Lab-1-1

```html
<!DOCTYPE html>
<html>

<head>
    <title>Lab 1-1 </title>
    <meta charset="UTF-8" />

    <!-- Keywords relevant to the webpage for search engines -->
    <meta name="description" content="Data Visualisation Lab 1" />
    <meta name="keywords" content="HTML, CSS" />
    <meta name="author" content="Dhanveer Ramnauth" />

    <!-- Link stylesheet -->
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <!-- Main heading of the webpage -->
    <h1>Pets and the Pandemic</h1>
    <!-- Sub-heading with the author's name -->
    <h2>Dhanveer Ramnauth</h2>

    <!-- Paragraph explaining the content of the report -->
    <p>A report from Animal Medicines Australia (AMA) has found that many Australians took the opportunity to introduce
        a pet into their household during the pandemic. Their survey indicated that there was a <strong>significant
            increase</strong>
        the percent of households taking in a new dog, fish or bird. Their research also indicated that pets had a
        number of positive influences on their lives such as:</p>

    <!-- unordered list -->
    <ul>
        <!-- List items -->
        <li>companionship</li>
        <li>better mental health</li>
        <li>joy and happiness.</li>
    </ul>

    <figure>
        <img src="images/pet_ownership_in_australia_table.png" alt="pet_ownership_in_australia_table.png">
        <figcaption>
            <p>Fig 1. Comparison of Pet Ownership in 2019 - 2021. Data Source:
                <a
                    href="https://animalmedicinesaustralia.org.au/wp-content/uploads/2021/08/AMAU005-PATP-Report21_v1.41_WEB.pdf">Anima
                    Medicines Australia Report</a>
            </p>
        </figcaption>
    </figure>

    <p><em>With the increase in pet ownership the AMA are encouraging policy makers to consider the needs of companion
            animals and their owners when considering rental, strata and body corporate regulations are well as
            accepting
            animals in public places and transport.</em></p>
</body>

</html>
```

```css
img {
    width: 50%;
    height: 50%;
    border: black;
    border-width: 10px;
    stroke-width: 2px;
    border-style: solid;
    border-color: purple;
}

h1 {
    color: purple;
    font-size: 2em;
    font-weight: bold;
}

* {
    color: #2F4F4F;
}

h2 {
    color: rgb(0, 128, 128);
}

aside,
footer {
    font-style: italic;
}

h1,
h2,
h3 {
    font-family: Arial, sans-serif;
}

table {
    border: 1px solid black;
}

th, td {
    border: 1px solid black;
}

#images {
    text-align: center;
}

#red {
    color: red;
}

.special {
    color: darkorange;
    font-weight: bold;
}

.month-heading {
    text-align: right;
}

nav a {
    text-decoration: none;
    padding: 0.2em 0.6em;
    border: 4px solid #ccc;
}

nav a:hover
{
    background-color: lightblue;
    border-color: darkblue;
}

ol {
    list-style-type: lower-roman;
}

ol ul {
    list-style-type: square;
}

aside:hover {
    visibility: hidden;
}
```

Pets and the Pandemic

Dhanveer Ramnauth

A report from Animal Medicines Australia (AMA) has found that many Australians took the opportunity to introduce a pet into their household during the pandemic. Their survey indicated that there was a **significant increase** the percent of households taking in a new dog, fish or bird. Their research also indicated that pets had a number of positive influences on their lives such as:

- companionship
- better mental health
- joy and happiness.

Pet ownership in Australia, 2019 vs 2021

Pet type	Household penetration (%)		Total owner households ('000)		Animals per household (average)		Total pets ('000)	
	2019	2021	2019	2021	2019	2021	2019	2021
Dogs	40	47 ▲	3,848.2	4,644.6	1.3	1.4	5,104.7	6,344.3
Cats	27	30	2,602.4	3,030.7	1.4	1.6	3,766.6	4,903.3
Fish	11	13 ▲	1,056.8	1,314.5	10.7	8.5	11,331.7	11,186.5
Birds	9	14 ▲	867.9	1,384.0	6.4	3.9	5,569.4	5,448.4
Small mammals	3	5	257.8	498.9	2.4	3.0	614.5	1,502.0
Reptiles	2	4	194.5	426.4	1.9	1.6	364.2	663.4
Other pets	2	1	194.8	118.6	9.2	3.4	1,785.3	401.2
Pet Owners	**61**	**69** ▲	**5.9 m**	**6.8 m**			**28.5 m**	**30.4 m**
Non-Owners	**39**	**31** ▼	**3.7 m**	**3.1 m**				

Fig 1. Comparison of Pet Ownership in 2019 - 2021. Data Source: Animal Medicines Australia Report

With the increase in pet ownership the AMA are encouraging policy makers to consider the needs of companion animals and their owners when considering rental, strata and body corporate regulations are well as accepting animals in public places and transport.

Lab-1-2

```html
<!DOCTYPE html>
<html>

<head>
    <title>Lab 1-2 </title>

    <!-- Keywords relevant to the webpage for search engines -->
    <meta charset="UTF-8" />
    <meta name="description" content="Data Visualisation Lab 1" />
    <meta name="keywords" content="HTML, CSS" />
    <meta name="author" content="Dhanveer Ramnauth" />
    <link href="css/style.css" rel="stylesheet">
</head>

<body onload="">
    <h1>Pets and the Pandemic</h1>
    <h2>Dhanveer Ramnauth</h2>

    <p>A report from Animal Medicines Australia (AMA) has found that many Australians took the opportunity to introduce
        a pet into their household during the pandemic. Their survey indicated that there was a <strong>significant
            increase</strong>
        the percent of households taking in a new dog, fish or bird. Their research also indicated that pets had a
        number of positive influences on their lives such as:</p>
    <ul>
        <li>companionship</li>
        <li>better mental health</li>
        <li>joy and happiness.</li>
    </ul>

    <!-- Function Signature for button -  editFigure(source_img, alt_text, figure_name, year)-->
    <div class="container">
        <div class="button-container">
            <button onclick="editFigure('images/Pets 2019.png', 'Figure 1.1', '2019')">2019</button>
            <button onclick="editFigure('images/Pets 2021.png', 'Figure 1.2', '2021')">2019</button>
            <button onclick="editFigure('images/Both.png', 'Figure 1.3', 'Both')">2019</button>
        </div>

        <figure>
            <img id="pic" src="images/Pets 2019.png" alt="Figure 1.1">
            <figcaption>
                <p id="caption">Figure 1.1 - Percent of most popular pets owned by Australians in 2019</p>
            </figcaption>
        </figure>
    </div>

    <!--Link javascript file for button functionality -->
    <script src="js/main.js"></script>
    <p><em>With the increase in pet ownership the AMA are encouraging policy makers to consider the needs of companion
            animals and their owners when considering rental, strata and body corporate regulations are well as
            accepting
            animals in public places and transport.</em></p>

    <footer>
        COS30045 Data Visualisation
        Dhanveer Ramnauth
    </footer>
</body>

</html>
```

```css
button
{
    background-color: pink;
}

.container {
    display: flex;
    flex-direction: column;
    align-items: center;
    justify-content: flex-start;
}

.button-container {
    flex-direction: row;
    display: flex;
    justify-content: center;
    gap: 10px; /* Adjust the gap between buttons as needed */
}

img {
    border: black;
    border-width: 10px;
    border-style: solid;
    border-color: purple;
}

h1 {
    color: purple;
    font-size: 2em;
    font-weight: bold;
}

* {
    color: #2F4F4F;
}

h2 {
    color: rgb(0, 128, 128);
}

aside,
footer {
    font-style: italic;
}

h1,
h2,
h3 {
    font-family: Arial, sans-serif;
}

table {
    border: 1px solid black;
}

th, td {
    border: 1px solid black;
}

#images {
    text-align: center;
}

#red {
    color: red;
}

.special {
    color: darkorange;
    font-weight: bold;
}

.month-heading {
    text-align: right;
}

nav a {
    text-decoration: none;
    padding: 0.2em 0.6em;
    border: 4px solid #ccc;
}

nav a:hover
{
    background-color: lightblue;
    border-color: darkblue;
}

ol {
    list-style-type: lower-roman;
```

```css
}

ol ul {
    list-style-type: square;
}

aside:hover {
    visibility: hidden;
}
```

```
function editFigure(source_img, alt_text, year) {
    let captionStart = "Percent of most popular pets owned by Australians in "
    let picture = document.getElementById("pic");
    picture.src = source_img;
    document.getElementById("pic").alt = alt_text;
    document.getElementById("caption").innerHTML = alt_text + " " + captionStart + year;
}

function b1() {
    document.getElementById("pic").src = "images/Pets 2019.png"
    document.getElementById("pic").alt = "Figure 1.1"
    document.getElementById("caption").innerHTML = "Figure 1.1 - " + captionStart + "2019"
}

function b2() {
    document.getElementById("pic").alt = "Figure 1.2"
    document.getElementById("pic").src = "images/Pets 2021.png"
    document.getElementById("caption").innerHTML = "Figure 1.2 - " + captionStart + "2021"
}

function b3() {

    document.getElementById("pic").alt = "Figure 1.3"
    document.getElementById("pic").src = "images/Both.png"
    document.getElementById("caption").innerHTML = "Figure 1.3 - " + captionStart + "2019 and 2021"
}
```

Pets and the Pandemic

Dhanveer Ramnauth

A report from Animal Medicines Australia (AMA) has found that many Australians took the opportunity to introduce a pet into their household during the pandemic. Their survey indicated that there was a **significant increase** the percent of households taking in a new dog, fish or bird. Their research also indicated that pets had a number of positive influences on their lives such as:

- companionship
- better mental health
- joy and happiness.

2019 2019 2019

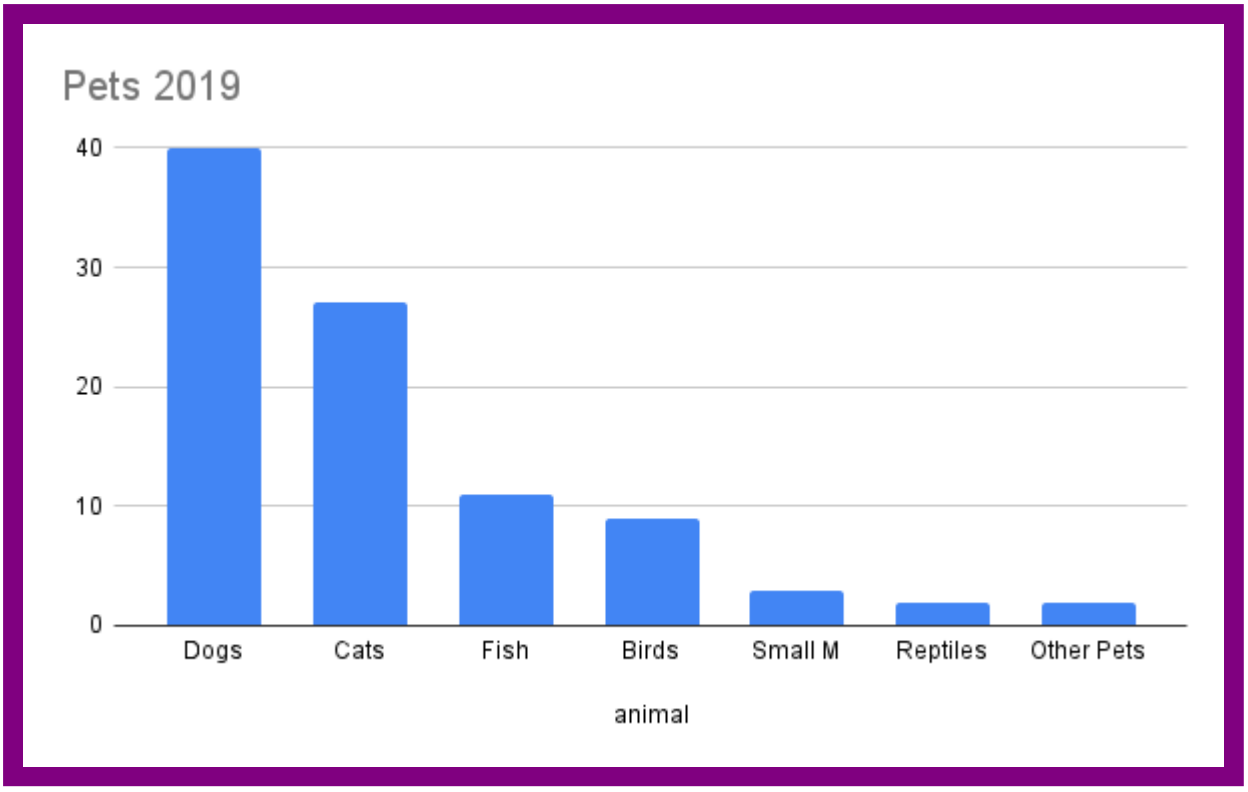


Figure 1.1 - Percent of most popular pets owned by Australians in 2019

With the increase in pet ownership the AMA are encouraging policy makers to consider the needs of companion animals and their owners when considering rental, strata and body corporate regulations are well as accepting animals in public places and transport.

COS30045 Data Visualisation Dhanveer Ramnauth

Lab-1-3

```html
<!DOCTYPE html>
<html>

<head>
    <title>Lab 1-3</title>
    <meta charset="UTF-8" />
    <meta name="description" content="Data Visualisation Lab 1" />
    <meta name="keywords" content="HTML, CSS" />
    <meta name="author" content="Dhanveer Ramnauth" />
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <!--SVG Drawing Canvas -->

    <!-- X,Y 0, 0 is top left -->
    <svg width="500" height="50">


        <!-- This circle gets cut off, CY and CX specify the center (radius goes outside canvas)-->
        <circle cx="0" , cy="0" , r="5" fill="darkpink" />
        <circle cx="25" , cy="25" , r="25" fill="rgb(240, 59, 32)" />


        <rect x="50" , y="5" , width="50" , height="50" , fill="rgb(254, 178, 76)" />

        <ellipse cx="140" , cy="30" , rx="40" , ry="25" fill="rgb(255, 237, 160)" />

        <!--TRANSPARENCY DEMONSTRATION-->

        <!--Higher alpha values = Higher opaqueness -->
        <Line x1="0" , y1="30" , x2="100" , y2="30" stroke="rgba(0, 0, 255, 0.3)" stroke-width="5" />
        <text x="35" y="35" font-size="20" fill="rgba(0, 255, 0, 0.8)">Hello world!</text>


    </svg>

    <h1>Pets 2019</h1>
    <svg width="314" height="200">
        <!--YOU CAN JUST DO HEX IN FILL !!! -->
        <rect x="0"   , y="160" , width="50" , height="50" , fill="#003f5c" />
        <rect x="52"  , y="173" , width="50" , height="50" , fill="#374c80" />
        <rect x="104" , y="189" , width="50" , height="50" , fill="#7a5195" />
        <rect x="156" , y="191" , width="50" , height="50" , fill="#bc5090" />
        <rect x="208" , y="197" , width="50" , height="50" , fill="#ef5675" />
        <rect x="262" , y="198" , width="50" , height="50" , fill="#ff764a" />
        <rect x="314" , y="198" , width="50" , height="50" , fill="#ffa600" />
    </svg>

    <footer>
        COS30045 Data Visualisation
        Dhanveer Ramnauth
    </footer>
</body>

</html>
```

```css
svg {
    margin-bottom: 12px;
}
```

Pets 2019

COS30045 Data Visualisation Dhanveer Ramnauth

Lab-2-1

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="Data Visualisation">
    <meta name="keywords" content="HTML, CSS, D3">
    <meta name="author" content="Dhanveer Ramnauth">
    <meta name="description" content="Data Visualisation">

    <title>Task 2.1 D3 Data Binding</title>
    <script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <h1>The D3 Journey starts here...</h1>

    <script>

        let dataset = [14, 5, 26, 23, 9];

        d3.select("body").selectAll("p") //selects all nonexistent p tags
            .data(dataset) //counts and prepares data
            .enter() //creates a new placeholder for each bit of data
            .append("p") //appends a p element to match each placeholder
            .text(function (d) { //the function as an input to .text

                //d is the current dataset value

                let text = `Joe watched ${d} cat videos today`;

                text = d > 10 ? "Warning: " + text : text; //if d > 10 we put warning modifier


                return text;
            })
            .style("color", function (d, i) { //d is the amount, i is the index
                //change the color of the text for warning
                return d > 10 ? "#ff0000" : "#000";  //can i cache d > 10?
            })

    </script>

    <br>

    <footer>
        <hr>
        Data Visualisation <br>Dhanveer Ramnauth
    </footer>

</body>

</html>
```

```css
svg {
    margin-bottom: 12px;
}
```

The D3 Journey starts here...

Warning: Joe watched 14 cat videos today

Joe watched 5 cat videos today

Warning: Joe watched 26 cat videos today

Warning: Joe watched 23 cat videos today

Joe watched 9 cat videos today

Data Visualisation
Dhanveer Ramnauth

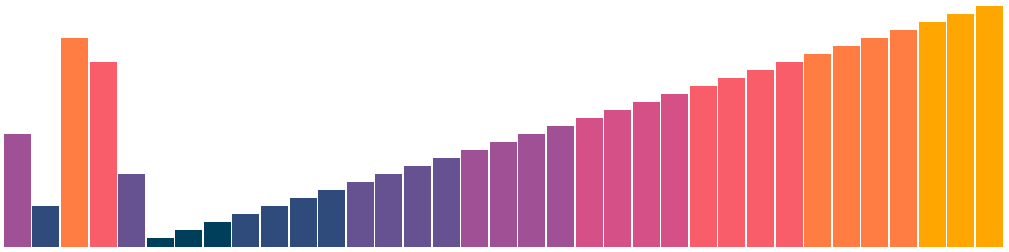
Lab-2-2

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="Data Visualisation">
    <meta name="keywords" content="HTML, CSS, D3">
    <meta name="author" content="Dhanveer Ramnauth">
    <meta name="description" content="Data Visualisation">

    <title>Task 2.2 D3 Data Binding</title>
    <script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <h1>The D3 Journey starts here...</h1>

    <script>
        //dataset
        let dataset = [14,  5, 26, 23,  9,
                        1,  2,  3,  4,  5,
                        6,  7,  8,  9, 10,
                       11, 12, 13, 14, 15,
                       16, 17, 18, 19, 20,
                       21, 22, 23, 24, 25,
                       26, 27, 28, 29, 30];
        //canvas size
        let w = 500;
        let h = 200;

        //ratio between width of canvas and length of the dataset
        //used to compute element spacing
        let ratio = (w / dataset.length);

        //define svg canvas
        let svg = d3.select("body")     // in body element
                    .append("svg")      //add the svg
                    .attr("width", w)   //set width attribute
                    .attr("height", h); //set height attribute

        //spacing between the bars (by modifying width)
        let padding = 1; // size between bar
        let height_multiplier = 4; //make bar big

        svg.selectAll("rect")
            .data(dataset) //bind data
            .enter() //creates a new placeholder for each bit of data
            .append("rect") //add svg rect
            .attr("x", function (d, i) { //X coord
                return i * ratio; // w / dataset.length - norm
            })
            .attr("y", function (d) { //Y coord
                //we need to set the y value to the top of the bar so its not upside down
                return h - d * height_multiplier; //d*height_multiplier is bar height
            })
            .attr("width", ratio - padding) //ratio is the maximum element size and padding is gap
            .attr("height", function (d) {
                return d * height_multiplier; //multiply the current data with a multiplier
            })
            .attr("fill", function(d, i)
            {
                    //https://www.learnui.design/tools/data-color-picker.html
                    let color_palette = [
                        [  0,  63,  92],
                        [ 47,  75, 124],
                        [102,  81, 145],
                        [160,  81, 149],
                        [212,  80, 135],
                        [249,  93, 106],
                        [255, 124,  67],
                        [255, 166,   0]
                    ];


                    //----------------INDEXING-------------------------------

                    //Max value is 30
                    //color pallete length is 8


                    /*
                        color_index_ratio calculation:

                        30 / 8 =  3.75
                        3.75 * 2 = 7.5;
                        floor(7.5) = 7;

                        7 is max index value so we are safe
```

```
                    */

                    let color_index_ratio = Math.floor( ( d / color_palette.length ) * 2 ); // BAD WAY TO DO THIS
                    let element = color_palette[color_index_ratio]; // slightly cleaner than inlining this.

                    //---------------------------------------------------------


                    return `rgb(${element[0]}, ${element[1]}, ${element[2]})`;
            });

    </script>

    <br>

    <footer>
        Data Visualisation <br>Dhanveer Ramnauth
    </footer>

</body>

</html>
```

```css
svg {
    margin-bottom: 12px;
}
```

The D3 Journey starts here...



Data Visualisation
Dhanveer Ramnauth

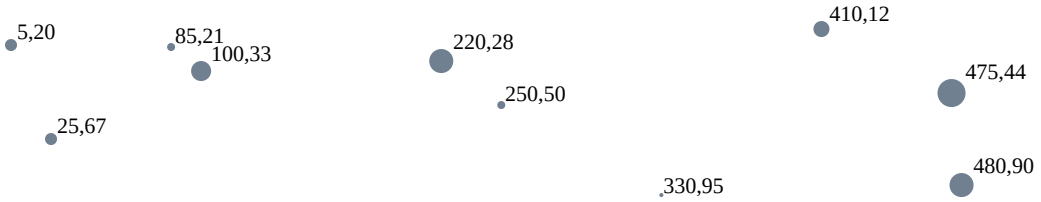
Lab-2-3

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="Data Visualisation">
    <meta name="keywords" content="HTML, CSS, D3">
    <meta name="author" content="Dhanveer Ramnauth">
    <meta name="description" content="Data Visualisation">

    <title>Task 2.3 D3 Data Binding</title>
    <script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <h1>The D3 Journey starts here...</h1>

    <script>

        let dataset = [
            [5,   20, 3],
            [480, 90, 6],
            [250, 50, 2],
            [100, 33, 5],
            [330, 95, 1],
            [410, 12, 4],
            [475, 44, 7],
            [25,  67, 3],
            [85,  21, 2],
            [220, 28, 6]
        ];

        //SIZE OF CANVAS
        let w = 700;
        let h = 200;

        <!--DEFINE CANVAS -->
        let svg = d3.select("body")
            .append("svg")
            .attr("width", w)
            .attr("height", h);

        //spacing between the bars (by modifying width)
        let padding = 1; // size between bar
        let height_multiplier = 4; //make bar big

        //GENERATE CIRCLE
        svg.selectAll("circle")
            .data(dataset) //bind data (counts and prepares)
            .enter() //generate placeholder for data
            .append("circle") //append circle per placeholder
            .attr("cx", function (d, i) { //center X of circle
                return d[0]; //defined in array
            })
            .attr("cy", function (d) { //center Y of circle
                return d[1];  //defined in array
            })
            .attr("r", function(d) { //radius of circle
                return d[2]; //defined in array
            }) //radius
            .attr("fill", "slategray"); //set color

        //GENERATE LABELS
        svg.selectAll("text")
            .data(dataset) //bind data (counts and prepares)
            .enter() //generate placeholder for data
            .append("text") //append text svg per placeholder
            .text(function (d) { //set text
                return d[0] + "," + d[1] //comma separated coords
            })
            .attr("x", function (d, i) { //x coord
                return d[0] + d[2]; //x + radius (right)
            })
            .attr("y", function (d, i) { //y coord
                return d[1] - d[2]; //y - radius (above)
            })
            .attr("font-size", "11"); //set font size

    </script>

    <br>

    <footer>
        Data Visualisation <br>Dhanveer Ramnauth
    </footer>

</body>
```

```
</html>
```

```css
svg {
    margin-bottom: 12px;
}
```

The D3 Journey starts here...



Data Visualisation
Dhanveer Ramnauth

Lab-2-4

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <meta name="description" content="Data Visualisation">
    <meta name="keywords" content="HTML, CSS, D3">
    <meta name="author" content="Dhanveer Ramnauth">
    <meta name="description" content="Data Visualisation">

    <title>Task 2.4 D3 Data Binding</title>
    <script src="https://cdn.jsdelivr.net/npm/d3@7"></script>
    <script src="js/main.jsA></script>
    <link href="css/style.css" rel="stylesheet">
</head>

<body>
    <h1>CSV!</h1>

    <div id="charts"></div>

    <br>

    <footer>
        Data Visualisation <br>Dhanveer Ramnauth
    </footer>

</body>

</html>
```

```css
svg {
    margin-bottom: 12px;
}
```

```
window.onload = init;

function init() {
    wombatChart();
    petsChart2019();
    petsChart2021();
}

/*------------------GEN CHARTS-----------------------------*/
function wombatChart() {
    d3.csv("res/wombat.csv").then(function(data) {
        wombatSightings = data;

        //bar chart settings
        let w = 500;
        let h = 200;
        let gap = 1;
        let h_padding = 10;
        barChart(wombatSightings, "wombats", gap, w, h, h_padding, "Wombat Sightings");
    });
}
function petsChart2019() {

    d3.csv("res/pet_ownership.csv").then(function(data) {
        ownership = data;
        //bar chart settings
        let w = 600;
        let h = 300;
        let gap = 15;
        let h_padding = 25;
        barChart(ownership, "pets2019", gap, w, h, h_padding, "Pet Ownership 2019", "animal", "Pet Ownership in 2019");
    })
}

function petsChart2021() {
    d3.csv("res/pet_ownership.csv").then(function(data) {
        ownership = data;
        //bar chart settings
        let w = 600;
        let h = 300;
        let gap = 15;
        let h_padding = 25;
        barChart(ownership, "pets2021", gap, w, h, h_padding, "Pet Ownership 2021", "animal", "Pet Ownership in 2021");
    })
}
/*-------------------------------------------------------*/


//dataset - full dataset,
//columnName - columnName of the thing we are plotting
//gap - the gap between the bars
//v_padding - the vertical space between the bottom of the svg and the graph (used for labels)
//title - title of the graph
//labelColName - the column name in which the labels are stored
//figCaption - the caption of the figure
function barChart(dataset, columnName, gap, w, h, v_padding, title, labelColName = "", figCaption = "") {

    //ratio between width of canvas and length of the dataset
    //used to compute element spacing
    let w_ratio = (w / dataset.length);

    //add linebreak
    d3.select("#charts").append("hr");

    let figure = d3.select("#charts").append("figure"); //append figure to charts

    //define svg canvas inside figure
    let svg = figure.append("svg")      //add the svg
        .attr("width", w)   //set width attribute
        .attr("height", h); //set height attribute


    //Figure
    //use fig caption if not avaliable just use title
    let num_figures = d3.select("#charts").selectAll("figure").size();
    figure.append("figcaption").text(function() {
        let caption = `Figure ${num_figures}`
        if (figCaption)
            caption += `: ${figCaption}`;
        else
            caption += `: ${title}`;

        return caption;
    });


    //spacing between the bars (by modifying width)
    let height_multiplier = 4; //make bar big

    svg.selectAll("rect")
```

```
        .data(dataset) //bind data
        .enter() //creates a new placeholder for each bit of data
        .append("rect") //add svg rect
        .attr("x", function(d, i) { //X coord
            return i * w_ratio; //spacing relative to width of canvas
        })
        .attr("y", function(d) { //Y coord
            //we need to set the y value to the top of the bar so its not upside down
            return h - v_padding - d[columnName] * height_multiplier; //d*height_multiplier is bar height
        })
        .attr("width", w_ratio - gap) //ratio is the maximum element size and padding is gap
        .attr("height", function(d) {
            return d[columnName] * height_multiplier; //multiply the current data with a multiplier
        })
        .attr("fill", (d, i) => setColor(d, i, columnName, dataset)); //color setting


    //ADD THE LABELS IF THEY EXIST!!!
    if (labelColName) {
        console.log(dataset);
        svg.selectAll("text")
            .data(dataset)
            .enter()
            .append("text")
            .text(function(d) { return d[labelColName] })
            .attr("x", function(d, i) { //X coord
                console.log(i);
                return i * w_ratio;
            })
            .attr("y", function(d) { //Y coord
                //we need to set the y value to the top of the bar so its not upside down
                return h - v_padding / 2;
            })
            .attr("font-size", "11");
    }

    //add title last
    svg.append("text")
        .attr("x", (w / 2)) //center title
        .attr("y", 20) //20pixels down
        .attr("text-anchor", "middle") //middle text anchor
        .style("font-size", "16px")
        .style("text-decoration", "underline") //underline
        .text(title); //finally set the text
}

function setColor(data, index, columnName, dataset) {
    //https://www.learnui.design/tools/data-color-picker.html

    //easier to store as hex instead of rgb.
    let color_palette = [
        [0, 63, 92],
        [47, 75, 124],
        [102, 81, 145],
        [160, 81, 149],
        [212, 80, 135],
        [249, 93, 106],
        [255, 124, 67],
        [255, 166, 0]
    ];

    //I am not sure of a better way to do this

    //gets the minimum and maximum value of the array

    //use plus here to convert the column into a number?
    //Without the + operator, d[columnName] would be treated as a string,
    let min = d3.min(dataset, function(d) { return +d[columnName]; });
    let max = d3.max(dataset, function(d) { return +d[columnName]; });

    let val = data[columnName];


    //https://d3js.org/d3-scale/linear
    //d3.ScaleLinear maps an input domain to an output domain using linear transformation

    //different scaling functions - https://d3js.org/d3-scale

    //preserves proportional differences

    //using it here to convert the data value to an accurate array index

    let color_palette_index_calc = d3.scaleLinear([min, max], [0, color_palette.length - 1]); //mapping function

    let color_palette_index = Math.round(color_palette_index_calc(val)); // calculating the index

    let element = color_palette[color_palette_index]; //indexing into the element

    //cleanliness
    let r = element[0];
    let g = element[1];
```

```
    let b = element[2];

    return `rgb(${r}, ${g}, ${b})`;
}
```

CSV!

Wombat Sightings

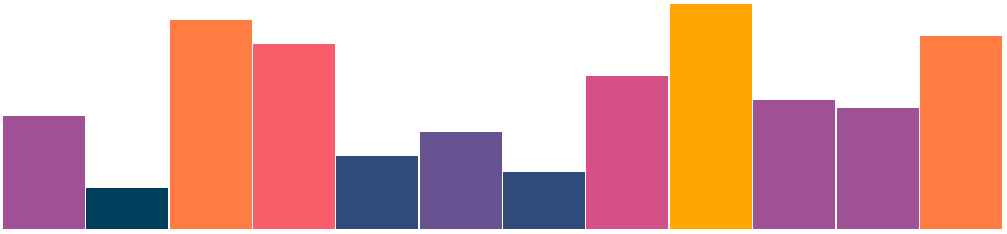


Figure 1: Wombat Sightings

Pet Ownership 2019

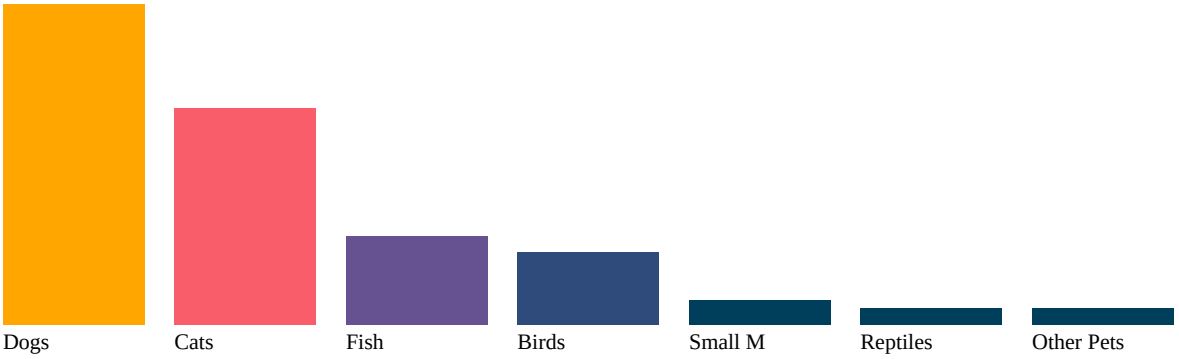


Figure 2: Pet Ownership in 2019

Pet Ownership 2021

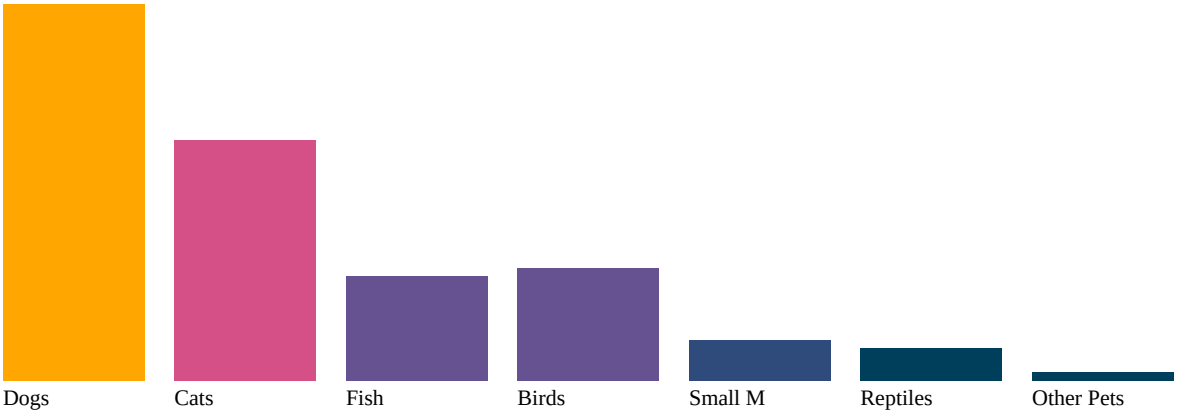


Figure 3: Pet Ownership in 2021

Data Visualisation
Dhanveer Ramnauth