

# Visualization as Audit Evidence

## 1. Objective

Audit evidence is defined as the entire set of information collected and evaluated by auditors when deciding whether a firm's financial statements are stated in accordance with GAAP (SAS No. 106, AICPA 2004). Analytical procedure is one type of the audit procedures that auditors can use to obtain audit evidence (SAS No. 106).

Visualization, when used together with analytical reasoning techniques, is called visual analytics, which can be used to enhance the recognition of patterns (exploratory data analysis) and support the easy perceptual inference of relationships that are otherwise more difficult to induce (confirmatory data analysis) (Keim et al.). These two purposes are the same as the objectives of analytical procedures. Therefore, appropriately designed visualization has the potential to be considered as a type of audit evidence generated from analytical procedures.

This project intends to explore and demonstrate how to use exploratory and confirmatory data analytics techniques in analytical procedures to generate relevant and reliable visualizations that can be used as audit evidence.

## 2. Planned research approach

In this study, we would like to first request a dataset, which is suitable to perform analytical procedures, from the firms. After getting the data, visual analytics will be applied to the dataset through a series of exploratory and confirmatory data analysis focus on the audit assertions related to the nature of the data. The visualizations generated in the course of the analysis will be assessed based on sufficient, relevant, and reliability for the qualification of audit evidence. Based on the findings of this dataset, we will then extend our analysis to other audit scenarios. Specifically, based on the feature of the data, we intend to develop a contingency table proposing appropriate visualization methods and analytical techniques (exploratory, confirmatory, or both) for auditors to test various assertions in different audit scenarios. After confirming that visualization can be used as audit evidence, a scheme to weight different types of visualization will also be studied to integrate visualization with other traditional types of audit evidence.

## 3. Anticipated outcomes:

We expect that appropriately designed visualizations generated from analytical procedures can be used as a new type of audit evidence to complement traditional audit evidence.

## 4. Project timeline and milestones:

June 2016	Literature Review (audit evidence related)
September 2016	Dataset demonstration
December 2016	Contingency table

**Reference:** D. Keim, Kohlhammer, J., Ellis, G., and Mansmann, F., Solving problems with visual analytics. 2010.