The Shape and Color of Politics

How citizens process political information and its consequences

Damon C. Roberts

2022-11-17T00:00:00-07:00

Table of contents

Acknowledgements

1 Introduction

2 Do colors convey political information?

2.1 The systematic use of colors in campaign branding

- Descriptive analysis of the use of color in yard signs
- Consider using district level fixed effects in a regression to show District PID → Color selection

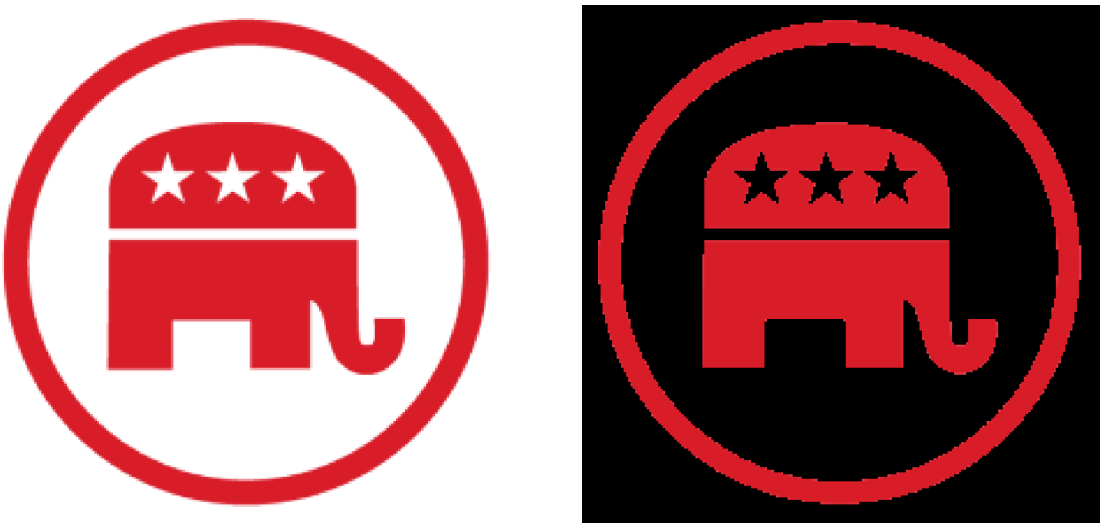
To examine whether the use of colors on yard signs vary in systematic ways, I collect images from the 2018, 2020, and 2022 Congressional elections for the House of Representatives across the United States. These yard signs are pulled together on one website by the Center for American Politics and Design[1]. From this website, I am able to extract over 1,100 images for these three elections. I then combine this information with district-level data provided by the MIT election lab on election returns for candidates in these House elections [2].

With these data, I detect the percentage of the "Republican Red" and "Democratic Blue" on the yard signs and examine whether the 5-year smooth moving average of Democratic candidate vote share in that given district correlate. The purpose of this analysis is to examine the hypothesis that campaigns respond to the preferences of partisan voters and adjust their branding as a result. In this case, the branding being the color on the yard sign.

To provide an example of how the color detection works, I collected the GOP logo used on their official Twitter account during the 2022 midterm election cycle. I load this image and convert it to a three-dimensional array that contains information about the GBR (reversed RBG) values for the pixels in that image. I then resize the images to be a standardized 224 x 224 pixels. The computer is trained to detect a range of GBR values that encompass the official "Republican Red"[3]. For the broader exercise, I do it for the color white[4] and "Democratic blue"[5]. Once this range of values is specified, the computer detects the pixels that do not contain values within this pre-specified range and converts those values to represent the color black. Figure 2.1 presents this process.

I then extract the values in the array that are non-black and calculate the percentage of non-black pixels (as depicted in Equation 2.1).

[1] See: https://www.politicsanddesign.com/
[2] See: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/IG0UN2
[3] lower values: (93, 9, 12), higher values: (236, 69, 75)
[4] upper and lower values: (255, 255, 255)
[5] lower values: (0, 18, 26), higher values: (102, 212, 255)



(a) Resized original image (b) Masked

Figure 2.1: Detecting colors in the GOP logo

$$\text{Color\%} = \frac{\text{Non-black}}{\text{Transformed}} \times \frac{\text{Original}_{\text{Height}} + \text{Original}_{\text{Width}}}{2\text{Transformed}_{\text{Height}} + 2\text{Transformed}_{\text{Width}}} \tag{2.1}$$

For the example in Figure 2.1, about 32.26 of the image is red.

3 Conclusion

References