World Mental Health Day Awareness Campaign Ad Budget Allocation

Context

We have an allotted budget to spend on social media ads for the upcoming global awareness campaign for World Mental Health Day. In order to bring awareness of mental health to the audiences that could benefit the most, we have chosen to optimise our budget based on data on the prevalence of mental health disorders.

The analysis below outlines the insights about mental health prevalence and methodology for allocating our budget. The final allocation results file can be found here.

Dataset

Our dataset is from the Global Burden of Disease Study (2019) from the Institute of Health Metrics and Evaluation. As described on their website:

> *The Global Burden of Disease (GBD) study provides a comprehensive picture of mortality and disability across countries, time, age, and sex. It quantifies health loss from hundreds of diseases, injuries, and risk factors so that health systems can be improved and disparities eliminated.*

The dataset covers 204 countries and includes the estimated number and percentage of people who are diagnosed with mental disorders, broken down by demographic segments. The columns included are:

Metric:
  Percent: percent of the population diagnosed
  Number: number of people diagnosed
Location:
  Global
  By country
Age:
  All ages
  Children: 0-9 years old
  Teens: 10-19 years old
  Adults: 20-54 years old
  Elders: 55+ years old
Sex:
  Both sexes
  Male
  Female

Methodology

We chose to target audiences with a higher mental health prevalence. While there is the issue of underdiagnosis for mental health disorders, we reasoned that the statistical estimation model created for the study may try to account for it.
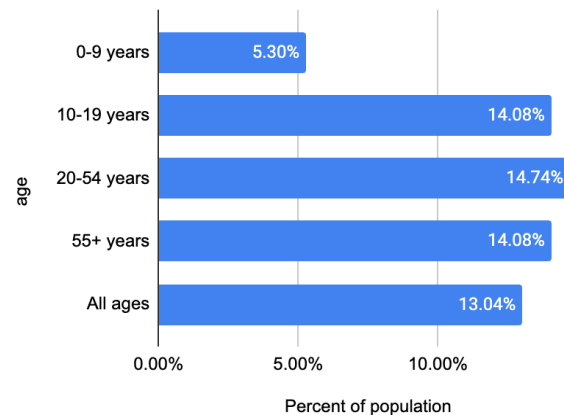We used spreadsheets for this analysis. See the Appendix belowfor the files.
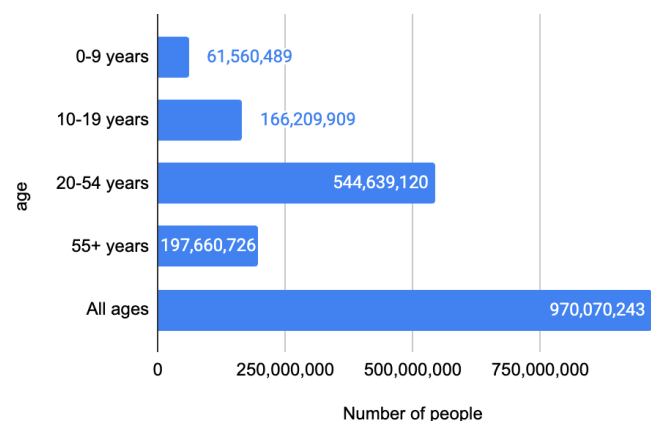
Insights on Prevalence

To understand the general prevalence of mental disorders across different demographics, we analyzed both prevalence metrics by age and sex.
The total number of people worldwide estimated to have a mental disorder is 970 million, or 13% of the global population.
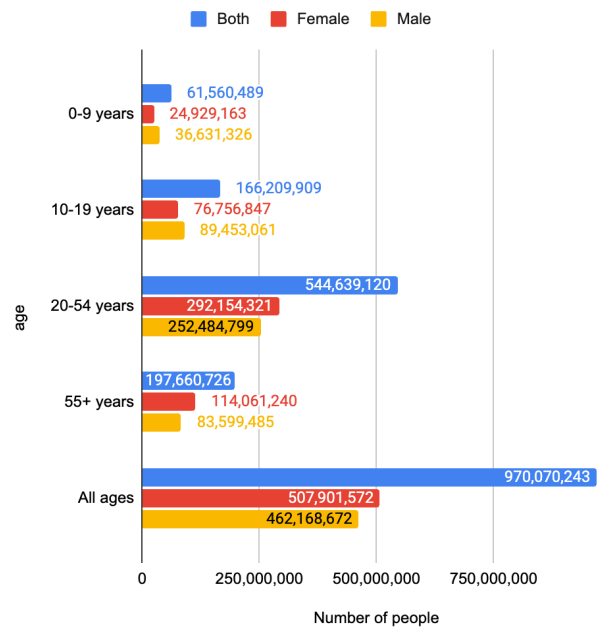
Prevalence by Age (Percent)

age	Percent of population
0-9 years	5.30%
10-19 years	14.08%
20-54 years	14.74%
55+ years	14.08%
All ages	13.04%

Prevalence by Age (Number)

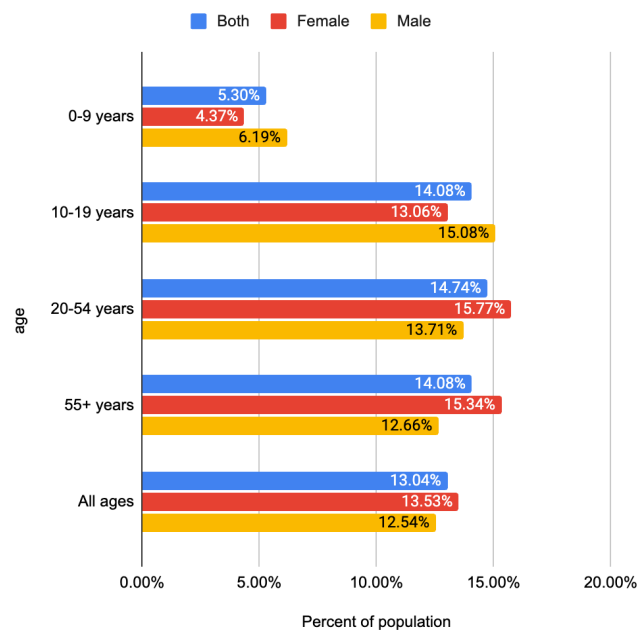| age	Number of people
0-9 years	61,560,489
10-19 years	166,209,909
20-54 years	544,639,120
55+ years	197,660,726
All ages	970,070,243

Adults (20-54 years old) are the most affected by mental disorders in terms of both number and percent prevalence. They make up the majority of people with mental disorders worldwide. They also have the highest percentage of people diagnosed, but only slightly more than teens (10-19 years old) and elders (55+ years old).

Prevalence by Age & Sex (Number)

■ Both ■ Female ■ Male

0-9 years
- 61,560,489 (Both)
- 24,929,163 (Female)
- 36,631,326 (Male)

10-19 years
- 166,209,909 (Both)
- 76,756,847 (Female)
- 89,453,061 (Male)

20-54 years
- 544,639,120 (Both)
- 292,154,321 (Female)
- 252,484,799 (Male)

55+ years
- 197,660,726 (Both)
- 114,061,240 (Female)
- 83,599,485 (Male)

All ages
- 970,070,243 (Both)
- 507,901,572 (Female)
- 462,168,672 (Male)

Number of people (x-axis: 0, 250,000,000, 500,000,000, 750,000,000)

Prevalence by Age & Sex (Percent)

■ Both ■ Female ■ Male

0-9 years
- 5.30% (Both)
- 4.37% (Female)
- 6.19% (Male)

10-19 years
- 14.08% (Both)
- 13.06% (Female)
- 15.08% (Male)

20-54 years
- 14.74% (Both)
- 15.77% (Female)
- 13.71% (Male)

55+ years
- 14.08% (Both)
- 15.34% (Female)
- 12.66% (Male)

All ages
- 13.04% (Both)
- 13.53% (Female)
- 12.54% (Male)

*Percent of population* (x-axis: 0.00%, 5.00%, 10.00%, 15.00%, 20.00%)

Across ages, females are slightly more likely than males to have a mental health diagnosis: 13.53% for females compared to 12.54% for males. However, when we break this down by age group, we see that the percentage is substantially higher when we look at adults and elders: 15.3-15.8% for females compared to 12.7%-13.7% for males. For children and teens, we see the opposite: the percentage of males is ~2% higher than females. The prevalence among children is generally much lower than among adults.

Budget Allocation

In order to optimize the budget while reducing the number of ads to be created, we performed a Pareto Analysis based on the number of people diagnosed with a mental disorder in each combined country/age/sex segment. The chart below shows the top combined segments, but there are ~1,200 in total.
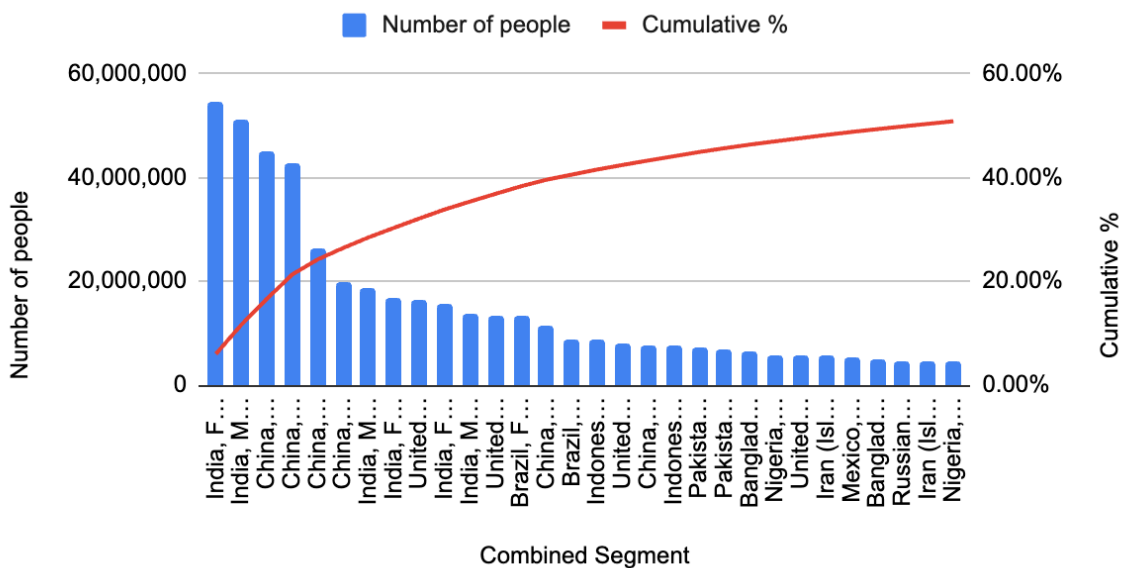
In order to account for 80% of the estimated total number of people diagnosed with a mental disorder, we only need to target 165 of these segments (13%). The budget allocation file has the structure shown below, with the name of the combined segment, estimated number of people diagnosed with a mental disorder, and the % of budget that should be allocated to that segment as a result.

Combined Segment	Number of people	% of Budget
India, Female, 20-54 years	54,507,008	7.51%
India, Male, 20-54 years	51,125,911	7.04%
China, Female, 20-54 years	45,054,337	6.20%
China, Male, 20-54 years	42,811,517	5.90%

China, Female, 55+ years	26,265,772	3.62%
China, Male, 55+ years	20,024,058	2.76%
India, Male, 10-19 years	18,576,838	2.56%
India, Female, 55+ years	16,649,554	2.29%
United States of America, Female, 20-54 years	16,467,122	2.27%
India, Female, 10-19 years	15,807,084	2.18%
India, Male, 55+ years	13,873,077	1.91%
United States of America, Male, 20-54 years	13,445,260	1.85%
Brazil, Female, 20-54 years	13,210,072	1.82%
China, Male, 10-19 years	11,414,658	1.57%
Brazil, Male, 20-54 years	8,952,501	1.23%
Indonesia, Female, 20-54 years	8,922,608	1.23%
United States of America, Female, 55+ years	8,005,288	1.10%
China, Female, 10-19 years	7,686,105	1.06%

Indonesia, Male, 20-54 years	7,460,018	1.03%

Link to full budget allocation spreadsheet file

Appendix

Insights Prevalence spreadsheet file
Budget allocation spreadsheet file
Donor Presentation
Tableau Dashboard
Tableau Infographic
Global Burden of Disease results tool