



STAT 101

Statistical Methods

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WHAT IS STATISTICS?

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"Remember the old days when we used
to eat his statistics homework?"

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STATISTICS

(singular) a body of knowledge concerned with the collection, organization, presentation, analysis, and interpretation of data

(plural) a collection of facts and figures

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Gender parity in the workplace is demonstrated when people have access to similar rewards, resources, and opportunities regardless of gender. According to statistics, the Philippines dropped to number 16 in the 2019 Global Gender Gap report from rank 8 in 2018. While the country maintained its top position in Asia, its overall gender gap is down by 2% from last year's 80 percent. The Philippines significantly closed its gaps in economic participation and opportunity, educational attainment, and health and survival. On the other hand, the country fell to the 29th place from 13th in 2018 in terms of political empowerment gap.



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POPULATION VS. SAMPLE

Population refers to the entire collection of entities that we want information about, on which inferences are made.

Sample refers to the subset of the population we actually examine to gather information.

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An international organization for women funded a research project that will evaluate the gender parity in the academe, specifically in the University of the Philippines Los Baños. Since the research project would require in-depth collection of data, the project team plans to take only a sample of UPLB employees with active status (not on-leave) for the academic year 2021-2022.



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PARAMETER VS. STATISTIC

Summary measures from a population are called **parameters**.

Summary measures from a sample are called **statistics**.

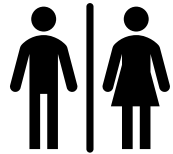
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parameter

Gender inequality in government is even worse among local elective officials. In 2013, only 11% of elected local officials were female, a sharp decline from 20% in 2010, 18% in 2007, and 17% in 2004. At the barangay level, specifically, women occupied only 19% of all barangay captain. – *Filipino women in leadership: Government and industry, PIDS, 2017*

statistic

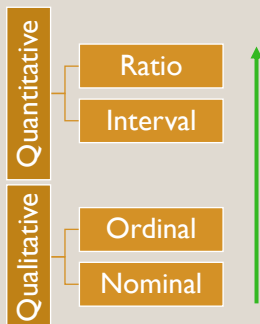
In 2012, labor surveys indicate that unemployment rate for young Filipino women aged 15–24 was 18.2%, and the rate for young men was 14.9% – *Gender Equality in the Labor Market in the Philippines, ADB, 2013*



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VARIABLES

Variables are attributes or characteristics measurable on each and every unit of the population.



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The following are some of the information the project team plans to collect. Identify their type and level of measurement.

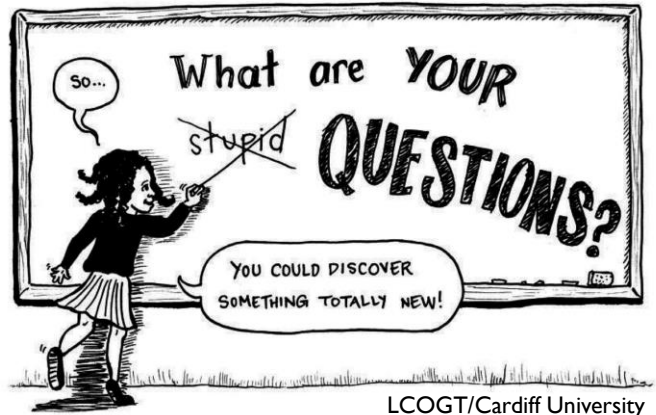
1. employee ID - **qualitative, nominal**
2. years of service (0 to 1 year; more than 1 year to 5 years; more than 5 years to 10 years; more than 10 years) - **qualitative, ordinal**
3. monthly salary (in pesos) - **quantitative, ratio**
4. number of children - **quantitative, ratio**
5. if graduate of advance degree (1 = yes, 2 = no) - **qualitative, nominal**



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QUESTIONS?

There is No Such Thing as a
Stupid Question



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CONSULTATIONS AND RECITATIONS

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ACTIVITY 1.1 Test yourself: Population, Sample, Parameter, and Statistics

Let's check if you can correctly distinguish between population and sample, and parameters and statistics. Answer the questions that follow.

1. The student council at a university with 15,000 students is interested in the percentage of students who favor a change in the grading system. It is being proposed to modify the grading system from the numerical grade (1.0, 1.25, 1.5, ...) to the letter grade (A+, A, A-, B+, ...). Two hundred students are interviewed to determine their attitude toward this proposed change. What is the population of interest? What group of students constitutes the sample in this problem?

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ACTIVITY 1.1 Test yourself: Population, Sample, Parameter, and Statistics

Let's check if you can correctly distinguish between population and sample, and parameters and statistics. Answer the questions that follow.

2. The administrators of the city engineering and public works office are interested in the proportion of property owners who support the water supply project. Because it is too costly to contact all 5,000 property owners, a survey of 500 owners, selected at random, is undertaken. Describe the population and sample for this problem.

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ACTIVITY 1.1 Test yourself: Population, Sample, Parameter, and Statistics

Let's check if you can correctly distinguish between population and sample, and parameters and statistics. Answer the questions that follow.

3. The homeowners in a subdivision were reminded to strictly follow the waste segregation rules set by the municipal government. The management of a subdivision is interested to know if the same percentage of households in this subdivision are following the said rules. The officers of the homeowner's association selected a random sample of households in the subdivision and found that 80% of them strictly follow the waste segregation rules. Is the given percentage a parameter or statistic?

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ACTIVITY 1.2 Test yourself: Qualitative or Quantitative?

Let's check whether you can correctly distinguish qualitative variables from quantitative variables. The online quiz can be accessed on this [link](#).

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