

# A Statistics Lab Analyzing Civil War Data to Foster DEI and Social Justice Discussions

## Summary:

A DEI-focused lab activity was conducted in an Introductory Statistics course. The lab involved analyzing a dataset from the Southern Poverty Law Center (SPLC) website titled “Whose Heritage? Public Symbols of the Confederacy”

(<https://www.splcenter.org>). This article has information on Confederate symbols.

The dataset includes variables such as:

- type of symbol (e.g., monument, school, roadway, building),
- location (city, state, county),
- dedication year
- year of removal (where applicable)

A key non-statistical objective is to help students make connections between the history of Confederate symbols and current events. The statistical goals of the lab include generating appropriate graphs to visually display the data, summarizing categorical data, and gaining experience coding in R. There are over 2600 observations in the data set.

For the research study, students answered pre- and post-surveys assessing the perceived importance of incorporating DEI activities and curriculum into college coursework. The surveys included Likert scale questions such as, “I am comfortable talking about race in front of my classmates.”

## Demographics:

Of the 77 students that answered the pre- and post-survey, 57 (74.0%) identified as female, 18 (23.4%) identified as male, and 2 (2.6%) identified as non-binary or third gender. Of the 73 providing race information, 5 (6.8%) identified as Black or African American, 61 (83.6 %) identified as White, and 7 (9.6%) identified as Multiracial, which includes any participant who identified with more than one race. Eight study participants (10.4%) were of Hispanic heritage.

Kirsten Doehler and Heather Barker  
Elon University, Mathematics & Statistics Department



## Lab Activity Information:

Students completed a pre-lab assignment and participated in a post-lab discussion. For the pre-lab, the class watched excerpts from several videos, including:

- The TEDx talk “Allegories on race and racism” by Dr. Camar Jones
- Katie Couric talking with Director of the Equal Justice Initiative, Bryan Stevenson, on "Why Is It So Hard to Talk About America's Past?"

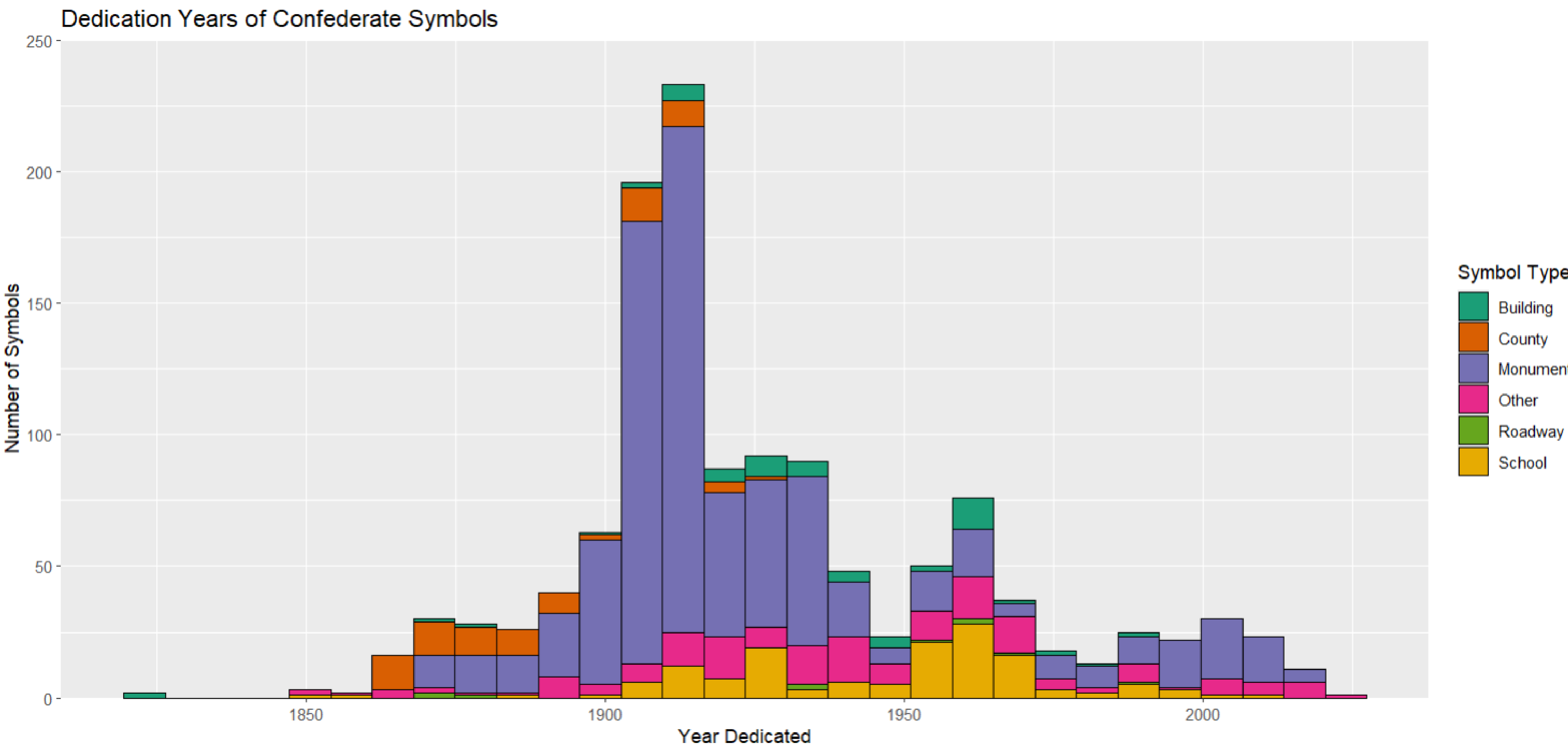
Each student group has an assigned reading and then answers questions on a Google Form and share out to the class. Examples of pre-lab questions include:

- What were Jim Crow Laws? When were they enacted and what did they do?
- What was the outcome of the Brown vs. Board of Education of Topeka supreme court decision of **1954**? Who was Mr. Brown? What did he do?

After the pre-lab activity, students answer questions about the data, generate graphs, and carry out post-lab questions. The two-part DEI Lab instructions can be found at this link: <https://tinyurl.com/2025USCOTS>

## Historical Notes:

There is a noticeable increase in the number of dedicated Confederate symbols around 1877, when Jim Crow Laws were legalized, and beginning in the 1950s, when the Civil Rights movement began.



## Study Results:

Eight Likert scale questions were asked as part of the pre- and post-surveys. Participants were asked to rate their agreement on a scale of Strongly Disagree (1) to Strongly Agree (6). A difference score was computed for each student by subtracting the pre-value from the post-value for all Likert scale questions. Therefore, difference = post – pre. Of these items, 2 were significant based on a paired t-test.

Statement	T-test Statistic	T-test P-value
I am comfortable talking about race in front of my classmates.	-2.51	0.0141
It is very important to incorporate DEI activities and curriculum into all courses that I take in my college studies.	-2.28	0.0252

Themes identified in the open-ended responses to the question “In what ways has completing this activity helped you better understand statistics?” and the frequency of each theme. Only themes with a frequency greater than one are displayed.

Theme	Total
Coding in R or using R Studio Cloud	23
Connecting the field of statistics to real world issues and/or other disciplines	18
Understand statistical concepts from class on a deeper level	6
Experience analyzing historical data	5
Deeper understanding of proportions and/or frequencies	5
Data cleaning practice (Sorting and/or subsetting data)	3

## Closing Remarks:

Statistics and data science are ideal disciplines to incorporate DEI-based assignments due to the presence of data sets that address these issues.

L. Lesser (2007) warns that faculty from different departments “separately assume they may delegate teaching critical thinking, social justice, or any other interdisciplinary theme or skill to some unidentified “other department.” The result of this, of course, is often that no one does it.

## References:

- Lesser, L. M. (2007). Critical values and transforming data: Teaching statistics with social justice. Journal of Statistics Education, 15(1).
- <https://www.splcenter.org/resources/reports/whose-heritage-public-symbols-confederacy/>