# Introduction

## Rationale

Technological advancement has led to the emergence of big data (Gould & Çetinkaya-Rundel, 2014) making data inevitable in our daily life. In addition, powerful computers are now easily available (Finzer, 2013). These developments gave way to the emergence of data science as a field. As a result, the practice of statistics has dramatically changed and has distanced away from statistics education (Wood, Mocko, Everson, Horton, & Velleman, 2018; Zeiffler, Garfield, & Fry, 2018). In this regard, Gould (2010), Horton et al. (2015), Horton (2015) and Hardin et al. (2015) pointed out the importance of data management skills and its integration in introductory and second courses in statistics. Nonetheless, some measures are already in place to lessen the gap between statistical practice and statistics education. In 2005, Franklin et al. (2007) put forth some recommendations as framework for statistics education both in the k to 12 and college level. In 2016, the GAISE College Report ASA Revision Committee (2016) revisited the effectiveness of the framework and still found it effective. The framework is now the standard in statistics education in the United States and in many countries who adopted it (Zeiffler et al., 2018).

One of the recommendations in the Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report 2016 is the use of technology to explore concepts and analyze data (GAISE College Report ASA Revision Committee, 2016). Studies show that the use of technology can really improve statistics education; equipping learners with relevant data skills and effective powerful tools in this era where data is very much abundant (Chance, Ben-Zvi, Garfield, & Medina, 2007; Chance & Rossman, 2006; Çetinkaya-Rundel & Rundel, 2017; Doi, Potter, Wong, Alcaraz, & Chi, 2016; Harraway, 2012; Stander & Dalla Valle, 2017). However, there is no single statistical computing tool that fits all statistical tasks (McNamara, 2018). Nonetheless, introductory statistics students should be taught a common statistical package such as SPSS, SAS, or R (R Core Team, 2018), enthusing them to continuously learn statistics technology because statistical tools are diverse and eventually evolve through time (Gould et al., 2018).

Reproducible

The gap between statistical practice and statistics education.

barriers in using technology (price)

R and RStudio

Efforts in the Philippines

## Statement of the Problem

## Statement of the Hypothesis

## Significance of the Study

## Research Framework

## Scope

## Definition of Terms

# Review of Related Literature and Studies

# Methodology

## Research Design

## Research Environment

## Respondents

## Research Instruments

## Data Gathering Procedure

## Data Analysis

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