RenR 480/711

Statistical Vocabulary Part I

Statistical term	Colloquial speech	In your research project
Population	General class of things	That‘s what you want to learn something about
Sample	Group of things representing a class	That‘s what you actually study
Unit	Thing, location entity	An individual research subject
Dependent variable	Properties of things	What you measure on your research subject
Independent variable	Environment of things	What you measure because you think it influences your research units
Datum (Data)	Values of variables	What you record

Statistical term	Example 1	Example 2
Population	The tree species aspen	A local aspen population
Sample	Seed collected at 1000 locations throughout its range	1000 seeds collected from 10 trees on campus
Unit	Aspen seedling	Aspen seedling
Dependent variable	Drought resistance	Drought resistance
Independent variable	Climate at collection location	10 experimental irrigation levels
Datum (Data)	0/1 - Survival	01/ - Survival

Therefore…

- Sampling determines the population

  The more general the better!

Data table concept

Type I: Multiple Populations

Unit ID	Population ID Crop Variety	Dependent variables Yield	 Resistance
1	A	5	0
2	A	3	1
3	A	6	0
4	B	12	0
5	B	15	0
6	B	14	1

Type II: Single Population

Unit ID	Independent Variables Fertilizer	Dependent variable Yield	 Resistance
1	0	3	1
2	0	2	0
3	3	6	1
4	3	9	1
5	6	5	0
6	6	8	1

Data table concept

Type I: Multiple Populations

Unit ID	Population ID Crop Variety	Dependent variables Yield	 Resistance
1	A	5	0
2	A	3	1
3	A	6	0
4	B	12	0
5	B	15	0
6	B	14	1

Sample of population that you want to learn something about

Type II: Single Population

Unit ID	Independent Variables Fertilizer	Dependent variable Yield	 Resistance
1	0	3	1
2	0	2	0
3	3	6	1
4	3	9	1
5	6	5	0
6	6	8	1

You can think of this representing a population: Crop grown without fertilizer

Types of Variables

Continuous variables

1) Ratio-scale: (magnitude/unit) non-arbitrary zero value

e.g. precipitation (2000 mm)

all statistics allowed

2) Interval-scale: arbitrary zero value

e.g. temperature (5°C)

all statistics allowed but may need transformation

3) Ordinal-scale: rank order

e.g. class grade (excellent, 4.0)

usually not permissible for parametric stats

percentiles, non-parametric stats possible

you can force normal distribution on scores, through

e.g. -3 -2 -1 0 1 2 3

Nominal variables

1) Categories: e.g. yes/no, N/P/K

no normal statistics, but fine for independent variables. Good practice is to use letters to avoid confusion