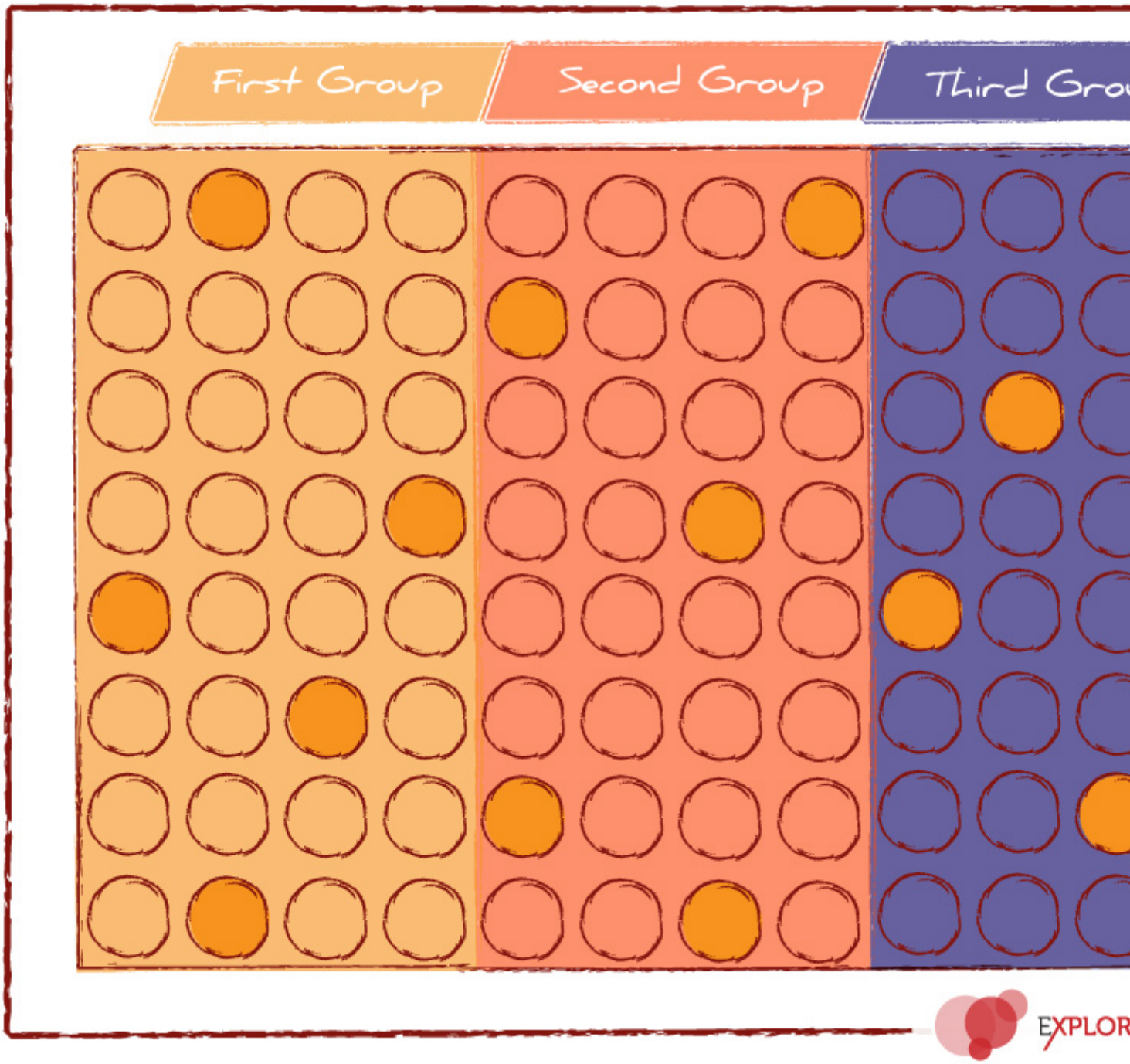
Stratified Sampling Method

Stratified sampling is a probability sampling technique wherein the researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different strata.



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It is important to note that the strata must be non-overlapping. Having overlapping subgroups will grant some individuals higher chances of being selected as subject. This completely negates the concept of stratified sampling as a type of probability sampling.

Equally important is the fact that the researcher must use simple probability sampling within the different strata.

The most common strata used in stratified random sampling are age, gender, socioeconomic status, religion, nationality and educational attainment.

Uses of Stratified Random Sampling

- Stratified random sampling is used when the researcher wants to highlight a specific subgroup within the population. This technique is useful in such researches because it ensures the presence of the key subgroup within the sample.
- Researchers also employ stratified random sampling when they want to observe existing relationships between two or more subgroups. With a simple random sampling technique [1], the researcher is not sure whether the subgroups that he wants to observe are represented equally or proportionately within the sample.
- With stratified sampling [2], the researcher can representatively sample even the smallest and most inaccessible subgroups in the population. This allows the researcher to sample the rare extremes of the given population.
- With this technique, you have a higher statistical precision compared to simple random sampling. This is because the variability within the subgroups is lower compared to the variations when dealing with the entire population.

  Because this technique has high statistical precision, it also means that it requires a small sample size which can save a lot of time, money and effort of the researchers.

Types of Stratified Sampling

Proportionate Stratified Random Sampling

The sample size of each stratum in this technique is proportionate to the population size of the stratum when viewed against the entire population. This means that the each stratum has the same sampling fraction.

For example, you have 3 strata with 100, 200 and 300 population sizes respectively. And the researcher chose a sampling fraction of ½. Then, the researcher must randomly sample 50, 100 and 150 subjects from each stratum respectively.

Stratum	A	B	C
Population Size	100	200	300
Sampling Fraction	½	½	½
Final Sample Size	50	100	150

The important thing to remember in this technique is to use the same sampling fraction for each stratum regardless of the differences in population size of the strata. It is much like assembling a smaller population that is specific to the relative proportions of the subgroups within the population.

Disproportionate Stratified Random Sampling

The only difference between proportionate and disproportionate stratified random sampling is their sampling fractions. With disproportionate sampling, the different strata have different sampling fractions.

The precision of this design is highly dependent on the sampling fraction allocation of the researcher. If the researcher commits mistakes in allotting sampling fractions, a stratum may either be overrepresented or underrepresented which will result in skewed results.

Links
[1] https://explorable.com/simple-random-sampling
[2] http://en.wikipedia.org/wiki/Stratified_sampling