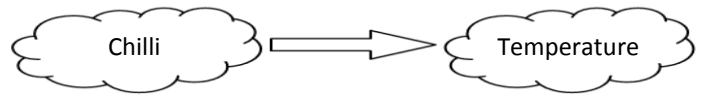


EXAMPLE: Does the amount of chilli in a meal affect your body temperature?

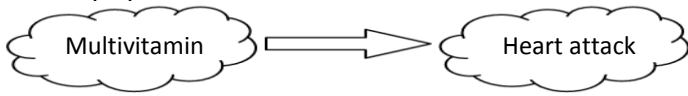
Concept picture:



<p>Notes: One group has chilli in their meal, one group does not. Measure temperature after the meal.</p> <p>SITUATION A</p> <p>Diagram</p> <p>Stats analysis to do:</p>	<p>Notes: Groups are given 0g, 0.5g, 1g, 1.5g of chilli powder in their meals. Measure temperature after the meal.</p> <p>SITUATION D</p> <p>Diagram</p> <p>Stats analysis to do:</p>
<p>Notes: Each person has both a meal with chilli and a meal without at different times. Measure temperature after both meals.</p> <p>SITUATION B</p> <p>Diagram</p> <p>Stats analysis to do:</p>	<p>Notes: One group has chilli in their meal and one does not. Each person is asked if they feel hot or not.</p> <p>SITUATION E</p> <p>Diagram</p> <p>Stats analysis to do:</p>
<p>Notes: One group has chilli flakes in their meals, one group has chilli sauce and one has no chilli. Measure temperature after the meal.</p> <p>SITUATION C</p> <p>Diagram</p> <p>Stats analysis to do:</p>	<p>Notes: Each person has both a meal with chilli and a meal without at different times. They are asked if they feel hot or not after both meals.</p> <p>SITUATION F</p> <p>Diagram</p> <p>Stats analysis to do:</p>

1. *If people take multivitamins daily, does it reduce their chances of a heart attack?*

Concept picture:



Notes:

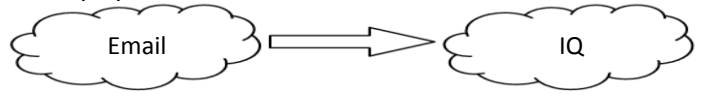
Two groups are given the same information about lifestyle by their doctor, but one is also instructed to take a multivitamin daily. Follow for five years and record whether they have a heart attack.

Diagram

Stats analysis to do:

3. *Is your IQ lower when you are responding to emails continuously?*

Concept picture:



Notes:

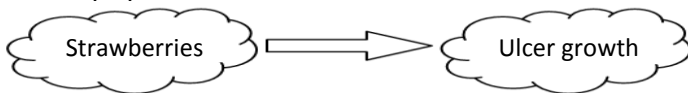
Staff in a university sit at a desktop computer and complete two IQ tests. During one test, the email program is turned off. During the other, the email program is turned on and emails are sent to it every two minutes.

Diagram

Stats analysis to do:

2. *Does eating strawberries make ulcers grow more slowly?*

Concept picture:



Notes:

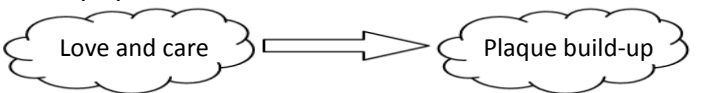
Two groups of rats are given ulcer-causing bacteria. One is given strawberry-rich diet and the other is not. The total area of the ulcers in their stomachs is measured after two weeks.

Diagram

Stats analysis to do:

4. *Does being shown love and care prevent plaque build up in the arteries?*

Concept picture:



Notes:

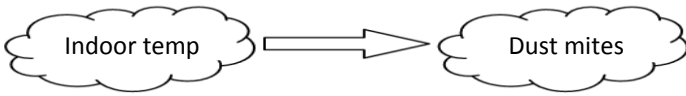
Rabbits are randomised into three groups. One has all their food delivered by a machine, one has their food delivered by a person, and the third is given cuddles when the food is delivered. After a month, the volume of plaque build-up is measured.

Diagram

Stats analysis to do:

5. Does the indoor temperature have an effect on the number of dust-mites in the carpet?

Concept picture:



Notes:

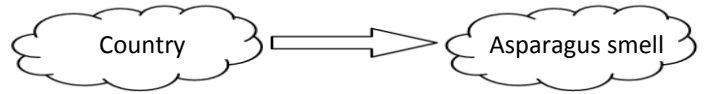
In 23 offices, the number of dust mites in a sample of carpet is counted. The temperature setting on the air conditioning is also recorded.

Diagram

Stats analysis to do:

7. Is the percentage of people who can smell asparagus different in Australia, China and Indonesia?

Concept picture:



Notes:

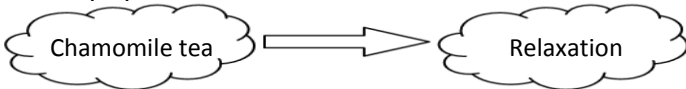
20 people born in each country are each sent to an empty room then a plate of cooked asparagus is placed by the air vent into the room. Whether the person smelled the asparagus is recorded.

Diagram

Stats analysis to do:

6. Does drinking chamomile tea have a relaxing effect?

Concept picture:



Notes:

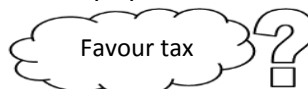
Participants have a heart-rate monitor attached while they watch two stressful movies. During one movie they are given a cup of ordinary tea, during the other they are given a cup chamomile tea. The change in heart rate for each situation is recorded.

Diagram

Stats analysis to do:

8. Are the majority of people in favour of an unhealthy food tax?

Concept picture:



Notes:

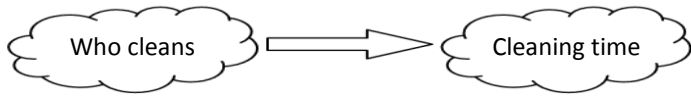
A large survey asks people whether they are in favour of an unhealthy food tax. Whether they are in favour or not is recorded.

Diagram

Stats analysis to do:

9. Do maggots clean wounds faster than a surgeon?

Concept picture:



Notes:

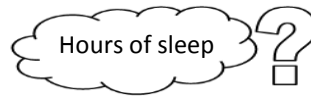
New patients are randomly allocated to have their wounds cleaned by surgeon or maggots. The number of minutes per area of wound is recorded for each patient.

Diagram

Stats analysis to do:

11. Do teenagers get the recommended 8 hours of sleep per day on average?

Concept picture:



Notes:

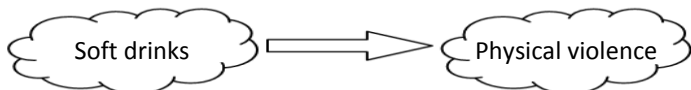
Parents of teenagers are asked to keep a diary of their children's sleeping habits for a month. The average number of hours of sleep per night is recorded for each teenager.

Diagram

Stats analysis to do:

10. Does a students' consumption of soft-drink affect whether they are physically violent?

Concept picture:



Notes:

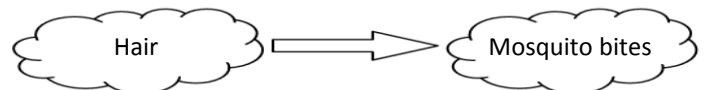
Students surveyed to find the number of cans of soft drink they consume per week. School records are used to determine which students have been involved in violence at school.

Diagram

Stats analysis to do:

12. Do hairier people get less mosquito bites?

Concept picture:



Notes:

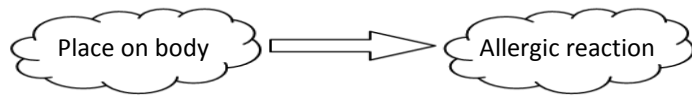
One group of people have one arm left as normal and one arm shaved. They are sent to sleep in a room and then mosquitoes are released. The number of mosquito bites on each arm is counted the next morning.

Diagram

Stats analysis to do:

13. Are children just as likely to have an allergic reaction to Band-Aids on their hands as their feet?

Concept picture:



Notes:

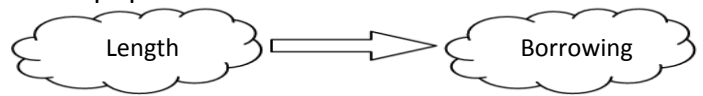
Each child in the study has a Band-Aid applied to both their hand and their foot, which is left for two days. Whether an allergic reaction develops in each site is recorded.

Diagram

Stats analysis to do:

15. Do longer novels in the library get borrowed less often?

Concept picture:



Notes:

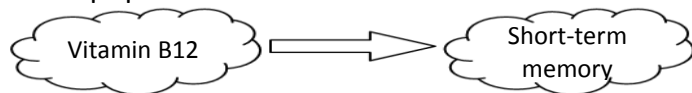
From the records of many libraries, the number of times a book is borrowed per year is calculated for many books. Then the number of pages in each book is counted.

Diagram

Stats analysis to do:

14. Does taking Vitamin B12 supplements improve elderly people's short-term memory?

Concept picture:



Notes:

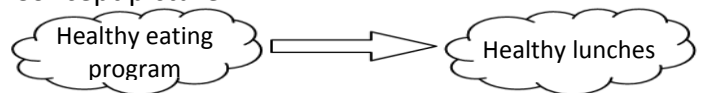
One group of elderly people is given Vitamin B12 supplements daily for two months, while the other is given a placebo. Scores on a short-term memory test are recorded before and after the treatment.

Diagram

Stats analysis to do:

16. Does a healthy-eating program in schools make more children bring healthy lunches?

Concept picture:



Notes:

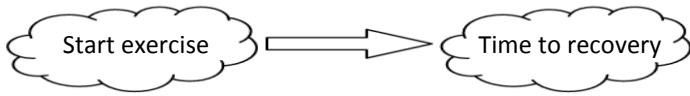
Many schools are randomly allocated to either give a healthy-eating program in their classes or not. On a particular day after the program, children's lunchboxes in each school are classified as healthy or unhealthy.

Diagram

Stats analysis to do:

17. Does starting exercise earlier after a heart attack shorten the time to recovery?

Concept picture:



Notes:

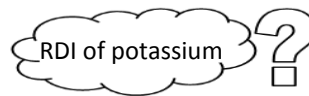
Physiotherapist records for a large group of patients are used to find both the number of days between heart attack and exercise, and the total time to recovery.

Diagram

Stats analysis to do:

19. What percentage of bananas have more than the recommended daily intake of potassium?

Concept picture:



Notes:

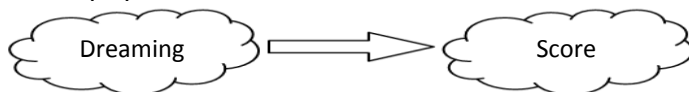
Random samples of bananas are taken from several banana farms. The amount of potassium in each banana is found and compared to the recommended daily intake.

Diagram

Stats analysis to do:

18. If you dream about a new game you learn, do you perform any better?

Concept picture:



Notes:

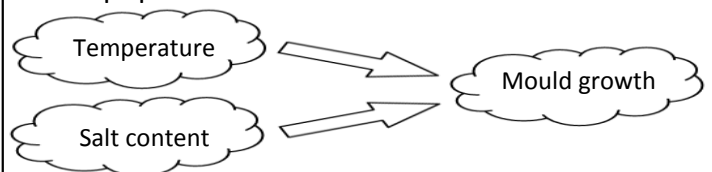
Students are taught a computer game before going to sleep. They write down their dreams when they wake up and then play the game to get a score. It is recorded whether they dreamed about games at all, games generally or specifically the new game.

Diagram

Stats analysis to do:

20. Do either the temperature or the salt content in bread affect how quickly mould grows on it?

Concept picture:



Notes:

Bread is baked with various salt contents and slices are placed in rooms of various temperatures. The area of mould is measured after two days.

Diagram

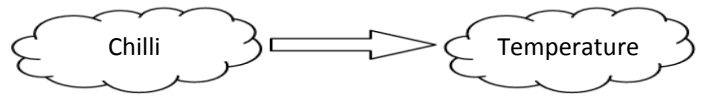
Stats analysis to do:

**ANSWERS
ARE ON THE NEXT PAGES**

DON'T PEEK!

EXAMPLE: Does the amount of chilli in a meal affect your body temperature?

Concept picture:



Notes:

One group has chilli in their meal, one group does not. Measure temperature after the meal.

SITUATION A

Diagram



Stats analysis to do:

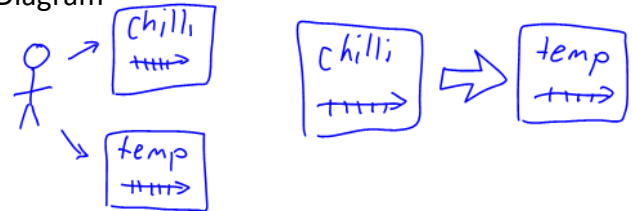
z-sample t-test

Notes:

Groups are given 0g, 0.5g, 1g, 1.5g of chilli powder in their meals. Measure temperature after the meal.

SITUATION D

Diagram



Stats analysis to do:

regression

Notes:

Each person has both a meal with chilli and a meal without at different times. Measure temperature after both meals.

SITUATION B

Diagram



Stats analysis to do:

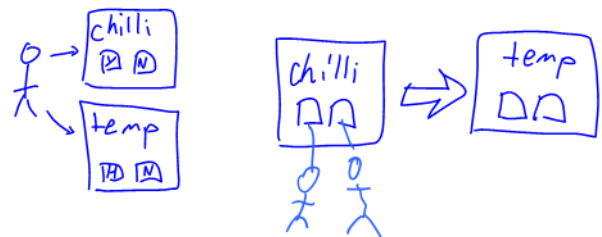
paired t-test

Notes:

One group has chilli in their meal and one does not. Each person is asked if they feel hot or not.

SITUATION E

Diagram



Stats analysis to do:

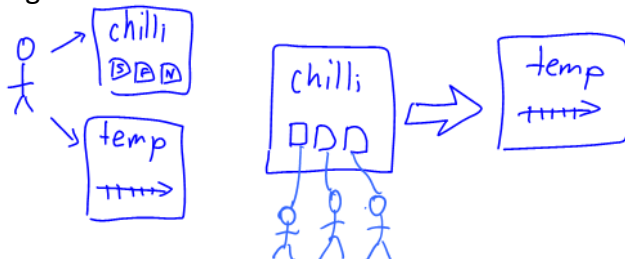
chi-squared test (for association)

Notes:

One group has chilli flakes in their meals, one group has chilli sauce and one has no chilli. Measure temperature after the meal.

SITUATION C

Diagram



Stats analysis to do:

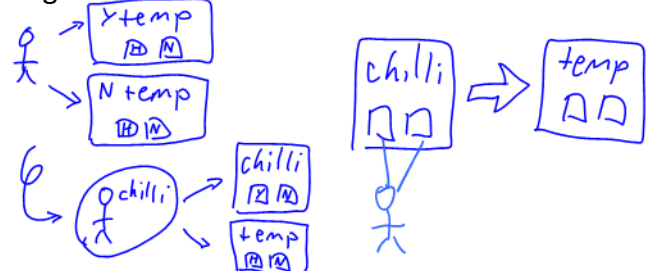
ANOVA

Notes:

Each person has both a meal with chilli and a meal without at different times. They are asked if they feel hot or not after both meals.

SITUATION F

Diagram

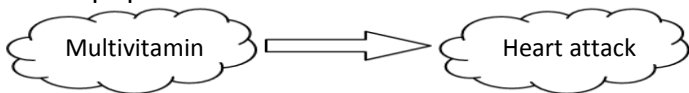


Stats analysis to do:

McNemar's test

1. If people take multivitamins daily, does it reduce their chances of a heart attack?

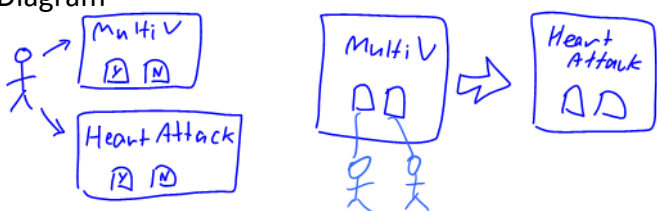
Concept picture:



Notes:

Two groups are given the same information about lifestyle by their doctor, but one is also instructed to take a multivitamin daily. Follow for five years and record whether they have a heart attack.

Diagram

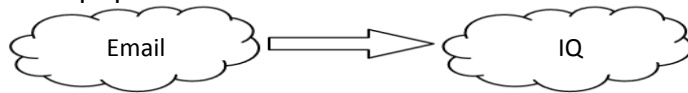


Stats analysis to do:

chi-squared test (for association)

3. Is your IQ lower when you are responding to emails continuously?

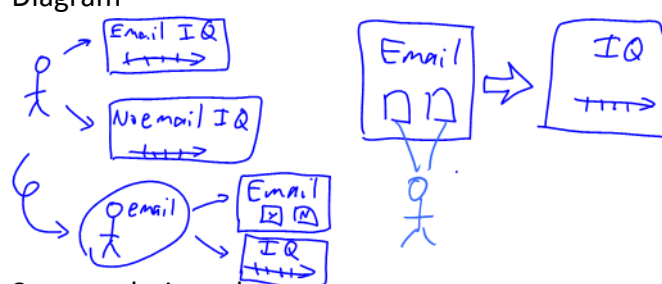
Concept picture:



Notes:

Staff in a university sit at a desktop computer and complete two IQ tests. During one test, the email program is turned off. During the other, the email program is turned on and emails are sent to it every two minutes.

Diagram

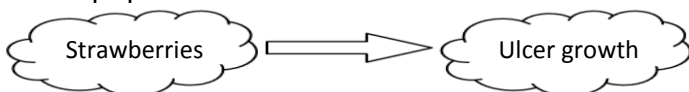


Stats analysis to do:

paired t-test

2. Does eating strawberries make ulcers grow more slowly?

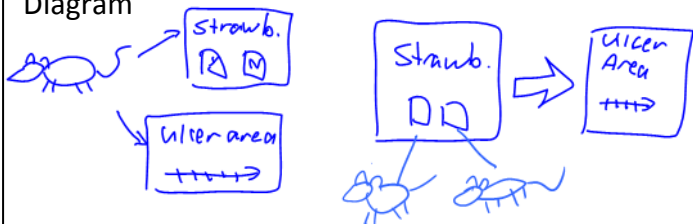
Concept picture:



Notes:

Two groups of rats are given ulcer-causing bacteria. One is given strawberry-rich diet and the other is not. The total area of the ulcers in their stomachs is measured after two weeks.

Diagram

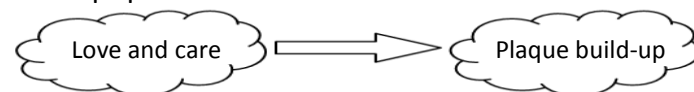


Stats analysis to do:

2-sample t-test

4. Does being shown love and care prevent plaque build up in the arteries?

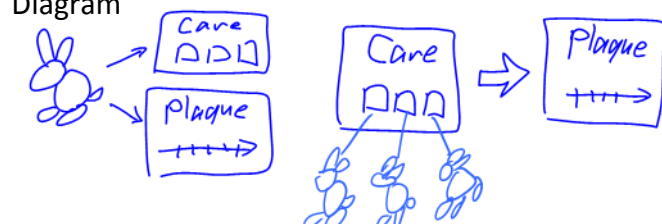
Concept picture:



Notes:

Rabbits are randomised into three groups. One has all their food delivered by a machine, one has their food delivered by a person, and the third is given cuddles when the food is delivered. After a month, the volume of plaque build-up is measured.

Diagram

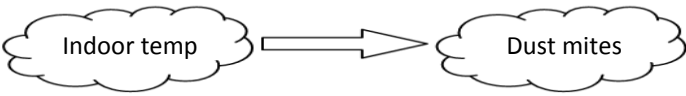


Stats analysis to do:

ANOVA

5. Does the indoor temperature have an effect on the number of dust-mites in the carpet?

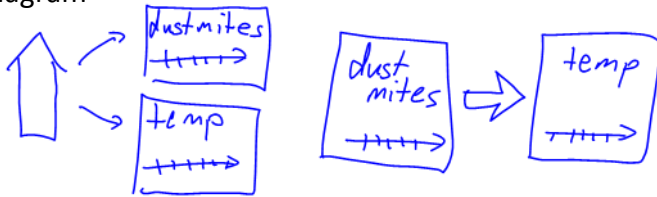
Concept picture:



Notes:

In 23 offices, the number of dust mites in a sample of carpet is counted. The temperature setting on the air conditioning is also recorded.

Diagram

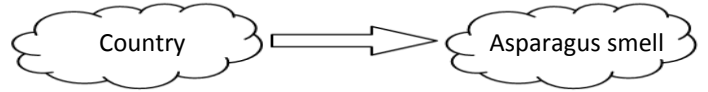


Stats analysis to do:

regression

7. Is the percentage of people who can smell asparagus different in Australia, China and Indonesia?

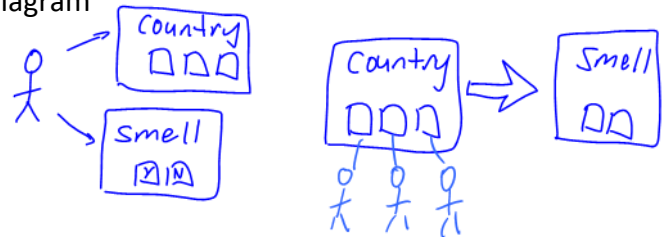
Concept picture:



Notes:

20 people born in each country are each sent to an empty room then a plate of cooked asparagus is placed by the air vent into the room. Whether the person smelled the asparagus is recorded.

Diagram

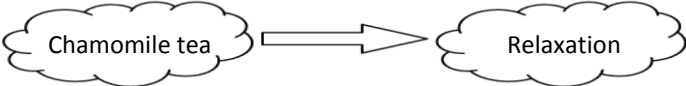


Stats analysis to do:

chi-squared test (for association)

6. Does drinking chamomile tea have a relaxing effect?

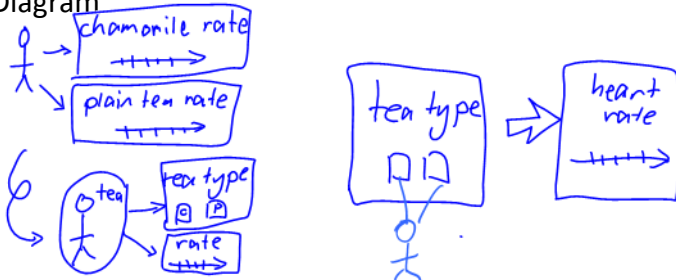
Concept picture:



Notes:

Participants have a heart-rate monitor attached while they watch two stressful movies. During one movie they are given a cup of ordinary tea, during the other they are given a cup chamomile tea. The change in heart rate for each situation is recorded.

Diagram



Stats analysis to do:

paired t-test

8. Are the majority of people in favour of an unhealthy food tax?

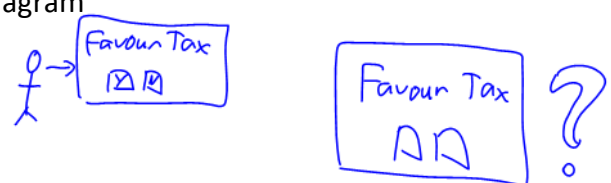
Concept picture:



Notes:

A large survey asks people whether they are in favour of an unhealthy food tax. Whether they are in favour or not is recorded.

Diagram

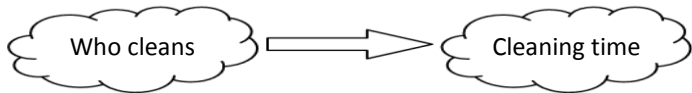


Stats analysis to do:

z-test for proportion (or chi-squared goodness of fit)

9. Do maggots clean wounds faster than a surgeon?

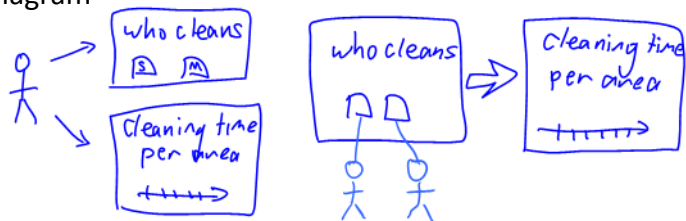
Concept picture:



Notes:

New patients are randomly allocated to have their wounds cleaned by surgeon or maggots. The number of minutes per area of wound is recorded for each patient.

Diagram

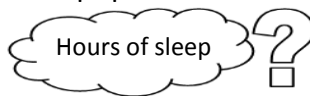


Stats analysis to do:

2-sample t-test

11. Do teenagers get the recommended 8 hours of sleep per day on average?

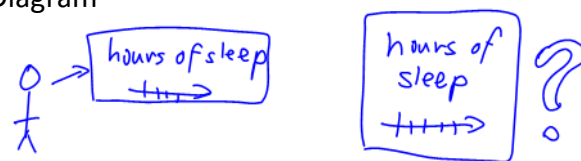
Concept picture:



Notes:

Parents of teenagers are asked to keep a diary of their children's sleeping habits for a month. The average number of hours of sleep per night is recorded for each teenager.

Diagram

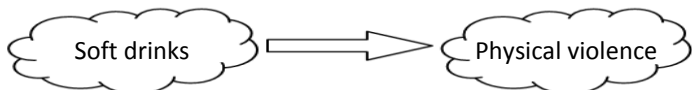


Stats analysis to do:

One-sample t-test

10. Does a students' consumption of soft-drink affect whether they are physically violent?

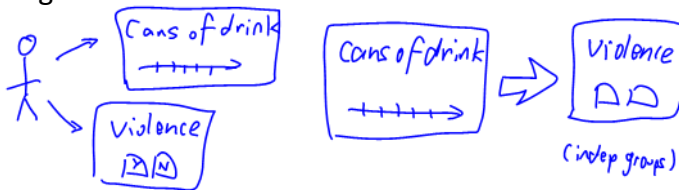
Concept picture:



Notes:

Students surveyed to find the number of cans of soft drink they consume per week. School records are used to determine which students have been involved in violence at school.

Diagram

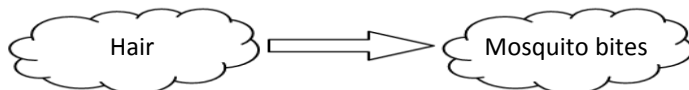


Stats analysis to do:

2-sample t-test (or logistic regression)

12. Do hairier people get less mosquito bites?

Concept picture:



Notes:

One group of people have one arm left as normal and one arm shaved. They are sent to sleep in a room and then mosquitoes are released. The number of mosquito bites on each arm is counted the next morning.

Diagram

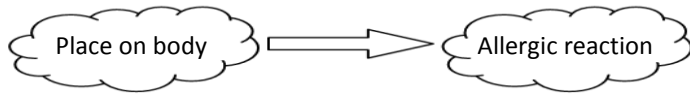


Stats analysis to do:

paired t-test

13. Are children just as likely to have an allergic reaction to Band-Aids on their hands as their feet?

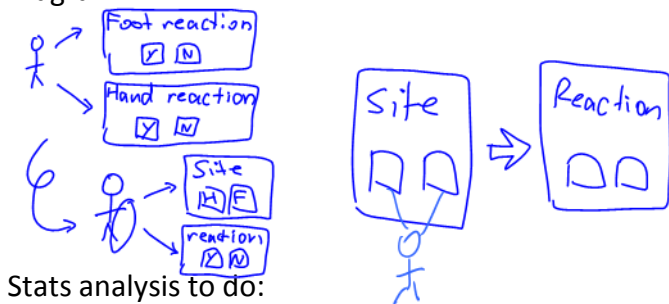
Concept picture:



Notes:

Each child in the study has a Band-Aid applied to both their hand and their foot, which is left for two days. Whether an allergic reaction develops in each site is recorded.

Diagram

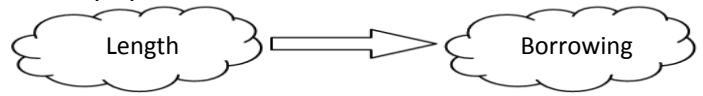


Stats analysis to do:

McNemar's Test

15. Do longer novels in the library get borrowed less often?

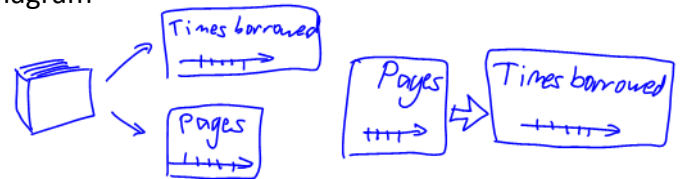
Concept picture:



Notes:

From the records of many libraries, the number of times a book is borrowed per year is calculated for many books. Then the number of pages in each book is counted.

Diagram

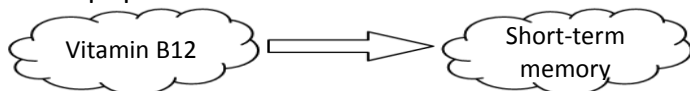


Stats analysis to do:

regression (+test on coefficient)

14. Does taking Vitamin B12 supplements improve elderly people's short-term memory?

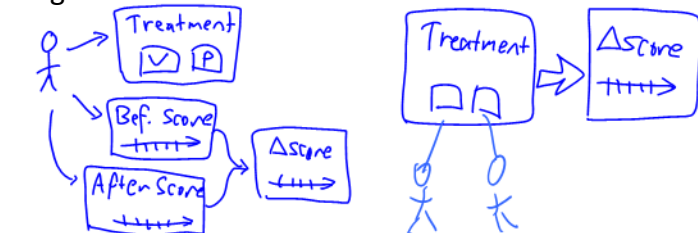
Concept picture:



Notes:

One group of elderly people is given Vitamin B12 supplements daily for two months, while the other is given a placebo. Scores on a short-term memory test are recorded before and after the treatment.

Diagram

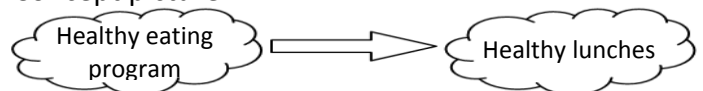


Stats analysis to do:

2-sample t-test

16. Does a healthy-eating program in schools make more children bring healthy lunches?

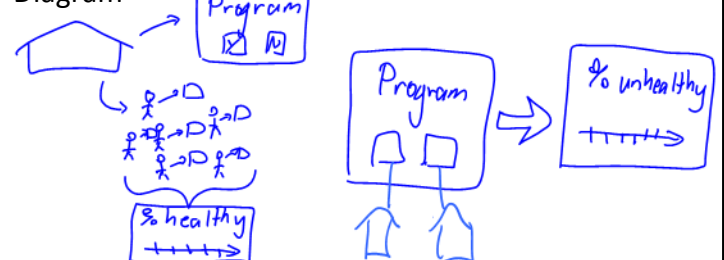
Concept picture:



Notes:

Many schools are randomly allocated to either give a healthy-eating program in their classes or not. On a particular day after the program, children's lunchboxes in each school are classified as healthy or unhealthy.

Diagram

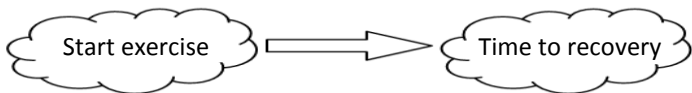


Stats analysis to do:

2-sample t-test

17. Does starting exercise earlier after a heart attack shorten the time to recovery?

Concept picture:



Notes:

Physiotherapist records for a large group of patients are used to find both the number of days between heart attack and exercise, and the total time to recovery.

Diagram

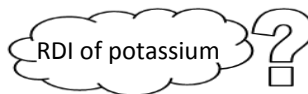


Stats analysis to do:

regression (t-test on coefficient)

19. What percentage of bananas have more than the recommended daily intake of potassium?

Concept picture:



Notes:

Random samples of bananas are taken from several banana farms. The amount of potassium in each banana is found and compared to the recommended daily intake.

Diagram

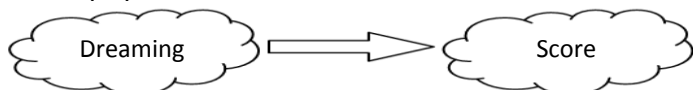


Stats analysis to do:

Z-test for proportion (or chi-squared goodness of fit)

18. If you dream about a new game you learn, do you perform any better?

Concept picture:



Notes:

Students are taught a computer game before going to sleep. They write down their dreams when they wake up and then play the game to get a score. It is recorded whether they dreamed about games at all, games generally or specifically the new game.

Diagram

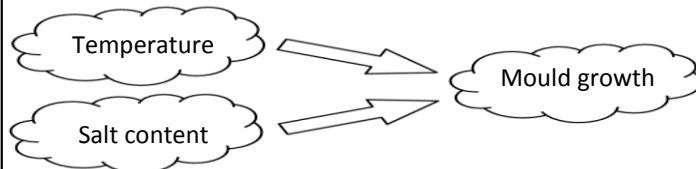


Stats analysis to do:

ANOVA

20. Do either the temperature or the salt content in bread affect how quickly mould grows on it?

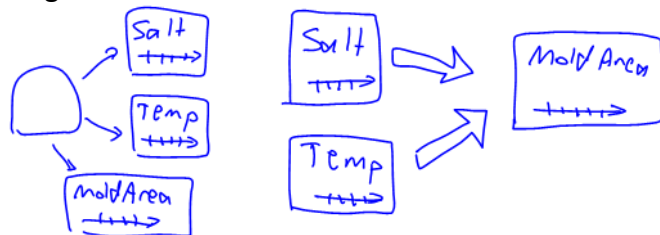
Concept picture:



Notes:

Bread is baked with various salt contents and slices are placed in rooms of various temperatures. The area of mould is measured after two days.

Diagram



Stats analysis to do:

Multiple regression