

# Asking the right question?

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Research questions and Hypotheses

# Learning goals



WHAT IS A RESEARCH  
QUESTION?



WHAT IS A STATISTICAL  
HYPOTHESIS?

# What is a Research Question



How do you define a research question  
why is it important?



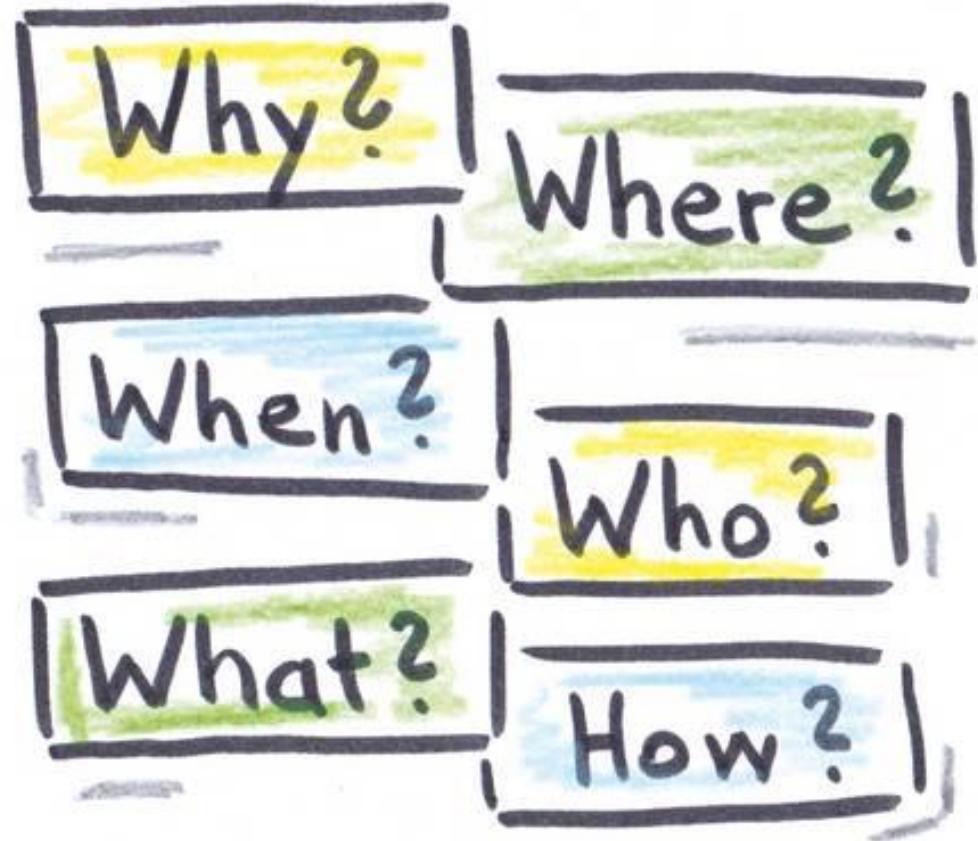
A research question is a sentence that defines what you will examine, within which population, and what the outcome of interest will be.



Let's ask questions!

A hotel has hired you because their employees are unhappy. They want to know how to fix this.

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6-W Method

# Working Questions (6W)

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Who

Who is affected by the unhappy employees?

What

What common complaints are being voiced?

Where

Where is the problem occurring?

When

When did the problem begin?

Why

Why can you not hire more employees?

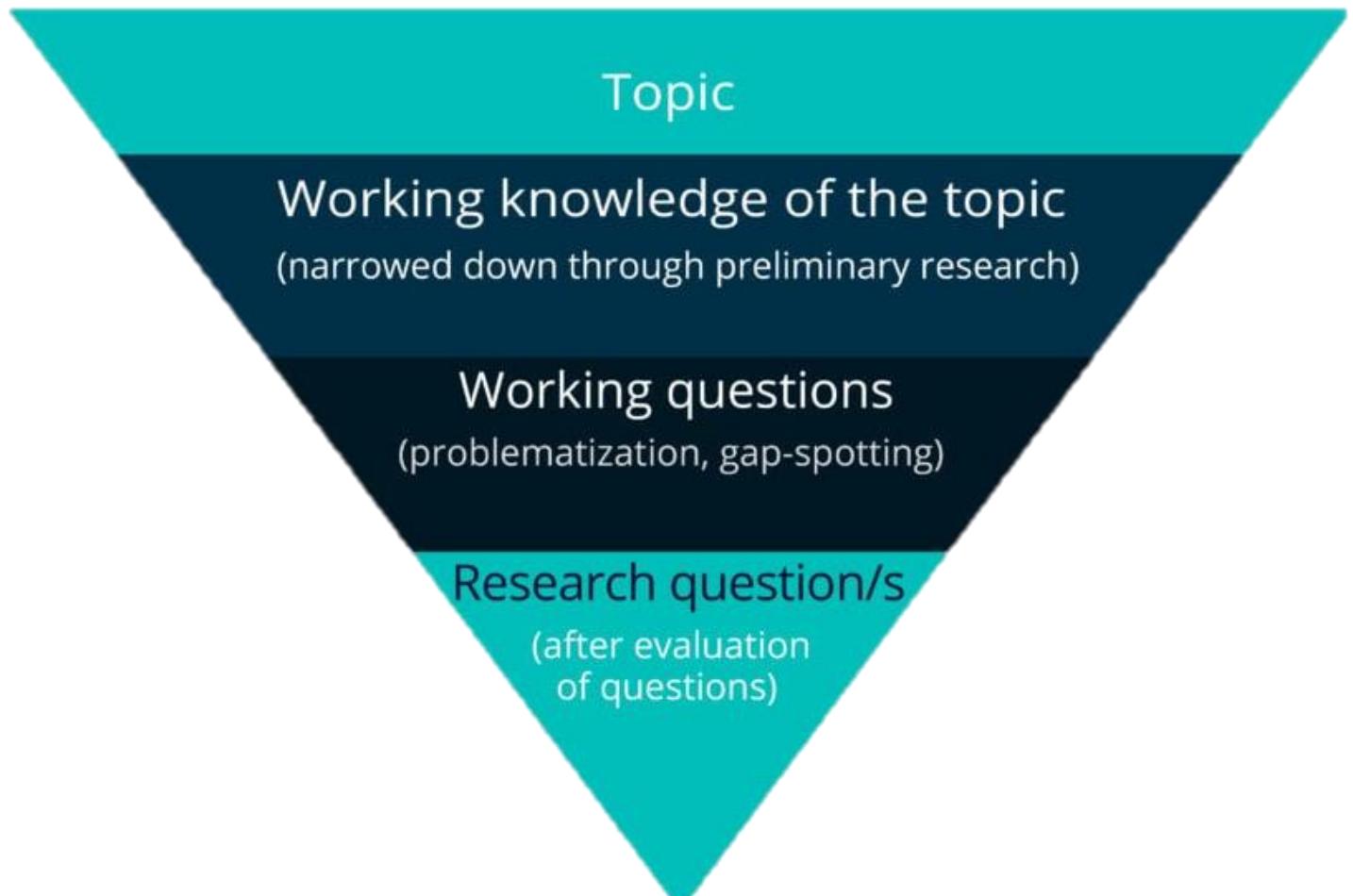
How

How can we solve this? (Brainstorming step)

So with all our background information....

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We can piece together one MAIN question. The Research Question.



# Research Question

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**How would removing some job responsibilities for support staff increase overall staff happiness?**



Referral

Slightly less hospitable = perhaps more negative reviews from customers who are used to a certain standard of care

But maybe less staff turnover, increased job performance, happier workers = happier customers?

This is a POTENTIAL TEMPORARY SOLUTION until more staff can be found.

But is the cost to the hotel worth it? Can we add a time-frame?



Happy Employees



Quality Work



Happy Customers

# The alternate hypothesis and null hypothesis

A hypothesis is a statement, never a question.

The **null hypothesis** always assumes that no changes need to be made

The **alternate hypothesis** is always the opposite of the null hypothesis

How would removing some job responsibilities for support staff increase overall staff happiness?

$H_0$ : Removing some job responsibility for support staff will have no effect on overall staff happiness.

$H_a$ : Removing some job responsibility for support staff will have a positive effect on overall staff happiness.

# Hypothesis symbols

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Are we talking about averages? This sign means average:  $\mu$  (mu)

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Are we talking about percentages? This sign means percent:  $\Pi$  (pi)

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# The takeaway

Ask lots of questions to get to your main question.

A research question is NOT a hypothesis

The null hypothesis always assumes that no action is needed

The alternate hypothesis is always the opposite of the null hypothesis