

Assignment 1: Understanding Threats (E1a)

Security Experiments and Measurements

Vrije Universiteit 2022

Summary

During experiment E1a you filled-in a survey. For your actual assignment, you will get the data submitted by the entire class (incl. your own). Your objective is to analyze the data to answer the research questions below and submit a final report for which you will follow the provided template.

Intervention

The idea behind the experiment E1a is that *the DFD is in fact useful and significantly helps in understanding the security threats of a system*. So from a company's perspective it makes sense to invest resources (training of developers, expensive consultants, integration of toolchains, etc.) to actually generate a DFD during the analysis phase.

Intended Measures of Success

Measure 1: The *actual precision* of the identified threats measured by correctly identified threats (True Positives - TP) and wrong, inapplicable threats (False Positives - FP) identified by the participants.

Measure 2: The *perceived usefulness* of the graphical model (i.e., DFD) when analyzing potential security threats as collected by participants' questionnaires with Likert scale-like questions.

Process - Intervention and Control Groups

The data at your disposal includes survey responses from two groups:

- A. In group A, students received as training material the description of the app deployment in Kubernetes, including a Data Flow Diagram depicting the deployment of an application. You can see what they received here:
<https://docs.google.com/document/d/1qV9TDbqIOOS6LX5wBbPxOImF2VG7BZJA6MZ1VDchCt0/edit?usp=sharing>
- B. In group B, students received as training material the *same* description of the app deployment in Kubernetes, without the Data Flow Diagram. You can see what they received here:
https://docs.google.com/document/d/1sNkMUReycFCqgQ9apEPzJFO8WNppy9_4S4SAnx73cCg/edit?usp=sharing

Ground Truth

The survey that you filled-in as part of Ea1 was designed to collect the data needed to investigate research questions 1 and 2.

The correct answers about threat correctness (i.e., the ground truth for your analysis) can be found here:

https://docs.google.com/spreadsheets/d/1XcskVakYsarK-ZkJJbpz_sHCQWMJ7VI5AwwmCnVBFwY/edit?usp=sharing

Report

You are tasked with performing the data analysis using the data set of the entire class, the ground truth, and the measures above and above all discuss whether it is appropriate. You are also tasked with *presenting and interpreting* the results (incl. answering the RQ above) of your analysis and reporting on your final conclusion for the study.

Eventually, you will have to exercise your judgement in determining whether the effect is actually practically significant or just statistically significant or insignificant from all perspectives.

The deliverable for this assignment is a report written and submitted on Canvas according to the provided template.