



## Field Experiments <sup>[1]</sup>

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For geologists, social scientists and environmental biologists, amongst others, field experiments are an integral part of the discipline.

As the name suggests, a field study is an experiment performed outside the laboratory, in the 'real' world. Unlike case studies <sup>[3]</sup> and observational studies <sup>[4]</sup>, a field experiment still follows all of the steps of the scientific process <sup>[5]</sup>, addressing research problems <sup>[6]</sup> and generating hypotheses.

The obvious advantage of a field study is that it is practical and also allows experimentation <sup>[7]</sup>, without artificially introducing confounding variables <sup>[8]</sup>.

A population biologist examining an ecosystem could not move the entire environment into the laboratory, so field experiments are the only realistic research method in many fields of science.

In addition, they circumvent the accusation leveled at laboratory experiments of lacking external <sup>[9]</sup> or ecological validity <sup>[10]</sup>, or adversely affecting the behavior of the subject.

Social scientists and psychologists often used field experiments to perform blind studies <sup>[11]</sup>, where the subject was not even aware that they were under scrutiny.

A good example of this is the Piliavin and Piliavin experiment <sup>[12]</sup>, where the propensity of strangers to help blood covered 'victims' was measured. This is now frowned upon, under the policy of informed consent <sup>[13]</sup>, and is only used in rare and highly regulated circumstances.

Field experiments <sup>[14]</sup> can suffer from a lack of a discrete control group and often have many variables <sup>[15]</sup> to try to eliminate.

For example, if the effects of a medicine are studied, and the subject is instructed not to drink alcohol, there is no guarantee that the subject followed the instructions, so field studies often sacrifice internal validity <sup>[16]</sup> for external validity <sup>[9]</sup>.

For fields like biology, geology and environmental science, this is not a problem, and the field experiment can be treated as a sound experimental practice, following the steps of the scientific method <sup>[5]</sup>.

A major concern shared by all disciplines is the cost of field studies, as they tend to be very expensive.

For example, even a modestly sized research ship costs many thousands of dollars every day, so a long oceanographical research program can run into the millions of dollars.

Pilot studies [17] are often used to test the feasibility of any long term or extensive research program before committing vast amounts of funds and resources. The changeable nature of the external environment and the often-prohibitive investment of time and money mean that field experiments are rarely replicable [18], so any generalization [19] is always tenuous.

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