# NM2207 Final Project: Discrimination against Migrant Workers

## Overview
The data story consists of six segments:
1. Significance of migrant workers
2. Need for migrant labor
3. Mistreatment of migrant workers
4. Reported issues from two distinguished non-governmental organizations (NGO's)
5. Mental and physical well-being of migrant workers
6. Acts of volunteer work done for migrant workers.

Segment 1 and 2 focuses on why migrant workers are essential for Singapore, firstly highlighting the high proportion of migrants in our society, and then discussing the need for them to take on lower-end jobs for Singaporeans to occupy the higher-end Professionals, Managers, Executives and Technicians (PMET) jobs. Despite the dependence on migrant labor, however, deep-rooted prejudice and discrimination for migrant workers still exist in society which segments 3 to 5 seek to analyze. The flow of these segments show the negative perceptions that some Singaporeans harbor towards migrants, which could be translated into exploitative actions towards this group that results in declining mental and physical well-being for them. However, segment 6 attempts to inspire and provide hope to the reader by shining light on the voluntary work that Singaporeans have done for migrant workers in recent years.

## Reasons for Choice of Topic
During Covid-19, the topic of mistreatment towards migrant workers was brought to light and caused controversy. There was a reported 70-fold increase in Covid cases from clusters in migrant worker dormitories, resulting in the government attempting to confine more workers into the dormitories with limited space and facilities (Chew, 2020). However, this triggered suicide attempts of workers which caused the government to ease the quarantine measures on migrant workers (Telling, 2022). Although this issue brought about slight improvements to their living conditions, it does not address the deep-rooted prejudice that society has against migrant workers or why there was a need to treat them as separate entities and lock them away into dormitories. This data story aims to focus on both the perceptions that the Singaporean society has towards them and the issues they experience, in order to develop understanding for and induce empathy within readers towards migrant workers.

## Design, or "Computational Thinking" Process
The initial design comprised of two columns positioned side by side, one discussing segments 1 and 2, and the other focusing on segments 3-5. However, this affected readability. Hence, I arranged the content horizontally and used different colors to distinguish between the content, with white portraying the importance of migrant labor, yellow containing the effects of discrimination on migrant workers, and purple to promote voluntary work for them. Meanwhile, I wanted to include interactive elements for charts to appear when users click on buttons or texts, hence a CSS div element with a scrollbar that displays various charts (Fig. 1), the utilization of event listeners (Fig. 2 and 3), and a slideshow of images and texts to showcase the various volunteering acts (Fig. 4).
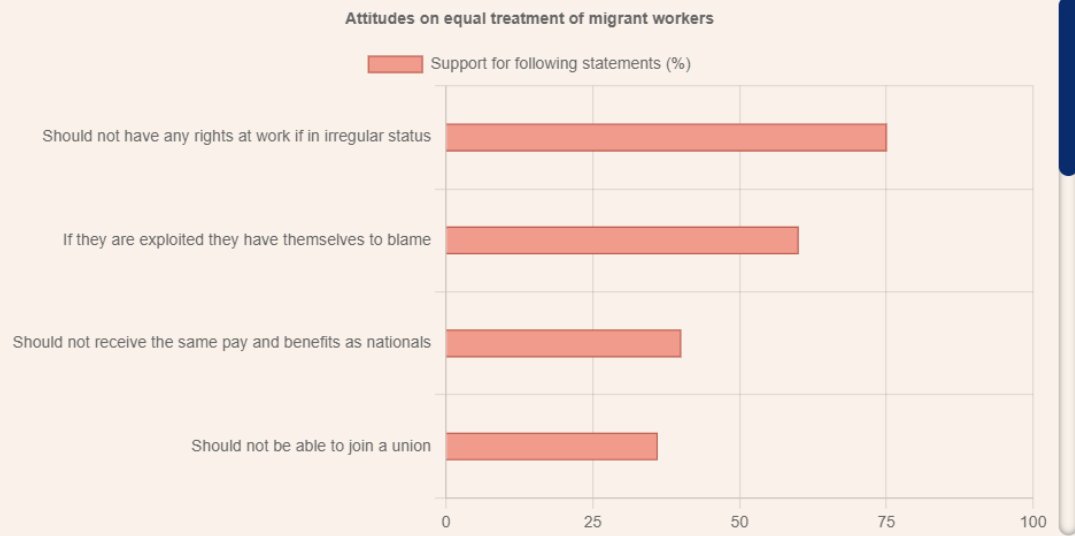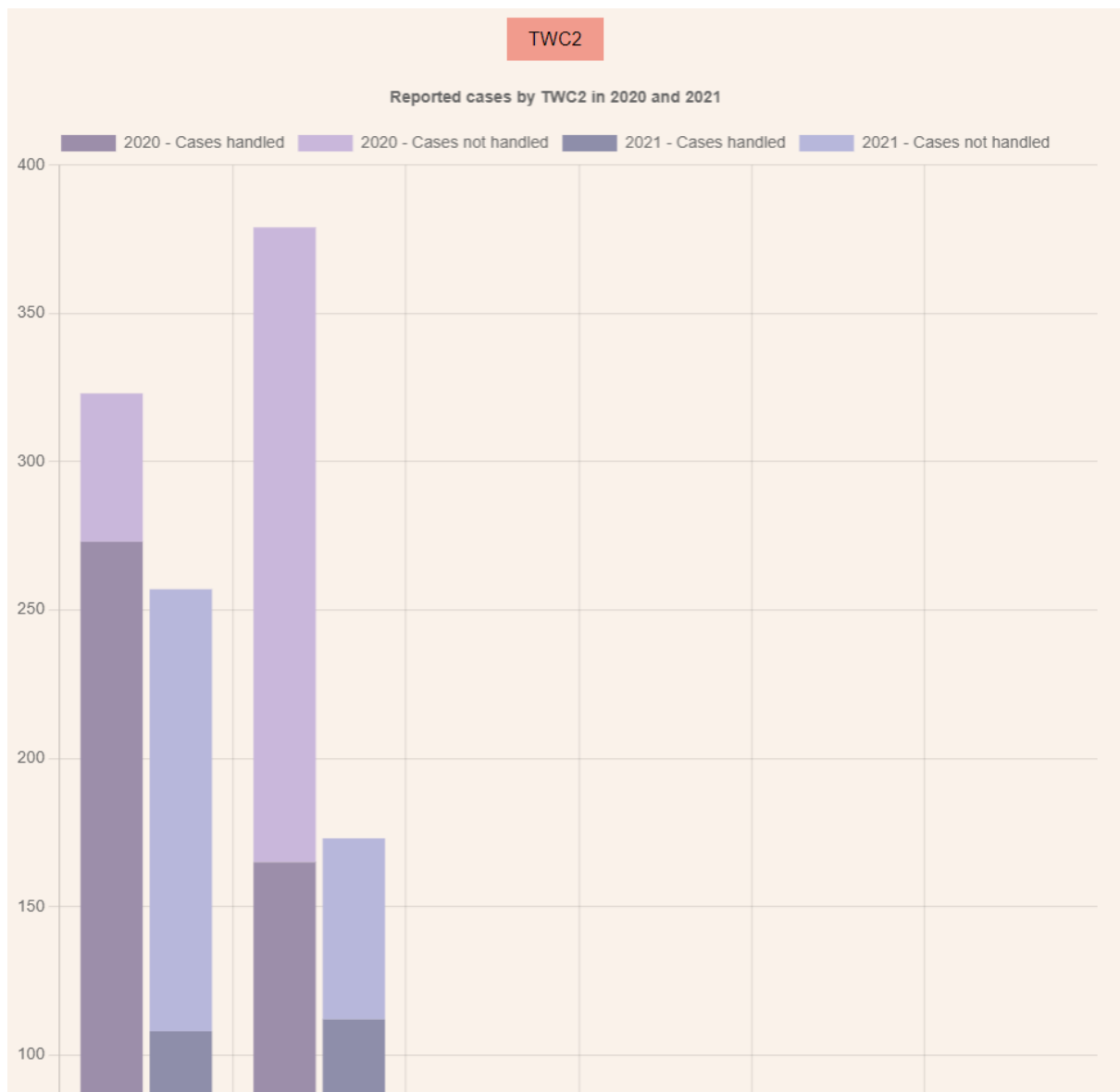
Fig. 1: Scrollbar element

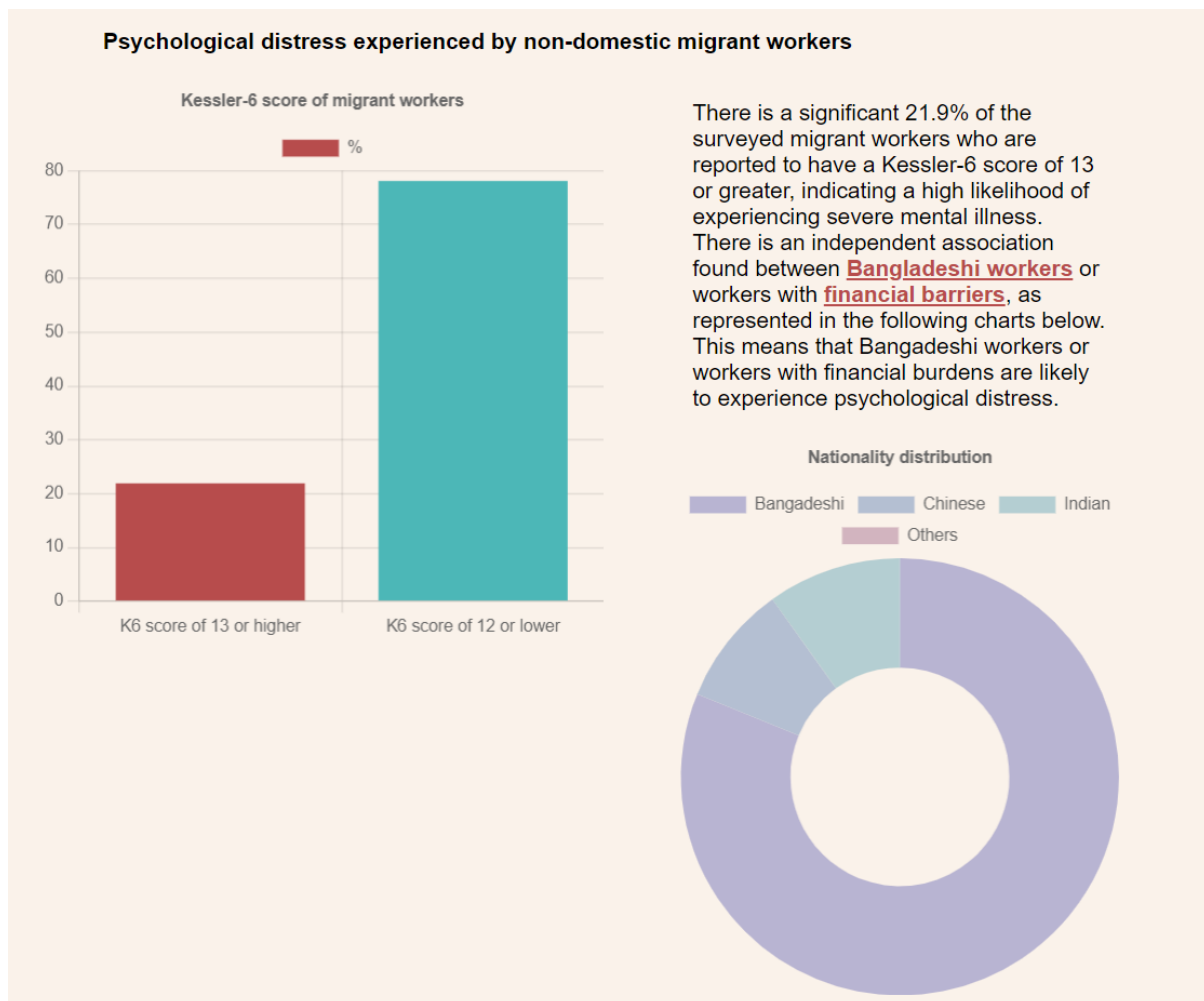Fig. 2: Event listener for TWC2 button

Fig. 3: Event listener for 'Bangladeshi workers'



Fig. 4: Slideshow

**Skills Learned**

I learned how to create a table in JavaScript by passing the data in the form of an array to variables, then using createElement and appendChild to create the row elements and append them to the table. Fig. 5 shows the initial HTML code I used to create a table, and Fig. 6 shows the final code with the table I created using JavaScript.

```
<table id="wfTable">
    <tr>
        <td><b>Pass type</b></td>
        <td><b>Dec 2017</b></td>
        <td><b>Dec 2018</b></td>
        <td><b>Dec 2019</b></td>
        <td><b>Dec 2020</b></td>
        <td><b>Dec 2021</b></td>
        <td><b>Jun 2022</b></td>
    </tr>
    <tr>
        <td><b>Employment Pass (EP)</b></td>
        <td>187,700</td>
        <td>185,800</td>
        <td>193,700</td>
        <td>177,100</td>
        <td>161,700</td>
        <td>168,800</td>
    </tr>
    <tr>
        <td><b>S Pass</b></td>
        <td>184,400</td>
        <td>195,500</td>
        <td>200,000</td>
        <td>174,000</td>
        <td>161,800</td>
        <td>169,200</td>
    </tr>
    <tr>
        <td><b><p style= "background-color: ■#fcd0cc">Work Permit (Total)</p></b></td>
        <td><div id="div1wp">965,200</div></td>
        <td><div id="div2wp">972,600</div></td>
        <td><div id="div3wp">999,000</div></td>
        <td><div id="div4wp">848,200</div></td>
        <td><div id="div5wp">849,700</div></td>
        <td><div id="div6wp">943,400</div></td>
    </tr>
    <tr>
        <td><p style= "margin-left: 20px">Work Permit (Migrant Domestic Workers)</p></td>
        <td>246,800</td>
        <td>253,800</td>
        <td>261,800</td>
        <td>247,400</td>
        <td>246,300</td>
        <td>256,300</td>
    </tr>
    <tr>
        <td><p style= "margin-left: 20px">Work Permit (Construction, Marine Shipyard and Process)</p></td>
        <td>360,700</td>
        <td>355,700</td>
        <td>370,100</td>
        <td>311,000</td>
```

Fig. 5: Initial HTML code

```
// table of number of foreign workers
var headers = ["Pass Type", "Dec 2017", "Dec 2018", "Dec 2019", "Dec 2020", "Dec 2021", "Jun 2022"]; //defining var headers and assigns it with array of data
var row1 = ["Employment Pass", 187700, 185800, 193700, 177100, 161700, 168800]; //defining var row1
var row2 = ["S Pass", 184400, 195500, 200000, 174000, 161800, 169200]; //defining var row 2
var row3 = ["Work Permit (Total)", 965200, 972600, 999000, 848200, 849700, 943400]; //defining var row 3
var row4 = ["Work Permit (Migrant Domestic Workers)", 246800, 253800, 261800, 247400, 246300, 256300]; //defining var row 4
var row5 = ["Work Permit (Construction, Marine Shipyard and Process)", 360700, 355700, 370100, 311000, 318400, 369400]; //defining var row 5
var row6 = ["Other Work Passes", 30700, 32100, 34700, 32200, 27200, 24400]; //defining var row 6
var row7 = ["Total Foreign Workforce", 1368000, 1386000, 1427400, 1231500, 1200400, 1305800]; //defining var row 7
var data = [row1, row2, row3, row4, row5, row6, row7]; //defining var data and assigning it with array of nested data from previous rows


var table = document.getElementById("myTable"); //get html element "myTable"


// Create header row
var headerRow = document.createElement("tr"); //create table row element
for (var i = 0; i < 7; i++) { //create 7 header cells
    var headerCell = document.createElement("th"); //create table header element
    headerCell.innerHTML = headers[i]; //set inner html of the th element to corresponding value from headers array
    headerRow.appendChild(headerCell); //append th element to headerRow
}
table.appendChild(headerRow); //append th element to table

// Create the data rows
for (var i = 0; i < 7; i++) { //create 7 rows
    var dataRow = document.createElement("tr"); //create table row element for data array thats being read
    for (var j = 0; j < data[i].length; j++) { //iterates through each element
        var dataCell = document.createElement("td"); //create table cell element
        dataCell.innerHTML = data[i][j]; //set inner html of the table cell element to corresponding value from array
        if (i == 0) { //adding styling attributes (indentation) to the table
            dataCell.setAttribute("colspan", "1");
        } else {
            dataCell.classList.add("indent"); //indentation if current data row is not the header row
        }
        dataRow.appendChild(dataCell); //append table cell element to data row element
    }
    table.appendChild(dataRow); //append data row element to table element
}
```

Fig. 6: Final JS code

I learned to create the slideshow using the code from W3Schools, and made CSS modifications to cater to my design choice. A majority of my codes for the charts were based off of concepts taught in class.

**Challenges**
Creating the CSS elements was the biggest challenge posed. The initial template that I used with side-by-side columns was adapted from CodePen, and the parts of the code I had retained from the template were the topic introduction box and the footer. However, I had to figure out how to arrange the information to be presented according to the design I wanted, which was mainly figured out through trial-and-error and modifying parts of the code and checking for changes. Due to the numerous div class elements used, it was also difficult to keep track of the child and parent elements to add the respective CSS attributes to.

**Self-critique**
My website presents the information clearly in a statistical form with descriptions to explain the corresponding charts. Images were utilized appropriately to invoke a sense of sympathy or provide hope to the reader. I feel that I was able to create a data story on a serious topic with suitable design elements that captured the severity of the issue.

**Improvements to be Made**
Without time constraints, I would have included the impact of Covid-19 restrictions on migrant workers in Singapore, with a choropleth heatmap of the location of migrant worker dormitories and the number of Covid clusters in the respective dormitories.

815 words

# References

CodePen source: https://codepen.io/weiyu-wu/pen/zYWRdmo

Chew, H. M. (2020, April 17). *Two weeks and a 70-fold increase: A look into the COVID-19 outbreak in Singapore's Foreign Worker Dormitories*. CNA. Retrieved April 15, 2023, from https://www.channelnewsasia.com/singapore/covid-19-singapore-foreign-worker-dorm-outbreak-increase-764586

Telling, O. (2022, June 6). *Migrant workers suffer in Singapore's hidden lockdown*. Financial Times. Retrieved April 15, 2023, from https://www.ft.com/content/4c63dea0-9ebd-4170-b978-5dce0c5e7f99