Part 1

Size

https://stackoverflow.com/questions/18677902/visualization-size-of-circle-proportionate-to-the-value-of-the-item

- The size is selective because the circles are visually differentiable based on size.
- The size is associative because all the circles with similar sizes represent numbers with similar magnitude.
- The size is quantitative because size in this graph is a direct measure of job loss
- The size is certainly ordered because larger circles equate to more firings.
- The size has length because the circles only communicate information based on size. A size change will always communicate some level of unemployment.

Position

https://www.natgeomaps.com/re-the-world-for-kids-in-gift-box

- The position is selectable because, technically, each pixel represents a “dot” which you would find on a traditional graph. Each pixel-dot is selectable based on the location they are in on the map.
- The position is also associative because the pixels on the map take on different colors to represent different countries.
- The position is quantitative; each pixel in the map indicates that the location it represents is x miles from the equator and y miles from the prime meridian
- The position follows a distinct order; the pixels in the map follow the order of how land and water on earth are organized
- The length of the position is finite, since Earth’s surface area is finite.

Color

Analysis of another color visualization:
https://www.wolfram.com/mathematica/new-in-8/new-and-improved-scientific-and-information-visualization/show-the-gradient-field-on-a-surface.html

- The color of different parts of the graph make these sections easily differentiable. It is therefore selective.
- Sections of the graph with the same color have similar gradient magnitude, so color is associative.
- Color is quantitative because color corresponds to gradient magnitude which is a number.
- The color has order because pink regions have a more negative gradient magnitude.

- The color has length because there are theoretically infinite colors “between” blue and pink that can communicate gradient magnitude.

Texture

https://www.deviantart.com/alrey/art/Pixel-Evolution-426158789

Texture is selective because differences in pixelation make the avatars clearly differentiable.

Texture is associative because different avatars with the same texture connote a similar level of video game development.

Texture is quantitative because texture (theoretically) tracks character development by number of bits.

Texture is ordered because the finer the texture the more bits a character has.

Texture has length because the character can be really smooth or really rough and still convey (theoretical) information about the video game bits.

Orientation

Our orientation visualization:

Outside orientation visualization analysis:

https://www.math3d.org/

- The orientation is not selective because perspective is in use with this 3d graph.
- The orientation is not associative either because the graph uses perspective and is non-linear (it has a saddle shape)
- Orientation in general cannot be described using quantity nor order
- The orientation theoretically has an infinite number of perspectives from which we can view it, since we can view it from any perspective we chose.

Value

Original grayscale courtesy of Bob Flynn on Twitter (https://twitter.com/bobjinx/status/1156248282483560448/photo/1)

https://www.statista.com/statistics/271856/global-box-office-revenue/

- The value is selective because larger values are easily distinguished by longer bars in the bar graph.
- The value is not associative because the bars are grouped together not based on value (that value being box office revenue) but year instead.
- Value is generally not quantitative (at least in visualizations).
- The value is not ordered because the bars are in the order they are in due to the year they represent, not their monetary value.
- Because the box office revenues are represented by the length of the bars in the graph, the length is theoretically infinite.

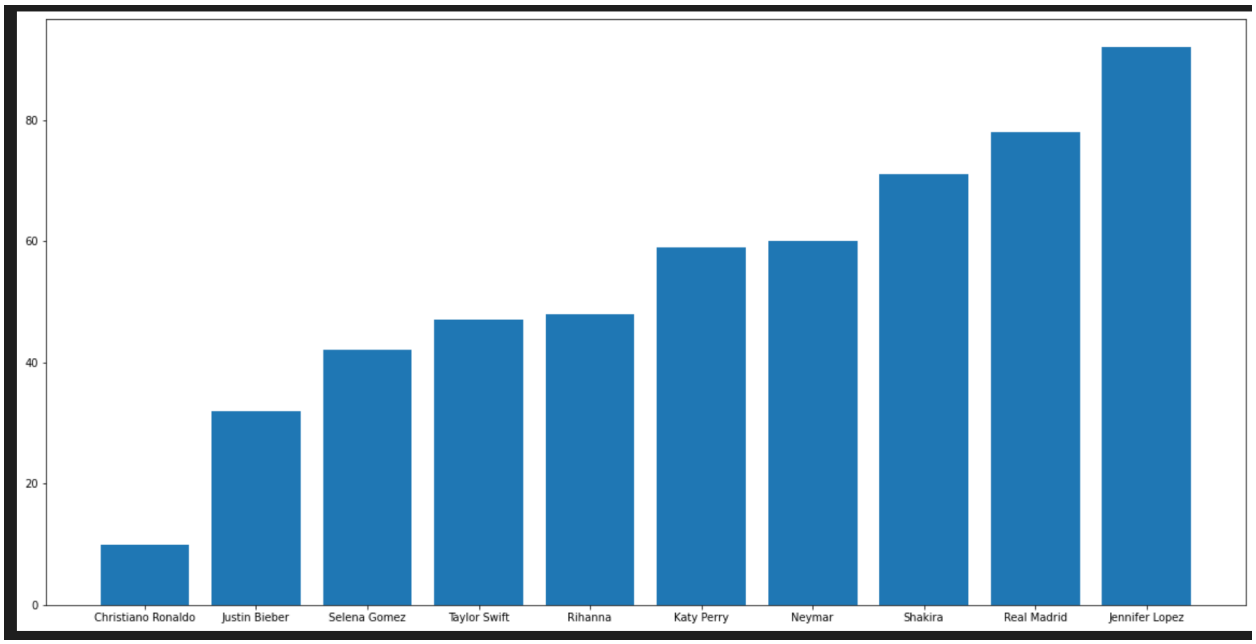
Shape

https://geology.com/world/the-united-states-of-america-satellite-image.shtml

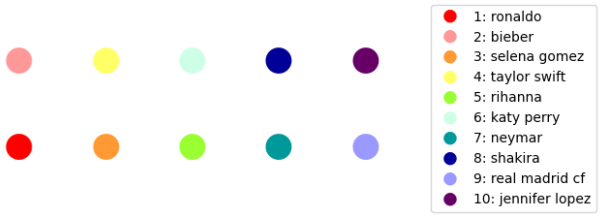
- The shape is selective because each shape has its own, distinct shape.
- Shape is not associative because state shape does not create groups.
- The shape is not quantitative because the shape refers to physical state shape and not a number.
- The shape is not ordered because state shape doesn't not correspond to an ascending or descending order.
- The shape of a state has infinite length.

Part 2

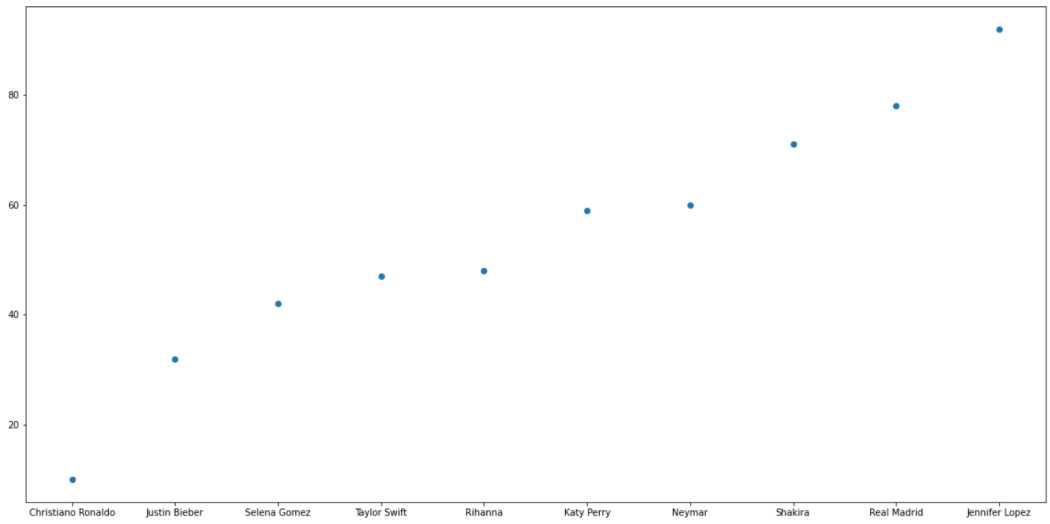
Size



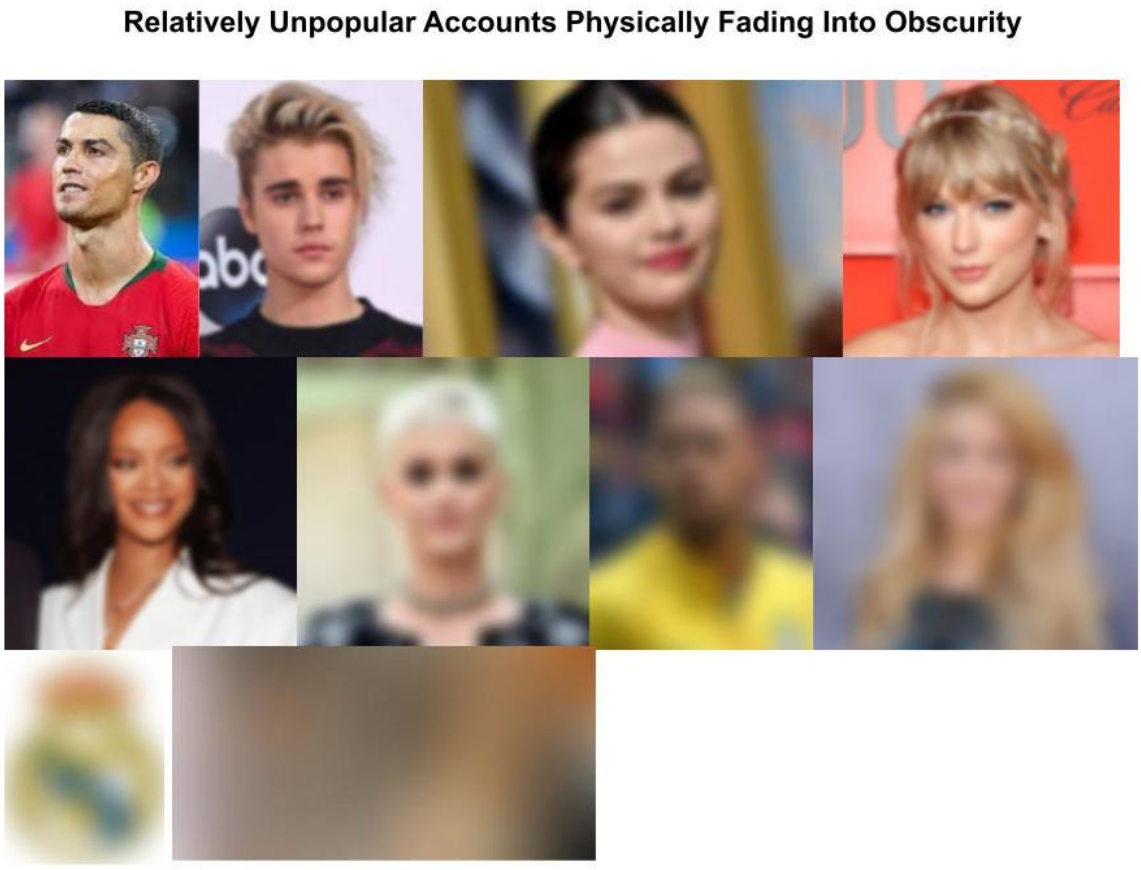
Color



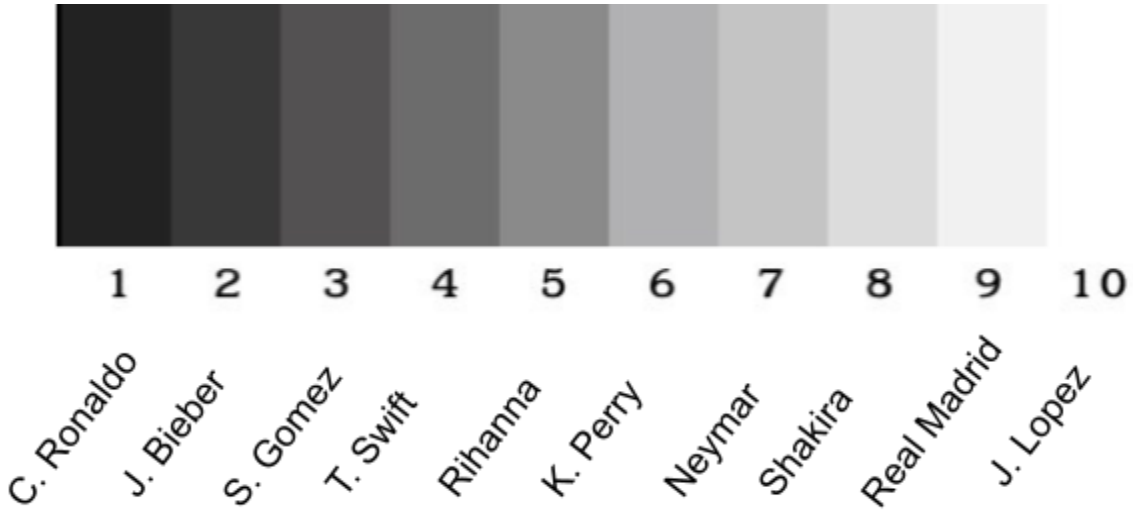
Position



Texture



Value


1
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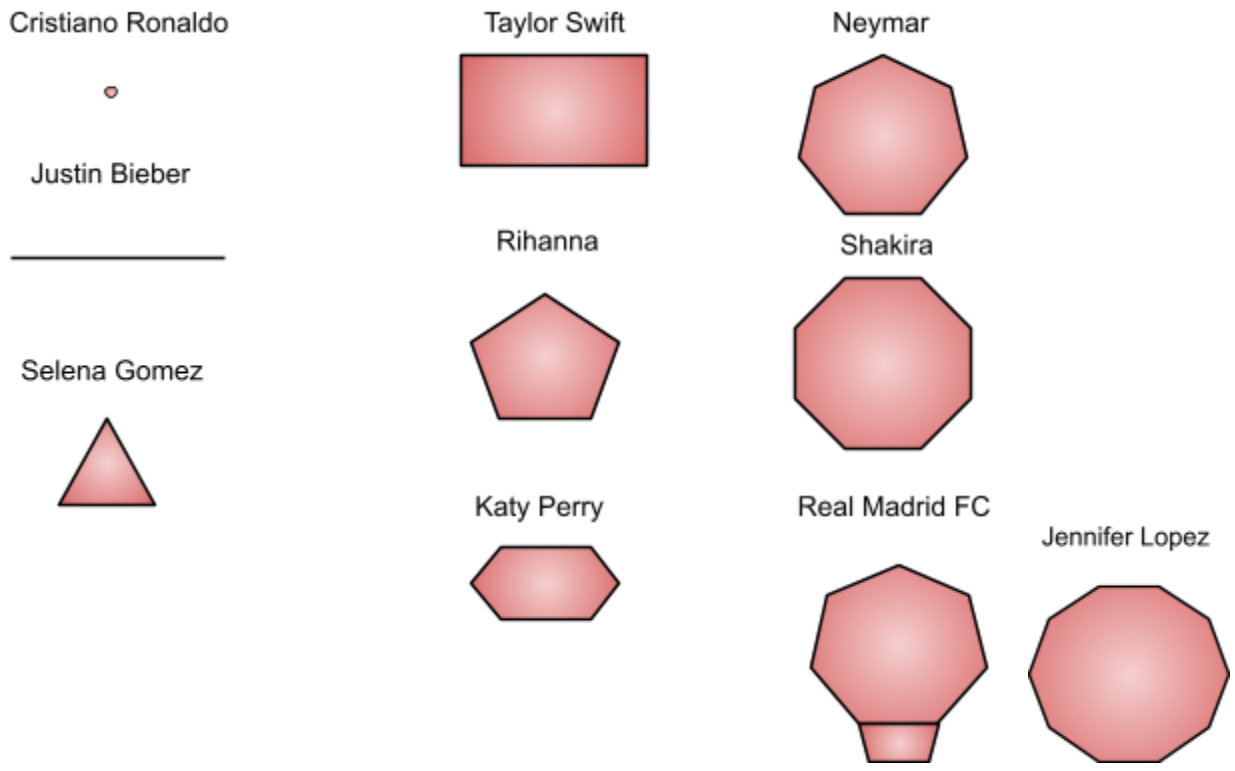
C. Ronaldo
J. Bieber
S. Gomez
T. Swift
Rihanna
K. Perry
Neymar
Shakira
Real Madrid
J. Lopez

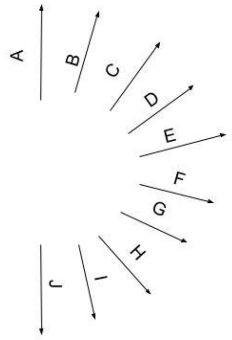
Shape


Cristiano Ronaldo
Justin Bieber
Selena Gomez
Taylor Swift
Rihanna
Katy Perry
Neymar
Shakira
Real Madrid FC
Jennifer Lopez

Orientation

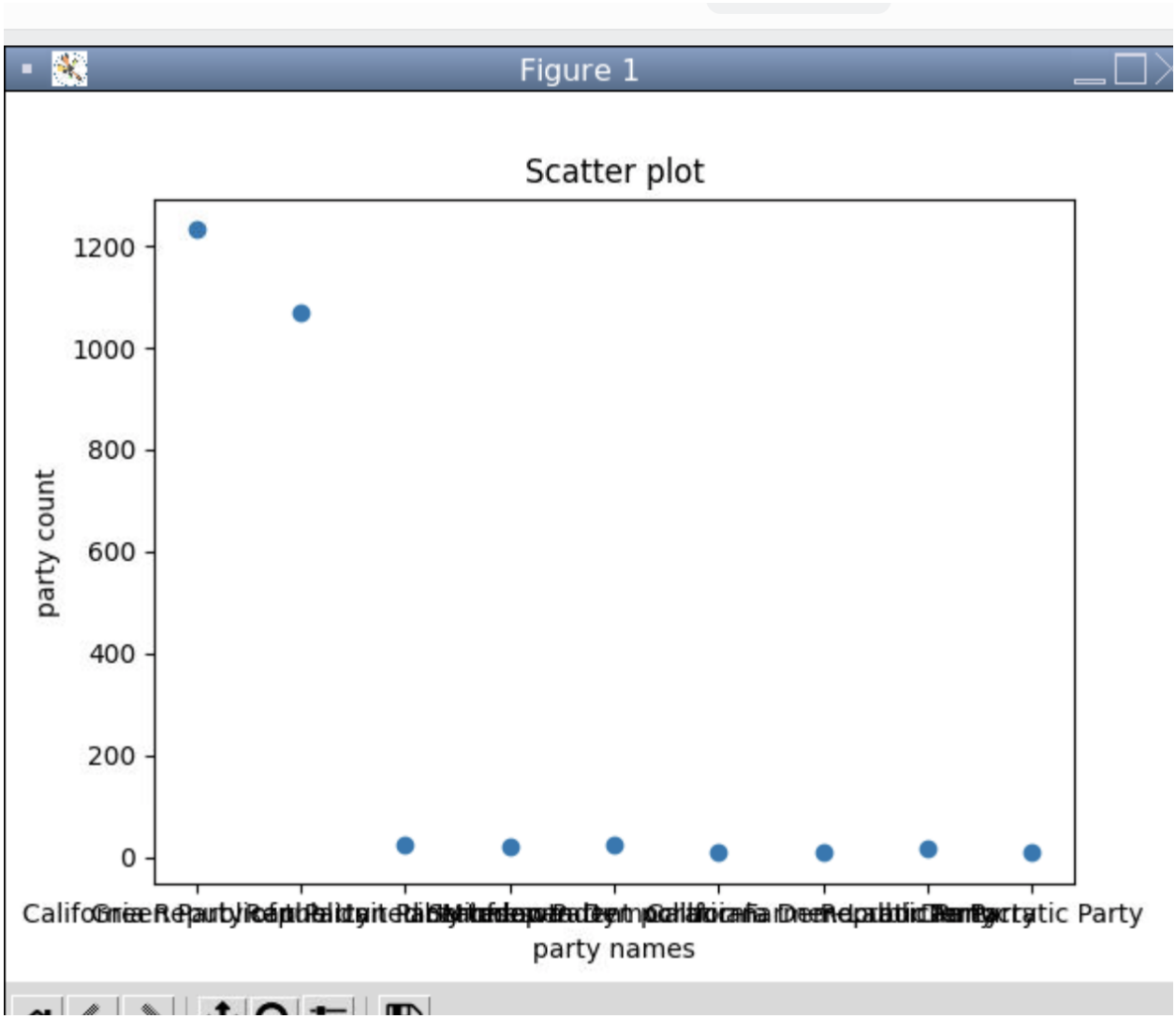
KEY

A - Christiano Ronaldo
B - Justin Bieber
C- Selena Gomez
D- Taylor Swift
E- Rihanna
F- Katy Perry
G- Neymar
H- Shakira
I- Real Madrid CF
J - Jennifer Lopez



Part 3

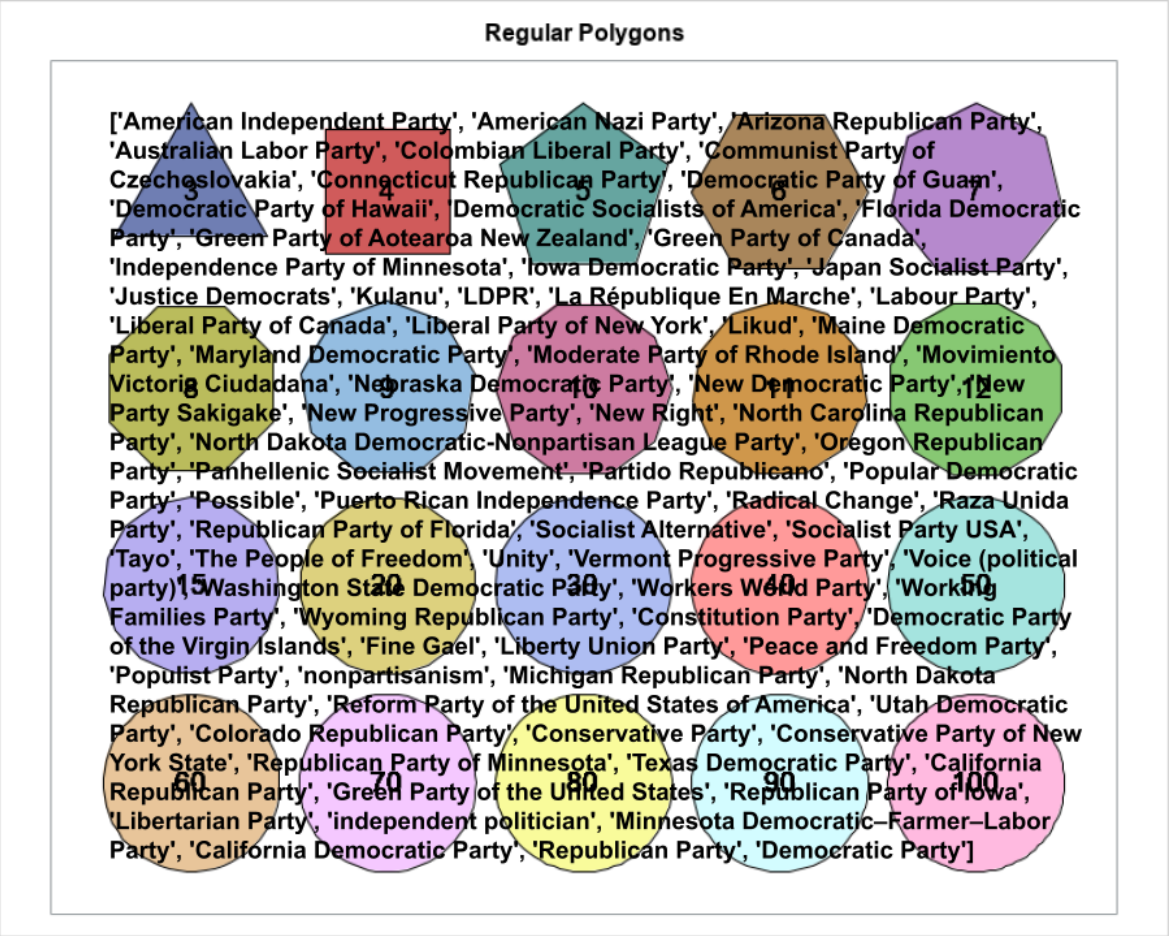
Position



Value

['American Independent Party', 'American Nazi Party', 'Arizona Republican Party', 'Australian Labor Party', 'Colombian Liberal Party', 'Communist Party of Czechoslovakia', 'Connecticut Republican Party', 'Democratic Party of Guam', 'Democratic Party of Hawaii', 'Democratic Socialists of America', 'Florida Democratic Party', 'Green Party of Aotearoa New Zealand', 'Green Party of Canada', 'Independence Party of Minnesota', 'Iowa Democratic Party', 'Japan Socialist Party', 'Justice Democrats', 'Kulanu', 'LDPR', 'La République En Marche', 'Labour Party', 'Liberal Party of Canada', 'Liberal Party of New York', 'Likud', 'Maine Democratic Party', 'Maryland Democratic Party', 'Moderate Party of Rhode Island', 'Movimiento Victoria Ciudadana', 'Nebraska Democratic Party', 'New Democratic Party', 'New Party Sakigake', 'New Progressive Party', 'New Right', 'North Carolina Republican Party', 'North Dakota Democratic-Nonpartisan League Party', 'Oregon Republican Party', 'Panhellenic Socialist Movement', 'Partido Republicano', 'Popular Democratic Party', 'Possible', 'Puerto Rican Independence Party', 'Radical Change', 'Raza Unida Party', 'Republican Party of Florida', 'Socialist Alternative', 'Socialist Party USA', 'Tayo', 'The People of Freedom', 'Unity', 'Vermont Progressive Party', 'Voice (political party)', 'Washington State Democratic Party', 'Workers World Party', 'Working Families Party', 'Wyoming Republican Party', 'Constitution Party', 'Democratic Party of the Virgin Islands', 'Fine Gael', 'Liberty Union Party', 'Peace and Freedom Party', 'Populist Party', 'nonpartisanism', 'Michigan Republican Party', 'North Dakota Republican Party', 'Reform Party of the United States of America', 'Utah Democratic Party', 'Colorado Republican Party', 'Conservative Party', 'Conservative Party of New York State', 'Republican Party of Minnesota', 'Texas Democratic Party', 'California Republican Party', 'Green Party of the United States', 'Republican Party of Iowa', 'Libertarian Party', 'independent politician', 'Minnesota Democratic–Farmer–Labor Party', 'California Democratic Party', 'Republican Party', 'Democratic Party']

Shape


Regular Polygons
['American Independent Party', 'American Nazi Party', 'Arizona Republican Party', 'Australian Labor Party', 'Colombian Liberal Party', 'Communist Party of Czechoslovakia', 'Connecticut Republican Party', 'Democratic Party of Guam', 'Democratic Party of Hawaii', 'Democratic Socialists of America', 'Florida Democratic Party', 'Green Party of Aotearoa New Zealand', 'Green Party of Canada', 'Independence Party of Minnesota', 'Iowa Democratic Party', 'Japan Socialist Party', 'Justice Democrats', 'Kulanu', 'LDPR', 'La République En Marche', 'Labour Party', 'Liberal Party of Canada', 'Liberal Party of New York', 'Likud', 'Maine Democratic Party', 'Maryland Democratic Party', 'Moderate Party of Rhode Island', 'Movimiento Victoria Ciudadana', 'Nebraska Democratic Party', 'New Democratic Party', 'New Party Sakigake', 'New Progressive Party', 'New Right', 'North Carolina Republican Party', 'North Dakota Democratic-Nonpartisan League Party', 'Oregon Republican Party', 'Panhellenic Socialist Movement', 'Partido Republicano', 'Popular Democratic Party', 'Possible', 'Puerto Rican Independence Party', 'Radical Change', 'Raza Unida Party', 'Republican Party of Florida', 'Socialist Alternative', 'Socialist Party USA', 'Tayo', 'The People of Freedom', 'Unity', 'Vermont Progressive Party', 'Voice (political party)', 'Washington State Democratic Party', 'Workers World Party', 'Working Families Party', 'Wyoming Republican Party', 'Constitution Party', 'Democratic Party of the Virgin Islands', 'Fine Gael', 'Liberty Union Party', 'Peace and Freedom Party', 'Populist Party', 'nonpartisanism', 'Michigan Republican Party', 'North Dakota Republican Party', 'Reform Party of the United States of America', 'Utah Democratic Party', 'Colorado Republican Party', 'Conservative Party', 'Conservative Party of New York State', 'Republican Party of Minnesota', 'Texas Democratic Party', 'California Republican Party', 'Green Party of the United States', 'Republican Party of Iowa', 'Libertarian Party', 'independent politician', 'Minnesota Democratic–Farmer–Labor Party', 'California Democratic Party', 'Republican Party', 'Democratic Party']
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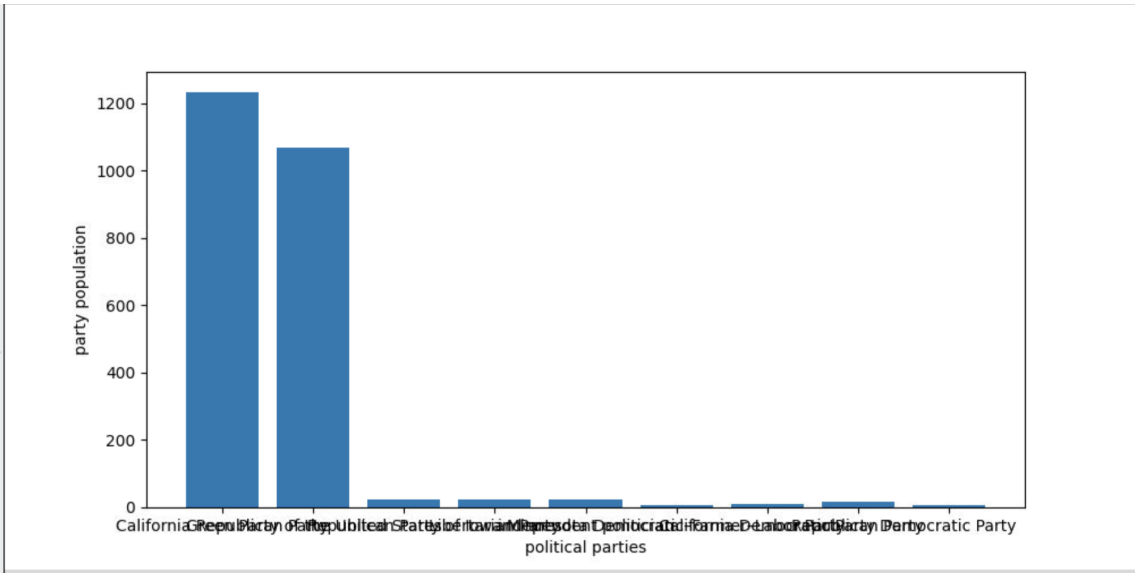
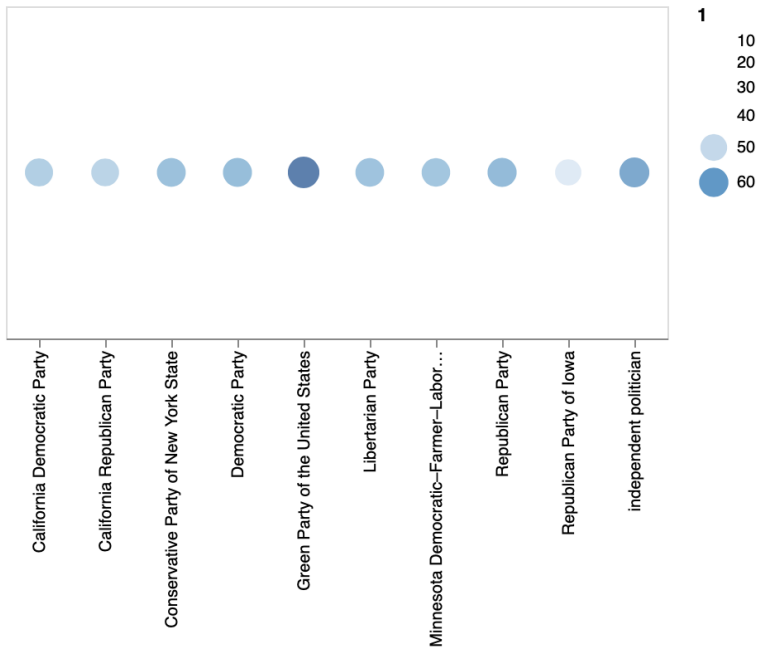
Size

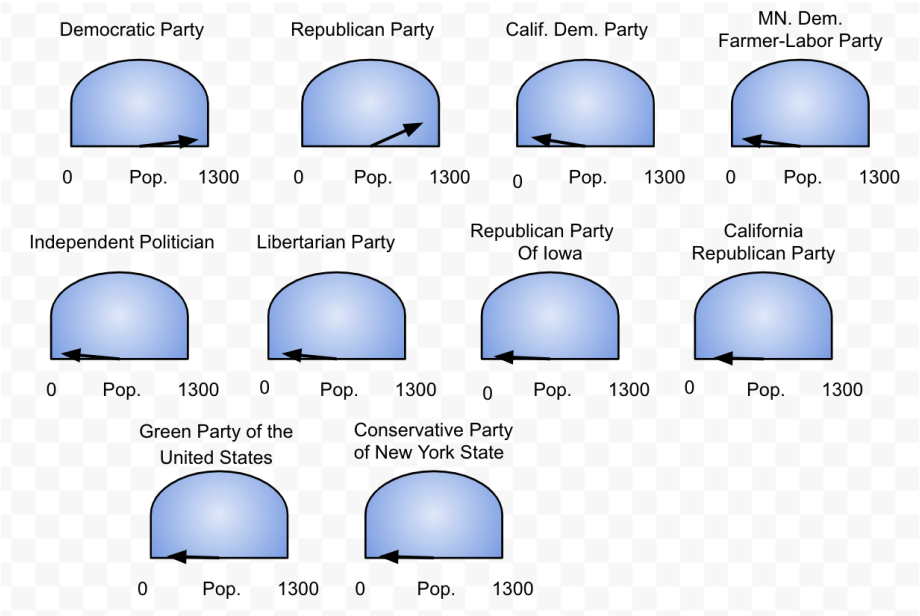

party population
1200
1000
800
600
400
200
0
political parties
Democratic Party

Color

Average Age of Members in Selected Parties

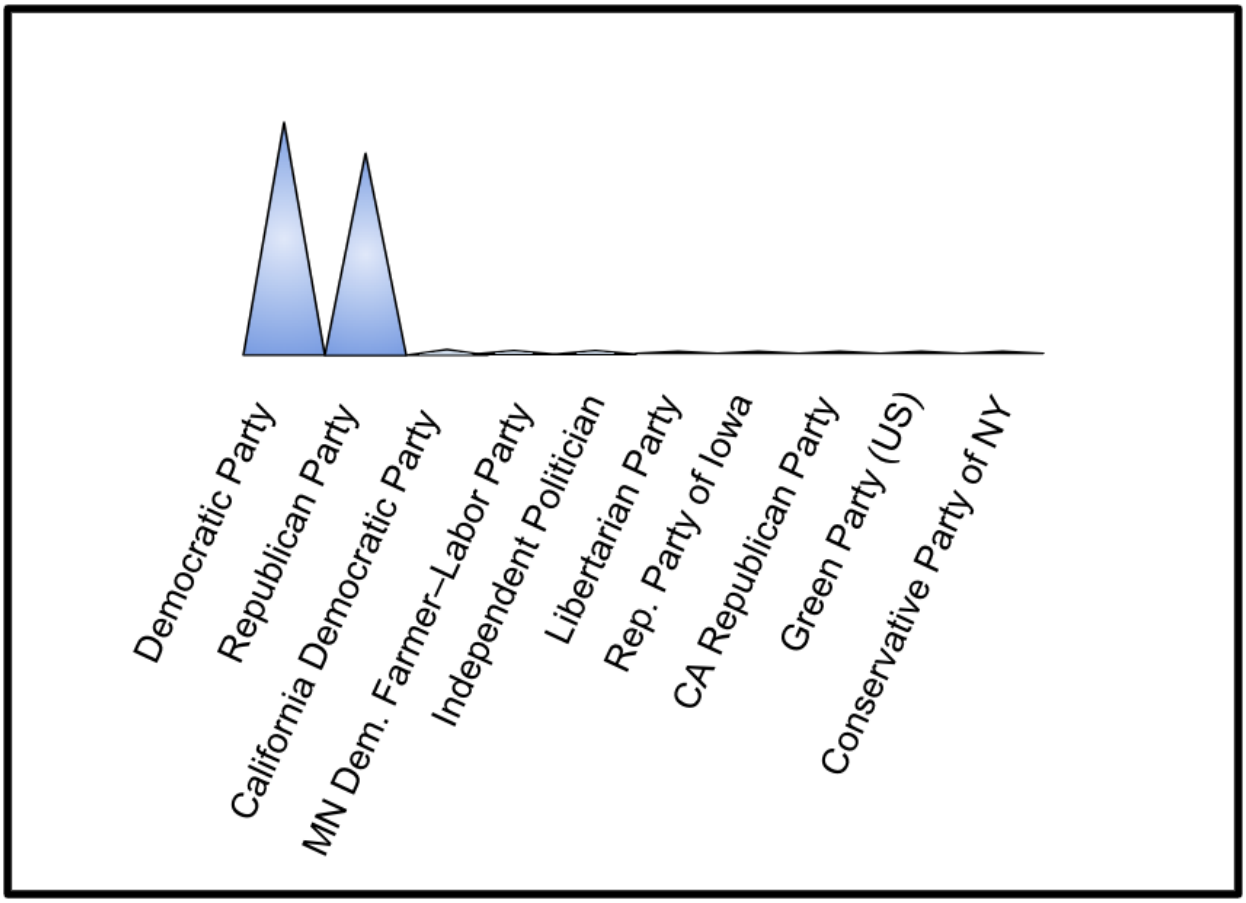


Orientation



Texture

Membership Count of Selected Political Parties as Triangle Sharpness



Data for our visualization

To assess the popularity of prominent figures, we researched popularity rankings on Facebook, Instagram, and Twitter. We assigned each figure a score that was the sum of their rankings. The lower the overall score, the more popular the figure.

Christiano ronaldo (3-2-5) - 10
Justin bieber (20- 10-2) - 32
Selena gomez 22 + 13 + 7 = 42
Taylor swift (27-14-6) - 47
Rihanna (17- 27-4) - 48
Katy perry 34 + 3 + 22 = 59

Neymar 21 + 20 + 19 = 60
Shakira (7- 42-22) - 71
Real Madrid CF 8 + 41 + 29 = 78
Jennifer lopez 44 + 32 + 16 = 92