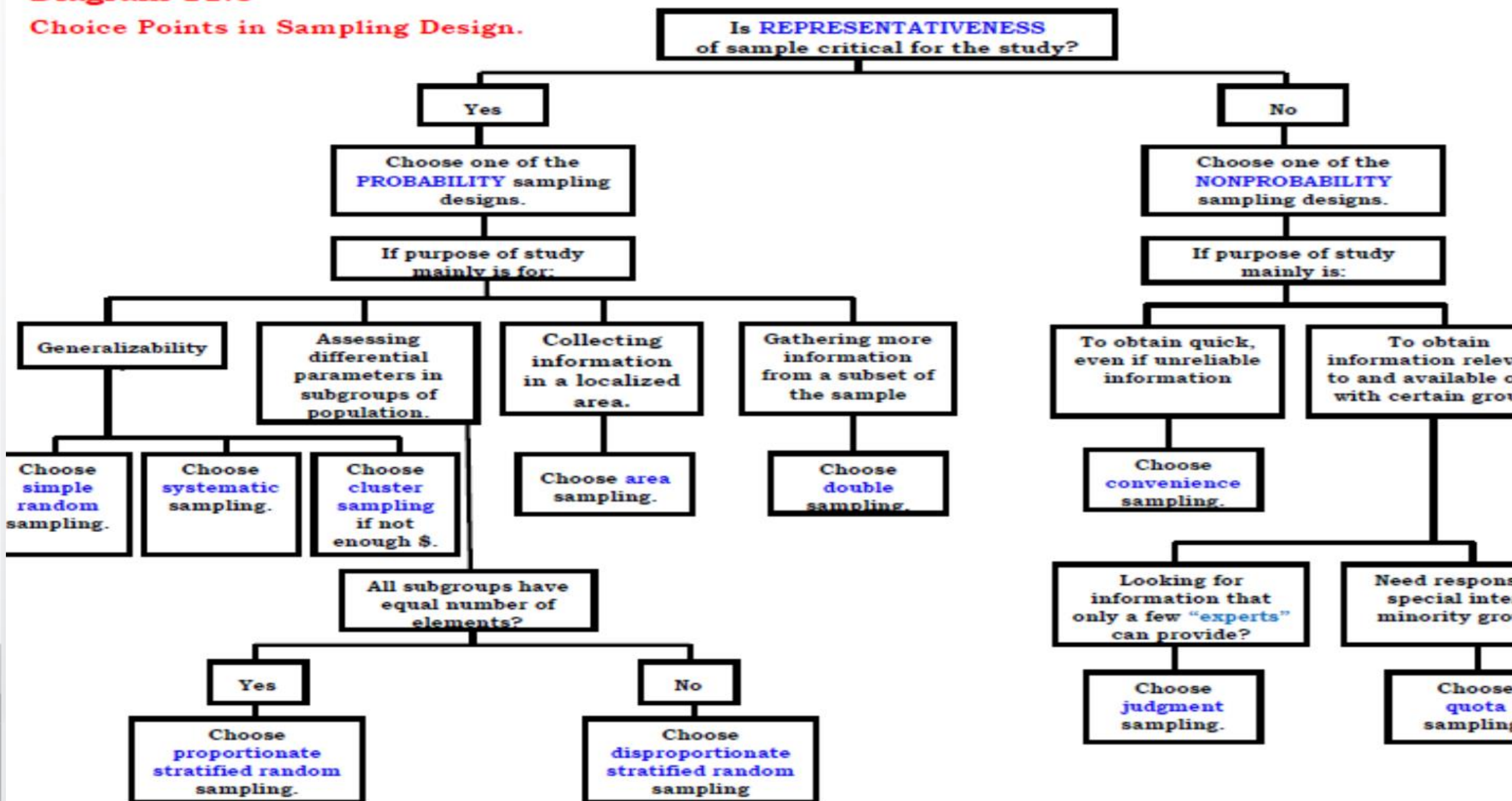


# Sampling Techniques



**Diagram 11.3**

**Choice Points in Sampling Design.**



*Table for Determining Sample Size from a Given Population*

| <i>N</i> | <i>S</i> | <i>N</i> | <i>S</i> | <i>N</i> | <i>S</i> |
|----------|----------|----------|----------|----------|----------|
| 10       | 10       | 220      | 140      | 1200     | 291      |
| 15       | 14       | 230      | 144      | 1300     | 297      |
| 20       | 19       | 240      | 148      | 1400     | 302      |
| 25       | 24       | 250      | 152      | 1500     | 306      |
| 30       | 28       | 260      | 155      | 1600     | 310      |
| 35       | 32       | 270      | 159      | 1700     | 313      |
| 40       | 36       | 280      | 162      | 1800     | 317      |
| 45       | 40       | 290      | 165      | 1900     | 320      |
| 50       | 44       | 300      | 169      | 2000     | 322      |
| 55       | 48       | 320      | 175      | 2200     | 327      |
| 60       | 52       | 340      | 181      | 2400     | 331      |
| 65       | 56       | 360      | 186      | 2600     | 335      |
| 70       | 59       | 380      | 191      | 2800     | 338      |
| 75       | 63       | 400      | 196      | 3000     | 341      |
| 80       | 66       | 420      | 201      | 3500     | 346      |
| 85       | 70       | 440      | 205      | 4000     | 351      |
| 90       | 73       | 460      | 210      | 4500     | 354      |
| 95       | 76       | 480      | 214      | 5000     | 357      |
| 100      | 80       | 500      | 217      | 6000     | 361      |
| 110      | 86       | 550      | 226      | 7000     | 364      |
| 120      | 92       | 600      | 234      | 8000     | 367      |
| 130      | 97       | 650      | 242      | 9000     | 368      |
| 140      | 103      | 700      | 248      | 10000    | 370      |
| 150      | 108      | 750      | 254      | 15000    | 375      |
| 160      | 113      | 800      | 260      | 20000    | 377      |
| 170      | 118      | 850      | 265      | 30000    | 379      |
| 180      | 123      | 900      | 269      | 40000    | 380      |
| 190      | 127      | 950      | 274      | 50000    | 381      |
| 200      | 132      | 1000     | 278      | 75000    | 382      |
| 210      | 136      | 1100     | 285      | 1000000  | 384      |

Note.—*N* is population size.  
*S* is sample size.

krejcie, r.v., & morgan, d.w.,  
 (1970). determining sample size  
 for research activities.  
 educational and psychological  
 measurement.



# Sampling Techniques- Probability sampling

- In order to provide a statistical basis for generalizing from a research study to a wider population, probability sampling must be applied.
- There are a number of techniques available that allow for statistical generalization but remember that the logic of statistical generalization demands that certain conditions are met.
- من أجل توفير أساس إحصائي للتعميم من دراسة بحثية على عدد أكبر من السكان، يجب تطبيق أخذ العينات الاحتمالية.
- هناك عدد من التقنيات المتاحة التي تسمح بالتعميم الإحصائي ولكن تذكر أن منطق التعميم الإحصائي يتطلب استيفاء شروط معينة.

- Probability sampling refers to the selection of a sample from a population, when this selection is based on the principle of randomization, that is, random selection or chance.
- Probability sampling is more complex, more time-consuming and usually more costly than non-probability sampling.

- These conditions are that the:

- Sample is representative of a wider population
- Wider population is properly defined يتم تحديد عدد أكبر من السكان بشكل صحيح
- Sample was drawn from a population using probability sampling methods.
  - تم سحب العينة من مجتمع ما باستخدام طرق أخذ العينات الاحتمالية.

- Even where a sample is obtained using probability sampling methods, the ability of such sampling to produce a representative sample will depend on:
  - حتى في حالة الحصول على عينة باستخدام طرق أخذ العينات الاحتمالية، فإن قدرة هذا النوع من العينات على إنتاج عينة تمثيلية ستعتمد على ما يلي:
- ✓ The adequacy of the sampling frame from which the sample was drawn;
- ✓ Any bias in response and non-response from the selected sample units (De Vaus, 2002a, 149).
  - ✓ مدى كفاية إطار المعاينة الذي تم سحب العينة منه؛
  - ✓ أي تحيز في الاستجابة وعدم الاستجابة من وحدات العينة المختارة (De Vaus, 2002a, 149).

- A general rule is that the larger the sample size the smaller the sampling error.
- القاعدة العامة هي أنه كلما زاد حجم العينة كلما قل خطأ العينة.

- **Random sampling** is a procedure of creating a sample where each member of the defined population has an equal chance of being selected for inclusion and the selection of one participant depends on the selection of any other from that population.
- A simple random sample can be drawn in several ways.
- أخذ العينات العشوائية هو إجراء لإنشاء عينة حيث يكون لكل فرد من أفراد المجتمع المحدد فرصة متساوية في الاختيار لإدراجه، واختيار مشارك واحد يعتمد على اختيار أي شخص آخر من هذا السكان.
- ويمكن سحب العينة العشوائية البسيطة بعدة طرق.

## Simple Random Sampling

- Each element in the population has a known and equal probability of selection.
- Each possible sample of a given size ( $n$ ) has a known and equal probability of being the sample actually selected.
- This implies that every element is selected independently of every other element. This method is equivalent to a lottery system.

Step 1: Make a list

Step 2: Assign a sequential number ( Sampling Frame)

Step 3 : Figure out what your sample size is going to be

Step4: Use any method of selection from following

( Random Number Tables, Lottery table,  
Throwing dies, Tossing of Coins)

# Probability sampling- Simple random sampling

1- We could write the name of every member of the professional association on a separate slip of paper; all of the names could then be placed in a large container.

- We then draw out random slips of paper until we have the number required for our sample

- يمكننا كتابة اسم كل عضو في الرابطة المهنية على قصاصة منفصلة من الورق؛ يمكن بعد ذلك وضع جميع الأسماء في حاوية كبيرة.

- نقوم بعد ذلك بسحب قصاصات عشوائية من الورق حتى نحصل على العدد المطلوب لعينتنا

2- An alternative is to use a random number table, a table of numbers where the numbers are listed in no particular order and no number occurs any more frequently than any other.

- Using our example and assuming the association had a membership of 3000, we would give each association member a number from 1 to 3000 on a separate population list.

- البديل هو استخدام جدول أرقام عشوائي، وهو جدول أرقام يتم فيه سرد الأرقام بدون ترتيب معين ولا يتكرر أي رقم أكثر من أي رقم آخر.

- باستخدام مثالنا وبافتراض أن عدد أعضاء الجمعية يبلغ 3000، سنعطي كل عضو في الجمعية رقمًا من 1 إلى 3000 في قائمة سكانية منفصلة.

# Probability sampling- Systematic random sampling

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Systematic Sampling can be defined as a method of probability sampling in which a researcher chooses a random starting point and a sample interval with which the sample group is selected from the target population.

This is the most basic type of systematic sampling and these are the steps taken to conduct it:

- Calculate sampling interval using the formula  $i = N/n$
- Pick a starting point “r”. This point must be between 1 and the number of the sampling interval (between 1 and i).
- **For instance**, in the example shown above, the sampling interval is 40 so we must pick a number between 1 and 40.
- Using the sampling interval, choose successive elements until the desired sample size is reached.

# Systematic Random Sampling

|    |    |
|----|----|
| 1  | 21 |
| 2  | 22 |
| 3  | 23 |
| 4  | 24 |
| 5  | 25 |
| 6  | 26 |
| 7  | 27 |
| 8  | 28 |
| 9  | 29 |
| 10 | 30 |
| 11 | 31 |
| 12 | 32 |
| 13 | 33 |
| 14 | 34 |
| 15 | 35 |
| 16 | 36 |
| 17 | 37 |
| 18 | 38 |
| 19 | 39 |
| 20 | 40 |

$n \rightarrow K = N/n$

Size of Population  $\rightarrow N = 40$

Size of sample  $\rightarrow n = 8$

$$\begin{aligned} K &= N/n \\ &= 40/8 \\ &= 5 \end{aligned}$$

Items selected

5, 10, 15, 20, 25, 30, 35, 40

# Probability sampling- Systematic random sampling

**$N = 100$**

**want  $n = 20$**

**$N/n = 5$**

**select a random number from 1-5:  
chose 4**

**start with #4 and take every 5th unit**

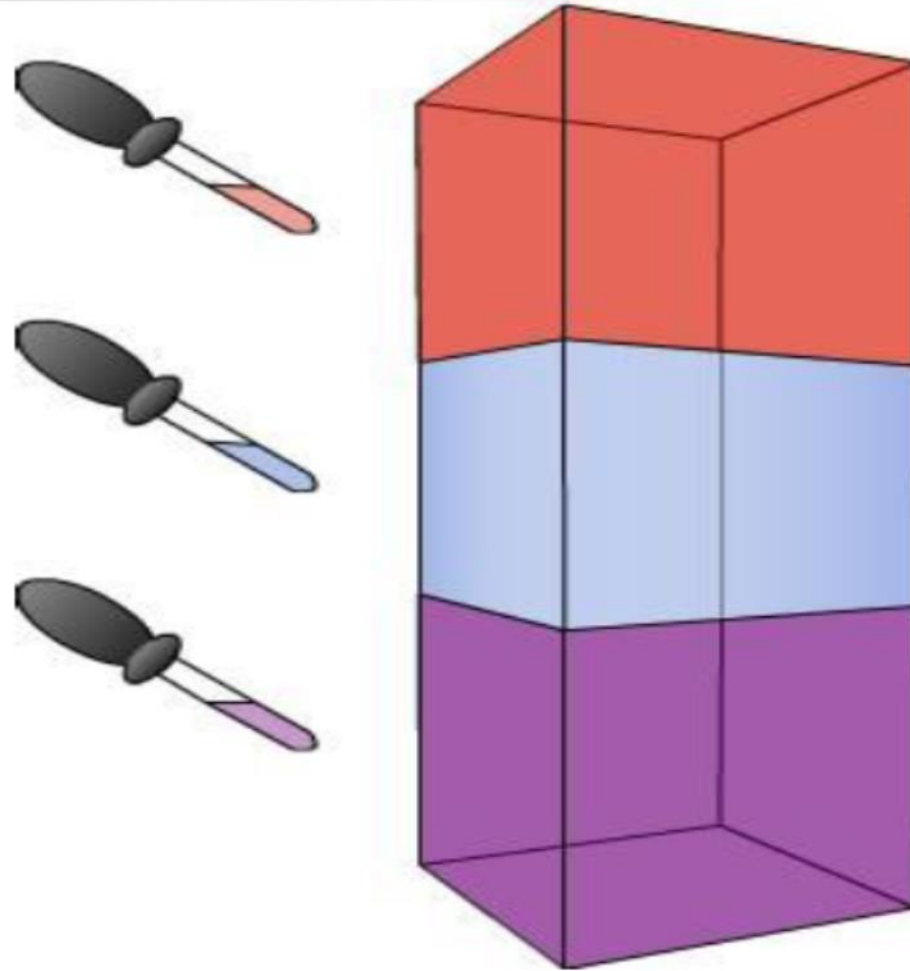
|    |    |    |     |
|----|----|----|-----|
| 1  | 26 | 51 | 76  |
| 2  | 27 | 52 | 77  |
| 3  | 28 | 53 | 78  |
| 4  | 29 | 54 | 79  |
| 5  | 30 | 55 | 80  |
| 6  | 31 | 56 | 81  |
| 7  | 32 | 57 | 82  |
| 8  | 33 | 58 | 83  |
| 9  | 34 | 59 | 84  |
| 10 | 35 | 60 | 85  |
| 11 | 36 | 61 | 86  |
| 12 | 37 | 62 | 87  |
| 13 | 38 | 63 | 88  |
| 14 | 39 | 64 | 89  |
| 15 | 40 | 65 | 90  |
| 16 | 41 | 66 | 91  |
| 17 | 42 | 67 | 92  |
| 18 | 43 | 68 | 93  |
| 19 | 44 | 69 | 94  |
| 20 | 45 | 70 | 95  |
| 21 | 46 | 71 | 96  |
| 22 | 47 | 72 | 97  |
| 23 | 48 | 73 | 98  |
| 24 | 49 | 74 | 99  |
| 25 | 50 | 75 | 100 |

# Probability sampling- Systematic random sampling

- This process can be performed using a computer program that numbers each member of the population, generates a list of random numbers and then produces a sample list based on those numbers.
- يمكن إجراء هذه العملية باستخدام برنامج كمبيوتر يقوم بترقيم كل فرد من أفراد المجتمع، ويولد قائمة من الأرقام العشوائية ثم ينتج قائمة عينة بناءً على تلك الأرقام.

# Probability sampling- Stratified random sampling

## Stratified Sampling



# Probability sampling- Stratified random sampling

- Very often a research population will have recognized groups or strata within that population.
- There are two ways of dealing with this if you wish to include the distinct groups as an element of the sample design: stratified random sampling or cluster sampling.
- Stratified random sampling allows for random selection within each group or strata.

# Probability sampling- Stratified random sampling

- **This is a two-stage process:**
  - ❖ First the groups are identified and the research population is listed within their groups.
  - ❖ Once this list has been prepared a random sample is taken from the group in the same way as a simple random sample would be drawn from the entire research population.

# Probability sampling- Stratified random sampling

- It is important here to remember that each group should be represented in the sample in **equal proportion** to the size of that group in relation to the entire research population.
- Using our example of association membership, one possible choice of grouping or strata could be 'duration of membership'; members would be listed according to the length of time they had been members (see Table 5.1).

# Probability sampling- Stratified random sampling

## Stratified Sampling Formula

$$\text{Stratified Random Sampling} = \frac{\text{Total Sample Size}}{\text{Entire Population}} \times \text{Population of Subgroups}$$



# Probability sampling- Stratified random sampling

**Table 5.1** Sample composition using stratified random sampling

| Length of membership | No. in research population | No. in final sample |
|----------------------|----------------------------|---------------------|
| 6-10 yrs             | 450                        | 45                  |
| 11-15 yrs            | 670                        | 67                  |
| 16-20 yrs            | 590                        | 59                  |
| 21-25 yrs            | 420                        | 42                  |
| 26-30 yrs            | 350                        | 35                  |
| 31-35 yrs            | 270                        | 27                  |
| 36-40 yrs            | 120                        | 12                  |
| 41-45 yrs            | 90                         | 9                   |
| 46-50 yrs            | 40                         | 4                   |
| Total                | 3000                       | 300                 |

# Probability sampling- Stratified random sampling

STRATIFIED RANDOM SAMPLING

| JOB LEVEL      | # OF ELEMENTS | # OF SUBJECTS          |                  |
|----------------|---------------|------------------------|------------------|
|                |               | PROPORTIONATE<br>(20%) | DISPROPORTIONATE |
| Top Management | 10            | 2                      | 7                |
| Middle Mgt.    | 30            | 6                      | 15               |
| Lower Mgt.     | 50            | 10                     | 20               |
| Supervisors    | 100           | 20                     | 30               |
| Clerks         | 500           | 100                    | 60               |
| Secretaries    | 20            | 4                      | 10               |
| Total          | 710           | 142                    | 142              |

# Probability sampling- Stratified random sampling

## Example

| Age     | Number<br>of<br>people |
|---------|------------------------|
| 5 - 15  | 132                    |
| 16 - 25 | 678                    |
| 26 - 40 | 543                    |
| 41 - 60 | 289                    |
| 61+     | 108                    |

Population= 1750

$n = 313$

Calculate number of  
people within each  
strata?

# Probability sampling- Stratified random sampling

## Example

| Age     | Number<br>of<br>people |
|---------|------------------------|
| 5 - 15  | 132                    |
| 16 - 25 | 678                    |
| 26 - 40 | 543                    |
| 41 - 60 | 289                    |
| 61+     | 108                    |

24

121

97

52

19

Population= 1750  
n= 313

The proportion=  $\frac{313}{1750} = 17.8\% = 0.178$



# Sampling Techniques- Non-probability sampling

- ❑ Non-random sampling is a sampling technique where the sample selection is based on factors other than just random chance.
- ❑ In other words, non-random sampling is biased in nature. Here, the sample will be selected based on the convenience, experience or judgment of the researcher.

## Non- probability sampling (2)

### Point to consider

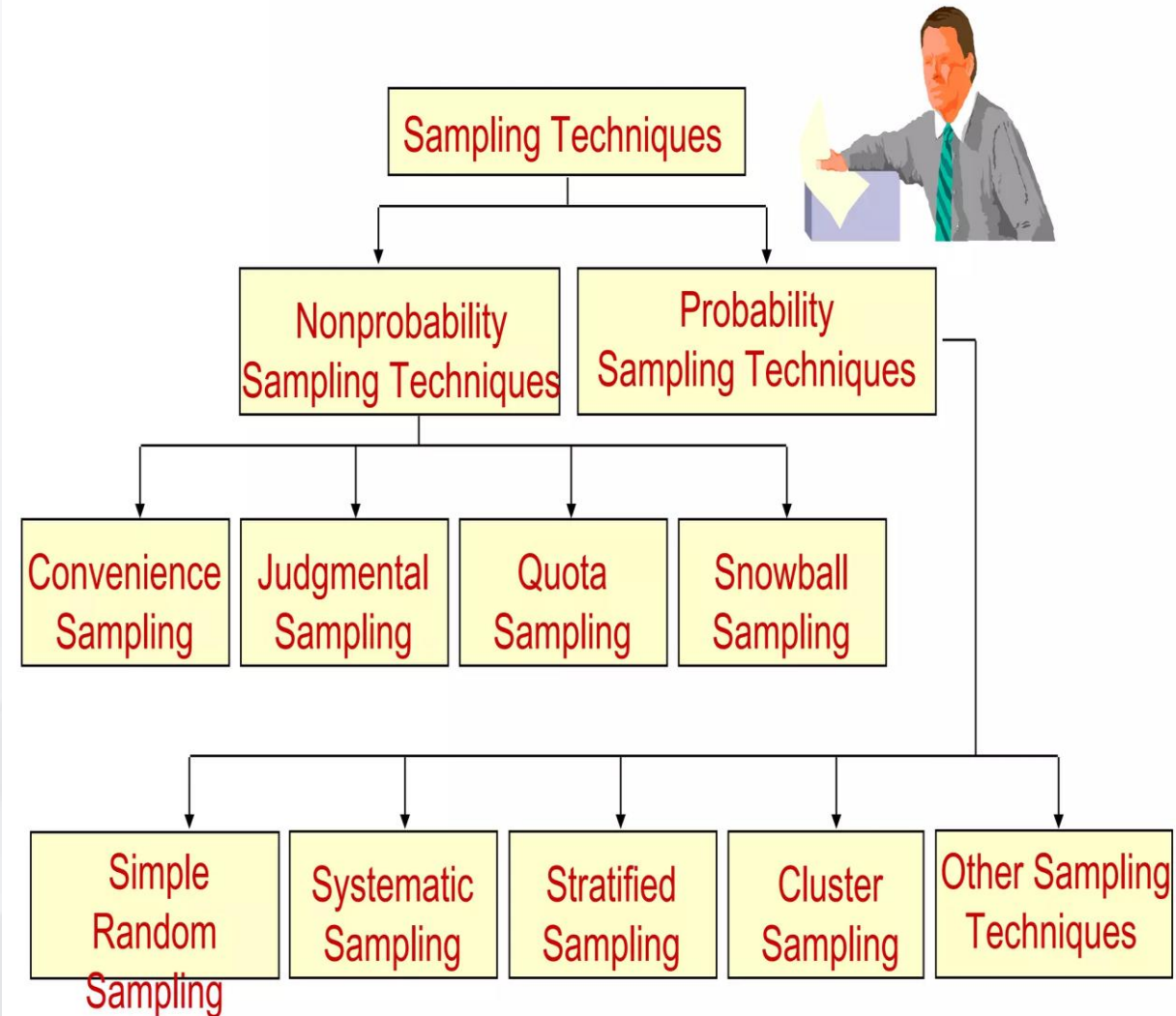
Deciding on a suitable sample size  
Data saturation

Selecting the appropriate technique

### Sampling techniques

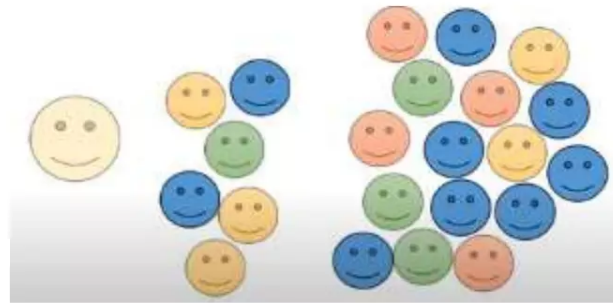
- Convenience sampling
- Quota sampling (larger populations)
- Purposive sampling
- Snowball sampling
- Self-selection sampling
- Convenience sampling

# Classification of Sampling Techniques



# 1. Convenience sampling

- In Convenience sampling, the researcher select those units from the population which are accessible to the researcher



- Subjects are chosen simply because they are easy to recruit.
- This technique is considered easiest, cheapest and least time consuming

# A Graphical Illustration of Convenience Sampling

| A | B  | C  | D  | E  |
|---|----|----|----|----|
| 1 | 6  | 11 | 16 | 21 |
| 2 | 7  | 12 | 17 | 22 |
| 3 | 8  | 13 | 18 | 23 |
| 4 | 9  | 14 | 19 | 24 |
| 5 | 10 | 15 | 20 | 25 |

**Group D happens to assemble at a convenient time and place. So all the elements in this Group are selected. The resulting sample consists of elements 16, 17, 18, 19 and 20. Note, no elements are selected from group A, B, C and E.**

# Judgmental Sampling

**Judgmental sampling** is a form of convenience sampling in which the population elements are selected based on the judgment of the researcher.

- test markets
- purchase engineers selected in industrial marketing research
- precincts selected in voting behavior research
- expert witnesses used in court

# Graphical Illustration of Judgmental Sampling

| A | B  | C  | D  | E  |
|---|----|----|----|----|
| 1 | 6  | 11 | 16 | 21 |
| 2 | 7  | 12 | 17 | 22 |
| 3 | 8  | 13 | 18 | 23 |
| 4 | 9  | 14 | 19 | 24 |
| 5 | 10 | 15 | 20 | 25 |

The researcher considers groups B, C and E to be typical and convenient. Within each of these groups one or two elements are selected based on typicality and convenience. The resulting sample consists of elements 8, 10, 11, 13, and 24. Note, no elements are selected from groups A and D.

# Quota Sampling

- In quota sampling the researcher ensures equal or proportionate representation of subjects depending on which trait is considered as basis of the quota
- The bases of the quota are usually age, gender, education, race, religion and socioeconomic status
- For example, if basis of the quota is socioeconomic status and the researcher needs equal representation of each quota (Sample size 150)
- (Upper class-Elite 30, Upper Middle Class 30 Lower Middle class 30, Working Class 30 Poor 30)
- Divide the population into specific groups.
- Calculate quota for each group based on relevant and available data
- Collect data from each quota

# Quota Sampling

**Quota sampling** may be viewed as two-stage restricted judgmental sampling.

- The first stage consists of developing control categories, or quotas, of population elements.
- In the second stage, sample elements are selected based on convenience or judgment.

| <b>Control<br/>Characteristic<br/>Sex</b> | <b><u>Population<br/>composition</u></b> | <b><u>Sample<br/>composition</u></b> |            |
|-------------------------------------------|------------------------------------------|--------------------------------------|------------|
|                                           | Percentage                               | Percentage                           | Number     |
| Male                                      | 48                                       | 48                                   | 480        |
| Female                                    | 52                                       | 52                                   | 520        |
|                                           | <hr/> 100                                | <hr/> 100                            | <hr/> 1000 |

### 3. Judgment or (Purposive sampling

- Subjects are chosen to be part of the sample with a specific purpose in mind.
- With judgmental sampling, the researcher believes that some subjects are more fit for the research compared other individuals.
- This is the reason why they are purposively chosen as subjects.
- 
- Extreme case/deviant sampling: unusual or special case enable to learn the most about the RQ.
- Heterogeneous or maximum variation sampling: representing different subgroups
- Homogeneous sampling: One subgroup.
-

## Snowball Sampling

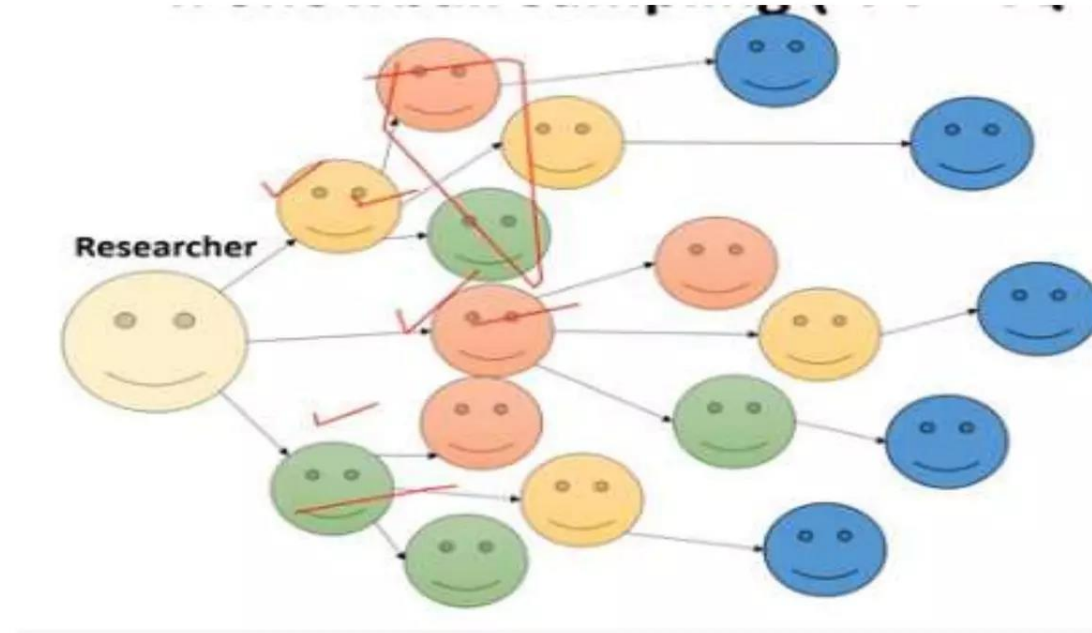
In **snowball sampling**, an initial group of respondents is selected, usually at random.

- After being interviewed, these respondents are asked to identify others who belong to the target population of interest.
- Subsequent respondents are selected based on the referrals.



# Snowball sampling

## 4. Snowball sampling



- Make contact with one or two cases in the population.
- Ask these cases to identify further cases.
- Ask these new case to identify further new cases.
- Stop when either no new cases are given or the sample is large enough.





# Summary

# Summary

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- Sampling is a vital stage in the research process; the outcomes, rigour and trustworthiness of your research all rely on the robustness of the sample and how that sample was identified.
- The sampling technique you apply must be appropriate to your research goals and conform to the research tradition you have chosen for your investigation.

# Summary

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- What is important is that you choose a technique that matches your research design, you are open and honest about your sample composition and you provide your reader with sufficient detail to understand the significance of your findings and any bias that may exist as a result of your sampling:

# Summary

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- For most research, investigators often have to make do with whatever subjects they can gain access to. Generalisations from such samples are not valid and the results only relate to the subjects from whom they are derived' (Burns, 2000, 85). In qualitative research this is exactly as it should be.

# Summary

---

- Generalization, in this sense, is not a goal of qualitative research but it often is in quantitative research.
- Whichever tradition you are following be very careful about claims you make based on the sample you have studied.



**Exercise**

# Exercise

.....is the process of selecting a few from the many in order to carry out empirical research.

- هي عملية اختيار عدد قليل من العديد من أجل إجراء بحث تجريبي. ....
- أخذ العينات Sampling
- عينة Sample
- لا توجد إجابة صحيحة No right answer
- المنهجية Methodology

# Exercise

.....is the process of selecting a few from the many in order to carry out empirical research.

- هي عملية اختيار عدد قليل من العديد من أجل إجراء بحث تجريبي. ....
- **Sampling** أخذ العينات
- Sample عينة
- No right answer لا توجد إجابة صحيحة
- Methodology المنهجية

## Exercise

The quantitative research will tend to use probability sampling techniques

سوف يميل البحث الكمي إلى استخدام تقنيات أخذ العينات الاحتمالية

**True**

## Exercise

When we are talking about quantitative research we are talking about in-depth rich pictures, not short detail collected from many

عندما نتحدث عن البحث الكمي، فإننا نتحدث عن صور غنية متعمقة، وليست تفاصيل قصيرة تم جمعها من كثيرين

**False**

## Exercise

There is only one possible approach to purposive sampling  
يوجد نهج واحد فقط ممكن لأخذ العينات هادفة

**False**

## Exercise

18. .... takes an inductive approach to 'growing' the sample as the research progresses

يأخذ نهجًا استقرائيًا "لتنمية" العينة مع تقدم البحث .....

أخذ العينات كرة الثلج Snowball sampling

أخذ العينات الأولوية Priori sampling

أخذ العينات الطباقية Stratified sampling

عينة عشوائية بسيطة Simple random sampling

## Exercise

18. .... takes an inductive approach to 'growing' the sample as the research progresses

يأخذ نهجًا استقرائيًا "لتنمية" العينة مع تقدم البحث .....

**Snowball sampling** أخذ العينات كرة الثلج

Priori sampling أخذ العينات الأولية

Stratified sampling أخذ العينات الطباقية

Simple random sampling عينة عشوائية بسيطة

## Data collection techniques

تقنيات جمع البيانات

2



- ❑ This section will deal with individual techniques for collecting empirical data.
- ❑ A single research design may include one or more data collection techniques.
- ❑ If you are aiming for methodological triangulation then you will be engaging in a number of data collection techniques

- ❑ Remember that data collection and data analysis often go hand in hand; think carefully about selecting and designing your data collection tools and remember that whatever is gathered needs to be analyzed

- ❑ Try to plan ahead and be aware of the nature of the data you will be harvesting and exactly what you plan to do with it.
- ❑ Regardless of which data collection techniques you decide to use in your research design there are a number of general points which apply in almost all cases

- ✓ Be very sure of what you are doing before you enter the field. Access to a field site is very often only possible because of prior relationships and connections; sometimes we have to engage in fieldwork before we have had time to do all of the detailed preparation

- ✓ If you do not have connections within the field site then you will need to negotiate access. Don't leave this until the week before you want to engage in your data collection.

- ✓ Make sure you have informed consent before you begin collecting data. This could range from the very informal to the very formal signed consent form. Be aware of what you need and use the correct channels to get it.

- ✓ Always pilot your data collection instrument before you apply it to your research subjects.
- ✓ Prepare a detailed timetable of your fieldwork for yourself and your research subjects.



# Interviews

- ❑ The research interview can take a number of different forms, from the very structured, formal interview which is usually a researcher-administered questionnaire, to the very informal, purposeful conversation (Dexter, 1970; Lincoln and Guba, 1985)

- ☐ The only way to become a good interviewer is to practice; there is no secret formula to becoming an expert interviewer if there is such a thing.
- ☐ It is all down to knowing your topic and knowing yourself and how you react in the interview situation.

- ❑ Before you decide what form of interview will suit you best you have to decide if indeed the interview is the most appropriate technique to use.

- ☐ In order to help you make this decision you have to understand the purpose of the research interview:
- ☐ What can an interview contribute to your research?
- ☐ What can an interview do that no other technique could do, or at least not do as well?
- ☐ Is the interview 'fit for purpose'?

## ❑ What is the purpose of an interview?

- ✓ The purpose of an interview is to access what was in, and on, the interviewee's mind
- ✓ Interviews are usually used when we are seeking qualitative, descriptive, in-depth data that is specific to the individual and when the nature of the data is too complicated to be asked and answered easily

## ❑ What is the purpose of an interview?

- ✓ 'A major advantage of the interview is that it permits the respondent to move back and forth in time – to reconstruct the past, interpret the present, and predict the future, all without leaving a comfortable armchair'

## □ Types of interview

- ✓ **Structured interviews:** 'Structured interviewing refers to a situation in which an interviewer asks each respondent a series of preestablished questions with a limited set of response categories'

## ❑ Types of interview

- ✓ **Structured interviews:** There are two forms of structured interview.
  - In a standardized, open-ended interview all interviewees are asked the same open-ended questions but allowed to respond in any way they feel is appropriate and with any information they choose to share.

## □ Types of interview

- ✓ **Structured interviews:** There are two forms of structured interview.
  - In a closed, fixed-response interview interviewees are asked the same questions and choose from a predetermined set of alternative answers. It is also possible to use a combination of the two methods.
  - Although this type of interview is very similar to the questionnaire the major benefit is the visual and oral clues you can pick up by listening to and watching your respondent..

## □ Types of interview

- ✓ **Unstructured interviews:** Unstructured interviews are used to gain a holistic understanding of the thoughts and feelings of the interviewee: you are there to learn about their point of view. Very often this type of interview is used in the early stages of the research to explore salient issues for further investigation.
- ✓ Unstructured interviews are concerned with open-ended questions that allow the interviewee to tell their own story in their own words.

## □ The seven stages of the interview process

### **Thematizing**

‘The “why” and “what” of the investigation need to be clarified before the question of “how

### **Designing**

The purpose of using an interview guide is to ‘ensure that each interview covers basically the same ground but gives the interviewer considerable discretion in the conduct of the interview

## □ The seven stages of the interview process

### **Interviewing**

Conduct the interviews based on an interview guide and with a reflective approach to the knowledge sought and the interpersonal relation of the interview situation (structured/unstructured)

**Transcribing:** I always suggest that transcription be done as soon after the interview as possible.

## □ The seven stages of the interview process

### Analyzing:

In qualitative research analysis is a constant, ongoing element of the research process; it begins during the interview, and each time you reflect on what you hear and ask a follow-up question you will have engaged in initial analysis

### Verifying:

Kvale (1996) uses the verification stage to refer to the extent to which the interview asked what it was intended to ask: did it answer the research question?

## □ The seven stages of the interview process

### **Reporting:**

In your research report your evidence from interviews will form the foundation of your emerging theory; remember that the spoken word is evidence



# Questionnaires

- ❑ Survey data are usually obtained by means of a questionnaire, a series of pre-determined questions that can be either self-administered, administered by mail, or asked interviewers.

- ❑ When the questionnaire is to be administered by interview, it is often called an interview schedule.
- ❑ The use of questionnaires in research is based on one basic underlying assumption: that the respondent will be both willing and able to give truthful answers.

- ❑ Questionnaires are without doubt the single most popular data collection tools in any research involving human subjects.

# Questionnaires

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- ❑ There are a number of reasons for using questionnaires in your research:
  - ✓ you can reach a large and geographically dispersed community at relatively low cost
  - ✓ you can harvest data from a larger sample than would be possible using any other technique
  - ✓ anonymity can be offered as well as confidentiality

# Questionnaires

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## ☐ Designing questionnaires

Despite being the most popular research technique, questionnaires produce a low response rate unless the researcher administers them personally.

# Questionnaires

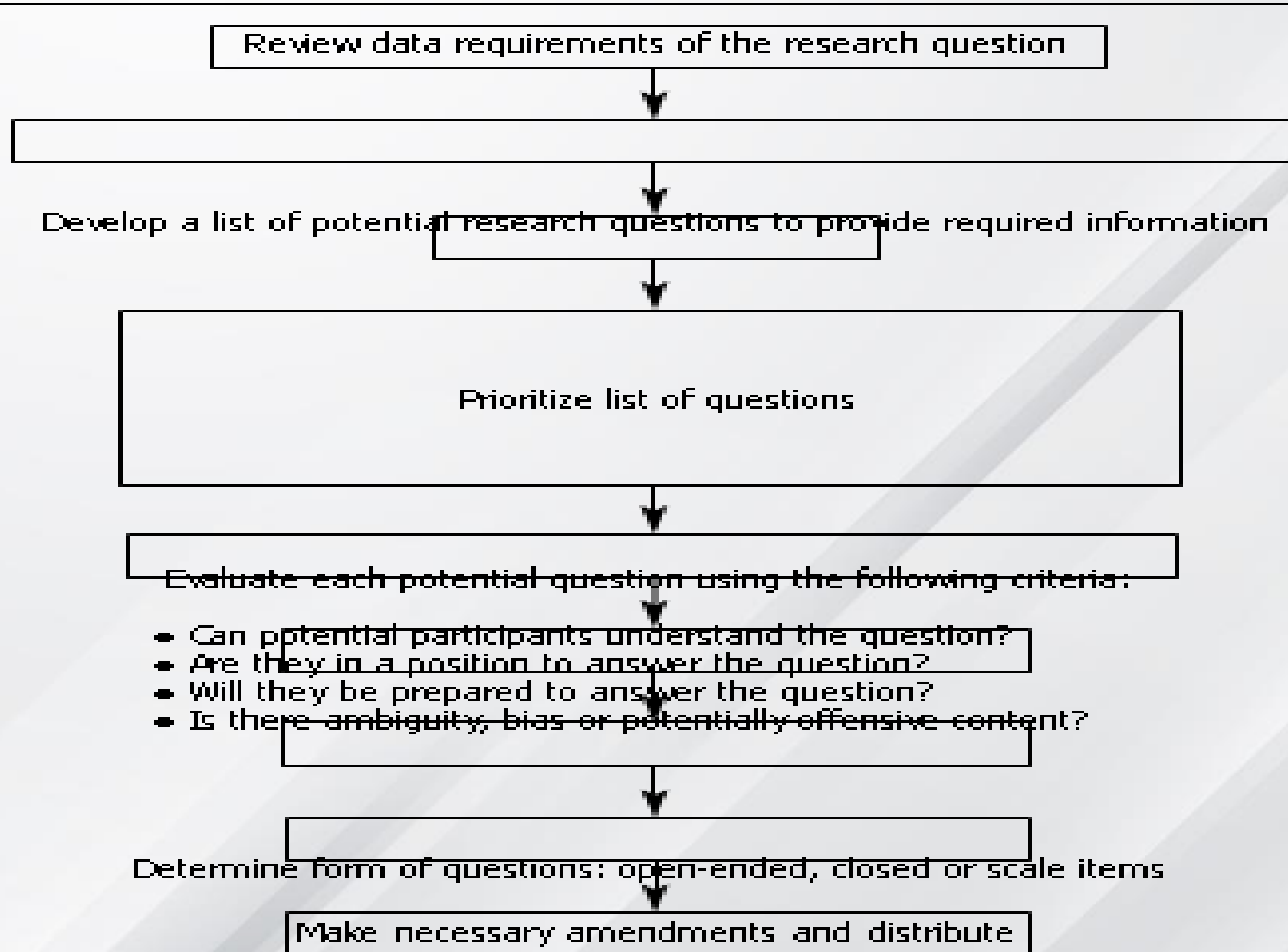
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## ☐ **Designing questionnaires**

One of the most important things to remember is that a questionnaire is required to stand alone; the researcher is rarely looking over the respondent's shoulder while he or she completes the questionnaire.

You won't be there to confirm that the respondent understands the questionnaire or to provide additional information

## Figure 18.1 Steps in designing a questionnaire



# Questionnaires

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## ☐ **Scale items**

Scale items are often included in questionnaires although they are a data collection technique in their own right

# Questionnaires

## **Example 18.1** Different types of interview question

### *The dichotomous question*

'Have you used Information Central within the last week?'

- ☐ Yes                      ☐ No                      ☐ Can't remember

### *The multiple dichotomous question*

'Which of the following resources do you use to produce your reports?'

- ☐ Reference texts  
☐ The internet  
☐ Databases  
☐ Newspapers

Other, please state .....

### *Fixed alternative question*

'Which is your designated study day?'

- ☐ Monday    ☐ Tuesday    ☐ Wednesday    ☐ Thursday    ☐ Friday

### *Rank order question*

'Please rank the following online resources in order of preference, 1 being your favourite, 5 your least favourite.'

- ☐ BUBL info services    ☐ CSA    ☐ ERIC    ☐ JSTOR    ☐ BEI

(Please note you would only use acronyms where respondents are familiar with them and would expect to see them.)

# Questionnaires

## Example 18.2 Likert scale

INSTRUCTIONS: Please rate how strongly you agree or disagree with each of the following statements by placing a tick in the appropriate box.

|                                                                                       | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---------------------------------------------------------------------------------------|----------------|-------|---------|----------|-------------------|
| The new self-issue system is easy to use                                              |                |       |         |          |                   |
| I don't understand the system on-screen help facility                                 |                |       |         |          |                   |
| I feel confident about using the self-issue system                                    |                |       |         |          |                   |
| The self-issue system saves me time                                                   |                |       |         |          |                   |
| I would rather go to the desk to return my books                                      |                |       |         |          |                   |
| There should be a member of staff close to the self-issue machines to help            |                |       |         |          |                   |
| I am confident that my books are off my library card when I use the self-issue system |                |       |         |          |                   |

# Questionnaires

## **Example 18.3** Thurstone scale

INSTRUCTIONS: Please state whether you agree or disagree with each of the following statements by placing a tick in the appropriate box.

|                                                                                       | Agree | Disagree |
|---------------------------------------------------------------------------------------|-------|----------|
| The new self-issue system is easy to use                                              |       |          |
| I don't understand the system on-screen help facility                                 |       |          |
| I feel confident about using the self-issue system                                    |       |          |
| The self-issue system saves me time                                                   |       |          |
| I would rather go to the desk to return my books                                      |       |          |
| There should be a member of staff close to the self-issue machines to help            |       |          |
| I am confident that my books are off my library card when I use the self-issue system |       |          |

# Questionnaires

**Example 18.5** Semantic differential scale

INSTRUCTIONS:

- 1 For each pair of adjectives please place a tick at the point between them which best reflects the extent to which you feel the adjective best describes the new **self-issue system**.
- 2 Work through the items fairly quickly without worrying or considering them too much, your first reaction is wanted.

Resist the temptation to look back over y

|          | 1 | 2 | 3 | 4 | 5 | 6 | 7 |            |
|----------|---|---|---|---|---|---|---|------------|
| valuable |   |   |   |   |   |   |   | useless    |
| helpful  |   |   |   |   |   |   |   | unhelpful  |
| easy     |   |   |   |   |   |   |   | difficult  |
| reliable |   |   |   |   |   |   |   | unreliable |
| fast     |   |   |   |   |   |   |   | slow       |
| flexible |   |   |   |   |   |   |   | rigid      |

# Questionnaires

---

## **Example 18.6** Open-ended questions

### **1 Preventing a Yes/No response:**

**Question:** 'Do you collaborate with other webmasters/moderators? If so, in what way?'

**Actual response:** 'It all depends on the attitude of the moderator. Some site owners simply do not want to share information. In fact, they are actively against it. They view other sites as rivals to be denounced and discredited. They jealously guard their information and want to be the first to harvest a specimen. Other groups realize that more can be achieved by working together and sharing information.'

Here a follow-up question was included to encourage respondents to expand on the obvious Yes/No they could provide.

### **2 Asking a totally open question about personal behaviour; no response suggested:**

**Question:** 'How do you decide if information is reliable or not?'

**Actual response:** 'Usually there is a set pattern. The person is not going to be very outward. Most people do not want to report a Bigfoot sighting, but deep down they know what they saw and eventually it eats away at them if you will and they have to tell someone. Also, we do some field research on reports that are received near our database.'

Examples taken from: Dmytriw, D. (2003) *Information Acquisition and Exchange Within Cryptozoological Virtual Communities*, unpublished dissertation, Northumbria University. (Winner of the LIRG prize for best student dissertation 2004)

# Questionnaires

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## ☐ **Forms of questionnaire**

There are a number of options available for administering and distributing questionnaires; you need to think very carefully about your target group when you decide how to reach them.

## - Questionnaires

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### ☐ Forms of questionnaire

Here is a checklist of the questions you need to ask before deciding on the format of your questionnaire:

- What form of questionnaire would best suit your subjects?
- What are your own capabilities?
- What resources do you have?
- How much time do you have?
- Is your sample group geographically dispersed?

# Questionnaires

---

## □ Forms of questionnaire

### ❖ Paper-based postal questionnaires

The most common form of questionnaire is the paper-based, printed instrument. The most typical forms of distribution are by post, handing them to individuals at group events or leaving them in a prominent position where people are encouraged to complete and return them to the distribution point.

# Questionnaires

---

## □ Forms of questionnaire

### ❖ **Electronic questionnaires**

The term 'electronic questionnaires' is generally used to cover both online questionnaires and questionnaires contained within an e-mail message;

it does not cover questionnaires produced in a word-processing package and then sent to participants as an attachment: this is still a 'paper-based' questionnaire using a different mechanism for distribution

# Questionnaires

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## □ Forms of questionnaire

### ❖ **Researcher-administered questionnaires**

Researcher-administered questionnaires usually generate the highest response rate of any questionnaires, because you approach your subject and you complete the questionnaire by asking the questions and filling in the document according to what they tell you.

The most obvious example of this is the market researcher working in the street –



# Summary

# Summary

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- Interviewing is a well established and well used technique for data collection.
- The interview can take any form, from the highly structured researcher-administered questionnaire to the highly open purposeful conversation.

# Summary

---

- Choice of type depends on issues such as the researcher's experience, the nature of the research topic and questions, access to research participants and the time available for data collection.
- You need to think very carefully about your choices before you design and engage in the interview process.

# Summary

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- Questionnaire design involves a great deal of common sense and personal experience.
- It is only by attempting to harvest data on specific research questions that you will come to understand the intricacies of designing effective questionnaires..

# Summary

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- Always remain aware of the purpose of the investigation and make sure each question you ask relates to it specifically

# Summary

---

- Remember that a questionnaire depends entirely on the ability and willingness of respondents to answer the questions you are asking.
- Make sure you ask them questions they can answer in a format they can understand.

# Summary

---

- It is also a very good idea to be aware of how you intend to analyze the data and how it will be used to inform the investigation.
- Be sure to pilot your instrument with a reasonable number of test subjects before you release it to your sample population.



**Questions**

# Questions

A single research design may include one or more data collection techniques.

قد يتضمن تصميم بحث واحد أسلوبًا واحدًا أو أكثر من تقنيات جمع البيانات.

- True

# Questions

Data collection and data analysis rarely go hand in hand

نادرًا ما يسير جمع البيانات وتحليلها جنبًا إلى جنب

- False

# Questions

....refers to a situation in which an interviewer asks each respondent a series of preestablished questions with a limited set of response categories'

يشير إلى موقف يسأل فيه المحاور كل مستجيب سلسلة من الأسئلة المحددة مسبقاً مع ...  
مجموعة محدودة من فئات الاستجابة

المقابلات المنظمة Structured interviewing

المقابلات غير المنظمة Unstructured interviewing

المقابلات المنظمة وغير المنظمة Structured & Unstructured interviewing

- المقابلات المنظمة Structured interviewing

# Questions

You can harvest data from a larger sample than would be possible using any other technique

يمكنك حصاد البيانات من عينة أكبر مما سيكون ممكنًا باستخدام أي تقنية أخرى

Using interview باستخدام المقابلة

Using questionnaire باستخدام الاستبيان

Using observation باستخدام الملاحظة

- Structured Using questionnaire باستخدام الاستبيان

# Questions

The most obvious example of this is the market researcher working in the street أوضح مثال على ذلك هو عمل باحث السوق في الشارع

Paper-based postal questionnaires

Electronic questionnaires

Researcher-administered questionnaires

- Researcher-administered questionnaires



مجموعة جامعة  
الجميع الذكية  
للتعليم القابضة

MIDOCEAN  
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# Thank You

