IPS9 in R: Statistics for Quality: Control and Capability (Chapter 17)

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Introduction and background

These documents are intended to help describe how to undertake analyses introduced as examples in the Ninth Edition of *Introduction to the Practice of Statistics* (2017) by Moore, McCabe, and Craig.

More information about the book can be found here. The data used in these documents can be found under Data Sets in the Student Site. This file as well as the associated R Markdown reproducible analysis source file used to create it can be found at https://nhorton.people.amherst.edu/ips9/.

This work leverages initiatives undertaken by Project MOSAIC (http://www.mosaic-web.org), an NSF-funded effort to improve the teaching of statistics, calculus, science and computing in the undergraduate curriculum. In particular, we utilize the `mosaic` package, which was written to simplify the use of R for introductory statistics courses. A short summary of the R needed to teach introductory statistics can be found in the mosaic package vignettes (http://cran.r-project.org/web/packages/mosaic). A paper describing the mosaic approach was published in the *R Journal*: https://journal.r-project.org/archive/2017/RJ-2017-024.

Chapter 17: Statistics for Quality: Control and Capability

This file replicates the analyses from Chapter 17: Statistics for Quality: Control and Capability.

First, load the packages that will be needed for this document:

```
library(mosaic)
library(readr)
```

Section 17.1: Processes and statistical process control

Section 17.2: Using control charts

Section 17.3: Process capability indexes

Section 17.4: Control charts for sample proportions