

Social-Sector Expenditure and Human-Development Outcomes Across Indian States: Evidence from a Mixed-Methods Study

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Abstract: *The study investigates the relationship between social-sector expenditure and specific human development outcomes across India's states. It employs absolute, GSDP-relative, and per-capita measures of spending and focuses on secondary school dropout and infant mortality. The study uses an explanatory sequential mixed-methods approach. The quantitative part uses a fixed-effects, time-series, cross-sectional analysis of state-level data for 28 states from 2021–22 to 2025–26, with outcome panels constrained by data availability. Spending observations extend from 2021–22 to 2025–26, whereas outcome observations are shorter. A survey of 25 purposively selected experts provides supplementary evidence on institutional and implementation factors. Average social-sector spending grew from 59,075 crore (2021–22) to 100,642 crore (2025–26). Of the six key fixed-effects spending coefficients, none were statistically significant. Education coefficients were all negative, and health coefficients were all positive. However, neither pattern was statistically significant; including 2024–25 RE in the education robustness models did not yield statistically significant coefficients. Experts assigned the highest descriptive priority to institutional capacity, implementation efficiency and fund utilisation; however, the differences in the six factors' rankings were not statistically significant (Friedman (5) = 9.389, $p = .095$). This does not mean social-sector spending has no impact. It only means that spending volume alone cannot account for the outcome variables included in this set of models. Policy evaluation should link budget allocation to implementation, service delivery, and outcome metrics.*

Keywords: Social-sector expenditure; human development; Indian states; fixed-effects model; infant mortality; school dropout; institutional capacity

1. Introduction

Public spending on education, health, nutrition, sanitation, and social welfare is a key lever that governments can use to promote human development. But budget size alone does not tell us whether funds translate into available services and better outcomes. This matters in India, where state finances, population, and administrative systems vary.

For this reason, the human-development approach offers an alternative lens for studying this problem, independent of income growth alone. As Sen (1999) suggests, development can be viewed as the growth of people's freedom and abilities. The Human Development Index embodies this view through measures of education, health, and income (Anand & Sen, 1994; United Nations Development Programme [UNDP], 1990). Public spending measures are significant because they fund the services that support human capabilities. However, they also depend on resource use processes.

Most studies have found associations between public expenditures and social outcomes, and have reported variation in spending efficiency and the role of governance. Across the world, evidence suggests that the relationship between spending and outcomes depends on the institutional environment and the quality of public services (Filmer & Pritchett, 1999; Gupta et al., 2002; Rajkumar & Swaroop, 2008). Indian data also suggest variation in spending efficiency and human-development outcomes at the state level (Das et al., 2021; Mohanty & Bhanumurthy, 2021). While not conclusive, these results point to the need to

include spending volume alongside fiscal-institutional context.

This article examines the association between social-sector spending and two outcomes in Indian states: secondary-school dropout and infant-mortality rate (IMR). It considers three measures of social-sector spending: total social-sector spending, social-sector spending as a proportion of GSDP, and per-capita spending. It also draws on a purposefully selected survey of 25 experts to explore implementation-related explanations. The article contributes in three ways. First, it tests the extent to which the three spending measures remain statistically linked to each outcome when economic and fiscal controls are included. Second, it distinguishes spending scale from spending intensity and per-capita spending. Third, it treats expert opinion as useful supplementary evidence on how social-sector spending should affect each outcome, in contrast with state-level data.

2. Literature and Conceptual Framework

The capability approach shifts the focus of development from income to people's well-being (Sen, 1999). Public expenditure sustains these capabilities by funding education, health, nutrition, and related services, which help meet households' needs, often unequally. Public services are central to meeting these needs. Anand and Ravallion (1993) argue that expenditure should be assessed by the outputs and impacts it helps produce rather than by its face value.

Still, the public-spending literature does not imply that expenditure always leads to better outcomes. Filmer and Pritchett (1999) questioned whether public health spending

necessarily leads to better health outcomes, given other factors, and Gupta, Verhoeven, and Tiongson (2002) investigated the effectiveness of public spending in education and health in developing and transition economies. Rajkumar and Swaroop (2008) demonstrated that governance influences the expenditure–outcome relationship. These studies provide evidence for a conceptual framework in which expenditure, economic inputs, fiscal space, and institutional arrangements influence empirically observed outcomes.

Studies from India suggest that social-sector expenditure matters and that states vary in how efficiently they convert public resources into outcomes. Das, Mandal, and Patra (2021) established a positive association between social-sector expenditure and HDI in state-level and panel analyses, while Mohanty and Bhanumurthy (2018, 2021) focus on variations in expenditure efficiency and governance issues. These studies justify a deeper look into state-specific circumstances rather than assuming that a common expenditure point leads to a common outcome.

The conceptual pathway for this analysis, in the present study, is the relationship between social-sector spending and inputs and service capacity, which in turn flow to institutional capacity, fund utilisation, implementation quality, staffing infrastructure, and monitoring, which in turn flow to service delivery, which in turn contributes to education and health outcomes. The analysis tests the links, but not the mechanisms, between the expenditure measures and outcomes.

Empirical estimates of the effects of programme operating conditions indicate that higher effective social-sector expenditure tends to reduce secondary-school dropout and IMR (these are directional expectations only, not causal inferences). Our expert survey examines which implementation conditions experts consider important, although the small purposive sample does not allow population-level inference.

2.1 Expenditure as an input rather than an outcome

Public expenditure is a financial input into the production of public services. Its effectiveness depends on the institutional and operational processes that link budgets to services. An allocation might support staff recruitment, medicines, classrooms, school transport, or primary healthcare. Yet an allocation does not confirm that procurement occurred on time, posts were filled, facilities became operational, or intended users received the service. A sound evaluation therefore distinguishes financial inputs, operational outputs, service access, and final human-development outcomes.

This distinction matters for state-level comparisons. A state with high expenditure might face higher costs, greater need, challenging geography, or a larger population requiring public provision. Another state might achieve similar outcomes with lower expenditure because of different baseline conditions or service-delivery arrangements. Expenditure comparisons should therefore be interpreted alongside the economic and fiscal context and should not be treated as direct rankings of government effectiveness.

2.2 Why use multiple expenditure measures?

Total expenditure, expenditure as a share of GSDP, and per-capita expenditure capture different dimensions of public commitment. Total expenditure reflects the overall scale of resources recorded for the social sector. It is influenced by population size, the range of public programmes, and the state economy. Expenditure/GSDP relates expenditure to the state's economic output and measures relative fiscal effort. Per-capita expenditure divides expenditure by population and provides an average measure of resource allocation.

2.3 The study's conceptual contribution

The conceptual framework treats the expenditure-to-outcome relationship as a sequence rather than an automatic link. Social-sector expenditure funds inputs. These inputs must be procured, staffed, deployed, and maintained. These processes affect the quantity and quality of services available to households. In turn, service delivery contributes to education and health outcomes alongside household circumstances, demographic conditions, and other public policies. The expert survey focuses on selected implementation dimensions within this sequence. Institutional capacity concerns the ability to plan, coordinate, and administer programmes. Implementation efficiency concerns converting available resources into planned activities and outputs. Fund utilisation concerns whether approved resources are spent for intended purposes and within appropriate time frames. Human-resource availability and infrastructure availability concern whether services have the personnel and facilities required to operate. Monitoring and accountability concern identifying implementation gaps and follow-up action.

3. Research Methodology

The research is designed as an explanatory sequential mixed-methods study. The primary quantitative component adds state-level expenditure and outcome data. A formal survey of 25 purposively selected participants offers additional insights into implementation conditions.

The Indian state is the unit of analysis. The expenditure data cover 28 states from 2021–22 through 2025–26. Figures for 2025–26 are Budget Estimates and are used only for descriptive analysis of expenditure. The main education regression relies on actual expenditure data from 2022–23 and 2023–24. The 2024–25 Revised Estimate is examined separately in a robustness analysis. The health outcome panel contains available observations within the same state-level structure.

The social-sector expenditure data are based on the source trail detailed in the Odisha Economic Survey 2025–26, with references to Statistics of India and the Reserve Bank of India (RBI). RBI state-level statistics are used for GSDP and fiscal variables. Secondary-school dropout rates come from UDISE+ and education statistics. IMR data come from the Sample Registration System.

The dependent variables are the percentage of the population dropping out of secondary school and IMR. The main

explanatory variables are (i) the log of total social-sector expenditure, (ii) social-sector expenditure divided by GSDP, and (iii) the log of per-capita social-sector expenditure, estimated separately. The models also include per-capita GSDP, own-tax revenue as a percentage of GSDP, and fiscal deficit as a percentage of GSDP. The models include state and year effects, with standard errors clustered at the state level.

Fixed-effects models account for unmeasured state characteristics that are constant over the period of analysis. The study considered several model diagnostics, including tests supporting state effects and variance inflation factors. The education robustness analysis accounts for 2024–25.

The purposively selected Expert survey includes 25 valid responses from people expected to have an informed view on public finance governance, education, health systems, and public policy. The respondents ranked six implementation-related constructs: institutional capacity, fund utilisation, human-resource availability, infrastructure availability, implementation efficiency, and monitoring and accountability. Responses are presented as descriptive statistics. The survey uses a Friedman test to assess whether the six factor rankings differ statistically.

3.1 Alignment between research questions and methods

The descriptive analysis addresses the first research question by examining changes in total expenditure, expenditure/GSDP, and per-capita expenditure. The fixed-effects models address the second question by estimating associations between each expenditure measure and each selected outcome, conditional on the included controls and effects. The expert survey addresses the third question by summarising how respondents rank implementation-related factors. These methods serve different purposes and should not be conflated. The panel models provide the principal statistical estimates, while the expert survey provides exploratory context.

The mixed-methods design is explanatory because expert evidence helps interpret the quantitative findings. However, the survey is not a formal causal follow-up experiment, and this article does not code the documentary component into a quantitative index. Consequently, the study uses triangulation as an interpretive strategy, not as a claim that three independent datasets statistically confirm the same causal mechanism.

3.2 Interpretation of the fixed-effects model

State fixed effects capture unobserved state characteristics that remain constant over the observed period. This approach is relevant when persistent differences between states might otherwise be associated with both expenditure and outcomes. Year effects capture influences common to all states in a given year. Controls for per-capita GSDP, own-tax revenue/GSDP, and fiscal deficit/GSDP represent selected dimensions of economic capacity and fiscal conditions.

Fixed effects do not automatically eliminate all sources of bias. Time-varying omitted variables, measurement error, reverse relationships between spending and outcomes, and limited time coverage remain concerns. For example, a state might increase spending in response to worsening health or education indicators. Such a response complicates interpreting the expenditure coefficient. The models are therefore interpreted as associational rather than causal.

3.3 Data quality and comparability

The data combine official sources with different reporting calendars and measurement conventions. Expenditure estimates for 2025–26 are Budget Estimates, and the 2024–25 figures are Revised Estimates. These categories should remain clearly distinguished from final actual expenditure. The education series also warrants caution because the UDISE+ (Unified District Information System for Education Plus) reporting framework changed in 2022–23. The SRS health estimates for some smaller states use multi-year estimation periods. These factors limit the assumption that each annual observation is perfectly comparable with every other observation.

4. Results

4.1 Expenditure patterns and outcome trends

Mean social-sector expenditure rose from 59,075.04 crore in 2021–22 to 100,642.28 crore in 2025–26. The median was 44,749.50 crore in 2021–22, rising to 78,888.00 crore in 2025–26. The gap between the mean and median, together with the reported high variation across states, indicates that expenditure scales differ substantially across states. Mean social-sector expenditure as a percentage of GSDP stood at nearly 10 per cent through 2023–24 and at 10.76 per cent in 2024–25 (for states with available observations). The mean per capita expenditure increased from 24,078.52 in 2021–22 to 35,811.17 in 2024–25.

The average secondary-school dropout rate declined from 16.49 per cent (2022–23) to 11.15 per cent (2023–24), then increased to 11.72 per cent (2024–25). Mean IMR declined from 20.64 (2021–22) to 19.82 (2023–24, based on available data). These trends reflect observed patterns and cannot be attributed solely to expenditure. From 2022–23, UDISE+ changed the approach to collecting individual student-wise data; some SRS estimates for smaller states are based on data from multiple years.

4.2 Fixed-effects regression results

Table 1 reports the six principal fixed-effects models. All specifications control for per-capita GSDP, own-tax revenue/GSDP, and fiscal deficit/GSDP. The education models use 55 observations, and the health models use 83 observations. State-clustered standard errors are applied.

Table 1: Principal fixed-effects regression results

Model	Outcome	Expenditure measure	N	Coefficient	p-value	Within R ²
E1	Secondary-school dropout	ln(Total social-sector expenditure)	55	-8.879	.394	.893
E2	Secondary-school dropout	Social-sector expenditure/GSDP (%)	55	-0.773	.363	.893
E3	Secondary-school dropout	ln(Per-capita social-sector expenditure)	55	-8.295	.423	.893
H1	Infant mortality rate	ln(Total social-sector expenditure)	83	1.090	.818	.984
H2	Infant mortality rate	Social-sector expenditure/GSDP (%)	83	0.052	.909	.984
H3	Infant mortality rate	ln(Per-capita social-sector expenditure)	83	0.989	.835	.984

None of the six expenditure coefficients is statistically significant at the 5% level. All three education coefficients are negative, consistent with the intuitive expectation of a negative association between expenditure and dropout, but their magnitudes are too small to be statistically significant. All three health coefficients are positive and statistically insignificant. These results do not imply that social-sector expenditure has no impact, but they do imply that the specified models cannot establish a statistically significant direct association between measures of expenditure and outcomes after controlling for state effects and the particular controls included.

State-effects diagnostics are consistent with the need to account for the state-specific mix. The reported fixed-effects-versus-pooled tests are strongly significant across all six specifications, with F values ranging from 4.689 to 50.052 and $p < .001$. Maximum variance inflation factors across all models range from 1.56 to 3.75, well below conventional thresholds for critical multicollinearity concerns.

4.2 Robustness analysis

The education robustness models incorporate 2024–25 Revised Estimate values for log total expenditure (-13.597, $p = .130$), expenditure/GSDP (-1.140, $p = .083$), and log per-capita expenditure (-12.598, $p = .157$). In each case, the expenditure coefficients are not statistically significant at the 5% level. The expenditure/GSDP coefficient is close to the conventional significance threshold but does not meet it.

4.3 Expert survey findings

The 25 expert responses provide exploratory context for the econometrics. Of the six implementation factors, fund utilisation (3.20), implementation efficiency (3.00), and institutional capacity (2.96) received the highest descriptive priority. The fourth was human resource availability (3.72), the fifth was infrastructure availability (4.00), and the sixth was monitoring and accountability (4.12). The smaller the mean rank, the greater the descriptive priority.

This did not reach statistical significance ($\chi^2(5) = 9.389$, $p = .095$, Kendall's $W = .075$), so the ordering is descriptive and does not show statistically significant relationships among the six factors. With a small sample, caution is also needed in interpreting the results, mainly because the preliminary alpha was only .468 for the implementation-efficiency construct, which needs revision and further pilot testing before making scale-level assertions. However, the survey supports an exploratory interpretation that respondents believe institutional and implementation factors are worth considering, although, statistically, such factors do not mediate the expenditure-outcome association.

4.4 Reading the expenditure trends cautiously

The difference between the mean and the median expenditure also matters. The mean is influenced by states with relatively high expenditure totals, whereas the median identifies the middle observation in the distribution. The gap between them indicates that a single average does not describe every state's fiscal position. This is one reason to supplement total expenditure with expenditure/GSDP and per-capita measures.

4.5 Interpreting the regression coefficients

The expenditure coefficients must be interpreted alongside their statistical uncertainty. The negative education coefficients indicate the estimated direction of association in the fitted models. However, the corresponding p-values of .394, .363, and .423 are well above the 5 per cent threshold. The study therefore does not reject the null hypothesis of no association in these specifications.

The health coefficients are positive, but the p-values of .818, .909, and .835 are also well above .05. These estimates do not establish that higher expenditure increases infant mortality. The coefficient signs should not be interpreted as causal effects or as a policy ranking. A non-significant estimate is compatible with a range of underlying relationships, particularly when observations are limited, and measurement uncertainty is present.

The reported within R-squared values are high, but a high within R-squared does not establish that the main expenditure coefficient is statistically significant or that the model has identified a causal effect. The statistic describes the model's fit to within-state variation under the specified estimator. Report it alongside the coefficient, standard error, p-value, sample size, and model specification.

4.6 Implications of the Robustness Analysis

The robustness specifications include the 2024–25 Revised Estimate and yield negative education coefficients across all three expenditure measures. The expenditure/GSDP coefficient has $p = .083$, which is closer to the 5 per cent threshold than the corresponding principal estimate but remains statistically insignificant at that threshold. It is appropriate to describe this as a negative estimate with suggestive but insufficient statistical evidence, provided the wording does not imply significance.

4.7 Interpreting the Expert Ranking

The descriptive ranking suggests that the surveyed experts ranked institutional capacity, implementation efficiency, and fund utilisation ahead of human resource availability,

infrastructure availability, and monitoring and accountability. However, the Friedman test does not show statistically significant differences among the six rankings at the 5 per cent level. Kendall's W of .075 indicates low concordance in the rankings.

The low preliminary alpha for implementation efficiency also limits interpretation of that construct as a scale. A coefficient of .468 indicates that the items do not show strong internal consistency in this small sample. The appropriate next step is to examine item wording, item-total relationships, and the scale's conceptual coherence, followed by a larger pilot or validation sample.

5. Discussion

Overall, increased spending and improvements in selected outcomes do not yield statistically significant direct expenditure coefficients in the primary fixed-effects models. This finding diverges from a straightforward calculation that higher spending should produce lower dropout and IMR over the same short horizon. It aligns with other studies finding that the effect of public spending depends on state characteristics such as governance and service delivery (Gupta et al., 2002; Rajkumar & Swaroop, 2008).

The study highlights three findings. First, total expenditure, expenditure per unit of GSDP (expenditure intensity), and expenditure per capita are all measures of the extent of public contribution. Total expenditure indicates the relative size of a state's fiscal effort and is affected by state size. Similarly, expenditure relative to GSDP indicates the relative effort, while expenditure per capita serves as an indirect indicator of the resources available per individual. Neither total expenditure nor per-capita expenditure nor expenditure relative to GSDP directly captures the quality of facilities, the presence of staff, the timely release of funds, or the coverage of programmes. The lack of significant coefficients bears on this.

Second, outcomes may take longer to respond to expenditure than the panels allow. School infrastructure, teacher employment, primary healthcare, maternal healthcare, and nutrition each have their own delivery processes and temporal dynamics. The short education panel and the limited number of health measures preclude examining lagged relationships.

Third, the prominent state effects suggest that enduring distinctions across states influence the outcomes in question. Some of these are assumed to reflect institutional capacity (and perhaps client need), population composition, initial education and health conditions, and each state's funding and service organisation. The models in use do not isolate the influence of each mechanism. In this case, the descriptive ordering established by the expert survey will not bear on the ranking, as the Friedman test is not statistically significant.

The education and health results also diverge. Education coefficients are negative, and health coefficients are positive; both are insignificant. This might reflect differences in how results are measured, the time period over

which they are measured, the relative needs of a population, or how the services are supplied, but the evidence does not allow us to determine which applies. This finding underscores the importance of analysing education and health expenditure separately rather than assuming that an aggregate expenditure measure operates in the same way in both sectors.

So, the paper's contribution is both methodological and (more) interpretive. It shows the need to test alternative expenditure measures, account for the state-level mix, and not confuse statistical non-significance with evidence of no effect. It identifies implementation conditions as a candidate mediator that requires future testing.

5.1 Implications for Theory

The findings support distinguishing public expenditure as a resource commitment from human development as an outcome. The capability approach emphasises the substantive opportunities people have to achieve valued ways of living (Sen, 1999). Public expenditure supports those opportunities when it finances accessible, adequate, and effective services. The current results do not contradict this theoretical role. Instead, they indicate that the three aggregate expenditure measures, on their own, do not statistically explain the two selected outcomes in the short panels used here.

The results also align with a public-finance perspective in which spending effectiveness depends on the composition and implementation of expenditure. The models use aggregate social-sector measures and do not distinguish the amount directed to each programme, the share spent on recurrent versus capital items, or the quality of delivery. An aggregate measure can therefore be weakly associated with a particular outcome even when specific types of spending are important.

5.2 Implications for Empirical Research

The results illustrate why statistical non-significance should be reported precisely. It is not evidence that the true relationship is exactly zero, nor does it prove that expenditure is ineffective. It means that the estimated coefficient is not statistically distinguishable from zero at the chosen threshold under the specified model. This distinction is important for policy research because strong claims based solely on coefficient signs risk overstating the evidence.

The article also illustrates the value of reporting alternative expenditure measures. The three measures capture different dimensions of spending, and none yields a statistically significant principal coefficient. This consistent lack of statistical significance supports a cautious overall interpretation. However, it does not establish that all possible expenditure measures would yield the same result.

5.3 Implications for implementation research

The expert survey identifies institutional capacity, implementation efficiency, and fund utilisation as issues respondents considered relatively important. This aligns

with the idea that financial resources must pass through administrative and operational processes before they affect service outcomes. However, the survey does not measure these factors across all states, and its small purposive sample does not support generalisation to the wider expert population. The findings should therefore guide the development of testable measures rather than serve as proof of a mechanism.

A future state-level study might assemble comparable indicators of budget release delays, expenditure utilisation, procurement completion, vacancies, facility functionality, service availability, and audit follow-up. Such indicators could be linked to state-year outcome data, subject to appropriate measurement and coverage. A larger expert survey could help refine the indicators, while documentary analysis could validate the operational definitions. Test mediation or moderation only when the variables and model design support those analyses.

6. Policy Implications

First, state governments should set expenditure and output indicators against budget allocations for fund releases, including expenditure, procurement, staffing, hospital and service readiness, utilisation of hospitals and services, and outcomes. Tracking these indicators would distinguish financial inputs from outputs.

Second, comparisons of expenditure should not be restricted to total expenditure. Per-capita expenditure and expenditure as a percentage of GSDP reflect different aspects of effort versus resource availability. In addition, comparisons should account for actual expenditure vis-à-vis Revised Estimates and Budget Estimates.

Third, education and health assessments should incorporate sector-specific time lags and measurement issues. Evaluators and policy departments should not automatically ascribe year-to-year changes in outcomes to expenditure levels and changes unless other factors are ruled out and data comparability is analysed.

Fourth, expenditure planning must address institutional and implementation capacity. Departments should review slow releases, unused balances, procurement delays, vacant positions, and whether infrastructure is operational. Audit recommendations should result in documented and tracked actions.

Finally, policy evaluations should test whether the implementation measures in our index account for state-level differences in outcomes. We have adopted this as a research goal but have not demonstrated empirically that this is the case.

6.1 A linked expenditure-performance framework

A practical performance framework should track the sequence from budget allocation to release, expenditure, procurement, operational readiness, service utilisation, and final outcomes. Each stage answers a different question. Allocation indicates policy intent; release indicates fund

availability; expenditure indicates financial execution; procurement and staffing indicate operational inputs; service utilisation indicates whether intended users access services; and outcomes indicate changes in education or health conditions. Reporting these stages together would provide a more informative basis for policy review than expenditure totals alone.

6.2 Improve the use of administrative and audit evidence

Departments should document implementation bottlenecks in a format that supports corrective action. Examples include delayed fund releases, persistent unspent balances, procurement delays, vacancies, incomplete infrastructure, and low utilisation of facilities. Audit findings should identify responsible units, action deadlines, and follow-up status. The present study does not quantify CAG observations, so it does not rank states or departments by governance quality. A future index would require transparent definitions, a replicable coding protocol, independent coding, and reliability testing.

7. Limitations and Future Research

This study has limitations. The outcome panels are brief and mostly for educational purposes, so we should not overinterpret the results. The UDISE+ reporting structure changed in 2022–23, and some SRS estimates cover multiple years. Our 2025–26 expenditure figures come from Budget Estimates, while the 2024–25 numbers come from Revised Estimates, so they should not be interpreted as realised expenditure. Our expert survey purposively samples 25 respondents, so it is not representative of all experts in India, and the implementation-efficiency construct shows poor preliminary internal consistency. We have not coded the CAG reports into a validated numerical governance index. Finally, fixed-effects estimates show conditional associations, not effects.

As other outcomes of comparable quality are provided, future studies should expand the state-year panel and include lagged expenditure variables and other outcome indicators. District-level analysis will mitigate some aggregation problems. With a larger expert sample and revised survey questions, perception indicators will be more stable. Content analysis of CAG reports should employ an open coding scheme, coder independence, and intercoder reliability assessments before creating a governance index. Models should also test for variation by state-level development and fiscal capacity.

7.1 Limitations of Inference

The short time dimension and uneven availability of outcome data limit the statistical power and scope of the analysis. Using state-clustered standard errors is appropriate to account for within-state dependence in the reported approach, but the limited number of state clusters still warrants caution. The models do not directly address all time-varying omitted variables or reverse relationships between spending and outcomes. For these reasons, the estimates should be presented as conditional associations.

The expenditure series also mixes actual observations with Revised Estimates and Budget Estimates in the descriptive analysis. The article distinguishes these categories, but the presence of estimated values means that the full expenditure trajectory should not be described as a series of final realised outturns. Data comparability issues in UDISE+ and SRS further reduce the reliability of year-to-year comparisons.

7.2 Future Research Priorities

Future research should extend the panel to a longer period and examine whether expenditure has delayed associations with dropout and IMR. It should use sector-specific expenditure categories with comparable definitions and test alternative outcome indicators where official data are reliable. District-level data could help reveal variation hidden by state averages, although such analysis would require careful harmonisation of fiscal and outcome measures.

Future studies should also develop stronger measures of institutional and implementation capacity. A larger expert survey would yield more stable descriptive and reliability estimates. Researchers could combine a validated survey instrument with official administrative indicators and systematically coded audit evidence. Only after these measures are sufficiently reliable should researchers test whether governance quality mediates or moderates the relationship between expenditure and human-development outcomes.

8. Conclusion

Social-sector spending in Indian states rose markedly during the study period. Still, the main fixed-effects models did not find statistically significant direct links between total spending, spending as a share of GSDP, or per-capita spending and secondary-school dropout rates or infant mortality. The education-related coefficients were negative, while the health-related coefficients were positive, but none of the six estimates was statistically significant. The robustness analysis for education reached the same overall result.

The results should not be interpreted as suggesting that public expenditure does not matter. They show that expenditure volume does not account for the outcomes we have chosen within the scope of our data and model specifications. Significant state effects, the exploratory expert survey, and concepts in the policy implementation literature suggest that the institutional environment shapes how expenditures are converted into services. Policy implications are that expenditures should be understood as part of a chain of connection between allocation, utilisation, delivery, and outcome.

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