Introducción

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Inferencia Estadística, Semestre 2026-I

¿ Qué es la estadística ?

Statistics is about gathering data and working out what the numbers can tell us. From the earliest farmer estimating whether he had enough grain to last the winter to the scientists of the Large Hadron Collider confirming the probable existence of new particles, people have always been making inferences from data. Statistical tools like the mean or average summarise data, and standard deviations measure how much variation there is within a set of numbers. Frequency distributions - the patterns within the numbers or the shapes they make when drawn on a graph - can help predict future events. Knowing how sure or how uncertain your estimates are is a key part of statistics.

Today vast amounts of digital data are transforming the world and the way we live in it. Statistical methods and theories are used everywhere, from health, science and business to managing traffic and studying sustainability and climate change. No sensible decision is made without analysing the data. The way we handle that data and draw conclusions from it uses methods whose origins and progress are charted here.

Julian Champkin
Significance magazine

"Statistics is the science of information gathering, especially when the information arrives in little pieces instead of big ones." Bradley Efron is good at putting things simply. He talked to **Julian Champkin**.

statistics

science

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Article History

statistics, the science of collecting, analyzing, presenting, and interpreting data.

Introduction to Statistics

Sheldon M. Ross, in Introduction to Probability and Statistics for Engineers and Scientists (Fifth Edition), 2014

1.1 Introduction

It has become accepted in today's world that in order to learn about something, you must first collect data. *Statistics* is the art of learning from data. It is concerned with the collection of data, its subsequent description, and its analysis, which often leads to the drawing of conclusions.

Introduction

Andrew F. Siegel, in Practical Business Statistics (Seventh Edition), 2016

1.2 What is Statistics?

Statistics is the art and science of collecting and understanding data. Since *data* refers to any kind of recorded information, statistics plays an important role in many human endeavors.

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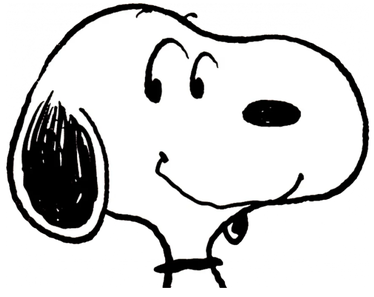
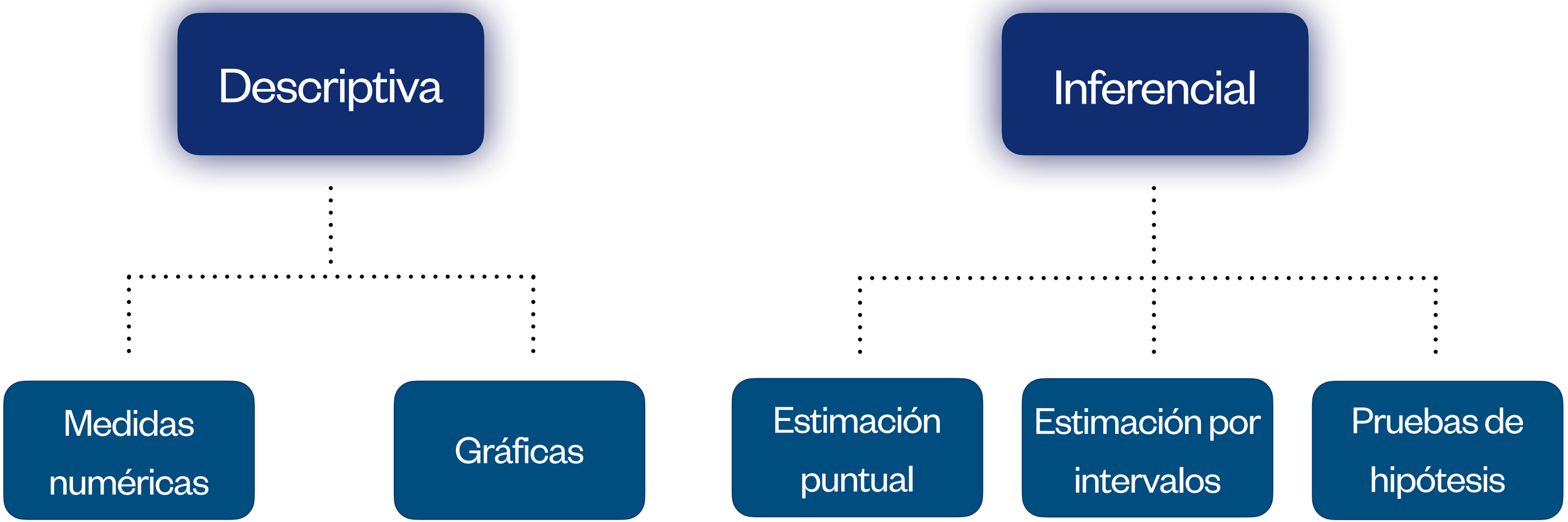
La estadística

- No hay una única definición pero ...
- **Aprender de los datos**
- **Está en todos lados**
- **Siempre ha existido de alguna forma u otra**



Enfoques de la estadística



La estadística inferencial moderna

Clásica

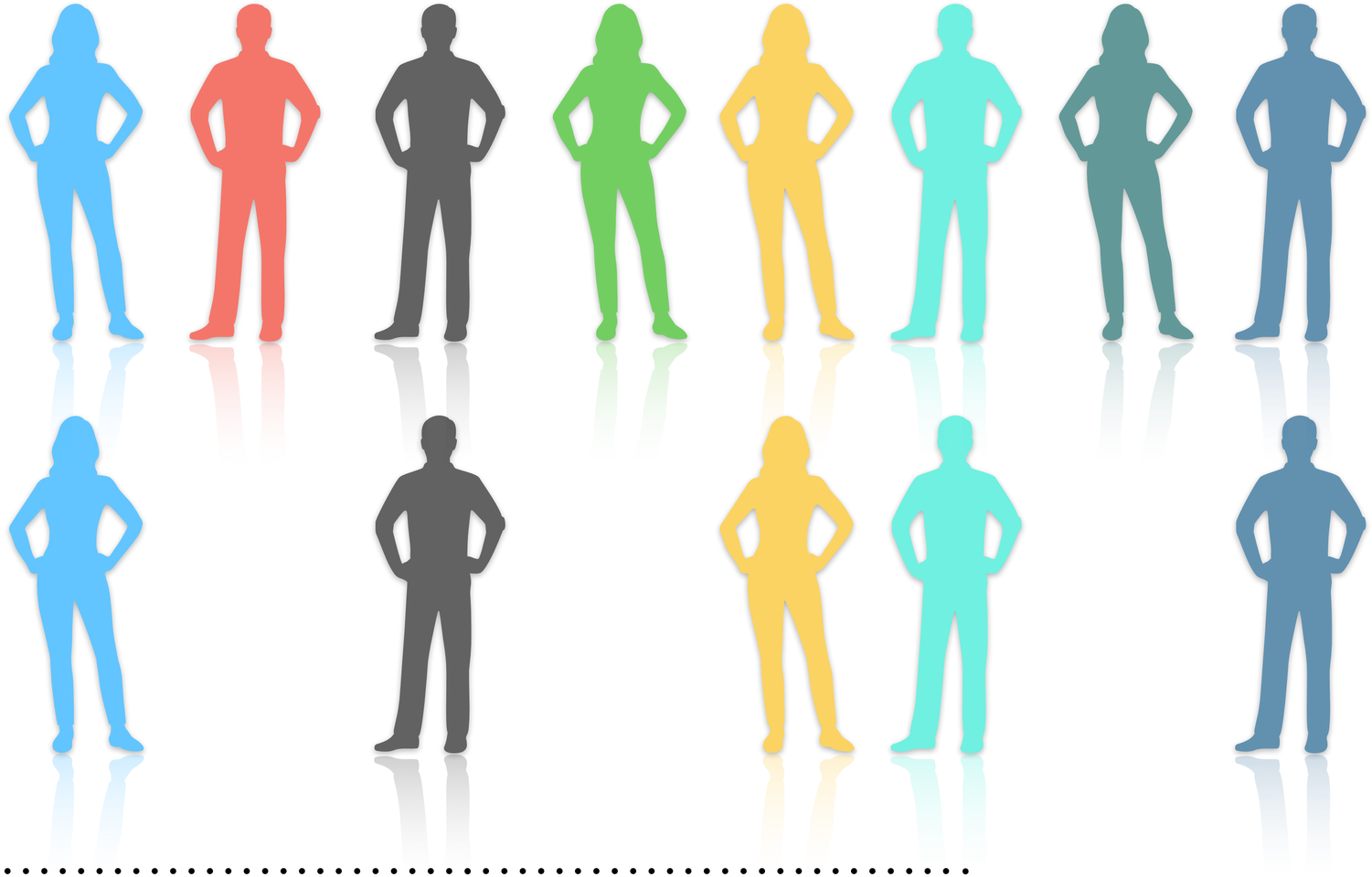
Bayesiana

Computacional

Conceptos iniciales

Población

Muestra



- Aleatorio
- Conglomerados
- Estratificado
- Otros

Recordatorio

Definición 1 (Espacio de probabilidad)

Un espacio de probabilidad es una terna $(\Omega, \mathscr{F}, \mathbb{P})$, donde Ω es un conjunto arbitrario, $\mathscr{F}$ es una σ-álgebra de conjuntos de Ω y $\mathbb{P}$ es una medida de probabilidad.

Definición 2 (Variable aleatoria)

Una variable aleatoria real es una función $X : \Omega \to \mathbb{R}$ tal que para cualquier Boreliano B, se cumple que $X^{-1}(B) \in \mathscr{F}$.

Definición 3 (Espacio parametral)

Al conjunto de valores que el parámetro θ puede tomar se le llama espacio paramétrico (o parametral) y se le denota por Θ.

Muestra aleatoria

Definición 4

Si $X_1, \ldots, X_n$ es un conjunto de **variables aleatorias, independientes e idénticamente distribuidas (v.a.i.i.d.)**, entonces se dice que $X_1, \ldots, X_n$ es una **muestra aleatoria (m.a.)**. De esta forma su densidad conjunta estará dada por

$$f(x_1, \ldots, x_n \mid \theta) = \prod_{i=1}^{n} f(x_i \mid \theta)$$