

# Re-randomisation

How to address chance in our experiments

# Walking Baby Age

- Does a special exercise programme lower walking age?

<b>Treatment?</b>	
<b>Control?</b>	
<b>Explanatory Variable?</b>	
<b>Response Variable?</b>	
<b>Aim?</b>	
<b>Purpose?</b>	

# Walking Baby Age

- Does a special exercise programme lower walking age?

<b>Treatment?</b>	Exercise Programme
<b>Control?</b>	Not in Exercise Programme
<b>Explanatory Variable?</b>	Exercise Programme
<b>Response Variable?</b>	Walking Age (in Months)
<b>Aim?</b>	To find out if a special exercise programme lowers walking age
<b>Purpose?</b>	Developers of a exercise programme want to find out if the programme effectively reduces the walking age.

# Walking Baby Age

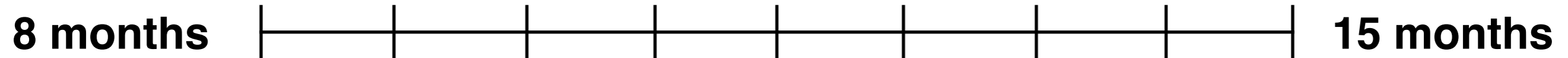
- Does a special exercise programme lower walking age?

10 male infants (& parents) were randomly assigned to one of two treatment groups.

Did the programme **cause** babies to walk at an earlier age?

# Walking Baby Age

- Create a box and whisker of the walking age (in Months) and compare the results.



# Walking Baby Age

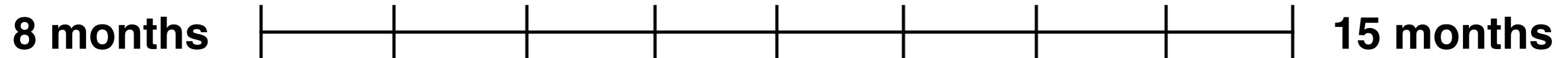
- Is the outcome of our experiment as a result of our treatment?

– or –

- Is the outcome of our experiment as a result of some other confounding variable?
- Or worse, was it just a matter of chance

# Walking Baby Age

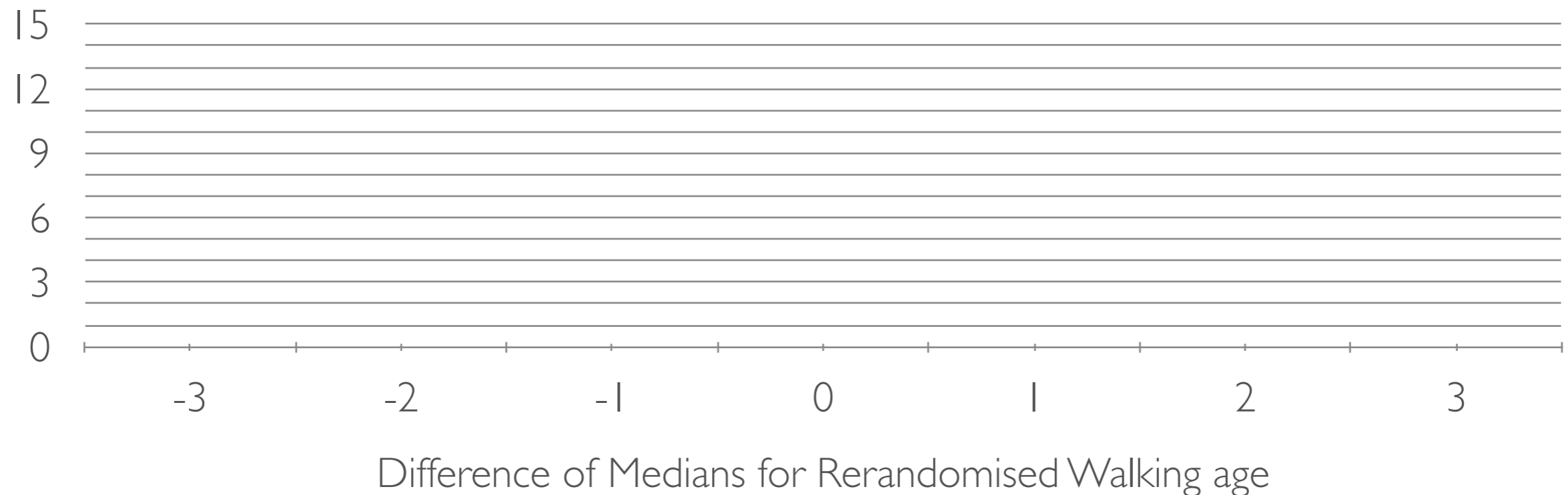
- But what if chance had determined which baby went to which group? Could it be mere chance that we observed that difference?



# Walking Baby Age

- But what if chance had determined which baby went to which group? Could it be mere chance that we observed that difference?

Dot Plot of Re-randomised Differences





# Making a claim

## Chance?

The observed difference of ..... or greater is highly unlikely when chance is acting alone. Therefore, there is evidence that chance is not acting alone. Because the [groups] were randomly assigned to the control and treatment groups, we can claim that the [treatment] was effective in [changing the response variable] for the group in this experiment.

## Chance?

The observed difference of .... is not unusual if chance were acting alone. Therefore, no claim can be made about the treatment's effect.

