Why

There is a natural probability measure on a measurable space to associate with a dataset from the base set of that space.

Definition

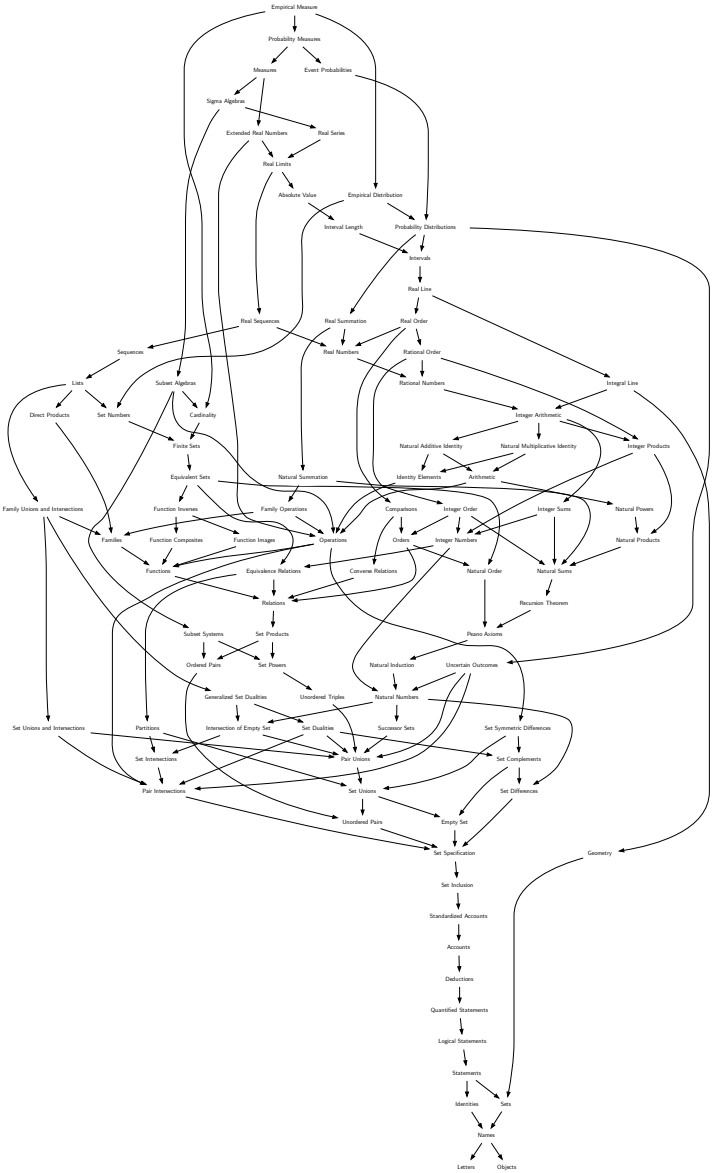
The *empirical measure* for a dataset in some measurable space is the measure which associates to each event the proportion of the records which are elements of that event.

Notation

Let $(a^1, \ldots, a^n)$ be a dataset in a measurable space $(A, \mathcal{A})$. Let $P : \mathcal{P}(A) \to [0, 1]$ be the probability measure that assigns to each set $B \subset A$ the number

$$P(B) = \frac{1}{n} \left| \left\{ k \in \{1, \ldots, n\} \;\middle|\; a^k \in B \right\} \right| .$$

Then P is the empirical measure.


Empirical Measure
Probability Measures
Measures
Event Probabilities
Sigma Algebras
Extended Real Numbers
Real Series
Real Limits
Absolute Value
Empirical Distribution
Interval Length
Probability Distributions
Intervals
Real Line
Real Sequences
Real Summation
Real Order
Sequences
Real Numbers
Rational Order
Lists
Subset Algebras
Rational Numbers
Integral Line
Direct Products
Set Numbers
Cardinality
Integer Arithmetic
Finite Sets
Natural Additive Identity
Natural Multiplicative Identity
Integer Products
Equivalent Sets
Natural Summation
Identity Elements
Arithmetic
Family Unions and Intersections
Function Inverses
Family Operations
Comparisons
Integer Order
Integer Sums
Natural Powers
Families
Function Composites
Function Images
Operations
Orders
Integer Numbers
Natural Products
Functions
Equivalence Relations
Convene Relations
Natural Order
Natural Sums
Relations
Recursion Theorem
Subset Systems
Set Products
Peano Axioms
Ordered Pairs
Set Powers
Natural Induction
Uncertain Outcomes
Generalized Set Dualities
Unordered Triples
Natural Numbers
Set Unions and Intersections
Partitions
Intersection of Empty Set
Set Dualities
Successor Sets
Set Symmetric Differences
Set Intersections
Pair Unions
Set Complements
Pair Intersections
Set Unions
Set Differences
Unordered Pairs
Empty Set
Geometry
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects