

U3D2_T Graph a Scatter Plot

Wednesday, March 21, 2018 2:44 PM



U3D2_T
Graph a S...

U3D2 MAP 4CI Scatter Plots

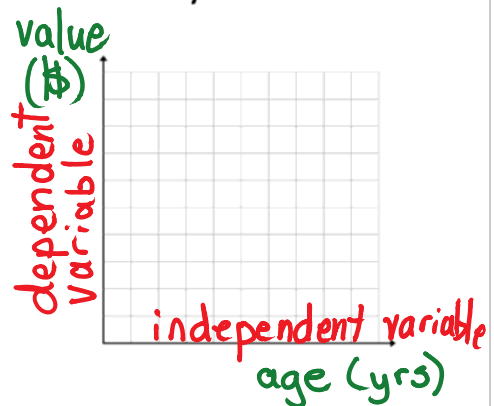
Scatter Plots

represent the relationship between two variables. Data is plotted as points.

Scatter plots may indicate a relationship between the two variables.

In two variable data situations, one variable may be dependent on another: in other words, its value is the result according to the independent variable.

For example, the value of a car depends on its age.



So the independent value is age (years)

And the dependent value is value (\$)

To plot a scatter plot the dependent variable goes on the vertical axis (y).

And the independent variable goes on the horizontal axis (x).

CORRELATION DOES NOT MEAN CAUSATION

Example : Daylight hours and Temperature - In winter daylight hours are shortened and temperature is lower (positive correlation). But the low temperature is not caused by the low number of daylight hours. It is caused by the angle the earth makes relative to the sun.

Correlation: is how closely the variables are related. 'r' is called the correlation coefficient

Positive

/ **Correlation:** As independent variable increases,
the dependent variable increases

Negative

\ **Correlation:** As independent variable increases,
the dependent variable decreases

What type of correlation would you expect for the value of a car over time?

Value decreases over time so, **NEGATIVE**
Correlation.

Considering Possible Cause and effect. Observing a relationship does not mean that the one variable causes a change in the other. Other factors can be involved or the correlation could be a coincidence.

1) State whether the claim in each situation is reasonable.

a) A scientific study showed a negative correlation between aerobic exercise and blood pressure. It claimed that the increase in aerobic activity was the cause of the decrease in blood pressure. *Yes.*

b) A positive correlation was discovered between the gas price and the average monthly temperature. She concluded that the temperature determines the price of gas. *No.*

2) State whether you think the variables in each situation would have a negative correlation, a positive correlation, or no correlation.

a) Driving speed [↑] and time [↓] to travel 100 km. *Negative*

b) Size of a house and its interior temperature. *No.*

c) A Person's age and the number of colds they have had. *Positive*

d) Price of gasoline at the pump and the fuel efficiency of a vehicle. *↳ price/L. No.*

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Do the following variables show positive, negative or no correlation.

Babies crying and being held by their parents *Negative*

Average Daily Temperature and Distance from the North Pole *Positive then Negative*

Average Daily Temperature *↓* and Distance *↑* from the Equator *Neg.*
Speed and the time it takes to drive a given distance. *Neg.*

Distance driven and the amount of fuel consumed. *Positive*

Example: Canadians consume a large amount of sodium. Although some sodium is needed to control blood volume and to help cells function properly, most Canadians consume far more than is necessary, or recommended. Most sodium is consumed as sodium chloride, also known as “table salt”. Processed foods are the main source, accounting for 77% of average daily sodium intake. The maximum recommended daily salt intake from all sources (food, cooking, etc) is 1 tsp or 6 g.

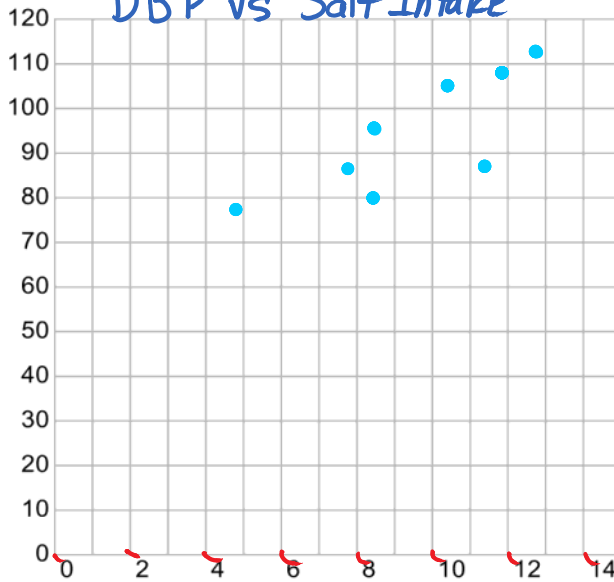
Salt in our diet has been shown to contribute to high blood pressure. Blood pressure (BP) is the pressure exerted by circulating blood upon the walls of blood vessels. During each heartbeat, BP varies between a maximum (systolic pressure), pressure in the arteries when the heart is contracting, and a minimum (diastolic pressure), pressure in the arteries when the heart is relaxing and expanding. A person’s BP is expressed in terms of the systolic pressure over the diastolic pressure, measured in mmHg (mm of mercury, although mercury is not used), for example 120/80.

Draw a scatter plot on a set of axes, of the Diastolic BP vs. Salt Intake for the eight patients in the table.

Patient	Average Daily Salt Intake (g)	Diastolic Blood Pressure (mmHg)
A	8.4	80
B	10.4	105
C	4.9	78
D	7.8	87
E	12.8	112
F	11.9	108
G	8.4	96
H	11.4	88

Diastolic
Blood
Pressure

DBP vs Salt Intake



Salt Intake (g)

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a) Pose a question that would require one-variable data analysis.

What is the median DBP?

What is the median salt intake?

What % of people surveyed consume more than recommended 6g/day of salt?

What % of people surveyed have high DBP?

b) Pose a question that would require two-variable data analysis.

Does DBP increase with higher salt intake?

c) Give three descriptive statements about this data.

Only 1 person consumes less than 6g salt/day (about 13% of those surveyed).

As salt intake increases, DBP increases

The median DBP is 92.

U3D2 Homework: Pg 146 # 4, 5, 6 b c, 7, 8

(in 4 c) graph a scatter plot of Average Daily Salt Intake vs. Systolic Blood Pressure)