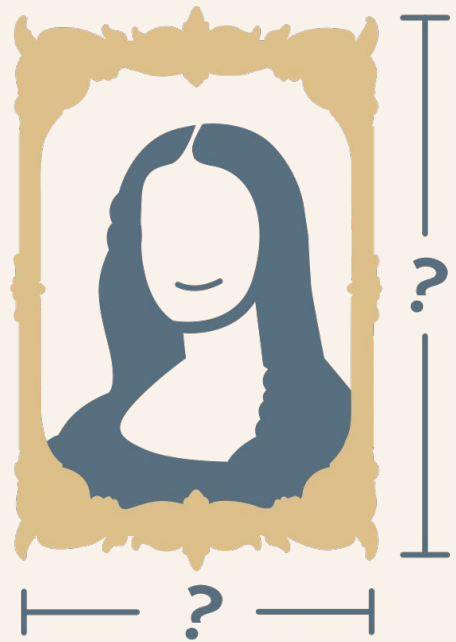


The Width and Length Comparison in National Portrait Gallery

The visualization project explores 150 portraits which are on the physical exhibit from the National Portrait Gallery. It compares the length, width and the area size of each painting separately as well as a whole.

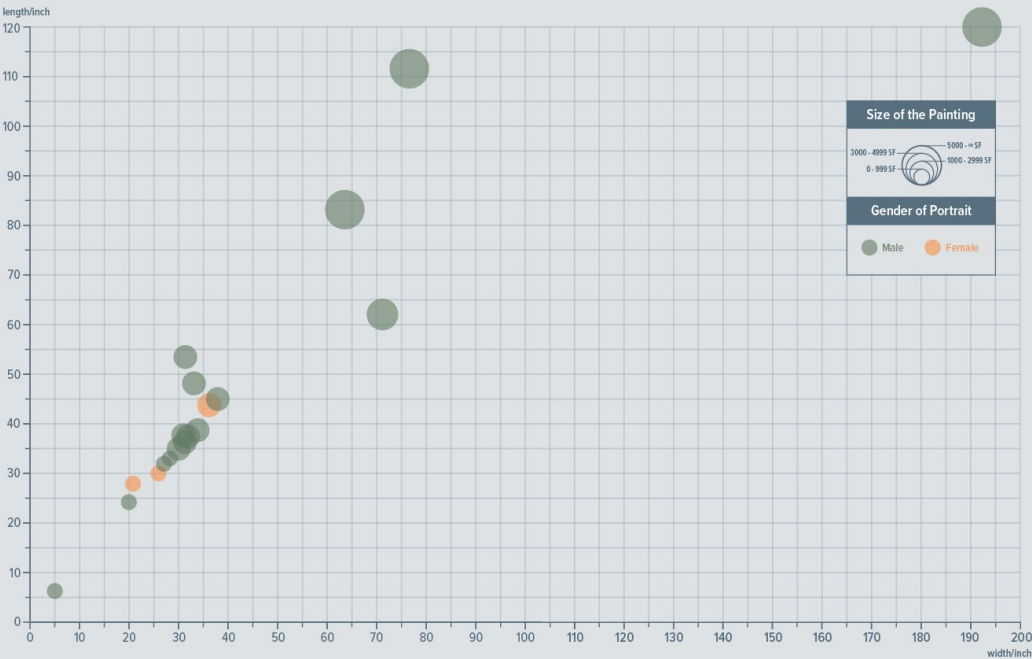


When we visit the painting exhibition online instead of in the museum, although we will see pictures and some descriptions about its size, such as "Frame: 57.2 x 46.7 x 5.4cm (22 1/2 x 18 3/8 x 2 1/8\")", it is still difficult for the audience to imagine how big a painting is.

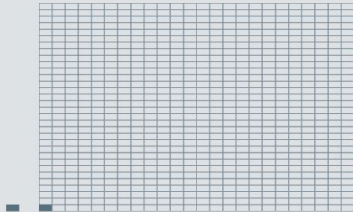
The dataset includes 150 portrait paintings which are on the physical exhibit with CCO media access. By comparing the length, width and the area size of each painting, we can know the size relationship between each painting, and I also have some questions, such as which is the largest painting? The smallest one? What is the ratio between them? What is the most common portrait painting size? ...

How big of a U-Haul I need to rent to clear out the National Portrait Gallery?

The National Portrait Gallery is a historic art museum between 7th, 9th, F, and G Streets NW in Washington, D.C., in the United States. Founded in 1962 and opened to the public in 1968, it is part of the Smithsonian Institution. Its collections focus on images of famous Americans. The museum is housed in the historic Old Patent Office Building, as is the Smithsonian American Art Museum.

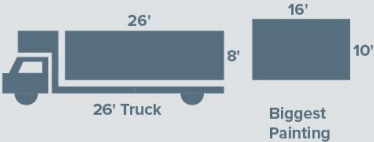


The Biggest v.s. The Smallest...



1: 768

How big of a U-Haul?



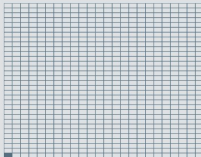
$\therefore \sqrt{(8^2+8^2)} \approx 11.3 > 10$

\therefore You can rent a(or more) U-Haul's biggest 26' Truck(s) to clear out the National Portrait Gallery if you put the biggest painting in diagonally!

How big of a U-Haul I need to rent to clear out the National Portrait Gallery?



The Biggest v.s. The Smallest...



1: 768

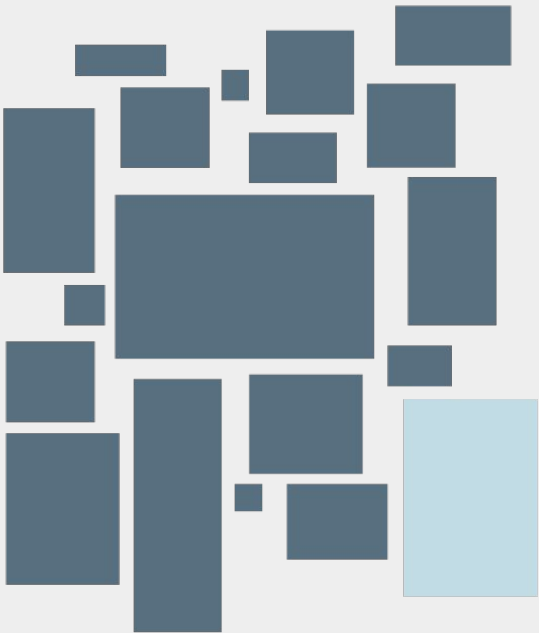
How big of a U-Haul?



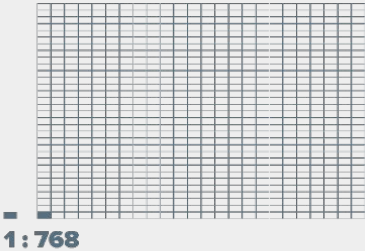
$\therefore \sqrt{(8^2+8^2)} \approx 11.3 > 10$

\therefore You can rent a(or more) U-Haul's biggest 26' Truck(s) to clear out the National Portrait Gallery if you put the biggest painting in diagonally!

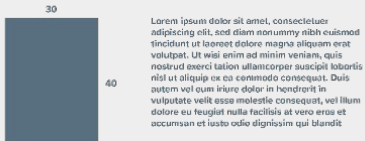
The width and length comparison in National Portrait Gallery



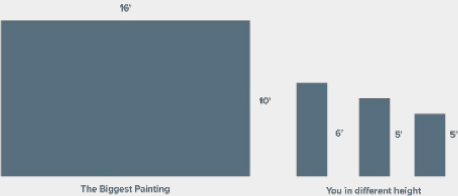
The Biggest v.s. The Smallest...



The Most Common Ratio of a Portrait Painting...



If you are in the National Portrait Gallery...



Request data through API Key

```

7
8 // search base URL
9 const searchBaseUrl = "https://api.si.edu/openaccess/api/v1.0/search";
10
11 // constructing the initial search query
12 // const search = 'Flowers AND unit_code:"CHNDM" AND object_type:"Embroidery (visual works)" AND online_media_type:"Images"';
13 const search = `Paintings AND unit_code:"NPG" AND object_type:"Paintings" AND set_name:"National+Portrait+Gallery+Collection" AND onphysical
14
15
16 // array that we will write into
17 let myArray = [];
18
19 // string that will hold the stringified JSON data
20 let jsonString = '';
21

```

```

75 // create your own array with just the data you need
76 function addObject(objectData) {
77
78   // we've encountered that some places have data others don't
79   let currentPlace = "";
80   if(objectData.content.indexedStructured.place) {
81     currentPlace = objectData.content.indexedStructured.place[0];
82   }
83
84   myArray.push({
85     id: objectData.id,
86     title: objectData.title,
87     link: objectData.content.descriptiveNonRepeating.record_link,
88     place: currentPlace,
89     physicalDescription: objectData.content.freetext.physicalDescription,
90     date: objectData.content.freetext.date,
91     name: objectData.content.freetext.name,
92
93   });
94
95 }
96
97
98
99 fetchSearchData(search);
100

```

```

1 [{
2   "id": "edanmdm-npg_NPG.71.34",
3   "title": "Cecilia Beaux Self-Portrait",
4   "link": "https://npg.si.edu/object/npg_NPG.71.34",
5   "place": "",
6   "physicalDescription": [{
7     "label": "Medium",
8     "content": "Oil on canvas"
9   }], {
10    "label": "Dimensions",
11    "content": "Stretcher: 45.4 x 35.2 x 2.5cm (17 7/8 x 13 7/8 x 1\")"
12  }, {
13    "label": "Dimensions",
14    "content": "Frame: 57.2 x 46.7 x 5.4cm (22 1/2 x 18 3/8 x 2 1/8\")"
15  }],
16   "date": [{
17     "label": "Date",
18     "content": "c. 1889-1894"
19   }],
20   "name": [{
21     "label": "Artist",
22     "content": "Cecilia Beaux, 1 May 1855 - 17 Sep 1942"
23   }], {
24     "label": "Sitter",
25     "content": "Cecilia Beaux, 1 May 1855 - 17 Sep 1942"
26   }
27 ], {

```

d3.js

```

5 class ForceRects {
6   constructor(id, data) {
7     this.id = id;
8     this._data = data;
9     this.init();
10  }
11
12  handleData() {
13    this.data = this._data
14    // calculate area size
15    this.data.forEach(d => {
16      let area = d.physicalDescription[1].content
17      const regex = /\d.*cm/g;
18      let width_height = area.match(regex)?.[0]?.replace('cm', '').split('x')
19
20      d.width = +width_height[0]
21      d.height = +width_height[1]
22      d.area = +width_height[0] * +width_height[1]
23    })
24  }
25
26  initScale() {
27    // calculate ratio of width&length
28    let max_width = d3.max(this.data, (d) => d.width);
29    let max_height = d3.max(this.data, (d) => d.height);
30
31    let min_width = d3.min(this.data, (d) => d.width);
32    let min_height = d3.min(this.data, (d) => d.height);
33
34    let domain = [Math.min(min_width, min_height), Math.max(max_width, max_height)]
35
36    this.size = d3.scaleLinear().domain(domain).range([12, 120]);
37
38    this.radius = 0
39
40    // calculate color
41    this.color = d3
42      .scaleLinear()
43      .domain(d3.extent(this.data, d => d.area))
44      .range(["#C1DCE5", "#586F7F"])
45  }
46
47  }

```

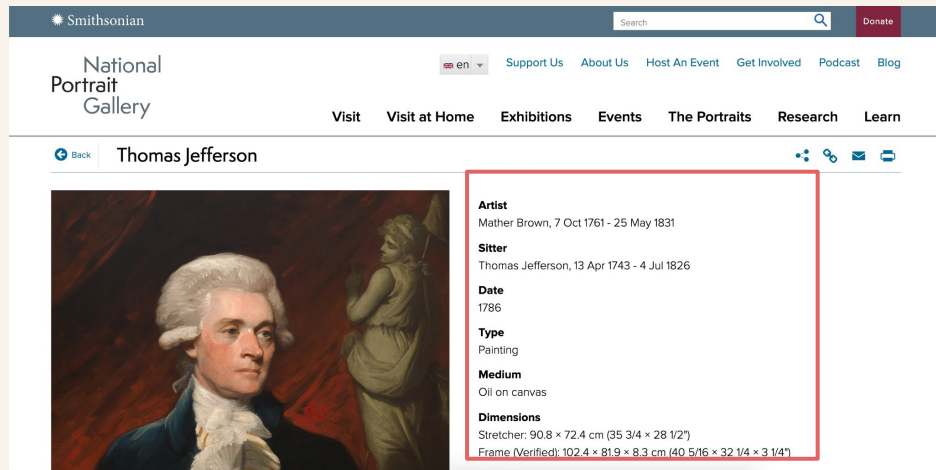
```

103 draw_rects() {
104   this.svg
105     .selectAll("rect")
106     .data(this.simulation.nodes())
107     .join("rect")
108     .attr("fill", (d) => this.color(d.area))
109     .attr("width", d => this.size(d.width))
110     .attr("stroke", "#00878A")
111     .attr("stroke-width", "3px")
112     .attr("height", d => this.size(d.height))
113     .on("mouseover", (e, d) => {
114       this.tips_show(e, d);
115     })
116     .on("mouseout", this.tips_hide);
117 }
118
119 //tips
120 tips_show(e, d) {
121   d3.select(".d3-tip")
122     .style("display", "block")
123     .style("position", "absolute")
124     .style("top", `${e.pageY}px`)
125     .style("left", `${e.pageX}px`)
126     .attr("stroke", "#00878A")
127     .attr("stroke-width", "1px")
128     .html(
129       `
130       <div>
131         <strong>${d.title}</strong></div>
132         <div>
133           <strong>${d.physicalDescription[0].label}</strong></div>
134           <div>
135             <strong>${d.physicalDescription[0].content}</strong></div>
136           <div>
137             <strong>${d.physicalDescription?.[2].label}</strong></div>
138             <div>
139               <strong>${d.physicalDescription?.[2].content}</strong></div>
140             </div>
141       </div>
142     `
143     )
144 }
145
146 //import data
147 async function get_data() {
148   const data = await d3.json('./data.json')
149   console.log(data);
150   return data
151 }
152
153 async function charts() {
154   const data = await get_data()
155   new ForceRects('rects', data)
156 }
157
158 charts()

```



Typeface



Proxima Nova

UPPERCASE

A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z

LOWERCASE

a b c d e f g h i j k l m n
o p q r s t u v w x y z

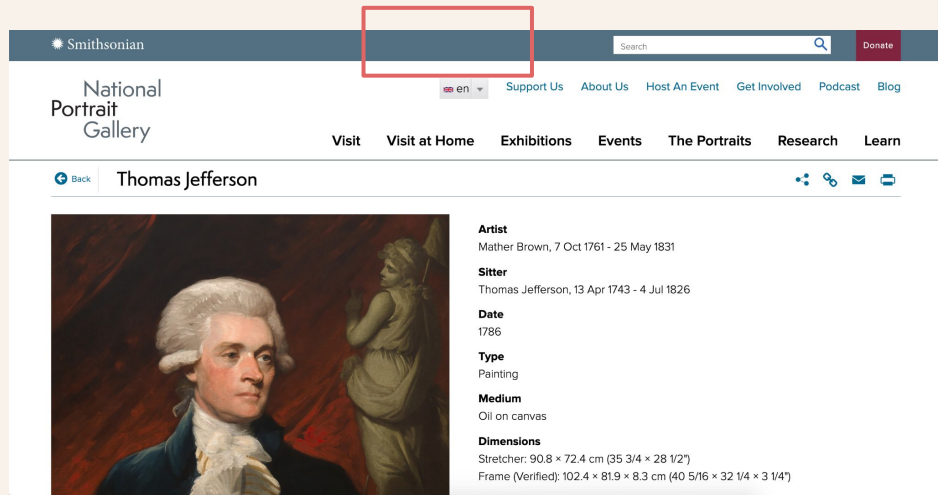
NUMBERS & SYMBOLS

0 1 2 3 4 5 6 7 8 9
! @ # \$ % ^ & * () _ + , . ? ` =

WEIGHTS

THIN / SEMIBOLD /
BOLD / EXTRABOLD

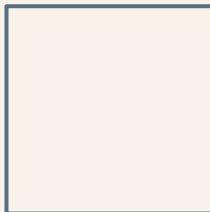
Colors



#586F7F
Primary color



#DDBF8A
Frame color



#F9F2EA
Background color



The Width and Length Comparison in National Portrait Gallery

The National Portrait Gallery is a historic art museum between 7th, 9th, F, and G Streets NW in Washington, D.C., in the United States. Founded in 1962 and opened to the public in 1968, it is part of the Smithsonian Institution. Its collections focus on images of famous Americans. The museum is housed in the historic Old Patent Office Building, as is the Smithsonian American Art Museum.



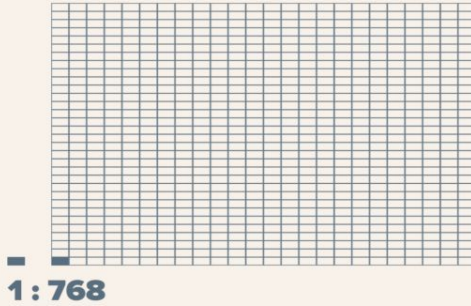
DeWitt Clinton

Medium:
Oil on canvas

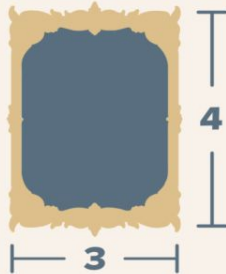
Dimensions:
Frame: 147 x 116.2 x 11.4cm (57 7/8 x 45 3/4 x 4 1/2")

Date:
c. 1816

Artist:
John Wesley Jarvis, 1780 - 14 Jan 1840

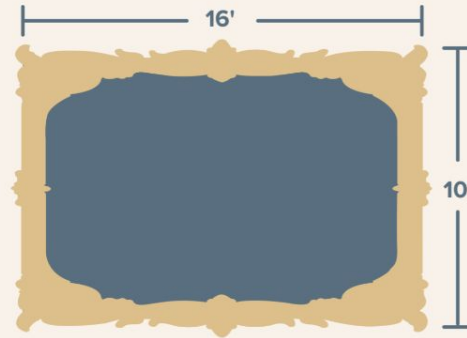


The Most Common Aspect Ratio of a Portrait Painting...

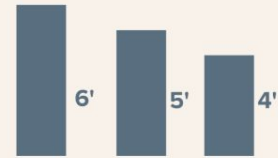


The aspect ratio of a painting is the relationship between the height and width of the finished piece. In portrait paintings inside National Portrait Gallery, the most common aspect ratio is **3:4**

If **YOU** are in the **National Portrait Gallery** ...



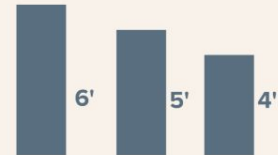
The Biggest Painting



YOU in different height

9"
6"

The Smallest Painting



YOU in different height

1. **There is some undefined data in my json file, and it appeared in my tooltips when hovering over.**
2. **For now the rectangles' part is larger than the screen size, and it is not responsive if you change the screen size.**
3. **Maybe include some photos of the portrait paintings in my visualization.**
4. **Learn more about d3.js, watch more tutorial videos and examples.**

Q & A Time

Thank You:)