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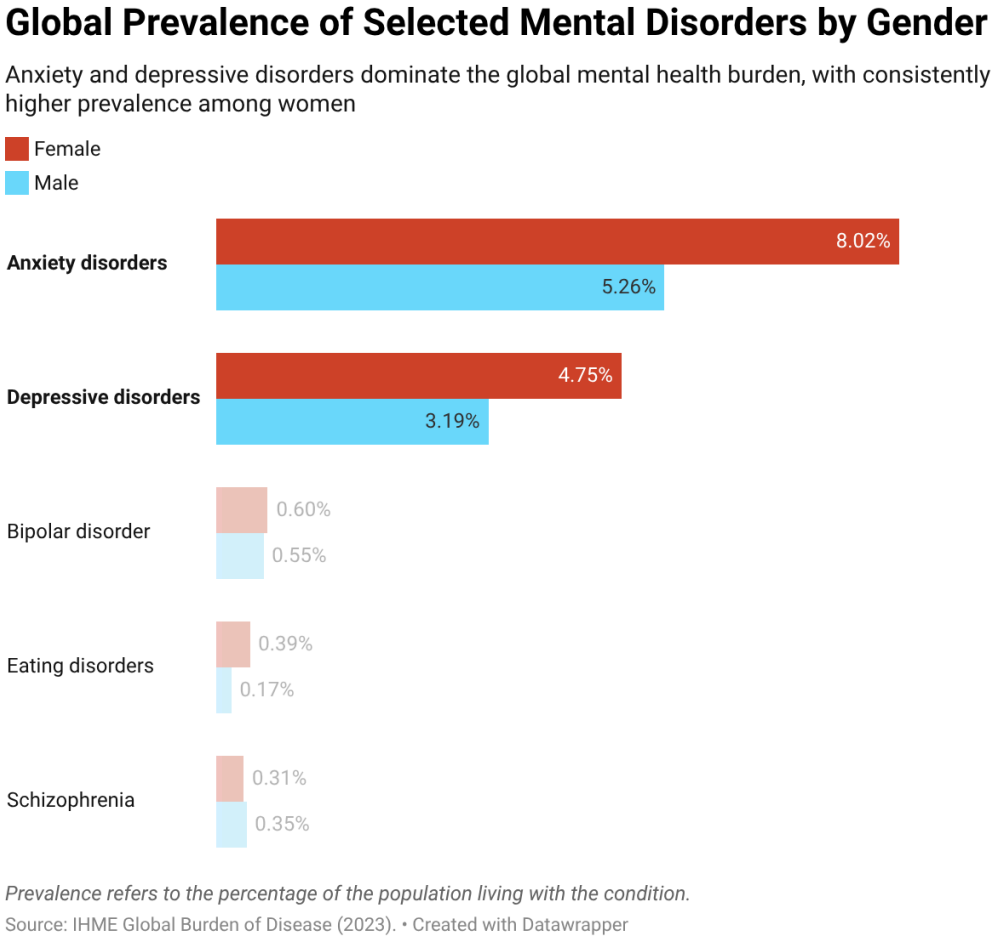
DSA4262 Individual Assignment 1
Github Repo: https://github.com/zhixin-lim/DSA4262

Introduction

Mental health is often discussed as a single, undifferentiated public health challenge, yet both the prevalence of mental disorders and their consequences vary substantially across populations. Understanding who is most affected, how risk manifests, and where existing systems fall short is essential for designing effective and equitable interventions. This analysis uses a three-stage visual narrative to examine gender differences in mental health burden and suicide outcomes. Together, the plots trace how disparities in reported prevalence translate imperfectly into mortality risk, and how this mismatch can inform more targeted prevention strategies.

Macro Plot: Gendered Mental Health Burden

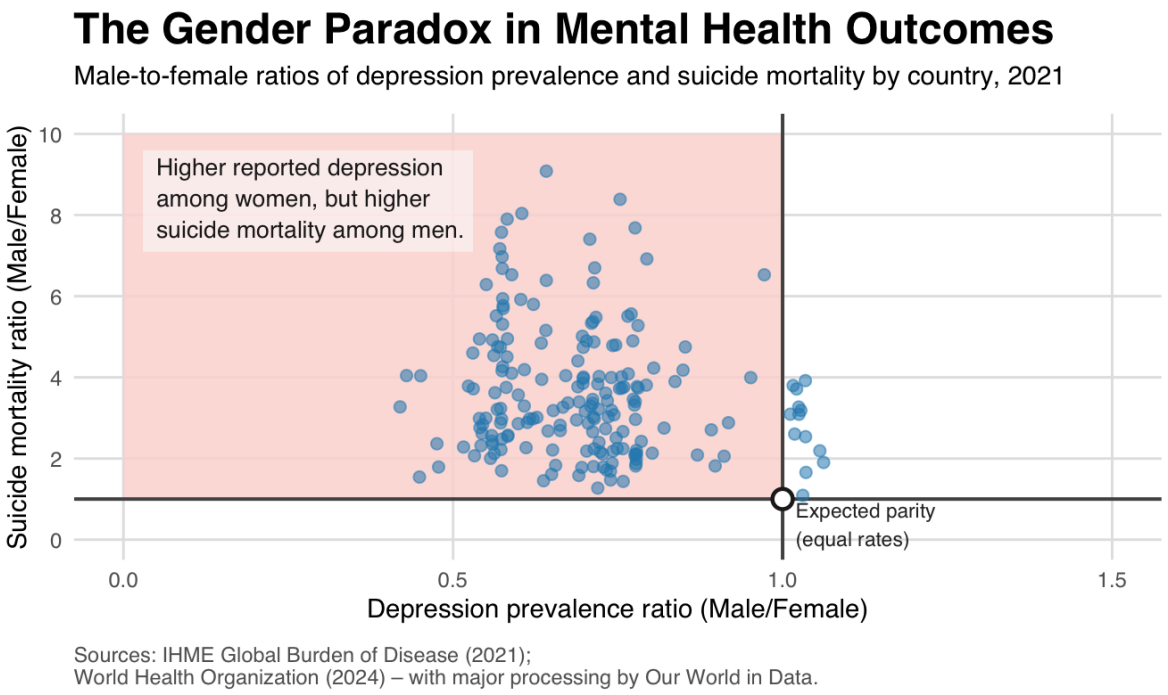


Mental health burden is unevenly distributed across disorders and genders, a distinction that is often obscured in discussions. To clarify these population-level patterns, a grouped bar chart was used, as bar length is an intuitive visual channel for comparing prevalence magnitudes and

side-by-side placement makes gender gaps immediately scannable. The chart shows that anxiety and depressive disorders account for the largest share of the global mental health burden and consistently affect women at higher rates than men. In contrast, gender differences are minimal for bipolar disorder and schizophrenia, where overall prevalence is lower and more balanced.

For clinicians and policymakers, this suggests that gender-sensitive screening and early intervention may be particularly important for common affective disorders rather than for severe psychiatric conditions, where prevalence is lower and more balanced. However, a key limitation of this dataset is that prevalence estimates rely on modelled and diagnosed cases. These figures may reflect differences in help-seeking behaviour, symptom expression, and access to care, rather than underlying risk alone. As a result, higher prevalence does not necessarily imply greater severity or higher mortality risk, motivating the next step in the analysis.

Micro Plot: The Gender Paradox between Prevalence and Mortality

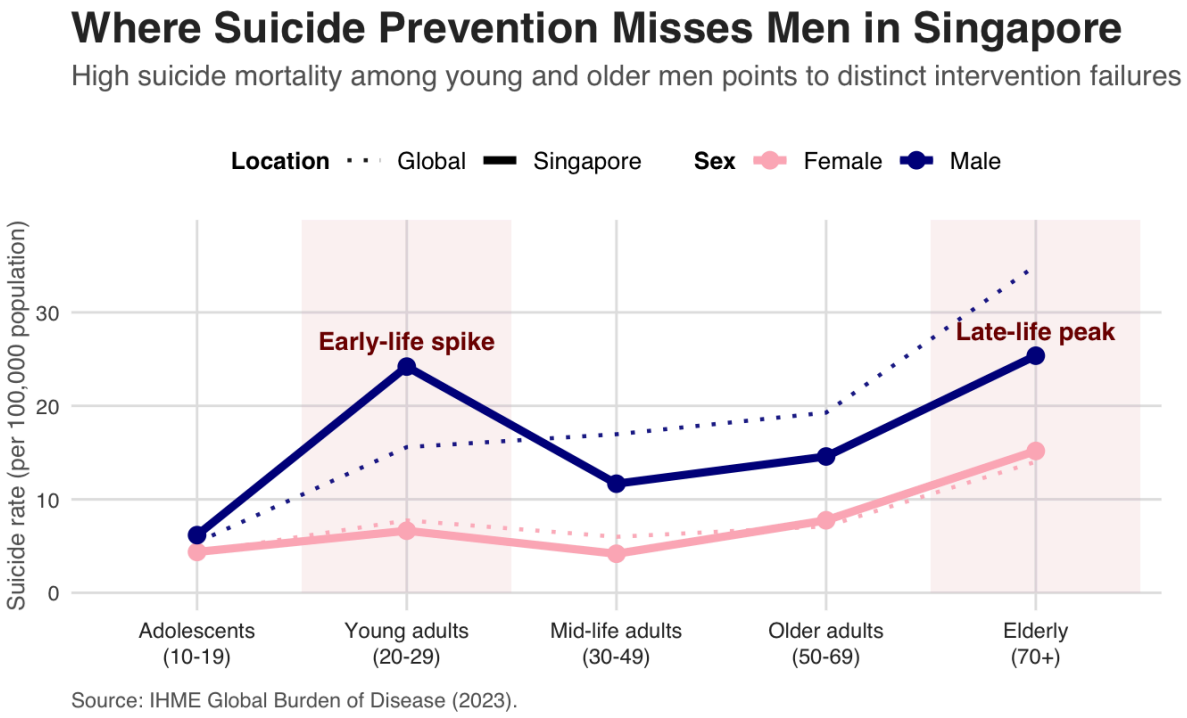


While Plot 1 establishes that women carry a higher reported prevalence of common affective disorders, it raises a critical follow-up question: Does higher prevalence translate into higher mortality risk? This plot zooms in on that relationship by focusing on depression, the most prevalent affective disorder and the one most closely linked to suicide, and comparing male-to-female ratios of depression prevalence and suicide mortality across countries.
A quadrant-based scatter plot centred on the point of gender parity (1.0, 1.0) was chosen to make deviations from equal outcomes immediately visible. The resulting pattern is striking: most countries cluster in the upper-left quadrant, where men report lower depression prevalence than

women but experience substantially higher suicide mortality. Importantly, the suicide mortality axis spans a much wider range than the depression prevalence axis, indicating that relatively modest differences in reported burden correspond to far larger disparities in fatal outcomes. This reveals a clear gender paradox in which lower reported prevalence among men coincides with substantially higher mortality risk.

For clinicians and policymakers, this suggests that prevalence data alone may be an incomplete indicator of risk, particularly for men. Standard diagnostic and self-report pathways may under-detect male distress, even as downstream consequences are severe. A key limitation is that both depression prevalence and suicide mortality are shaped by cultural norms, reporting practices, and data quality. Observed gender ratios may therefore reflect differences in detection as much as true underlying risk. Despite this, the consistency of the pattern across countries points to a systematic misalignment between reported burden and fatal outcomes.

Actionable Plot: Where Suicide Prevention Misses Men in Singapore



While Plots 1 and 2 established a global gender paradox, effective prevention strategies must ultimately be grounded in the local context. Mental health risk, help-seeking behaviour, and access to care are shaped by cultural norms, institutional structures, and healthcare pathways that vary across countries. This plot therefore shifts the analytical focus to Singapore, while retaining global trends as a comparative benchmark, to identify where current prevention efforts may be misaligned with observed risk.

Two high-risk patterns emerge among Singaporean men. Suicide mortality peaks sharply in young adulthood and remains comparably elevated in later life, with young adults and elderly men exhibiting similar rates. These two groups, however, occupy very different positions within the mental health system.

Among young adult men, elevated suicide mortality occurs despite high institutional visibility through schools, national service, and workplaces. This suggests that contact alone is insufficient for protection. Existing screening and intervention approaches may be poorly attuned to how male distress presents, or stigma and institutional pressures may limit disclosure even when access exists. From a policy perspective, this points to a need to reassess the design and delivery of early-life interventions, rather than assuming that coverage equates to effectiveness. In contrast, older men experience sustained high suicide mortality in a context of markedly reduced institutional contact. Interpreted alongside Plots 1 and 2, which show that male distress is often under-represented in prevalence-based indicators, this late-life pattern highlights a detection gap in which risk persists beyond the reach of routine screening pathways. Addressing this gap likely requires extending proactive detection into primary care and community settings, where older men are more likely to interact with the healthcare system. Female trends provide an important point of contrast. While suicide mortality among women also increases with age, the rise is more modest and closely tracks global patterns, indicating that the late-life divergence observed among men is not simply an artefact of ageing. Rather, it highlights gender-specific differences in detection, engagement, and intervention across the life course.

A key limitation of this plot is its focus on suicide mortality rather than attempts, ideation, or subclinical distress. As such, it captures only the most severe outcome and cannot identify earlier opportunities for intervention. Nevertheless, mortality remains a critical indicator of where prevention systems are failing most visibly and where targeted reforms may yield meaningful reductions in harm.

Conclusion

Together, these plots show how mental health prevalence, reported burden, and suicide mortality diverge across genders and life stages. While women carry a higher diagnosed burden of affective disorders, men experience disproportionately high suicide mortality that is poorly predicted by prevalence data alone. By moving from global patterns to a local, age-specific lens, this analysis identifies two distinct prevention gaps: limitations in the effectiveness of early-life interventions for young men, and failures of detection among older men who fall outside institutional screening pathways. Rather than replacing existing strategies, these findings point to the need for age- and gender-sensitive prevention approaches that address both visibility and engagement, aligning detection and intervention more closely with observed risk.

Sources

1. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2023 (GBD 2023) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2024. Available from https://vizhub.healthdata.org/gbd-results/.

2. World Health Organization (2024) – with major processing by Our World in Data. “Male-to-female ratio of suicide rate” [dataset]. World Health Organization, “Global Health Estimates” [original data]. Retrieved February 4, 2026 from https://archive.ourworldindata.org/20250909-093708/grapher/male-female-ratio-suicides-rates.html (archived on September 9, 2025).