

## **Application of Digital Analysis To Assess the Quality and Usability of the ATA Database**

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The American Trucking Association (ATA) database is widely used for research into a variety of transportation research issues. Data are self-reported by motor carriers using a standard format. Over the years, anecdotal reports have questioned the quality and usability of the self-reported data. However, short of an independent audit, no method existed to investigate the data. In this research, we applied digital analysis, specifically Benford's Law to total revenues and to total expenses for all motor carriers as reported in the ATA database over a ten year period from 1988 to 1997. We chose revenues and expenses because that operating data is widely used in motor carrier research. For example, the operating ratio is a popular measure of motor carrier performance. It is calculated by dividing total operating expenses by total operating revenues. Our results support the use of digital analysis to examine databases where the quality and usability of the data have been questioned, and demonstrates two things: (1) digital analysis was able to detect a significant change in the database that occurred in 1994, and (2) it is important for researchers to understand the data they are analyzing. The results of this analysis should be of interest to auditors and forensic accountants who may be looking for ways to expand their assurance services and forensic accounting practices. Digital analysis is a useful tool for discovering irregular patterns in data. Our study extends the use of digital analysis to examine self-reported data in databases where quality and usability have been questioned.

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### **INTRODUCTION**

When research is conducted using an independent database, the researcher usually takes for granted the quality of the data. Verifying data quality may not be possible, short of conducting a cost prohibitive, independent audit. This is particularly true when data are self-reported, as is the case with the American Trucking Associations' (ATA) Motor Carrier Annual Report. The ATA Annual Report contains financial and operating statistics for well over 1,000 motor carriers. The data are self-reported and organized using a standard format.