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Utilisation of Fifteenth Finance Commission's Health Grants: A Kerala Story

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Abstract

This paper evaluates the strengths, weaknesses, opportunities, and challenges involved in the management and utilisation of health grants in Kerala, a state renowned for its decentralised healthcare system, with the support of empirical evidence from all the urban and rural local governments in the state. It critically explores the factors that led to poor utilisation of health grants through the lens of politicisation, personalisation, corruption, post-office syndrome, capability traps, poor self-esteem, over emphasis on legalistic framework and rule-bound approaches, and relative absence of thick and thin accountability. While the 15th Union Finance Commission took inspiration from the Kerala model of decentralised healthcare to involve the rural and urban local governments in the health sector and extend additional resources to strengthen the primary health system at the grassroots level with the introduction of health grants, the shocking underutilisation of health grants in the model state is a disappointing one.

Keywords: Health Grants, Kerala, Fifteenth Finance Commission, Decentralisation, Politicisation, Post-Office Syndrome, Capability Traps

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1. Introduction

Health grants to local governments was introduced by the 15th Union Finance Commission (UFC) in the midst of the Covid 19 pandemic in India. The pandemic led to the collapse of India's public healthcare system, which is one of the most underfunded and understaffed in the world (Wallen, 2020).

Prior to the pandemic, India's public expenditure on healthcare was the lowest among the BRICS nations. For instance, between 2015-16 and 2016-17, India used to spend just 1.3% of its GDP on healthcare, while South Africa spent 8.8%, Brazil around 8.3%, Russia 7.1%, and China 6.6% (The Economic Times, January 29, 2017 and Fang, 2020)[1]. This prompted the 15th UFC to allocate health grants of Rs. 70,051 crores for five years (from 2021-22 to 2025-26) to strengthen the public healthcare system at the grassroots level (See Table 1). The health grants to local governments recommended by the 15th UFC lay emphasis on the trust-based approach to local governments and decentralisation of health services provision.[2]

The health grants released in FY21-22 amount to Rs. 13,192 crores, which includes Rs. 8,273 crores for rural and Rs. 4,919 crores for urban local governments. The same amount is earmarked for FY22-23. The recommendations made by the 15th UFC reflect a scientific and thoughtful approach, rooted in the ground reality that primary healthcare infrastructure at the grassroots level crumbled in the wake of Covid-19, with poor facilities and shortage of funds. The 15th UFC has recommended 'health grants' for five major areas as shown in Table 1.

One of the major reasons for recommending the health grants was the reality that many of the primary healthcare institutions are understaffed and underfunded and need to be financially empowered. The possibility of "mission creep" undoing the effectiveness of the grants to strengthen the primary health care sector was discussed in our 2022 article titled *Will Health Grants to Local Governments by the Fifteenth Finance Commission Eventually Become a Victim of Mission Creep Syndrome?*[3] This paper follows on the previous article to expose the ground realities and facts concerning the utilisation of the health grants.

The present paper evaluates the strengths, weaknesses, and challenges involved in the management and utilisation of health grants in Kerala, a state renowned for its legacy of decentralisation in planning and decentralized healthcare system, with the support of empirical evidence from all the urban and rural local governments in the state.

Table 1: Sector-wise Break-up of Health Grants by 15th UFC (Rs. in Crores)

Total Health Grants	2021-22	2022-23	2023-24	2024-25	2025-26	Total
1.Support for diagnostic infrastructure at primary healthcare facilities*	3478**	3478	3653	3835	4028	18472
- Sub Centres (SCs)	1457	1457	1530	1607	1687	7738
- Primary Health Centres (PHCs)	1627	1627	1708	1793	1884	8639
- Urban PHCs	394	394	415	435	457	2095
2. Block Level Public Health Units (BHUs)	994	994	1044	1096	1151	5279
3. Urban Health and Wellness Centers (HWCs)	4525	4525	4751	4989	5238	24028
4. Building-less SCs, PHCs, CHCs	1350	1350	1417	1488	1562	7167
5. Conversion of Rural PHCs into HWCs	2845	2845	2986	3136	3293	15105
Total Health Grants	**13192**	**13192**	**13851**	**14544**	**15272**	**70051**

*Under the component "support for diagnostic infrastructure to the primary healthcare facilities", there are three sub components: SCs, PHCs and Urban PHCs.

** Please note that the Rs. 3478 Crores is the sum total of (SCs -1457, PHCs -1627, Urban PHCs -394).

Source: Report of the 15th UFC.

The first part of the paper looks into the total health grants allocated to Kerala and discusses the distribution and utilisation of these grants to the rural and urban local governments including 87 Municipalities, six Corporations, 152 Block Panchayats (of which only 75 Block Panchayats have been assessed in this paper, as only these received their health grants so far) and 941 Gram Panchayats.

The second part of the paper offers a detailed discussion on the rate of utilisation of the health grants in the selected tiers of the local governments at the rural and urban regions, with special emphasis on the best- and worst-performing entities. It is followed by a discussion of the reasons behind the decentralisation paradox in Kerala, and the policy decisions to be drawn from the evidence-based research in the state, as well as how it can be used to track the governance of health grants across states in India. The policy recommendations discussed in the paper are evidence driven, which have the potential to shape the approach of the Sixteenth UFC towards local governments and state governments, and similarly in the approach of the governments towards finance commissions in general.

2. Methodology and Data Sources

The present paper exposes the bottlenecks that are preventing the effective utilisation of health grants among the local governments in Kerala, based on empirical data and findings from intensive field work which took place between September 2022 and August 2023. A 15-member research team did the intensive fieldwork and conducted interviews and focus group discussions (FGDs) with stakeholders across Corporations and Municipalities (urban local governments) and Gram Panchayats and Block Panchayats (rural local governments).

The research team covered all six Corporations in Kerala. Of the 87 Municipalities in Kerala, based on secondary data, the team further selected the five best-performing and five worst-performing ones in the utilisation of health grants for the intensive study. Similarly, of the 941 Gram Panchayats, the team collected secondary data on the utilisation of health grants, and from these five best-performing and five worst-performing Panchayats were selected. In the case of Block Panchayats, the health grants have so far been released to 75 of the 152 Block Panchayats. Again, five best-performing and five worst-performing Block Panchayats were selected.

The team visited all these selected 36 local governments (Six Corporations, 10 Municipalities, 10 Block Panchayats, and 10 Gram Panchayats) and conducted interviews and FGDs with the elected and selected functionaries, health workers, officials with the health institutions, health departments, and staff in other related departments. As part of the field study, the team also visited all the SCs and PHCs in the selected Gram Panchayats, CHCs in selected Block Panchayats, and HWCs in selected Municipalities and Corporations. The team also interacted with health workers and staff working in these rural and urban healthcare facilities while they were in the field, employing some elements of field observation methods.

After receiving constructive feedback and suggestions from anonymous reviewers on the first submitted version of this paper, we decided to adopt a more comprehensive framework to further investigate the reasons behind the poor performance of local governments in effectively utilizing the health grants. We conducted a second phase of field work, over three weeks, in the selected 36 local governments, where we organized focus group discussions (FGDs) with the staff, elected functionaries, and citizens of each local government, with the support of a well-prepared checklist, to identify the reasons that led to poor utilisation of health grants.

We identified common problems including (i) politicisation, (i) personalisation, (iii) corruption, (iv) post-office syndrome, (v) capability traps, (vi) poor self-esteem, (vii) greater emphasis on legalistic framework and rule-bound approaches, and (viii) relative absence of thick and thin accountability as part of our field visit and discussions with the staff, elected functionaries in the local governments and officials of health and PWD departments. These eight common identified problems (detailed discussion in Table 9) have resulted in specific problems (detailed discussion in Table 5, 6, 7 and 8) in the selected local governments in connection with implementation and utilisation of health grants.

2.1 Analytical Framework

This paper is conceived and developed with the support of a comprehensive literature review. The theoretical frameworks used in the paper are borrowed from some key papers, including **"***Is India a Flailing State? Detours on the Four Lane Highway to Modernisation"* by Pritchett (2009), "*The Post Office Paradox: A Case Study of the Block-Level Education Bureaucracy"* by Aiyar and Bhattacharya (2016)**, "***Capability Traps? The Mechanisms of Persistent Implementation Failure"* by Pritchett et al., (2010), "*India's Political Settlement and Development Path"* by Mehta and Walton (2012), "*Premature Load Bearing: Doing Too much Too Soon"* by Andrews et al. (2017), and "*Bureaucratic Norms and State Capacity: Implementing Primary Education in India's Himalayan Region"* by Mangla (2014), as well as the book *Everything You Ever Wanted to Know About Bureaucracy but Were Too Afraid to Ask* by Raghunandan (2019).

The paper attempts to explore the reasons for the underutilisation of health grants in Kerala through the lens of absence of administrative modernism (politicisation, personalisation and corruption), post-office syndrome and capability traps (isomorphic mimicry, premature load bearing), more emphasis on legalistic and rule-bound approaches while ignoring local felt needs, poor self-esteem (cognitive maps), bureaucratic misconceptions on local governments, and thick and thin accountability frameworks.

3. Health Grants to Local Governments in Kerala

Kerala has used decentralisation as a tool to revamp its public healthcare system and delivery. As a result, health grants were considered a new impetus, to further strengthen its robust healthcare infrastructure at the grassroots level. Gram Panchayats and healthcare institutions at the grassroots level have been the biggest beneficiaries of the decentralisation experiment undertaken in Kerala under the banner of the 1996 People's Plan Campaign (PPC).

As part of the PPC, around one-fourth of state plan outlay were transferred to local governments (Chathukulam and John, 2002, 2003; Jafar, 2014). It was accompanied by training local governments and granting them a certain amount of autonomy to formulate and implement expenditure plans, based on local needs and priorities. On the side lines of the PPC, the management of primary and secondary public health facilities in Kerala were transferred to local governments, with the objective of improving infrastructure and services offered. In a way, it helped local governments and health care facilities operating at the grassroots level to identify and respond to local health issues as quickly as possible.

As part of the move towards decentralisation, PHCs, SCs, and government dispensaries were transferred to Gram Panchayats, putting in place mechanisms for greater community involvement (Ramankutty and Vijayakumar, 2023). Block PHCs, CHCs, taluk hospitals, and government hospitals came under the purview of Block Panchayats. The District Panchayats were responsible for overseeing the management of state-sponsored and centrally-sponsored schemes (CSS) at the district level, including district hospitals. In urban areas, CHCs and taluk hospitals were transferred to

Municipalities and Corporations. While the state government maintains control over the total number of posts at sub-centres and PHCs, the Gram Panchayats were given authority to appoint temporary staff to fill any vacancies. An element of dual control can also be noticed here.

Staff working in local governments are treated as the staff of the state government, and the number of positions and transfers are determined at the state level. Elected functionaries (e.g. ward members) are entrusted with the Village Health Sanitation and Nutrition Committees (VHNCs). They work closely with National Health Mission (NHM), which consist of multipurpose frontline health workers like Accredited Social Health Activist (ASHA) and anganwadi workers. This structure has helped the government to engage more closely with the community, and made it easier to respond to local needs, catering to critical gaps like purchase of medicines and lab equipment and hiring of additional workforce, as well as to concentrate on disease prevention activities. All these factors have resulted in increased utilisation of PHCs and SCs at the grassroots level.

The staff structure in local governments (especially in urban local governments) have not been modernized yet. As Narayana (2022) in his paper titled *Size of Local Governments in a Rapidly Urbanising Kerala: Is it Sustainable?*[4] argues that

> the departments in Kerala have a high load of clerks, assistants, typists and drivers. The local governments have replicated this structure as there is hardly any difference between the functions carried out by the local governments and the departments as the bulk of spending of both is plan funds. The officers devolved from the line departments have not joined the local government structure. The significantly larger size of urban local governments in terms of employees for a population comparable to rural local governments in a rapidly urbanizing state raises sustainability questions. Since salaries have to be paid from own funds of the local governments which have not shown much growth, there is sign of a crisis brewing".

The very nomenclature of the staff posts and structure in the local governments remains rigid and outdated till today.

Kerala's total allocation for the five years under the health grants is Rs. 2,968 crores. Of this, Rs.559 crores each are for FY21-22 and FY22 -23, and the remaining amount for the next three years (Table 2 and 3). The evidence and first-hand observations emerging from the experience of local governments in Kerala regarding the utilisation and management of the health grants reveal that it is moving at a snail's pace. The performance of local governments in Kerala with regards to the utilisation of the health grants appears disappointing.

Table 2: State Wise Distribution of Health Grants (Rs. in Crores)

State	2021-22	2022-23	2023-24	2024-25	2025-26	Total
Andhra Pradesh	490	490	514	540	567	2601
Arunachal Pradesh	49	49	51	54	56	259
Assam	280	280	293	308	323	1484
Bihar	1133	1133	1190	1249	1312	6017
Chhattisgarh	339	339	356	373	392	1799
Goa	31	31	33	35	37	167
Gujarat	629	629	661	694	728	3341
Haryana	305	305	320	335	352	1617
Himachal Pradesh	98	98	103	108	114	521
Jharkhand	446	446	469	492	517	2370
Karnataka	552	552	579	608	638	2929
Kerala	559	559	587	616	647	2968
Madhya Pradesh	923	923	969	1018	1069	4902
Maharashtra	1331	1331	1397	1467	1541	7067
Manipur	44	44	46	49	51	234
Meghalaya	59	59	61	64	68	311
Mizoram	31	31	33	35	36	166
Nagaland	57	57	60	63	66	303
Odisha	462	462	485	510	535	2454
Punjab	401	401	421	443	465	2131
Rajasthan	833	833	875	918	964	4423
Sikkim	21	21	22	23	24	111
Tamil Nadu	806	806	846	889	933	4280
Telangana	419	419	441	463	486	2228
Tripura	85	85	90	94	99	453
Uttar Pradesh	1830	1830	1921	2017	2118	9716
Uttarakhand	150	150	158	165	174	797
West Bengal	829	829	870	914	960	4402
All States	**13192**	**13192**	**13851**	**14544**	**15272**	**70051**

Source: Report of the 15th UFC

The 15th UFC in its report have pointed out that "Kerala has established itself as an example where local governments and the staff of public health institutions effectively deliver healthcare at the local level in a collaborative framework," (Para 7.13, 15th UFC Report). It is further mentioned that "Taking a cue from the Kerala model, we considered this to be an opportune time to involve the third tier in the health sector and extend additional resources to it to strengthen the primary health system at the grassroot level," (Para 7.139, 15th UFC Report). Kerala's effective handling of the Covid 19

management during the first wave of the pandemic was made possible because of its robust healthcare system even at the grassroots level (Chathukulam and Tharamangalam, 2021; Ekbal, 2022).

Table 3: Allocation of Health Grants to Kerala in Five Major Areas (Rs. in Crores)

Components in Health Grants	2021-22	2022-23	2023-24	2024-25	2025-26	Total
1a. Support for diagnostic infrastructure to the primary healthcare facilities (SCs)	39.61	39.61	41.6	43.68	45.86	210.36
1b. Support for diagnostic infrastructure to the primary healthcare facilities (PHCs)	49.58	49.58	52.06	54.66	57.39	263.27
1c. Support for diagnostic infrastructure to primary healthcare facilities (UPHCs)	11.05	11.05	11.61	12.19	12.8	58.7
2. Block Level Public Health Units (BPHUs)	30.59	30.59	32.12	33.72	35.41	162.43
3. Grants for Urban Health and Wellness Centers (UHWCs)	322.22	322.22	338.34	355.25	373.01	1711.04
4. Grants for Building-less SCs, PHCs, CHCs	0.5	0.5	0.52	0.55	0.58	2.64
5. Conversion of Rural PHCs and SCs into Health and Wellness Centre (HWCs)	105.43	105.43	110.7	116.23	122.04	559.83
Total	558.98	558.98	586.95	616.28	647.09	2968.28

Source: Report of the 15th UFC.

Funds and grants allocated by the UFCs are transferred in two stages[5]: first from the union government to state governments, and then from the states to local governments. Of the Rs. 558.98 crores allocated to the local governments in Kerala, the union government released only Rs. 427.13 crores to the state government. The reasons as to why the union government did not fully release the first instalment are not clear, and the officials interviewed for this paper are not able to mention the reasons that might have led to this.

Out of the Rs 427.13 crore released to the state government in Kerala, it released Rs.323.11 crores to the local governments, and from this Rs. 33.95 crores were released to National Health Mission

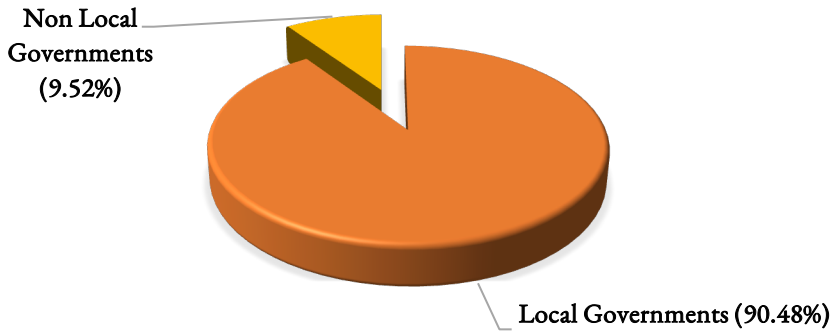
(NHM) and Kerala Medical Service Corporation (KMSC). From the Rs.323.11 crores allocated to the local governments as health grants, Rs.186.74 crores were given to Municipalities, Rs. 72.66 crores to Corporations, Rs. 44.32 crores to Gram Panchayats, and Rs. 19.13 crores to Block Panchayats.

Previous experiences show that local governments in Kerala have been a victim of Mission Creep Syndrome especially when it comes to the utilisation of grants allocated by the earlier UFCs[6]. While the local self-government department in Kerala has issued guidelines to local governments for the utilisation of grants in the health sector, our study has found out several barriers that are posing hurdles in the effective utilisation of health grants in the state.

4. Utilisation Rate of Health Grants among Rural and Urban Local Governments in Kerala

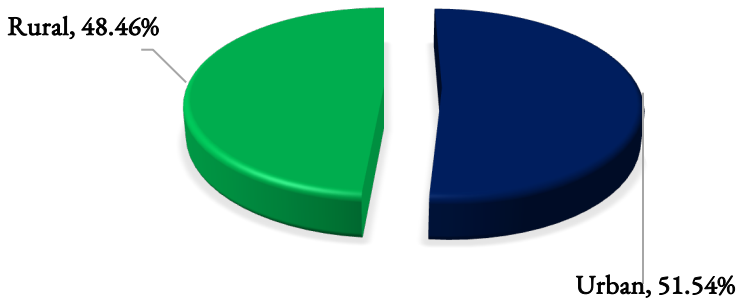
This section discusses the total amount released to the Gram Panchayats and Block Panchayats (rural local governments) and Corporations and Municipalities (urban local governments) and looks into the rate of utilisation of funds allocated to them. The local governments collectively received 90.48% of the allocated health grants from the state government (Figure 1 & 2 and Table 4).

Figure 1: State Government Allocation of Health Grants to Local and Non-local Governments



Source: Department of Local Self Government, Government of Kerala.

Figure 2: Share of Distribution of Health Grants among Urban and Rural Local Governments



Source: Department of Local Self Government, Government of Kerala.

Table 4: Released Amount and Expenditure Incurred under Health Grants to Local Governments in Kerala (Rs. in Lakhs)

Local Governments	Total Release	Total Expenditure
1.Gram Panchayats	4432.06	1286.00 *(29.01%)*
2. Block Panchayats (only released to 75 Block Panchayats)	1912.50	774.21 *(40.48%)*
3.Municipalities	18674. 29	293. 49 *(1.57%)*
4.Corporations	7265.75	18.78 *(0.26%)*

Source: Field Data

4.1 Gram Panchayats

The Union government approved the release of 15th UFC health sector grants for an amount of Rs.427.13 Crores for Kerala for the financial year 2021-22. Of this, Rs.44.32 crores was released to Gram Panchayats, and from this allocated amount only Rs. 12.86 crores got utilized. Out of the total 941 Gram Panchayats in Kerala, 323 of them have not utilized a single rupee from the allocated funds under health grants, while the remaining 618 of them have utilized some per cent of the allocated funds (ranging from 100% to 0.38 %.) (See Appendix 1).

The components for rural local governments for which health grants have been sanctioned includes:

A. Building-less SCs, PHCs and CHCs.

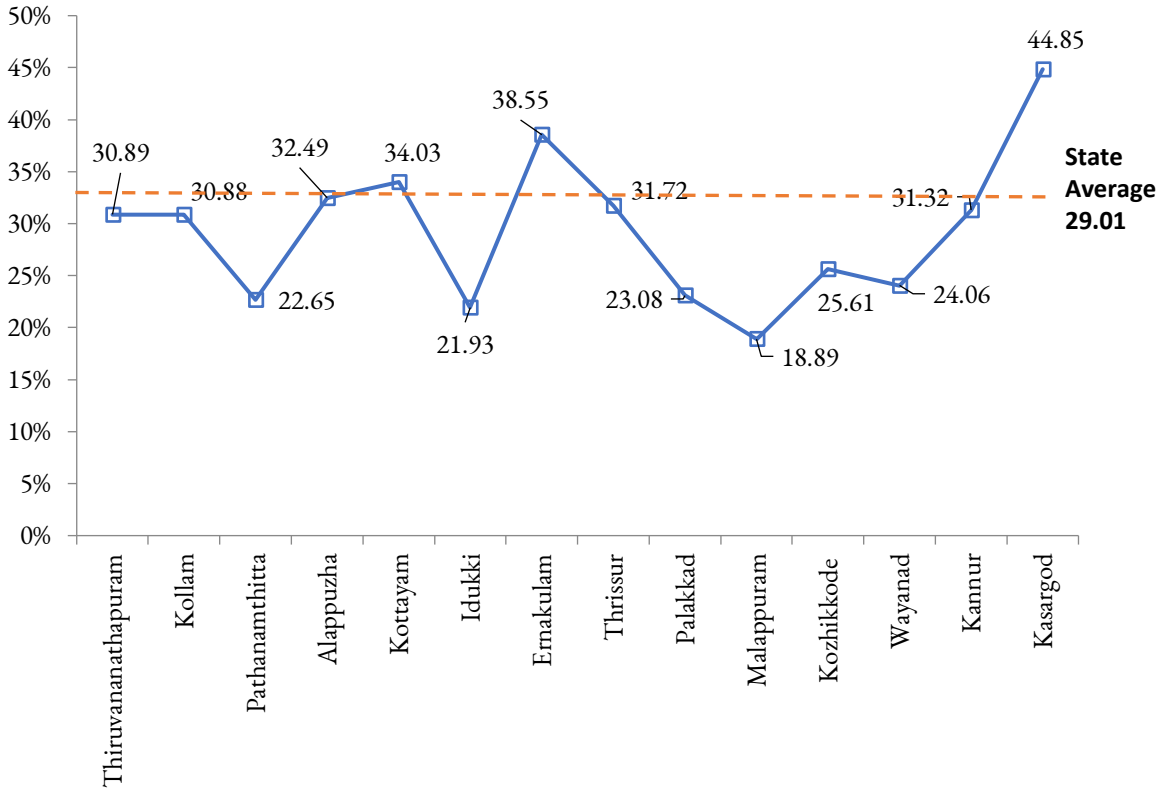
B. Conversion of rural PHCs and SCs to HWCs.

C. Support for diagnostic infrastructure to the primary healthcare facilities

D. Block Level Public Health Units (This is discussed in the section in block panchayats).

The state average in the utilisation of health grants among the Gram Panchayats stand at 29.01 per cent. Gram Panchayats in eight districts have spent above the total average (Figure 3 and 4), namely Kasargod, followed by Ernakulam, Kottayam, Alappuzha, Thrissur, Kannur, Thiruvanthapuram, and Kollam. Panchayats in the remaining six districts are below the state average. When it comes to average spending, no district has crossed 50%.

Figure 3: Percentage of Expenditure Incurred under Health Grants among the Gram Panchayats in 14 districts in Kerala

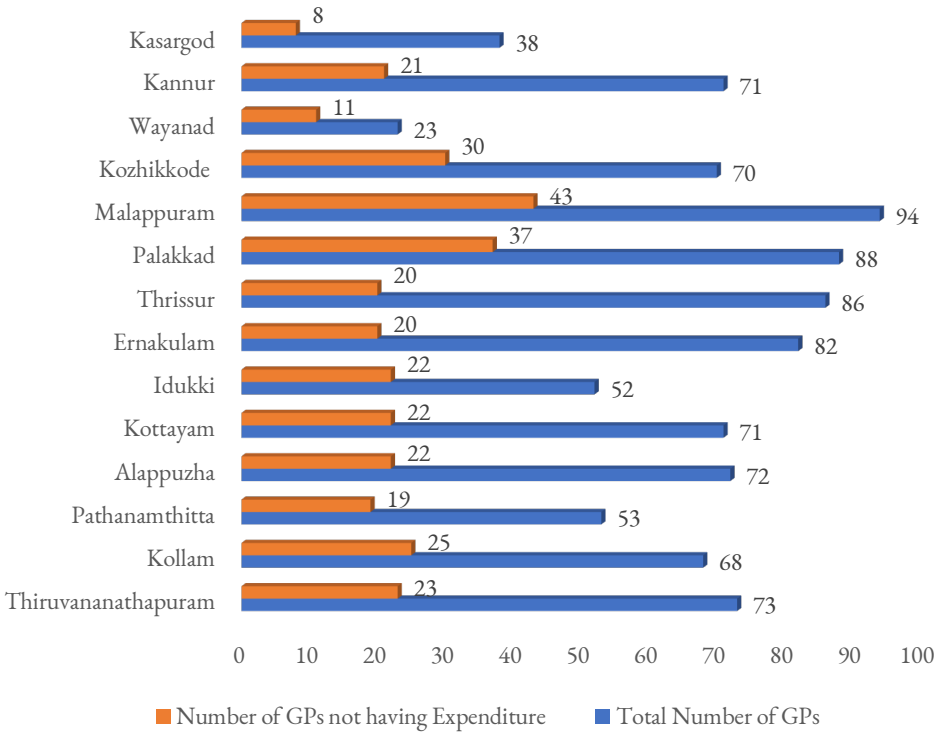


Source: Appendix 1

Moving on to Panchayat wise analysis, Kinanoor – Karinthalam, Valiyaparamba and Bedadka in Kasargod district, Pangode in Thiruvanthapuram district, Padanad in Alappuzha district, Teekoy in Kottayam district, Amballoor, Kadamakudy, Kuzhipally and Maneed in Ernakulam district, Engadayur and Tholur in Thrissur district are the Gram Panchayats that have utilized 100% of the health grants allocated to them.

As part of the study, we selected five best-performing and worst-performing Gram Panchayats in Kerala to understand the positive and negative factors influencing the utilisation of health grants in the state. Sound knowledge on health grants and familiarity with the guidelines associated with utilisation of health grants, along with empowered elected functionaries and staff in the Gram Panchayats, are the major reasons that helped the top performers to utilize the allocated funds under health grants effectively (See Table 5). Moreover, the selected five Gram Panchayats with good utilisation have low intensity of the complex web of issues described in the literature review (politicisation, personalisation, corruption, post - office syndrome, capability traps and poor self – esteem). They also maintain a balanced approach towards legalistic/ rule-bound frameworks and addressing local felt needs, and have some level of thick and thin accountability (Detailed Discussion in Table 5 and Table 9).

Figure 4: Number of Gram Panchayats not having Expenditure under Health Grants among the Total Gram Panchayats in Kerala



Source: Appendix 1

On the other side, poor knowledge on health grants among elected functionaries and staff, leadership and capability deficit, and lack of initiative and coordination with stakeholders and health department led to poor performance. In the case of poor performing Panchayats, there exists a high degree of complex web of issues (eight common identified problems). These common identified problems have resulted in specific problems, including the lack of coordination between the staff, elected functionaries and health officials, and poor knowledge on health grants (See Table 5). In this scenario, an inter-relation between eight common identified problems (discussed in Table 9) and specific problems (discussed in Table 5) can be seen.

Table 5: Selected Five Best Performing and Worst Performing Gram Panchayats in Utilizing Health Grants in Kerala (Rs. in Lakhs)

Name of the Gram Panchayat	Allocated Health Grants	Utilisation of Health Grants	Activities and Specific Reasons for Better/ Poor Utilisation	Common Reasons Observed with the Support of Theoretical Framework
1.Padanad	2.93	2.92 (100 %)	Bought laboratory equipment and medical instruments for the PHC functioning in the Panchayat premises. Purchased an almirah to store medical documents and medicines, one set of table and chair, and one laptop for the sub-centre in the Panchayat.	Issues of (i) Politicisation, (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi)Low Self-Esteem are found in *Low Intensity* with varying degrees. (vii) A balanced approach in adopting legal framework and in addressing local felt needs and (viii) there is some level of "thick and thin accountability."
2.Teekoy	2.65	2.65 (100%)	Purchased lab equipment and machines for the PHC. Hospital beds and two sets of bed sheets were also purchased.	
3.Pangode	4.53	4.53 (100%)	Purchased instruments for medical laboratories at the PHC.	
4.Kadamakkudy	4.06	4.05 (100 %)	Bought medical instruments for the PHC lab. Though Biosafety Cabinet was purchased with the funds, it is yet to be installed.	
5.Tholur	3.23	3.22 (100 %)	Purchased medical lab equipment and instruments for PHC. Good coordination between elected functionaries, health department, and functional health standing committee are noticed.	
6.Aikkaranadu	4.94	0 (0 %)	Technical issues in purchasing medicines and equipment. Poor knowledge about health grants and operational guidelines.	Issues of (i) Politicisation, (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi) Poor Self-Esteem, (vii) More Emphasis on Legalistic and Rule – Bound Approaches by Ignoring Local Felt Needs and (viii) Absence of Thick and Thin Accountability are found in *High Intensity* with varying degrees.
7.Anad	5.49	0 (0 %)	Problem in getting the bills/receipts related to health grants from Treasury department. Some amount of confusion is seen among the functionaries.	
8.Agali	11.30	0 (0 %)	Apart from poor knowledge on health grants, the lack of coordination between elected functionaries and health officials is the biggest hurdle. The health standing committee is also ignorant about these grants and rarely convene the meetings.	
9.Kooropada	4.53	0 (0 %)	No proper awareness on health grants. For instance, they can use the money to improve the infrastructural facilities in the labs functioning in PHC. But they don't know they can use these grants for improving facilities in the lab and to buy necessary equipment.	
10.Chengala	4.88	0 (0 %)	While knowledge deficit on health grants is the major issue, the lack of coordination and absence of team spirit are the other major reasons for poor utilisation.	

Source: Interview and FGDs with Elected Functionaries, Staff, and Health Workers in the Selected 10 Gram Panchayats

4.2 Block Panchayats

Community Health Centres (CHCs) often serve as First Referral Unit, Block level Administrative Unit, and BPHU. In Kerala, CHCs and taluk hospitals are under the purview of Block Panchayats. It is envisaged that the Block level facility (variously referred to as CHCs/ SDHs/ BPHCs - the nomenclature may vary across states) would be strengthened to become a BPHU. Support is provided under the 15th UFCs health grants to strengthen BPHUs across all the blocks of 28 states. The BPHUs have three major components:

i. Public Health Unit for providing public health functions such as surveillance and detection of outbreaks.

ii. Block Public Health Lab for providing advanced diagnostics services for clinical and public health functions.

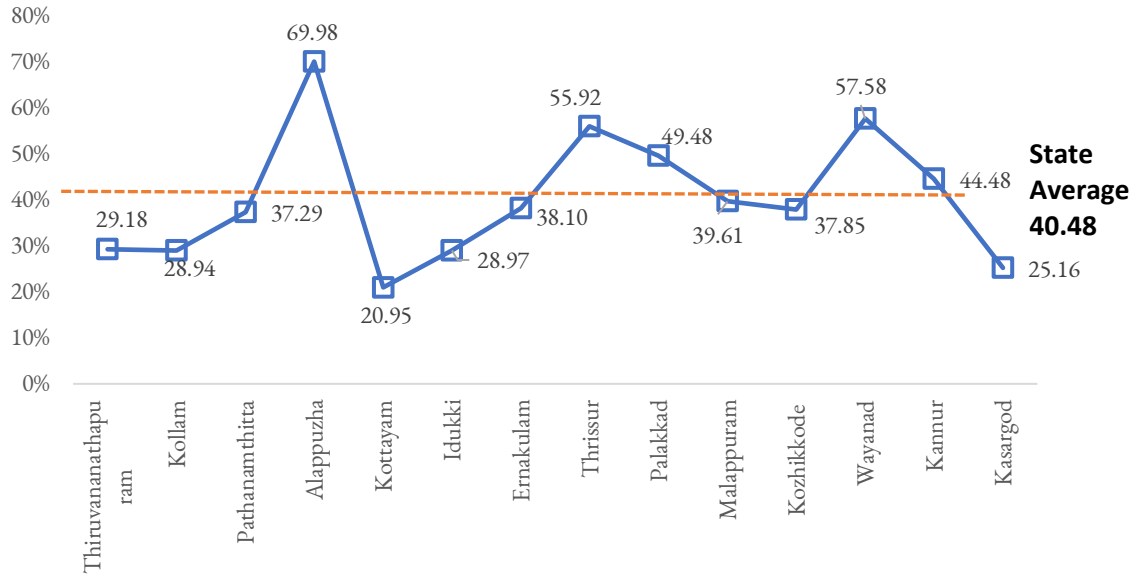
iii. Hub for data compilation, analysis, and feedback, through a Health Management Information System (HMIS).

The BPHU will also serve as the referral unit for HWCs in the block.

4.2.1 Block Panchayats in Kerala and Utilisation of Health Grants

A sum of Rs.19.125 crores has been allocated to 75 Block Panchayats for starting new block-level public health units, and for setting up Block Public Health Labs. Among the selected Block Panchayats, 40.48% of the funds allocated under health grants have been utilized (Appendix 2). When compared with Gram Panchayats and other types of local governments, Block Panchayats fared better; however, the average utilisation rate is still below 50%. In five districts, the utilisation rate of allocated health grants among the Block Panchayats are way above the state average of 40.48% (See Figure 5).

Figure 5: Percentage of Expenditure of Health Grants among the Block Panchayats in 14 Districts in Kerala



Source: Appendix 2

Compared to Municipalities, Corporations, and Gram Panchayats, the Block Panchayats have made better use of health grants. Among the 75, five Block Panchayats have not utilized a single rupee from the allocated funds. Vellanganallur in Thrissur is the only Block Panchayat with 100% utilisation. The other top performers at the Block level are Haripad in Alappuzha with 99.15%, followed by Mala in Thrissur with 93.48% and Areekode in Malappuram district with 91.79% (Appendix 2).

In the guidelines issued by the 15th UFC, it has been made clear that states may prioritize the blocks in the aspirational districts, including Tribal districts and Left-Wing Extremism (LWE) affected districts while doing inter-se allocation of resources among districts. Wayanad is the only aspirational district in Kerala; the Block Panchayats in Wayanad have utilized 57.58% and Sultan Bathery (83.70 %) has the highest utilisation level in the district (Table 6). They have utilized a major share of health grants to strengthening the medical laboratory at their CHC and secondary-level palliative care services and facilities.

Table 6: Selected Five Best Performing and Worst Performing Block Panchayats in Kerala in Utilizing Health Grants (Rs. in Lakhs)

Name of the Block Panchayat	Allocated Health Grants	Utilisation of Health Grants	Activities and Specific Reasons for Better/ Poor Utilisation	Common Reasons Observed with the support of Theoretical Framework
1.Vellangallur	2.55	2.55 (100.00%)	Have utilized a major share of health grants to strengthening the medical laboratory at their CHC and secondary-level palliative care services and facilities.	Issues of (i) Politicisation (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi), Poor Self- Esteem are found in *Low Intensity* with varying degrees. (vii) A balanced approach in adopting legal framework and addressing local felt needs and (viii) some level of "thick and thin accountability."
2.Mala	2.55	2.38 (93.48%)	Used it for renovating the lab at the CHC. Also purchased (i) Heamatology Analyzer (ii) HbA1CA Analyzer (iii) Thyroid Machine (iv) Binocular Microscope (v) VC Cooler and (vi) Steel cupboard.	
3.Areekode	2.55	2.34 (91.79%)	Have purchased all tools and equipment needed in a medical laboratory and strengthened the lab facilities in the CHC. Also purchased computer and printer for the lab.	
4.Sulthan Bathery	2.55	2.19 (85.70%)	There are three implementing officers (Medical Officer, Secretary, and Assistant Engineer) who are entrusted with implementing the health grants. Have utilized a major share of health grants to strengthen the medical laboratory at the CHC and secondary-level palliative care services and facilities. The lab is fully operational.	
5.Ambalappuzha	2.55	2.19 (86.03 %)	Better awareness and understanding of the health grants and its purposes. Used the funds from health grants to strengthen the secondary palliative care unit working at the block level. Used to strengthen lab facilities including clinical services in Biochemistry (biochemical analyser), Immunochemistry, Pathology, Haematology and Serology. Leadership at the block level and the cooperation of the staff and other elected functionaries resulted in effective utilisation of the grants.	

6.Sasthamcotta	2.55	0 (0 %)	Apart from technical difficulties, weak coordination between elected functionaries and health staff also led to poor utilisation.	Issues of (i) Politicisation(ii) Personalisation, (iii) Corruption, (iv)Post- Office Syndrome, (v)Capability Traps, (vi) Poor Self-Esteem, (vii) More Emphasis on Legalistic and Rule – Bound Approaches by Ignoring Local Felt Needs and (viii) Absence of Thick and Thin Accountability are found in *High Intensity* with varying degrees.
7.Panur	2.55	0 (0 %)	Lab maintenance is delayed due to poor support of engineering wing. Before purchasing the equipment, the space needs to be increased to store the items safely.	
8.Kalikavu	2.55	0 (0 %)	The lack of coordination between functionaries and staff in the health institution /department is the major reason. The knowledge on health grants is also poor.	
9.Azhutha	2.55	0 (0 %)	Poor awareness on health grants and lackadaisical attitude. Only once did health standing committee discuss about health grants. None of the elected functionaries or staff attended the meeting convened by hospital management committee (HMC). Though a decision was made to purchase BP Monitor Machine, the preference was given to civil work (renovation).	
10.Manjewswaram	2.55	0.37 (1.47%)	When the health grants were released, the post of medical officer was lying vacant and in the absence of the concerned officer, the responsibility was given to Assistant Engineer. It all resulted in inordinate delay in purchasing laboratory equipment as there is no clarity and awareness on health grants.	

Source: Interview and FGDs with Elected Functionaries, Staff, and Health Workers in the Selected 10 Block Panchayats

The reasons for good performance among the selected Block Panchayats are due to multiple factors. While sound knowledge on health grants and familiarity with technical and operational guidelines are the major factors, capable nodal officers and elected functionaries also play an equivalent role. Good coordination and cooperation shared between the elected functionaries, staff and health workers is another factor.

For instance, in the case of Sulthan Bathery block, there are three implementing officers (Medical Officer, Secretary, and Assistant Engineer) who are entrusted with the charge of implementing the health grants and due to the rapport shared between them, they were able to effectively make use of the grants. On the other hand, poor knowledge on health grants, delay in appointing the concerned officers (in the case of Manjeshwaram block, the delay in the appointment of a medical officer, led to an Assistant Engineer being in charge of overseeing the implementation of health grants and it resulted in inordinate delay), and lack of professionalism are the major bottlenecks resulting in poor utilisation of health grants.

The selected five Block Panchayats with good utilisation have "low intensity" of complex web of issues. They have a balanced approach in adopting legal framework and addressing local felt needs and have some level of thick and thin accountability (detailed discussion given in Table 6 and Table 9). Leadership is more effective and capable of addressing issues.

In the case of poor performing Blocks Panchayats there exists a high intensity of complex web of issues. These common identified problems have resulted in specific problems including the lack of coordination between the staff, elected functionaries and delay in the appointment of staff. In this context, an inter-relation between eight common problems (discussed in Table 9) and specific problems (discussed in Table 6) can be seen.

Compared to urban local governments, the rural local governments in Kerala have relatively easier tasks and responsibilities to undertake and perform, which has helped Gram Panchayats as well as Block Panchayats in delivering not-so-poor performance. However, considering Kerala's rich legacy in decentralisation, the performance of Gram Panchayats as well as Block Panchayats need more critical introspection.

4.3 Municipalities

There are two components under health grants to urban local governments and they are (a) Support for diagnostic infrastructure to the primary healthcare facilities and (b) Urban Health and Wellness Centres (HWCs). Under the first component, Rs. 63.25 crores were released in July 2022 and Rs. 45.68 crores in September 2022. Thus, a total of Rs. 108.93 crores was given to Municipalities under this component.

For the second component, a total of Rs. 77.81 crores was given to the Municipalities in April 2023. The amount allocated under these two components is thus Rs. 186.74 crores, out of which

only Rs. 2.935 crores (1.57%) have been utilized so far (Appendix 3). Among the Municipalities, 59 of them (67.81 %) have not utilized a single rupee.

Muvattupuzha Municipality in Ernakulam district and Thanur Municipality in Malappuram district have the highest utilisation rates in the state (Appendix 3 and Table 7). Muvattupuzha Municipality utilized 26.21%, followed by the Municipalities of Thanur, Chalakkudy, Ankamali, and Ettumanoor. All these five top-performing Municipalities are way above the state average of 1.57 per cent (Figure 6).

The elected functionaries, health workers, and staff working at other departments in these five top Municipalities have some amount of knowledge and understanding about the health grants and the relevant operational guidelines. Leadership quality, cooperation, and team spirit between the Municipality and other stakeholders are the other major factors that helped these Municipalities to utilize their health grants to some extent when compared with their counterparts (Table 7). The selected five Municipalities with good utilisation have low intensity of the complex web of issues. They have a balanced approach in adopting legal framework and addressing local felt needs, and some level of thick and thin accountability (detailed discussion given in Table 7 and Table 9).

In the case of poor-performing Municipalities, there exists a high intensity of the complex web of issues. These common identified problems have resulted in specific problems, including the delay in finding suitable locations and buildings to house HWCs. Lack of coordination between the staff, elected functionaries, health officials, and PWD officials are found. Here, an inter-relation between the eight common problems (discussed in Table 9) and specific problems (discussed in Table 7) can be seen. *None* of the Municipalities in Kollam, Idukki and Kannur districts have utilized a single rupee from the health grants allocated to them in both financial years (See Figure 7).

Table 7: Selected Five Best and Worst Performing Municipalities in Utilizing Health Grants in Kerala (Rs. in Lakhs)

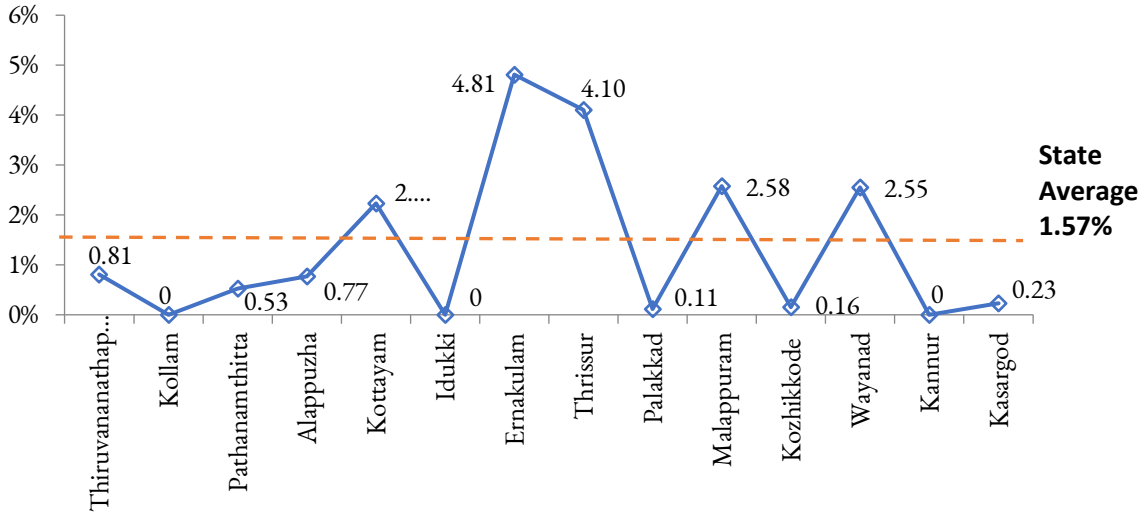
Name of the Municipality	Allocated Health Grants	Utilisation of Health Grants	Activities and Specific Reasons for Better/ Poor Utilisation	Common Reasons Observed with the support of Theoretical Framework
1.Muvattupuzha	153.05	40.12 (26.21 %)	Unlike other Municipalities, the authorities did not have to spend much time to find buildings and suitable locations. The authorities found a good workspace in an old hospital building in the area and converted it into the HWC. This building belongs to the Municipality, so they did not have to go through many procedural delays, only spending some time and amount in renovating the old building. The elected functionaries and staff have good awareness regarding health grants. Recruited new health staff, purchased medical equipment (including syringes, BP apparatus and masks). Placed orders to purchase medicines from KMSC. The HWC is now operational.	Issues of (i)Politicisation, (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi) Poor Self- Esteem are found in *Low Intensity* with varying degrees. (vii) A balanced approach in adopting legal framework and addressing local felt needs. There is (viii) some level of "thick and thin accountability."
2.Thanur	164.83	31.04 (18.83%)	Plans to establish three HWCs. Two HWCs are fully operational and functioning in rented buildings; the third is going to be in a building owned by the Municipality. At present, maintenance work is going on at this site. Did not face any delays in getting the rent rates approved by the PWD department. The authorities said the officials and staff at the other departments were cordial and cooperative. Staff appointments have been completed in the two operational HWCs. On an average, 130-140 people come to the HWCs daily. Lab facilities will also be made available in the HWCs. Relatively good awareness on health grants at all levels, and strong leadership in the urban local governance are seen.	

3.Chalakkudy	221.94	31.64 (14.26%)	There are three functional HWCs, of which two are in rented buildings. Received public support for starting the HWCs – some people even donated computers, fridge, furniture etc. While staff appointments have been made, most of them are fresh MBBS candidates, hence there is a risk that they might leave to pursue higher studies. The authorities suggested that retired doctors and nurses should be allowed to work in HWCs. On an average, 70 to 75 people visit the HWCs daily. Some degree of awareness on health grants and leadership also play a crucial role.
4.Ankamali	168.05	23.76 (14.14%)	Awareness among the elected functionaries and staff on health grants. Projects to be implemented under health grants are discussed in Municipal Council meetings, and separate meetings are conducted in this regard. Staff appointments are completed. Purchased medical equipment. Placed orders to purchase medicines from KMSC. While, the HWC is all set to be operational, the delay in inaugurating the facility is posing some hurdles.
5.Ettumanoor	110.94	12.94 (11.66 %)	Plans to establish two HWCs. Took some amount of time in location scouting, especially to find affordable buildings for rent in suitable locations. One HWC will soon become operational. Though the first set of interviews to appoint doctors and nurses were held, the rules related to reservation quota created hurdles in their appointments, and they are forced to do a second round of recruitment process. The municipal authorities have to approach a professional agency to recruit doctors and nurses. At present, they have appointed one nurse and one pharmacist.

6.Kottarakara	315.44	0 (0 %)	Not able to find good buildings to start two HWCs. The major issue is in the process to get approval from the PWD department when it comes to fixing rent rates.	Issues of (i) Politicisation, (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi) Poor Self - Esteem, (vii) More Emphasis on Legalistic and Rule – Bound Approaches by Ignoring Local Felt Needs and (viii) Absence of Thick and Thin Accountability are found in a *High Intensity* with varying degrees.
7.Thodupuzha	214.89	0 (0 %)	Poor awareness on health grants in general. In the absence of own buildings, there is a great deal of difficulty in getting buildings to rent. Rent fixation and sanctioning from PWD department also taking considerable amount of time and resulting in delays. Absence of a responsible medical officer in charge is another issue. HMC meetings are not taking place.	
8.Karunagapally	211.94	0 (0 %)	Plans to establish three HWCs. Since it does not have own buildings to function as HWCs, there was considerable delay in getting rent rates fixed and approved. The procedural delay in valuation and getting sanction from Superintendent Engineer. Tender for the remaining two buildings is announced. Poor coordination of Health Standing Committee is another reason for zero utilisation of the grants.	
9.Mavelikkara	210.44	0 (0 %)	Despite having two buildings to facilitate the functioning of HWCs, the lethargic attitude of the authorities as well as poor awareness regarding health grants in general are the major reasons for non-utilisation. Though the request for quotation for renovation of the existing two buildings have been issued, technical problems associated with it are causing further delay.	
10.Thiruvalla	327.22	0 (0 %)	Poor awareness on health grants in general is noticed. Rent-related issues causing delay in opening the HWCs. The authorities have issued tender for one building, and this is also delayed.	

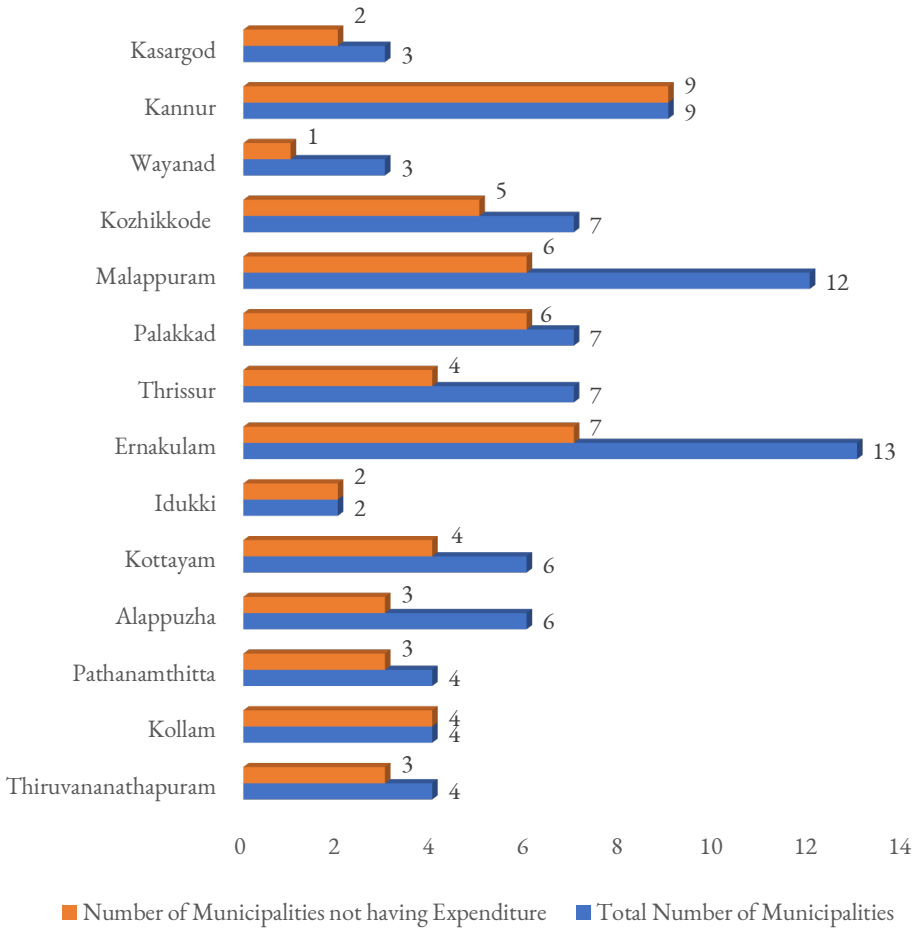
Source: Interview and FGDs with elected functionaries, staff, and health workers in the selected 10 Municipalities

Figure 6: Percentage of Expenditure Incurred under Health Grants among the Municipalities in 14 Districts in Kerala



Source: Appendix 3

Figure 7: The district wise number of Municipalities that utilized the allocated funds under Health Grants in Kerala



Source: Appendix 3

Moving on to district wise analysis, with 13 Municipalities, Ernakulam district has the highest number, yet overall utilisation of health grants among them stands at a mere 4.87%. The total utilisation rate among the Municipalities in Thrissur district stands at 4.10%. Though the Municipalities in Ernakulam and Thrissur are above the state average, the performance is less than 5%.

Capacity deficit and lack of professionalism are the major reasons for the poor utilisation of the health grants. Lack of training and poor awareness regarding the components of health grants and its relevance is another major problem that is preventing the proper utilisation of allocated funds. Poor awareness on health grants and lack of coordination between health, engineering, and other concerned sections in the Municipality, as well as its health standing committee, are major reasons which have been frequently cited as hurdles. "Despite a constitutional mandate for decentralised governance, policy implementation got derailed in the processes threading through laws, rules and administrative actions. It shows how habitual practices create hidden institutional rigidities that thwart policy moves despite good intentions and democratic legitimacy," (Jacob and Jacob, 2021).

Absence of administrative modernism, in which governments and governance have been politicized, personalized, and corrupted, is a major factor that prevents Municipalities from utilizing these grants. The concerned staff in the worst-performing Municipalities have not familiarized themselves with the operational guidelines related to health grants. Urban governance, like urban health, is neglected territory – even in a state like Kerala, that is renowned for its decentralisation experiments in India and around the world.

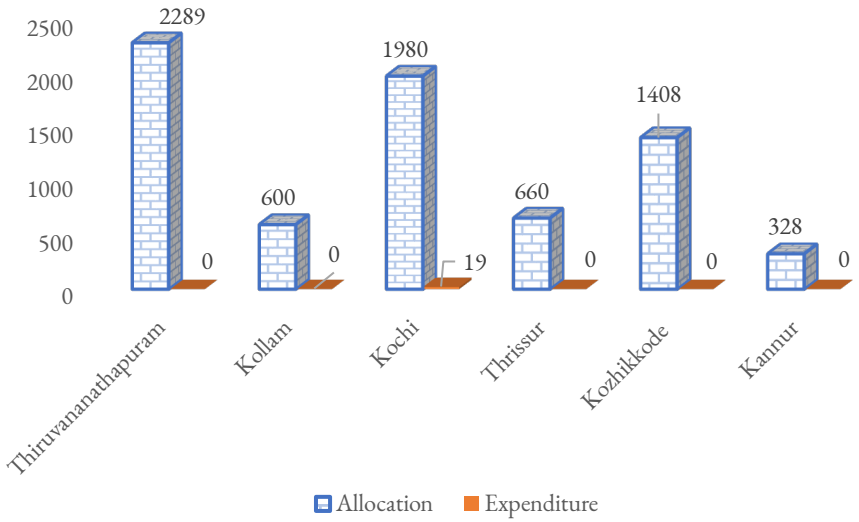
4.4 Corporations

There are a total of six corporations in Kerala, and Rs. 72.66 crores were allocated to them as part of health grants. Only a negligible percentage was utilized from the allocated amount. As part of the 15th UFC health grants, under the component, *diagnostic infrastructure to the Primary Healthcare facilities in urban PHCs*, the six corporations, received a total of Rs. 31.75 crores in FY21-22; in FY22-23, they received Rs. 24.42 crores. For the construction of HWCs, the six corporations received a total of Rs. 16.49 crores. Thus, a total of Rs. 72.66 crores have been allocated under the two components so far (Appendix 4).

Utilisation of these allocated funds is disappointing. Except Cochin Corporation, none of the other corporations have utilized even a single rupee under the health grants. Out of the total of Rs. 19.8 crores given to Cochin Corporation, Rs. 18.78 lakhs have been utilized – a mere 0.95% (Table 8 and Figure 8). Like Municipalities, Corporations also suffer from capacity deficit and lack of professionalism and transparency. Neither the elected functionaries nor the concerned staff working in these urban local governments are familiar with the concept of health grants, and have not even gone through technical and operational guidelines for the implementation of the 15th UFC health grants.

As in the case of Municipalities, Corporations in Kerala also suffer from deficits in professionalism, capability, and governance, and urban health is a poorly-understood concept. Poor awareness on health grants and implementation guidelines among the concerned stakeholders in Corporations is the major bottleneck. Lack of coordination between elected functionaries and staff, and between engineering wing (and PWD officials) and health officials are also hurting the implementation process. In all the Corporations, though the health standing committees are in operation, capacity deficit is major reason for performing below the expected capacity utilisation.

Figure 8: Allocation and Expenditure of Health Grant in Corporations (Rs. In Lakhs)



Source: Appendix 4

In the case of the six Corporations in Kerala, there exists a high intensity of the complex web of issues (common identified problems). These common identified problems have resulted in specific problems, including lack of coordination between elected functionaries and staff, and between engineering wing (and PWD officials) and health officials. Here, an inter-relation between the eight common identified problems (discussed in Table 9) and specific problems (discussed in Table 8) can be seen.

Table 8: Performance of Corporations in Kerala in Utilizing Health Grants (Rs. in Lakhs)

Name of the Corporation	Allocated Health Grants	Utilisation of Health Grants	Activities and Specific Reasons for Better/ Poor Utilisation	Common Reasons Observed with the support of Theoretical Framework
Thiruvanthapuram	2289	0 (0 %)	Difficulty in getting suitable buildings to start the functioning of HWCs. Rent norms proving to be the biggest hurdle. The Corporation needs to establish 44 HWCs. So far, the authorities have made attempts to establish only six of them. All six of them are under process. Location scouting and identifying appropriate buildings are causing the delay. No staff interview is done.	Issues of (i) Politicisation (ii) Personalisation, (iii) Corruption, (iv) Post- Office Syndrome, (v) Capability Traps, (vi) Poor Self- Esteem, (vii) More Emphasis on Legalistic and Rule – Bound Approaches by Ignoring Local Felt Needs and (viii) Absence of Thick and Thin Accountability are found in *High Intensity* with varying degrees. This is applicable to all the six Corporations in Kerala.
Kollam	600.17	0 (0 %)	Nine HWCs have to be established. So, five buildings in five wards have been identified and rent agreements have been executed. Delay occurred in finding suitable buildings on rent. Meanwhile, staff interviews have been completed. However, a few of the selected candidates later decided to drop off in search of better opportunities.	
Kochi	1979.95	18.78 (0.95%)	Plans to establish 33 HWCs. It has 11 own buildings where HWCs can be operational, and five rented buildings have also been identified. Though the HWCs are in operational mode, there was delay in getting the staff. As of now the staff interviews have been completed and the HWCs are likely to be opened for the public within two months.	
Thrissur	660.17	0(0 %)	Plans to establish nine HWCs - two in own buildings and the remaining in rented buildings. Own building maintenance is going on. In the case of rented buildings, rent fixation problem is causing delay. Staff interview is	

			done and furniture quotation is given. Engineers and Municipality staff meeting is done to solve the issue relating to rent rates.
Kozhikode	1408.06	0 (0 %)	Plans to establish 24 HWCs. So far only 10 buildings have been identified. Five HWCs are already in operational stage, but delay in staff appointment is the biggest bottleneck. Candidates who got selection to the post of doctor and nurses are not willing to join as they feel there are better opportunities elsewhere.
Kannur	328.39	0 (0 %)	Two HWCs need to be established. Buildings are identified, but staff shortage is the issue. Delay in getting buildings on rent is another reason for the delay. Poor awareness is noticed among workers and functionaries regarding health grants and its utilisation.

Source: Interview and FGDs with elected functionaries, staff and health workers in all the six Corporations

5. Technical and Operational Guidelines: Implementation of Fifteenth Finance Commission – Health Grants through Local Governments

This section discusses whether there was any rigidity in the guidelines issued by the Union Ministry of Health and Family Welfare (MoHFW), and looks into its role in the utilisation of health grants.

The MoHFW released the Technical and Operational Guidelines on August 2021. The Guidelines issued by the Ministry are clear, precise, and easy to understand. Any literate person can read and understand these guidelines without difficulty. The guidelines are structured into six chapters.

- The first chapter discusses the overarching principles for the use of the 15th UFC grants for planning and gap analysis as per the needs identified by the Health Department in consultation with the urban and rural local governments.
- The second chapter lays out guidelines for establishing Urban-HWCs.
- The third chapter provides a detailed description for the construction of building-less SCs, PHCs, and CHCs.
- The fourth chapter looks into the conversion of rural SCs and PHCs to HWCs.
- The fifth chapter focusses on the creation of BPHUs.
- The sixth chapter provides direction on support for diagnostic infrastructure to SCs, PHCs, and urban PHCs.

Each chapter provides the description of each of the specific components, objectives of the component, the unit cost applicable for the component, factors to be considered while planning, and the negative list for which the funds should not be utilized.

During the field visit, the team got several complaints from the elected functionaries and staff that they did not receive any training on how to utilize health grants, and demands for training in this regard. Most of them have not even seen the operational guidelines, and only a selected few admitted to having gone through the document outlining the procedures regarding implementing the grants. It is clear that these local governments need special support for capacity building and training (CB&T) from outside agencies. In the Kerala context, there are institutions like Kerala Institute of Local Administration (KILA), Institute of Management in Government (IMG), Universities (including Kerala University of Health Sciences Health University), Centre for Development Studies (CDS), Centre for Management Development (CMD), and other centres of research and training. They should immediately conduct interventions for training and orientation on health grants.

6. Discussion and Conclusion

Table 9: Details Regarding Problems Affecting the Effective Utilisation of Health Grants in Selected Local Governments in Kerala

Type of Problems Identified in Selected Local Governments in Kerala	Areas in which Identified Problems and its Manifestations Were Found in the Selected Local Governments in Kerala	Source of Theoretical Framework used to Identify the Problems
1. Politicisation	1. Right from fund allocation to utilisation, there is often a political fight between Union and States. For instance, the Union government released Rs. 421.81 crore as health grants to local governments in FY22-23 financial year[7] However, it has withheld Rs. 137.14 crore on the grounds that the Kerala government has not complied with the stipulated conditions and guidelines. Meanwhile, the state government has accused the Union for blocking the funds (Puthiyetti, 2023). 2. Political tension between the state and local governments over delay in distribution of grants is also common. During the field visit, we were told that delays in disbursement of health grants have stopped them from purchasing medical equipment and diagnostic infrastructure. There is a high chance for spillover syndrome and fund lapse owing to delay in disbursement of funds and poor utilisation. Spillover refers to the process in which projects that needs to be completed within a particular financial year remains incomplete and its implementation is passed on to the next financial year/ takes place in the next financial year. 3. Establishing HWCs in Municipalities and Corporations is an important component under health grants. For this purpose, local governments have to find suitable locations / buildings for the HWCs. Here, the Councillors are often in a competition to open HWCs in their own respective wards, to protect their political interests and to gain political mileage. The location of HWCs should be based	Politicisation shows the absence of 'administrative modernism' as put forward by Pritchett in his work *Is India a Flailing State? Detours on the Four Lane Highway to Modernisation, (*2009).

	on population density and presence of vulnerable and marginalized sections of people. However, in the race to get political mileage, these guidelines are mostly side lined. 4. If the HWC is proposed to operate in a rented building, then selecting the building and fixing rent rates become problems. The major issue is in the process to get approval from the PWD department in fixing rent rates. In many cases, some elements of politicisation are seen at this stage as well. 5. Appointment of contractual staff for the implementation of the health projects is another major area that is highly based on political influence and affiliations. Preference is given to candidates who have allegiance to the ruling Party. 6. Similarly, transfer of the staff is an area that is heavily politicized. We observed that staff who are overseeing health projects are transferred to faraway places on political grounds.	
2. Personalisation	1. While appointing contract staff for implementation of projects, merit is secondary. The primary factor that matters is the personal connections and political background of the concerned candidate. If the prospective candidate is ready to toe the line of the elected functionaries from the ruling political party, their chance of securing the job is higher. Candidates coming with recommendations and having considerable personal influence likewise have higher chances. Local governments are a safe haven for making backdoor appointments, as candidates have considerable influence here. 2. An Urban-HWC is to be staffed with a Medical Officer, a Staff Nurse/Pharmacist, Male-MPWs and two support staff. Usually, Party officials at the local and district levels forward a list of candidates for these posts, who are party loyalists. This is a clear case of personalisation induced with political favouritism. It was noticed in the selected local governments.	Personalisation shows the absence of 'administrative modernism' by Pritchett in his work *Is India a Flailing State? Detours on the Four Lane Highway to Modernisation,* (2009)

3. Corruption	1. Local governments are not free from corruption and rent-seeking culture in Kerala. 154 officials in the Local Self-Government department have been booked in corruption cases since 2017 (Antony, 2023). In the context of health grants, right from fixing and sanctioning rent rates for HWC buildings, there is scope for corruption. Local government functionaries often have to grease the palms of officials from PWD to get the rent rates sanctioned without inordinate delay. 2. Similarly, in the case of purchasing medicines and diagnostic equipment for PHCs, CHCs, and HWCs, the scope for corruption is higher. Here, Kerala Medical Service Corporation Ltd (KMSCL) is appointed as the procurement agency for effecting procurement of medicine, medical equipment, diagnostics, and other consumables under health grants. In the past, the KMSCL has been accused of making irregular purchases and supplying date-expired medicines to hospitals by the Comptroller and Auditor General (Mohan, 2023). KMSCL's dubious practices have been reported in the case of procurement of medical equipment, diagnostics, medicines, and other consumables under health grants in some of the selected local governments.	Corruption shows the absence of 'administrative modernism' by Pritchett in his work *Is India a Flailing State? Detours on the Four Lane Highway to Modernisation,* (2009)
4. Post- Office Syndrome	1. While there is ample literature on Kerala model of decentralisation, devolution and empowerment of local governments, it is also an element of rhetoric (Chathukulam and John, 2003). Kerala does not have a "credible decentralisation" as is widely publicized. Be it the implementation of any scheme or programme, the local government will act on it only if they get orders from the top officials of the State. 2. Even in the case of health grants, majority of the staff and elected functionaries are not familiar with the technical and operational guidelines. The reason stated by them is that they did not receive any training on the guidelines. The attitude is that they will do something only if they are asked to, otherwise, they do not have to fulfil such task. It is disappointing to note that they express a need for guidance and training even to understand guidelines.	The phenomenon of 'post-office syndrome' is borrowed from *The Post Office Paradox:* *A Case Study of the Block Level Education Bureaucracy* by Aiyar and Bhattacharya, (2016)

	3. The "actual and final decision-making authority" is vested with the state government in many matters relating to Local Governments. The local governments have neither full autonomy to take a decision on their own nor the capability to solve problems by themselves. The intervention of state government is very much involved in the affairs of the local governments. 4. Bureaucratic misconceptions on decentralisation and local governments also fosters "post-office syndrome". Local Governments are viewed as "unpaid agents" to do what those at the top determine. (Raghunandan, 2019). 5. Bureaucratic perception of local governments is that "the local governments have virtually no elbow room to function as devolved entities that are able to exercise a modicum of control over their staff and organisational capacities" (Raghunandan, 2019)	*Everything You Ever Wanted to Know About Bureaucracy But Were Afraid to Ask* by Raghunan dan, (2019).
5. Capability Traps	1. Misconceptions about Kerala model of decentralisation is the biggest capability trap for the local governments and its functionaries. While Kerala model of development and Kerala model of decentralisation have serious deficits, there is an increasing tendency to glorify these models as the "perfect example of development and empowerment". The foundation of Kerala model of decentralisation lies within the Kerala model of development. The Kerala model of development is characterized by social and economic developments in a fragile economic system. The mass and class organisations affiliated to the Leftist parties in Kerala are often credited with the creation of Kerala model of development and the same Left laid the foundation for decentralisation experiments in the state through the PPC (Moolakkattu and Chathukulam, 2003). To address the deficits in Kerala	*Capability Traps? The Mechanisms of Persistent Implementation Failure* by Pritchett et al., (2010) *Premature Load Bearing: Doing too much too soon* by Andrews et al., (2017)

	model of development, especially the stagnation part, the Left Front government found a panacea in decentralisation. It is quite naive to argue (Isaac and Sreedharan, 1992) that the mass and class organisations that have come up in the state of Kerala following the leftist interventions could be used for enhancing production and addressing stagnation at the grassroots level. Thus, the imitation of Kerala model of development to address the stagnation at the local level via decentralisation without understanding ground reality backfired. An "isomorphic mimicry" of Kerala model of development is seen in Kerala model of decentralisation. There is a false sense of impression among the staff and elected functionaries that the local governments in Kerala are the best and they are capable and effective. It has led to "too much unrealistic expectations" on local governments and their functionaries. In some ways, this is akin to the idea of path dependence. The weight of the past modes of thinking centred around modelling development and the hype surrounding them seemed to have influenced the notions and dynamics of decentralisation in Kerala. 2. Premature load bearing is another major factor leading to capability trap in local governments in Kerala. It is clear that local government staff and elected functionaries are not efficient and capable enough; they also view themselves as disempowered entities. They are forced to perform tasks even before evaluating whether they are capable to perform it. It creates too much pressure on them, and leads to the collapse of even the small capability they have acquired. These processes when repeated leads to "capability traps. In other words, "*...asking too much of too little too soon too often"* (Andrews et al., 2017).	
6. Low Self Esteem (Cognitive Maps)	1. Poor self-esteem among the staff in local governments is another major reason. They view themselves as employees with little or "no autonomy", "less competence", and "less relatedness". The hierarchical structure is also designed in such a way that the staff in the local governments are inferior to those in the district and state level. The staff and elected functionaries of the selected local government view themselves as *"disempowered cogs in a hierarchical administrative culture that renders them powerless,"* (Aiyar and Bhattacharya, 2016)	The role of 'Cognitive Maps' have been highlighted by Mehta and Walton in *India's Political Settlement and Development Path* (2012)

	2. Service in the local government is not considered "prestigious enough" (Chathukulam and John, 2003). The senior political leaders in Kerala tend to shun local government elections, and it gives an impression that the positions are after all "not very coveted ones" (Chathukulam & John, 2003). 3. Generally, the local governments are viewed as "parking slots for lower-level government-officials," (Raghunandan, 2019)	*The Post Office Paradox: A Case Study of the Block Level Education Bureaucracy* by Aiyar and Bhattacharya, (2016) *Measuring Decentralisation: The Case of Kerala (India)* by Chathukulam and John, (2003). *Everything You Ever Wanted to Know About Bureaucracy but Were Afraid to Ask* by Raghunandan, (2019).
7.Emphasis on Legalistic and Rule-Bound Approaches, Ignoring Local Felt Needs	1. In the case of health grants, the functionaries in local governments blame the rigidity of guidelines in the 15th UFC report and MoHFW as the reason for delay in utilisation of funds. This is a major issue when it comes to implementing projects at the local level. The local needs of the community are neglected, and the blame for failure is shifted to the "rigidity" in the guidelines. Thus, the focus is on "delaying the development" and not fulfilling the needs and aspirations of the community. We observed that generally, the staff is more vocal on legalistic and rule-bound approaches. However, there are few qualms in violating the very same rules for their own interests. For instances, if it was road grants instead of health grants, things would have been entirely different.	*Bureaucratic Norms and State Capacity: Implementing Primary Education in India's Himalayan Region* by Mangla (2014) *The Post Office Paradox: A Case Study of the Block Level Education Bureaucracy*

		by Aiyar and Bhattacharya, (2016).
8. Thick and Thin Accountability	1. Local governments are failing at "thick accountability" involving "transaction - intensive service delivery" or "compliance with quality obligations". Similarly, in matters of "thin accountability" (managing office files or archives, maintaining filing cabinets, etc.) also, local governments are not in a good space. During the field visits, it was observed that files related to project implementation, fund flow, and government orders related to health grants are not properly documented. This in turn is related to knowledge deficit.	*Everything You Ever Wanted to Know About Bureaucracy But Were Afraid to Ask* by Raghunandan, (2019).

Source: Interview and FGDs with Elected Functionaries, Staff, and Health Workers in the Selected 36 Local Governments in Kerala.

The major inferences from our discussions and deliberations is that a "complex web" of issues consisting of eight common problems (See Table 9) and specific problems (See Table 5, 6, 7, 8) as the reasons for poor implementation and utilisation of health grants in Kerala. Local governments are entangled in a complex web of problems: politicisation, personalisation, corruption, post office syndrome, capability traps, poor self-esteem, greater emphasis on legal framework than on local felt needs, and absence of thick and thin accountability. Here, an inter-relation between eight common identified problems (discussed in Table 9) and specific problems (discussed in Table 5, 6, 7 and 8) can be seen.

During the discussions with the staff and elected functionaries, we got a detailed understanding of the depth of the politicisation, personalisation, and corruption involved in the fund allocation, fund utilisation, rent-fixing agreements, location for HWCs, appointment of contractual staff in the local governments, and transfer of the staff at the local governments – all of which are related to a lack of credible decentralisation and devolution.

The degree of intensity of the above identified problems varies both between and within tiers of local governments. For instance, in the selected 36 local governments, some of them were able to effectively use the health grants because the degree of intensity of the complex web of issues is found to be "low intensity", and the leadership there is capable of addressing these issues. On the contrary, in local governments with poor utilisation, there is high intensity of above-mentioned complex web of issues. Similarly, there is ignorance of local felt needs, along with the poor thin and thick accountability, and the leadership is ineffective to some extent in addressing these problems.

Local government functionaries are willing to act on something only if they receive orders directly from the state government. Local governments and functionaries are hardly viewed as "independent actors" and are treated as "post offices" or as "agents of state governments", in which they act and perform as per the demands made by the higher authorities. The influence of political parties and party hegemony has rendered local governments and its functionaries disempowered, and all these factors are preventing credible decentralisation.

The lack of motivation and support to the staff working at the local governments is a major reason for lack of confidence as well as disempowerment among those working in the local governments. They are viewed as "unpaid agents" and their roles in the office is likened to "post - offices". The bureaucratic misconceptions about the local governments also play a greater role in instilling poor self-esteem among the staff in local governments on their roles and functions. They view themselves as employees with little or no autonomy and less relatedness, or – in other words – disempowered cogs.

Misconceptions about Kerala model of decentralisation is the biggest capability trap for the local governments and its functionaries. Lack of credible decentralisation and devolution exists in the context of local governments in Kerala, and this was evident during the discussion with the staff and elected functionaries in the selected 36 local governments.

While Kerala model of development and Kerala model of decentralisation are flawed, there is an increasing tendency to glorify these models as the perfect example of development and empowerment. This has created a false sense of impression that the local governments in Kerala are the best and they are capable and effective. It has led to too much unrealistic expectations on local governments.

In general, local governments in Kerala, have showcased poor performance in the utilisation of health grants in FY21-22 and FY22-23. They have not lived up to expectations. The PPC focused on empowering rural local governments, especially Gram Panchayats, and this in a way sidelined the urban governments and urban healthcare. However, even the most empowered Gram Panchayats (the first-hand beneficiaries of the decentralisation campaign under PPC) in Kerala have proved to be a dismal failure in terms of utilisation of health grants. If the local governments in Kerala are struggling, what would be the status of utilisation of health grants in other states in India, where local governments and its functionaries are not empowered as in the case of Kerala?

Meanwhile, when compared with other local governments, Block Panchayats have been able to utilize health grants to some extent, though it is still below 50%. Municipalities and Corporations in Kerala have almost totally failed in utilizing the health grants. The findings emerging from this empirical study shows that urban health and urban governance in general are neglected territories even in states like Kerala, which has carved a niche in the realm of decentralisation (Gangadharan and Sufaira, 2019).

The poor performance in the utilisation of health grants is a reality check on the capacity and efficiency of local governments in Kerala, and it raises questions on the decentralisation experiences that emerged from the 1996 PPC. Notwithstanding the constitutional requirement for decentralised governance, the implementation of policies has been impeded by procedural obstacles stemming from legislation, regulations, and administrative measures. This phenomenon illustrates how habitual practices engender covert institutional inflexibilities that impede policy initiatives, despite their laudable objectives and democratic mandate(Jacob and Jacob, 2021).

Is there a decentralisation paradox in Kerala? The local governments and their elected functionaries also suffer from a multitude of deficits in the realms of autonomy, knowledge, capacity, governance, and integration. One of the major reasons for the deficit in terms of utilisation and implementation of health grants is the absence of Pritchett's "administrative modernism" and autonomy deficit for governing locally (Jacob and Jacob, 2021). Apart from that, governments and governance suffer from capacity and integration deficit, as well as lack of professionalism.

Kerala, a state (in the context of India, states refer to administrative regions within the country) within a State (India) (Here the second state denotes India. In Political Science, State is defined as a sovereign entity., has effectively made use of the power of public action to improve the wellbeing of the people, and to transform its social, economic, political, and cultural conditions. In the context of Indian states, (Kerala) refers to administrative regions within the country (India).

Kerala like any other state is a distinct political and administrative entity within the larger framework of Indian union. The second State or India as a State denotes the concept of state as a sovereign entity. When it comes to human development indicators, Kerala has emerged as a leading state in India. The state has consistently secured the top position in the Sustainable Development Goals Index in India. In 2022 and 2023, Kerala emerged as the state with least poor population in the country, as per the Multi-Dimensional Poverty Index (MPI) by NITI Aayog (MPI, 2022 and 2023). Kerala has also emerged as the best overall performer in the NITI Aayog Health Index in the last four consecutive years, especially during the Covid pandemic (Chathukulam et al., 2023).

Meanwhile, local governments that were able to utilize the heath grants to some extent have witnessed improvements in their healthcare facilities, including secondary-level palliative care institutions, and subsequent increase in footfalls in SCs, PHCs, CHCs, and HWCs. The 15th UFC in its report has pointed out that the Kerala model – in which local governments and the staff of public health institutions are able to effectively deliver healthcare at the local level in a collaborative framework – has inspired and motivated them to launch the health grants across India. If the role model "local governments" in Kerala itself fails to effectively utilize the health grants, then that would set a wrong precedent in the history of decentralisation experiments undertaken in India and across the globe.

The shocking underutilisation of health grants among the local governments in Kerala shows lack of credible decentralisation, excessive politicisation, personalisation, corruption, capability traps, post office syndrome, along with the absence of accountability. There is low level of professionalism among the staff and elected functionaries in local governments. The ineffectiveness of elected functionaries in office administration is evident to anyone who walks into their office. If one overhears the conversation between the staff and the elected functionaries, "misappropriation", "audit objection" and "procedure lapse" are the riposte from the staff. Generally, no files are seen on their tables, and it gives an impression that very few files are moving towards elected functionaries (including Chairpersons).

The elected functionaries are often absent, and most of them are interested in maintaining their presence as political leaders, spending a great deal of time in attending public functions and party meetings. This leaves them little time to concentrate on office administration. The core administration is still a concealed area for elected functionaries. There is a high degree of amateurishness in local governments in Kerala (Chathukulam and John, 2003). In short, this type of a caricature of Kerala model of decentralisation is seen in the present-day local governments in the state.

Governments at all levels, particularly local governments should periodically conduct "performance statement of institutions, staff, and elected functionaries"[8]. While monitoring mechanisms at the district, state and national level alone cannot tackle these issues effectively, in the absence of monitoring mechanisms, the ground realities and bottlenecks involved in the utilisation of health grants would remain unobserved.

Established think-tanks and policy experts, including NITI Aayog, should seriously invest in some monitoring mechanisms to address the underutilisation of health grants across India, so that the successive UFCs can also propose some strong institutional mechanisms within the local governments to ensure these grants (not limited to health grants) are rightly channelized and reaches the concerned beneficiaries. The appointment of the 16th UFC is scheduled to take place this year, and it will also have the challenging task of navigating the prevailing strained fiscal environment of Indian federalism, as suggested by Rao (2023).

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Appendix

Appendix No. 1: Allocation and Utilisation of Health Grants among Gram Panchayats (Rs.in Lakhs)

Sl. No	Name of the Gram Panchayats	Diagnostic Infrastructure to the PHCs					Conversion of Rural PHCs and SCs in to Health and Wellness Centre				Total Allocation	Total Expenditure	%
		Amount Released on 17-09-2022	Amount Released on 05-07-2022	Amount Released on 06-09-2022	Amount Released on 27-08-2022	Amount Released on 27-08-2022	Amount Released on 05-07-2022	Amount Released on 27.08-2022	Amount Released on 06-09-2022	Amount Released on 17-09-2022			
Thiruvananthapuram District													
1	AMBOORI	0	2.56288	0	0	0.93303	2.10	0.00	0.00		5.60	3.81234	68.13%
2	ANAD	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	0	0.00%
3	ANCHUTHENGU	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	3.34094	71.97%
4	ANDOORKONAM	0.83731	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.47	3.61439	66.03%
5	ARUVIKKARA	1.25597	1.99716	0	0	0.93303	1.55	0.00	0.00	0.53883	6.27	0	0.00%
6	ARYANAD	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	0	0.00%
7	ARYANCODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.62956	40.77%
8	ATHIYANNOOR	2.09328	2.8286	0.28	0	0.93303	2.60	0.00	0.30	0.898	9.93	0.9911	9.98%
9	AZHOOR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.75	16.56%
10	BALARAMPURAM	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.00	0.53883	6.32	5.94763	94.03%
11	CHEMMARUTHI	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	2.70931	63.06%
12	CHENKAL	0	1.7143	0	0	0.93303	1.30	0.00	0.00	0	3.95	2.64633	67.04%
13	CHERUNNIYOOR	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0	0.00%
14	CHIRAYINKEEZH	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
15	EDAVA	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	2.50352	58.27%
16	ELAKAMAN	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0	0.00%
17	KADAKKAVOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.49975	37.52%
18	KADINAMKULAM	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	0.76538	12.60%

19	KALLARA	1.25597	1.69716	0.28	0	0.93303	1.55	0.00	0.30	0.53883	6.55	4.18614	63.86%
20	KALLIKADU	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.19384	92.58%
21	KALLIYOOR	1.46529	2.28002	0	0	0.93303	1.85	0.00	0.00	0.62864	7.16	3.19997	44.71%
22	KANJIRAMKULAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.95323	73.88%
23	KARAKULAM	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.30	0.53883	6.62	0	0.00%
24	KARAVARAM	1.04664	1.7143	0	0	0.93303	1.30	0.00	0.00	0.44903	5.44	0.35923	6.60%
25	KARODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.98972	99.81%
26	KARUMKULAM	1.88395	2.54574	0.28	0	0.93303	2.35	0.00	0.00	0.80825	8.80	0	0.00%
27	KATTAKADA	0.41866	1.99716	0	0	0.93303	1.55	0.00	0.00	0.17961	5.08	0	0.00%
28	KILIMANOOR	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	4.65769	99.93%
29	KIZHUVILAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
30	KOLLAYIL	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.64733	66.23%
31	KOTTUKAL	0	3.1286	0	0	0.93303	2.60	0.00	0.00	0	6.66	1.71735	25.78%
32	KULATHOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
33	KUNNATHUKAL	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	3.3332	59.56%
34	KUTTICHAL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
35	MADAVOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
36	MALAYINKEEZHU	0	1.69716	0	0	0.93303	1.65	0.00	0.00	0.53883	4.82	1.41129	29.29%
37	MANAMBOOR	0	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0	4.28	0.6349	14.84%
38	MANGALAPURAM	1.04664	3.41146	0	0	0.93303	2.85	0.00	0.00	0.44903	8.69	0	0.00%
39	MANIKKAL	0	1.43144	0.28	0	0.93303	1.10	0.00	0.3	0	4.04	0.36032	8.91%
40	MARANALLOOR	1.04664	1.7143	0	0	0.93303	1.30	0.00	0.00	0.44903	5.44	1.18489	21.77%
41	MUDAKKAL	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.3308	58.31%
42	NAGAROOR	1.04664	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.44903	5.54	5.53982	99.99%
43	NANNIYODU	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	1.98272	26.66%
44	NAVAIKULAM	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.00	0.53883	6.32	4.14677	65.56%
45	NELLANAD	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	1.62772	51.44%

46	OTTASEKHARAMANGALAM	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	0	0.00%
47	OTTOOR	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	2.68176	84.31%
48	PALLICHAL	1.46529	2.28002	0	0	0.93303	1.85	0.00	0.00	0.62864	7.16	0	0.00%
49	PALLIKKAL	0	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0	3.16	2.92639	92.56%
50	PANAVOOR	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	0	0.00%
51	PANGODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.53019	100.00%
52	PARASSALA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.92312	37.98%
53	PAZHAYAKUNNUMMEL	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	3.38385	61.60%
54	PERINGAMALA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.5	62.54%
55	PERUMKADAVILA	0.62798	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.26942	5.17	1.73664	33.56%
56	POOVACHAL	0	2.56288	0.28	0	0.93303	2.10	0.00	0.30	0	6.18	0.13507	2.19%
57	POOVAR	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	2.67284	54.10%
58	POTHENCOD	0.83731	0.3	0	1.4	0.93303	0.00	1.50	0.00	0.35922	5.33	1.1152	20.92%
59	PULIMATH	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	3.04988	55.52%
60	PULLAMPARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.17273	33.85%
61	THIRUPURAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
62	THOLICODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.3716	59.33%
63	UZHAMALAKKAL	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.78735	44.71%
64	VAKKOM	0	0.84858	0	0	0.93303	0.80	0.00	0.00	0	2.58	0.79296	30.72%
65	VAMANAPURAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.59694	39.95%
66	VELLANAD	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0.4	6.06%
67	VELLARADA	2.09328	2.8286	0.28	0	0.93303	2.60	0.00	0.30	0.89806	9.93	0	0.00%
68	VEMBAYAM	1.67462	2.56288	0	0	0.93303	2.10	0.00	0.00	0.71845	7.99	0	0.00%
69	VENGANNOOR	1.67462	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.27	0	0.00%
70	VETTOOR	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	2.44238	56.85%

71	VILAPPIL	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	0.19388	2.61%
72	VILAVOORKKAL	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	0	0.00%
73	VITHURA	0	1.98002	0	0	0.93303	1.85	0.00	0.00	0	4.76	0	0.00%
	Sub Total	**41.02826**	**131.8726**	**5.32**	**1.4**	**68.11119**	**109.2**	**1.50**	**5.70**	**18.14**	**382.27**	**118.08**	**30.89%**
Kollam District													
74	ADICHANALLOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.53453	69.81%
75	ALAPPADU	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.57682	11.39%
76	ALAYAMON	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.9561	48.94%
77	ANCHAL	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
78	ARYANCAVU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.25802	36.31%
79	CHADAYAMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.5243	63.15%
80	CHATHANNOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
81	CHAVARA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.19361	63.08%
82	CHIRAKKARA	0	1.43144	0	0	0.93303	1.05	0.00	0.00	0	3.41	1.65	48.32%
83	CHITHARA	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	1.5	24.47%
84	CLAPPANA				1.42	0.93303	0.00	1.5	0.00	0	3.85	3.01246	78.18%
85	EAST KALLADA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
86	EDAMULAKKAL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
87	ELAMADU	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	3.10969	68.64%
88	ELAMPALOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.54367	53.57%
89	EZHUKONE	0.41866	0.3	0	0	0.93303				0.17961	1.83	0	0.00%
90	ITTIVA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.37	30.24%
91	KADAKKAL	0.83731	1.13144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.36	0	0.00%
92	KALLUVATHUKKAL	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	0.87099	20.59%
93	KARAVALOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.69337	48.88%
94	KAREEPRA	0.83731	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.35922	7.07	0	0.00%
95	KOTTAMKARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%

96	KULASHEKARAPURAM	0	3.69432	0	0	0.93303	3.15	0.00	0.00	0	7.78	4.21737	54.23%
97	KULAKKADA	1.25597	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.14	2.90727	40.73%
98	KULATHOOPUZHA	2.3026	3.11146	0.28	0	0.93303	2.85	0.00	0.30	0.98786	10.76	8.41235	78.15%
99	KUMMIL	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.87218	99.67%
100	KUNDARA	0	0.84858	0	0	0.93303	0.80	0.00	0.00	0	2.58	0	0.00%
101	KUNNATHOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.54252	88.23%
102	MAYYANAD	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
103	MELILA	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	1.55762	66.32%
104	MUNROTHURUTHU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
105	MYLOM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.44872	12.95%
106	MYNAGAPPALLI	1.04664	3.67718	0.28	0	0.93303	3.35	0.00	0.30	0.44903	10.04	0	0.00%
107	NEDUMPANA	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	0	0.00%
108	NEDUVATHUR	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.00	0.53883	6.32	0	0.00%
109	NEENDAKARA	0.41866	0.56572	0	0	0.93303	0.55	0.00	0.00	0.17961	2.65	0	0.00%
110	NILAMEL	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
111	OACHIRA	0.83731	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.47	3.03527	55.45%
112	PANAYAM	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	0	0.00%
113	PANMANA	1.88395	2.54574	0.28	0	0.93303	2.35	0.00	0.30	0.80825	9.10	0	0.00%
114	PATHANAPURAM	1.04664	3.1286	0.28	0	0.93303	2.60	0.00	0.30	0.44903	8.74	4.86239	55.65%
115	PATTAZHI		0.3		1.7	0.93303	0.00	1.80	0.00	0	4.73	0.36	7.61%
116	PATTAZHI VADAKKEKARA	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0.6	9.79%
117	PAVITHRESWARAM	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	4.29307	70.05%
118	PERAYAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.40625	60.20%
119	PERINAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.56451	39.14%
120	PIRAVANTHOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
121	POOTHAKULAM	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%

122	POOYAPPALLY	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	4.21089	90.34%
123	PORUVAZHY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.58032	14.52%
124	SASTHAMCOTTAH	1.04664	0.28286	0	0	0.93303	0.30	0.00	0.00	0.44903	3.01	1.2782	42.44%
125	SOORANADU NOTRH	0.83731	2.54574	0.28	0	0.93303	2.40	0.00	0.30	0.35922	7.66	3.27815	42.82%
126	SOORANADU SOUTH	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.24852	31.23%
127	THALAVOOR	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	1.89551	33.87%
128	THAZHAVA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.33689	83.48%
129	THEKKUMBHAGOM	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	1.36689	27.66%
130	THENMALA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
131	THEVALAKARA	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0.62448	11.16%
132	THODIYOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
133	THRIKKARUVA	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	0	0.00%
134	THRIKKOVILVATTOM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.015	0.38%
135	UMMANNOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.03237	40.14%
136	VELINALLOOR	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0	6.07	3.10095	51.12%
137	VELIYAM	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.00	0.53883	6.32	5.22027	82.53%
138	VETTIKAVALA	0	1.98002	0	0	0.93303	1.85	0.00	0.00	0	4.76	0	0.00%
139	VILAKUDY	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.07239	89.89%
140	WEST KALLADA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.18614	63.10%
141	YEROOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
	Sub Total	**23.65405**	**119.5725**	**4.2**	**3.12**	**63.44604**	**99.90**	**3.30**	**4.50**	**9.61**	331.30	**102.32**	30.88%
Pathanamthitta District													
142	ANIKKADU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.37413	10.80%
143	ARANMULA	1.25597	2.28002	0.28	0	0.93303	1.80	0.00	0.30	0.53883	7.39	0.7793	10.55%
144	ARUVAPPULAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	3.79022	83.67%
145	AYIROOR	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	2.21032	47.62%
146	CHENNERKKARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.45012	11.26%

147	CHERUKOLE	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.54383	44.56%
148	CHITTAR	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	0	0.00%
149	ELANTHOOR	1.04664	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.44903	5.24	2.0448	39.02%
150	ENADIMANGALAM	0.62798	2.8286	0.28	0	0.93303	2.60	0.00	0.30	0.26942	7.84	0	0.00%
151	ERATHU	0	1.99716	0	0	0.93303	1.65	0.00	0.00	0	4.58	0	0.00%
152	ERAVIPEROOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
153	EZHAMKULAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.77725	17.16%
154	EZHUMATTOOR	0.62798	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.26942	5.47	0.89469	16.34%
155	KADAMBANADU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.7777	19.46%
156	KADAPRA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.96966	56.85%
157	KALANJOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
158	KALLOOPPARA	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	1.35964	33.50%
159	KAVIYOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
160	KODUMON	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.82181	16.23%
161	KOIPURAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	3.75101	82.80%
162	KONNI GP	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0.30364	4.60%
163	KOTTANADU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.16271	33.56%
164	KOTTANGAL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.32	9.24%
165	KOZHENCHERRY	0	0.84858	0	0	0.93303	0.80	0.00	0.00	0	2.58	0	0.00%
166	KULANADA	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	3.69649	99.98%
167	KUNNATHANAM	0	1.98002	0	0	0.93303	1.85	0.00	0.00	0	4.76	0	0.00%
168	KUTTOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.17573	62.80%
169	MALAYALAPUZHA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.81909	52.51%
170	MALLAPPALLI				0.84	0.93303	0.00	0.9	0.00	0	2.67	2.67262	99.98%
171	MALLAPUZHASERRY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
172	MEZHUVELY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
173	MYLAPRA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.79733	27.67%

174	NARAGANAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.49914	14.41%
175	NARANAMMOOZHY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.89708	72.48%
176	NEDUMBRAM	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	1.79817	76.56%
177	NIRANAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.33521	38.54%
178	OMALLOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
179	PALLICKAL	0.62798	1.98002	0	0	0.93303	1.85	0.00	0.00	0.26942	5.66	0.64338	11.37%
180	PANDALAM THEKEKKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.15948	33.47%
181	PERINGARA	0.41866	1.13144	0.28	0	0.93303	1.10	0.00	0.3	0.17961	4.34	0	0.00%
182	PRAMADOM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
183	PURAMATTOM	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
184	RANNI	0	0.28286	0	0	0.93303	0.30	0.00	0.00	0	1.52	0	0.00%
185	RANNI- PERUNADU	1.25597	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.14	0.75051	10.51%
186	RANNI-ANGADI	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
187	RANNI-PAZHAVANGADI	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
188	SEETHATHODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
189	THANNITHODE	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.51423	10.16%
190	THOTTAPPUZHASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.39605	11.43%
191	THUMPAMON GP	0.20933	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.08981	2.93	1.27295	43.48%
192	VADASSERIKKARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.47761	36.96%
193	VALLIKODE	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.08658	60.23%
194	VECHOOCHIRA	0	2.8286	0	0	0.93303	2.60	0.00	0.00	0	6.36	0	0.00%
	Sub Total	**8.58244**	**81.53214**	**2.8**	**0.84**	**49.45059**	**67.00**	**0.90**	**3.00**	**3.68**	**217.79**	**49.32**	**22.65%**
Alappuzha District													
195	ALA GP	0.20933	0.86572	0	0	0.93303	0.55	0.00	0.00	0.08981	2.65	1.90235	71.84%
196	AMBALAPUZHA NORTH	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%

197	AMBALAPUZHA SOUTH	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
198	ARATTUPUZHA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.79038	94.82%
199	AROOKUTTY	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	0	0.00%
200	AROOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
201	ARYAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.21352	55.37%
202	BHARANIKAVU	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.9205	64.47%
203	BUDHANUR	0.41866	1.7143	0	0	0.93303	1.35	0.00	0.00	0.17961	4.60	1.12311	24.44%
204	CHAMPAKULAM	1.25597	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.14	2.35	32.92%
205	CHENNAM PALLIPPURAM	0.62798	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.94	0	0.00%
206	CHENNITHALA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.92017	77.43%
207	CHEPPADU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
208	CHERIYANAD	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0.42135	11.20%
209	CHERTHALA SOUTH	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
210	CHERUTHANA	0.62798	1.14858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.36	1.98874	45.62%
211	CHETTIKULANGARA	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	4.53419	81.03%
212	CHINGOLI	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.4701	51.02%
213	CHUNAKKARA	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
214	DEVIKULANGARA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.10464	38.33%
215	EDATHUA	1.88395	2.54574	0.28	0	0.93303	2.35	0.00	0.30	0.80825	9.10	0.669	7.35%
216	EEZHUPUNNA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.82377	95.66%
217	KADAKKARAPPALLY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
218	KAINAKARY	1.46529	2.28002	0	0	0.93303	1.85	0.00	0.00	0.62864	7.16	0	0.00%
219	KANDALLOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.90976	55.12%
220	KANJIKUZHI	1.67462	1.7143	0	0	0.93303	1.35	0.00	0.00	0	5.67	0	0.00%
221	KARTHIKAPPALLY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.22759	77.30%
222	KARUVATTA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%

223	KAVALAM	0.20933	1.7143	0	0	0.93303	1.40	0.00	0.00	0.08981	4.35	2.98282	68.63%
224	KODAMTHURUTH	0	1.7143	0	0	0.93303	1.34	0.00	0.00	0	3.99	2.63788	66.16%
225	KRISHNAPURAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.84525	24.40%
226	KUMARAPURAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.6104	21.18%
227	KUTHIYATHODE	0	2.28002	0	0	0.93303	1.90	0.00	0.00	0	5.11	0.92434	18.08%
228	MANNAMCHERY	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	1.09895	19.64%
229	MANNAR	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
230	MARARIKULAM NORTH	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.24805	64.15%
231	MARARIKULAM SOUTH	0	2.26288	0	0	0.93303	2.10	0.00	0.00	0	5.30	3.23159	61.02%
232	MAVELIKKARA THAMARAKKULAM	0	1.99716	0	0	0.93303	1.60	0.00	0.30	0	4.83	4.00453	82.91%
233	MAVELIKKARA THEKKEKKARA	1.46529	1.98002	0.28	0	0.93303	1.90			0.62864	7.19	0	0.00%
234	MUHAMMA	1.04664	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.44903	6.31	3.85567	61.14%
235	MULAKUZHA	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0.90328	21.02%
236	MUTHUKULAM	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	1.84307	39.71%
237	MUTTAR	0.20933	0.86572	0	0	0.93303	0.55	0.00	0.00	0.08981	2.65	0.63971	24.16%
238	NEDUMUDI	0	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0	5.88	0	0.00%
239	NEELAMPEROOR	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	0	0.00%
240	NOORANAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.42382	10.60%
241	PALAMEL	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
242	PALLIPADU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.41863	12.08%
243	PANAVALLY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.1297	78.29%
244	PANDANAD	0.20933	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.08981	2.93	2.92781	100.00 %
245	PATHIYOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.96902	58.64%
246	PATTANAKKAD	1.46529	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.74	2.66048	34.39%

247	PERUMBALAM	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	0	0.00%
248	PULINCUNNU	0.20933	1.99716	0	0	0.93303	1.10	0.00	0.00	0.08981	4.33	0	0.00%
249	PULIYUR	0.20933	1.13144	0	0	0.93303	0.80	0.00	0.00	0.08981	3.16	1.3008	41.12%
250	PUNNAPRA NORTH	0	1.14858	0	0	0.93303	1.65	0.00	0.00	0	3.73	1.62445	43.53%
251	PUNNAPRA SOUTH	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.85564	99.10%
252	PURAKKAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.18451	29.63%
253	RAMANKARY	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	0.99938	31.42%
254	THAKAZHI	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.00235	59.30%
255	THALAVADY	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0.99994	16.32%
256	THANNEERMUKKOM	1.67462	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.27	1.97764	23.92%
257	THAZHAKARA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.44054	98.02%
258	THIRUVANVANDOOR	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	0	0.00%
259	THRIKKUNNAPUZHA	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	2.28496	34.59%
260	THURAVOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.42007	69.85%
261	THYCATTUSSERY	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	3.82859	77.49%
262	VALLIKUNNAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
263	VAYALAR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.32771	33.21%
264	VEEYAPURAM	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	1.54465	65.76%
265	VELIYANAD	0.20933	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.08981	3.46	0	0.00%
266	VENMONY	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0.5	11.64%
	Sub Total	**23.23539**	**118.59532**	**5.32**	**0**	**67.17816**	**97.04**	**0.00**	**5.7**	**9.25005**	**326.32**	**106.0154**	**32.49%**
						Kottayam District							
267	AKALAKUNNAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.64733	66.23%
268	ARPOOKARA	0.83731		0	1.12	0.93303	0.00	1.20	0.00	0.35922	4.45	0.12278	2.76%
269	AYMANAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.04846	40.46%
270	ATHIRAMPUZHA	1.04664	4.2429	0.28	0	0.93303	3.85	0.00	0.30	0.44903	11.10	4.34322	39.12%
271	AYARKUNNAM	1.04664	1.4143	0.28	0	0.93303	1.30	0.00	0.30	0.44903	5.72	5.15221	90.03%

272	BHARANANGANAM	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	1.54013	26.68%
273	CHEMPU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.12107	61.22%
274	CHIRAKKADAVU	1.25597		0	1.12	0.93303	0.00	1.20	0.00	0.53883	5.05	0.38081	7.54%
275	ELIKULAM	0.62798	0.84858	0	0	0.93303	0.80	0.00	0.00	0.26942	3.48	2.3787	68.37%
276	ERUMELY	2.3026	3.67718	0.28	0	0.93303	3.35	0.00	0.30	0.98786	11.83	0	0.00%
277	KADANADU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.14375	3.60%
278	KADAPLAMATTOM	0.41866	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.17961	3.23	1.34543	41.69%
279	KADUTHURUTHY	0.83731	1.99716	0	0	0.93303	1.60	0.00	0.00	0.35922	5.73	1.42794	24.93%
280	KALLARA	0.62798	1.14858	0	0	0.93303	0.80	0.00	0.00	0.26942	3.78	1.32998	35.19%
281	KANAKKARY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	3.18721	92.00%
282	KANGAZHA	1.04664	2.8286	0.28	0	0.93303	2.60	0.00	0.30	0.44903	8.44	1.54656	18.33%
283	KANJIRAPPALLY	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.20667	26.64%
284	KAROOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.73878	68.52%
285	KARUKACHAL	0.83731	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.35922	6.54	2.59521	39.68%
286	KIDANGOOR	0.62798	1.69716	0	0	0.93303	1.60	0.00	0.00	0.26942	5.13	3.66355	71.45%
287	KOOROPADA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
288	KOOTTIKKAL	0.41866	0.84858	0.28	0	0.93303	0.85	0.00	0.30	0.17961	3.81	0	0.00%
289	KORUTHODE		0.3	0	0	0.93303	0.00	0.60	0.00	0	1.83	0	0.00%
290	KOZHUVANAL	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
291	KUMARAKOM	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	0	0.00%
292	KURAVILANGAD	0.83731		0	0.84	0.93303	0.00	0.90	0.00	0.35922	3.87	2.61034	67.46%
293	KURICHY	0.62798		0.28	0.84	0.93303	0.00	0.90	0.30	0.26942	4.15	1.94658	46.90%
294	MADAPPALLY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.62733	15.69%
295	MANARCADU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.94496	67.50%
296	MANIMALA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.38137	96.71%
297	MANJOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
298	MARANGATTUPILLY	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%

299	MARAVANTHTURUTH	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.96863	85.69%
300	MEENACHIL	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	0	0.00%
301	MEENADOM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.31267	95.20%
302	MELUKAVU	0	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0	3.16	0	0.00%
303	MOONILAVU	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0.1419	3.77%
304	MULAKKULAM	0.20933	1.99716	0.28	0	0.93303	1.60	0.00	0.30	0.08981	5.41	0	0.00%
305	MUNDAKKAYAM	0.83731	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	5.24	0	0.00%
306	MUTHOLY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.36263	12.58%
307	NEDUMKUNNAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
308	NEENDOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.00958	50.27%
309	NJEEZHOOR	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0.12489	3.32%
310	PAIPPADU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.98922	69.03%
311	PALLIKATHODU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
312	PAMPADI				1.12	0.93303	0.00	1.20	0.00	0	3.25	2.9237	89.88%
313	PANACHIKKAD GP	1.46529	2.28002	0.28	0	0.93303	1.90	0.00	0.30	0.62864	7.79	0	0.00%
314	PARATHODU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.05348	1.34%
315	POONJAR	0.20933	2.28002	0	0	0.93303	0.80	0.00	0.00	0.08981	4.31	3.07769	71.37%
316	POONJAR THEKKEKKARA	0.20933	1.14858	0	0	0.93303	1.60	0.00	0.00	0.08981	3.98	0	0.00%
317	PUTHUPPALLY	0	1.99716	0.56	0	0.93303	1.90	0.00	0.60	0	5.99	0	0.00%
318	RAMAPURAM	1.67462	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.27	0.42373	5.12%
319	TEEKOY	0.20933	0.86572	0	0	0.93303	0.55	0.00	0.00	0.08981	2.65	2.64781	100.00 %
320	THALANADU	0.20933	2.28002	0	0	0.93303	1.85	0.00	0.00	0.08981	5.36	0	0.00%
321	THALAPPALAM	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	1.28981	34.27%
322	THALAYAZHAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.81871	63.11%
323	THALAYOLAPARAMBU	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	3.60827	62.50%

324	THIDANADU	0.20933	0.3	0	0	0.93303	0.00	1.50	0.00	0.08981	3.03	0	0.00%
325	THIRUVARPP	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.37717	47.79%
326	THRIKODITHANAM	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	2.68823	84.95%
327	TV PURAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.07855	72.13%
328	UDAYANAPURAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.34843	33.73%
329	UZHAVOOR	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	4.22019	99.76%
330	VAKATHANAM	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	3.59749	97.30%
331	VAZHAPPALLY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
332	VAZHOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.80185	80.87%
333	VECHOOR	1.25597	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.53883	5.54	2.76119	49.85%
334	VELIYANNOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0.53883	4.00	3.46447	86.54%
335	VELLAVOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
336	VELLOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
337	VIJAYAPURAM	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	1.82761	57.75%
	Sub Total	**23.65405**	**102.06946**	**5.32**	**5.04**	**66.24513**	**83.40**	**7.50**	**5.70**	**10.69**	309.62	**105.35**	**34.03%**
						Idukki District							
338	ADIMALI	2.93059	4.26004	0	0	0.93303	3.60	0.00	0.00	1.25728	12.98	1.02846	7.92%
339	ALAKODE	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	1.78199	75.87%
340	ARAKULAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.65548	58.62%
341	AYYAPPANCOVIL	0	1.7143	0	0	0.93303	1.40	0.00	0.00	0	4.05	1.11277	27.49%
342	BISONVALLEY	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	3.17922	68.21%
343	CHAKKUPALLAM	0	1.99716	0	0	0.93303	1.55	0.00	0.00	0	4.48	1.10344	24.63%
344	CHINNAKANAL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
345	DEVIKULAM	1.88395	2.8286	0.28	0	0.93303	2.60	0.00	0.30	0.80825	9.63	1.10361	11.46%
346	EDAMALAKUDI	0.20933		0	0.3	0.93303	0.00	0.30	0.00	0.08981	1.83	0	0.00%
347	EDAVETTY	0	0.86572	0	0	0.93303	0.60	0.00	0.00	0	2.40	0	0.00%
348	ELAPPARA	0	1.98002	0	0	0.93303	1.85	0.00	0.00	0	4.76	0.76464	16.05%

349	ERATTAYAR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
350	KAMAKSHY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
351	KANCHIYAR	0	1.99716	0	0	0.93303	1.65	0.00	0.00	0	4.58	3.25648	71.10%
352	KANJIKUZHY	0	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	6.59	3.6699	55.65%
353	KANTHALLOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
354	KARIMANNOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.38406	84.66%
355	KARIMKUNNAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.64666	22.44%
356	KARUNAPURAM	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	1.6	37.82%
357	KODIKULAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.11766	38.79%
358	KOKKAYAR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
359	KONNATHADY	2.51193	3.69432	0	0	0.93303	3.10	0.00	0.00	1.07767	11.32	0	0.00%
360	KUDAYATHOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.293	10.17%
361	KUMARAMANGALAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.18372	34.17%
362	KUMILY	0	3.1286	0	0	0.93303	2.60	0.00	0.00	0	6.66	0.9994	15.00%
363	MANAKKAD	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.59479	46.03%
364	MANKULAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
365	MARAYOOR	0.41866	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.17961	3.76	3.05748	81.32%
366	MARIYAPURAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
367	MUNNAR	2.09328	2.54574	0	0	0.93303	2.35	0.00	0.00	0.89806	8.82	0	0.00%
368	MUTTOM	0.41866	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.17961	3.23	1.49877	46.44%
369	NEDUMKANDAM	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
370	PALLIVASAL	1.88395	2.84574	0.28	0	0.93303	2.35	0.00	0.30	0.80825	9.40	0.89157	9.48%
371	PAMPADUMPARA	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	2.51997	41.49%
372	PEERMADE	1.88395		0	2.24	0.93303	0.00	2.4	0.00	0.80825	8.27	0	0.00%
373	PERUVANTHANAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.37294	7.37%
374	PURAPUZHA	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	2.06396	50.85%
375	RAJAKKAD	1.04664	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.44903	6.31	6.10419	96.80%

376	RAJAKUMARY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	3.45953	99.86%
377	SANTHANPARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
378	SENAPATHY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
379	UDUMBANCHOLA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
380	UDUMBANNOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.37938	59.52%
381	UPPUTHARA	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	2.38064	32.01%
382	VANDENMEDU	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
383	VANDIPERIYAR	2.3026	5.6572	0.28	0	0.93303	5.10	0.00	0.30	0.98786	15.56	0	0.00%
384	VANNAPPURAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.65889	16.48%
385	VATHIKKUDY	2.3026	3.11146	0.28	0	0.93303	2.85	0.00	0.30	0.98786	10.76	0	0.00%
386	VATTAVADA	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
387	VAZHATHOPE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
388	VELLATHOOVAL	2.09328	3.1286	0.28	0	0.93303	2.60	0.00	0.30	0.89806	10.23	4.92274	48.11%
389	VELLIYAMATTAM	1.04664	1.99716	0	0	0.93303	1.60	0.00	0.00	0.44903	6.03	0	0.00%
	Sub Total	**28.04992**	**95.67514**	**3.64**	**2.54**	**48.51756**	**79.40**	**2.70**	**3.90**	**12.75**	277.18	**60.79**	**21.93%**
Ernakulam District													
390	AIKKARANAD GP	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
391	ALANGAD	1.25597	1.99716	0	0	0.93303	1.55	0.00	0.00	0.53883	6.27	4.49382	71.61%
392	AMBALLOOR	0.41866	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.17961	4.34	4.34261	100.00 %
393	ARAKKUZHA	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	2.14108	52.75%
394	ASSAMANOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.35836	68.07%
395	AVOLY	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
396	AYAVANA	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0.89648	38.17%
397	AYYAMPUZHA GP	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.37102	47.58%
398	CHELLANAM	0	1.99716	0.56	0	0.93303	1.60	0.00	0.60	0	5.69	0	0.00%
399	CHENDAMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
400	CHENGAMANAD	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%

401	CHERANALLOOR	0.83731	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	5.24	3.33852	63.70%
402	CHITTATTUKARA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.51969	99.77%
403	CHOORNIKKARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.40607	60.19%
404	CHOTTANIKKARA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.68658	93.23%
405	EDAKKATTUVAYAL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.18656	26.19%
406	EDATHALA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
407	EDAVANNAKKADU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.57677	74.38%
408	ELAMKUNNAPPUZHA	0.83731	2.84574	0.28	0	0.93303	2.35	0.00	0.30	0.35922	7.91	0.3915	4.95%
409	ELANJI	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	0.39591	12.45%
410	EZHIKKARA	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	2.18451	44.21%
411	KADAMAKKUDY	0.41866	1.14858	0.28	0	0.93303	0.80	0.00	0.30	0.17961	4.06	4.05975	100.00 %
412	KADUNGALLOOR	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	3.15585	57.45%
413	KALADY	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	0	0.00%
414	KALLOORKADU	0.41866	0.86572	0.28	0	0.93303	0.55	0.00	0.30	0.17961	3.53	0.83683	23.73%
415	KANJOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.04096	70.83%
416	KARUKUTTY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.0909	52.31%
417	KARUMALLOOR	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	4.34833	79.16%
418	KAVALANGAD	0.83731	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.47	3.22898	58.99%
419	KEERAMPARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.41311	69.65%
420	KEEZHMAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
421	KIZHAKAMBALAM	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	1.14588	15.41%
422	KOOVAPPADY	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.22115	24.12%
423	KOTTAPADY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.41098	60.31%
424	KOTTUVALLY	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.9074	20.03%
425	KUMBALAM	0	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0	4.58	2.47373	54.04%
426	KUMBALANGI	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0.99249	15.03%
427	KUNNATHUNAD	0	2.28002	0	0	0.93303	1.90	0.00	0.00	0	5.11	2.6821	52.46%

428	KUNNUKARA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
429	KUTTAMPUZHA	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0	0.00%
430	KUZHIPPILLY	0.41866	0.86572	0.28	0	0.93303	0.55	0.00	0.3	0.18	3.53	3.52689	100.00 %
431	MALAYATTOOR NEELEESWARAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.68309	92.14%
432	MANEED	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	3.76353	100.00 %
433	MANJALLOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.80789	28.04%
434	MANJAPRA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.04692	71.03%
435	MARADY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.08161	72.24%
436	MAZHUVANNOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
437	MOOKKANNOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
438	MUDAKUZHA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.2522	7.28%
439	MULANTHURUTHY	0.41866		0.28	0.84	0.93303	0.00	0.9	0.30	0.17961	3.85	0.99069	25.72%
440	MULAVUKAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.82137	70.58%
441	NAYARAMBALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.80775	45.22%
442	NEDUMBASSERY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.39201	59.84%
443	NELLIKKUZHY	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.46985	54.52%
444	NJARAKKAL	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	2.84693	89.97%
445	OKKAL	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
446	PAINGOTTOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.53465	15.43%
447	PAIPRA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
448	PALAKUZHA	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0.71909	19.11%
449	PALARIMANGALAM	0.62798	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.26942	3.53	0	0.00%
450	PALLIPPURAM	1.04664	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.44903	7.14	2.03566	28.52%
451	PAMPAKUDA	0.20933	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.08981	4.04	0.69675	17.23%
452	PARAKADAVU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.91703	47.96%

453	PINDIMANA	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	0.9608	25.99%
454	POOTHRIKKA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
455	POTHANICAUD	0	0.86572	0.28	0	0.93303	0.55	0.00	0.30	0	2.93	2.32724	79.46%
456	PUTHANVELIKKARA	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	1.03109	32.58%
457	RAMAMANGALAM	0.20933	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.08981	3.46	0	0.00%
458	RAYAMANGALAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.29323	94.77%
459	SREEMOOLANAGARAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.53001	44.16%
460	THIRUMARADY	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	0.48715	15.32%
461	THIRUVANIYOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
462	THURAVOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.87725	99.85%
463	UDAYAMPERUR	0.20933	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.08981	4.88	3.03629	62.26%
464	VADAKKEKARA	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
465	VADAVUCODE PUTHENCURZE	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.3	0.53883	6.60	0.83902	12.70%
466	VALAKAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.06192	2.15%
467	VARAPETTY	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	3.78848	81.62%
468	VARAPUZHA	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	5.36836	92.99%
469	VAZHAKULAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
470	VENGOLA	1.25597	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.14	3.09834	43.41%
471	VENGOOR	0.83731	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.35922	6.54	1.3676	20.91%
	Sub Total	**24.07273**	**122.6582**	**8.4**	**0.84**	**76.50846**	**99.50**	**0.90**	**9.00**	**10.33**	352.21	**135.76**	**38.55%**
						Thrissur District							
472	ADAT	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.77847	61.72%
473	ALAGAPPANAGAR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.59451	17.16%
474	ALOOR	1.67462	2.56288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.57	0.31417	3.67%
475	ANNAMANADA	0.62798	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.26942	5.47	1.27256	23.24%
476	ANTHIKKAD	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	1.49485	30.25%

477	ARIMBUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
478	ATHIRAPPILLY	0.20933	2.28002	0	0	0.93303	1.85	0.00	0.00	0.08981	5.36	1.83237	34.17%
479	AVANOOR		0.3	0	0.86	0.93303	0.00	0.90	0.00	0	2.99	2.29703	76.75%
480	AVINISSERY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
481	CHAZHUR	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0.98975	17.14%
482	CHELAKKARA	1.46529	2.28002	0	0	0.93303	1.85	0.00	0.00	0.62864	7.16	0.96269	13.45%
483	CHERPU	0.83731	1.13144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.36	3.27711	75.15%
484	CHOONDAL	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.38751	9.69%
485	CHOWANNUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.36447	68.25%
486	DESAMANGALAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
487	EDATHIRUTHI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
488	EDAVILANGU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.89149	30.94%
489	ELAVALLY	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.90507	64.13%
490	ENGANDIYUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.88161	100.00 %
491	ERIYAD	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	1.20477	16.20%
492	ERUMAPETTY	1.04664	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.44903	7.37	0	0.00%
493	KADAGODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
494	KADAPPURAM	0.20933	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.08981	4.04	2.68593	66.42%
495	KADAVALLUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
496	KADUKUTTY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.40066	60.06%
497	KAIPAMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.98374	24.61%
498	KAIPARAMBU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.98284	57.23%
499	KANDANASSERY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.14947	53.77%
500	KARALAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.61938	17.88%
501	KATTAKAMBAL	0.41866	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.17961	4.88	0	0.00%
502	KATTOOR	0.41866	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.17961	3.23	0	0.00%
503	KODAKARA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	3.81519	84.22%

504	KODASSERY	1.67462	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.71845	7.74	0	0.00%
505	KOLAZHY	0.41866	1.14858	0.28	0	0.93303	0.80	0.00	0.30	0.17961	4.06	0.58259	14.35%
506	KONDAZHY	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	3.21809	69.04%
507	KORATTY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.05263	26.33%
508	KUZHUR	0.62798	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.94	4.18987	84.78%
509	MADAKKATHARA	0.20933	2.84574	0.28	0	0.93303	2.35	0.00	0.30	0.08981	7.01	0.9734	13.89%
510	MALA	1.25597	1.69716	0.28	0	0.93303	1.65	0.00	0.30	0.53883	6.65	6.30486	94.74%
511	MANALUR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
512	MATHILAKAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.037	75.98%
513	MATTATHUR	1.88395	2.54574	0.28	0	0.93303	2.35	0.00	0.30	0.80825	9.10	4.13707	45.46%
514	MELOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.96731	58.61%
515	MULAMKUNNATHUKAVU	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	3.91228	69.91%
516	MULLASSERY	0.41866	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.17961	3.76	0	0.00%
517	MULOORKKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.58788	16.97%
518	MURIYAD	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	0	0.00%
519	NADATHARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.24958	64.93%
520	NATTIKA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.92593	32.13%
521	NENMANIKKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.95248	85.22%
522	ORUMANAYUR	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0.56206	23.93%
523	PADIYUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
524	PANANCHERY	0.83731	1.14858	0	0	0.93303	0.80	0.00	0.00	0.35922	4.08	1.38454	33.95%
525	PANJAL	0.62798	1.14858	0	0	0.93303	0.80	0.00	0.00	0.26942	3.78	0.02967	0.79%
526	PARALAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.39415	40.24%
527	PARAPPUKKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.73543	78.96%
528	PARIYARAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.93946	38.31%
529	PAVARATTY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
530	PAZHAYANNUR	1.46529	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.74	0.4278	5.53%

531	PERINJANAM	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	0	0.00%
532	POOMANGALAM	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0.72408	30.83%
533	PORKULAM	0.41866	1.7143	0	0	0.93303	1.35	0.00	0.00	0.17961	4.60	3.07048	66.81%
534	POYYA	0.62798	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.94	1.25323	25.36%
535	PUNNAYUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.64808	41.23%
536	PUNNAYURKULAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.56293	16.25%
537	PUTHENCHIRA	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	3.07372	62.21%
538	PUTHUKKAD				1.12	0.93303	0.00	1.2	0.00	0	3.25	2.34041	71.95%
539	PUTHUR	0	3.41146	0	0	0.93303	2.85	0.00	0.00	0	7.19	0	0.00%
540	SREENARAYANAPURAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.36445	26.95%
541	THALIKULAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.41161	83.69%
542	THANNIYAM	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0.2048	3.55%
543	THEKKUMKARA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.58077	31.22%
544	THIRUVILWAMALA	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	0	0.00%
545	THOLUR	0.41866	0.56572	0.28	0	0.93303	0.55	0.00	0.30	0.17961	3.23	3.22689	100.00%
546	TRIKKUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.97708	24.44%
547	VADAKKEKKAD	0.41866	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.17961	4.34	0	0.00%
548	VALAPPAD	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	1.5565	23.57%
549	VALLACHIRA	0	1.14858	0.28	0	0.93303	0.80	0.00	0.30	0	3.46	1.6836	48.64%
550	VALLATHOL NAGAR	0.62798	1.14858	0	0	0.93303	0.80	0.00	0.00	0.26942	3.78	0.96413	25.51%
551	VARANDARAPILLY	0	3.41146	0	0	0.93303	2.85	0.00	0.00	0	7.19	2.96778	41.25%
552	VARAVOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.15527	53.92%
553	VATANAPPALLY	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
554	VELLANGALLUR	1.25597	1.99716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.90	3.76374	54.51%
555	VELOOKKARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.4116	10.30%
556	VELOOR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.64933	58.48%

557	VENKIDANGU	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.92644	20.45%
	Sub Total	**30.56186**	**137.73548**	**8.12**	**1.98**	**80.24058**	**112.10**	**2.10**	**8.7**	**13.11164**	394.65	**125.1666**	**31.72%**
						Palakkad District							
558	AGALI	2.3026	3.39432	0.28	0	0.93303	3.10	0.00	0.30	0.98786	11.30	0	0.00%
559	AKATHETHARA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.07626	72.05%
560	ALANALLUR	1.46529	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.62864	7.44	0	0.00%
561	ALATHUR	1.25597		0	1.12	0.93303	0.00	1.20	0.00	0.53883	5.05	0	0.00%
562	AMBALAPARA	0	1.98002	0	0	0.93303	1.85	0.00	0.00	0	4.76	0.5712	11.99%
563	ANAKKARA	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	1.25	25.88%
564	ANANGANADI	0.20933	2.28002	0	0	0.93303	1.85	0.00	0.00	0.08981	5.36	0.94358	17.60%
565	AYILUR GP	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
566	CHALAVARA	0	2.54574	0.28	0	0.93303	2.35	0.00	0.30	0	6.41	0	0.00%
567	CHALISSERY	0	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	4.64	3.96249	85.46%
568	ELAPPULLY	1.67462	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.27	0	0.00%
569	ELAVANCHERY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.12685	28.19%
570	ERIMAYOOR	1.25597	1.99716	0	0	0.93303	1.60	0.00	0.00	0.53883	6.32	1.75259	27.71%
571	ERUTHEMPATHY	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0.72066	12.88%
572	KANHIRAPPUZHA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.99122	74.83%
573	KANNADI	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0	0.00%
574	KANNAMBRA	1.04664	1.99716	0	0	0.93303	1.60	0.00	0.00	0.44903	6.03	0	0.00%
575	KAPPUR	0.41866	1.7143	0	0	0.93303	1.35	0.00	0.00	0.17961	4.60	2.60166	56.61%
576	KARAKURISSI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
577	KARIMBA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.46068	11.52%
578	KARIMPUZHA	0.41866	2.28002	0	0	0.93303	1.90	0.00	0.00	0.17961	5.71	2.62003	45.87%

579	KATAMPAZHIPURAM	0	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0	4.81	0	0.00%
580	KAVASSSERY	0.83731	1.7143	0	0	0.93303	1.35	0.00	0.00	0.35922	5.19	2.94984	56.79%
581	KERALASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	3.38947	97.84%
582	KIZAKKENCHERRY	0	3.41146	0	0	0.93303	2.85	0.00	0.00	0	7.19	0.96373	13.40%
583	KODUMBU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
584	KODUVAYUR	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	2.62997	39.82%
585	KOLLENGODE	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.79754	35.50%
586	KONGAD	0	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0	5.34	0	0.00%
587	KOPPAM	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	2.53421	43.90%
588	KOTTAYI	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0	0.00%
589	KOTTOPADAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
590	KOZHINJAPARA				1.12	0.93303	0.00	1.20	0.00	0	3.25	0	0.00%
591	KULUKKALLUR	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	0.14898	2.45%
592	KUMARAMPUTHUR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
593	KUTHANUR	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	3.50552	72.59%
594	KUZHALMANNAM	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.539	6.60	0	0.00%
595	LAKKIDI-PERUR	0.41866	3.1286	0	0	0.93303	2.70	0.00	0.00	0.17961	7.36	1.68985	22.96%
596	MALAMPUZHA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.6617	16.55%
597	MANKARA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.07194	71.90%
598	MANNOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.52579	15.18%
599	MARUTHAROAD	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
600	MATHUR	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0	0.00%
601	MELARCODE	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	0.98176	17.87%

602	MUNDUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
603	MUTHALAMADA	0	3.41146	0.28	0	0.93303	2.85	0.00	0.30	0	7.77	0	0.00%
604	MUTHUTHALA	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	3.51536	75.42%
605	NAGALASSERY	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0.38929	10.34%
606	NALLEPILY	0	2.56288	0	0	0.93303	2.15	0.00	0.00	0	5.65	1.59725	28.29%
607	NELLAYA	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	1.51706	31.41%
608	NELLIYAMPATHY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.67166	19.39%
609	NEMMARA	1.04664	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.44903	6.31	0.29362	4.66%
610	ONGALLUR	1.25597	1.99716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.90	2.22297	32.19%
611	PALLASSANA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.66633	91.72%
612	PARALI	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
613	PARUTHUR	0	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0	4.58	0	0.00%
614	PATTENCHERY	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	1.53076	23.18%
615	PATTITHARA	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	0	0.00%
616	PUDUNAGRAM	0	1.43144	0	0	0.93303	0.00	0.00	0.00	0	2.36	0	0.00%
617	PERINGOTTUKURISSI	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	1.10977	22.98%
618	PERUMATTI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.48806	12.21%
619	PERUVEMBA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.85279	46.35%
620	PIRAYITI	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
621	POLPULLY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.5538	53.92%
622	POOKKOTTUKAV	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	0	0.00%
623	PUDUKODE	1.04664	1.43144	0	0	0.93303	1.10	0.00	0.00	0.44903	4.96	1.17319	23.65%
624	PUDUPPARIYARAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%

625	PUDUR	0	1.99716	0	0	0.93303	1.55	0.00	0.00	0	4.48	0	0.00%
626	PUDUSSERY	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
627	SHOLAYUR	0	3.1286	0	0	0.93303	2.60	0.00	0.00	0	6.66	4.54857	68.28%
628	SREEKRISHNAPURAM	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	1.82446	42.46%
629	THACHAMPARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
630	THACHANATTUKARA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
631	THAROOR	1.04664	3.11146	0.28	0	0.93303	2.85	0.00	0.30	0.44903	8.97	4.97673	55.48%
632	THENKARA	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
633	THENKURISSI	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	3.31744	68.69%
634	THIRUMITTAKODE	0.20933	1.99716	0	0	0.93303	1.60	0.00	0.00	0.08981	4.83	0	0.00%
635	THIRUVEGAPPURA	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	4.07619	67.12%
636	THRIKKADEERI	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	0.54516	12.69%
637	TRITHALA	0.20933	1.4143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.00	1.83873	46.01%
638	VADAKARAPTHY	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.58251	51.01%
639	VADAKKANCHERRY	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	6.60459	99.99%
640	VADAVANNUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
641	VALLAPUZHA	0.20933	1.43144	0	0	0.93303	1.10	0.00	0.00	0.08981	3.76	1.60772	42.72%
642	VANDAZHI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.06175	26.56%
643	VANIYAMKULAM	0.20933	1.14858	0	0	0.93303	0.80	0.00	0.00	0.08981	3.18	1.03481	32.53%
644	VELLINEZHY	0.41866	1.99716	0	0	0.93303	1.60	0.00	0.00	0.17961	5.13	0	0.00%
645	VILAYUR	0.83731	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	5.24	0	0.00%
	Sub Total	**31.8179**	**160.14998**	**5.88**	**2.24**	**82.10664**	**130.60**	**2.40**	**6.30**	**14.01**	435.50	**100.53**	**23.08%**
Malappuram District													
646	ALANCODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.60527	35.43%

647	ALIPARAMBA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
648	AMARAMBALAM	0	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0	5.64	2.41595	42.81%
649	ANAKKAYAM	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.59149	31.43%
650	ANGADIPURAM	0	2.28002	0	0	0.93303	1.90	0.00	0.00	0	5.11	0	0.00%
651	AR NAGAR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.3073	28.86%
652	AREEKODE	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	0	0.00%
653	ATHAVANAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.39375	9.85%
654	CHALIYAR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.01729	75.48%
655	CHEEKODE	0.83731	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.77	1.14899	19.90%
656	CHELEMBRA	0	1.7143	0	1.7	0.93303	1.35	1.80	0.00	0	7.50	0	0.00%
657	CHERIYAMUNDAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
658	CHERUKAVU	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.71549	49.52%
659	CHOKKAD	0	1.7143	0	1.42	0.93303	1.35	1.50	0.00	0	6.92	0.17738	2.56%
660	CHUNGATHARA	0.83731	2.56288	0.28	0	0.93303	2.25	0.00	0.30	0.35922	7.52	0	0.00%
661	EDAKKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.01507	29.30%
662	EDAPATTA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.17112	25.85%
663	EDAPPAL	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
664	EDARIKODE	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
665	EDAVANNA	1.04664	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.44903	7.14	0	0.00%
666	EDAYUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.55941	39.01%
667	ELAMKULAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.1053	77.68%
668	IRIMBILIYAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
669	KALADY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.41627	40.88%
670	KALIKAVU	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	3.20591	48.54%
671	KALPAKANCHERY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
672	KANNAMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
673	KARULAI	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.87922	83.11%

674	KARUVARAKUNDU	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
675	KAVANNUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.03329	22.81%
676	KEEZHATTUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.23771	5.25%
677	KEEZHUPARAMBA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.1482	33.14%
678	KODUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
679	KOOTILANGADI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.1206	3.02%
680	KURUVA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
681	KUTTIPPURAM	0	1.69716	0	0	0.93303	1.60	0.00	0.00	0	4.23	0.31143	7.36%
682	KUZHIMANNA	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	2.87906	77.87%
683	MAKKARAPARAMBU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.70879	59.30%
684	MAMPAD	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
685	MANGALAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.64782	36.37%
686	MANKADA	0.83731	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.47	0	0.00%
687	MARAKKARA	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
688	MARANCHERY	1.25597	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.44	5.1759	69.59%
689	MELATTUR	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
690	MOONNIYUR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
691	MOORKANAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.82803	20.71%
692	MOOTHEDAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.16138	62.39%
693	MORAYUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
694	MUTHUVALLUR	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	0.15989	5.05%
695	NANNAMBRA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
696	NANNAMUKKU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
697	NIRAMARUTHUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
698	OORAKAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
699	OTHUKKUNGAL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.305	6.73%
700	OZHUR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.46189	9.12%

701	PALLIKKAL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
702	PANDIKKAD	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0.85078	13.88%
703	PARAPPUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
704	PERUMANNA KLARI	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	3.00374	86.70%
705	PERUMBADAPPU	0	2.28002	0	0	0.93303	1.90	0.00	0.00	0	5.11	1.81093	35.42%
706	PERUVALLUR	1.04664	1.4143	0.28	1.12	0.93303	1.35	1.20	0.30	0.44903	8.09	0.21955	2.71%
707	PONMALA	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	1.32742	41.95%
708	PONMUNDAM	0	1.43144	0	0.84	0.93303	1.10	0.90	0.00	0	5.20	0	0.00%
709	POOKKKOTTUR	0.62798	1.43144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.94	0	0.00%
710	PORUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
711	POTHUKAL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.6614	19.09%
712	PULAMNTHOLE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.39788	30.86%
713	PULIKKAL	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
714	PULPATTA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.11722	22.07%
715	PURATHUR	0.83731	1.4143	0.28	1.4	0.93303	1.40	1.50	0.30	0.35922	8.42	8.16464	96.92%
716	PUZHAKKATTIRI	0.83731	1.4143	0.28	0.56	0.93303	1.35	0.60	0.30	0.35922	6.63	0.99367	14.98%
717	TANALUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.19955	26.48%
718	THALAKKAD	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
719	THAVANUR	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	3.13843	54.36%
720	THAZHEKKODU	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
721	THENHIPPALAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
722	THENNALA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
723	THIRUNAVAYA	0	2.84574	0	1.7	0.93303	2.40	1.80	0.00	0	9.68	5.68169	58.70%
724	THIRUVALI	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
725	THRIKKALANGODE	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
726	THUVUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.83077	20.78%
727	TRIPRANGODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0.17997	3.97%

728	URNGATTIRI	0.41866	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.18	6.24	2.61396	41.88%
729	VALAVANNUR	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
730	VALLIKKUNNU	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0.71846	12.84%
731	VATTAMKULAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.44388	36.12%
732	VAZHAKKAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
733	VAZHAYUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.51091	14.75%
734	VAZHIKKADAVU	0	2.56288	0	2.26	0.93303	2.10	2.40	0.00	0	10.26	4.31631	42.09%
735	VELIYANCODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
736	VENGARA	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0.2825	4.89%
737	VETTATHUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
738	VETTOM	1.04664	1.4143	0.28	0	0.93303	1.40	0.00	0.30	0.44903	5.82	0	0.00%
739	WANDOOR	0	2.26288	0	1.96	0.93303	2.10	2.1	0.00	0	9.36	0	0.00%
	Sub Total	**17.79288**	**168.19004**	**5.32**	**12.96**	**87.70482**	**138.15**	**13.80**	**5.70**	**7.63**	457.25	**86.37**	**18.89%**
	Kozhikode District												
740	ARIKULAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.69839	17.47%
741	ATHOLY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
742	AYANCHERY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
743	AZHIYUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.85998	82.55%
744	BALUSSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.779	80.21%
745	CHAKKITTAPPARA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
746	CHANGAROTH	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.03447	58.72%
747	CHATHAMANGALAM	0	1.99716	0	0	0.93303	1.65	0.00	0.00	0	4.58	3.94601	86.15%
748	CHEKKYADU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.13576	4.71%
749	CHELANNUR	0.62798	1.14858	0	0	0.93303	0.80	0.00	0.00	0.26942	3.78	0.94805	25.09%
750	CHEMANCHERRY	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	4.40957	76.38%
751	CHENGOTTUKAVU G	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
752	CHERUVANNOOR	0	2.56288	0	0	0.93303	2.15	0.00	0.00	0	5.65	0	0.00%

753	CHORODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.96928	43.47%
754	EDACHERI	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.71675	49.55%
755	ERAMALA	1.04664	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.44903	6.31	0.22064	3.50%
756	KADALUNDI	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.70836	37.71%
757	KAKKODI	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	4.8355	88.03%
758	KAKKUR	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	2.51137	53.88%
759	KARASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.89411	83.54%
760	KATTIPARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
761	KAVILUMPARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
762	KAYAKKODY	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.44853	50.27%
763	KAYANNA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.22394	7.77%
764	KEEZHARIYUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	2.08161	72.24%
765	KIZHAKOTH	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	3.53189	88.36%
766	KODENCHERY	2.09328	3.11146	0.28	0	0.93303	2.85	0.00	0.30	0.89806	10.47	0	0.00%
767	KODIYATHUR	0.62798	2.28002	0.28	0	0.93303	1.90	0.00	0.30	0.26942	6.59	0.05	0.76%
768	KOODARANHI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.78794	69.75%
769	KOORACUNDU	0.62798	1.99716	0.28	0	0.93303	1.70	0.00	0.30	0.26942	6.11	0	0.00%
770	KOOTHALI	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	1.30161	55.42%
771	KOTTUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.05553	26.41%
772	KUNNAMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.40028	10.01%
773	KUNNUMMAL	0.62798	0.84858	0.28	0	0.93303	0.80	0.00	0.30	0.26942	4.06	3.70342	91.24%
774	KURUVATTUR	0	1.7143	0	0	0.93303	1.30	0.00	0.00	0	3.95	1.63258	41.36%
775	KUTTIADY	0.62798	1.13144	0	0	0.93303	1.10	0.00	0.00	0.26942	4.06	0	0.00%
776	MADAVOOR	0.83731	1.43144	0	0	0.93303	1.10	0.00	0.00	0.35922	4.66	2.61489	56.10%
777	MANIYUR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.54149	50.20%
778	MARUTHONKARA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
779	MAVOOR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%

780	MEPPAYUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
781	MOODADI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.91626	22.92%
782	NADAPURAM	0	1.4143	0	0	0.93303	1.30	0.00	0.00	0	3.65	0	0.00%
783	NADUVANNUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
784	NANMINDA	1.04664	1.7143	0	0	0.93303	1.35	0.00	0.00	0.44903	5.49	1.05754	19.25%
785	NARIKKUNI	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
786	NARIPPATTA	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.31	8.95%
787	NOCHAD	0	1.43144	0	0	0.93303	1.05	0.00	0.00	0	3.41	2.38191	69.76%
788	OLAVANNA	1.25597	1.98002	0.28	0	0.93303	1.85	0.00	0.30	0.53883	7.14	0	0.00%
789	OMASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
790	ONCHIYAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.25927	27.80%
791	PANANGHAD	0	2.28002	0	0	0.93303	1.95	0.00	0.00	0	5.16	2.08219	40.33%
792	PERAMBRA	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	0	0.00%
793	PERUMANNA	0	0.84858	0	0	0.93303	0.80	0.00	0.00	0	2.58	0	0.00%
794	PERUVAYAL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
795	PURAMERI	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
796	PUTHUPPADY	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
797	THALAKKULATHUR	1.04664	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.44903	6.31	0	0.00%
798	THAMARASSERY	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	0	0.00%
799	THIKKODI	0.83731	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.35922	5.47	3.37635	61.68%
800	THIRUVALLUR	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
801	THIRUVAMBADY	0	2.26288	0	0	0.93303	2.10	0.00	0.00	0	5.30	0	0.00%
802	THURAYUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
803	TUNERI	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	3.87035	134.31 %
804	ULLIYERI	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
805	UNNIKULAM	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0.44558	7.96%
806	VALAYAM	0.62798	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.26942	4.64	0	0.00%

807	VANIMEL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.24654	35.98%
808	VELOM	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	2.12984	67.30%
809	VILLIAPPALLY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.5	37.53%
	Sub Total	**18.00218**	**112.33812**	**3.64**	**0**	**65.3121**	**92.15**	**0.00**	**3.90**	**7.72**	303.07	**77.62**	**25.61%**
						Wayanad District							
810	AMBALAVAYAL	1.67462	2.26288	0.28	0	0.93303	2.10	0.00	0.30	0.71845	8.27	8.25338	99.81%
811	EDAVAKA	0.20933	2.56288	0.28	0	0.93303	2.10	0.00	0.30	0.08981	6.48	4.66601	72.06%
812	KANIYAMBETTA	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0	0.00%
813	KOTTATHARA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.61816	15.46%
814	MEENANGDY	1.88395	2.54574	0.28	0	0.93303	2.40	0.00	0.30	0.80825	9.15	0	0.00%
815	MEPPADY	2.51193	3.67718	0.28	0	0.93303	3.35	0.00	0.30	1.07767	12.13	0	0.00%
816	MOOPPAINAD	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	4.99125	98.58%
817	MULLANKOLLY	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
818	MUTTIL	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
819	NENMENY	0	3.41146	0	0	0.93303	2.85	0.00	0.00	0	7.19	0	0.00%
820	NOOLPUZHA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	2.32184	45.86%
821	PADINJARATHARA	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
822	PANAMARAM	1.46529	2.54574	0.28	0	0.93303	2.35	0.00	0.30	0.62864	8.50	0	0.00%
823	POOTHADY	0	3.1286	0	0	0.93303	2.60	0.00	0.00	0	6.66	0	0.00%
824	POZHUTHANA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.09805	2.45%
825	PULPPALLY	0.83731	2.84574	0.28	0	0.93303	2.32	0.00	0.30	0.35922	7.88	6.51116	82.68%
826	THARIODE	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	0	0.00%
827	THAVINJAL	1.04664	2.84574	0.28	0	0.93303	2.35	0.00	0.30	0.44903	8.20	1.46478	17.85%
828	THIRUNELLY	0	2.84574	0	0	0.93303	2.45	0.00	0.00	0	6.23	0	0.00%
829	THONDERNAD	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.79241	35.40%
830	VELLAMUNDA	1.25597	2.56288	0.28	0	0.93303	2.10	0.00	0.30	0.53883	7.97	1.59712	20.04%
831	VENGAPALLY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.58206	16.80%

832	VYTHIRI	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	3.50807	69.29%
	Sub Total	**11.93168**	**56.59766**	**2.52**	**0**	**21.45969**	**47.67**	**0.00**	**2.70**	**5.12**	148.00	**36.40**	**24.60%**
Kannur District													
833	ALAKKODE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.4315	31.60%
834	ANJARAKKANDY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.4315	41.32%
835	ARALAM	1.04664	1.99716	0.28	0	0.93303	1.65	0.00	0.30	0.44903	6.66	0	0.00%
836	AYYANKUNNU	0	2.84574	0	0	0.93303	2.45	0.00	0.00	0	6.23	2.36348	37.94%
837	AZHIKODE	1.46529	1.98002	0.28	0	0.93303	1.80	0.00	0.30	0.62864	7.39	0	0.00%
838	CHAPPARAPADAVU	0.62798	1.99716	0.28	0	0.93303	1.60	0.00	0.30	0.26942	6.01	1.76	29.30%
839	CHEMBILODU	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	4.19744	72.71%
840	CHENGALAYI	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
841	CHERUKUNNU	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.45	50.32%
842	CHERUPUZHA	0	2.8286	0	0	0.93303	2.60	0.00	0.00	0	6.36	4.82092	75.78%
843	CHERUTHAZHAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
844	CHIRAKKAL	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.84716	16.73%
845	CHITTATIPARAMBA	0.41866	2.28002	0.56	0	0.93303	1.85	0.00	0.60	0.17961	6.82	0	0.00%
846	CHOKLI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.7	67.55%
847	DHARMADAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.6	55.52%
848	ERAMAM KUTTUR	0	3.1286	0	0	0.93303	2.60	0.00	0.00	0	6.66	2.47118	37.10%
849	ERANHOLI GP	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0.755	21.79%
850	ERUVESSY	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
851	EZHOME	0	5.39148	0	0	0.93303	4.70	0.00	0.00	0	11.02	0	0.00%
852	IRIKKUR	0	0.84858	0	0	0.93303	0.80	0.00	0.00	0	2.58	1.53846	59.59%
853	KADAMBUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.59994	55.52%
854	KADANNAPPALY PANAPUZHA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.11992	28.02%
855	KALLIASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.2	63.50%
856	KANICHAR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.89656	63.94%

857	KANKOL ALAPADAMPA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.59978	55.52%
858	KANNAPURAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
859	KARIVELLUR PERALAM	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	3.508	71.00%
860	KATHIROOR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	0	0.00%
861	KEEZHALLUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
862	KELAKAM	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.27534	28.15%
863	KOLACHERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.57024	45.32%
864	KOLAYAD	0	1.13144	0	0	0.93303	1.10	0.00	0.00	0	3.16	2.2	69.52%
865	KOODALI	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.22006	42.34%
866	KOTTAYAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.6	55.52%
867	KOTTIYUR	0	2.28002	0	0	0.93303	1.90	0.00	0.00	0	5.11	3.7751	73.83%
868	KUNHIMANGALAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.66	66.54%
869	KUNNOTHUPARAMBA	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.7	67.55%
870	KURUMATHUR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.5476	19.00%
871	KUTTIATTOOR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
872	MADAYI	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.9472	38.46%
873	MALAPPATTAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.06928	2.40%
874	MALLOOR	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.59058	55.20%
875	MANGATTIDAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0.8	20.01%
876	MATTOOL	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.64738	47.55%
877	MAYYIL	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	0	0.00%
878	MOKERI	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	1.6	55.52%
879	MUNDERI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.49998	37.52%
880	MUZHAKUNNU	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
881	MUZHUPPILANGAD	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.59864	20.77%

882	NADUVIL	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	2.35884	52.07%
883	NARATH	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.57874	45.57%
884	NEW MAHE	0	0.56572	0	0	0.93303	0.60	0.00	0.00	0	2.10	0	0.00%
885	PADIYOOR	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
886	PANNIYANNOOR	0	1.14858	0.28	0	0.93303	0.80	0.00	0.30	0	3.46	0.52664	15.21%
887	PAPPINISSERY	0.83731	1.13144	0.28	0	0.93303	1.10	0.00	0.30	0.35922	4.94	1.47064	29.76%
888	PARIYARAM	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	0	0.00%
889	PATTIAM	0.83731	1.43144	0.56	0	0.93303	1.10	0.00	0.60	0.35922	5.82	3.3136	56.92%
890	PATTUVAM	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0.75648	26.25%
891	PAYAM	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.68918	67.27%
892	PAYYAVOOR	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	1.96	38.71%
893	PERALASSERY	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	1.6	46.18%
894	PERAVOOR	0	0.56572	0	0	0.93303	0.55	0.00	0.00	0	2.05	0.239	11.67%
895	PERINGOME VAYAKKARA	0	2.54574	0	0	0.93303	2.35	0.00	0.00	0	5.83	3.2558	55.86%
896	PINARAYI	1.25597	1.69716	0.28	0	0.93303	1.60	0.00	0.30	0.53883	6.60	0	0.00%
897	RAMANTHALI	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	2.7	67.55%
898	THILLENKERI	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0	0.00%
899	THRIPPANGOTTUR	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	3.2	70.64%
900	UDAYAGIRI	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
901	ULIKKAL	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
902	VALAPATTANAM	0	0.86572	0	0	0.93303	0.55	0.00	0.00	0	2.35	0.81032	34.50%
903	VENGAD	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
	Sub Total	**9.21042**	**118.1153**	**3.64**	**0**	**66.24513**	**95.20**	**0.00**	**3.90**	**3.95**	300.26	**94.05**	**31.32%**
Kasargod District													
904	AJANUR	0	3.1286	0	0	0.93303	2.70	0.00	0.00	0	6.76	3.80736	56.31%
905	BADIADKA	1.67462	2.56288	0.28		0.93303	2.10	0.00	0.30	0.71845	8.57	1.1035	12.88%
906	BALAL	0.20933	2.28002	0.28	0	0.93303	1.85	0.00	0.30	0.08981	5.94	0.84	14.14%

907	BEDADKA				2.24	0.93303	0.00	2.4	0.00	0	5.57	5.57303	100.00 %
908	BELLUR	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.09358	60.43%
909	CHEMNAD	0	2.56288	0	0	0.93303	2.20	0.00	0.00	0	5.70	5.66591	99.47%
910	CHENGALA	0.20933	1.99716	0	0	0.93303	1.65	0.00	0.00	0.08981	4.88	0	0.00%
911	CHERUVATHUR	1.04664	1.7143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	6.07	2.07141	34.11%
912	DELAMPADY	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0	0.00%
913	EAST ELERI	0.20933	2.56288	0	0	0.93303	2.15	0.00	0.00	0.08981	5.95	4.79796	80.71%
914	ENMAKAJE	0	2.84574	0	0	0.93303	2.35	0.00	0.00	0	6.13	0	0.00%
915	KALLAR	0	1.4143	0	0	0.93303	1.35	0.00	0.00	0	3.70	2.64945	71.66%
916	KARADUKA	0.20933	5.10862	0	0	0.93303	4.40	0.00	0.00	0.08981	10.74	6.6749	62.15%
917	KAYYUR-CHEEMENI	0	2.56288	0	0	0.93303	2.15	0.00	0.00	0	5.65	3.97995	70.49%
918	KINANOOR-KARINTHALAM	0.20933	1.7143	0	0	0.93303	1.40	0.00	0.00	0.08981	4.35	4.34639	100.00 %
919	KODOM-BELUR	0.20933	2.84574	0	0	0.93303	2.40	0.00	0.00	0.08981	6.48	2.05433	31.71%
920	KUMBADAJE	0.20933	1.7143	0	0	0.93303	1.35	0.00	0.00	0.08981	4.30	1.19482	27.81%
921	KUMBALA	0.62798	2.28002	0.28	0	0.93303	1.90	0.00	0.30	0.26942	6.59	1.10485	16.76%
922	KUTTIKOL	0	2.56288	0	0	0.93303	2.10	0.00	0.00	0	5.60	0	0.00%
923	MADHUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.22451	30.63%
924	MADIKAI	0	2.28002	0	0	0.93303	1.85	0.00	0.00	0	5.06	0.95146	18.79%
925	MANGALPADY	0	1.69716	0	0	0.93303	1.55	0.00	0.00	0	4.18	0	0.00%
926	MANJESWARAM	1.04664	1.4143	0.28	0	0.93303	1.35	0.00	0.30	0.44903	5.77	2.65486	45.99%
927	MEENJA	0	1.14858	0	0	0.93303	0.80	0.00	0.00	0	2.88	0	0.00%
928	MOGRAL PUTHUR	0.20933	1.14858	0	0	0.93303	0.85	0.00	0.00	0.08981	3.23	1.50313	46.53%
929	MULIYAR			0.28	1.12	0.93303	0.00	1.20	0.30	0	3.83	0	0.00%
930	PADNE	0	1.43144	0	0	0.93303	1.10	0.00	0.00	0	3.46	2.35777	68.06%
931	PAIVALIGE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	1.6	35.32%
932	PALLLIKARE	0	1.99716	0	0	0.93303	1.60	0.00	0.00	0	4.53	4.25491	93.92%

933	PANATHADY	0.20933	2.56288	0	0	0.93303	2.15	0.00	0.00	0.08981	5.95	5.72821	96.35%
934	PILICODE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.628	40.73%
935	PULLUR PERYA	1.25597	2.54574	0.28	0	0.93303	1.35	0.00	0.30	0.53883	7.20	2.33894	32.47%
936	PUTHIGE	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	0	0.00%
937	TRIKARIPUR	0	1.7143	0	0	0.93303	1.35	0.00	0.00	0	4.00	1.42799	35.72%
938	UDUMA	0	2.56288	0	0	0.93303	2.15	0.00	0.00	0	5.65	3.43878	60.91%
939	VALIYAAPARAMBA	0	1.14858	0	0	0.93303	0.85	0.00	0.00	0	2.93	2.93161	100.00 %
940	VORKADY	0	1.14858	0	0	0.93303	0.85	0.00	0.00	0	2.93	1.48251	50.57%
941	WEST ELERI	0.62798	2.84574	0	0	0.93303	2.35	0.00	0.00	0.26942	7.03	6.71315	95.54%
Sub Total		**8.1638**	**76.35496**	**1.96**	**3.36**	**35.45514**	**62.15**	**3.60**	**2.10**	**3.50**	**196.65**	**88.19**	**44.85%**
Grand Total		***299.76***	***1601.46***	***66.08***	***34.32***	***877.98***	***1313.46***	***38.70***	***70.8***	***129.5***	***4432.06***	***1286.0***	***29.01%***

Source: Computed and Compiled based on the Primary and Secondary Data Sources from Gram Panchayats

Appendix No.2: Allocation and Utilisation of Health Grants among Block Panchayats (Rs. in Lakhs)

Sl. No	Name of the Block Panchayats	Total Allocation	Total Expenditure	% of Expenditure
	Thiruvananthapuram District			
1	Varkala	25.50	5.40	21.17%
2	Vellanad	25.50	4.97	19.49%
3	Pothencode	25.50	3.96	15.52%
4	Nemom	25.50	15.37	60.27%
5	Perumkadavila	25.50	7.51	29.46%
	Sub Total	127.50	37.21	29.18%
	Kollam District			
6	Sasthamcotta	25.50	0.00	0.00%
7	Vettikkavala	25.50	12.89	50.55%
8	Anchal	25.50	9.32	36.56%
9	Chavara	25.50	6.99	27.43%
10	Chadayamangalam	25.50	7.69	30.18%
	Sub Total	127.50	36.90	28.94%
	Pathanamthitta District			
11	Pulikeezhu	25.50	5.63	22.06%
12	Koipuram	25.50	5.80	22.76%
13	Elanthur	25.50	8.53	33.43%
14	Pandalam	25.50	13.22	51.84%
15	Parakkode	25.50	14.37	56.37%
	Sub Total	127.50	47.55	37.29%
	Alappuzha District			
16	Kanjikuzhi	25.50	4.84	18.96%
17	Ambalapuzha	25.50	21.94	86.03%
18	Harippad	25.50	25.28	99.15%

19	Mavelikkara	25.50	19.40	76.06%
20	Muthukulam	25.50	17.78	69.71%
	Sub Total	127.50	89.23	69.98%
Kottayam District				
21	Ettumanoor	25.50	2.78	10.89%
22	Erattupetta	25.50	7.00	27.45%
23	Vazhoor	25.50	11.59	45.46%
24	Kanjirapally	25.50	0.00	0.00%
	Sub Total	102.00	21.37	20.95%
Idukki District				
25	Adimaly	25.50	2.53	9.94%
26	Elamdesom	25.50	5.31	20.84%
27	Idukki	25.50	11.38	44.63%
28	Thodupuzha	25.50	17.71	69.47%
29	Azhutha	25.50	0.00	0.00%
	Sub Total	127.50	36.94	28.97%
Ernakulam District				
30	Paravur	25.50	18.05	70.79%
31	Koovappady	25.50	8.21	32.20%
32	Vazhakkulam	25.50	3.33	13.05%
33	Vypin	25.50	7.72	30.28%
34	Vadavucode	25.50	17.54	68.78%
35	Parakkadavu	25.50	15.38	60.31%
36	Muvattupuzha	25.50	3.43	13.45%
37	Vazhakulam	25.50	4.06	15.93%
	Sub Total	204.00	77.72	38.10%
Thrissur District				
38	Pazhayannur	25.50	7.75	30.40%
39	Ollukkara	25.50	3.70	14.52%

40	Mullassery	25.50	7.03	27.55%
41	Kodakara	25.50	17.74	69.57%
42	Vellangallur	25.50	25.50	100.00%
43	Mala	25.50	23.84	93.48%
	Sub Total	153.00	85.56	55.92%
Palakkad district				
44	Sreekrishnapuram	25.50	15.22	59.70%
45	Mannarkkad	25.50	12.60	49.40%
46	Attappady	25.50	5.00	19.61%
47	Palakkad	25.50	21.43	84.02%
48	Kuzhalmannam	25.50	4.87	19.09%
49	Alathur	25.50	16.59	65.04%
	Sub Total	153.00	75.70	49.48%
Malappuram District				
50	Nilambur	25.50	18.88	74.06%
51	Kalikavu	25.50	0.00	0.00%
52	Areekkode	25.50	23.41	91.79%
53	Malappuram	25.50	0.90	3.53%
54	Mankada	25.50	4.02	15.77%
55	Tirurangady	25.50	13.39	52.51%
	Sub Total	153.00	60.60	39.61%
Kozhikode District				
56	Vadakara	25.50	7.38	28.93%
57	Kunnummal	25.50	8.42	33.00%
58	Thodannur	25.50	2.61	10.25%
59	Balussery	25.50	13.48	52.86%
60	Chelannur	25.50	19.99	78.38%
61	Kozhikkode	25.50	6.03	23.65%
	Sub Total	153.00	57.90	37.85%

Wayanad District				
62	Mananthavady	25.50	8.02	31.44%
63	Panamaram	25.50	13.58	53.27%
64	Sulthanbathery	25.50	21.85	85.70%
65	Kalpetta	25.50	15.28	59.92%
	Sub Total	102.00	58.74	57.58%
Kannur District				
66	Irikkur	25.50	7.40	29.01%
67	Kannur	25.50	15.77	61.82%
68	Edakkad	25.50	21.35	83.71%
69	Panoor	25.50	0.00	0.00%
70	Iritty	25.50	12.21	47.87%
	Sub Total	127.50	56.72	44.48%
Kasargod District				
71	Manjewswaram	25.50	0.37	1.47%
72	Karadka	25.50	3.81	14.93%
73	Kasargod	25.50	5.01	19.64%
74	Kanhangad	25.50	10.52	41.25%
75	Neeleswaram	25.50	12.37	48.52%
	Sub Total	127.50	32.08	25.16%
	Grand Total	***1912.50***	***774.21***	***40.48%***

Source: Computed and Compiled based on the Primary and Secondary Data Sources from the Block Panchayats.

Appendix No.3. Allocation and Utilisation of Health Grants among Municipalities in Kerala(Rs.in Lakhs)

Sl. No	Name of the Municipalities	Allocation for						Total Allocation	Total Expenditure	%
		1.Diagnostic Infrastructure to the Primary Health Care Facilities in Urban PHCs				2.Construction of Health and Wellness Centres				
		Date	Amount	Date	Amount	Date	Amount			
Thiruvananthapuram District										
1.	Attingal	08-07-2022	50.00	03-08-2022	32	29-04-2023	86.05	168.05	0	0
2.	Neyyattinkara	08-07-2022	150.00	03-08-2022	116	29-04-2023	34.72	300.72	7.98	2.65
3.	Nedumangadu	08-07-2022	75.00	03-08-2022	58	29-04-2023	28.94	161.94	0	0
4.	Varkala	08-07-2022	75.00	03-08-2022	48	29-04-2023	236.325	359.325	0	0
Sub Total			**350.00**		**254**		**386.04**	**990.04**	**7.98**	**0.81**
Kollam District										
5.	Punalur	08-07-2022	75.00	03-08-2022	58	29-04-2023	88.94	221.94	0	0
6.	Paravoor	08-07-2022	50.00	03-08-2022	32	29-04-2023	28.94	110.94	0	0
7.	Kottarakara	08-07-2022	50.00	03-08-2022	32	29-04-2023	233.44	315.44	0	0
8.	Karunagapally	08-07-2022	75.00	03-08-2022	48	29-04-2023	88.94	211.94	0	0
Sub Total			**250**		**170**		**440.26**	**860.26**	**0**	**0**
Pathanamthitta District										
9.	Adoor	08-07-2022	50.00	03-08-2022	32	29-04-2023	133.94	215.94	0	0
10.	Pandalam	08-07-2022	50.00	03-08-2022	32	29-04-2023	28.94	110.94	5.33	4.80
11.	Pathanamthitta	08-07-2022	75.00	03-08-2022	58	29-04-2023	217.78	350.78	0	0
12.	Thiruvalla	08-07-2022	75	03-08-2022	58	29-04-2023	194.22	327.22	0	0
Sub Total			**250**		**180**		**574.88**	**1004.88**	**5.33**	**0.53**
Alappuzha District										
13.	Alappuzha	08-07-2022	300	03-08-2022	222	29-04-2023	163.56	685.56	1.57	0.23
14.	Cherthala	08-07-2022	75	03-08-2022	48	29-04-2023	88.94	211.94	5.30	2.50
15.	Chengannur	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	0	0.00
16.	Haripad	08-07-2022	50	03-08-2022	32	29-04-2023	86.05	168.05	0	0.00
17.	Mavelikkara	08-07-2022	50	03-08-2022	32	29-04-2023	128.44	210.44	0	0.00

18.	Kayamkulam	08-07-2022	75	03-08-2022	58	29-04-2023	133.94	266.94	**5.91**	2.21
Sub Total			**600**		**424**		**626.98**	**1650.98**	**12.78**	**0.77**
Kottayam District										
19.	Changanasseri	08-07-2022	75	03-08-2022	58	29-04-2023	191.325	324.325	17.34	5.35
20.	Erattupetta	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0.00
21.	Ettumanoor	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	12.94	11.66
22.	Kottayam	08-07-2022	150	03-08-2022	116	29-04-2023	220.67	486.67	0	0.00
23.	Pala	08-07-2022	50	03-08-2022	32	29-04-2023	131.05	213.05	0	0.00
24.	Vaikam	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	0	0.00
Sub Total			**425**		**302**		**626.975**	**1353.96**	**30.28**	**2.23**
Idukki District										
25.	Kattappana	08-07-2022	75	03-08-2022	58	29-04-2023	236.32	369.32	0	0
26.	Thodupuzha	08-07-2022	75	03-08-2022	58	29-04-2023	214.89	347.89	0	0
Sub Total			**150**		**116**		**451.22**	**717.22**	**0**	**0**
Ernakulam District										
27.	Aluva	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	0	0.00
28.	Ankamali	08-07-2022	50	03-08-2022	32	29-04-2023	86.05	168.05	23.76	14.14
29.	Eloor	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0.00
30.	Kalamassery	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0.00
31.	Koothattukulam	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0.00
32.	Kothamangalam	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	11.70	10.83
33.	Maradu	08-07-2022	50	03-08-2022	32	29-04-2023	31.83	113.83	0	0.00
34.	Muvatupuzha	08-07-2022	50	03-08-2022	32	29-04-2023	71.05	153.05	40.12	26.21
35.	North paravur	08-07-2022	50	03-08-2022	32	29-04-2023	131.05	213.05	5.78	2.71
36.	Perumbavoor	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	3.32	3.07
37.	Piravom	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	0	0.00
38.	Thrikkakara	08-07-2022	75	03-08-2022	58	29-04-2023	34.72	167.72	0	0.00
39.	Thripunithura	08-07-2022	75	03-08-2022	58	29-04-2023	97.61	230.61	4.99	2.16
Sub Total			**725**		**494**		**646.22**	**1865.22**	**89.67**	**4.81**

Thrissur District										
40.	Chalakudy	08-07-2022	75	03-08-2022	58	29-04-2023	88.94	221.94	31.64	14.26
41.	Chavakad	08-07-2022	50	03-08-2022	32	29-04-2023	71.05	153.05	9.00	5.88
42.	Guruvayoor	08-07-2022	75	03-08-2022	58	29-04-2023	34.72	167.72	0	0.00
43.	Irinjalakuda	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0.00
44.	Kodungallur	08-07-2022	75	03-08-2022	58	29-04-2023	194.22	327.22	0	0.00
45.	Kunnamkulam	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0.00
46.	Wadakkancherry	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	10.86	9.79
Sub Total			**450**		**328**		**478.64**	**1256.64**	**51.5**	**4.10**
Palakkad District										
47.	Cherppulassery	08-07-2022	50	03-08-2022	32	29-04-2023	28.96	110.96	0	0
48.	Chittoor Thathamangalam	08-07-2022	50	03-08-2022	32	29-04-2023	86.05	168.05	1.75	1.04
49.	Mannarkad	08-07-2022	50	03-08-2022	32	29-04-2023	86.05	168.05	0	0
50.	Ottappalam	08-07-2022	75	03-08-2022	58	29-04-2023	136.83	269.83	0	0
51.	Palakkad	08-07-2022	225	03-08-2022	174	29-04-2023	265.946	664.946	0	0
52.	Pattambi	08-07-2022	50	03-08-2022	32	29-04-2023	26.05	108.05	0	0
53.	Shornur	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0
Sub Total			**575**		**418**		**661.72**	**1654.716**	**1.75**	**0.11**
Malappuram District										
54.	Malappuram	08-07-2022	75	03-08-2022	58	29-04-2023	109.89	242.89	0	0.00
55.	Manjery	08-07-2022	150	03-08-2022	116	29-04-2023	31.83	297.83	4.00	1.34
56.	Nilambur	08-07-2022	75	03-08-2022	58	29-04-2023	131.325	264.325	0	0.00
57.	Kondotty	08-07-2022	75	03-08-2022	58	29-04-2023	88.94	221.94	0	0.00
58.	Kottakkal	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	12.54	7.61
59.	Parappanagadi	08-07-2022	75	03-08-2022	58	29-04-2023	34.72	167.72	14.00	8.35
60.	Perinthalmanna	08-07-2022	75	03-08-2022	58	29-04-2023	28.94	161.94	0	0.00
61.	Ponnani	08-07-2022	150	03-08-2022	116	29-04-2023	94.72	360.72	5.62	1.56
62.	Thanur	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	31.04	18.83
63.	Thirurangadi	08-07-2022	75	03-08-2022	58	29-04-2023	133.94	266.94	0	0.00
64.	Tirur	08-07-2022	75	03-08-2022	58	29-04-2023	73.94	206.94	0	0.00

65.	Valancheri	08-07-2022	75	03-08-2022	48	29-04-2023	31.83	154.83	1.95	1.26
Sub Total			**1050**		**802**		**823.74**	**2675.74**	**69.15**	**2.58**
Kozhikode District										
66.	Feroke	08-07-2022	75	03-08-2022	48	29-04-2023	88.94	211.94	0	0
67.	Koduvally	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0
68.	Koyilandy	08-07-2022	75	03-08-2022	58	29-04-2023	88.94	221.94	0	0
69.	Mukkam	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	1.54	1.39
70.	Payyoli	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0
71.	Ramanattukara	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0
72.	Vatakara	08-07-2022	75	03-08-2022	58	29-04-2023	136.83	269.83	0.36	0.13
Sub Total			**450**		**318**		**433.36**	**1201.36**	**1.9**	**0.16**
Wayanad District										
73.	Kalpetta	08-07-2022	75	03-08-2022	32	29-04-2023	169.89	276.89	13.45	4.86
74.	Mananthavadi	08-07-2022	50	03-08-2022	58	29-04-2023	73.94	181.94	0	0.00
75.	Sulthan Batheri	08-07-2022	75	03-08-2022	48	29-04-2023	239.215	362.215	7.50	2.07
Sub Total			**200**		**138**		**483.05**	**821.045**	**20.95**	**2.55**
Kannur district										
76.	Aanthoor	08-07-2022	75	03-08-2022	48	29-04-2023	34.72	157.72	0	0
77.	Iritty	08-07-2022	50	03-08-2022	32	29-04-2023	86.05	168.05	0	0
78.	Koothuparamba	08-07-2022	75	03-08-2022	48	29-04-2023	191.325	314.325	0	0
79.	Mattannur	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0
80.	Panoor	08-07-2022	75	03-08-2022	58	29-04-2023	37.61	170.61	0	0
81.	Payyannur	08-07-2022	75	03-08-2022	58	29-04-2023	28.94	161.94	0	0
82.	Sreekandapuram	08-07-2022	50	03-08-2022	32	29-04-2023	28.94	110.94	0	0
83.	Thalassery	08-07-2022	75	03-08-2022	58	29-04-2023	31.83	164.83	0	0
84.	Thaliparamba	08-07-2022	75	03-08-2022	58	29-04-2023	133.94	266.94	0	0
Sub Total			**625**		**450**		**605.185**	**1680.185**	**0**	**0**
Kasaragod District										
85.	Kasaragod	08-07-2022	75	03-08-2022	58	29-04-2023	214.89	347.89	0	0
86.	Kanhangad	08-07-2022	75	03-08-2022	58	29-04-2023	191.325	324.325	2.20	0.68

87.	Nileswaram	08-07-2022	75	03-08-2022	58	29-04-2023	136.83	269.83	0	0
Sub Total			**225**		**174**		**543.045**	**942.045**	**2.20**	**0.23**
Grand Total			***6325***		***4568***		***7781.315***	***18674.291***	***293.49***	***1.57***

Source: Computed and Compiled based on the Primary and Secondary Data Sources from the Municipalities.

Appendix No.4. Allocation and Utilisation of Health Grants among the Corporations in Kerala (Rs.in Lakhs)

Sl. No	Name of the Corporations	Allocation for						Total Allocation	Total Expenditure	%
		Diagnostic Infrastructure to the Primary Health Care Facilities in Urban PHCs				Construction of Health and Wellness Centre				
		Date	Amount	Date	Amount	Date	Amount			
1.Thiruvananthapuram		08-07-2022	1100	03-08-2022	844	29.04-2023	345.02	2289	0	0
2.Kollam		08-07-2022	225	03-08-2022	174	29.04-2023	201.17	600.17	0	0
3.Kochi		08-07-2022	950	03-08-2022	728	29.04-2023	301.945	1979.95	18.78	0.95
4.Thrissur		08-07-2022	225	03-08-2022	174	29.04-2023	261.17	660.17	0	0
5.Kozhikode		08-07-2022	600	03-08-2022	464	29.04-2023	344.055	1408.06	0	0
6.Kannur		08-07-2022	75	03-08-2022	58	29.04-2023	195.39	328.39	0	0
Grand Total			**3175**		**2442**		**1648.75**	**7265.75**	**18.78**	**0.26**

Source: Computed and compiled based on the Primary and Secondary Data Sources from Corporations

NOTES

[1] In the post- pandemic period, also there has only been a slight increase with the Indian government spending 2.1 per cent of the GDP on healthcare (Dutta, 2023) while Brazil spends the most (9.6 %), followed by South Africa (9.1%), Russia (5.7 %) and China (5. 3%).

[2] There are also criticisms that the central government funding in general is based on demographic performance of the states and it largely ignores the element of "economic efficiency" of the healthcare system (Majumdar, 2023). This criticism is also applicable while recommending the health grants under the 15th UFC.

[3] Published in Indian Public Policy Review (2022, 3(3): 59-79)

[4] Narayana is the former director, Gulati Institute of Finance and Taxation (GIFT), Thiruvanthapuram, Kerala.

Paper was presented by Narayana at the International Webinar on Grassroots Participation and Local Development: Learnings from the 'People's Plan Campaign' in Kerala (India) and 'Batho Pele Initiative' in South Africa on May 26, 2022.

[5] These fund transfers were earlier governed by stipulations and conditions imposed by the union government, which may not be based strictly or solely on the recommendations of the FC. However, the 14th UFC made it clear that "...there is a need to trust and have respect for local bodies as institutions of local self-government, and that no more conditions may be imposed by either the union or the state government, which go beyond those made by the 14th FC". The 14th UFC also clarified that "no further conditions should be imposed by either the Union or the States in this regard". However, these recommendations were not followed in letter and spirit by both Ministry of Finance (MoF) and Ministry of Panchayati Raj (MoPR) and state governments, and this has led to "Mission Creep". For instance, the introduction of Gram Panchayat Development Plan (GPDP) as a necessary condition for the receipt of 14th UFC funds have undermined the recommendations of the Commission. "There has been 'Mission Creep' by the MoF and MoPR through the imposition of more conditionalities upon Panchayats and States, over and above those suggested by the FC" (Centre for Policy Research, 2019).

[6] For instance, Kerala merged the Plan Funds allocated to local governments by the state government and funds earmarked by the 14th UFC (under the name 'Development Funds'). Thus, the 14th UFC grants were subjected to rigid conditionalities imposed by the Government of Kerala. As a result, these funds were transferred to the treasury accounts of the Gram Panchayats in Kerala instead of depositing them in the bank accounts of each Panchayat. It resulted in an inordinate delay in the release of funds, and the Panchayats lost the grants and interest rate which would have been accumulated on them. This is an explicit violation of the recommendations laid out by the UFC (Chathukulam and Joseph, 2022).

[7] The Hindu Bureau, November 13, 2023.

[8] The practice of performance statement /contact is found in the local governments in Rwanda and it is locally known as *Imihigo.*

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IPPR

Private and Public Expenditure on Education in India: Trend over last Seven Decades and impact on Economy

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Abstract

This paper examined the trends in private and public expenditure on education in India during the last seven decades. The analysis is based on public expenditure on education compiled by Ministry of Education, Government of India, that includes expenditure incurred by education department as well as by all other departments on education and training-related programmes and activities. The private final consumption expenditure (PFCE) on education as estimated by the national accounts and statistics (NAS) is the base for private expenditure on education. It is observed from the analysis that India's spending on education reached its peak in the recent past. Public and private expenditure on education are respectively equivalent to 3.9% and 2.7% of its GDP in 2018-19. Together, the country's spending on education is equivalent to 6.6% of GDP. A notable trend over the past three decades is that private expenditure on education is growing faster than that of the public. The ratio of public to private in terms of expenditure on education has declined during this period. This reflects increasing privatisation of education in India, and has far reaching policy implications.

Keywords: Public Expenditure on Education, Private Expenditure on Education, Financing Education, Privatisation of Education

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I Introduction

Progress in educational development in India during the last three decades is remarkable, owing to growing demand and initiatives for school education such DPEP, SSA, RMSA and now the Samagra Shiksha. According to authors' estimates based on the fourth annual Periodic Labour Force Survey (PLFS-6) 2022-23, more than 98% of 6-14 years-age children in the country are attending schools (private or public). Universalisation of school attendance among the 6-14 years-age children is a constitutional mandate in India. The global norm for the same is among children ages 6-17 years; correspondingly, the attendance rate among 6-17-years-children is around 95%.

The country's performance on higher education is also remarkable during the same period. GER in higher education was less than one percent in 1950, and it increased to just 8% at the end of 1990s, but thereafter it has tripled during the last two decades. According to AISHE report estimates, GER in higher education in India is 28.5% in 2021-22. This remarkable progress in the landscape of Indian education system is associated with growing private sector involvement in the field (Desai *et al.*, 2008; Agarwal, 2004). Private educational institutions (non-state sector) account for nearly half (46%) of the total school enrolment and 70% of enrolment in higher education in the country (GoI, 2022a&b). Further to such a trend, not only the base (consisting of percentage of households spending private expenditure on education) is expanding, but also the per capita private expenditure on education is increasing over a period (Motkuri and Revathi, 2023a). Such a growth in private expenditure on education is more so among the lower economic classes.

Growing demand for education in India coupled with inadequacy of public expenditure on education has been resulting in growing private expenditure on education which in turn has far reaching implications for affordability and access to education (Tilak, 1983; 1991; 1997; 2003; Motkuri and Revathi, 2023a&b). With the expanding infrastructure, transportation and communication facilities leading to mobility of people and penetration of markets; expanding base of the middle class and emerging neo-middle classes; structural changes in labour market, and urbanisation have contributed to rise in perceived values of education and to the growing demand for education (Motkuri, 2016). The non-fulfilment of public education system due to inadequate state funding, strained the private pockets in meeting the growing demand (Tilak, 1997; Motkuri and Revathi, 2023a). The recent National Education Policy 2020 which is third in series, intends to curb the commercialisation of education but not privatisation.

Against this backdrop, the present paper examines and analyses the trend in and relationship between private and public expenditure on education in India for the seven-decade period since independence. The analysis is based on public expenditure on education compiled by Ministry of Education, Govt. of India, that includes expenditure incurred by education department as well as all other departments on education and training-related programmes and activities. Data on private expenditure on education, is based on the private final consumption expenditure (PFCE) on education as estimated by the National Accounts Statistics (NAS). A detailed methodology is discussed in the section three.

II Financing Education - Public Vs Private Expenditure: A Review of Certain Theoretical Underpinning

Social philosophy and economic framework of human capital theory justifies the public investment in education (Motkuri, 2016). Empirical evidence has shown that along with private returns to education there are social returns as well (Psacharopoulos, 1994&2006 Psacharopoulos and Patrinos, 2004). Research in endogenous growth model exercises has also shown that long-run growth outcomes are associated with public expenditure on education (Lucas, 1988; Glomm and Ravikumar, 1997; Blankenau and Simpson, 2004; Dissou *et al.*, 2016). Public investment in education is justified not only on social returns, but also the redistribution effects, i.e. reducing economic inequality (Stiglitz, 1974; Magalhaes and Turchick, 2022). However, while the experience of developed countries also indicate that their educational development is catered largely by public institutions and public expenditure on education, the developing countries have to rely on educational institutions of private sector actors and household private expenditure (UNESCO, 2022).

Extensive research has been conducted on public expenditure/investment on education in India (GoI, 1966; Mazumdar, 1983; Panchamukhi, 1989; Tilak, 1993; 1997; 2002; 2006; 2007; Mukherji, 2013; Bhakta, 2014; De and Endow, 2018). Most of the studies on public expenditure on education in India inferred that education is a public good, and hence public investment in education is necessary, but such expenditure was found to be insufficient and short of the requirement in achieving the educational goals of the country.

Further, there is also an emerging research on private expenditure on education in India. Various aspects, including determinants of private expenditure on education, are explored (Sarkar, 2017; Chandrasekhar *et al.*, 2019; Geetharani, 2021; Rashmi *et al.*, 2022; Motkuri and Revathi, 2023b). In a study of time series cointegration and Granger causality analysis of Indian data, it is observed that a rise in public expenditure on education has a positive effect on growth of national income, which in turn has a positive effect on a rise in private expenditure on education (Motkuri, 2020). Growing private expenditure on education is a cause of concern. In this context, one needs an understanding of the process of privatisation, and thereby growing private expenditure on education.

Privatisation and Private Expenditure on Education

Privatisation in education is a process that indicates the direction of change in three dimensions: *ownership*, *financing,* and *control* (Bray, 1998). The private, otherwise meaning non-government, encompasses variety of operators/entities, including commercial entrepreneurs, non-profit organisations, trusts, and communities (*ibid*). The process of privatisation is possible in four different scenarios (or strategies) or a combination of them:

a. change in ownership of institutions (public to private);

b. relatively faster growth of private over that of public in expanding base of the education system, or else slower rate of decline of private in the scenario of education system contraction;
c. increasing government financial support for institutions under private control (not necessarily financing the private institution, but financing the students through vouchers); or
d. the increasing private financing of institutions under government control (Bray, 1998).

Among the private sector, philanthropy of non-profit or not-for-profit organisations (NPOs) have a long history of delivering public services including education (Weisbrod, 1975; 1977; James, 1986; 1987; 1993a&b; Bray, 1998; Valentinov, 2006). One is not sure whether, in the emerging private education sector in India, the motto of it is in line with the philosophy of philanthropy and social service.

Private Serving Excess and/or Differentiated Demand

Privatisation in education can be explained through neoclassical economics framework of ***excess demand*** and/or ***differentiated demand*** (James, 1993a&b; Bray, 1998). Burton A. Weisbrod was the earliest one to formulate *excess demand hypothesis*. It is so especially in the context of public goods wherein the effective demand for the same exceeding the limited public supply is referred to as excess demand, which is served by emerging voluntary non-profit private organisations (Weisbrod, 1975; 1977). Public good nature of education requires the government supply of such services, but the effective demand for the same is over and above the limited public supply, and so private comes in to serve such *excess demand*. Public is superior but paradoxically limited in supply, inescapably excluding the demand of some aspirants. Although parents of eligible students prefer the public institutions for their children's education, but they could not get a place due to limited supply of public (in terms of number of institutions and their intake capacities) that is constrained by public financing. Therefore, they are involuntarily pushed out of public and hence resorting to private, which is there to provide similar services (James, 1987; 1993a&b).

As mentioned above the non-government or private service-providing entities encompassed commercial enterprises, donative non-profit organisations including philanthropy-based trusts and communities along with religious organisations, associations, or institutions. Private provision of education in fact initially began with the voluntary non-profit organisations which are financed by donations of concerned citizens. Some of the institutions of such nature are supplemented with public funds (government aided) in case of education. Extent of subsidised service provision or cost-recovery of these non-profit organisations however depend on their donations base and service motto. Willingness and ability to pay for education is what matters in cost recovery and for commercial entities.

Again, rise in private sector is also due to *differentiated demand* for private education (James, 1987). Parents of eligible students prefer private system due to real or perceived quality differentiation

in private and public education and placement opportunities after completion of education. Product differentiation is a rationale behind the increasing returns and downward sloping demand curve, among two important elements of Pierra Sraffa's contribution to the theory of imperfect competition in 1926 (Sraffa, 1926).

The concept was further elaborated by Harold Hotelling in 1929 and Edward Chamberlin in 1933 (Hotelling, 1929; Chamberlin, 1933). Hotelling's spatial competition or linear model consists of two types of product/service differentiation: vertical, based on the quality, and horizontal, based on the variety (Hotelling, 1929). Chamberlin's differentiation[1] in his monopolistic competition model relaxes the assumptions of product homogeneity and perfect substitutability of products. Non-price factor, consisting of various characteristics of a general class of products produced or sold by different producers/agents, creates a preference of one over the other. Consumer preferences and perceptions are a key to such product differentiation especially according to theory of Chamberlin.

In line with above theoretical underpinnings, education hitherto predominantly provided by government across countries, now witness a significant presence of private sector in the field. The predominant private sector presence caters to excess demand, and also (partly) to differentiated demand (James, 1993; 1987). Quality and variety features of education provided/delivered in private institutions might be different from those of public ones, differentiating the educational services provided in institutions under these two different forms of management. Given the diverse tastes and preferences of parents for their children's education, the delivery of the same in institutions of two different (private and public) managements would lose their perfect substitutability (James, 1993).

Non-Profit Vs For-Profit Organisations: Producing and Supplying Public Good

Within the private sector for educational services, non-profit or not-for-profit organisations (NPOs) are the most preferred form across the globe in delivering such services. Non-profit organisations are reliable in contract failures and market failures due to information asymmetry, given the *non-distribution constraint* (NDC) factor in these organisations (Weisbrod, 1975; Hansmann, 1980; Valentinov, 2006). In other words, non-profit organisation does not have space for distributing its profits or dividends to its members, and it cannot sell-off its stocks for capital gains (James, 1993; 1987). The non-distribution constraint (NDC) of not-for-profit organisation is such that even if makes profits, these are not to be distributed (Hansmann, 1980). If any profits, they are to be ploughed back to expand the services, or to improve the quality of the service. While giving tax exemptions, in many countries, a legal requirement of being a non-profit entity is typical for educational institutions. Many times, governments have been providing certain financial assistance as well as certain other benefits for such institutions as required.

Interlocking of Managements: Abuse of Non-Profit and Philanthropy

Although most of the private educational institutions, especially in India, are under the category of NPOs, there is space for misuse of such social service platform. An opportunity for abuse is presented with *interlocking of management* of non-profit and for-profit organisations, hence Weisbrod recommends prohibition of such entities and motives (Weisbrod, 1975). Steering the business from non-profit activity to for-profit activity, along with accounting manipulations, are two important abuses of interlocking management in this regard.

All the above theoretical underpinnings indicate that growth of private sector is either largely meeting the excess demand or differentiated demand. This in turn indicates the deficiency in the public investment. Societal demand for education is over and above that accommodated in educational institutions under public management. Further, as parental perceptions regarding quality and variety of education delivered in such institutions are not too positive, there is a rising preference for educational programmes in institutions under private management.

Growing private sector in education has implications in the sense of increase in private costs and hence the problem of affordability. Further, although most of the private educational institutions are registered as non-profit or not-for-profit organisations (NPOs), there is enough space for possible interlocking of management and thereby abuse of philosophy and intention. In this context the welfare state objectives and obligations and distributional aspects would be better served with substantial public investment in education, rather than leaving the larger space to private sector.

III Data Sources and Methodological Issues

The main sources of public expenditure on education are budget documents where the *budget major head* (BMH) representing education (codes: 2202, 2203, 2205, 4202 and 6202) presents the budget expenditure on education. Reserve Bank of India has been compiling and building a time-series of all the state Governments' expenditure by major heads that includes education.

The *Ministry of Education* (MoE), *Government of India* also compiles expenditure on education which comprehensively covers the expenditure on education, not only by Education Departments but also all the other Ministries and Departments incurred for education and training-related programmes and activities. It is reported in annual series of report on Analysis of Budget Expenditure on Education (ABEE).

For the current analysis, public expenditure on education as compiled by MoE, Govt of India and presented in ABEE is used. The MoE, Govt of India made available such statistics for the period since 1951-52 to 2020-21. *The definition and coverage of expenditure on education has been largely intact throughout the period.* Hence, the time series data regarding expenditure on education is more or less consistent and thereby comparable. MoE compilation in the latest report of ABEE presents actual expenditure on education till 2018-19. It is revised expenditure for the year 2019-20 and budget

expenditure for 2020-21. We also attempted a projection/extrapolation (forward) based on the past growth for the years 2021-22 and 2022-23.

One must note that Covid pandemic has an adverse impact on all the economic activities and social services during 2020-21. Therefore, though there is an increase in public and private expenditure on education for the year 2020-21 over the previous year, rate of growth in the same is far lower during the period. Though, the public expenditure on education picked-up in the subsequent year (2021-22), private expenditure on education was affected in this year as well,

For the private expenditure on education, one of the sources could be the ***private final consumption expenditure*** (PFCE) on education as estimated by the *National Accounts Statistics* (NAS). In estimating the national income following methods of national accounting system, PFCE comprises an important component of GDP at market prices following the expenditure method. As defined in *national accounts statistics* (NAS), *private final consumption expenditure* (PFCE) is the expenditure incurred by the *resident households* as well as the *non-profit institutions serving the households* (NPISH) on final *consumption of goods and services*. Such an estimate of total final consumption expenditure is derived using *commodity flow* approach. Expenditure on education is one of the major components within the PFCE. However, one of the shortcomings of the PFCE estimate of NAS is that such an estimate is made possible at the national level only, there is no such estimate available at sub-national level.

The other major source of information for the *private expenditure on education* is the national-level household survey based estimates (Motkuri and Revathi, 2023). They are National Sample Survey Office's (NSSO) different rounds of *Consumer Expenditure Surveys* (CES) and Surveys on *Household Social Consumption on Education*. As we know NSSO has been conducting larger sample quinquennial CESs since 1970s, and the latest survey for which estimates are available is 2011-12. Although there was a very recent survey in 2017-18, it was withdrawn from public domain for unknown reasons. Education is one of the *household consumption expenditure* (HCE) items and hence expenditure on it is captured in these surveys. Also, since mid-1980s the NSSO has been carrying surveys focused on household social consumption of education along with health. There are five such surveys so far: 1987-88, 1995-96, 2006-07, 2013-14, and 2017-18. These surveys have captured households' private expenditure on education.

One must however note the differences between NAS (for PFCE) and NSSO (for CES-based HCE) in their estimates of private consumption expenditure in general and that of education in particular (Motkuri and Revathi, 2023a). Ideally both should match with each other, but in practice they do not. The divergence between these two estimates, particularly in terms of the total private consumption expenditure, has been increasing over the period of study. The PFCE estimates have always been higher than the estimates of CES.

One of the reasons for the differences could be that PFCE of NAS covers consumption expenditure of, as mentioned above, both the resident households and the *non-profit institutions serving the households* (NPISH) whereas CES of NSSO covers only the resident households

(Motkuri and Revathi, 2023a). Besides, CES of NSSO also suffers with *non-sampling error*s of *under-reporting* especially the economically better-of and/or rich households, along with relapses in longer recall. However, one of the advantage with the CES of NSSO estimate is that estimates are made not only for the national level but also sub-national (state and region) levels. Similar shortcomings and advantages of CES are applicable for the NSSO's Surveys on *Household Social Consumption on Education*.

One similarity between PFCE of NAS and CES of NSSO is that both capture education expenditure across all age-groups, and hence have broader coverage reflecting the perspective of life-long learning, whereas the *Social Consumption on Education* survey captures only school or college age-groups and those attending formal or informal education institutions below 35 years of age (Motkuri and Revathi, 2023a).

The following analysis on private and public expenditure on education is based on two sources: ABEE of Ministry of Education, Government of India for public expenditure, and PFCE of NAS for private expenditure. Both sources have broader and more comprehensive coverage of expenditure on education. Since the present analysis is limited to trends at the national level only, the PFCE estimate is used for private expenditure on education. Unless and otherwise specified, per capita is per person. We have not made it per school-age or college-age population, and also not per-student.

IV Private and Public Expenditure on Education: Trends

Expenditure on education in India over the seven decades since independence reveals a remarkable growth in both private and public expenditure. The private expenditure (PFCE) on education increased from Rs. 86.5 crores in 1951-52 to Rs. 509961.6 crores in 2018-19 and the same is expected to be Rs. 728197.6 crores by 2022-23. Public expenditure on education increased from Rs. 64.5 crores to Rs. 736581 crores, and further to Rs. 1098589.4 crores for the years mentioned above (Table-1). All the figures are in current prices.

In terms of the per capita expenditure on education (per person), private expenditure had increased from Rs. 2.4 in 1951-52 to Rs.3805.7 in 2018-19, and to Rs. 5221.9 in 2022-23, whereas the per capita public expenditure on education had increased from Rs. 1.8 to Rs. 5555.8, and to Rs. 7954.9 during the same period (Table-2).

At the time of independence, private expenditure on education was higher; subsequently, public expenditure outpaced the private. While the total private expenditure on education in India had increased by nearly 5900 times, during the last seven decades since independence (i.e. between 1951-52 and 2018-19), the public expenditure on education had increased by 11400 times during the same period. In other words, the rate of growth during the last seven decades in *current prices* is 13.4% per annum in case of private expenditure on education, whereas for the public expenditure on education it is 14.67% per annum.

Table-1: Total Private and Public Expenditure on Education in India

				Expenditure on Education	
Year	GDP	PFCE	TBE	Public	Private
1	**2**	**3**	**4**	**5**	**6**
1951-52	11054.0	10307.0	814.1	64.5	86.3
1961-62	19010.0	16617.0	2225.4	260.3	213.2
1971-72	50999.0	41496.0	10610.9	1011.1	619.3
1981-82	175805.0	135676.0	41715.7	4298.3	2334.1
1991-92	673875.0	457735.0	170370.4	22393.7	9667.1
2001-02	2355845.0	1531672.0	619713.1	79865.7	40777.4
2011-12	8736329.0	4910447.0	2249526.5	333930.4	182378.0
2018-19	18899668.4	11205296.4	4645521.3	736581.3	509961.6
2022-23	27240712.2	15914796.3	7644017.5	1098580.4	728197.6

Notes: 1. Values are Rs. in Crores and in Current Prices; 2. **GDP** – Gross Domestic Product of India; **PFCE** – Private Final Consumption Expenditure - Total; **TBE** – Total Budget Expenditure of all sectors and combined of all the State governments and the Centre; 3. **Public** – Budget Expenditure on Education by both the Centre and State Governments, as is compiled by Min of Education, GoI; 4. **Private** – PFCE on Education (i.e. households excluding the Government expenditure); 5. GDP is 2011-12 Series; 6. Till 2018-19 figures are actuals and for the year 2022-23 figures are projected/extrapolated (forward) based on the past growth.
Sources: 1. National Accounts Statistics (NAS); 2. Reserve Bank of India (RBI); 3. Ministry of Education (MoE), Government of India (GoI).

Similarly, the per capita private expenditure on education (per person) in India had increased by nearly 1670 times during these seven decades, whereas the per capita public expenditure on education had increased by 3100 times during the same period. In other words, the *rate of growth* in *per capita private expenditure on education* during the last seven decades in *current prices* is 11% per annum, whereas the *per capita public expenditure on education* is 12.6% per annum.

Table-2: Per Capita (per person) Expenditure (Rs.) on Education in India: Private and Public

Year	GDP	PFCE	TBE	*Expenditure on Education*		*Ratio of Public to Private*
				Public	Private	
1	2	3	4	5	6	7
1951-52	303.1	282.6	22.3	1.8	2.4	0.7
1961-62	428.0	374.1	50.1	5.9	4.8	1.2
1971-72	920.1	748.7	191.4	18.2	11.2	1.6
1981-82	2545.2	1964.3	603.9	62.2	33.8	1.8
1991-92	7883.9	5355.2	1993.2	262.0	113.1	2.3
2001-02	22716.4	14769.3	5975.6	770.1	393.2	2.0
2011-12	71680.2	40289.4	18457.0	2739.8	1496.4	1.8
2018-19	142554.1	83621.0	35039.5	5555.8	3805.7	1.5
2022-23	197738.5	114125.6	55351.2	7954.9	5221.9	1.5

Notes: 1. Values are in Rupees (Rs.) and in Current Prices; 2. **GDP** – Gross Domestic Product of India; **PFCE** – Private Final Consumption Expenditure; **TBE** – Total Budget Expenditure of all sectors and combined of all states and Centre; 3. **Public** – Budget Expenditure on Education by both the Centre and State Governments, as is compiled by Min of Education, GoI; 4. **Private** – PFCE on Education (i.e. households excluding the Government expenditure); 5. Per capita is per person; 6. Till 2018-19 figures are actuals and for the year 2022-23 figures are projected/extrapolated (forward) based on the past growth.

Sources: Authors' calculations based on: 1. National Accounts Statistics (NAS); 2. Reserve Bank of India (RBI); 3. Ministry of Education (MoE), Government of India (GoI); 4. RGI and Census of India.

Higher volume of private expenditure on education as compared to that of public during the early years of post-independence period was a reflection of the situation in British Colonial regime. Although the British introduced the modern and mass education system in India and provisions for educational grants were made, significantly larger part of the educational services were privately financed (parents, village/town communities, philanthropies, charities etc.,) (Nurullah and Naik, 1951). Post-War Educational Development Plan (1944) intended for a multi-fold rise in the public investment (expenditure) on education.

Post-independence, the Kher Committee (1949) recommendations along with the state-led development and planning initiatives, more particularly from the Second Five-Year-Plan onwards made efforts in the direction (Govinda and Mathew, 2018). Further, recommendations of the Kothari Commission (1966) that translated into the first National Education Policy 1968, followed by the second National Education Policy 1986, laid more emphasis on public investment on education (Govinda and Mathew, 2018). Thus, since the mid-1950s the public expenditure on education had outpaced the private, and that trend continued till 1980s. But during the last three decades since 1990s, the growth in private expenditure on education outpaced the public. It coincides with the economic reforms and liberalisation policy introduced during the early 1990s.

An increase in both the private and public expenditure on education, reflecting the expanding base of education system, during the last seven decades is several times higher than the increase in GDP, total PFCE and total budget expenditure (TBE). Such a mammoth increase (in values of current

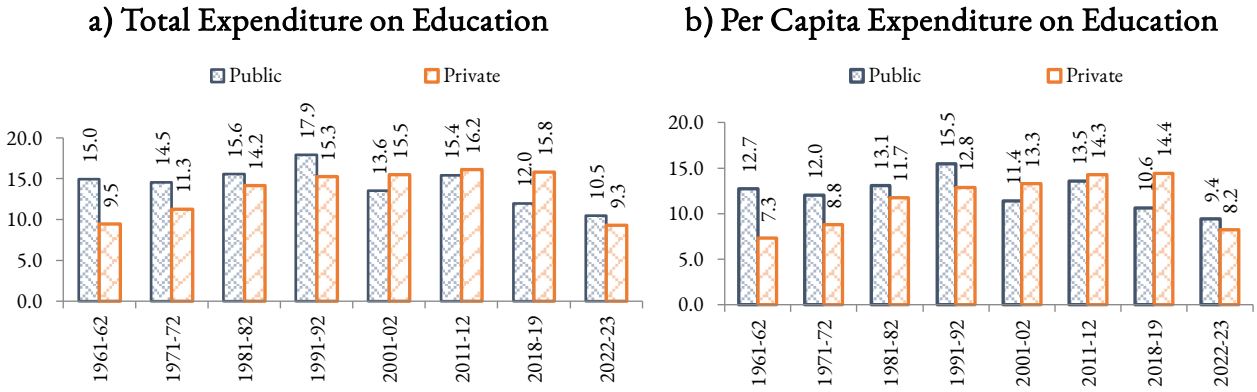
prices) in expenditure on education (public and private) might have been partly due to inflationary tendencies of the economy, but it must be largely due to the expanding base of education system in terms of both number of educational institutions and the enrolment in both the private and public sector institutions in the country.

In 1950-51, the number of schools in India was around 2.3 lakhs, number of colleges and universities were around 600, enrolment in schools was 238 lakh, and in colleges and universities it was just 4 lakhs; teachers in schools were 7 lakhs, and a few thousands in colleges. They increased manifold during the last seven decades: around 15 lakh schools and 50 thousand higher education institutions (HEIs) in the recent past, with the enrolment more than 600 lakh in schools and 410 lakh in HEIs, and more than 36 lakh teachers in schools and 14 lakh in HEIs.

The overall annual growth (CAGR or semi-log trend) for the last seven decades indicates that the public expenditure on education has grown more rapidly than that of private. But the annual growth in public expenditure on education separately for each decade indicates such supremacy has not continued. Growth in public expenditure on education was higher than that of private during the first four decades (from 1950s through 1980s), but thereafter (1990s through the present decade) it is the opposite (see Figure-1a&b). In other words, the growth in private expenditure on education is higher than that of public expenditure since 1990s. As a result the ratio of public to private had increased continuously for the first four decades, and it began decelerating during the last three decades especially since 1990s (Table-2).

The trend is in fact reflecting the increasing privatisation of education since 1990s. The per capita public expenditure on education was 0.7 times that of the private and the ratio increased to 2.3 in early 1990s. Such a ratio is gradually declining since 1990s, and it is 1.5 at present. It would further decline in the next decade, as the rate of growth in private expenditure on education is outpacing that of public one (Table-2). Although Covid-19 affected the growth in both the private and public expenditure on education, its adverse impact is more on the private one (Figure-1a&b). In fact UDISE+ data on school education has shown that the enrolment in government schools increased faster than private ones during the post-Covid period.

Figure-1: Annual Growth (%) in Expenditure on Education in India: Private and Public



Notes: 1. Compound Annual Growth Rate (CAGR in %); 2. Growth of Expenditure in current prices; 3. Till 2018-19 figures are actuals, revised estimates for 2019-20, budget estimates for 2020-21and for the years 2021-22 and 2022-23 figures are projected/extrapolated (forward) based on the past growth.

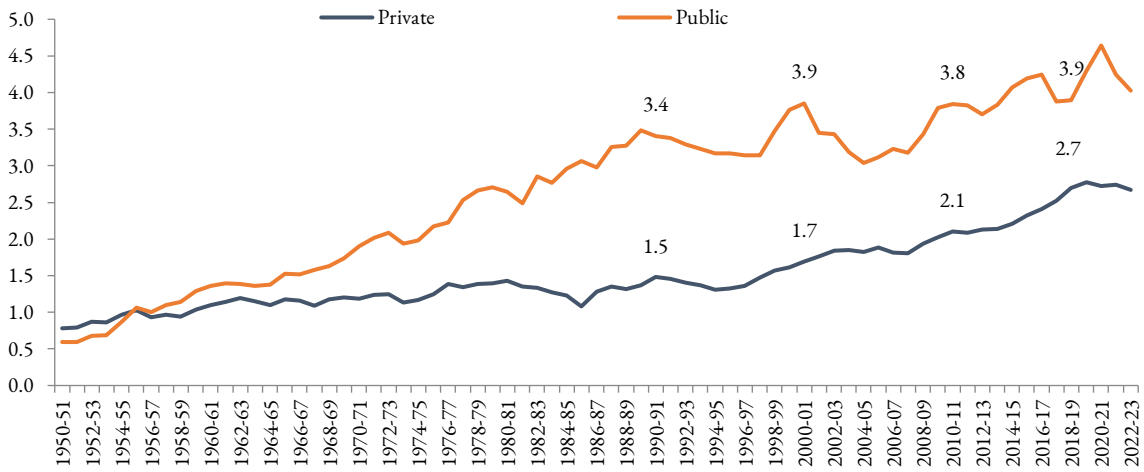
Source: Authors' calculations based on sources: 1. PFCEE, National Accounts Statistics (NAS); 2. ABEE, Ministry of Education (MoE), Government of India (GoI).

The increase in per capita private expenditure on education would be not only due to rapid growth of education in private sector (the base expansion of private), but also the increase in per capita expenditure per student owing to increase in fee and other charges over a period (Motkuri and Revathi, 2023). As the estimates based on NSSO's recent 75th round survey on ***Social Consumption: Education*** (2017-18) show, nearly 41% among the children of 3-35 years age who are currently attending educational institutions (pre-schools, schools and colleges) are attending such institutions under private management[2]. In higher education, more than 75% of institutions and 65% of enrolment is under private management in 2021-22[3] (AISHE, 2024). Besides, public (Government) institutions as well have introduced various self-financed courses or programmes, and there is a considerable enrolment in the same.

In terms of expenditure on education as a percentage of GDP, in 2018-19 India's public expenditure is 3.9%, while that of the private expenditure is 2.7% (Figure-2). Together, an amount equivalent to nearly 6.6 percent of GDP is spent on education in the country in 2018-19. The revised estimates in 2019-20 and the budget estimates in 2020-21 indicate the percentage of public expenditure on education is a little higher, at 4.6%, while the private expenditure remains the same.

The expenditure on education by public and private sources was equivalent to 0.6% and 0.8% of GDP respectively in 1950-51, and together it was merely 1.4%. The public expenditure on education as a percentage of GDP had increased by seven times, whereas the percentage of private increased three times during the last seven decades. The trend shows that expenditure on education as percentage of GDP is increasing, for both the sources: private and public[4].

Figure-2: Private and Public Expenditure on Education in India as a Percentage of its GDP



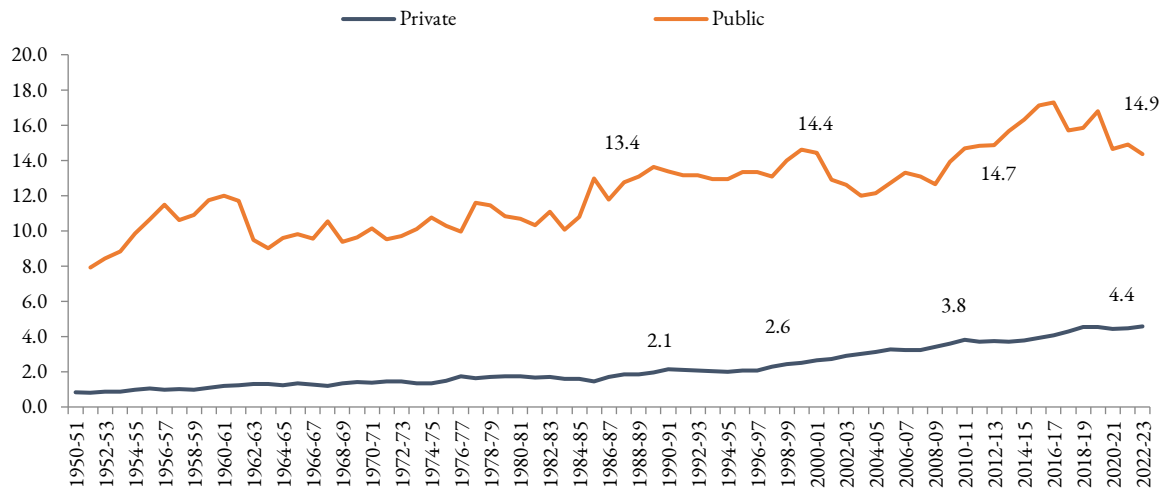
Notes: 1. **Public** – Budget Expenditure on Education by both the Centre and State Governments, as is compiled by Min of Education, GoI; **Private** – PFCE on Education (i.e. private/households' expenditure, excluding the Government/public expenditure); 2. Till 2018-19 figures are actuals, revised estimates for 2019-20, budget estimates for 2020-21and for the years 2021-22 and 2022-23 figures are projected/extrapolated (forward) based on the past growth.

Source: Authors' calculations based on 1. National Accounts Statistics (NAS) for PCEE and GDP, and Ministry of Education, Govt of India for ABEE.

The private and public expenditure on education as a percentage of total public and private consumption expenditure respectively, during the last seven decades, is showing an increasing trend (Figure-3). This is because of the higher growth of private expenditure on education vis-à-vis growth in total private expenditure (PFCE), and similarly higher growth in case of public expenditure on education compared to that of total (Centre and States) budget expenditure.

The percentage of education expenditure (private) in total PFCE had increased five times from less than one percent (0.8%) in 1951-52 to 4.6% in 2018-19, while the increase in the public expenditure domain was doubled from 7.9% to 15.9% during the same period. Though the level of private expenditure is lower than that of public expenditure, the rise in its share as percentage of PFCE was almost five times during the period. Moreover, the increase in education expenditure share in total private consumption expenditure domain is continuous and more consistent than that of public.

Figure-3: Public and Private Expenditure on Education respectively as % of Total Private and Public Expenditure - All India



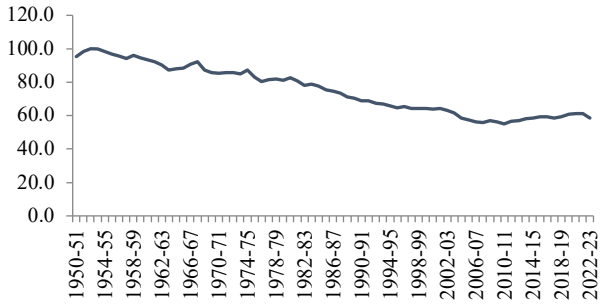
Notes: 1. **Private** – Private expenditure on education as a percentage of total PFCE; 2. **Public** – Public expenditure on education as a percentage of total budget expenditure (TBE); 3. Till 2018-19 figures are actuals, revised estimates for 2019-20, budget estimates for 2020-21and for the years 2021-22 and 2022-23 figures are projected/extrapolated (forward) based on the past growth.

Source: Authors' calculations based on 1. National Accounts Statistics (NAS) for PCE, and Ministry of Education, Govt of India for ABEE.

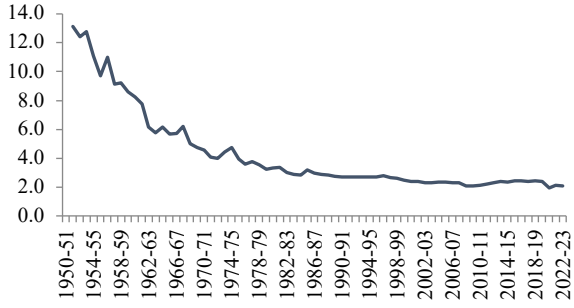
Private final consumption expenditure holds a major share in the Gross Domestic Product[5] (GDP) at market prices of a country. In India, although there was gradual decline in share of PFCE in GDP at market prices (95% in 1950-51, to around 60% in the recent past), it is still a major contributing component of GDP (Figure-4a). It also means that, correspondingly, the share of government expenditure is rising. This is reflected in the declining trend in ratio of Private (PFCE) to Government expenditure. The total private consumption expenditure (PFCE) was almost twelve times higher than that of public (Government) in 1951-52, but it is just twice that of public expenditure at present (see Figure-4b).

Figure-4: Private Final Consumption Expenditure (PFCE) in GDP: India

a) % of PFCE in GDP



b) Ratio of PFCE to Govt Expenditure



Source: Authors' calculation based on National Accounts Statistics (NAS), Government of India.

Finally, the real growth (i.e. in constant prices) in private and public expenditure on education gives the true picture, and highlights the following patterns. Firstly, the growth in private expenditure on education (either total or per capita) is higher than the total private expenditure (PFCE). Secondly, growth in private expenditure on education is higher than that of public (Table-3). Thirdly, while an accelerated rate of growth since 1970s is observed for private expenditure on education, there is a decelerated rate of growth for public expenditure on education throughout.

Table-3: Real Rate of Growth (Constant Prices) in Private and Public Expenditure on Education in India

	Growth in Total Value					*Growth in Per Capita*				
				on Education					*on Education*	
Decade	GDP	PFCE	TBE	Public	Private	GDP	PFCE	TBE	Public	Private
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1950s	4.0	3.4	8.6	13.9	6.8	2.0	1.6	6.6	12.0	5.1
1960s	3.5	2.9	7.8	11.0	8.7	1.3	0.7	5.6	8.8	6.5
1970s	3.3	3.0	6.2	5.4	3.4	1.1	0.8	4.0	3.1	1.2
1980s	5.2	4.0	5.7	8.0	4.4	3.1	1.8	3.6	5.9	2.3
1990s	5.8	4.8	5.3	5.6	6.1	3.9	2.8	3.3	3.7	4.1
2000s	6.6	5.3	6.7	4.3	5.9	5.0	3.6	5.0	2.7	4.3
2010-11 to 2018-19	6.7	6.7	5.2	5.3	7.9	5.5	5.5	3.9	4.3	6.8
2019-20 to 2022-23	3.8	3.9	7.3	2.0	5.7	2.3	3.0	6.3	1.0	4.8

Notes:1. Values are Rate of Growth (%) in Constant (2011-12) Prices; 2. Growth is based on **semi-log model** for each of the decade; 3. **GDP** – Gross Domestic Product of India; **PFCE** – Private Final Consumption Expenditure - Total; **TBE** – Total Budget Expenditure of all sectors and combined of all State governments and Centre; 4. **Public** – Budget Expenditure on Education by both the Centre and State Governments, as is compiled by Min of Education, GoI; 5. **Private** – PFCE on Education (i.e. households excluding the Government expenditure).

Sources: Authors' calculation based on: 1. National Accounts Statistics (NAS); 2. Reserve Bank of India (RBI); 3. Ministry of Education (MoE), Government of India (GoI).

Above illustrations indicate that although the share of total PFCE in the GDP and ratio of PFCE to total Government (budget) expenditure is declining, the share of private expenditure on education in total PFCE is increasing. It indicates increasing prioritisation of education in the private domain, reflecting growing importance of education among the households across economic and social classes.

In the scenario of increasing demand for education, the inadequacy of Government expenditure, thereby limited capacity of public institutions (public supply is short of demand) would result in an excess demand scenario – which is catered to by private institutions. Inadequacy of public expenditure also affects the resource (human, financial, and physical infrastructure) availability in instructions under public management, and thereby the quality of education delivered and post-completion

services like placement. Private institutions serve such differentiated demand. Thus, excess as well as differentiated demand have been leading to growing private expenditure on education.

All the above trends reflect the growing burden on private pockets. The increasing share of education in the total PFCE has a burdening effect on the household consumption expenditure. Higher growth in private expenditure on education vis-à-vis public expenditure has a substituting or complementing effect due to inadequacy of public expenditure. The burden falling on private pockets has implications for affordability and thereby access to education for the poor and the marginalised. The longstanding recommendation of the first National Education Commission headed by Kothari, (also endorsed by all subsequent National Education Policies), that 'public spending on education to be raised to 6% of GDP', could find place in manifestos and common minimum programmes, however is yet to be realised.

The recent third National Education Policy (NEP) 2020, while endorsing the 6% norm, intends to curb commercialisation of education, especially post-secondary education. However, certain other provisions made in the NEP-2020 may encourage the private sector participation in education, and they may lead to furthering of commercialisation of the private education. Along with setting uniform standards and common guidelines to public and private institutions, the policy also provides autonomy to private institutions to set fee for their programmes. They are to be transparently and fully disclosed along with flexibility in required conditions for establishing private education institutions especially in the higher education segment. Given the ground realities, eventually it may lead to furthering of commercialisation.

V Cointegration and Causality Analysis

In addition to the above descriptive analysis, this section examines whether there exist a long-run equilibrium relationship between public and private expenditure on education on the one hand and if they both contribute to the economy (GDP). This analysis is based on the time-series econometric tools, such as cointegration, causality tests, and VAR-based error correction modelling. In this section we present our preliminary results, while a systematic analysis of the same is being made in a separate paper. The observations made in this analysis would well connect with findings of the existing literature to a certain extent as discussed below.

A stream of endogenous growth models research has been focussing on investment in education for human capital formation fostering economic growth, reducing inequality, and promoting individual well-being (Annabi, 2017). One strand within the stream focusses on public and private investments in education and their impact (see Bräuninger, and Vidal, 2000; Arcalean and Schiopu, 2010; Magalhães and Turchick, 2022). The focus of the research in this strand has been the impact of education on either growth or inequality or both. Further, such impact is analysed through combinations of private and public expenditure on two different stages of education: school (k-12)

and post-secondary or higher education (see Bräuninger, and Vidal, 2000; Arcalean and Schiopu, 2010; Annabi *et al.,* 2011; Magalhães and Turchick, 2022).

Such an analysis in the literature shows that public expenditure on education is a key factor fostering growth and reducing inequalities. Developed countries have witnessed the same (UNESCO, 2022). Developing countries like India, are witnessing the opposite – predominance of private expenditure. For instance in USA, school education is more or less public funded and higher education is left to private sector, but still economically poor are supported with public funding through vouchers, scholarships, and fellowships. In India, private sector is continuing to occupy major part of school as well as higher education in the country.

An analysis of *cointegration* shows the long-run equilibrium relationship while checking the stationarity of the time series. Such time series analysis is systematically dealt with and reported elsewhere (Motkuri, 2020). It is observed that non-stationary level series of GDP and expenditure on education by both the sources (private and public) is found to be stationary on their first-differenced series. Hence, the series are individually first-order integrated processes. A *cointegration* testing (both the Engel-Granger and Johansen procedures) has shown that there is a long-run equilibrium relationship between the investment in education (public and private) and the country's GDP (Motkuri, 2020). Further to coingration testing, a ***Granger Causality*** test is performed for three time series (GDP, PFCE on Education, and Public Expenditure on Education). Results are as presented below in Table-4. Granger causality test statistics for decision is derived for six combinations of three times series.

Table-4: Granger Causality Test Results and Decision

Sl.no	Causality (H0)	F	p	Decision
1	PFCE does not cause GDP	0.7582	0.522	Do not reject
2	PEE does not cause GDP	4.6479	0.005	Reject
3	GDP does not cause PFCE	3.3940	0.023	Reject
4	GDP does not cause PEE	2.3041	0.859	Do not reject
5	PFCE does not cause PEE	1.3689	0.261	Do not reject
6	PEE does not cause PFCE	1.1259	0.346	Do not reject

Note: 1. PFCE – Private Final Consumption Expenditure on Education; PEE – Public Expenditure on Education; GDP – Gross Domestic Product; **2**. Both the direct Granger Causality test and the VAR based test for the same is performed and both have shown same results.
Source: Author's estimation

A key takeaway of the ***Granger Causality*** is that while public expenditure on education causes GDP, the causality is opposite for private investment (expenditure) in education (Table-4). There is no Granger causality found, in either direction, between private and public investment. These observations in direction of causality provide an insight for the *path analysis.* While the change

(increase) in *public expenditure on education influences the change (increase) in country's GDP, this in turn influences the change (increase) in private expenditure on education*.

Table-5: Results of Simple VAR based Vector Error-Correction (VEC) Model

Relationship	Variable	Coefficient	SE	Z	Significance
1	*2*	*3*	*4*	*5*	*6*
Model-1: lPCGDP on lPCPEE					
Long-Run	lPCPEE (β)	1.763	0.301	5.870	0.000***
Short-Run	ECT(α)	(-)0.032	0.015	-2.120	0.034**
Model-2: PCPFCEE on PCGDP					
Long-Run	PCGDP(β)	0.019	0.009	2.120	0.034**
Short-Run	ECT(α)	(-)0.027	0.015	4.39	0.086*

Notes: **1**. lPCGDP – log of Per Capita Gross Domestic Product; lPCPEE – log of Per Capita Public Expenditure on Education; lPCPFCEE – log of Per Capita Private (Final Consumption) Expenditure on Education; ECT – Error-Correction Term (Short-Run Adjustment factor); **2**. All the time series are in per capita terms (per person) and in constant (2011-12) prices; 3. Short-run parameters are avoided in reporting; 4. Significance: *** at 1%, ** at 5% and * at 10%.

Source: Authors' estimates using STATA.

Further, the estimates of a very basic version of the Vector Error-Correction (VEC) model based on Vector Auto-Regression (***VAR)*** procedure for cointegrated time series, are fairly in line with the long-run equilibrium relationship; represented by coefficient of long-run (β) and error correction term (ECT) as a short-run adjustment parameter (α) in the VEC model (Table-5). Beta (β) is cointegration equation parameter indicating the long-run equilibrium relationships. As expected, the sign of the long-run equilibrium factor coefficient (β) is positive, and that of ECT (α) is negative. Both are found to be significant. The VEC model estimates fairly confirm the insights of Granger causality directions and the long-run equilibrium relationships.

VI Concluding Remarks

Inadequacy of public investment on education, especially in the context of growing demand for education, resulted in growth in private expenditure on education. This has far-reaching implications for affordability and access to education. The present paper has examined the private and public expenditure on education in India. It is observed from the analysis that India is spending around 3.9% of GDP as public expenditure on education, and around 2.7% of GDP as private expenditure; together, it is spending around 6.6% of GDP on education.

Private expenditure on education as a share in private final consumption expenditure has risen five times since the 1950s, indicating the priority placed by households on education. Another notable trend is that growth in private expenditure on education is higher than that of public expenditure during the last three decades. The ratio of public to private in terms of expenditure on education is

declining during this period. This reflects increasing privatisation of education in India. This trend has far-reaching policy implications, especially in higher education.

The Covid pandemic has affected the growth in expenditure on education, both the private and public. An econometric analysis has indicated that there is no causality between private and public expenditure on education. They have a long-run equilibrium relationship with GDP, although direction of causality is different. While public expenditure on education causes the country's GDP, which in turn causes the private expenditure on education. In other words, high growth in economy is a positive factor for growth in private expenditure on education.

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Notes

[1] According to Chamberlin "A general class of product is differentiated if any significant basis exists for distinguishing the goods (or service) of one seller from those of another. Such a basis may be real or fancied, as long as it is of any importance whatever to buyers, and leads to a preference for one variety of the product over another. Where such differentiation exists, even though it may be slight, buyers will be paired with sellers, not by chance and at random (as under pure competition), but according to their preferences. Differentiation may be based upon certain characteristics of the product itself, such as exclusive patented features; trade-marks, trade names; peculiarities of the package or container, if any; or singularity in quality, design, colour, or style. It may also exists with respect to the conditions surrounding its sale" (Chamberlin, 1933:56

[2] NSS KI (75/25.2): Key Indicators of Household Social Consumption on Education in India.

[3] All-India Survey on Higher Education (AISHE) 2021-22, Ministry of Education, Govt. of India.

[4] However, the trend in expenditure on education (as percentage of GDP) for the entire period indicates that the post reform period (during 2000 to 2008-09, witnessed a lower trend. This was the time when the pace of economic reforms picked up which had adversely affected the public expenditure in general, social sector and in particular expenditure on education. It is well known that this phase was characterised by, downsizing the state and reducing the fiscal deficits of the Centre and State Governments along with privatisation including the education sector.

[5] The Gross Domestic Product (GDP) at market prices of a country consists of Private as well as public (Government) final consumption expenditure along with investment that consisting of Gross Fixed Capital Formation (GFCE), change in stocks and valuables, and net imports (exports-imports). Usual national income accounting equation is GDP_{MP} = C+I+G+(X-I).

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IPPR

Interlinkages Between Economic Growth and Human Development in India

A State-Level Analysis[#$]

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Abstract

This study explores the relationship between economic growth and non-income components (health and education) of the Human Development Index (HDI) for 26 Indian states during the period from 1990 to 2019. By applying the auto-regressive distributed lag (ARDL) model and Dumitrescu and Hurlin panel causality technique, the study identified a strong two-way relationship between economic growth and non-income components in the long run. Public expenditure on health and education did not impact human development outcomes, whereas total expenditure (public and private) did. However, public expenditure on health is crucial in ameliorating households' financial burden and preventing impoverishment due to catastrophic health expenditure. Furthermore, the analysis of the relationship between different educational levels (primary, secondary, and tertiary education) and the gross state sectoral value added revealed that while education limited to the primary level had no discernible influence on economic activity, secondary and higher education played a pivotal role in determining sectoral economic activity. Secondary education positively influenced agriculture and manufacturing, while higher education significantly shaped the services sector. The impact of higher education on services was four times greater than that of secondary education on manufacturing.

Keywords: Economic growth, Human Development, Autoregressive Distributed Lag, Causality, Education, Health

JEL Codes: I15,I25,O15,O40, O47, C01

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Abbreviations

ARDL	Auto-Regressive Distributed Lag Model
DFE	Dynamic Fixed Effects
ECM	Error Correction Model
ECT	Error Correction Term
EG	Economic Growth
EYS	Expected Years of Schooling
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
GSDP	Gross State Domestic Product
GSVA	Gross State Value Added
HC	Health Centres
HD	Human Development
HDI	Human Development Index
IMR	Infant Mortality Rate
IPS	Im, Pesaran, and Shin Test
LE	Life Expectancy
MDG	Millennium Development Goals
MG	Mean Group
MYS	Mean Years of Schooling
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
OOPE	Out of Pocket Expenditure
PMG	Pooled Mean Group
PQLI	Physical Quality of Life Index
PTR	Pupil-Teacher Ratio
SDG	Sustainable Development Goals
UNDP	United Nations Development Programme

1. Introduction

Traditionally, a country's development was believed to be determined solely by its economic growth. While economic growth provides material comfort to human beings, human development encompasses much more than just economic development. It involves enhancing the overall quality and experience of human life, focusing on individuals, their possibilities, and their freedom to make choices, rather than merely emphasising a nation's economic prosperity (UNDP, 2002). Health has now become a crucial component of "pro-poor" economic growth strategies aimed at boosting economic growth and addressing economic inequality (Government of India, 2005). Similarly, education has emerged as a crucial determinant of an individual's productivity as well as that of a nation (Ozturk, 2001). Among the earliest attempts to recognise the importance of non-monetary measures unrelated to income as indicators of improving physical quality of life were the studies by Morris (1978) and Morris and McAlpin (1982). These authors conceptualised an outcome-oriented composite index, the Physical Quality of Life Index (PQLI), which utilised data on literacy rates, infant mortality rates (IMR), and life expectancy (LE) at the age of one to calculate the quality of life. Acknowledging the importance of overall human development, the United Nations Development Programme (UNDP) began monitoring human development outcomes beginning 1990.

Human development may encompass several elements, including health, education, political freedom, governance, and income equality, among others. The human development approach emphasises income growth as a means to development rather than an end in itself (Sen, 1985; UNDP, 2002). Recognising the importance of non-income aspects of welfare, the UNDP developed a composite Human Development Index (HDI) as a summary measure of a nation's average achievement in three key dimensions of human development: (i) health (assessed by LE at birth); (ii) education (measured by Mean Years of Schooling (MYS) for adults aged 25 years and above and Expected Years of Schooling (EYS) for school-age children); and (iii) decent income/standard of living (measured by per capita gross national income) (UNDP, 2010). The HDI has been computed country-wise and disseminated by the UNDP regularly since 1990.

The explicit recognition of non-income aspects of welfare, such as health and education, along with the income aspect, in enhancing human well-being does not suggest that they are mutually exclusive of each other; on the contrary, they are interrelated and influence each other. Economic growth offers access to resources, enabling a country or an individual to invest in health and education. Children with good health are more likely to develop better cognitive abilities and become healthier adults, and employees with better health tend to demonstrate higher levels of productivity. Education makes individuals more health-conscious and promotes health-appropriate behaviour (UNDP, 1996).

This doesn't imply that economic growth will always and automatically result in human development and vice versa. There have been instances worldwide where economically prosperous countries have performed poorly in health and education. Nonetheless, despite the possibility of

initial economic growth occurring without sufficient attention to health and education, numerous studies suggest that a country might face limitations in achieving its full longterm growth potential unless it prioritises the health and education of its population. Similarly, there are instances where a society has performed reasonably well in health and education compared to countries with similar or higher levels of economic growth. Thus, the relationship between the income and non-income components is neither automatic nor linear; rather, it is complex and depends on several other factors (UNDP, 1996).

India has progressed from the low HDI category in 1990 to the medium HDI category in 2007 and it is rapidly approaching the high HDI category. The progress is reflected in various health and education indicators. For instance, LE at birth improved from 57.9 years in 1990 to 69.9 years in 2020. Likewise, the infant mortality rate significantly declined from 88.6 (per 1000 live births) to 27 (per 1000 live births) during the same period. Expected years of schooling improved from 7.6 years in 1990 to 12.2 years in 2019. India's economic growth also accelerated from approximately 4% in the 1980s to 6.2% in the following three decades. Despite these recent improvements, India's HDI still lags behind that of many of its peers and advanced economies. One area of particular concern has been low public sector spending, especially on health. As a result, out-of-pocket expenditure (OOPE) on health in India has been one of the highest in the world (Mundle, 2018). Against this background, this study takes an integrated view of social sector spending, health and education indicators, and EG in India to clearly understand the relationships between them.

This study builds on the existing literature on the interlinkages between human development and EG by filling key empirical gaps in the literature. Using the latest dataset spanning from 1990 to 2019 at the state level, we examine in detail the dynamic nature of the relationship between human development (HD) and economic growth (EG). Unlike other studies, we use the error correction model (ECM) to study the relationship between HD and EG. We also employ the Dumitrescu and Hurlin panel causality test (Dumitrescu & Hurlin, 2012) to assess the existence and direction of causality between EG and HD. The test extends the Granger (1969) time series framework of causality to heterogenous panel data, considering potential cross-sectional dependency. To the best of our knowledge, no other study has employed the Dumitrescu and Hurlin panel causality framework to evaluate the causality between gross state domestic product (GSDP) and HD in India. To better understand the role of education in influencing EG, we assessed one particular link between education and EG - the impact of different levels of education (i.e., primary, secondary, and higher education) on the sectoral value added of the agriculture, manufacturing, and service sectors.

Some of the key questions we seek to address in this study are the following: (i) Is there a long-run relationship between HD (health and education) and EG in India? (ii) Does EG cause HD and vice versa? (iii) Does public expenditure on health and education impact human development outcomes? (iv) Is there a relationship between different levels of education and economic activity? These questions, wherever relevant, were examined against the backdrop of the endogenous growth theory developed in the 1980s, according to which economic growth is driven not only by physical capital but also by human capital. Unlike neoclassical growth models, proponents of the endogenous growth

model argue that investment in human capital drives economic convergence and long-term growth in different countries (Romer, 1990).

Several important findings emerged from our analysis: (i) There exists a strong two-way relationship between HD and EG in the long run. (ii) There is also evidence of bi-directional causality between EG and HD. (iii) While public spending on health and education (as a percentage of GDP) does not significantly impact health and education indicators, total spending (public and private) does. (iv) Secondary-level education has a positive impact on the agriculture and manufacturing sectors, while higher education positively impacts the service sector, with primary education playing no discernible role in shaping economic activity.

The paper is organised into 7 sections. Section 2 reviews the literature on the relationship between EG and HD. Section 3 outlines the theoretical underpinnings of the likely patterns of the relationship between EG and HD and the pathways through which they influence each other. Section 4 analyses the trends in HDI in India at the national and state levels. Sections 5 and 6 provide descriptive statistics and econometrically test the relationship (including causality) between HD and EG. Section 7 summarises the key findings and spells out the policy implications.

2. Review of the Literature

The relationship between EG and HD has been a widely debated issue in academic literature, even prior to the 21st century (Preston, 1975; Romer, 1986, 1990; Floud et al., 1990; Fogel, 1994; Arora, 2001). Early literature attempting to gauge the influence of human capital on EG modified the neoclassical growth theory, which initially assumed technology as exogenous and, therefore, implied diminishing returns to capital. Incorporating the growth and level effects of human capital on income led to the formulation of endogenous growth theories (Romer, 1986, 1990, 1994; Barro, 1991; King & Rebelo, 1993). These theories regarded human capital as an important factor in enhancing labour productivity and/or accumulating physical capital, thereby contributing to economic growth. Several studies by authors such as Uzawa (1965), Romer (1986), Lucas (1988), Barro (1991), and Schultz (1971, 1981) incorporated human capital as an important determinant of economic growth.

Numerous studies have identified a positive impact of HD on EG. Barro (1991) and Ranis et al. (2000) found a positive impact of HD on EG using country-level panel datasets. Higher levels of HD imply more productive human capital, resulting in higher EG. Ranis et al. (2000) identified specific factors linking HD to EG in 35–76 developing countries (based on the availability of data) for the period 1970–1992. They found a positive and significant impact of HD (levels as well as changes) on GDP per capita growth. They also determined that a higher gross domestic investment in capital and a more equal income distribution strengthen the impact of HD on EG. Barro (1991) studied the impact of human capital on GDP per capita growth for 98 countries between 1960 and 1985. After controlling for the investment ratio, fertility rate, and political stability, he found that the initial human capital (1960 school enrolment rates) had a significant positive impact on per capita income

growth. Benhabib and Spiegel (1994) estimated the impact of human capital on GDP per capita growth using a Cobb-Douglas production function for 78 countries over the period 1965–1985 and obtained similar results after accounting for the role of human capital in influencing the growth of total productivity as well as its capability to attract other factors of production, such as physical capital. Similiarly, among the Organisation for Economic Co-operation and Development (OECD) countries, Bassanini and Scarpetta (2002) found a long-run relationship between human capital and EG using the Pooled Mean Group (PMG) estimator. Analysing a large panel of 104 countries for the period 1970–1990, Bloom et al. (2004) established that a one-year improvement in the life expectancy of a nation contributed to an increase of 4% in GDP growth. In a study based on dynamic panel data for 21 OECD countries over 1960–2011, Teixeira and Queirós (2016) proxied human capital with average years of schooling and observed a positive impact on GDP per capita. In yet another study, Gyimah-Brempong and Wilson (2005) established a significantly positive impact of all levels of educational attainment on per capita income in 34 African countries for the period 1960–2000. The study applied the dynamic panel data estimation and utilised the Barro and Lee database for educational attainment (Barro and Lee, 2000). Pelinescu (2015) established a negative and statistically significant impact of education expenditure (as % of GDP) on GDP per capita for a sample of European countries over the period 2000–2012. However, the role of secondary education of employees and the innovative capacity of the countries, measured by the number of patents, was found to be positive and statistically significant in driving GDP per capita.

While there is ample evidence supporting the positive impact of HD on EG, accurately measuring HD to capture the true relationship between the two has remained a challenge. Average years of schooling and enrolment rates, widely utilised as indicators of HD, have been contested on many grounds. Not only do they make international comparisons difficult and disregard an individual's the cognitive skills, but they also overlook the health aspects of human development. Hanushek (2013) argued that a rise in school enrolment rates in developing countries compared to the developed world has not corresponded to a simultaneous improvement in quality of schooling and cognitive skills of students in developing countries. By integrating cognitive skills, based on mathematics and science tests as an explanatory variable, and controlling for years of schooling, Hanushek and Woessmann (2012) found a positive and statistically significant impact of cognitive skills on GDP per capita growth for the period 1960–2000 in a study of 50 countries. The study recommended prioritising quality education over mass education to foster growth.

A section of the literature also employs social sector expenditure on health and education as indicators of human development. In a study conducted by Baldacci et al. (2004), a comprehensive analysis of 120 developing countries spanning from 1975–2000 revealed a positive long-run effect of public spending (health and education) on real GDP per capita growth. Specifically, public educational spending was correlated with increased school enrolment rates, while public health expenditures were associated with reduced under-five child mortality rates. Similarly, Mercan and Sezer (2014) investigated the impact of educational expenditure on EG in Turkey for the period

1970–2012, utilising the auto-regressive distributed lag (ARDL) model. Their findings demonstrated a positive and statistically significant relationship between educational expenditure and EG.

Some studies have also examined the relationship between HD and EG within an asymmetric framework. For instance, Yang (2020) examined the impact of health expenditure on EG in China. His findings suggested the existence of threshold effects in the relationship between health expenditure and GDP growth for various levels of human capital. Notably, when the level of human capital falls below the first threshold (first regime), health expenditure shows a negative correlation with EG. The relationship between health expenditure and EG turns positive in the second and third regimes, specifically when the level of human capital exceeds the first threshold. By considering adult survival rates (ASR) as an indicator of a country's health outcomes, Bhargava et al. (2001) explored the dynamics between ASR and GDP growth, allowing for the relationship to be contingent on GDP levels. Their estimates revealed that ASR positively and significantly influenced GDP growth rates solely in low-income countries, such as India, Nigeria, Central African Republic, and Ivory Coast. ASR played an insignificant or negative role as a determinant of economic growth in middle- and high-income countries.

The relationship between HD and EG is not solely unidirectional. It is hypothesised that EG also drives HD. A higher EG leads to increased per capita income, which subsequently enables more expenditure on HD. Anand and Ravallion (1993) examined the pathways through which EG could influence HD indicators. They discovered that EG leads to the following: (i) direct enhancement of capabilities; (ii) a decrease in poverty; and (iii) an increase in the public provision of services. Empirical testing of the latter two pathways in a cross-section of 22 developing countries revealed that although EG positively impacted HD, this impact vanished after accounting for poverty and public expenditure. This suggested that an equitable distribution of economic output among the population was imperative for widespread HD. A study by Ranis et al. (2000) illustrated that a higher GDP per capita growth rate and social expenditure (as a ratio of GDP) were linked to improvements in HD indicators, specifically in reducing the shortfall in life expectancy during the period 1970–1992. In another study, Biswas (2002) compared the relative importance of EG and public provisioning in enhancing the HDI using the dataset from 29 countries over the period 1990–2000. His findings indicated that the public provision of health services played a more crucial role than the increase in real income in expanding the fundamental capabilities necessary for HD.

A few studies have attempted to examine the causal relationship between HD and EG. Cheng and Hsu (1997) utilised the Granger causality methodology and reported a bi-directional causality between economic growth and stock of human capital per worker in Japan for the period 1952–1993. Similarly, Asteriou and Agiomirgianakis (2001) utilised the Johansen cointegration and established a long-run relationship between educational attainment (enrolment rate) and EG in Greece. Their study also applied Granger causality tests, revealing a unidirectional causation from education to GDP growth. However, the causal relationship was observed to be weaker for higher education.

Several studies have analysed the relationship between HD and EG in the Indian context. Dholakia (2003) identified a two-way relationship between HDI and per capita income for Indian states. Additionally, he noted that an improvement in HDI led to a rise in the average per capita income of the states with an approximate lag of eight years, whereas, economic growth resulted in an enhancement of HDI with a much shorter lag of two years. Ghosh (2006), using data from 15 major Indian states for the years 1981, 1991, and 2001, demonstrated a two-way causality between the average per capita income of the states and HDI, particularly in terms of life expectancy at birth and literacy rate indicators. Viswanath et al. (2009) established the crucial role of human capital investment in propelling economic growth by studying a sample of 25 Indian states during 1995–1996 and 1998–1999. Employing the Johansen's cointegration for the period 1960–2005, Haldar and Malik (2010) concluded that investments in health and education expenditures had a positive and statistically significant impact on long-run per capita economic growth in India.

Utilising data from 28 Indian states, Mukherjee and Chakraborty (2010) observed that an increase in gross state domestic product per capita initially correlated with a rise in HDI. However, the significance of this relationship diminished over the study period. Both Mukherjee and Chakraborty (2010) and Mukherjee et al. (2014) identified a reverse causality, indicating a positive and statistically significant impact of HDI on economic growth. Confirming this, Mehrotra and Parida (2021) also reported a positive and statistically significant influence of HDI on states' gross state domestic product. Notably, they revealed a unidirectional Granger causality from HDI to economic growth, emphasising the crucial role of elevated human development in driving higher economic growth rates within the states.

Expenditure on human capital acts as a vital bridge between economic growth and human development, prompting numerous studies to explore its correlation with human capital expenditure and EG as well as human capital expenditure and HDI. Dholakia (2002), using data from 14 Indian states for two periods (1971–1981 and 1981–1991), discovered that government spending on human capital reduced the disparity in the Basic Welfare Index (BWI), an alternative and more comprehensive measure of human development based on nine socio-economic indicators. In the initial years 1981, 1991, 2001, and 2005, Gopalakrishna and Rao (2012) found that the impact of public expenditure on HD was higher than that of economic growth. Mor (2022) noted that total health expenditures (in %) could explain approximately half the variation in disability-adjusted life years lost, an indicator of health outcomes. However, Patel and Annapoorna (2019) found that educational expenditure, as a ratio of GDP, did not Granger-cause HDI. Meanwhile, Pradhan and Abraham (2002) observed a significant impact of social sector expenditure on HD and EG, using a dataset of 17 Indian states between 1980 and 1997. Examining the link between social sector expenditure (comprising health and education expenditure as a percentage of GDP) and economic growth, Narayan et al. (2010) employed the panel cointegration test and dynamic Ordinary Least Squares (OLS) on a sample of five Asian economies (including India) from 1974 to 2007. They reported that while the impact of health expenditure on economic growth was positive, though relatively modest, the expenditure on education did not significantly affect the economic growth of these economies. Ray and Sarangi

(2021) investigated causality between social sector expenditure and economic growth and found bi-directional causality between educational expenditure and economic growth, while they discovered only unidirectional causality from health expenditure to economic growth.

In conclusion, a comprehensive literature review confirms a strong two-way relationship between HD and EG. Nonetheless, the intensity of this relationship and the causal direction remains subjects of empirical evaluation. Findings may vary across different countries and timeframes. Moreover, elements such as the quality of human development, variable selection, levels of public expenditure, income distribution, and other factors contribute to the complexity of the relationship between EG and HD.

3. Economic Growth and Human Development—A Theoretical Perspective

How do health and education influence economic growth? Is the impact of an individual's health and education on economic growth temporary or permanent? These questions can be evaluated with the help of growth theories discussed in Box 3.1. The literature identifies three specific pathways through which human capital impacts EG. These include: (i) the impact of education in boosting the ability of the labour force to efficiently carry out tasks; (ii) the diffusion of new knowledge, technologies, products, and information created by others; and (iii) the improvement in creativity (World Economic Forum, 2015). More educated people are more likely to secure employment and enhance their skill sets, resulting in higher earnings over their working lives compared to less educated people. Ideas and technology exhibit non-rivalry, leading to increasing returns to scale. Based on this, Romer (1986, 1990) established that the accumulation of ideas will ensure sustained per capita economic growth.

Box 1: Impact of Human Capital on Economic Growth—Is it Transitory or Permanent?

The impact of HD on EG relies on whether HD directly enhances labour productivity or indirectly prompts investment in human and physical capital (Arora, 2001; Benhabib & Spiegel, 1994). If HD influences productivity, it will permanently boost the long-term growth of an economy. However, if HD encourages investment in physical capital, the impact on economic growth will vary based on the returns to scale. Under constant or increasing returns to physical capital, the increase in the growth rate would be permanent. Conversely, as suggested by the neoclassical growth model, under diminishing returns to capital, growth rates would rise only temporarily, eventually causing per capita income to revert to its prior steady-state growth rate. In such a scenario, investment in physical capital does not permanently alter the rate of growth; it only increases the level of output.

Nonetheless, even without growth-rate effects, reproducible factors significantly contribute to economic development by raising the level of income.

When analysing the dynamics between health and economic growth, it is evident that countries with healthier people typically exhibit higher income levels compared to those with less healthy populations. A healthy population not only reduces labour loss due to illness and premature death but also increases productivity, fostering increased savings and investments in human and physical capital. The correlation between health and economic growth is complex and contingent upon several factors (Box 3.2).

Box 2: Health and Economic Growth—A Complex Relationship

The empirical literature regarding the correlation between health and EG indicates a complex relationship between the two. Assessing the economic impact of health improvements is complicated by at least four factors, regardless of the method used to measure them.

First, the nature of the relationship between health and EG is unclear. This is not only due to the bi-directional causality between the two but also due to confounding factors, such as complementarity between health and education.

Second, the impact of health on EG varies depending on the specific health dimension considered, whether it's morbidity (illness) or mortality (death). While reduction in morbidity increases labour supply and productivity, reduction in mortality not only boosts labour supply but also encourages savings, investment in physical capital, and enhances the returns on educational investments (Bloom et al., 2018).

Third, the empirical evidence on the relationship between LE and EG is not unequivocal. Several studies suggest that a higher LE positively stimulates EG (Barro, 1996; Barro & Sala-i-Martin, 2004; Bloom et al., 2010). However, a few other empirical studies demonstrate a non-linear pattern or an inverted U-shaped relationship, where LE stimulates growth up to a certain threshold level, beyond which its impact becomes negative. For example, An and Jeon (2006) found that the growth rates initially increased with favourable demography and then decreased as the population aged, using data from 25 OECD countries for the period 1960–2000. Kunze (2014) found that an increase in LE unambiguously decreased growth if bequests were operative; if bequests were inoperative, the relationship showed an inverted U-shaped pattern. The demographic transition is one of the main reasons for the non-linear relationship between LE and EG, which involves three stages. The first stage exhibits high birth and mortality rates, the second stage has a high birth rate but low mortality rate, and the third stage presents low rates for both birth and mortality rates. Different countries have undergone various stages of demographic transition. As LE changes with various stages, its effect on economic growth is expected to change.

Fourth, there is a notable difference in the economic effects of health interventions between developed and developing countries. In developing countries with low initial health status, even minor health interventions can yield significant and positive outcome for working-age population's health. In advanced economies, even major interventions may not have a significant impact given the high initial health status of the population.

The third and fourth factors, in particular, explain why the relationship between health and economic growth may vary in emerging market economies and developed economies.

In conclusion, there is a strong case for a positive effect of health on economic growth in developing economies compared to developed countries. Health improvements in developing countries can stimulate greater investment in human capital, increase female participation in the labour force, and lower fertility (Bloom et al., 2018). Together, these factors can lead to a demographic dividend and propel long-term economic growth in a country.

Economic growth contributes to HD by augmenting resources available for investment in health and education (Ranis, 2004). Higher income levels incentivise households to adopt activities that promote positive health outcomes, such as using clean cooking fuel, safe housing, drinking clean water and practicing proper sanitation (Ali and Khan, 2022).

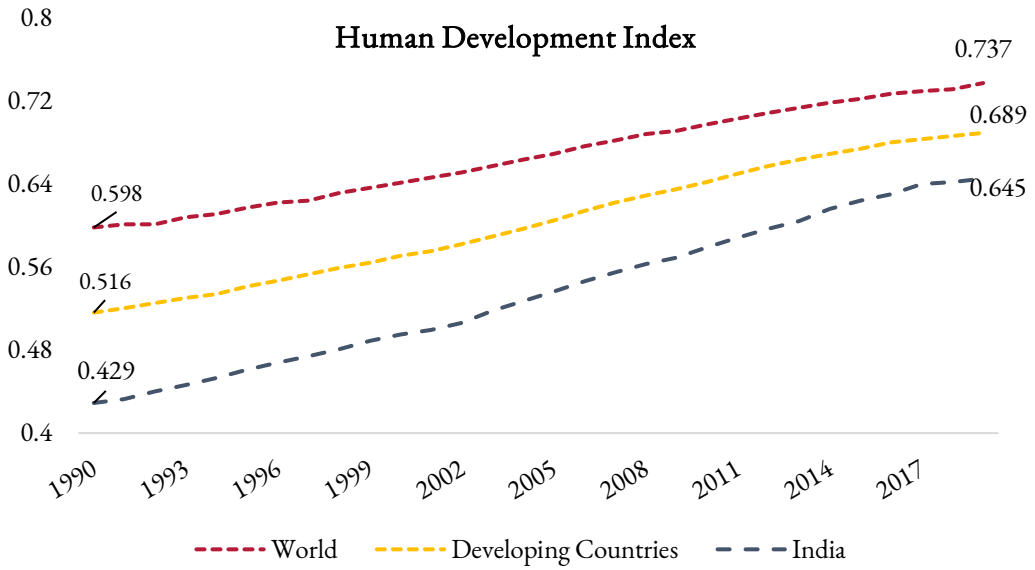
Similarly, health and education are also closely interlinked. Theoretically, people's decision to invest in human capital relies on the anticipated lifetime returns from such investments. Longevity tends to encourage schooling. After controlling for parents' incomes, education, and social status, Case et al. (2005) discovered that children who faced poor health exhibited significantly lower educational achievements, poor health, and lower earnings as adults. This highlights the importance of child nutrition and health as a focal point for the intergenerational transmission of wealth. Furthermore, Ranis (2004) established the importance of parents' income level, health, and educational attainments as decisive factors of their children's capabilities and their future health and earnings as adults. Schooling imparts knowledge of health-appropriate behaviour, creates awareness of the increased opportunity cost of poor health, and encourages people to protect their health. Moreover, education also facilitates women's empowerment, leading to improved health and education outcomes for women and their children. While health and education enhance productivity, it is significant to note that the purpose of investing in these areas aren't solely aimed at improving productivity; the development of human capabilities is an end in itself (UNDP, 1996).

In summary, health and education play vital roles in shaping economic growth and vice versa. Human capital contributes to growth by enhancing labour force efficiency through education, diffusion of knowledge, and fostering creativity. Higher education levels lead to better employment opportunities and lifelong earnings. Moreover, healthier populations tend to have higher income levels due to reduced labour loss from illness, increased productivity, and greater investments in human and physical capital. Economic growth, on the other hand, increases individual and state capacity to invest in human development. Health and education are interconnected, with childhood health influencing educational attainment and lifelong earnings. Education imparts health knowledge and empowers women, resulting in better health and education outcomes. Ultimately, health and education enhance productivity and contribute to human development beyond economic gains.

4. Trends in HDI

A comparison of the composite HDI, encompassing income, education, and health, for India and the rest of the world from 1990 to 2019 indicates that India's HDI score lagged the world average as well as the developing countries' average. However, the gap has gradually narrowed down over the years (Figure 4.1).

Figure 1: Human Development Index—India's Performance



Source: UNDP Human Development Report, 2019

The disaggregation of HDI into its income and non-income (health and education) components demonstrates that the narrowing of the gap between India and other economies primarily resulted from an increase in the non-income component rather than in the income component (Figures 4.2 and 4.3). The world average includes many advanced economies where significant improvements in health and education have already been achieved. Since health and education indicators in most of the advanced economies are very close to the highest possible level, the pace of improvement in these indicators is slow. In contrast, developing economies still have considerable ground to cover in reaching health and education levels comparable to those of advanced economies. Viewed in this context, the gradual convergence of the gap between India's non-income HDI and that of the developing economies is particularly noteworthy.

Figure 2: Non-Income HDI—India's Performance

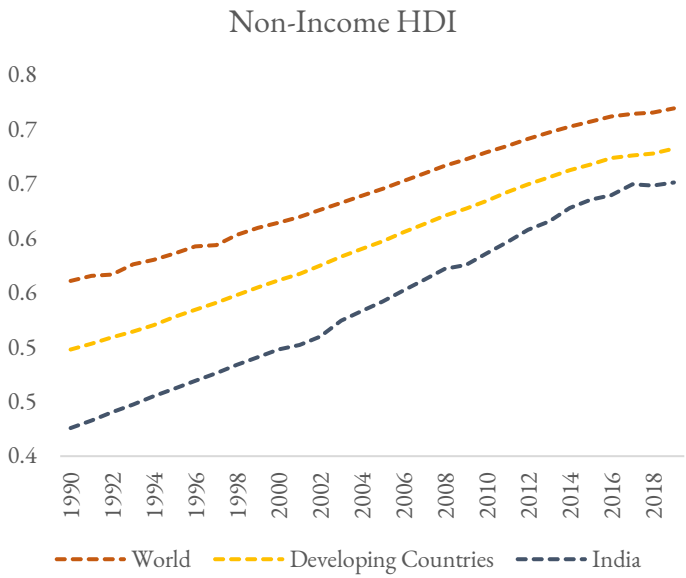
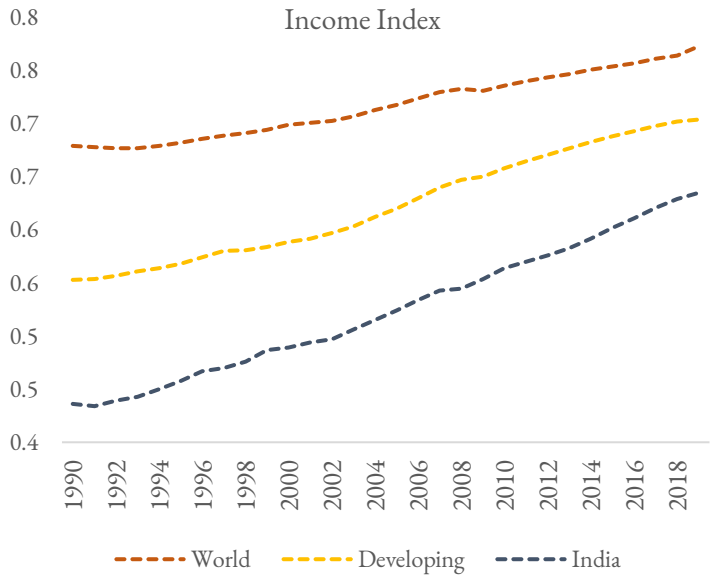


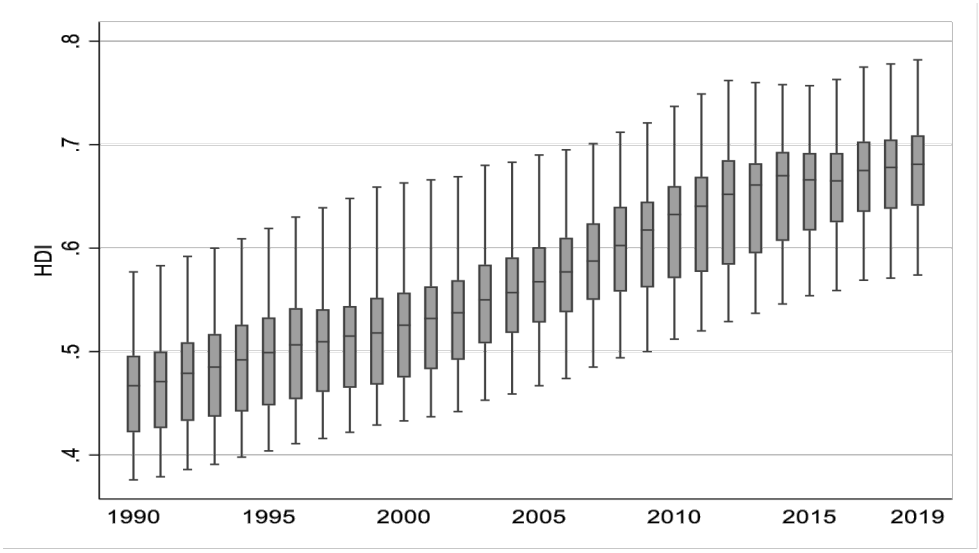
Figure 3: Income Index—India's Performance



Source: UNDP Human Development Report, 2019

The HDI for all the Indian states combined exhibited consistent improvement between 1990-2019, as reflected in the gradual upward trend in the (i) lowest HDI (lower edge of the box); (ii) highest HDI (upper edge of the box); and (iii) median HDI (middle of the box) in Figure 4.4. Most of the box plots are normally distributed, suggesting a symmetrical distribution of states below and above the median. The size of the box plot has remained relatively consistent across the years, indicating a steady variance over time (Figure 4.4).

Figure 4: Movement in HDI–All States (1990–2019)

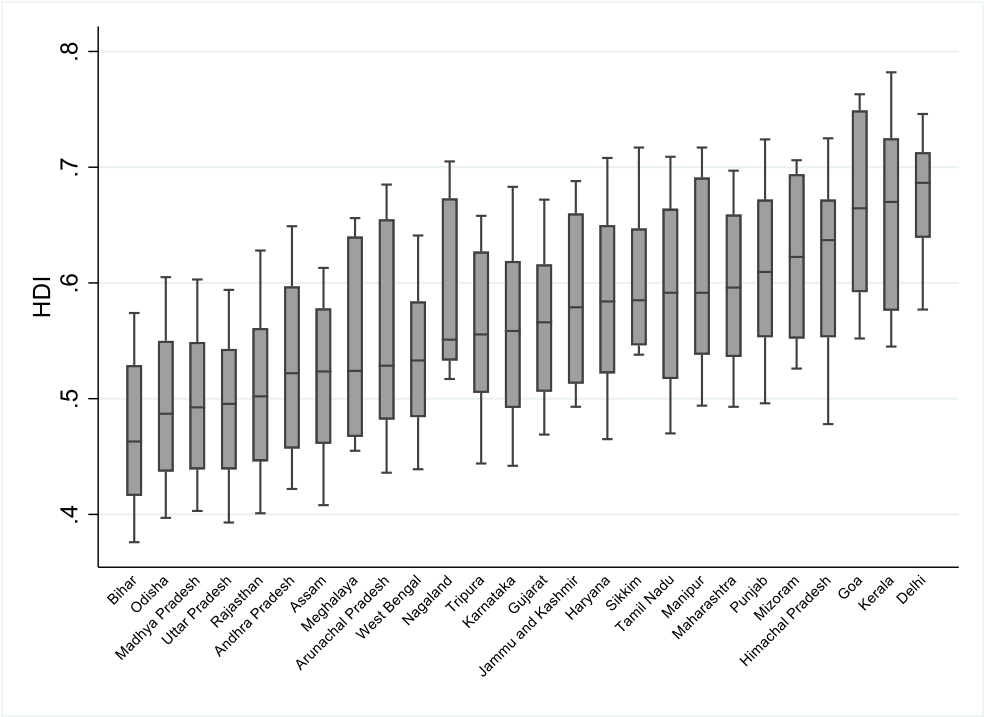


Source: Global Data Lab of the Institute of Management Research of the Radboud University, the Netherlands

An analysis of the HDI at the state level for the period 1990–2019 indicates that while the minimum, maximum, and median levels of HDI improved across all the states, significant inter-state variations were observed (Figure 4.5). Bihar, Uttar Pradesh, Odisha, and Madhya Pradesh recorded the lowest HDI values among all the states, while Delhi, Kerala, and Goa displayed the highest HDI values during 1990–2019 (Figure 4.5). Although not visually apparent from the graph, data illustrate that the median HDI value for most states was reached in 2005. Moreover, most of the box plots demonstrate symmetrical distribution around their medians, suggesting consistent improvements in HDI both before and after 2005. Six states notably differ from this pattern.

Among these six states, Nagaland, Arunachal Pradesh, Meghalaya, and Manipur, showed substantial improvements in HDI values post-2005, as evidenced by the right skew of their box plots. The other two states, Kerala and Himachal Pradesh, however, witnessed faster improvements before 2005 and only mild improvements thereafter. This can be inferred from the left skew of their box plots[1].

Figure 5: State-Wise Progress in HDI (1990–2019)



Source: Global Data Lab of the Institute of Management Research of the Radboud University, Netherlands.

5. Econometric Exercises—Data and Methodology

5.1. Data

We used panel data from 1990 to 2019 for 26 Indian states2 for this study. The selection of the period and the set of states was influenced by the availability of data. Our main variables were HD and EG. Different indicators were used to represent different components of HD. Life expectancy (LE) at birth was used as a measure of health and expected years of schooling (EYS) for education. A non-income HD index (geometric average of education and health indices) was used to capture the combined effects of health and education. Economic growth was measured by per capita state GSDP in nominal terms.3 Ranis (2004) and Suri et al. (2011) considered expenditure on health and education as an important interlinking factor between EG and HD. Therefore, following the literature, we added public expenditure on health ($Health\ Exp$) and education ($Educ\ Exp$) as a share of GSDP as additional explanatory variables in the equation estimating the impact of EG on HD. Following Barro (1991) and Benhabib and Spiegel (1994), gross capital formation (GCF), as a percentage of GSDP, was used as a control variable in the equation estimating the impact of HD on EG. The variables, their definitions, and the data sources used are set out in Appendix 1.

Descriptive statistics (mean, standard deviation, minimum, maximum, and median values) of the variables used in this study suggest that the mean expected years of schooling (EYS) during 1990–2019 was 10.51 years and life expectancy (LE) at birth was 66.81 years; the former exhibited lower variability (across time and states) compared to the latter. The average expenditure on education (as % of GSDP) ($Educ\ Exp$) at 4.3% was almost 3.5 times the average health expenditure ($Health\ Exp$) (1.3%). However, variability in health expenditure (across time and states) was lower than education expenditure (Table 5.1).

Table 1: Descriptive Statistics (1990–2019)

Variable	Mean	Standard Deviation	Minimum	Maximum	Median
EYS	10.51	1.80	5.8	15.04	10.42
LE	66.81	4.49	54.16	76.95	67.29
HDI	0.58	0.08	0.37	0.79	0.5
ln PCGSDP	10.39	1.11	8.07	13.07	10.32
Educ Exp	4.34	2.41	1.36	13.60	3.50
Health Exp	1.29	0.83	0.36	4.97	0.95
GCF	30.01	5.29	22.32	38.23	32.26

Source: Authors' calculations

5.2. Methodology

Panel Unit-Root Tests

Since we used panel data with a long-time dimension, we began by testing the stationarity of the variables, which is important to avoid spurious regression. If the variables are stationary in level form, they are said to be integrated of order I (0). If they are stationary in first differences, then they are said to be integrated of order I (1). To check for stationarity, two panel unit-root tests were carried out—the Im, Pesaran, and Shin (IPS) (2003) test and the Breitung (2000) test. The null hypothesis of both these tests is that the panels contain a unit-root, i.e, they are non-stationary. A rejection of the null hypothesis indicates that the panels do not have a unit-root and are, hence, stationary. While the Breitung test assumes a common autoregressive parameter for all the panels under study, the IPS test relaxes this assumption and allows for heterogeneity across panels. Both tests are first-generation panel unit-root tests, which imply that all the panels are considered homogeneous, and hence, the cross-sectional units are assumed to be independent.

Panel Auto-Regressive Distributed Lag Model

Most studies have used ordinary least squares (OLS) to assess the relationship between HD and EG, however, we did not find it suitable for the purpose of our analysis. Being a static model, OLS is unable to capture dynamic aspects. It is also susceptible to issues such as endogeneity, reverse causality, and non-stationarity. Baldacci et al. (2004) used the Generalised Method of Moments (GMM) for robustness to address issues of measurement error and endogeneity in dynamic modelling.4 However, GMM is more suited for models with large N (cross sections) and small T (Time horizons), i.e., where N>T. Since our dataset did not satisfy this condition, we followed the auto-regressive distributed lag (ARDL) model, which addresses the issues of reverse causality and endogeneity by regressing the dependent variable on its own past lagged values as well as current and past values of other explanatory variables. It has two main advantages over other models. First, it can be used even if variables are I(1) or I(0) or a mixture of both (Pesaran and Pesaran, 1997), and second, it can be re-parametrised to form an error correction model (ECM) that allows testing of long-run and short-run relationships. We estimated two relationships—the impact of EG on HD and vice versa, as detailed below.

Impact of Economic Growth on Human Development

The long-run impact of EG on HD can be formulated into a panel ARDL (p, q_1, q_2) equation where p and q represent the lags of the dependent and independent variables, respectively. The equation can be written as:

$$HD_{it} = u_i + \sum_{j=1}^{p} \gamma_{1,i} HD_{i,t-j} + \sum_{j=0}^{q_1} \gamma_{2,i} lnPCGSDP_{i,t-j} + \sum_{j=0}^{q_2} \gamma_{3,i} Expenditure_{i,t-j} + \varepsilon_{it}$$

(1)

Where $i = 1,2,3..N$ and $t = 1,2,3,\ldots,T$ represent the states and time, respectively; u_i is the state's fixed effects; $PCGSDP$ is the per capita state gross domestic product; HD represents human development; and $Expenditure$ represents public expenditure on human development (health and education) as a share of GSDP. Three separate equations were run using three different indicators of HD: (i) expected years of schooling (education); (ii) life expectancy (health); and (iii) non-income HDI (geometric average of education and health indices). Correspondingly, in each equation, expenditure represents public expenditure (as a percentage of GSDP) on (i) education ($Educ\ Exp$); (ii) health ($Health\ Exp$); and (iii) both education and health ($Total\ Exp$).

Equation (1) can be re-parametrised in ECM form as:

$$\Delta HD_{it} = u_i + \sum_{j=1}^{p-1} \delta_{1,i} \Delta HD_{i,t-j} + \sum_{j=0}^{q_1-1} \delta_{2,i} \Delta lnPCGSDP_{i,t-j} + \sum_{j=0}^{q_2-1} \delta_{3,i} \Delta Expenditure_{i,t-j} + \varphi_i \left(HD_{i,t-1} - \beta_2 lnPCGSDP_{i,t-1} - \beta_3 Expenditure_{i,t-1} \right) + \varepsilon_{it}$$

(2)

Where $\delta_1, \delta_2, \delta_3$ capture the short-run relationship of lagged dependent and independent variables with the dependent variable, and β_2 and β_3 capture the long-run relationship of economic growth and public expenditure with human development, respectively. φ_i is the speed of adjustment. A negative and significant φ_i shows a return to the long-run equilibrium, whereas $\varphi_i = 0$ indicates no long-run relationship. ε_{it} is the error correction term.

Impact of Human Development on Economic Growth

The long-run impact of human development on economic growth can be formulated into a panel ARDL (p, q_1, q_2) equation where p and q represent the lags of the dependent and independent variables, respectively. The equation can be written as:

$$lnPCGSDP_{it} = u_i + \sum_{j=1}^{p} \gamma_{1,i} lnPCGSDP_{i,t-j} + \sum_{j=0}^{q_1} \gamma_{2,i} HD_{i,t-j} + \sum_{j=0}^{q_2} \gamma_{3,i} GCF_{i,t-j} + \varepsilon_{it}$$

(3)

Where GCF represents the gross capital formation of a state as a percentage share of its GSDP, and the other variables are defined as before.

Equation (3) can be re-parametrised in ECM form as:

$$\Delta lnPCGSDP_{it} = u_i + \sum_{j=1}^{p-1} \delta_{1,i} \Delta lnPCGSDP_{i,t-j} + \sum_{j=0}^{q_1-1} \delta_{2,i} \Delta HD_{i,t-j} + \sum_{j=0}^{q_2-1} \delta_{3,i} \Delta GCF_{i,t-j} + \varphi_i (lnPCGSDP_{i,t-1} - \beta_2 HD_{i,t-1} - \beta_3 GCF_{i,t-1}) + \varepsilon_{it}$$

(4)

ECM equations (2) and (4) can be estimated using three different methods, including the mean group (MG) estimator (Pesaran and Smith, 1995) that allows state-specific heterogeneity both in the short and the long-run; the pooled mean group (PMG) estimator (Pesaran et al., 1999) that restricts the long-run coefficients to be homogenous across states while allowing for short-run heterogeneity; and the dynamic fixed effects (DFE) estimator that further restricts the short-run coefficients to also be equal across states. According to Pesaran et al. (1999), homogeneity in long-run parameters across countries can be expected on account of arbitrage conditions or common technologies. Since our sample consisted of states within the same country with high integration, we expected the homogeneity conditions to be even stronger in our sample. As a result, we had the option of either using PMG or DFE estimators. The final choice was made based on the Hausman test. Lags were selected based on the methodology suggested by Loayza and Ranciere (2006), according to which, if the research interest lies in the long-run estimates, the optimal lag length for each country can be decided using a consistent information criterion. However, if the research interest lies in analysing both the short and long-run estimates, a common lag structure can be used across countries. Since we aimed at capturing both the long and the short-run dynamics, we adopted the latter method and used a common lag structure. Owing to the limited time horizon of our study (30 years), we imposed a lag order of one across states to avoid over-specification of the model (Kim & Lin, 2010; Njindan Iyke & Ho, 2019).

In our regressions, we used nominal income levels to maintain comparability with expenditure figures that were available from the budget documents in nominal terms. To ensure that the results are not distorted by the usage of nominal income in place of real income, we re-ran all the regressions with a log of real GSDP per capita. Similarly, it is possible that our results may be sensitive to our choice of human development indicators, particularly EYS for education and LE for health. To rule out this possibility, we ran additional regressions using alternative indicators for education and health; mean years of schooling (MYS) was used for education and infant mortality rates (IMR) for health. In addition to these checks, a few control variables were added to account for quality. These were physical infrastructure and pupil-teacher ratio (PTR) for education and the number of health centres (HC) per one million population for health. The gross fiscal deficit as a percentage of GSDP was also used as a control variable (Appendix 2 and 3).

Causality

Although regression analysis can test the relationship between human development and economic growth, it is unable to establish cause and effect. The two variables may be related, but it does not necessarily imply that one causes the other. Therefore, we tested for causality using the Dumitrescu and Hurlin (2012) causality test that extends the Granger (1969) time series framework of causality to panel data while taking into account possible cross-sectional dependence between different units (states). We tested the null hypothesis of absence of causality for all states against the alternative

hypothesis of the presence of causality for at least one state. To investigate causality, the following test was carried out:

$$HD_{it} = u_i + \sum_{k=1}^{K} \alpha_{i,k} HD_{i,t-k} + \sum_{k=1}^{K} \beta_{i,k} lnPCGSDP_{i,t-k} + \varepsilon_{it} \quad (5)$$

$$lnPCGSDP_{it} = u_i + \sum_{k=1}^{K} \alpha_{i,k} lnPCGSDP_{i,t-k} + \sum_{k=1}^{K} \beta_{i,k} HD_{i,t-k} + \varepsilon_{it} \quad (6)$$

Where i, t, and k represent states, time, and lags, respectively. Since the test requires stationarity of variables, the variables were considered in the first-differenced form.

6. Results and Discussion

6.1. Panel Unit-Root Tests

Table 6.1 displays the panel unit root results. It is evident that variables displayed varying orders of integration, but none of them was found to be integrated of the second order (i.e., I(2)). The human development indicators (EYS, LE, and HDI) and per capita GSDP were integrated of order one, i.e., I (1), while the shares of health and education expenditure (in total expenditure) and gross capital formation were I (0). As the variables were either I (0) or I (1), the ARDL model was preferred over traditional regression techniques like OLS and GMM.

Table 2: Panel Unit-Root Tests (Levels and First Difference)

Variable	Levels		First-difference	
	Breitung test	IPS test	Breitung test	IPS test
(1)	(2)	(3)	(4)	(5)
EYS	5.76	7.28	-9.80***	-6.91***
LE	1.57	-0.81	-3.29***	-1.39*
HDI	5.15	3.30	-5.97***	-2.54***
$lnPCGSDP$	-1.52*	-0.87	-1.91**	-3.21***
$Educ\ Exp$	-1.27	-4.77***	-4.46***	-9.65***
$Health\ Exp$	-3.08***	-5.84***	-4.14***	-7.17***
$Total\ Exp$	-1.68**	-5.10***	-3.87***	-9.66***
GCF	-3.28***	-1.09	-7.49***	-6.47***

Source: Authors' analysis.

*Note: Variables have been tested at lag (1). ***, **, * denote statistical significance at 1%, 5%, and 10%, respectively.*

6.2. Impact of Economic Growth on Human Development

Table 6.2 sets out the empirical results of the impact of EG on HD. As can be seen from column 2 of Table 6.2, EG had a positive and statistically significant impact on non-income HDI, both in the short- and long-run. However, health and education budgets (health and education expenditure as a percentage of GDP) had no impact on human development outcomes either in the short- or long-run.[5] Though this result looks counter-intuitive, the empirical evidence on this aspect is mixed (Box 6.1).

We also estimated the impact of economic growth on education and health separately (Columns 3 and 4, table 6.2). A 10% increase in per capita GSDP of states increased expected years of schooling (EYS) by 0.17 years and life expectancy by 0.24 years, respectively, in the long run. The adjustment term (error correction term) was negative and significant, implying a long-run relationship between the variables. It also provided the speed of adjustment to restore the long-run equilibrium following a disturbance, which for education (EYS) was 8.7%. In other words, about 9% disequilibrium between short-run and long-run is corrected every year. Thus, the process of adjustment is slow, and it takes about 7.7 years for a 50% deviation to be corrected. The results remained robust even after factoring in additional controls (Appendix 2).

Table 3: Impact of Economic Growth on Human Development

Variable	Non-income HDI	EYS	LE
	(2)	(3)	(4)
Long-run estimation			
$lnPCGSDP$	0.060***	1.737***	2.395***
	(0.01)	(0.12)	(0.23)
$Total\ Exp$	-0.008	-0.057	0.143
	(0.01)	(0.13)	(0.61)
Short-run estimation			
D.$lnPCGSDP$	0.018***	1.044***	0.305
	(0.01)	(0.20)	(0.26)
D.$Total\ Exp$	-0.001	-0.095***	-0.041
	(0.00)	(0.03)	(0.10)
Constant	0.005	-0.643***	2.719***
	(0.00)	(0.16)	(0.29)
Adjustment term	-0.053***	-0.087***	-0.058***
	(0.01)	(0.01)	(0.01)
Fixed effects	Yes	Yes	Yes

Source: Authors' analysis.

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Figures in brackets denote standard errors.

Box 3: Public Expenditure—Does it Impact Human Development Outcomes?

Numerous studies have highlighted public expenditure on health and education as an important link between economic growth and human development (Ranis, 2004). However, empirical findings in this area present a mixed picture. While Anand and Ravallion (1993), Biswas (2002), Gupta et al. (2002), and Baldacci et al. (2004) reported a positive impact of public expenditure on human development outcomes, Filmer (1999) and Pelinescu (2015) found the impact on HD outcomes to be insignificant.

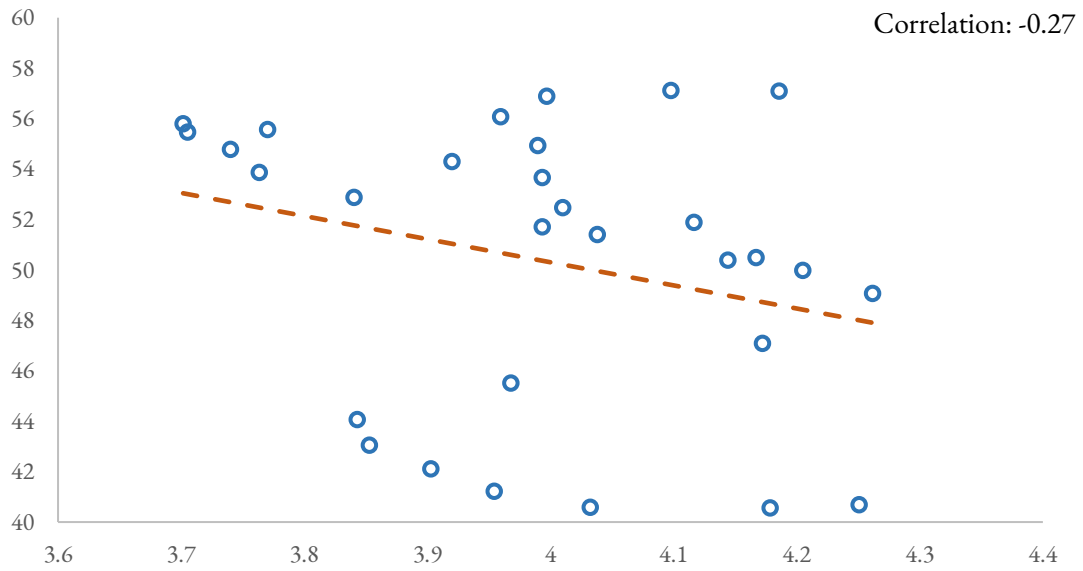
In the Indian context, the literature also exhibits a similar divide. Ghosh (2006), Farahani et al. (2009), and Pradhan and Abraham (2002) discovered a positive and statistically significant impact of public expenditure, whereas Patel and Annapoorna (2019), Dubey (2019), Goswami and Bezbaruah (2011), among others, argued that public expenditure did not impact health and education outcomes. Some papers even point towards diminishing returns to public expenditure on education (Kaur and Mishra, 2003).

Understanding why public expenditure has not had a strong effect on improving HD indicators is crucial for shaping public policy in developing countries. Filmer (1999) proposed three potential explanations: (i) cost-effectiveness of public spending; (ii) crowding out of private expenditure; and (iii) public sector efficiency. The insignificant impact may also be attributed to low levels of expenditure (Goswami and Bezbaruah, 2011). As per the 2021–2022 Economic Survey, India's public expenditure on education was around 4% of its GDP and on health, about 1.3% (Government of India, 2022). In OECD countries, the corresponding figures were approximately 5% and 7.5%, respectively. On the efficiency of expenditure, Mohanty and Bhanumurthy (2021) noted that states that were more efficient in spending their social sector budget also had higher HDI levels.

Since public expenditure is low, out-of-pocket expenditure (OOPE) plays an important role in India (Garg and Karan, 2009). Over 60% of total health expenditure and about 50% of total education expenditure are incurred by the private sector. Therefore, public expenditure alone may not be able to influence HD outcomes. Its effect on outcomes will be further muted if public expenditure crowds out private expenditure. Expenditure on health and education is non-discretionary, compelling individuals to allocate funds to these areas, either through borrowing or by cutting down expenditure on discretionary items. This implies that if the government does not spend adequately on health and education, the public would be forced to spend on such activities out of their own pockets. Thus, there is an inverse relationship between public and private expenditure (on health and education) in India (see Figure A).

Even though public spending might not directly correlate with human development results, it plays a critical role in reducing the households' financial burden. It aids in preventing families from falling into poverty because of overwhelming healthcare costs or from having to make tough decisions like reducing their food, education or other essential expenses.

Figure A: Relationship between Public and Private Expenditures on Health and Education



Source: National Account Statistics, MOSPI

On further examination we found that that while public expenditure alone may not impact human development outcomes, the combined total expenditure (including both public and private spending) on health and education did influence HD outcomes. Using the ARDL model and substituting public expenditure with total expenditure at an all-India level, we found that an increase in total expenditure resulted in an increase in both education (EYS) and health (LE) outcomes, albeit with lags: a one-year lag in the case of education and two years in the case of health. Other variables exhibited the expected signs (Tables 1A and 1B).

Table 1A: Impact of Total Expenditure on Education (Dep Variable: Expected Years of Schooling)

Variable	Coefficient
L.EYS	0.603*** (0.10)
lnPCGSDP	5.813*** (1.67)
L.lnPCGSDP	-5.046*** (1.61)
Educ Exp	-0.763** (0.28)
L.Educ Exp	0.883*** (0.28)

Table 1B: Impact of Total Expenditure on Health (Dep Variable: Life Expectancy)

Variable	Coefficient
L.LE	2.051*** (0.04)
L2.LE	-1.108*** (0.05)
lnPCGSDP	0.324*** (0.08)
L.lnPCGSDP	-0.124 (0.07)
Health Exp	0.015 (0.02)

Constant	-5.132*** (1.29)	L. Health Exp	-0.031 (0.03)
Observations	28	L2. Health Exp	0.074** (0.02)
Durbin-Watson statistic	2.600	Constant	1.314***
		Observations	28
		Durbin-Watson statistic	1.173

Source: Authors' analysis

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Figures in parentheses denote standard errors.

6.3. Impact of Human Development on Economic Growth

We also tested for the impact of human development on economic growth. As described in Box 3.2, the connection between health and economic growth is intricate. Many argue that the correlation between the two is non-linear. However, in the case of India, we found no evidence of a non-linear relationship (Box 6.2). Therefore, in our study, we hypothesised a positive and linear impact of health on economic growth in India.

Box 4: Impact of Health on Economic Growth in India—Is it Non-Linear?

As empirical evidence regarding the impact of health on EG is not unequivocal, understanding the nature of the relationship between health and EG becomes crucial. To ascertain whether the relationship between health and EG in India is linear or non-linear, we conducted a threshold regression of economic growth over life expectancy. However, the coefficient of the threshold was found to be insignificant, suggesting the absence of non-linearity. The threshold regression, based on Hansen (1999), endogenously identifies the existence and significance of threshold values using the data themselves for panels with individual-specific fixed effects. The regression equation is given below:

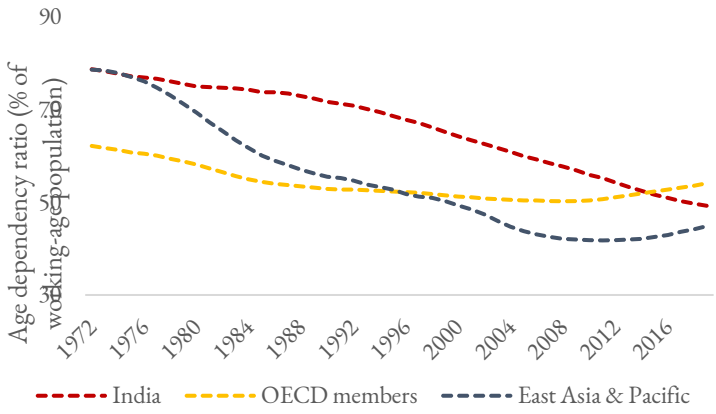
$$PCGSDPgrowth_{it} = u_i + \theta \boldsymbol{X}_{it} + \beta_1 LE_{it} I(LE_{it} \leq \gamma) + \beta_2 LE_{it} (LE_{it} \geq \gamma) + \varepsilon_{it}$$

Where the dependent variable $PCGSDPgrowth_{it}$ represents per capita economic growth. $\boldsymbol{X_{it}}$ is a vector of control variables that may impact EG, including gross capital formation as a share of GSDP. γ is the threshold parameter that divides the equation into two regimes based on life expectancy. The third and the fourth terms capture the impact of LE on EG in the two regimes. Our results rejected the existence of a threshold.

Threshold	F statistic	p-value
Single	30.29	0.30

The demographic transition is a primary factor contributing to the non-linear association between LE and EG. India is presently in the third stage of demographic transition (RBI, 2019). The dependency ratio in India has been falling continuously unlike many advanced economies where it has risen recently (Figure B). Thus, India has not reached the threshold stage where the impact of health on economic growth would turn negative.

Figure B: Age Dependency Ratio (% of Working-Age Population) Over the Years



Source: World Development Indicators database, World Bank.

Note: Age dependency ratio is defined as the ratio of dependents—people younger than 15 and older than 64—to the working-age population aged 15–64.

The results of the short-run and long-run impacts of human development on economic growth in India are presented in Table 6.3. Broadly, the findings align with expectations. A negative and statistically significant adjustment term (ECT) implies a long term relationship between the variables under study. The coefficients of GCF and HDI were statistically significant, indicating that GCF and human development influence economic growth positively in the long run. Ceteris paribus, a 0.1-point improvement in the non-income HDI results in, on average, a 48% increase in per capita GSDP of states in the long run. Similarly, a 0.1-point improvement in gross capital formation (as % of GDP) leads to, on average, a 1.3% increase in per capita GSDP of states. None of the variables had a statistically significant short-run impact on per capita GSDP (Table 6.3).

We also regressed economic growth on EYS and LE individually to find out the impact of education and health on economic growth, separately (Table 6.4). A negative and statistically significant estimate of the adjustment term (-0.043) signified that the variables under study returned to long-run equilibrium after a deviation. While all three explanatory variables —GCF, EYS, and LE—had a positive impact on per capita GSDP in the long-run, only EYS showed a statistically significant positive impact on per capita GSDP in the short-run. A one-year increase in the expected years of schooling can result in an increase of 16% in per capita GSDP in the long-run. On average, a one-year increase in life expectancy can lead to a 4% increase in a state's per capita GSDP.

It is intriguing that over the last 30 years, while life expectancy (at all-India level) increased by 12 years, expected years of schooling increased by only 5 years, yet the size of the coefficient of education was higher than the coefficient of health, implying that contribution of education to EG was higher than that of health. The results remained robust even after including additional controls (Appendix 3).

Table 4: Impact of Non-Income HDI on Economic Growth

Dependent Variable (D. log Per Capita GSDP)

Variable	Coefficient
Long-run estimation	
GCF	0.133***
	(0.020)
Non-Income HDI	4.763***
	(1.46)
Short-run estimation	
D.GCF	0.001
	(0.0001)
D.Non-Income HDI	0.032
	(0.270)
Constant	0.265***
	(0.020)
Adjustment term	-0.043***
	(0.010)
Fixed effects	Yes

Source: Authors' analysis. Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Figures in brackets denote standard errors.

Table 5: Impact of Human Development Indicators on Economic Growth

Dependent Variable (D.log Per Capita GSDP)

Variable	Coefficient
Long-run estimation	
GCF	0.125***
	(0.010)
EYS	0.160***
	(0.050)
LE	0.040*
	(0.020)
Short-run estimation	
D. GCF	0.001
	(0.0001)
D. EYS	0.013*
	(0.01)
D. LE	-0.006
	(0.010)
Constant	0.208***
	(0.050)
Adjustment term	-0.044***
	(0.0001)
Fixed effects	Yes

Source: Authors' analysis. Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Figures in brackets denote standard errors.

6.4. Levels of Education and Economic Activity

The analysis above clearly indicates a strong impact of education on economic growth. There are different levels of education, and it is of interest to understand how these different levels of education are related to a particular economic activity such as agriculture, manufacturing, and services. Consequently, we assessed the relationship between the different levels of education and components of economic activity. The levels of education were approximated by enrolments in primary, secondary, and tertiary education, while economic activity in each sector was gauged by value added in agriculture, manufacturing, and service sectors. We utilised data on gross state value added (at current prices) for 25 states spanning from 2000 to 2019. Data for the gross enrolment ratio in primary and higher secondary education were collected from the Department of School Education and Literacy, Ministry of Education. Additionally, data on enrolment ratios in higher education (18–23 years) were collected from the various annual reports of the All-India Survey on Higher Education (Ministry of Education).

Following the literature, we controlled for (logarithm of) gross capital formation per capita as a key driver of economic growth. We posited that primary and secondary enrolment ratios were the main determinants of agriculture, while secondary and higher education were important determinants for manufacturing and services sector value added. Our regressions incorporated 3-year lags.

Table 6.5 reports the results of the relationship between the gross enrolment rate (in %) and the (logarithm of) gross state value added in the agricultural, manufacturing, and services sectors. Through a fixed-effects regression model, we found that the gross enrolment ratio (in %) in secondary education had a positive and statistically significant impact on gross value added in agriculture, while the enrolment ratio in primary education (in %) had no impact on agriculture (Column 2, Table 6.5). The enrolment ratio in secondary education (in %) had a positive and statistically significant impact on value added in manufacturing but no influence on services. Meanwhile, the enrolment ratio in higher education (in %) had a positive and statistically significant impact on services; however, it did not have a statistically significant impact on manufacturing.

In quantitative terms, a 1% increase in the enrolment ratio for secondary education resulted, on an average, in a 0.3% increase in gross value added in agriculture as well as manufacturing, while a 1% increase in the gross enrolment ratio for higher education led to a 1.2% increase in the gross value added in the service sector for the states. Consequently, the impact of higher education enrolment on services was four times larger than that of secondary education on manufacturing. It is the development of cognitive skills of individuals rather than mere school enrolment or attainment that is related to economic growth. Recent studies indicate that investing in secondary education yields a substantial economic growth advantage, surpassing the impact achievable solely through universal primary education (Grant, 2017). In other words, for primary education to substantially contribute to economic growth, it must be complemented by the widespread provision of secondary education. The UN Sustainable Development Goals (SDGs) now have specific targets for primary and secondary

education, unlike the Millennium Development Goals (MDGs), which only emphasised universal primary education (United Nations, 2015).

Table 6: Relationship Between Enrolment Ratios (in %) and GSVA

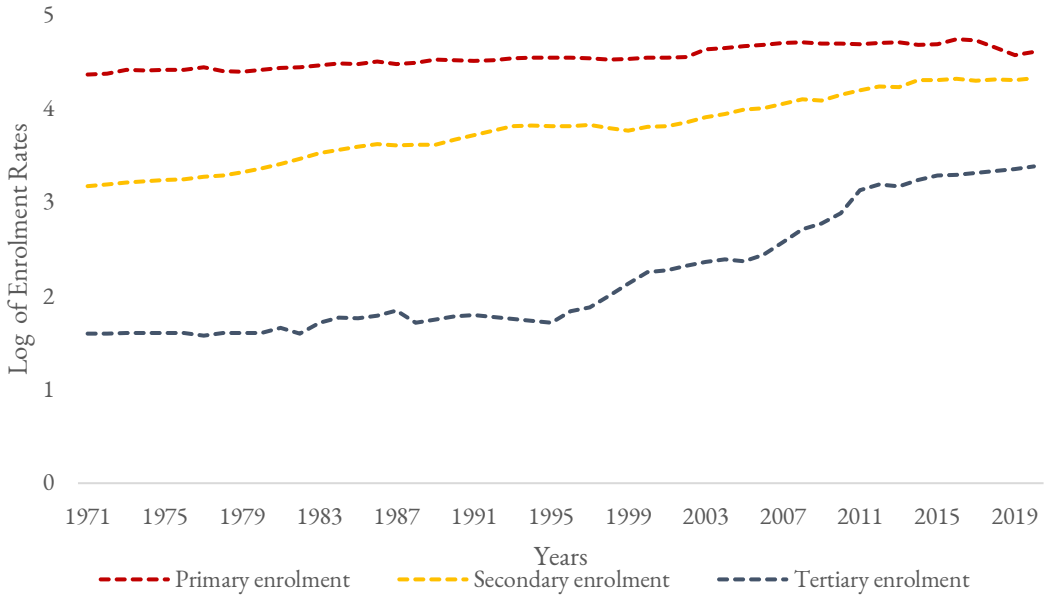
Variable	log (Gross state value added in agriculture)	log (Gross state value added in manufacturing)	log (Gross state value added in services)
(1)	(2)	(3)	(4)
Lagged gross enrolment ratio, primary (in %)	-0.001 (0.001)	-	-
Lagged gross enrolment ratio, secondary (in %)	**0.003***** **(0.001)**	**0.003***	-0.0003 (0.001)
Lagged gross enrolment ratio, higher education (in %)	-	-0.002 (0.003)	**0.012***** **(0.002)**
Log (GCF)	0.933*** (0.088)	1.216*** (0.080)	1.072*** (0.048)
Constant	5.302*** (0.885)	1.432 (0.774)	4.468*** (0.465)
F-statistic	121.95***	213.45***	617.36***
Fixed Effects	Yes	Yes	Yes

Source: Authors' analysis.

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Figures in brackets denote standard errors.

Figure 6.1 plots the (logarithm of) primary, secondary, and tertiary enrolments (in %) for India for the period 1960–2020. It is clear that the gap between secondary and tertiary enrolment widened from 1986 to 1997. However, it gradually narrowed down thereafter (other than in the last few years when it stagnated). This suggests that after completing their secondary education, a greater number of students are now pursuing higher education. Post 1997, tertiary enrolment increased significantly. When seen in conjunction with the tertiary enrolments as a factor driving the value added in the service sector, it is not surprising that the share of the service sector in India's GDP increased sharply from 39.08% in 1997 to 50.11% in 2019.

Figure 6: Trends in Primary, Secondary, and Tertiary Enrolments



Source: World Development Indicators database, World Bank

6.5. Causal Analysis

The Dumitrescu and Hurlin (2012) panel causality test was used to establish the presence of a causal relationship between HD and EG and to ascertain the direction of causality. It tests the null hypothesis of no causality against the alternative hypothesis that causality exists for at least some cross-sections in the heterogeneous panel. For robustness, the test was conducted both in level form and in terms of economic growth and improvement in non-income HDI (defined as shortfall reduction). Results from the level-based test indicated a bi-directional causality between GSDP per capita and human development at a 99% confidence level (Table 6.6). There is also evidence of bi-directional causality from improvement in HD to economic growth (at 99% confidence level) and vice versa (at 90% confidence level) (Table 6.7).

Table 7: Dumitrescu and Hurlin Panel Causality—GSDP and Non-Income HDI

Null hypothesis	Z- bar Statistic	p-value
Per capita GSDP does not Granger cause non-income HDI	14.003	0.0001***
Non-income HDI does not Granger cause per capita GSDP	29.037	0.0001***

Source: Authors' analysis.

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 8: Dumitrescu and Hurlin Panel Causality—Economic Growth and Improvement in Non-Income HDI

Null hypothesis	Z- bar Statistic	p-value
Economic growth does not Granger cause improvement in non-income HDI	-1.649	0.099*
Improvement in non-income HDI does not Granger cause economic growth	5.873	0.0001***

Source: Authors' analysis.

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

7. Conclusions and Policy Implications

Traditionally, economic development was considered the sole indicator of human development. However, it is now widely recognised that human development is multi-faceted. Though human development may comprise many elements, health and education are currently considered its two key determinants, apart from income. Given that economic growth and human development are interrelated, a country cannot maintain a fast pace of economic growth for an extended period of time without commensurate improvement in human development (UNDP, 1990; 1996). To understand the dynamics between income and human development in India over the long term, an ARDL model with error-correction parameterisation was employed for 26 Indian states spanning 1990–2019.

The results suggest a strong two-way relationship between EG and HD in India. This is evident from: (i) co-integration of a series of EG and HD (negative and significant error-correction term); (ii) a long-term relationship between EG and HD; and (iii) bi-directional causality. These findings have significant policy implications. Historically, policymakers in India have prioritised economic growth, with a relative neglect of health and education. While economic growth indirectly influences human development, the pace is notably slow. For instance, India's HDI improved by only 0.225 units over the past 30 years. Despite being one of the fastest-growing economies in the world for the last several years, India lags its peers in key health and education indicators. To catch up, India cannot rely on economic growth alone and its trickle-down effect on human development. It must implement direct, specific, and affirmative measures aimed at promoting human development. Since human development also catalyses economic development, prioritising human development in policymaking will not only enhance the welfare of people but will also fortify economic growth. One method to strengthen the interlinkages between human development and economic growth is to create and improve supporting conditions such as employment generation gender equality, and financial inclusion (Raj et al., 2023).

States that have maintained high economic growth and equally high human development (Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, and Tamil Nadu) have also maintained significantly better supporting conditions (low poverty, low unemployment, more

equality, financial inclusiveness, and prioritisation of the social sector). Conversely, economically less developed states like Bihar, Uttar Pradesh, and Odisha have low levels of HD (health and education). An effective way to boost overall economic growth is to prioritise human development in economically less-developed states (Raj et al., 2023).

The level of education plays a significant role in determining sectoral economic activity. The results indicate that secondary education leads to increased economic activity in the agriculture and manufacturing sectors, with a lag of three years, while higher education drives economic activity in the service sector. Primary education was not found to impact economic activity. Cross-country research now emphasises the criticality of at least secondary-level quality education for developing cognitive skills. Hence, educational reforms should focus on providing education for all, at least up to the secondary level.

Our study found that public health and education expenditures (% of GDP) had no impact on human development outcomes. This could be due to low efficiency in the public sector and the fact that public expenditure accounts for only 40–50% of the total expenditure on health and education, with the remainder coming from households or the private sector. This aligns with our other finding that while public expenditure does not impact health and education outcomes, total expenditure does. A negative relationship between public and private expenditure on health and education implies that the two are substitutes. Low public expenditure on health has been forcing households to spend on healthcare and education from their own pockets. For instance, a study suggests that out-of-pocket expenditure (OOPE) on healthcare pushed 55 million people in India into poverty in 2011–2012 (Selvaraj et al., 2018). High OOPE can force households to adopt harmful coping mechanisms such as liquidation of productive assets, borrowing at high rates of interest, and dissaving (Selvaraj et al., 2018), eventually resulting in impoverishment.

Public spending on education remains low at about 4% of GDP against the target of 6%. It is a matter of concern that even after nearly 40 years, the target of 6% remains significantly unmet from its original goal set for 1985–1986 (Tilak, 2006). The low public spending on education has been one of the key factors for a large proportion of children in the country still not being able to attain school education beyond the elementary level. India must significantly increase its public spending on health and education, and ensure its effective targeting. This would reduce people's out-of-pocket expenses, allowing them to allocate funds to their other crucial needs and strengthen the interlinkages between human development and economic growth.

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Appendix

Appendix 1: Description of Variables

Variable	Name	Definition	Data Source
Variables of interest	Gross state domestic product (GSDP) per capita (current INR)	The gross domestic product (GDP) of a state is divided by its population and measured in current INR.	RBI and NSO
	Human Development Index (HDI)	Measured by UNDP, HDI is a composite index that provides an indication of the standard of living of the population.	Global Data Lab; UNDP HDR database
	Non-income HDI	This indicator takes into account only the health and education aspects. It takes the geometric average of the health and education indices	Global Data Lab; UNDP HDR database
	Expected Years of Schooling (EYS)	Number of years of schooling a child of school entrance age can expect to receive if the current age-specific enrolment rates persist throughout the child's years of schooling.	Global Data Lab; UNDP HDR database
	Mean Years of Schooling (MYS)	Average number of completed years of education of population aged 25 years and older.	Global Data Lab; UNDP-HDR database
	Life Expectancy (LE)	Number of years a newborn child would live if subject to the prevailing mortality risks.	Global Data Lab; UNDP-HDR database
	Gross enrolment ratio (in %)	The ratio of total enrolments (primary, secondary, or tertiary), irrespective of age, to the total population in the age group that corresponds to the particular level of education, i.e., primary, secondary, or tertiary.	Ministry of Education and world bank

	Public expenditure on education (as a % of GSDP)	Union and state Budgets, RBI State Finances Report, CMIE, Ministry of Education
	Public expenditure on health (as a % of GSDP)	Union and State Budgets, RBI State Finances Report, CMIE
Control variables	Gross capital formation (GCF), public expenditure on education (in %), and public expenditure on health (in %)	RBI

Note: Gross capital formation for each state has been calculated based on the assumption that each state's share in GCF is equal to its contribution to the economy's GDP.

Appendix 2: Robustness Checks—Impact of Economic Growth on Human Development

Variable	D.EYS	D.LE	D.MYS	D.IMR
(1)	(2)	(3)	(4)	(5)
Long-run estimation				
Log (real per capita GSDP)	3.515***	3.608***	0.795	-29.461***
	(0.481)	(0.977)	(0.521)	(2.210)
Public expenditure on education (as % of GSDP)	-0.353**		-0.287*	
	(0.167)		(0.148)	
Pupil-teacher ratio	-0.021		-0.043***	
	(0.016)		(0.017)	
Public expenditure on health (as % of GSDP)		-1.604		-3.761
		(1.130)		(2.709)
HCs per million population		0.232		1.352***
		(0.151)		(0.297)
Short-run estimation				
D. Log (real per capita GSDP)	0.117	-0.019	-0.138	7.818**
	(0.183)	(0.213)	(0.127)	(3.179)
D. Public expenditure on education (as % of GSDP)	-0.119***		0.032	
	(0.034)		(0.024)	
D. Pupil-teacher ratio	-0.001		-0.000	
	(0.002)		(0.001)	
D. Public expenditure on health (as % of GSDP)		0.123		8.071***
		(0.112)		(1.677)
D. HCs per million population		-0.011		-0.122
		(0.009)		(0.136)
Constant	-2.174***	1.332***	0.092	70.460***
	(0.581)	(0.355)	(0.416)	(8.325)
Adjustment term	-0.089***	-0.039***	-0.064***	-0.208***
	(0.016)	(0.009)	(0.012)	(0.023)
Fixed effects	Yes	Yes	Yes	Yes

Source: Authors' analysis.

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Appendix 3: Robustness Checks—Impact of Human Development and Its Components on Economic Growth

Dependent Variable: D. Log (real GSDP per capita)

(1)	(2)	(3)	(4)	(5)	(6)
Long-run estimation					
GCF (as a % of GSDP)	0.033***	0.002	0.014***	0.016**	0.012***
	(0.004)	(0.003)	(0.005)	(0.006)	(0.003)
Non-income HDI	7.993***	7.812***			
	(0.314)	(0.252)			
EYS			0.274***	0.289***	
			(0.025)	(0.031)	
LE			0.039***	0.028	
			(0.015)	(0.018)	
MYS					0.261***
					(0.017)
IMR					-0.014***
					(0.002)
Fiscal deficit		-0.395***		-0.135	-0.623***
		(0.083)		(0.121)	(0.102)
Short-run estimation					
D. GCF (as a % of GSDP)	0.006***	0.008***	0.008***	0.009***	0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
D. Non-income HDI	-1.284**	-1.103***			
	(0.608)	(0.400)			
D. EYS			-0.024*	-0.018	
			(0.014)	(0.013)	
D. LE			-0.014	-0.024	
			(0.020)	(0.015)	
D.MYS					0.016
					(0.020)
D.IMR					0.001
					(0.001)
D. Fiscal deficit		0.064***		0.034**	0.066***
		(0.018)		(0.015)	(0.019)
Constant	0.559***	0.741***	0.556***	0.536***	0.917***
	(0.194)	(0.129)	(0.117)	(0.103)	(0.195)
Adjustment term	-0.094***	-0.106***	-0.099***	-0.085***	-0.087***
	(0.035)	(0.019)	(0.023)	(0.018)	(0.019)
Observations	650	650	670	670	650
Fixed effects	Yes	Yes	Yes	Yes	Yes

Source: Authors' analysis.

Note: ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Notes

[1] The pattern of the relationship between human development and economic growth amongst states has been discussed in detail in a recent study by Raj et al., 2023.

[2] Four states—Jharkhand, Uttarakhand, Chhattisgarh, and Telangana were formed after 2000 and have been removed from the analysis due to insufficient observations. Delhi has been considered as a state for this study.

[3] Nominal GDP is preferred over real GDP because expenditure data on health and education have been used in nominal terms. However, for robustness, regressions using real GDP were also carried out. Additional controls were added while performing robustness checks (see Appendix 2). Qualitatively, the results remained broadly the same.

[4] The GMM estimation framework utilises instrumental variables (IVs) framework (moment conditions) to estimate the unknown parameters of a dynamic model. Under certain assumptions, the GMM estimators can be shown to be consistent and asymptotically normal (Hansen, 1982; Cochrane, 2001).

[5] The negative coefficient of education expenditure in the short-run (Table 6.2, column 2) can be due to low year on year variations in expenditure shares. Insignificant coefficient on public expenditure could also be because government expenditures at current prices are flows and cannot represent a stock of government efforts, the latter being more effective in influencing HD. While our results do not capture this effect, we have controlled for state-level fixed effects that will likely account for the stock of efforts taken over the years and prevent it from introducing bias in our results.

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IPPR

To Watch the Watch-dog of Public Finance

T Selvaraju*

Abstract

The Comptroller and Auditor General of India (CAG) is one of the most important constitutional authorities. The CAG is to audit all receipts and expenditures of the governments and to report their findings to the Parliament/Assembly for their accountability. The Constitution and CAG's Act, 1971 provides total functional freedom to CAG to better serve the objective of public audit; what, when, how, and how much to audit are their prerogatives. All the stakeholders, from the Parliament and Assembly to the common people, can know only what is disclosed in these audit reports. Entrusting the entire audit process to one person without any monitoring mechanism may lead to below average performance or deliberate omission to do their mandated duties. The decreasing number of audit reports in recent years, more focus on administrative audit and evaluation of performance under the pretext of value addition/ aiding for better governance, opaqueness in non-publishing of some audit reports, less coverage of audit, and availability of less resources for audit indicate that the performance of the institution of CAG is not at the expected level. Evolving a system for annual reporting of the audit activities of CAG to the Parliament, without curtailing CAG's independent functioning, is an immediate need for the accrual of the benefit of public audit; ensuring clean governance without leakage and misuse of public money.

Keywords: Performance of CAG, Accountability of CAG, Watchdog, Compliance Audit, Performance Audit, Audit Assurance, Appointment of CAG

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1. Introduction

In parliamentary democratic form of governance, people govern themselves through their elected representatives to the Parliament. The majority in the Parliament forms the government and govern the country with their accountability to the people through the Parliament. As far as the financial governance is concerned, the Parliament authorises the government to mobilise the resources and to spend the public money for approved purposes. As it is not feasible for the Parliament to watch every collection and spending, a public audit system is created for watching and reporting the financial irregularities (if any) of the government, for accountability and transparency in financial governance.

The Constitution of India institutes an independent public audit authority with the Comptroller and Auditor General of India (CAG) to scrutinise the government's financial governance and to report the financial wrongs to the Parliament. The institution of CAG is not an organ of the government, but an independent authority to question the government and all executives handling public finance.

1.1 Expectations of founding fathers of the Constitution

Aptly appreciating the vital role of CAG in democratic governance, Dr. B. R. Ambedkar opined that CAG is the most important officer of the Constitution, whose duties are far more important than the duties even of the judiciary[1]. The other members of the Constituent Assembly also expected the CAG to be uninfluenced by anyone, howsoever great they may be, and to be vigilant to protect the public money from looting[2].

1.2 Constitutional protection for independent functioning of CAG

Considering the risks of questioning the powers for their accountability and for discharging audit duties independently without fear, CAG's tenure (except by removal, as is for judge of Supreme Court) and personal rights like salary and pension (not to be changed to their disadvantage) are constitutionally protected (Article 148 of the Constitution).

1.3 CAG's duties

CAG, heading an exclusive department, the Indian Audit and Accounts Department (IAAD) and having specialised and experienced officers at their command, shall audit all public monies receivable and spending the collected money by the governments (Union/State and Union Territory with Assembly/Local), and that of autonomous bodies, companies, etc., (significant exceptions being banks and insurance companies) under their control, and report financial improprieties in the form of Audit Reports to the President or Governor/ Lieutenant Governor or Government for their placement in the Parliament/Assembly, besides preparation and submission of accounts of 28 State governments[3].

1.4 Functional freedom of CAG

Time required for audit widely varies; it all depends on the nature of transactions – many transactions can be audited in a day, while one transaction may require many days, even weeks. Further, in view of complexity and volume of public finance, CAG is authorised to decide the scope and extent of audit; to dispense with, when circumstances so warrant, any part of detailed audit; and to apply such limited checks, as CAG may determine[4]. Thus, there is no power in the country to direct the CAG to work in a certain manner; what/how/how much/when to audit are all prerogatives of CAG, except only that accounts must be annually audited for certification. The CAG, empowered to question all, is not accountable to anyone.

This sort of freedom of work is not available even to the highly independent judiciary. Hierarchical system of courts, open proceedings, provisions for appeal and bench system in higher courts, bar associations and litigants provide formal as well as informal checks on the working of the judges. But CAG is a sole authority and fully independent; the only expectation of the Constitution is that they will discharge their duties to their best abilities, and without fear or favour, keeping the oath taken while assuming his office.

1.5 Opacity in appointment of CAG

In the absence of constitutional or statutory requirements as to the skill and personal capability required for the post of CAG, appointment to this unique and important position is made by the President of India, by warrant under his seal and authority (precisely by Union government), without any special procedure for selection or transparency. Except few Comptroller and Auditors General initially appointed from officers with Indian Audit and Accounts Service background (Chandrasekharan, 1990, pp. 74, 80), all CAG appointed later were retired Indian Administrative Service officers, who were auditees immediately before their appointment as CAG.

According to T. N. Chaturvedi, former CAG, '... The Auditor General should have a strong psychological or subjective feeling of accountability, which must manifest itself in the organisation and working of his office. ... As guardian of public accountability the Auditor General should hold himself out as a model institution fully conscious of his own responsibility to the people at large.' (1987, pp 22-23).

2. Need for watching performance of CAG

Everything of public audit is ultimately left to one person's discretion, who is appointed without any test for their suitability. The total freedom without any sort of accountability may give scope for an incumbent to sit silent enjoying high status, financial benefits, and foreign tours, without discharging their duties, or to actively subserve political or other interests of any person, as *quid pro quo* for their appointment or eying future rewards after retirement (while further office under government is prohibited, no bar to be an MP, Governor, Padma awardee, head of independent

committee, etc.). Adverse impact of below-standard or non-performance as per mandate by even one incumbent on public financial management would be immeasurable. So, performance of every CAG matters.

The presence of the CAG is not regularly felt, despite high corruption perception in the country. All stakeholders, from Parliament/Assembly to the common man, can know only what CAG has put in their audit reports. The audit reports of CAG occasionally evoke public attention, e.g. allotment of 2G spectrum in 2010, and construction of Dwarka Expressway in 2023. If the non-perceptibility of audit reports earlier and in between periods were due to incompetence, negligence, fear or favour of the incumbent, it is matter of grave concern and would defeat the creation of public audit system. The intermittent invisibility may be justified only by an optimal audit assurance for systemic and complete audit process as per the audit mandate.

There is no formal procedure/compulsion for CAG to report the level of annual audit coverage, either in terms of auditable units or Ministries/Departments or financial volume. Similarly, there is no arrangement for monitoring and evaluation of their performance. Hence, there is a need to ascertain whether the functional freedom and the opaqueness in appointment of CAG resulted in 'below average performance' or 'active omission/deviation in discharging the mandated audit function' by the incumbent, and to evolve a formal mechanism for evaluating the performance of CAG without affecting their independent functioning in the larger interest of public audit.

3. Performance of CAG

3.1 Self-inflicted erosion of Audit – CAG is Auditor, not Evaluator

The Constitution, while leaving the prescription of duties and powers of CAG to the Parliament, empowered the CAG to continue with same duties and powers conferred on the Auditor General of India immediately before the commencement of the Constitution till a law for that is made by the Parliament.

The word audit without any prefix/adjective (like social, energy) means audit of financial transactions and their accounting, looking at their compliances to provisions of the Constitution, applicable laws, rules, accounting standards, etc. As per the above concept of audit, and as they had been doing regularly before adoption of the Constitution, CAG continued to examine the financial transactions' compliances (compliance/regularity/propriety audit), treating each office with Drawing and Disbursing authority (to collect and spend public money) as an audit unit, and the annual accounts of governments and other bodies for their correctness and compliances to accounting standards/disclosures (certification audit/financial attest audit).

When, the system of evaluation of projects/schemes/plans was introduced, by the Union government, with Project Evaluation Officer as a part of administration, then CAG, in 1961, also introduced a concept of evaluation audit of important government schemes/projects as a whole, with the objective to see how far they had been efficiently implemented and fulfilled expectations. The

then-CAG himself described it as a facet of discretionary audit (Chandrasekharan, 1990, pp 80). The evaluation is a method to determine how far an activity has progressed, and how much further and in what way it should be carried out to accomplish the objectives (ibid, pp 207).

The Act prescribing CAG's duties, powers and conditions of service, as envisaged in the Constitution, enacted by the Parliament in 1971 - CAG's (DPC) Act, 1971, commands CAG to audit all public expenditures and receipts (Sections 13 and 16 of the Act). Though there is no specific provision for evaluation of schemes in the Act of 1971, it has been continued as Efficiency-cum-performance audit, Value for money audit, and now Performance audit. This type of audit is reviewing implementation of government schemes/projects with regard to economy, efficiency, and effectiveness.

Chandrasekharan (1990, pp 208) noted that 'although the material on which both Audit and Administration worked (the former in conducting Efficiency-cum-performance Audit and latter for carrying out evaluation) were one and the same, the results produced were diverse and different in content and conclusions, as both conformed to objectives, scope and methods employed by either'. Thus, it stands that both performance audit by CAG and evaluation by the Administration are nearly same, and may vary only according to the objectives, scope, and method set/used by them. Further it is clear that evaluation is the responsibility of the Administration.

Doubts about the legitimacy of performance audit by CAG had also been raised. Consequently, CAG obtained a clarification from the Government of India on June 13, 2006 to the effect that performance audit is deemed to be within the scope of audit to be decided by CAG under Section 23 of CAG's Act5. In 2007, CAG has also included the performance audit as a type of audit in the Regulations on Audit and Accounts made by him under Section 23 of the Act.

The Supreme Court, in 2012, held that CAG's functions to carry out examination into economy, efficiency, and effectiveness with which the government has used its resources is in-built in CAG's Act 19716. In 2013, the Supreme Court further held that the duty of CAG would arise only after incurring of expenditure7.

From the above, it is evident that unlike compliance audit and financial attest audit (regularity audits), performance audit is not a directly-mandated type of audit, but a derived one with objective of ascertaining economy, efficiency, and effectiveness (impact/outcome) in/of implementation of schemes. CAG's audit arises only after financial commitment for expenditure, or in case of receipts, when they are leviable/due.

Under the circumstances, CAG may conduct performance audits only after fulfilling their mandated audit for compliance of financial transactions and certification of accounts. At the same time, public audit's economic, efficient, and effective functioning is in its role of ensuring probity in public life/clean administration and Audit's assurance to the people of the country shall primarily be about the legality and propriety of financial transactions, rather than efficiency and effectiveness of scheme implementation.

However, significant portion of audit resources are now being used for performance audit, with lesser attention for compliance audit, as may be noted from the number of audit reports on these types of audits (of 12 reports presented in the Parliament in August 2023, while 5 were performance audit reports, 4 were compliance audit reports) and fewer and fewer auditable units covered for compliance audit (refer to para 3.5.4.1 below)

It may be noted that, at times, CAG conducted performance audit on matters not involving any financial commitment by government. Performance Audit of Disaster preparedness in India, Union (civil) (No.5 of 2013) and audit report of CAG on 'Preparedness for implementation of Sustainable Development Goals' (No. 8 of 2019) are the instances of such audit (SDGs are to be fully achieved only by 2030). In terms of the Supreme Court's judgement, audit on areas without provision of funds is beyond the authority of CAG, and audit expenditure on such exercise may be construed as irregular.

Further, accountability for overall deficiencies in economy, efficiency, and effectiveness in implementation of scheme cannot be fixed on individuals (unless any violation of rules, etc., is proved; which can be detected only in compliance audit), as they are generally the collective responsibility of persons or groups across policy formulation, planning, implementation etc.

3.2 Administrative audit is not the job of CAG – Diversion of duty

Separation of powers and duties among constitutional authorities for checks and balances is the essential principle of democratic governance. Government is for governance and CAG is for auditing the governance (financial) for accountability and transparency. Conceptually also, Audit can never be a part of management. Being part of governance would take away Audit's *locus standi* to question the government/executives later, and would also defeat the purpose of creating institution of CAG as a separate entity outside the other organs of governance.

Shri R. K Chandrasekharan (1990) has rightly noted that "The distinction between auditorial and administrative functions was clearly recognised and ... Audit of CAG was a financial audit and not an administrative audit and criticism was limited to financial criticism based on the accounts. It was not the function of audit to range over the field of administration and offer suggestions how the government may better be conducted. It was the responsibility of the Executive to enforce economy in the expenditure of public money but it was the duty of Audit to bring to notice wastefulness in public administration and infructuous expenditure". In the name of performance audit, however, CAG conducts administrative audit, as may be observed from a sample report discussed below:

3.2.1 A sample Performance Audit Report:

Of the three objectives of Performance Audit Report on Derailment in Railways (CAG, 2022) viz., (i) measures to prevent derailments were clearly laid down and implemented by concerned officials, (ii) derailments were investigated efficiently and recommendations of the inquiring authorities implemented towards bringing out systemic changes and (iii) Rashtriya Rail Sanraksha Kosh (RRSK) funds were utilised as per guidelines, the first two were an assessment of administrative function of

the Railways, and only the remaining one is on the financial aspects. Thus, two-third of audit coverage was clearly on administrative matters.

Besides the above, Audit also examined the positions of "Track Renewal works" and 'Collisions due to failure of Railway Staff' with reference to the recommendations of the Parliamentary Standing Committee on Railways in its Report on 'Safety and Security in Railways'. CAG found that 'the Railways Administration failed to take corrective steps in respect of track renewal and there was shortfall in track renewal work' and "The Ministry has failed to assess the root cause of continuous and possible repeated lapses by railway staff. ... The Ministry was therefore advised to deliberate on the issue to check the faults of the railway staff and take required corrective measures".

When the Standing Committee on Railways had already examined above as part of its oversight for executive accountability on administrative matters, and there is a system in place for further follow up of its recommendations to its finality by that Committee itself (through Action Taken Notes of Ministry and submission of the Committee's Reports to the Parliament), Audit's act of ascertaining the position further is a superfluous, if not wasteful exercise. This may also result in conflict of views between the two committees viz., the Public Accounts Committee following up the Audit Reports and the Standing Committee on Railways following up its own reports.

Various observations in this report were on administrative matters. These include: (i) shortfall in Rail Track inspections, carrying out of preferred type of welding, various types of inspections, periodical medical examinations of officials and training of track maintenance officials; (ii) delay in various stages of accident inquiry and keeping track maintenance machines idle; and (iii) other audit observations on other safety issues like fire accidents with causes and resultant losses, offences under Railways Act (hawking, begging, bringing dangerous goods and smoking), non-provision of fire extinguishers in non-AC coaches, shortfall in targeted elimination of Manned Level Crossings, delay in completion of road over/under bridges, Zonal Railways-wise number of animal deaths, run-over of four lions in two incidents and non-installation of sufficient signages, fencing and watch towers safety of Asiatic lions, etc.

If audit wants to make further points on these administrative deficiencies, it should have attempted to bring out the adverse financial impacts of such omissions like cost over-run and consequent avoidable expenditure on account of delay/omission on the part of railways in completion of over/under bridges. But there were no such audit observations.

As per the limited scope of the third objective set by Audit (utilisation of RRSK funds as per guidelines), the audit points were only on the shortfall in contribution from internal resources of Railways to the fund, decreasing trend of expenditure on track renewals, non-taking up of safety related works due to funds constraints with details of expenditure on three prioritised and non-priority items and incorrect booking of expenditure to the tune of Rs 48.21 crore on items not related to safety like salary, bonus, passenger amenities, purchase of furniture, etc., from RRSK intended for critical safety related capital works. From the above, it is evident that except incorrect booking of expenditure, no attempt was made to take a sample out of total expenditure of Rs. 51,523 crore

incurred from the fund during the period covered by audit (2017-20) for audit scrutiny, such as looking for larger financial irregularities in tendering, awarding of contracts for works/supplies, etc.

Thus, the Audit Report on derailment in railways is nearly entirely an administrative audit report. If CAG conducts administrative audit which may be done by the government itself, who will conduct the compliance audit which only the CAG is empowered to do?

Using the already limited audit resources (para 3.4 below) for works not related to CAG, with resultant non-audit of financial transactions to that extent, is highly irregular.

3.3 New ill-found objective of audit – extra aid for good governance

CAG is expected to remain uninfluenced by anyone, howsoever great they may be, and to discharge the mandated duties without fear or favour.

The financial irregularities brought out in the audit reports are to be followed up by the Public Accounts Committee/Committee on Public undertakings of the Parliament/Assembly for fixing individuals' accountability and remedial actions by government. Thus, Audit's contribution for good governance is indirect; it is in its higher rate of detection of financial misdeeds by its effective audit, instilling fear of audit detection/exposure in the minds of executives, thus creating a deterrent force preventing financial wrongs in governance. Now, in the pretext of good practice and aiding for good governance, attempts were made to restrict the role of audit only to help the government directly in its overall governance, and the incumbent CAG also readily submitted to them with open declaration to that effect as follows:

In first Audit Diwas celebrations on 16 November 2021, CAG was eager to hear from the Prime Minister (from the CAG's standpoint, an auditee as the head of the Union government) on his vision so that the institution of CAG can better aid governance for improving the lives of citizens of this great nation (CAG, 2021). The Prime Minister reportedly stated that 'There used to be a time when audit elicited fear or suspicion. Back then, CAG versus Government was a usual affair. But today audit is considered an important part of value addition' (Press release dated November 16, 2021) (CAG 2021)

Interactive sessions were conducted by CAG's office in 2019, February 2020 and April 2022 with various Union ministries for their suggestions on areas which could be selected for audit, and to identify schemes, projects and activities that the ministries would like CAG to evaluate and provide audit opinion and assurance on their implementation, outputs and outcome[8]. The CAG also declared in his press releases that these sessions/ value-addition exercises were organised at the behest of the Prime Minister of India, to make the institution of CAG friendlier and a more active contributor in good governance, and for developing greater synergies between the government and CAG. CAG also reported in his Performance/Activity Reports for 2019-22 that areas of audit which were outcome-focused were identified and selected for performance audit.

The Performance Audit Report of CAG (No. 2 of 2022) on 'Management of Spectrum assigned on the administrative basis to Govt Departments/Agencies' which had also been cited in the

Compendium of New Initiatives and Good Practices in the CAG's Institution, released by CAG in 2022, keeping in view the vision of the Prime Minister and CAG of India, may be an example for the results of above approach.

The above performance audit was taken up at the request (October 2020) of Department of Telecommunication (DoT). The important findings were (As per the above Compendium and CAG's Press Release were that spectrum in majority of bands was either sub-optimally utilized or not utilized, DoT had not acted for auction/allotment of those idle spectrum to Government/private users and DoT did not review pricing of spectrum, since 2012, despite a committee's recommendation in 2013[9].

Thus, the above 'audit' was at the request and that also on the area desired by DoT, and CAG assessed the position and reported the status. It is true that these findings are value additions, and friendlier without any CAG vs Department mindset, and would also aid for good governance. But, all these can be easily done either by department's internal audit or engaging an appraisal/evaluation agencies and for doing this type of 'audit' – constitutionally protected Supreme Audit Institution (SAI) is not required. Such an independent institution is required only for accountability for financial misdeeds/favouritism at the cost of public interest in allotment/auction of spectrum to the private parties, their pricing, etc., which sort of areas no government ministry/department would normally suggest on its own for audit.

Assessment of outcome is responsibility of the government/management concerned. If any government want 'extra' aid for governance and value additions by outcome or impact assessment of its scheme, let it create specialised agencies like Niti Ayog or establish exclusive department for such assessments as in Tamil Nadu (Department of Evaluation and Applied Research) or involve specialised bodies like National Productivity Council as had correctly been engaged for evaluation of Swadesh Darshan scheme of Ministry of Tourism (CAG's Audit Report No.17 of 2023). Let CAG to do their auditing duties - watching proper collection and spending of public money without fraud, misappropriation, misuse, etc.

The deviation of CAG from strict financial audit to evaluation/appraisal type of performance audit in the guise of value addition and aiding good governance is only an euphemistic way of subverting/weakening the public audit system in the country, by making the supreme auditor a part of executive, an evaluator or 'soft auditor or administrative auditor'.

The above is clear indication of travesty of audit. Further, when the very nature of audit is questioning the executives for their accountability, how can 'versus' be absent between them. If Audit is effective, there are bound to be conflicts; positive and purposeful. CAG versus Auditee is a good sign of existence of effective public audit in the interest of the nation.

CAG's looking to the executive for guidance and working in accordance with wish of that executive is not only against constitutional ethos, but also a clear case of an act of the incumbents in violation of their oath. Clean governance is to be proved only by free and complete audit test, but not by caging or diverting Audit.

3.4 Less resources for audit – fragile audit assurance

CAG is authorised to decide the extent of audit, and to dispense with any part of detailed audit and to apply limited checks, only when circumstances so warrant. At any stretch of leniency, shortage of human resources for audit shall not be a ground for 'dispensing with audit'.

Auditees would generally be happy with less audit. It is duty of the nation's auditor to employ adequate human resources for satisfactory level of checks for optimal audit assurance to the Parliament/Assembly and the people.

The strength of human resources of IAAD in 1966 was 44,720 (Chandrasekharan, 1990 pp. 92). But even after multifaceted growth of government activities, introduction of many welfare schemes, multi-fold increase of public finance over the years (revenue receipts alone of Union and State governments for 2019-20 was Rs 45,65,556 crore[10] with more spendings including other capital receipts and borrowings, IAAD's strength had been only in the range of 43,118 to 48,139 during 2011-2021 (Performance Reports of CAG, 2021-22). IAAD functioned during 2021-22 only with 41,675 officers and staff (including multi-tasking staff of 3,057) against the sanctioned strength of 61,121 (split up for audit and accounting functions is not available).

The strength was for auditing and for accounting function for 28 States, maintenance of GPF accounts for employees of 20 States, and authorisation of pension to employees of 19 States, gazetted entitlement functions for 9 States, for administering IAAD's 3 national and 10 regional level training institutes, and for UN audit assignment as and when entrusted. The vacancy position (32%) and the combined workload would clearly indicate dismal level of available human resources for audit. CAG, evidently, conducted audits, on plea of risk assessment, without any concern for providing even minimum audit assurance to the people of the country.

The expenditure on IAAD for 2021-22 (Performance Reports of CAG for 2021-22) was Rs 5,352 crore (including Rs 1,597 crore on offices for State Accounts and Entitlement function), which works out to only 0.2% of total non-debt receipts (Rs.24,76,007 crore) of Union government alone and if receipts and expenditures of all auditable entities under CAG's audit jurisdiction are reckoned, expenditure on audit would be negligible.

Of the recoveries pointed out by Audit in 2021-22, Rs 25,570 crore was accepted by the auditees. The accepted quantum of recovery pointing to the vulnerability of public funds and favourable cost-benefit ratio corroborate necessity for more audit and more human resource for that.

3.5 Oddities in recent years

The audit's self-inflicted erosion over the years, succumbing of the incumbents to serve the interest of the elected government, and less human resources for audit resulted in sub-optimal CAG's audit function, in recent years, as may be noted from following abnormalities:

3.5.1 Silence of CAG

The job of CAG is to question all, howsoever great they may be. The Prime Minister was not free to choose the manner of his journeys in view of security considerations. To conform to financial proprieties, at the instance of then Prime Minister in 1951, the institution of CAG arrived at a formula for travel expenses of the Prime Minister for use of IAF planes for his journey performed for party or political purposes. As per the arrangement, the Prime Minister and any other person travelling with him in the plane for party and political purposes shall reimburse the government with amount not less than the expenditure they would have incurred by air travel as private individuals. This initiative set a beginning of series of instructions from CAG for regulating the Travelling Allowance, Dearness Allowances, reimbursement of other expenses incurred by the Ministers of the Centre, the Chief Minister and other ministers in the States, the Speaker of the Parliament/Legislatures, etc. Based on the audit objections on regularity and propriety aspects, in several cases, monies were recovered either during tenure in office of the CMs or Ministers or after they demitted office. The cases which were not properly regularised were commented upon in the audit reports concerned (Chandrasekharan, 1990, pages 62 and 63).

Now, PM CARES Fund created by the Prime Minister is being operated from his office using services of two officers, though on honorary basis, and other official infrastructure maintained out of the Consolidated Fund of India for providing administrative and secretarial support to Trustees of the fund without any evidence of having been questioned by Audit[11].

The Constitutional dictum is that no paisa be collected without authority even by the government. Then, is not collecting money by any executive and spending them without accountability a financial dishonesty, howsoever good the intent or purpose? Is using services of government officers, even on honorary basis, and government office and other infrastructures, all maintained out of public money, for a fund administration not related to government, not a financial impropriety? Wouldn't silence of Audit set a precedent and encourage other elected executives also like Chief Ministers to indulge in similar irregularity? This stillness, even on the issue in the public domain, of the incumbents appointed to protect the public money and assets from misuse would erode the credibility of the institution perpetually.

3.5.2 Downward trend of audit reports and non-hosting of reports

The abnormalities of CAG's activities during 2017-2020 included a reduced number of audit reports on Union and States/UT and others (an average of 96 per year against 166 during immediately preceding 2014-17); dispensing with the practice of bringing out separate audit reports on Local governments for State Assembly; the first-ever acceptance, in 150 years history of the institution, for redaction of commercial details including price information relating to procurement of Rafale aircraft on the request of the Ministry of Defence (in Audit Report No.3 of 2019); and non-hosting of even that redacted audit report in CAG's website without disclosing any reason therefor.

The Performance Activity report of CAG for 2020-21 under heading 'Impact of Audit' citing Audit Report No. 20 of 2019 on Management of Defence Offsets read that "In view of the observations and to ensure transparency and efficiency in the verification process, an offset portal has been created and operationalized in May 2019". But this audit report, intended for transparency in verification process, is also not available in CAG's website.

While five Audit Reports on the activities of Defence Ministry/Sector were prepared in 2017 (Audit Report Nos 5, 15, 19, 20 and 24 of 2017) by CAG, no indications about preparation of any other audit report on Defence Sector, except the two audit reports mentioned above (Audit Report Nos.3 and 20 of 2019 which are also not hosted in the website of CAG) could be traced in the website of CAG for the last few years, despite CAG having a separate Wing for audit of Defence Sector.

The number of reports on Union government placed in the Parliament has also decreased from 54 in 2015 to 30 in 2022 and 16 in 2023 (4 in March 2023 and 12 in August 2023).

3.5.3 No significant 'CAG vs Union government' instances

No significant 'CAG vs Union government' instances could generally be felt, except ones after placement of some audit reports in the Parliament in August, 2023. The transfer of top officers dealt with those reports, reported in the media following special interest created by these audit reports, gives scope for doubt about independent functioning of Audit. Though the above were denied by CAG (The Hindu Bureau, 2023), the officers' transfer to unimportant/non-audit-related posts like Legal wing, Rashtra Bhasha wing and to State Accounts office and the timing of transfer strongly supports the above suspicion and suggests that these audit reports somehow escaped from 'new found vision of Audit' (para 3.3 above).

3.5.4. Performance of CAG in 2021-22

As per Activity report of CAG for 2021-22, Audit examined 7,912 accounts (of governments, PSUs and others like gram panchayats) according priority to the mandated financial attest audit and Compliance and Performance audits were taken up, guided by risk assessment and optimal utilisation of remaining resources, with emphasis on quality and timeliness of audit report.

Under compliance audit, of 32,884 units planned for audit, 28,964 (10,802 Union; 18,162 States/UTs) were covered. 165 Audit Reports (34 Union and 131 States/UTs) were prepared in the year.

3.5.4.1. Non-availability of total auditable units - Decreasing compliance audits

Considering the size and activities of all governments and visible presence of their offices (auditable units) and other government autonomous bodies, etc., units audited for compliance is, prima facie, less. The units audited had already decreased from around 65,000 in 2005-06 to 54,513 in 2013-14

and 42,192 in 2019-20 (20,460 and 32,884 units during 2020-22; may be attributable to covid lockdowns).

The total number of units auditable was not reported in the Activity Reports of CAG. To a request under RTI Act, CAG's office replied (August 2023) that the information was not available with them. Their further reply that "Where the information sought is not part of a public authority and where such information is not required to be maintained under any law or the rules or regulations of the public authority, there is no obligation to collect or collate such non-available information and then furnish it to the applicant" not only indicates absence of system to ascertain of number of auditable units, but also its scant regard for necessity to keep basic information for proper audit planning irrespective of any legal requirement therefor or not.

But, as per CAG's Act, he shall audit all expenditures, and the point of expenditure is DDO. So, details of all DDOs are the prerequisite for Audit.

3.5.4.2. No assurance for Compliance audit

The Audit's statement that 'Audit Plan 2021-22 accorded priority to the mandatory Financial Attest audit related assignments' is misguided in the sense that both financial attest audit and compliance audit are mandatory, while financial attest audit is also time bound.

Another assertion of taking up of compliance and performance audit guided by risk assessment is also not sustainable in respect of compliance audit, as such exercise without knowing details of all auditable units can only be imperfect. Thus, nobody including CAG knows the level of coverage of mandated compliance audit.

Non-audit of units in specified periodicity would defeat audit purpose; while delayed audit would prove 'infructuous', as getting all records required for audit trails is not possible, leaving units unaudited for ever would embolden unscrupulous elements/fence sitters as the fear of likely to be detected in audit wanes.

3.6 Inadequacy voluntary disclosure of CAG's performance

The activity details voluntarily given in annual Performance/Activity Report of CAG is not complete[12]. For instance, though the Activity Report for 2021-22 (183 pages) detailed various activities like CAG's engagement with UNO, International and Asian Organisation of SAIs (32 pages), the relevant information like total auditable units, reasons for not covering even all planned units for compliance audit (12% were not covered), type-wise audit reports prepared during the year, were not given.

Further there is no pattern and prescribed format for the activity report of CAG, and it has been prepared according to the wish of the incumbent. Thus, the activities of CAG are not transparent enough, and audit assurance level for mandated audits (Financial and Compliance) is neither stated nor ascertainable from the information disclosed.

4. Way forward – System for public watch of watchdog

Any institutional arrangement to watch performance of CAG would defeat the objective of public audit, as would leaving the CAG with no watchdog. This unique situation needs a unique technique.

First, an independent committee of experts, including representatives from IAAD, may be constituted to ascertain total auditable units, their categorisation for fixing periodicity of audit, level of audit coverage in a year for an optimal audit assurance for mandated audits, and human resources required for that level of audit coverage. The scope of performance audit may also be redefined keeping the objective of public audit in mind, leaving outcome appraisal/evaluation of schemes/projects to the government/management concerned. Disclosure on the total number of Ministries/Departments and the number and details of performance audits conducted thereon may also be considered.

Then, a simple proforma requiring activities of CAG against above measurable indicators, with columns for giving reasons for any shortfall, and number of audit reports annually prepared government-wise (Union, each State and each UT having Legislature) and presented to the President/Governor of each State/ Lieutenant Governor of UT for their placement in the Parliament and Legislature may be devised and notified with approval of the Parliament.

CAG shall be required to furnish the details in the proforma every year to the Parliament through the President of India. There shall be no voting and discussion on that report in the Parliament, except on shortage of human resources and non-production of records to audit, as independent functioning is the fulcrum of public audit. However, the availability of the above information annually in the Parliament and public domain and possible adverse public opinion in case of audit abnormalities would compel the incumbents to be independent and to perform the mandated audit duties at optimal level.

To be vigilant is the price not only for liberty, but also for accrual of audit benefit of clean governance without leakages and misuses of susceptible public monies at the hands of power/executives.

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Semiconductor Geopolitics - Past, Present, and Future

Book review of 'When the Chips are Down: A Deep Dive into a Global Crisis' by Pranay Kotasthane and Abhiram Manchi

Shree Kumar*

During the COVID-19 pandemic, the world witnessed a widespread chip shortage. Coming out of the COVID pandemic, the automotive industry was hit badly, resulting in widespread public awareness of the supply chains for integrated circuits (ICs).

Artificial intelligence (AI) applications as well as big data are driving the demand for more processing capabilities provided by newer and more efficient chips. Microprocessors underpin a whole range of economic activities as well as technologies, making chips and access to chips 'meta-critical'. However, some of these developments are being overshadowed by the trade war between the US and China. Policy actions are being used to try to delay and deny access to crucial semiconductor technology. This is the geopolitics of semiconductors.

Accessible literature on this complex subject is sparse. Chris Miller's 2022 book, 'Chip War', remains one of the better entries in this small canon. 'Chip War' is a thrilling, yet long read. In contrast, 'When the Chips are Down: A deep dive into a global crisis' provides concise and comprehensive coverage of the geopolitics of semiconductors. In less than two hundred pages, the authors run through a summary of the past decades of chip development and provide a framework to examine the complex inter-dependencies in the world of semiconductor geopolitics. It is also the first book that deals with this subject comprehensively from an Indian lens, while placing it simultaneously in the global context.

The authors employ jargon-free prose to make highly technical topics approachable to a wide audience. The '101' of Chips cover semiconductor design, fabrication, manufacturing, and the roles of people, processes, and materials. While semiconductors started off as innovation drivers for military applications, consumer and industrial applications are the current growth engines. The role of the globalised supply chain, with its various players engaged in specialised roles, resulting in high performance and cost-efficient products, is well covered in this section of the book.

The book uses the prism of 'creative insecurity' to explain American policy actions related to the semiconductor industry. The American Cold War policy birthed the semiconductor industry. The

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authors start with the invention of the transistor at Bell Labs in 1947 and take readers through the bursts of innovation that allowed the US to leverage semiconductor technology to build its military might and establish space leadership over the USSR. Later, rapid product quality improvements resulted in Japan gaining a massive lead in logic chip memories. The resulting 'creative insecurity' led to a chip war with Japan, where the US employed 100% tariffs on Japanese products, and was able to restrict Japanese products in the global market. This led to an expanded role of South Korea in the market, eventually resulting in it gaining a dominant market share. China's economic growth has been increasingly viewed as a challenge to American economic and geopolitical dominance. In 2022, this resulted in the US CHIPS Act, which looks to funnel $52 billion into manufacturing incentives and R&D, a scale similar to the Manhattan Project that created the atomic bomb.

The book chronicles various events and developments that made some East Asian states major players in the chip ecosystem. Taiwan, China, Japan, South Korea, Singapore, and Malaysia have all established their positions in the value chain. In a short time, Vietnam has become a competitor in the labour-intensive 'outsourced semiconductor assembly and test' (OSAT) business. The book provides a useful pattern to understand the cycle in these developments, which starts with a nation-state building competitive manufacturing capabilities in semiconductors using some form of technology transfer from the US, excelling in global exports over a period of time by building a local ecosystem, ending with moving into design, resulting in moving up the value chain.

US, Taiwan, Netherlands, UK, South Korea, and Japan are now the key technology providers, encompassing design and design tools, memory chips, fabrication technology, manufacturing, memory chips, and sensors. The book describes the comparative and absolute competitive advantages of these countries in key areas, and how their position in the chip ecosystem have changed over the past half century. This is an essential background for anyone looking to project events into the future.

The book adequately covers the global scenario, with countries looking to build and maintain a lead in their positions in the semiconductor supply chain. In recent times, China, South Korea, EU, Japan, and India have allocated large budgets, subsidies, or both towards their semiconductor goals. American efforts to contain Chinese progress by limiting technology access to advanced semiconductors has been work in progress. Various bilateral and multilateral initiatives such as Chip 4 (Taiwan, the US, South Korea, and Japan), the Quad (India, Australia, the US, and Japan), the US-EU Technology and Trade Council, and iCET (India and the US) have turned their attention towards supply chain diversity and resilience.

The chapter on happenings in the Indian semiconductor ecosystem, aptly titled 'India is an Enigma', details the reasons for the country's underwhelming performance in this sector. It details the efforts made towards establishing chip manufacturing in India, starting with the setting up of a CMOS fabrication ship unit at the Semiconductor Complex Limited (SCL). SCL has played an important role in India's space programme. With its niche focus, however, the chips it created could not be used to create consumer or industrial products, whether for the domestic or the export market. Relying solely on government budgets, and without substantial revenue, SCL could not keep up the

pace required to remain relevant. Subsequent attempts made to start a manufacturing ecosystem have turned out to be non-starters so far. The impact of the recent policies such PLI, SPECS, and PLI 2.0 are yet to accrue, at least at a chip level.

The authors rightly note (p. 136) that "By 2010, India was ahead of China in the complexity of chip designs handled, and in filing patents. However, not much IP belongs to Indian companies." India has 20% of the world's hardware design engineers for ICs. Most of this talent, however, is locked up in Global Competency Centers (GCCs). Much like the Indian IT industry, they largely offer design services. To effectively leverage this talent, a product ecosystem needs to be created in India. This can only be achieved by giving a big push to R&D in this sector. Given the IC design engineering background of the authors, a more detailed mapping of the sector, from the chip ecosystem to the downstream applications, would have significantly added to the value of the book.

The book persuasively argues for a twenty-year roadmap, instead of 'twenty-one-year plans'. They propose various actions including increased R&D investment to spur higher private R&D spending, setting up a trailing-edge chip fabrication unit, building a plurilateral semiconductor system with low tariffs, all backed with a robust infrastructure plan. Inexplicably, and generally against the grain of their past findings, they suggest a revival of SCL through fresh capital infusion to ensure that defence equipment is obtained from trusted sources. Yet, for efficiency, it would be better to have a private fab inside the country to achieve a similar goal. To kick-off new efforts, the book recommends starting a trailing-edge fab using fifteen-year-old manufacturing technology, based on a 40 nano-meter manufacturing process. They could have advocated for a decade old, yet highly useful technology based on a finer 28 nano-meter process. The newer process is more efficient, with broader application areas. This would have been in line with future needs and broader strategic autonomy goals. The broad policy canvas proposed by the authors looks like a missed opportunity to push a more detailed, actionable agenda.

The impact of Open-Source technologies is one of the threads that run through the book. The most prevalent example of such technology is RISC-V - a royalty free, open standard CPU Instruction Set Architecture (ISA). In late 2019, the RISC-V foundation moved its headquarters from the US to Switzerland. This was done to address concerns over potential US trade curbs raised by members including Huawei, Alibaba, NXP Semiconductors, and Qualcomm. This has turned out to be the right move, and the book rightly notes that the US cannot do much to prevent access to a public ISA. Nonetheless, US lawmakers are trying.

While the book does note that open-source hardware is a nascent field, it over-estimates the role of open-source hardware in geopolitics. The potential impact of open-source hardware can be huge; however, open-source hardware is today where open source software was twenty years ago. Unlike software developers, hardware developers (and the ecosystem) are known to be extremely protective of crucial aspects of their designs to retain their competitive edge. Given the costs and expertise involved, a high-performance open-source chip design that matches commercial-grade competitors is some time away.

The last chapter, 'Peering into the Future', is the highlight of the book. The realities now are different from the past. The authors address the 'meta-critical' aspects of semiconductors by looking at it through three lenses: semiconductor geopolitics, semiconductor geoeconomics, and semiconductor technology. Known technology trends are well captured in the book, including the role played by important drivers such as fabrication, packaging, and applications. Semiconductors are a capital-intensive business; specific chips require a high market volume to be viable. Geoeconomics is the market underpinning these considerations, including growing application areas, unit economics, as well as dependence on major consumer markets such as China. The book argues that geopolitics will need to live with the realities of geoeconomics in the medium term, and that non-linear technology breakthroughs arising out of investments may alter the status quo.

As a framework for formulating actions, the authors have come up with a useful framework, 'siliconcraft', that encompasses various possible tools of semiconductor statecraft. A neat table in the book helpfully shows how various strategic objectives could be met by applying specific instruments, while demonstrating the unintended repercussions. While international partnerships are an important part of siliconcraft, businesses of cooperating countries compete in a growing market. The authors could have shed some light on relevant details of current partnerships and expected impact on the relative power of nation-states.

All said, it is hard to disagree with their overall conclusions – that the billions of dollars that will be spent in the new initiatives will likely only result in a slightly diversified supply chain, and that the on-going round of semiconductor geopolitics will end with a realisation that 'semiconductor interdependence is a boon not a bane'.

Indian Prime Minister Narendra Modi recently said that the 'Semiconductor Mission should have started 30 years ago'[i]. This is a tacit admission that building a robust ecosystem is a long game. Overall, this book is an essential read for policy makers in India; it could infuse a sense of urgency as well as help drive an action plan for the next twenty years. Beyond government support, India's future in chips is highly dependent on building an ecosystem that will cater to both India and the world. 'India's Chip Designers', to whom this book is dedicated, must read this to understand and make the best of the massive potential opportunities in building this ecosystem.

"When the Chips are Down: A Deep Dive into a Global Crisis" by Pranay Kotasthane & Abhiram Manchi, 2023, Pages 224. ₹421 (Paperback); ₹335(Kindle), Bloomsbury India.

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