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Federal Tax Transfers and Demographic Transition: Balancing Equity and Efficiency

by

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ABSTRACT

Against the backdrop of demographic transition in India, the study highlights the necessity of integrating the elderly population as a critical factor in formula-based intergovernmental fiscal transfers. The demographic transition, characterized by an increasing elderly population, imposes unique fiscal challenges on states, necessitating a revision of transfer formulas to ensure equitable and efficient resource distribution. The paper employs a historical analysis of fiscal devolution criteria, and analyzes the impact of incorporating the elderly population into the devolution formula on the share of states in the total tax transfer to states. The findings indicate that integrating the elderly population into the tax devolution formula can significantly alter the distribution of resources among states, with states benefiting more while having a relatively larger elderly population. The study recommends considering demographic changes by incorporating the elderly to working age population ratio as a criterion used by the Sixteenth Finance Commission to promote a more equitable and efficient allocation of resources.

KEY WORDS: fiscal transfer, tax devolution, demographic transition, gender inequality

JEL CODES: H77, J11, J16

INTRODUCTION

Intergovernmental fiscal transfers have been a cornerstone of fiscal federalism in India, evolving significantly since the establishment of the First Finance Commission. These transfers are crucial for ensuring a balanced distribution of resources across states, addressing disparities, and promoting equity. Traditionally, the criteria used for these transfers can broadly be categorized into either need-based or equity-based. However, as India undergoes a demographic transition, characterized by a growing elderly population, there is a pressing need to revisit these criteria.

This paper examines the evolution of fiscal transfers from central government to state governments through the Finance Commission in India. Because India is undergoing a significant demographic transition, there has been a major shift in India's demographic structure. As a result, the share of elderly persons in the total population has increased in the recent past and will continue to grow in the near future as well. It is obvious that the states having a higher percentage of elderly are more financially burdened as compared with the states where the share of elderly is relatively low. Therefore, the states with a higher percentage of dependent population need more resources than the states having lower dependent population.

The demographic transition presents unique fiscal challenges. An aging population results in a lower labor force participation rate and savings rate, which has implications on economic growth. The increasing share of the elderly necessitates higher public spending on healthcare, pensions, and social security, all of which disproportionately affect states with larger elderly populations (Bloom, Canning, and Fink 2010). However, Nersisyan, Li, and Wray (2023) argued that the debate on all these financial challenges is misfocused. Further, they argue that the discussion should be directed toward the challenges facing the resource provision and from the resource perspective, the burden of caring for elderly seems far less challenging.

Given the federal structure in India, the Finance Commission is one of most important institutions for the provisioning of resources from the central government to state governments. In spite of the need for the special resource provisioning of the elderly given the demographic transition in India, the current tax devolution formulas do not adequately account for the fiscal

implications of these demographic changes. This paper argues that incorporating the share of the elderly population into the tax devolution formula can lead to a more equitable and efficient allocation of resources.

The existing literature is confined to the fiscal space required for demographic transition in terms of pensions, public expenditure design and revenue augmentation. We take this literature forward by examining the tax transfers within the intergovernmental fiscal mechanisms.

Against this backdrop, the paper sets out to analyze the evolution of intergovernmental fiscal transfers in India and proposes a revised devolution formula that includes the elderly population as a key criterion. By incorporating the share of the elderly into the devolution formula, the Finance Commission can better address the fiscal challenges posed by demographic transitions, promoting a more equitable and sustainable system of intergovernmental transfers.

This paper is organized into five sections. Section 1 analyzes the existing literature on intergovernmental fiscal mechanisms in India with special reference to the Finance Commission and draws up a summary of the empirical literature. Section 2 deals with the critical analysis of the evolution of criteria for fiscal devolution in India and examines the plausibility of incorporating gender into the devolution formula. Section 3 interprets data incorporating the age pyramids across states, while Section 4 presents the distribution of the divisible pool of taxes among states with and without a gender variable; this section also presents the change in the rank of the states in terms of revenue allocation after integrating the elderly variable. Section 5 concludes.

1. ANALYZING THE EMPIRICAL LITERATURE

Chakraborty (2010) noted that, given the changing demographics—the monotonous decline in the child–sex ratio, especially in some of the prosperous states of India—there can be no valid objection to designing Finance Commission transfers for this purpose. The study noted that while social mores cannot be changed by fiscal fiats, particularly when prejudices run deep, a proactive

approach by a high constitutional body like the Finance Commission is called for, especially when the prejudices are blatantly oppressive. Indeed, such an action is imperative. The intergovernmental transfer system can and should play a role in upholding the right to life for India's female children (Chakraborty 2016). That being said, it needs to be mentioned that it is not plausible to incorporate more gender variables in the Finance Commission's already complex transfer formula. In other words, inclusion of a "gender inequality index" in the formula may not result in the intended results, as the variables included in the index may cancel one another out. This paper works out the plausibility of integrating the sex ratio as a distance variable, however the present exercise takes a step ahead by incorporating the life cycle approach to integrate demographic transition in public finance transfers. We will revisit this point later.

Reflecting on the changes happening in Indian fiscal federalism, Chakraborty (2019) discussed how the issue of fiscal federalism in India has gained importance following the abolition of the Planning Commission, the creation of NITI Aayog, the introduction of the Goods and Services Tax (GST), the establishment of the GST Council, and the significant tax devolution to states recommended by the Fourteenth Finance Commission. Chakraborty (2019) discussed how the Fourteenth Finance Commission's recommendation for a 42 percent tax devolution was highly praised for increasing states' fiscal resources. However, it also faced criticisms concerning the central government's fiscal space and insufficient support for local bodies. On this issue, the Fourteenth Finance Commission chairperson clarified that the actual increase was from 39 to 42 percent, not 32 to 42 percent, and more than 50 percent of the grants were allocated to local bodies (Chakraborty 2019).

The significance of conditional versus unconditional fiscal transfers was also discussed in the paper, highlighting the lack of capacity to implement one-size-fits-all transfers and suggesting unconditional transfers instead. The paper also discussed the potential of making Finance Commissions permanent or abolishing them by fixing the tax devolution share through a constitutional amendment. The need for coordination and a conflict resolution mechanism between the GST Council and Finance Commissions was also emphasized. The idea of focusing on resource sharing instead of revenue sharing was also proposed.

2. EVOLUTION OF FISCAL DEVOLUTION FORMULA

Since 1951, fourteen Finance Commissions (FCs) have submitted reports using various formulas for distributing central tax revenue among Indian states. These approaches can be categorized into three distinct phases. In the first phase (Table 1), from the First to the Seventh FCs, there were separate formulas for income tax and union excise duties due to constitutional provisions. During this period, population and tax collection or assessment were the primary criteria. Over time, the emphasis shifted toward factors related to economic backwardness and fiscal weakness.

Table 1. Inter se Sharing of Income Tax and Union Excise Duties

Finance Commission	Inter se Sharing of Income Tax		Inter se Sharing of Union Excise Duties				
	Population	Contribution	Population	Backward-ness	Adjustment	Inverse of per capita income	Revenue equalization
1 FC	80	20	100				
2 FC	90	10	90		10		
3 FC	80	20					
4 FC	80	20	80	20			
5 FC	90	10	80	20			
6 FC	90	10	75	25			
7 FC	90	10	25	25		25	25

Source: Finance Commission reports, I-VII

In the second phase (Table 2), from the Eighth to the Tenth FCs, there was a move toward unifying the formula for both income tax and union excise duties. The weight given to the population criterion was significantly reduced, while the importance of economic backwardness and fiscal weakness increased. This phase also saw the introduction of the "alternative scheme of devolution," which led to constitutional amendments.

Table 2. Inter se Sharing of Shareable Taxes from 8th FC to 10th FC

Finance Commission	Population	Inverse of per capita income	Distance of per capita	Backward ness	Area	Index of infrastructure	Tax effort
8 FC	25	25	50				
9 FC	25	12.5	50	12.5			
10 FC	20		60		5	5	10

Source: Finance Commission reports, VIII-X

The third phase (Table 3) began with the Eleventh FC and continues to the present. During this period, considerations expanded to include vertical transfers, horizontal equity, incentives for efficiency, and cost disadvantages. Key criteria was introduced that included income distance and fiscal discipline, among other efficiency measures. The Fourteenth FC further recognized demographic changes and introduced forest area as a new criterion.

Table 3. Inter se Sharing of Shareable Taxes from 11th FC to 14th FC

Finance Commission	Population	Inverse of per capita income	Distance of per capita	Backwardness	Area	Fiscal discipline	Demo-graphic change	Forest area	Tax effort	Demo-graphic performance
11 FC	10	62.5	7.5	7.5	5	7.5				
12 FC	25	50	10		7.5	7.5				
13 FC	25	47.5	10			17.5				
14 FC	17.5	50	15				10	7.5		
15 FC	15		45		15			10	2.5	12.5

Source: Finance Commission reports, X–XV

Overall, the devolution formulas have evolved to better address the varying needs of the states, with a growing focus on equity and efficiency. The weight assigned to the population criterion has declined, while the significance of income distance and efficiency factors has increased. The criteria used can be broadly classified into factors reflecting needs, revenue disability measures, cost disability indicators, and fiscal efficiency indicators. This evolution reflects an ongoing effort to create a more balanced and fair system of intergovernmental fiscal transfers in India.

Once the states' share in the divisible pool is determined, the Finance Commission's task is to distribute this divisible pool among the states, which is also called horizontal devolution. Over the years, different finance commissions have used different criteria for the horizontal devolution. The Fifteenth Finance Commission (FC) has used three different types of criteria for the devolution purpose (need-based, equity-based, and performance-based criteria), which we will discuss below.

2.1: Need-Based Criteria

Population

One of the most important criteria for devolution is population as it directly represents the need of the state; the larger the population, the larger the need of the state. Keeping this view in mind, the Fifteenth Finance Commission assigned 15 percent weightage to this criterion. We are also of the view that the population should be retained as a criterion for the devolution purpose.

For calculating the inter se share of states on this criterion, Census 2011 data was used. Based on the share of state's population in total population of for each state was calculated.

Ratio of Elderly to Working-Age Population

Broadly, the whole population can be divided into two groups—working-age population and dependent population. The population aged between 15–59 are normally considered working age and children (0–14) and the elderly (60 and above) are considered as the dependent population. As data suggests, India is undergoing significant demographic transition, which will continue to in the decades to come. As a result of this demographic transition, the share of the population that is elderly is going to increase significantly in the coming decades (as per the report of technical group on population projections of Census of India [2011] the elderly share of the population is going to increase from 10.5 percent in 2011 to 16.9 percent in 2036). Moreover, this population will increase further for states which have already achieved replacement level fertility. As such there will be a greater need of finances in such states where the share of the dependent population is getting higher. Therefore, the authors are of the view that the ratio of the elderly population to the working-age population should also be used as a criterion for devolution.

For calculating the ratio of the elderly to the working-age population, we utilized Census 2011 data. As mentioned above, the working age population was calculated by adding up the population aged 15–59 and elderly population was calculated by adding up 60 and above population. Thereafter, the elderly population as a percentage of working age population was calculated and this percentage was scaled by the 1971 population.

Area

Area is another important, need-based criterion; as the geographical area of a state increases, the resource requirements of the state increase to provide comparable services. Therefore, it should be retained as a criterion.

Area data for states was taken from Registrar General of India. Share of the area of each state was calculated and was adjusted for each state by applying a 2 percent floor limit for each state whose area was less than 2 percent.

Forest Cover

One of the greatest challenges facing humanity today is climate change and its impact on the environment. Under such circumstances, trees alleviate the impact of environmental degradation and help in maintaining ecological balances. One important point which should be kept in mind is that while the benefits of forest cover extend beyond the geographical area of the state, its cost (opportunity cost) is born itself by the state. Therefore, the states, which have maintained ecological balance by retaining/ increasing forest area should be rewarded. It is against this backdrop that Fourteenth Finance Commission included this as one of the criteria for the first time for devolution purpose and Fifteenth Finance Commission retained it. We also feel that forest cover should be retained as a criterion.

Data for forest cover was obtained from the Forest Survey of India (2019). Only dense forest areas, obtained by adding moderately dense forest and very dense forest, were considered. Then the share of each state was calculated from the total dense forest area of all states.

2.2: Equity-Based Criteria

Income Distance

The idea behind incorporating this criterion in the devolution is to make it more equitable and progressive by providing higher devolution to states having lower per capita income and vice versa. The authors are of the opinion that progressivity should be incorporated in the devolution and hence retained as a criterion.

Comparable GSDP data from 2016–17 to 2018–19 was taken from Fifteenth Finance Commission report and inter se share of each state on this criterion was calculated by the same method as Fifteenth Finance Commission by taking the distance of each state from the highest income state and then scaling it from 2011 population.

2.3: Performance-Based Criteria

Demographic Performance

Until the Thirteenth FC, all commissions were mandated to use 1971 population for the purpose of devolution. For the first time, Terms of References of the 14th Finance Commission mandated that the Commission take into consideration the demographic changes which have been taken since 1971. Although this is a step forward (since devolution is done in the present period, therefore it should also consider the current population), but it also penalizes the states which have done well on the demographic front. This is why the Fifteenth Finance Commission incorporated total fertility rate (TFR) as one of the devolution criteria. We are also of the opinion that it should be retained as a criterion.

TFR data was also taken from the Fifteenth Finance Commission report. First, we took the inverse of TFR and the scaled it from 1971 population. Thereafter, the inter se share of each state was calculated.

Tax Effort

Tax effort was incorporated as a devolution criterion based on the views submitted to the Fifteenth Finance Commission. It was argued that it incentivizes the state's efficient tax collection.

For calculating tax effort, we calculated the tax GSDP ratio from the Fifteenth FC report data. This ratio was then scaled by the 2011 population and the inter se share of each state was obtained.

3. POPULATION PYRAMID FOR INDIA AND STATES

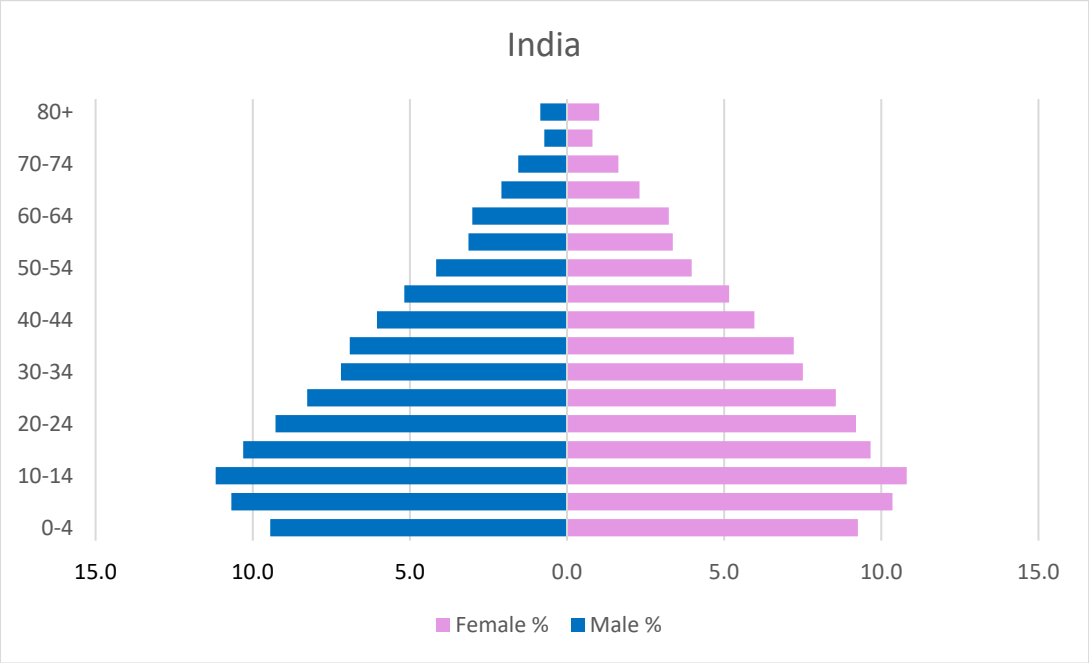
Before we delve into the issue of the devolution of shareable taxes to states, it is pertinent to discuss the importance of incorporating the elderly share in the devolution formula. For this purpose, we have shown the age–sex population pyramid for India and states in the following section.

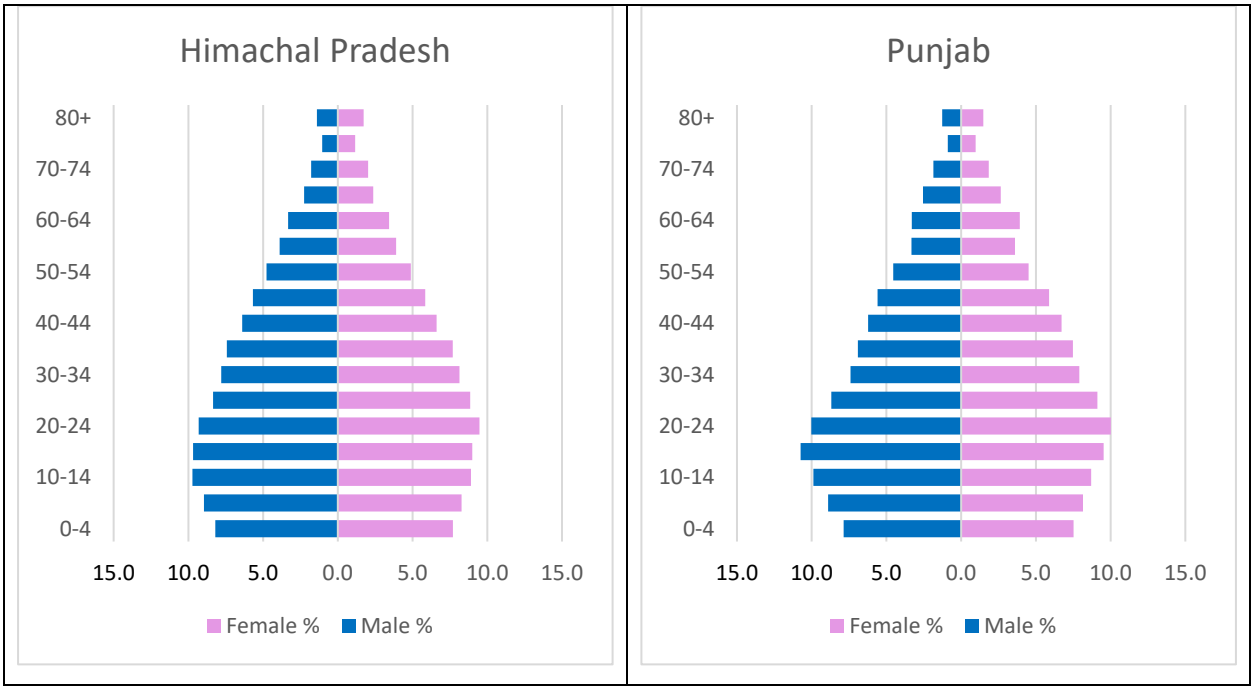
The population pyramid for India as a whole indicates a broad base, reflecting a large young population, which narrows toward the top—representing a smaller elderly population. The distribution suggests that while India has a predominantly young population, the proportion of elderly individuals is significant and growing; it is approximately 8.05 percent for males and 8.40 percent for females.

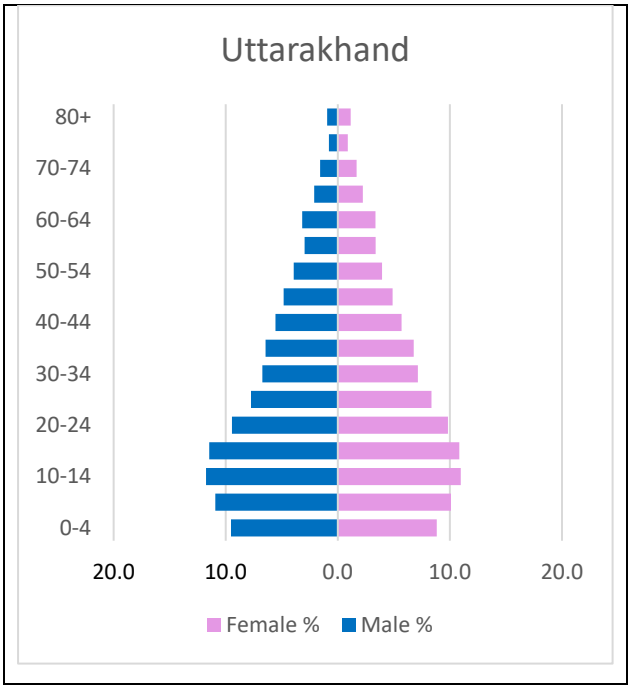
Our further perusal of the graphs reveals that Kerala had 12.55 percent of elderly population (in which 5.64 percent are males and 6.91 percent are females) and because of the higher percentage of elderly, it exhibits a population pyramid that is broader at the top compared to other states. The other states with higher percentages of elderly populations are Goa, Tamil Nadu, Punjab, and Himachal Pradesh, which collectively contain more than 10 percent of the elderly population (i.e., 60 and older).

The population pyramids highlight significant demographic differences among states. States with higher percentages of elderly populations require substantial resource allocation for elderly care, including healthcare, social security, and infrastructure. Since the proportion of elderly is increasing for all states in the near future, it is important to take into consideration the resource requirements for elderly care. Therefore, it is argued that the Finance Commission of India should consider these demographic changes for equitable and effective resource distribution.

Figure 1. Gender-Disaggregated Population Pyramid for India and States, 2011



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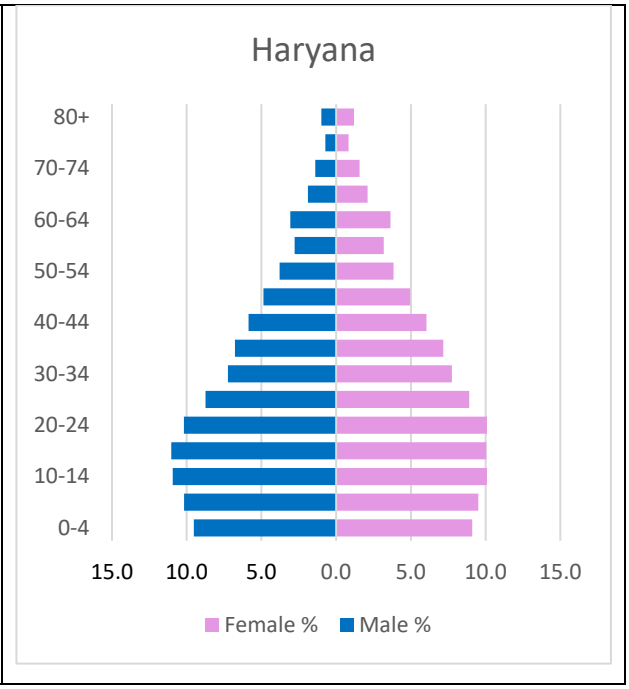
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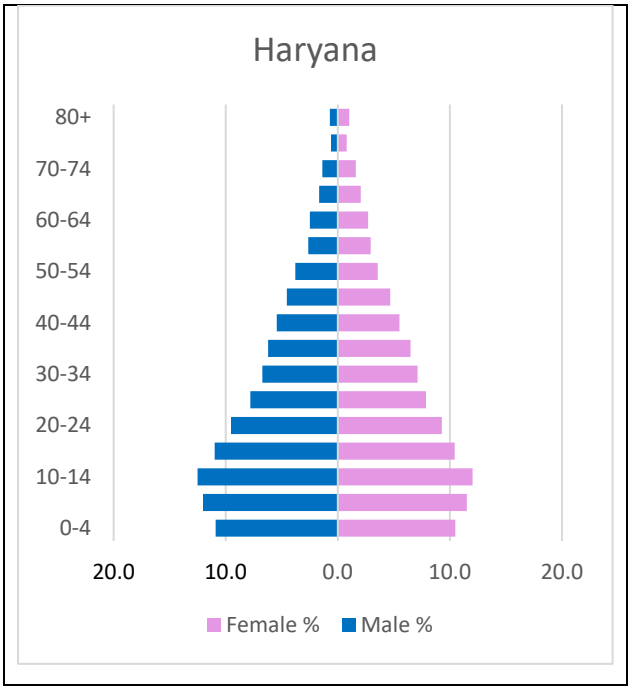
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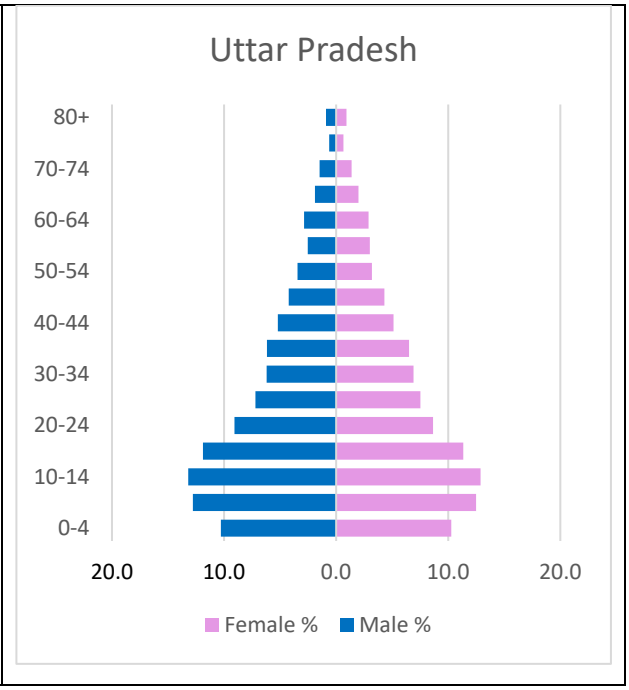
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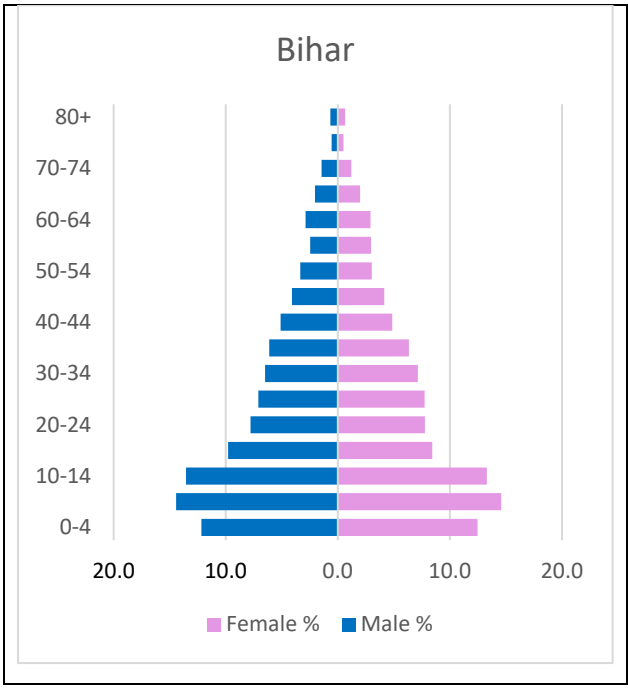
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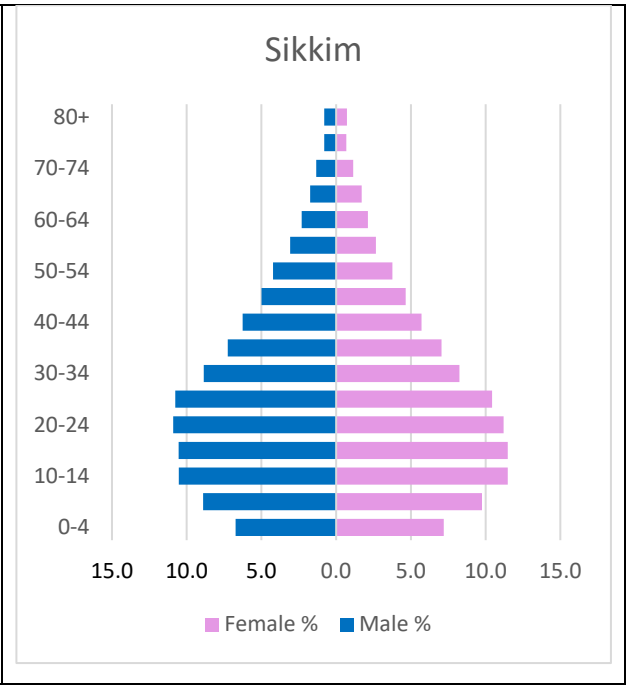
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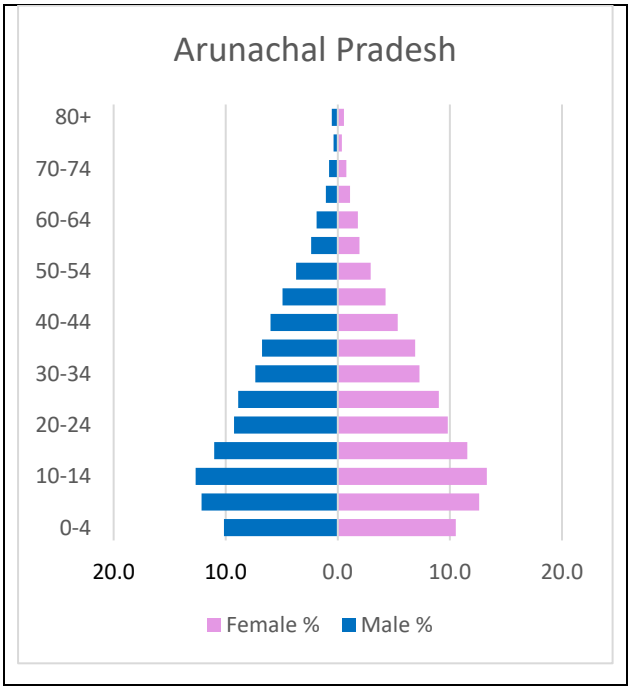
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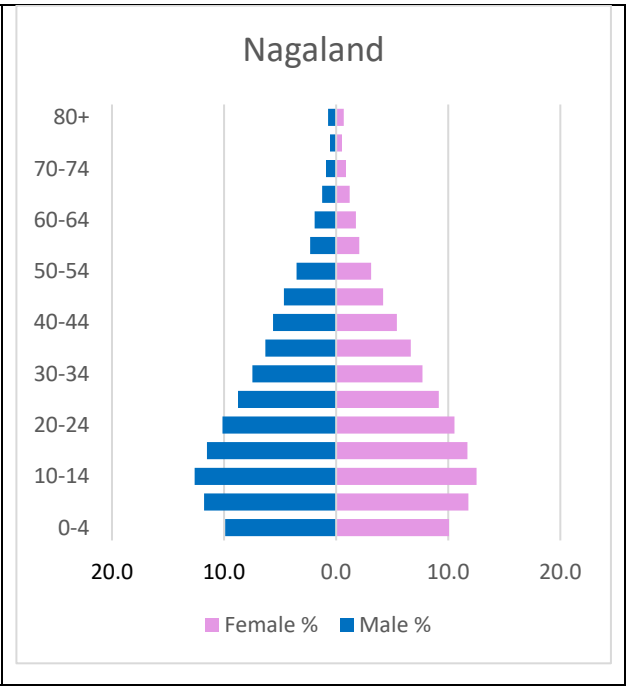
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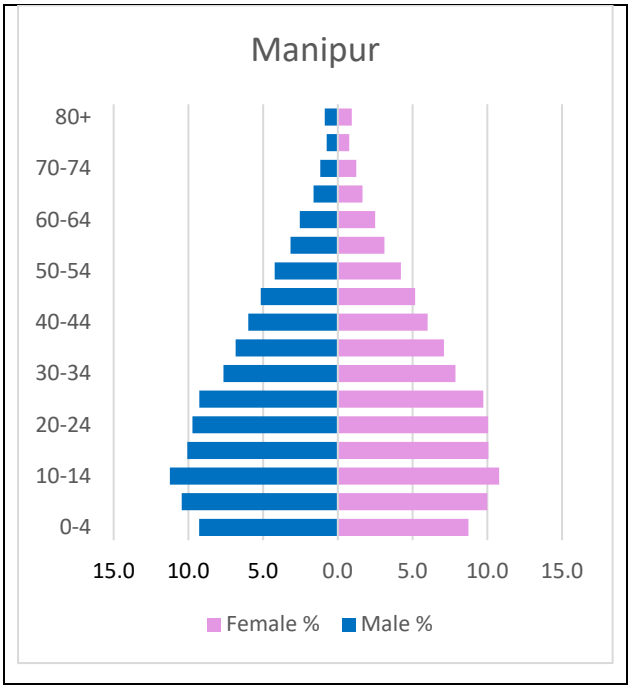
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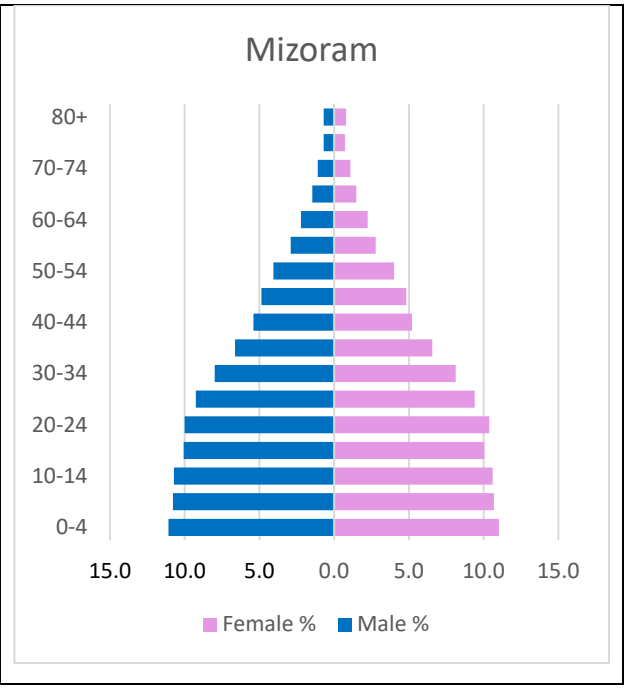
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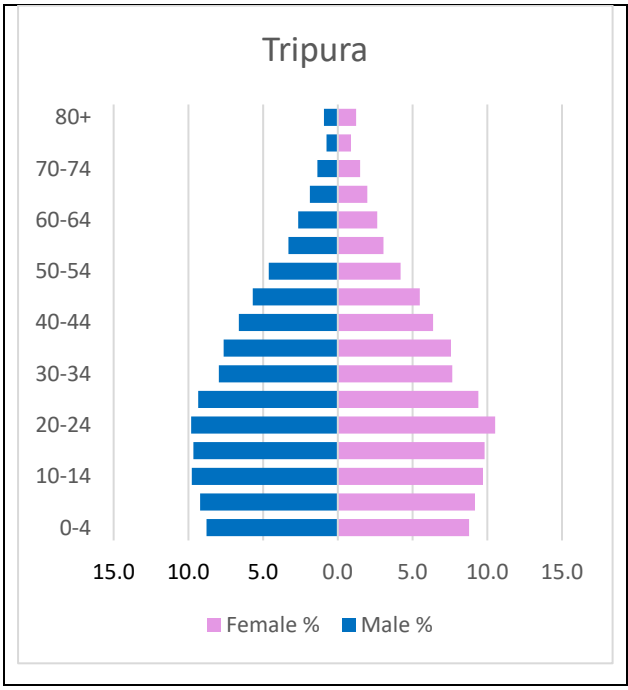
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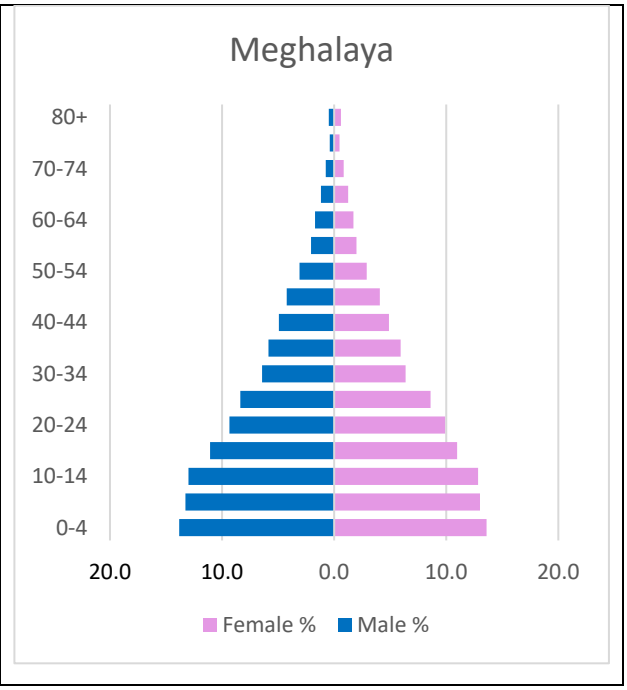
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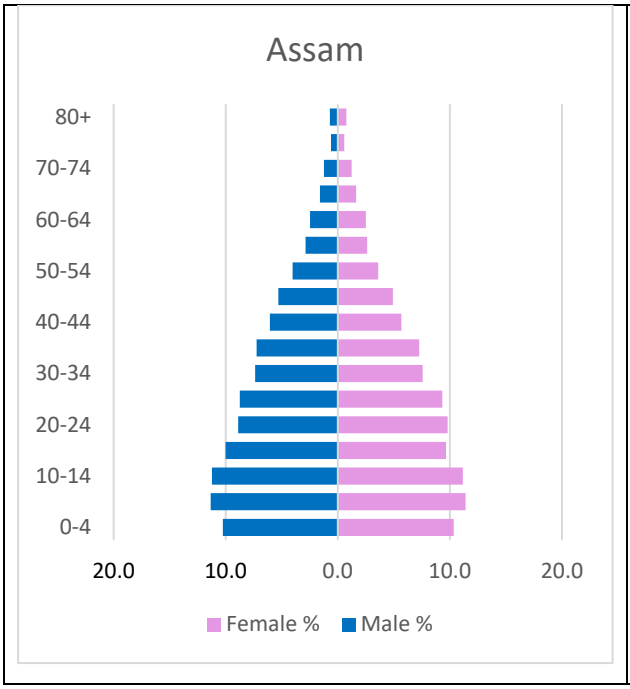
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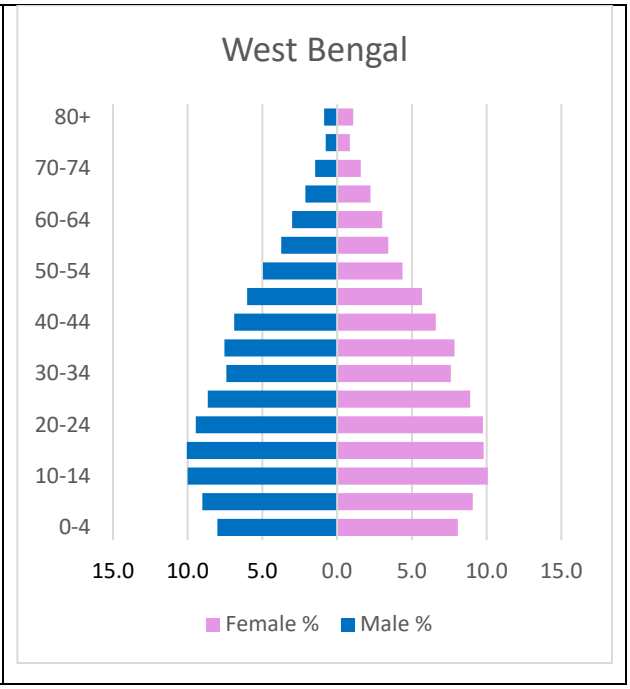
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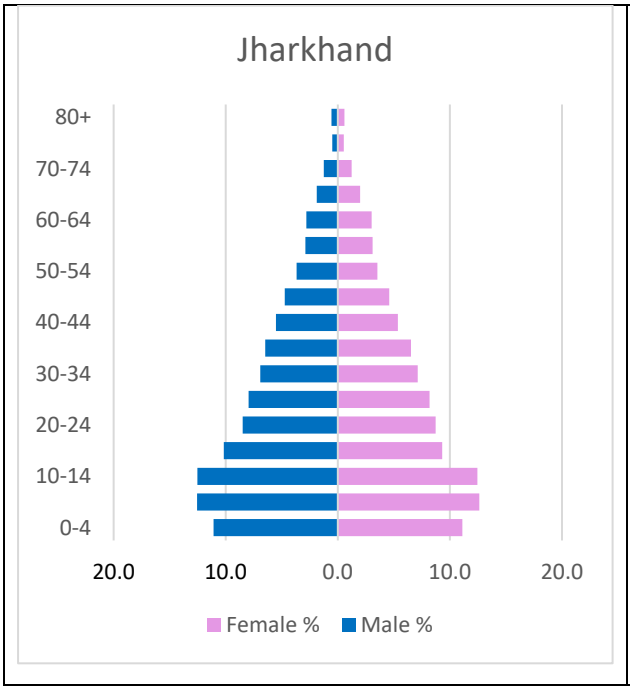
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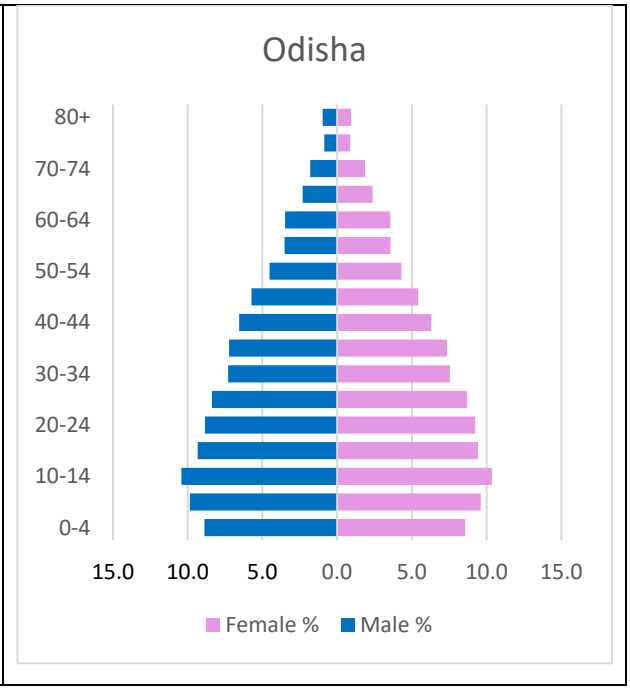
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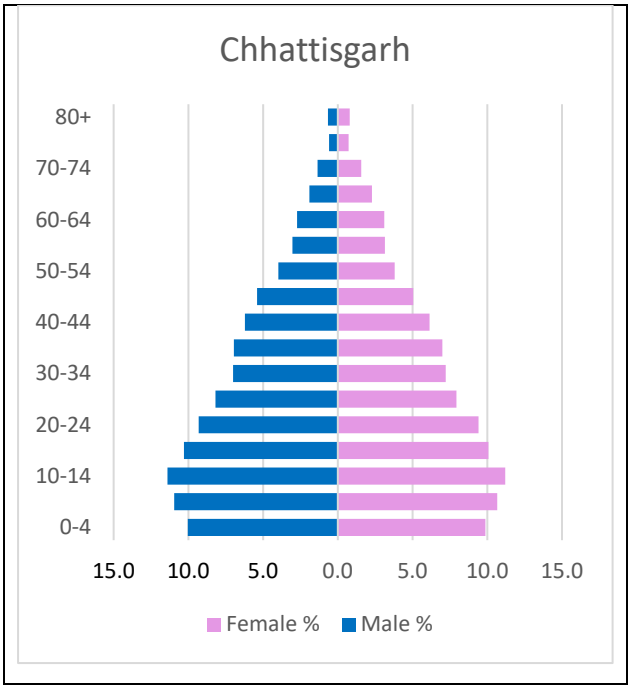
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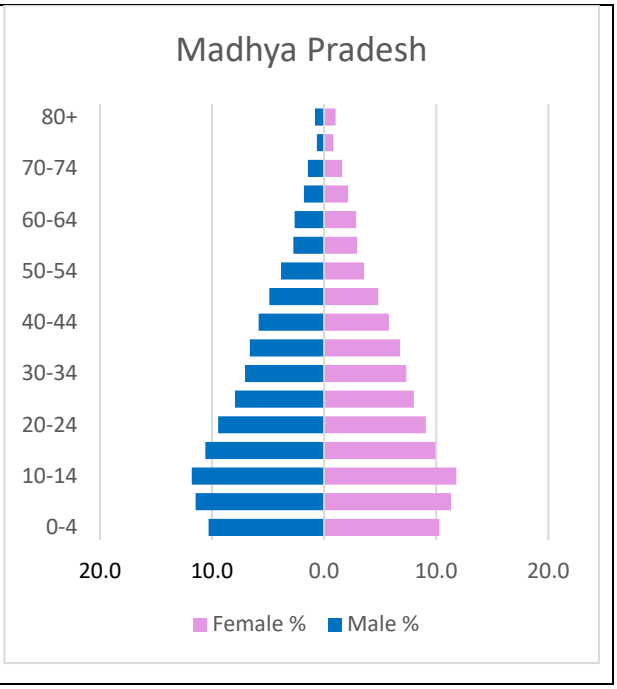
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Female %
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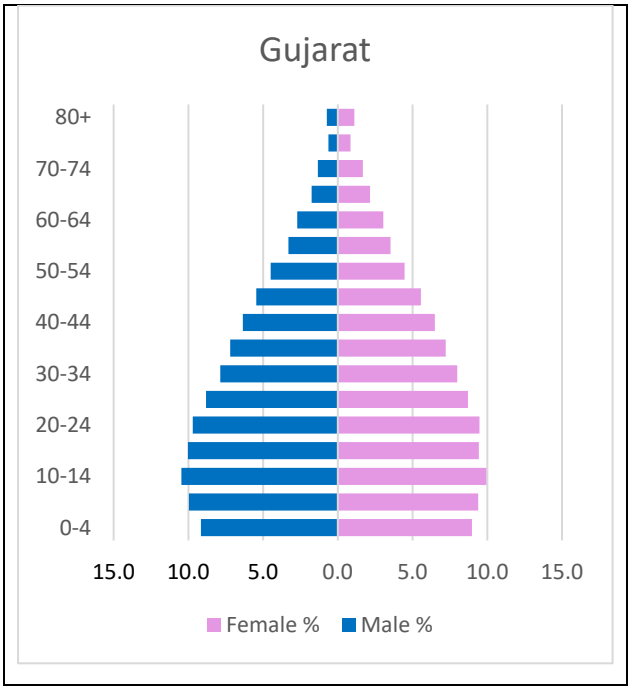
Gujarat
80+
70-74
60-64
50-54
40-44
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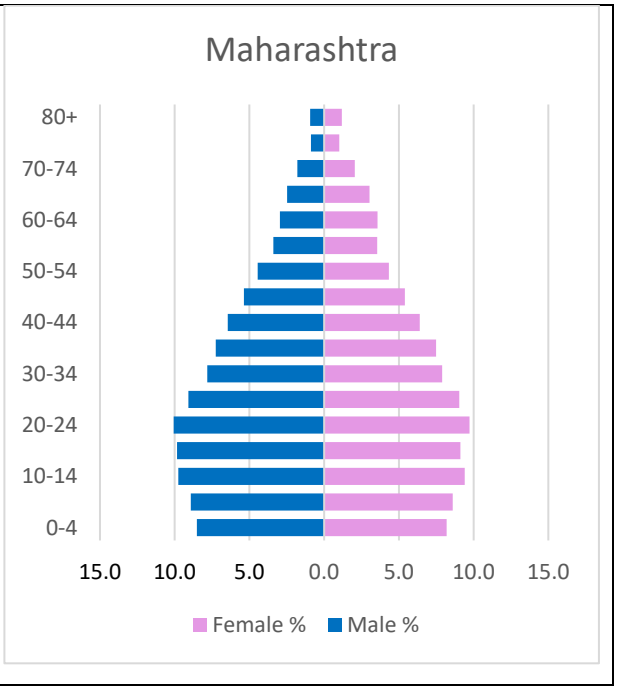
Female %
Male %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80+
70-74
60-64
50-54
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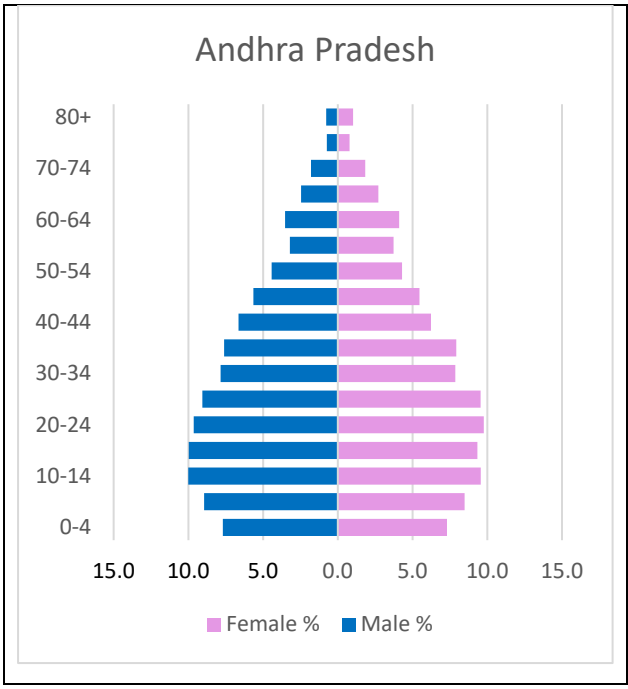
Female %
Male %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80+
70-74
60-64
50-54
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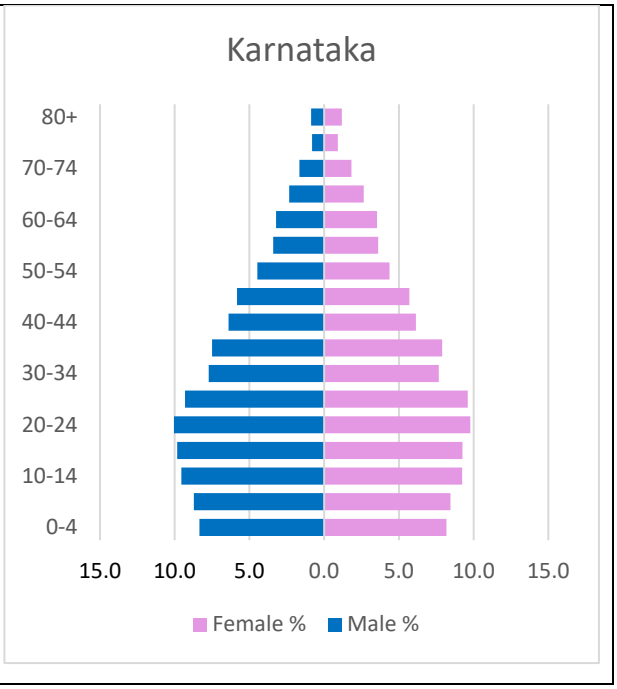
Female %
Male %


Karnataka
80+
70-74
60-64
50-54
40-44
30-34
20-24
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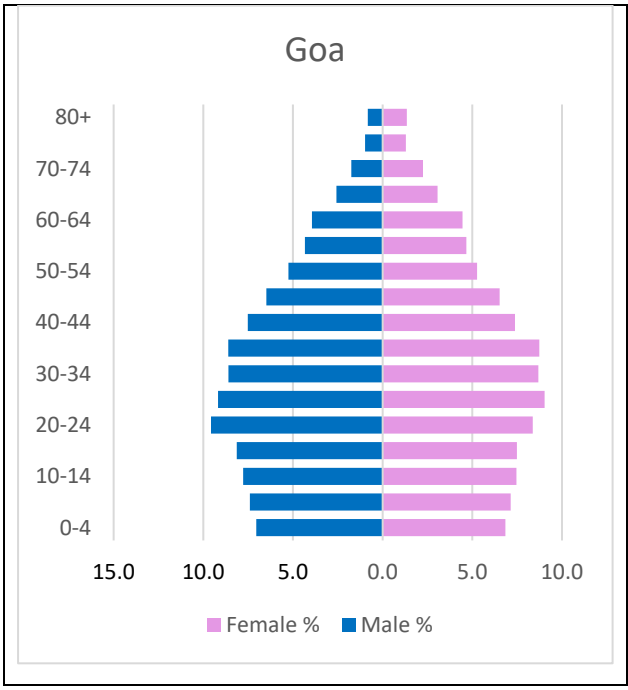
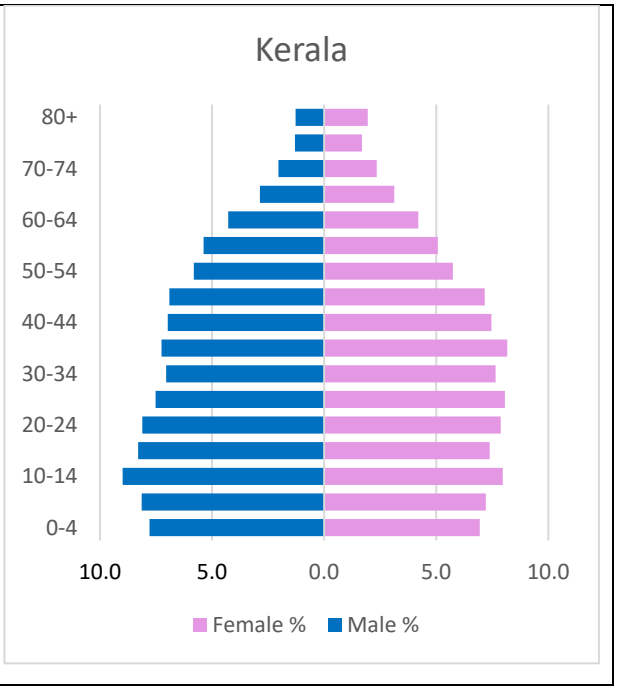
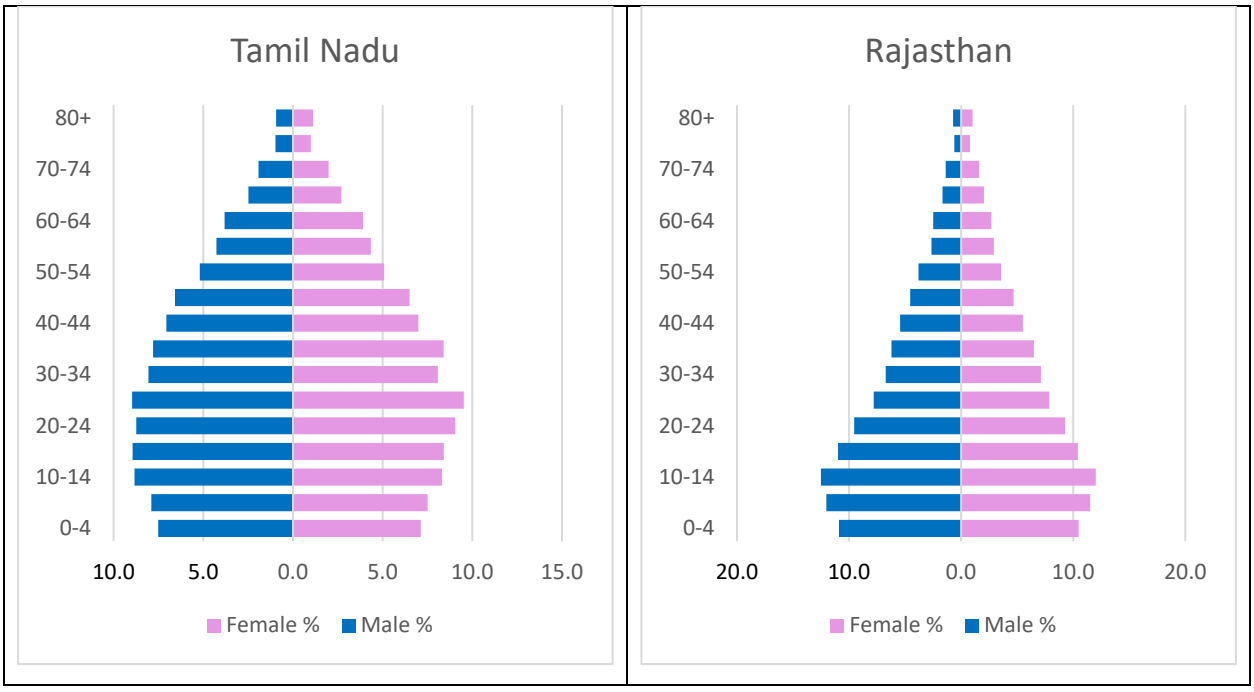
0-4
15.0 10.0 5.0 0.0 5.0 10.0 15.0
Female %
Male %


Goa
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
15.0 10.0 5.0 0.0 5.0 10.0
Female %
Male %


Kerala
80+
70-74
60-64
50-54
40-44
30-34
20-24
10-14
0-4
10.0 5.0 0.0 5.0 10.0
Female %
Male %



Source: Census of India, 2011

4. DYNAMICS OF FORMULA FOR TAX TRANSFERS AND INTER-STATE SHARE

In this section, we have analyzed the distribution of resources to states after incorporating the elderly population as a criterion in the devolution formula. In order to construct the variable, we have calculated the elderly population as a percentage of working age population for each of the states and then scaled it with 1971 population. Table 1 outlines the various criteria and their assigned weights used to determine the share of each state in the divisible pool under different scenarios. The first scenario in the table is the criteria adopted by the Fifteenth FC. In Scenarios 1 and 2, we have tweaked the criteria of the Fifteenth FC by incorporating the additional criterion of elderly population, which can be observed from the table. As can be observed from Table 4, in Scenario 1, we have reduced the proportion of the population (2011) from 15 percent to 10 percent and given 5 percent weightage to our newly constructed variable of elderly population, keeping the weightage of the rest of the variables intact. In Scenario 2, we have not assigned any weightage to "tax effort" variable and have assigned 7.5 per cent weightage to the variable of elderly population. In Scenarios 3 and 4, we have introduced an additional criterion

of "sex ratio." In Scenario 3, we have taken the sex ratio for all ages, whereas we have considered the sex ratio for only the elderly in Scenario 4. In both scenarios, we have considered the percentage of elderly population to total population instead of the percentage of elderly population to working age population. The implications of these changes on the inter se share of states has been discussed in the section below.

Table 4. Criteria and Weights (%) Assigned

Criteria	15th FC criteria	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Population	15	10	10	10	10
Area	15	15	15	12.5	12.5
Forest & ecology	10	10	10	10	10
Income distance	45	45	45	45	45
Tax & fiscal efforts	2.5	2.5	0	0	0
Demographic performance	12.5	12.5	12.5	12.5	12.5
Elderly-working age population ratio	0	5	7.5		
Elderly-total population ratio				5	7.5
Sex ratio (all ages)				5	
Sex ratio (elderly)	0	0	7.5	0	2.5

Source: Fifteenth Finance Commission Report

In both Scenarios 1 and 2, there are noticeable changes in the share allocations for states compared to the original Fifteenth FC recommendations (Tables 5 and 6). Scenario 1 introduces a slight shift in shares for many states, with Andhra Pradesh, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, and Uttarakhand seeing positive gains. Conversely, states such as Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, Tripura, Uttar Pradesh, and West Bengal experience losses.

Scenario 2 further adjusts the allocations, with a similar but slightly different pattern. Positive gains are observed for Andhra Pradesh, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Punjab, Tamil Nadu, and Uttarakhand. However, this scenario results in negative gains

for Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim, Telangana, Tripura, Uttar Pradesh, and West Bengal. Notably, Kerala sees the highest positive gain in both scenarios—especially in Scenario 2—while Uttar Pradesh experiences the highest loss in both scenarios. The changes in criteria weightage between the original Fifteenth FC recommendations and the two scenarios have significant implications. The decrease in the population weightage from 15 percent to 10 percent in both scenarios shifts focus slightly away from more populous states. The removal of tax and fiscal efforts criteria in Scenario 2 alters the incentive structure for states' fiscal performance, potentially impacting states that have been more proactive in improving their fiscal metrics. The introduction and increase of the elderly population criteria from 0 percent in the Fifteenth FC to 5 percent in Scenario 1 and 7.5 percent in Scenario 2 benefits states with higher elderly populations, such as Kerala.

Table 5: Inter se Share of States with Scenario 1

State	14th FC	15th FC	Scenario 1	Gain/loss from scenario 1
Andhra Pradesh	4.305	4.047	4.123	**0.076**
Arunachal Pradesh	1.37	1.757	1.754	-0.003
Assam	3.311	3.128	3.099	-0.029
Bihar	9.665	10.058	9.950	-0.108
Chhattisgarh	3.08	3.407	3.395	-0.012
Goa	0.378	0.386	0.390	**0.004**
Gujarat	3.084	3.478	3.446	-0.032
Haryana	1.084	1.093	1.078	-0.015
Jammu & Kashmir	0.713	-	-	-
Himachal Pradesh	1.854	0.83	0.839	**0.009**
Jharkhand	3.139	3.307	3.274	-0.033
Karnataka	4.713	3.647	3.682	**0.035**
Kerala	2.5	1.925	2.068	**0.143**
Madhya Pradesh	7.548	7.85	7.792	-0.058
Maharashtra	5.521	6.317	6.365	**0.048**
Manipur	0.617	0.716	0.713	-0.003
Meghalaya	0.642	0.767	0.759	-0.008
Mizoram	0.46	0.5	0.498	-0.002
Nagaland	0.498	0.569	0.563	-0.006
Odisha	4.642	4.528	4.570	**0.042**

Punjab	1.577	1.807	1.838	**0.031**
Rajasthan	5.495	6.026	5.938	-0.088
Sikkim	0.367	0.388	0.387	-0.001
Tamil Nadu	4.023	4.079	4.226	**0.147**
Telangana	2.437	2.102	2.118	**0.016**
Tripura	0.642	0.708	0.705	-0.003
Uttar Pradesh	17.959	17.939	17.778	-0.161
Uttarakhand	1.052	1.118	1.117	-0.001
West Bengal	7.324	7.523	7.494	-0.029

Source: Fourteenth Finance Commission and Fifteenth Finance Commission Report and Authors' Computations

These adjustments in weightage criteria demonstrate the trade-offs involved in different allocation models and their impact on the financial distributions to states. The broad pattern shows that states with higher gains generally benefit from the increased consideration for elderly populations and reduced emphasis on population size, while those with higher losses are often more populous or have higher tax efforts that are deprioritized in the revised scenarios.

Table 6. Inter-se Share of States with Scenario 2

State	14th FC	15th FC	Scenario 2	Gain/loss from scenario 1
Andhra Pradesh	4.305	4.047	4.158	**0.111**
Arunachal Pradesh	1.37	1.757	1.753	-0.004
Assam	3.311	3.128	3.100	-0.028
Bihar	9.665	10.058	9.920	-0.138
Chhattisgarh	3.08	3.407	3.383	-0.024
Goa	0.378	0.386	0.391	**0.005**
Gujarat	3.084	3.478	3.437	-0.041
Haryana	1.084	1.093	1.070	-0.023
Jammu & Kashmir	0.713	-	-	-
Himachal Pradesh	1.854	0.83	0.846	**0.016**
Jharkhand	3.139	3.307	3.273	-0.034
Karnataka	4.713	3.647	3.693	**0.046**
Kerala	2.5	1.925	2.136	**0.211**
Madhya Pradesh	7.548	7.85	7.753	-0.097
Maharashtra	5.521	6.317	6.369	**0.052**
Manipur	0.617	0.716	0.714	-0.002
Meghalaya	0.642	0.767	0.757	-0.010
Mizoram	0.46	0.5	0.498	-0.002

Nagaland	0.498	0.569	0.563	-0.006
Odisha	4.642	4.528	4.594	**0.066**
Punjab	1.577	1.807	1.853	**0.046**
Rajasthan	5.495	6.026	5.899	-0.127
Sikkim	0.367	0.388	0.387	-0.001
Tamil Nadu	4.023	4.079	4.298	**0.219**
Telangana	2.437	2.102	2.111	**0.009**
Tripura	0.642	0.708	0.707	-0.001
Uttar Pradesh	17.959	17.939	17.650	-0.289
Uttarakhand	1.052	1.118	1.121	**0.003**
West Bengal	7.324	7.523	7.526	**0.003**

Source: Fourteenth Finance Commission **and Fifteenth** Finance Commission Report and Authors' Computations

Table 7: Sex Ratio for All Ages and Elderly for All India and States

States	Sex ratio (all ages)	Sex ratio (elderly)
Andhra Pradesh	993	1119
Arunachal Pradesh	938	917
Assam	958	971
Bihar	918	877
Chhattisgarh	991	1159
Goa	973	1200
Gujarat	919	1132
Haryana	879	1015
Himachal Pradesh	972	1062
Jharkhand	948	994
Karnataka	973	1108
Kerala	1084	1226
Madhya Pradesh	931	1063
Maharashtra	929	1114
Manipur	985	1004
Meghalaya	989	1075
Mizoram	976	998
Nagaland	931	875
Odisha	979	998
Punjab	895	985
Rajasthan	928	1102
Sikkim	890	813
Tamil Nadu	996	1051
Telangana	993	1119

Tripura	960	1040
Uttar Pradesh	912	921
Uttarakhand	963	1039
West Bengal	950	1010
India	***943***	***1033***

Source: Census of India, 2011

Until now, we have discussed the implications of using Scenarios 1 and 2 on the inter se share of states. In the following sections, we will discuss how the inter se share of states will change if Scenarios 3 and 4 are used. As already discussed, the "sex ratio" has been used as a criterion for the devolution purpose. The idea behind using it as a criterion is to make the devolution more gender sensitive. Before we discuss the inter se share of states under Scenarios 3 and 4, it is imperative to discuss the sex ratio for all of India and the states. As can be observed from the table, the sex ratio for all ages is biased toward men for all India, i.e., there are relatively less women per 1000 men. However, it is not the case for Kerala. Our further perusal of the table indicates that sex ratio for the elderly is 1033 women per 1000 men for all India. The obvious reason behind the skewed sex ratio among the elderly toward women is the relative higher life expectancy of women as compared to men. Higher sex ratio for elderly makes the case for gender-sensitive devolution formula being stronger, which we have tried to assert in the section below.

Table 8. Inter-se Share of States with Scenario 3

State	14th FC	15th FC	Scenario 3	Gain/loss from scenario 1
Andhra Pradesh	4.305	4.047	4.295	**0.248**
Arunachal Pradesh	1.37	1.757	1.697	-0.060
Assam	3.311	3.128	3.144	**0.016**
Bihar	9.665	10.058	10.019	-0.039
Chhattisgarh	3.08	3.407	3.402	-0.005
Goa	0.378	0.386	0.346	-0.040
Gujarat	3.084	3.478	3.398	-0.080
Haryana	1.084	1.093	1.038	-0.055
Jammu & Kashmir	0.713	-	-	-
Himachal Pradesh	1.854	0.83	0.817	-0.013
Jharkhand	3.139	3.307	3.444	**0.137**

Karnataka	4.713	3.647	3.661	**0.014**
Kerala	2.5	1.925	2.389	**0.464**
Madhya Pradesh	7.548	7.85	7.840	-0.010
Maharashtra	5.521	6.317	5.898	-0.419
Manipur	0.617	0.716	0.673	-0.043
Meghalaya	0.642	0.767	0.709	-0.058
Mizoram	0.46	0.5	0.453	-0.047
Nagaland	0.498	0.569	0.698	**0.129**
Odisha	4.642	4.528	4.542	**0.014**
Punjab	1.577	1.807	1.906	**0.099**
Rajasthan	5.495	6.026	5.559	-0.467
Sikkim	0.367	0.388	0.613	**0.225**
Tamil Nadu	4.023	4.079	4.214	**0.135**
Telangana	2.437	2.102	1.972	-0.130
Tripura	0.642	0.708	0.667	-0.041
Uttar Pradesh	17.959	17.939	17.773	-0.166
Uttarakhand	1.052	1.118	1.098	-0.020
West Bengal	7.324	7.523	7.694	**0.171**

Source: 14th Finance Commission & 15th Finance Commission Report and Authors' Computations

Table 8 demonstrates the inter se share of states under Scenario 3 and the gains/losses of states from the Fifteenth FC recommendation under Scenario 3. As can be seen in the table, the states with a relatively higher sex ratio such as Kerala, Andhra Pradesh, Sikkim, and others, gain the under this scenario. On the other hand, states with a poor sex ratio lose from this devolution formula.

Table 9. Inter-se Share of States with Scenario 4

State	14th FC	15th FC	Scenario 4	Gain/loss from scenario 1
Andhra Pradesh	4.305	4.047	4.205	**0.158**
Arunachal Pradesh	1.37	1.757	1.695	-0.062
Assam	3.311	3.128	3.080	-0.048
Bihar	9.665	10.058	9.929	-0.129
Chhattisgarh	3.08	3.407	3.396	-0.011
Goa	0.378	0.386	0.360	-0.026
Gujarat	3.084	3.478	3.475	-0.003
Haryana	1.084	1.093	1.050	-0.043
Jammu & Kashmir	0.713	-	-	-

Himachal Pradesh	1.854	0.83	0.809	-0.021
Jharkhand	3.139	3.307	3.255	-0.052
Karnataka	4.713	3.647	3.713	**0.066**
Kerala	2.5	1.925	2.592	**0.667**
Madhya Pradesh	7.548	7.85	7.651	-0.199
Maharashtra	5.521	6.317	6.433	**0.116**
Manipur	0.617	0.716	0.667	-0.049
Meghalaya	0.642	0.767	0.711	-0.056
Mizoram	0.46	0.5	0.448	-0.052
Nagaland	0.498	0.569	0.514	-0.055
Odisha	4.642	4.528	4.545	**0.017**
Punjab	1.577	1.807	1.838	**0.031**
Rajasthan	5.495	6.026	5.788	-0.238
Sikkim	0.367	0.388	0.338	-0.050
Tamil Nadu	4.023	4.079	4.353	**0.274**
Telangana	2.437	2.102	2.124	**0.022**
Tripura	0.642	0.708	0.663	-0.045
Uttar Pradesh	17.959	17.939	17.652	-0.287
Uttarakhand	1.052	1.118	1.086	-0.032
West Bengal	7.324	7.523	7.591	**0.068**

Source: Fourteenth Finance Commission & Fifteenth Finance Commission Report and Authors' Computations

As discussed above, in Scenario 4, we have used sex ratio for elderly instead of sex ratio for all ages as a criterion. Table 4 reveals that Kerala gains the most form using this scenario. Like Kerala, the states with relatively high sex ratios for the elderly gain from this devolution formula.

CONCLUSION

This paper examined the evolving landscape of fiscal transfers from the central government to the state governments in India, particularly in the context of the country's significant demographic shifts. The study argued how the increasing share of the elderly population imposes unique fiscal challenges on states and argues for the necessity of integrating this demographic factor into formula-based fiscal transfers.

The analysis reveals that traditional criteria for fiscal transfers—which have historically focused on population size, economic backwardness, and fiscal weakness—are becoming increasingly inadequate. The demographic transition, characterized by an aging population, necessitates higher public spending for elderly care. Therefore, states with relatively larger elderly populations are disproportionately burdened, emphasizing the case for a revised devolution formula that incorporates the elderly population. share

Through a multi-faceted approach, the paper demonstrates the impact of integrating the elderly population into the tax devolution formula. The findings indicate that states with higher elderly population shares benefit significantly from this integration, promoting a more equitable distribution of resources. The proposed revisions to the devolution formula, as tested in different scenarios, show noticeable shifts in resource allocations among states.

In conclusion, the paper makes a compelling case for incorporating the elderly population into the fiscal transfer criteria used by the Finance Commission. This adjustment is essential for addressing the fiscal challenges posed by demographic transitions and ensuring a more equitable and efficient allocation of resources. By aligning fiscal policies with demographic changes, the Finance Commission can better support states in managing the financial implications of an aging population, ultimately promoting a more balanced and sustainable fiscal federalism in India.
The study also recommends integrating a “gender lens” within the demographic elderly transition variable to promote an even more equitable and efficient allocation of resources, which is the scope for our next research paper.

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