ICMK352
Marketing Intelligence

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Sampling

Sampling

Key topics for discussion

01
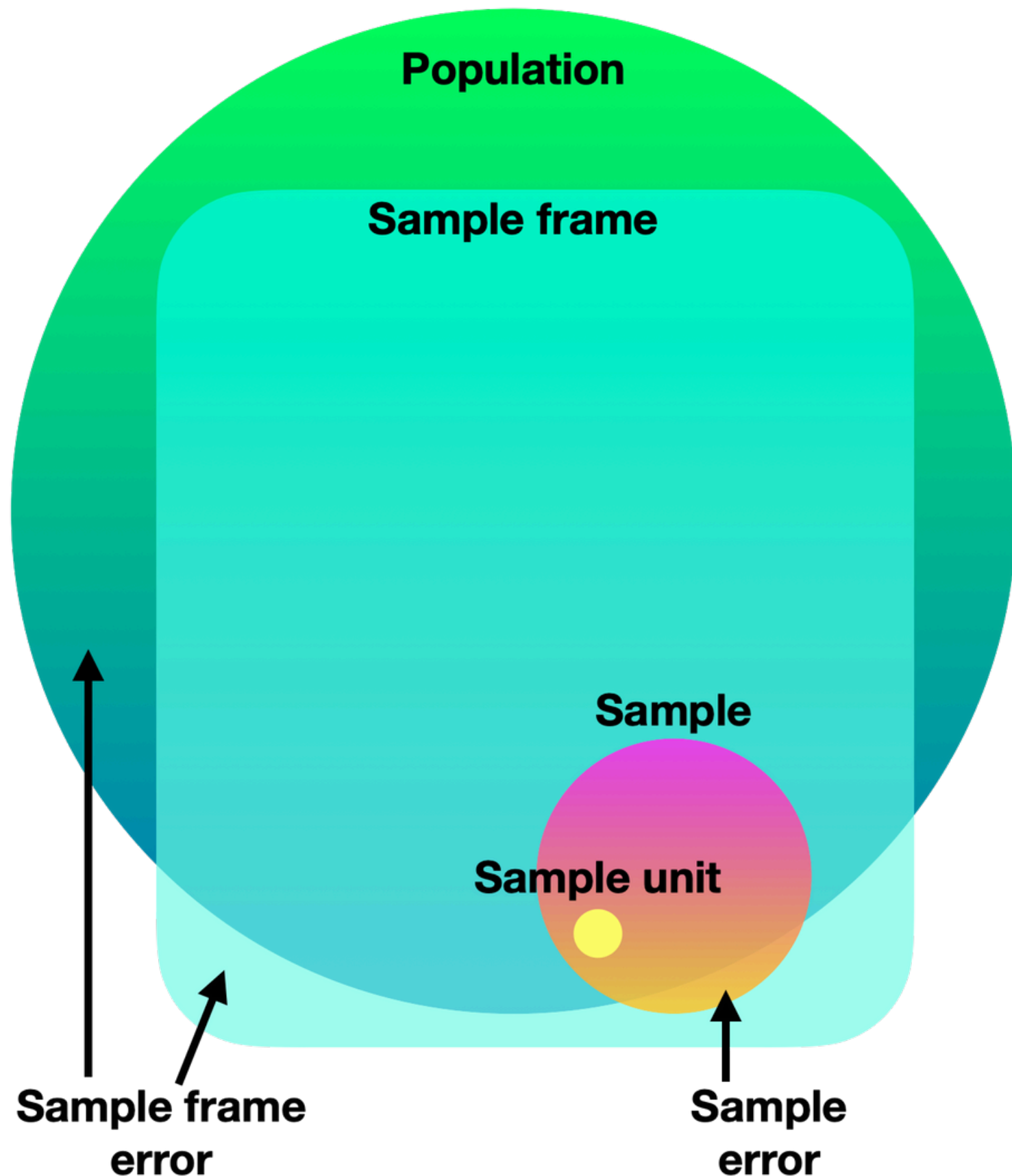
Probability sampling

02

Non-probability sampling

03

Sample size

04

Non sampling errors

Samples & Sampling

- Population is the entire group under study as defined by research objectives
- A census requires information from everyone in the population
- The sample is a subset of the population, and the sample unit pertains to the basic level of investigation
- A sample frame is a master source of sample units in the population
- A sample frame error is the degree to which the sample frame fails to account for all of the population
- Sampling error is any error in the survey that occurs because a sample is used

Probability sampling

samples in which members of the population have a known chance (probability) of being selected into the sample

Simple random sampling
Systematic sampling
Cluster sampling
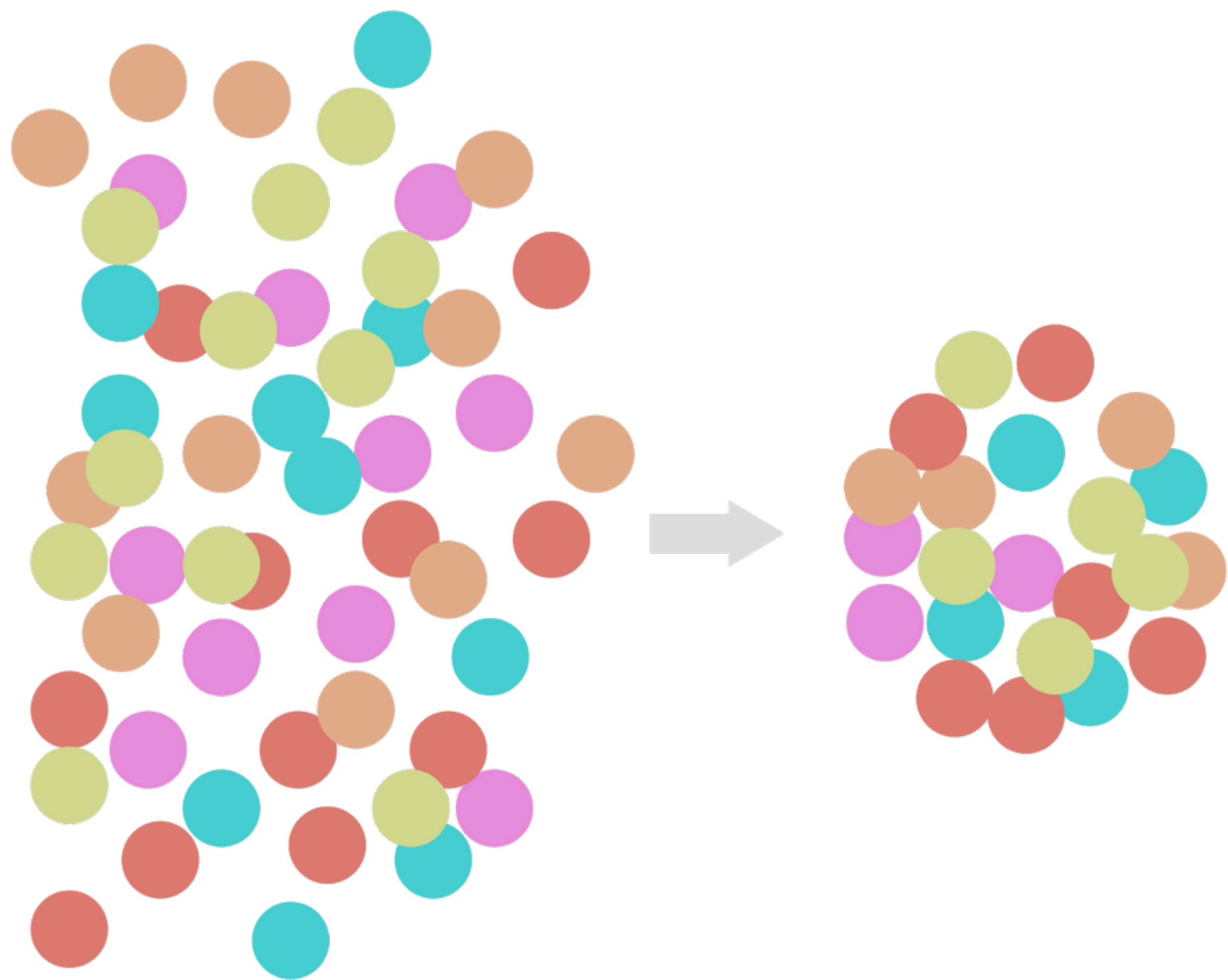*Stratified sampling*

Non-probability sampling

samples where the chances of selecting members from the population into the sample are unknown

*Convenience sampling*
Purposive sampling
*Chain-referral sampling*
Quota sampling

Simple random sampling

- The research uses random numbers from a computer, random digit dealing, or some other random selection procedure that guarantees each member of the population in the sample frame has an identical chance of being selected into the sample
- + embodies the requirements necessary to obtain a probability sample
- + guarantees an equal chance, valid representation
- - Difficult to obtain a complete listing
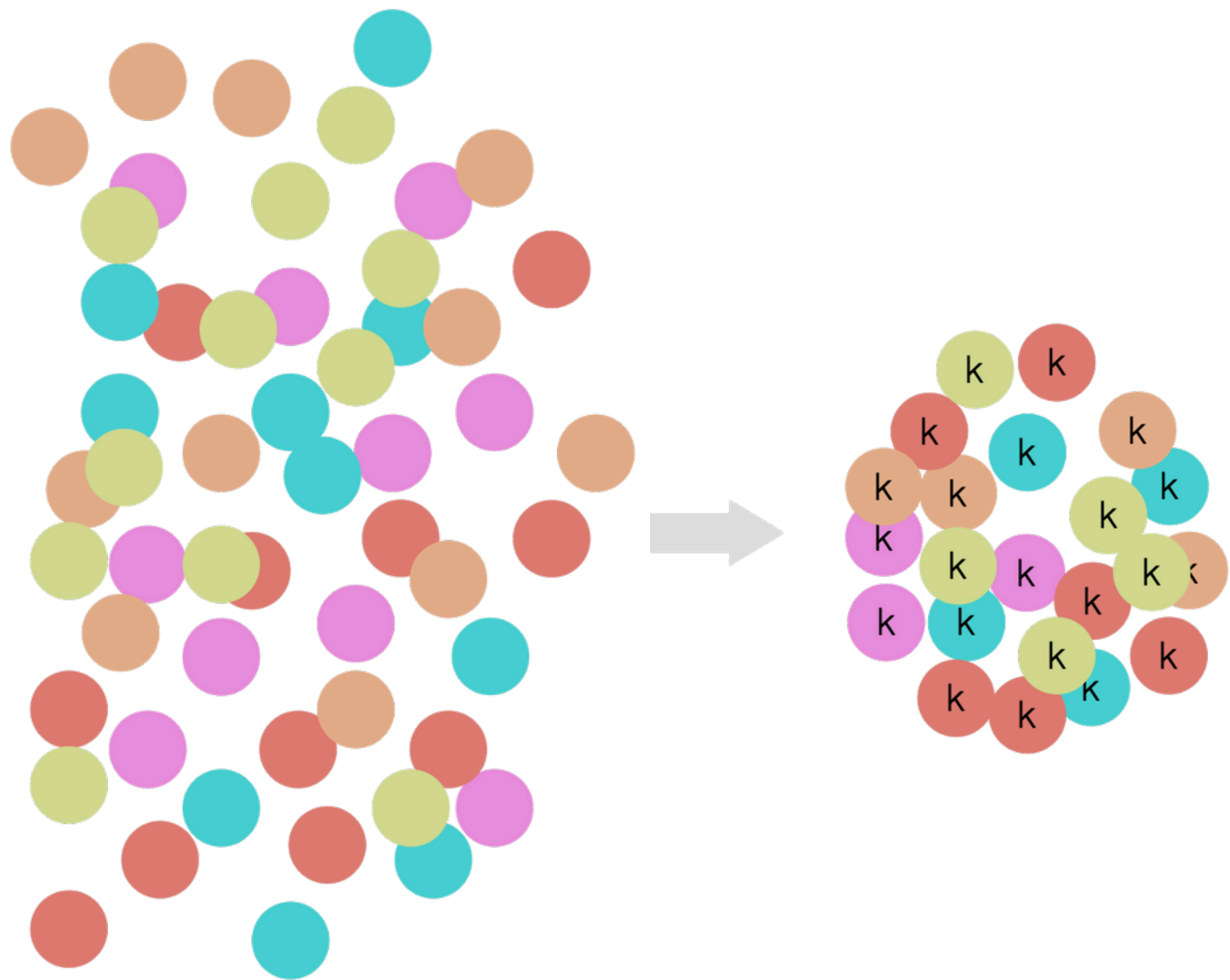
Systematic sampling

- The researcher selects a random starting point for the first sample member.
- It is more efficient than simple random sampling
- The research decides on a skip interval, which is calculated by dividing the number of names on the list by the sample size
- Skip interval = population list size / sample size
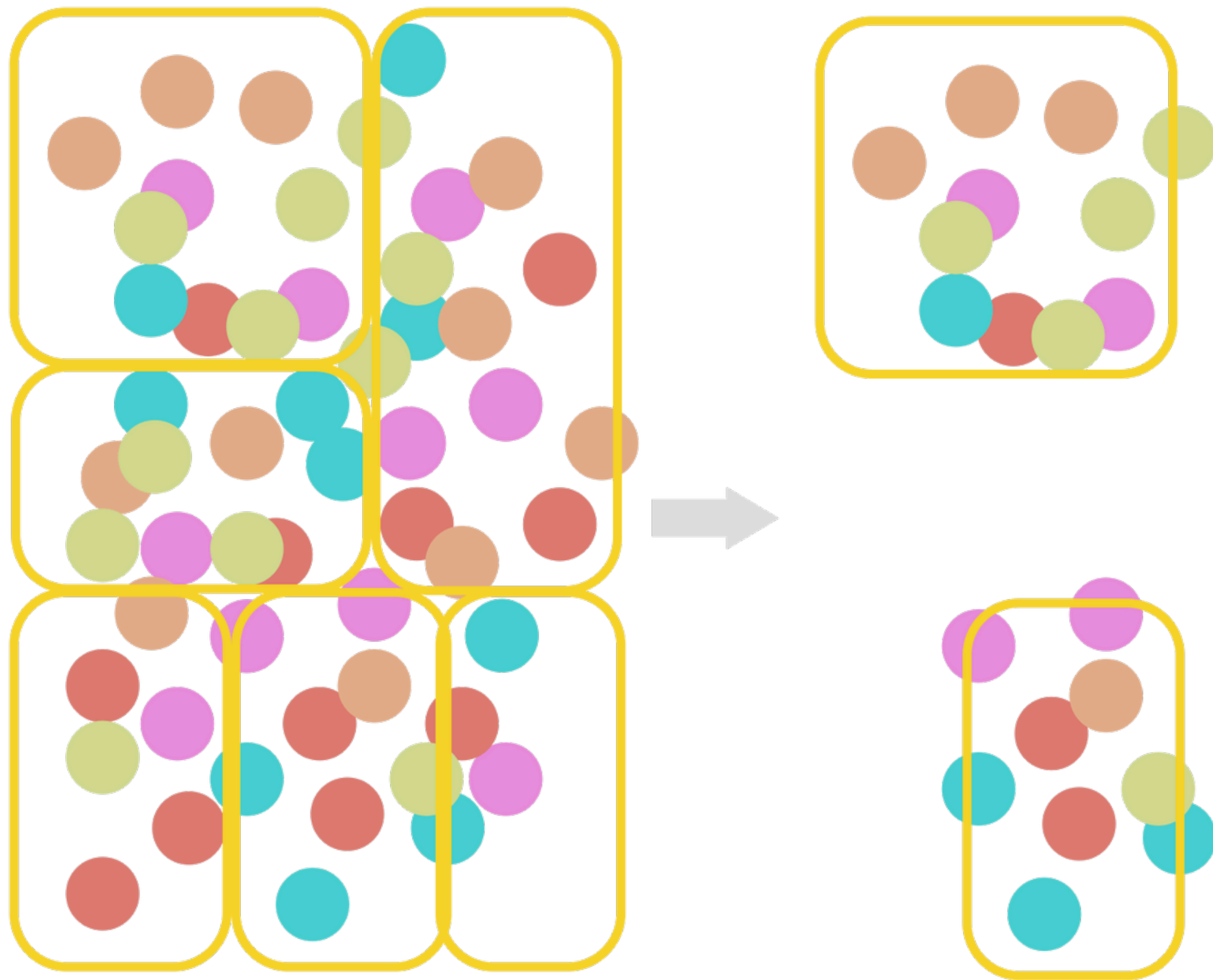
Cluster sampling

- The researcher divides the population into groups, any one of which can be considered a representative sample
- One-step area sample: select the one area randomly and perform a census of its members
- Two-step area sample: select a random sample of areas, then decide on a probability method within the chosen areas
- The greatest danger in cluster sampling is cluster specification error that occurs when the clusters are not homogeneous.
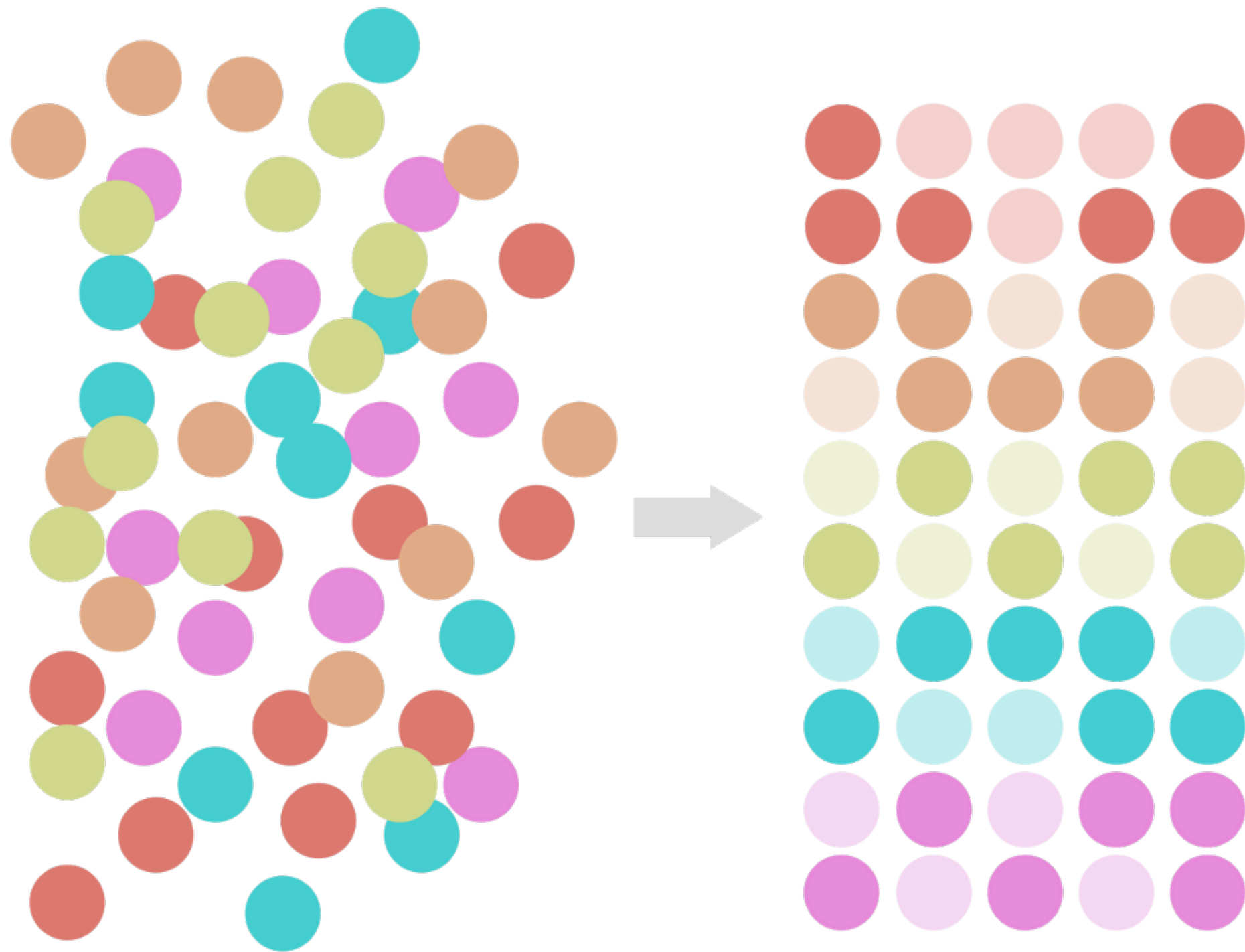
Stratified sampling

- The researcher separates the population into different strata, and a sample is taken from each stratum
- Stratified sampling is used when the researcher is working with a "skewed" population divided into strata and wishes to achieve high statistical efficiency
- It allows for an explicit analysis of each stratum and allows the estimation of the overall sample mean by use of a weighted mean

Non-probability Sampling

Convenience sampling

- Samples drawn from groups to which the researcher has easy access.
- The most convenient areas are shopping malls or busy pedestrian intersections - selection of the place is subjective rather than objective

Purposive sampling

- Require a judgment or an "educated guess" as to who should represent the population.
- Sometimes called a judgment sample or an exemplar sample
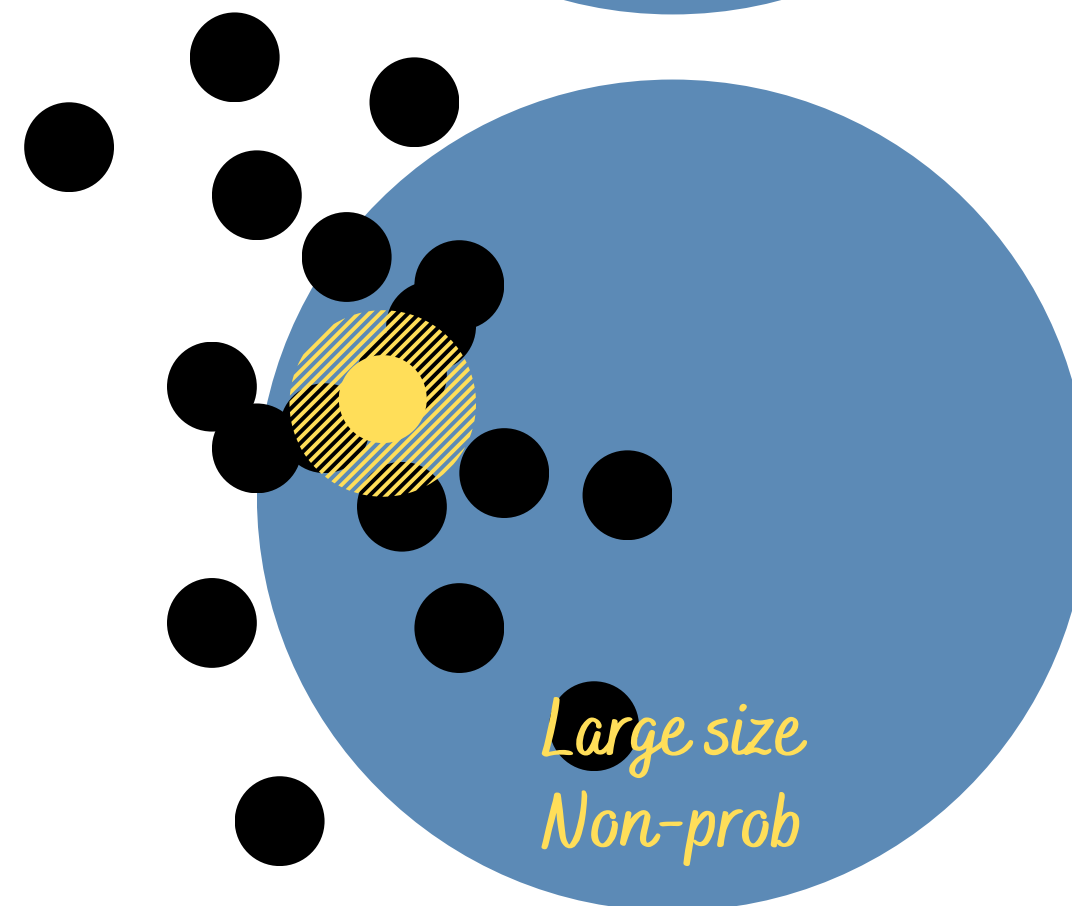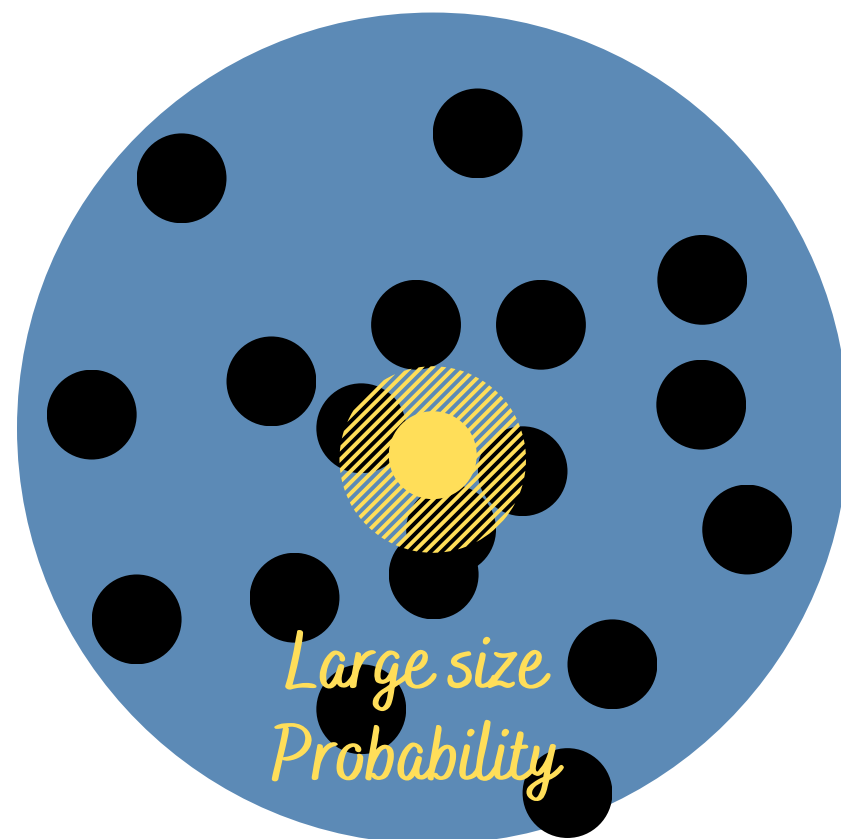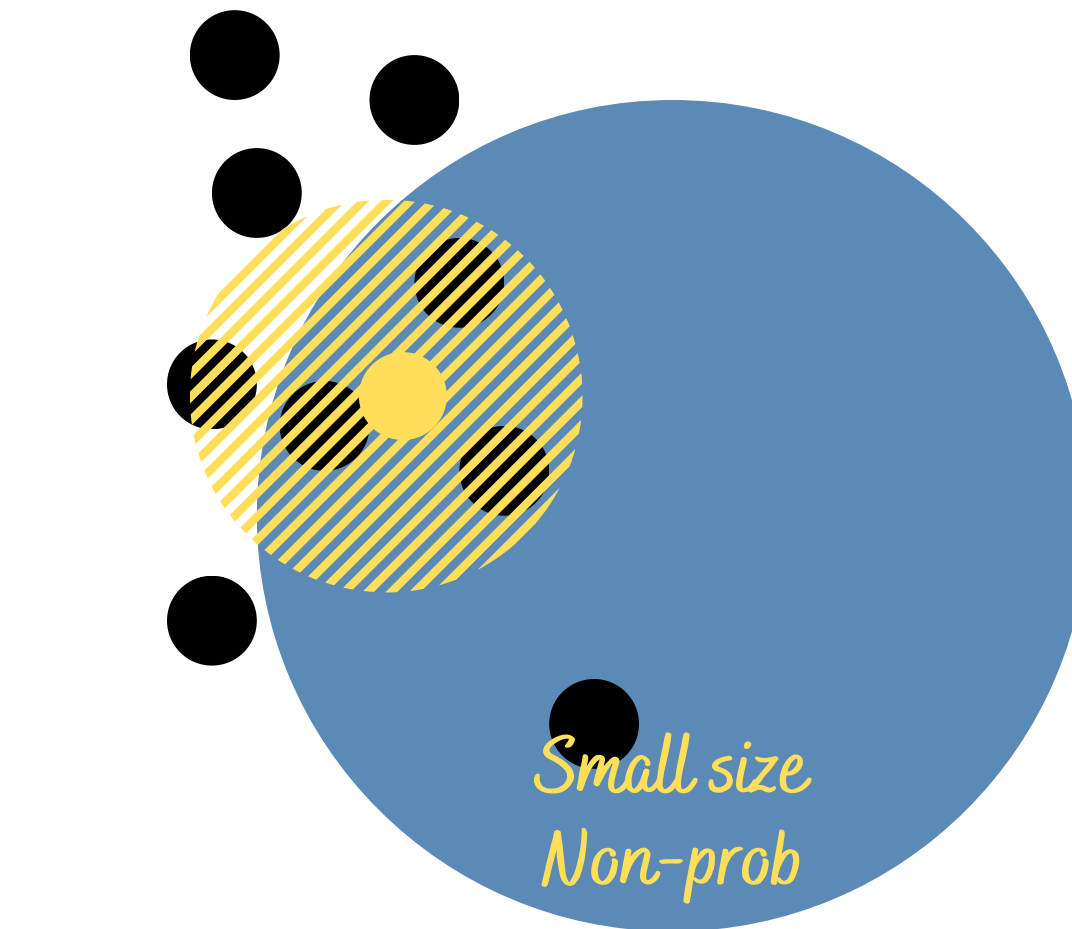
Chain referral sampling

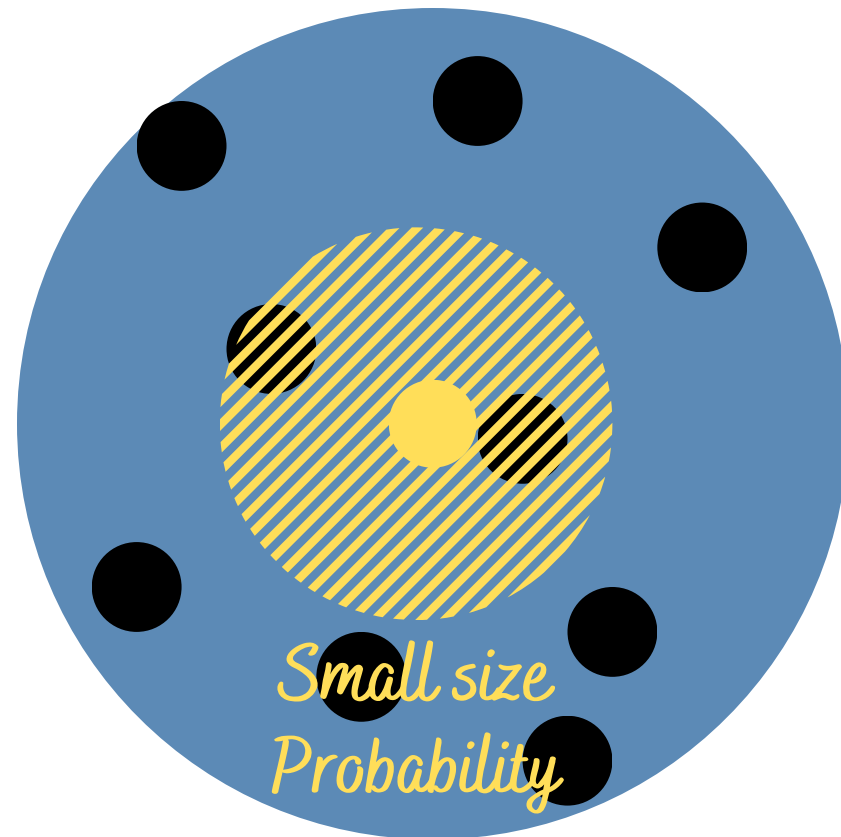- Asks respondent to provide the names of additional respondents. Sometimes called "snowball samples"

Quota sampling

- Rely on key characteristics to define the composition of the sample (e.g. 50% male 50% female)

Sample size

- Sample sizes affect the sample accuracy (precision). The size of a sample has nothing to do with its representativeness.
- The selection method, not the size of the sample, determined a sample's representativeness.

Sample size Axioms

01
—
Inaccuracy - always

A random sample always have some inaccuracy, margin of sample error or sample error

02
—
Represent error ±%

Sample error can be calculated with a formula and expressed as a ±% number

03
—
Replication

Replication of the survey with a random sample will be "very likely" within the ±% range

04
—
Larger size -> precision

The larger a random sample is, the more precise it is, meaning the less margin of sample error

05
—
Desired precision?

The size of a random sample depends on the desired precision (acceptable sample error)

06
—
X Population size

In almost all cases, sample error of a random sample is independent of the size of the population

Calculate the sample size

MUIC: 4000 students
Confidence level: 95%
Margin of error: 10%

Other methods

Arbitrary (rule of thumb)

—

- "A sample should be at least 5% of the population"
- Simple and easy but neither efficient nor economical

Conventional

—

- 1,200 for national poll
- Ignore the special circumstance, maybe too small or too large

Statistical analysis

—

- Researcher's desire to use particular statistical techniques influences sample size

cost basis

—

- The "all you can afford" approach may seem wise, but it is not.

Non sampling error

	Fieldwork	Respondent
Intentional	• Cheating • Leading respondent	• Falsehood • Nonresponse (break-off, refusal, item omission)
Unintentional	• Interviewer characteristics • Misunderstanding • Fatigue	• Misunderstanding • Guessing • Attention loss • Distraction • Fatigue

Data collection control

	Fieldwork	Respondent
Intentional	• Supervision • Validation (verification of 10% of completed surveys)	• Anonymity • Confidentiality • Incentives • Validation checks (information is confirmed) • Third-person technique
Unintentional	• Orientation sessions • Role-playing sessions	• Reversals of scale endpoints • Prompters: used to keep respondents on task and alert ("We are almost finished")

Data quality issues

Incomplete response
—
- Some questionnaire may be only partially completed

Item omission
—
- When a respondent does not answer a particular question, it is referred to as an item omission

Yay- or nay-saying
—
- Yea-saying and nay-saying are seen as persistent tendencies on the part of some respondents to agree or disagree with most of the questions asked. Whenever a researcher deals with respondents who represent different cultures, languages, and social conventions, concerns about data quality arise.

Middle-of-the-road
—
- Some respondents hide their opinions by indicating "no opinion" throughout the survey.