Why

We want to select a distribution graph to summarize some data.

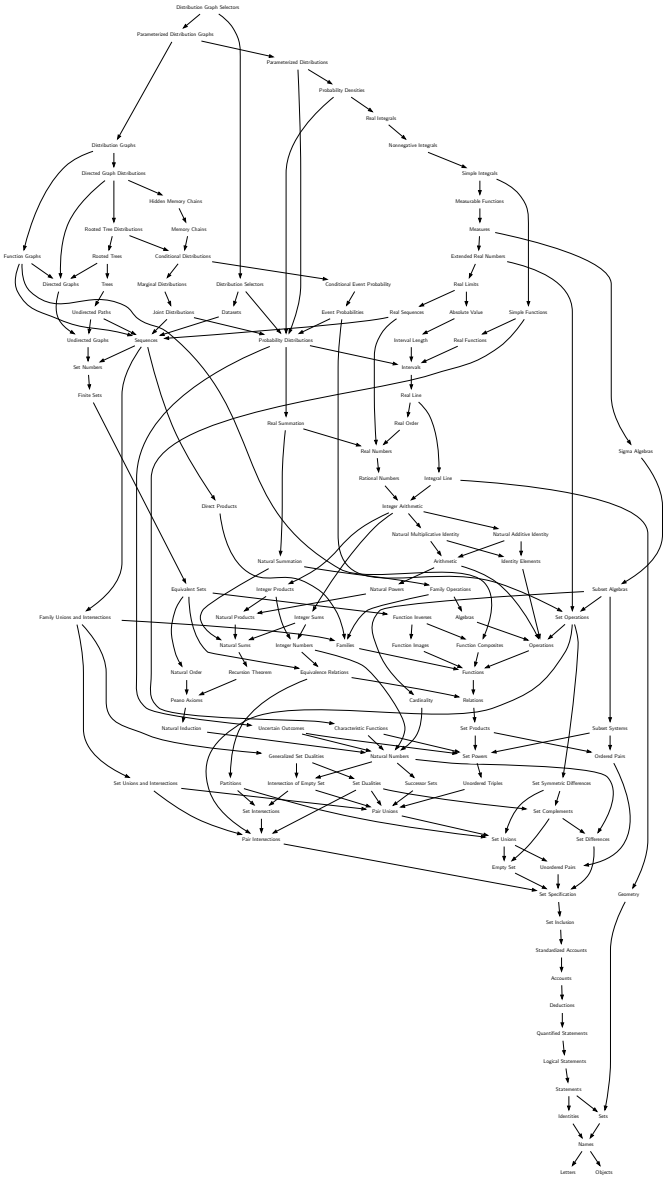
Definition

Let (G, A) be a typed graph on $\{1, \ldots, n\}$. Let $S \subset \{1, \ldots, n\}$. Let $x^1, \ldots, x^n$ be a dataset in $A_S = \prod_{j \in S} A_j$ (see Function Graphs).

A *distribution graph selector* for typed graph (G, A), dataset of size n, and indices $S \subset \{1, \ldots, n\}$ is a function from datasets of size n in A_S to distribution graphs on (G, A).

In the case that $S \neq \{1, \ldots, n\}$ we call S the *observable* (or *data*) indices and $T = \{1, \ldots, n\} - S$ the *hidden* (or *latent*, *nonobservable*) indices. It is common for many authorities to use the notational convention Z for A_T and X for A_S.

Let $p : \prod_i A_i \to [0, 1]$ denote the full joint distribution of a distribution graph. In this case, we call $p_S : A_S \to [0, 1]$ the *observable distribution* (or *evidence distribution*).


Distribution Graph Selectors
Parameterized Distribution Graphs
Parameterized Distributions
Probability Densities
Real Integrals
Nonnegative Integrals
Simple Integrals
Measurable Functions
Measures
Extended Real Numbers
Real Limits
Absolute Value
Simple Functions
Real Functions
Intervals
Real Line
Real Order
Real Numbers
Rational Numbers
Integral Line
Integer Arithmetic
Natural Multiplication Identity
Natural Additive Identity
Arithmetic
Identity Elements
Natural Summation
Integer Products
Natural Powers
Family Operations
Natural Products
Integer Sums
Function Inverses
Algebras
Set Operations
Natural Sums
Integer Numbers
Families
Function Images
Function Composites
Operations
Functions
Natural Order
Recursion Theorem
Equivalence Relations
Cardinality
Relations
Peano Axioms
Natural Induction
Uncertain Outcomes
Characteristic Functions
Set Products
Generalized Set Duality
Natural Numbers
Set Powers
Ordered Pairs
Set Unions and Intersections
Partitions
Intersection of Empty Set
Set Duality
Successor Sets
Unordered Triples
Set Symmetric Differences
Set Intersections
Pair Unions
Set Complements
Pair Intersections
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects
Function Graphs
Directed Graphs
Trees
Rooted Trees
Rooted Tree Distributions
Hidden Memory Chains
Memory Chains
Directed Graph Distributions
Distribution Graphs
Undirected Paths
Undirected Graphs
Marginal Distributions
Joint Distributions
Conditional Distributions
Distribution Selectors
Datasets
Sequences
Conditional Event Probability
Event Probabilities
Probability Distributions
Real Sequences
Interval Length
Set Numbers
Finite Sets
Equivalent Sets
Direct Products
Family Unions and Intersections
Sigma Algebras
Subset Algebras
Subset Systems
Geometry