

Assessing Economic Burden of Alcohol Use in India Compared to Alcohol Sales Revenue

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- I serve on the State Mental Health Policy Drafting Committee for Maharashtra, India, Board of ASAR and Advisory Board of Nivarana. I am currently the Chair of G4 Alliance SOTA Care in South Asia Working Group.
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- The findings presented here are now available as a [Preprint](#) on MedrXiv.



Background

- Over 99 million disability-adjusted life-years (DALYs) or 4% of the global disease burden can be attributed to alcohol use (GBD 2016 Alcohol and Drug Use Collaborators, 2018).
- The disease burden has an associated economic burden. Cost of alcohol use can be as high as 2.6% of a country's gross domestic product (GDP) (Manthey et al., 2021).
- While excise taxes on alcohol sales are an effective measure to reduce consumption and heavy drinking, the association between such health taxes and the expected health benefits is far more complex.
- Most importantly, governments have often overlooked the public health costs of alcohol use and focused solely on revenue generation.



Indian Scenario and Gaps

- The popular Indian discourse has been that short-term economic gains from revenue generation take priority over long-term health concerns (Zadey, 2020).
- Data from 2013-14 using costing data on healthcare, crime and law enforcement, road traffic injuries, and productivity losses showed that economic burden for India could be ~2.26% of the Indian GDP annually (World Health Organization - Country Office for India & MSG Strategic Consulting).
- A modeling study demonstrated that the accumulating economic burden due to alcohol use including the direct and indirect costs in the 2011 to 2050 period could be as high as 121 trillion INR (Jyani et al., 2019). Further, it also noted a projected annual loss of 1.45% of the GDP to country.
- **No subnational, recent, comprehensive annual estimates.**



Study Aims

1st Aim – To assess the economic burden of alcohol use at national and subnational levels for 2019

2nd Aim – To assess if this burden exceeded the revenue generation from excise taxes on alcohol sales in the financial year 2019.



Methods

Study Design – Retrospective analysis of cross-sectional data

Scope – India and 36 states/union territories for 2019

Data sources –

| Data Source | Variables |
|--|--|
| Global Burden of Disease (GBD) Study 2019 | Disability-adjusted life-years (DALYs) for both sexes and all ages for all causes with alcohol use as the underlying risk factor |
| The Lancet Commission on Investing in Health | Values of one life-year (VLYs) noted as 2.8 and 1.2 times the GDP per capita at 3% and 7% discount rates for South Asia |
| Reserve Bank of India (RBI) | National and state GDP per capita values in Indian national rupees (INR) Excise tax revenues (INR) for alcohol sales in top ten revenue generating states and India for financial year 2019 |



Methods

Analysis for Aim 1

Value of Life-Year (VLY) or Full Income Approach:

- VLY accounts for the gains in GDP as well as those in life expectancy due to investments in healthcare interventions (Jamison et al., 2013)
- Extends the human capital approach (that ties population health to a country's GDP) to include those beyond the working or economically productive populations.

$$VLY = DALY * GDP \text{ per cap} * i$$

Where, $i = 1$ for 0% discount rate

= 2.8 for 3% discount rate

= 1.2 for 7% discount rate



Methods

Analysis for Aim 2

Net loss/benefit

$$\begin{aligned} &= \text{Revenue from alcohol excise tax} \\ &- \text{Economic burden of alcohol use} \end{aligned}$$

Primary analysis using $i = 3\%$.

Sensitivity analyses based on different i values.

Uncertainty analysis based on 95% Uncertainty Intervals for DALY values

MINTING MONEY

| State | Excise revenue (₹ cr) | Share in revenue (%) |
|-------------------|-----------------------|----------------------|
| Uttar Pradesh | 31,517.4 | 21.8 |
| Karnataka | 20,950.0 | 20.6 |
| Maharashtra | 17,477.4 | 8.3 |
| Madhya Pradesh | 13,000.0 | 19.9 |
| West Bengal | 11,873.7 | 17.7 |
| Telangana | 10,901.0 | 15.7 |
| Rajasthan | 10,500.0 | 14.2 |
| Andhra Pradesh | 8,518.0 | 11.3 |
| Tamil Nadu | 7,262.3 | 5.8 |
| Haryana | 7,000.0 | 13.7 |
| All states | 175,501.4 | 12.5 |

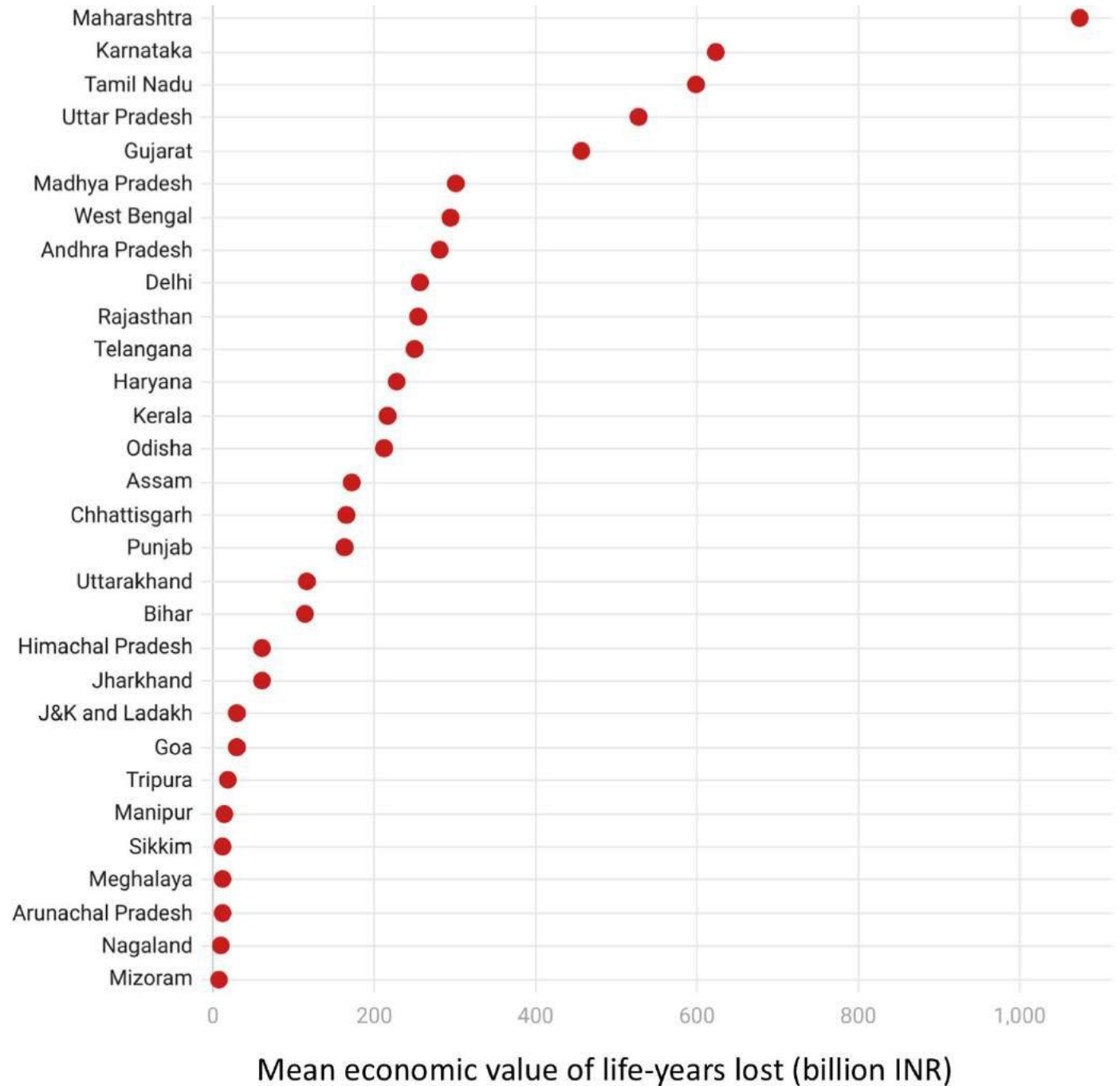
Source: Reserve Bank of India



Results - Burden

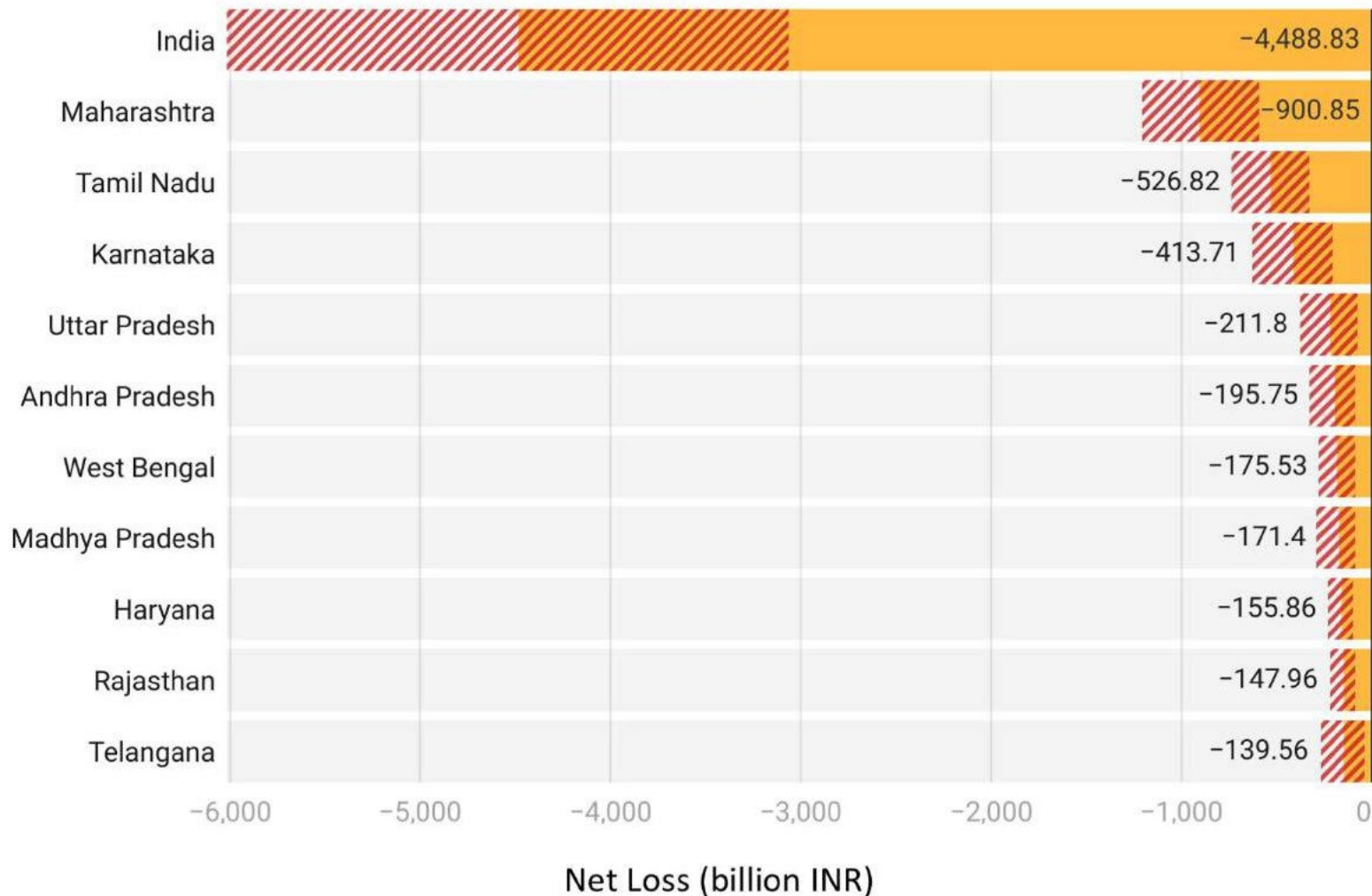
Our primary analysis –
Economic burden of alcohol use in India
in 2019 was **6.24 (95%UI: 4.81, 7.77)**
trillion INR or **US\$ 88.64 (68.32, 110.37)**
billion.

Across states,
Mizoram - 7.31 (4.68, 10.40) billion INR
Maharashtra - 1.08 (0.76, 1.39) trillion
INR



Results – Net Benefits/Losses

Lower 95% UI limit - Upper 95% UI limit



In 2019, India collected 1.76 trillion INR in revenue from alcohol excise taxes. Hence, the net loss was of **4.49 (3.06, 6.02) trillion INR** or **US\$ 63.78 (43.47, 85.51) billion**.

All ten states with the topmost revenues from the alcohol excise taxes depicted **net losses** in the primary analysis.

Maharashtra – Loss of 0.90 (0.60, 1.21) trillion INR

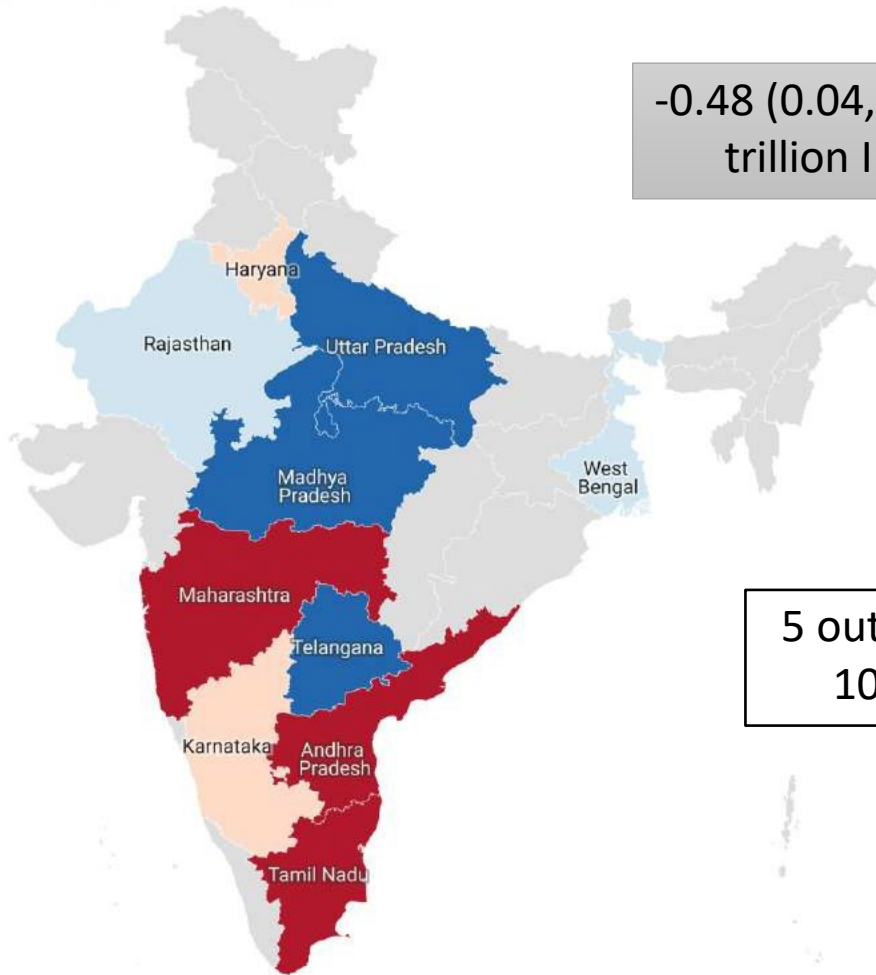
Telangana – Loss of 0.14 (0.04, 0.27) trillion INR



Results – Sensitivity Estimates for Net Benefits/Losses

Net loss/benefit at 0% discount rate for VLY calculations

Value in INR
 < -15B -15B-1B 1B-19B ≥ 19B

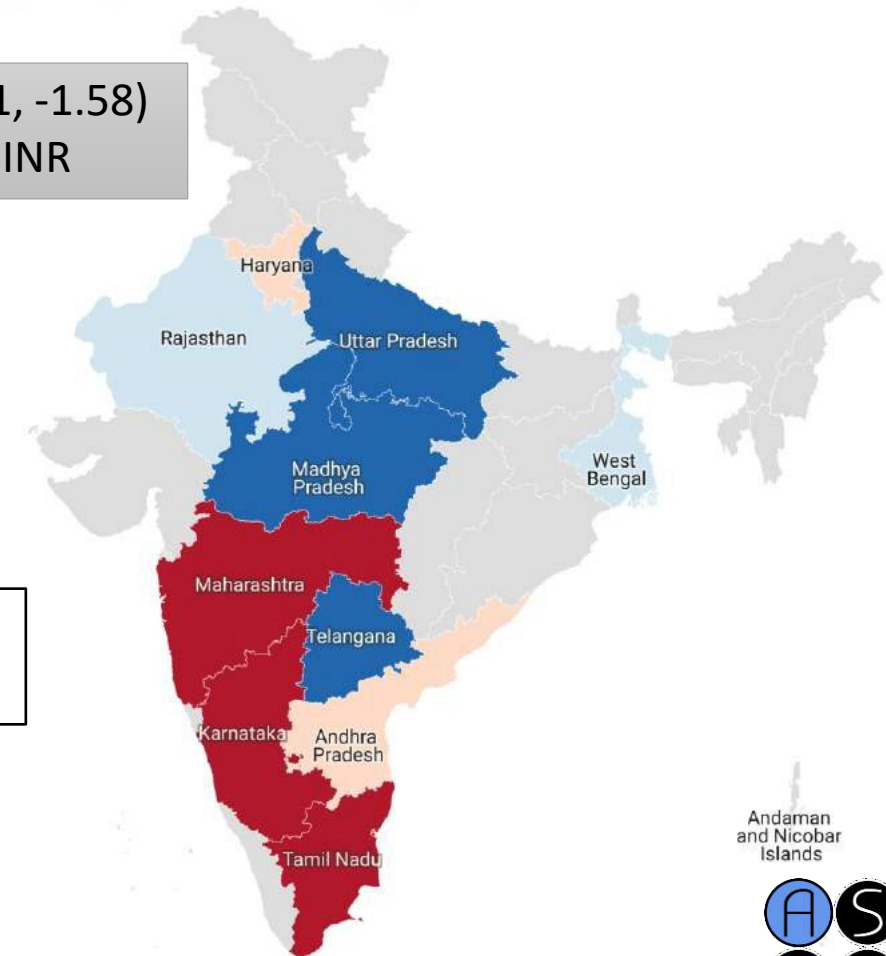


-0.48 (0.04, -1.02)
trillion INR

National
Net Value

Net loss/benefit at 7% discount rate for VLY calculations

Value in INR
 < -52B -52B--17B -17B--231M ≥ -231M



-0.92 (-0.31, -1.58)
trillion INR

No. of
states with
net loss

5 out of
10

7 out of
10

Andaman
and Nicobar
Islands



Interpretation

- We investigated annual economic burden of alcohol use in India and its 36 states/union territories for 2019.
- The burden surpasses the revenue generated by excise taxes on alcohol resulting in net losses for the country and its top ten revenue-earning states.
- While modeling studies have depicted long-term losses, it is often argued that the government has the incentive of revenue generation in the short run. This analysis shows annual losses, countering that popular argument.
- Further, we provide subnational or state-level estimates of economic burden and net losses that were missing previously.



Limitations

- This was a cross-sectional analysis involving only annual estimates without any projections for the future.
- Analysis was macroeconomic in design and did not consider different components of the economic burden such as healthcare costs, indirect costs, productivity losses, etc.
- We did not provide disaggregated estimates by sexes, age groups, rural/urban residence, etc.
- We could not include smaller states and union territories in the economic burden analysis due to the lack of disease burden data on them.
- For net benefits/losses analysis, we focused only on the national value and top ten revenue-earning states due to easy data availability, excluding other states.



Policy Implications

The findings should encourage national and state governments –

- To raise the excise taxes to a level that leads to some health gains in terms of reducing the incidence of alcohol consumption and heavy drinking.

We do not intend to imply that the taxes should cover all losses. Hence, it is noteworthy, that our estimates for net losses should be treated as 'upper bound' estimates.

- Avoid using revenue generation as a way to discount harms due to alcohol use.
- Policymaking needs to reorient toward the notion that the short-term (annual) economic burden of alcohol use is immense.
- While alcohol sales taxes are widely supported, multiple design and implementation issues can prevent their desired impact (Wright et al., 2017)



Thank you!

