#### CHAPTER IV

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# VARIATIONS IN DISTRICT PER CAPITA INCOME : REGRESSION ANALYSIS

### 1. INTRODUCTION

In Chapter Two it was observed that, though there was a convergence of district per capita income towards the state per capita income from 1961 to 1975, such a trend was not without substantial inequalities. It is generally argued that wide differences in per capita product are accompanied by wide differences in the characteristics of economic and social structure. The number of factors determining the magnitude and structure of economic activity in a given region is obviously large. In the words of Professor Simon Kuznets : " The structural characteristics associated with the level of per capita product ranging from the purely economic, such as education of the labourforce and mechanical energy available per capita or distribution of labourforce and production among major production sectors or consumption of final goods, ranging

from 'necessities' to 'luxuries' to non-economic processes and characteristics, such as the demographic rates of births, deaths and migration; or to conditions of life reflected in the extent of urbanisation, literacy of population etc."<sup>1</sup> Hence, an attempt may be made to describe some hypotheses in regard to factors of variations in per capita product. Section Two deals with this aspect. Section Three describes the specification of the variables and sources of data. The Multiple Regression Models and the results are discussed in Section Four. Section Five brings out the growth rates of explanatory factors. Conclusions are given at the end.

## 2. SOME HYPOTHESES

i) <u>Worker Participation Rate</u>: One can visualise two ways of defining the worker participation rate for a region. One, it may be defined as the proportion of workers to total population. This is a direct measure of the level of labour input. Two, it may be defined as the proportion of workers to the total population which is exclusive of the population in the age group of 0 - 9. The justification for the exclusion of the age group 0 - 9 population from the

<sup>1</sup> S.Kuznets, "The gap, concept, measurement, trends" in Gustav Ranis; (Ed), "The gap between the rich and poor", International Economic Association Publication, MacMillan, 1972, pp 11.

denominator is that one would not expect a child to work up to the age of, at least, nine. To make the distinction between the two, the latter may be called the "effective worker participation rate". It is argued that regions with identical averages of service income per worker in industry as a whole may differ in per capita product, because, they differ in the distribution of the population between the number of workers and the number of dependents. Hence, it may be said that, the region which has a higher percentage of total population in the labourforce will also be the region with high per capita product, given the productivity of labour. One would also anticipate a close positive relationship between the degree of manpower utilization and the corresponding level of per capita product.

ii) <u>Productivity</u>: Productivity is regarded as a prominent source of variations in per capita product between regions. Productivity may be measured in terms of product per worker ( which may be called labour productivity ). It is observed that differences in the levels of regional development are reflected in labour productivity differences among the regions. The higher the labour productivity of a region, the higher is its level of development. Therefore, it can be hypothesised that there will be a close and positive association between the product per worker and per capita income, given the labour participation rate.

iii) <u>Degree of Industrialisation</u>: The degree of industrialisation may be defined as the proportion of the labourforce engaged in the non-agricultural sector to the total labourforce. The degree of industrialisation, as a factor of regional income differences, may be considered on the ground that, "Service income per worker in nonagricultural industry is generally higher than in agriculture and differences among regions in the distribution of the labourforce between low income agriculture and high income non-agricultural industry will therefore give rise to regional differences in per capita income, even in the absence of differences in income per worker within each industrial sector."<sup>2</sup> Thus, it is expected that a high degree of industrialIsation is positively associated with a high level of per capita income.

iv) <u>The Active Population</u> : The active population ( or the age composition of the population ) indicates the potential contribution of human resources to the economy. Generally, two variants of active population are considered: one, the percentage of population in the age group of 15-59 years to the total population; two, the percentage

2 R. A. Easterlin, "Interregional differences in per capita income, population and total income, 1840-1950," in NBER : Trends in the American Economy in the 19th Gentury, Studies in Income and Wealth, Vol. 24, 1960, pp 80-81.

of population in the age group of 20 - 59 years to total population. The above variants are based on the assumption that, at these ages, persons contribute or contribute most effectively to income production. The persons not in the age groups tend to either the too young ( below 15 years ) or to those in the formative stage ( between 15 to 20 years ) or to the too old ( above 60 years ) to participate fully in productive activities. It is argued that the age criteria appear to account for the principal demographic factors in regional income differentials. In other words, the regions with high percentage of total population in this productive age group are expected to have a higher per capita product than that in the regions with the lower percentage of the total population in the productive age roup. Further, it can also be argued that, the differences in the ratios of male to female, in the active population, do result in differences in productivity between the regions. However, among the regions, variations in the ratios of male to female population in the active population are found to be insignificant.

v) Degree of Urbanisation : Urbanisation is measured as the percentage of urban population to the total population of the region concerned. In most of the advanced countries it is observed that there has been a continuous decline in the proportions of total population living in rural areas

and marked increase in urban population over the past many years. This significant change has accompanied the industrialisation of those nations. Similar trends also observed in the underdeveloped countries to-day. are The percentage of the urban population in these countries is swelling gradually. The increase in urbanisation is also associated with the industrialisation of the developing nations. It may be further argued that urbanisation provides better educational facilities, more opportunities for non-agricultural work, more of basic amenities, among other things. Thus, urbanisation offers better climate and environment for higher levels of а development of regions. To S. H. Robock, " urbanisation appears to be an inevitable concomitant of economic growth". Therefore, it can be said that differences in the degree of urbanisation brings about differences in the levels of regional development. The higher the degree of urbanisation, the higher is the expected level of development of a region. Hence, it is hypothesised that the high degree of urbanisation is positively correlated to the high per capita product.

vi) Education : Education has both economic and non economic dimensions. Available evidence suggests that

<sup>3</sup> Robock, Stefan H., "Strategies for regional economic development", in David. L. McKee, Robert D.Dean, William H.Leahy, (Eds), "<u>Regional Economics, Theory and Practice</u>", Collier-MacMillan, Ltd, London, 1970, pp 252.

the high educational standards possessed by the population in general and the labourforce in particular are significantly associated with the relatively high levels of income. Though it is difficult to assess the causal relationship between education and the level of income, it can be said with some confidence that, in no country, the illiterate persants and untrained workers forged the modern industrial society. Highly educated persons are not only supposed to be more efficient in their respective sphere of activity but also to serve as "change agents" in a society. Therefore, the education is frequently considered as a variable contributing to interregional income disparities. The education level of a region may be measured as the percentage of literate population in the total population of the region. But, a more useful index is the effective literacy rate, as this reflects the proportion of literates among persons who ought to have attended the education system in the normal course. This index can be obtained by calculating the proportion of the literate to the total population in the age group of five and above. Then, it goes without saying that regions with high literacy rates will have higher per capita product than those of regions with low literacy rates. Thus, one would obviously expect a definite and positive correlation between literacy rate and per capita product.

vii) Infrastructure Facilities : The economic development of any region depends, inter-alia, on the existence of a highly developed 'infrastructure' . Though the term "infrastructure" has been widely used in different contexts, it has no precise definition. It is also observed that the terms ! infrastructure ! . and 'social overhead capital' are used inter changeably. However, a World Bank expert defines 'infrastructure' as "the basic services on public utilities which are necessary to the commodity producing sectors of the economy ".4 According to Northam Shah," the infrastructure comprises all those facilities and activities, the basic rationale of which is the sustenance which they provide to income generation and production in the rest of the economy rather than income generation and production within infrastructure enter prises themselves."<sup>5</sup> He includes nearly eight items, viz., power, irrigation, transport, communications, education, research and development, health and other facilities like banking and insurance, under the head 'infrastructure'. In a way, the items which

<sup>4</sup> Quoted, Prabhakar Rao, "Cost of urban transportation", in Vadilal Dagli; (ed), "<u>Infrastructure for the Indian</u> Economy," Vora and Co., publishers private, Ltd., Bombay, 1970, pp 129.

<sup>5</sup> Narottam Shah," Infrastructure for the Indian economy " in Vadilal Dagli, (ed), op. cit., pp 12.

are labelled as 'infrastructure' are said to form the basis of development. They themselves are not a factor , bringing about the development. They are complementaries, needed to assure smooth economic development. If these overheads are unevenly distributed among regions, they will result in inequalities in the economic development of regions. The higher the level of infrastructure facilities available in a region, the higher is the level of economic development and vice versa. Hence, the factor 'infrastructure' assumes importance in the study of regional income inequalities. To study the regional pattern of the availability of infrastructure facilities, for each of the regions, a 'comprehensive index of infrastructure' ( or composite index of infrastructure ) may be prepared in relation to the average position for the state economy as a whole. One would expect that the high composite index of infrastructure is positively associated with the high per capita income.

In fact, the above factors have been considered, in several studies, as the important sources of regional income differentials. J. S. Williamson finds that, "labour participation rates in part contribute regional income per capita differentials".<sup>6</sup> M. D. Choudhary's study reveals

<sup>6</sup> J.S.Williamson, "Regional inequality and the process of national development : A description of the patterns". <u>Economic Development and Cultural Change</u>, Vol.XIII(4), Part II, July 1965, pp 44.

that, "nearly 50 % of the relative differences between provincial incomes in Canada during 1961 are accounted for by age composition of population, labour participation rates, level of schooling of working population and underemployment."7 According to R. A. Easterline, "the components like agricultural and non-agricultural income per worker, labourforce industrialisation, participation rates and property income per capita contributed to the narrowing of per capita income differences of states in U.S.A. between 1880 - 1950."<sup>8</sup> H. S. Perloff and others pointed out that, "among the important determinants of per capita product in a region, the following stand out-percentage of population employed, average earning of employed persons, place of residence, types of industrial employment, marginal labour productivity and capital per worker",9 V. H. Woodword argues that, "the regional variations in GDP per head arise to a considerable extent for differences in the economic composition of the regional populations". $^{10}$ 

<sup>7</sup> M.D.Choudhary, "Economic distance among regions - A Statistical analysis", <u>Economic Development and Cultural</u> <u>Change</u>, Vol., 19(4), July 1971, pp 544.

<sup>8</sup> R.A.Easterline, op, cit., pp 95-96.

<sup>9</sup> H.S.Perloff, EdgarS. Dunn, Jr, Eric E. Lampered, Richard F. Muth., "Regions, Resources and Economic Growth" Resources for the Future I.N.C. Baltimore, 1961, pp 605.

<sup>10</sup> V.H. Woodword", Regional Social Accounting for U.K.", in <u>N.I.E.S.R.</u>: Regional papers I, The syndices of the Combridge University Press, London, 1970, pp 78.

Woodword's study reveals that, for U.K., in 1961, the regional income variations were accounted for by differences in age structures the size of labourforce actually at work and productivity per person in work. Monteks Ahluwalia, in his size distribution of income analysis, attributes about half of the observed variations in income shares accross countries to variables like, level of per capita income and the share of agriculture in GDP, rate of growth of the economy, the rates of enrollment in primary and secondary schooling and the rates of growth of population.<sup>11</sup>

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There are also studies which have examined the sources of interregional income differences in terms of the investment in human resources, migration and size of the regions. R. B. Hughes Jr. argues that, " differential investment in human capacities ( i.e., investment in education and health) do result in regional differences".<sup>12</sup> This hypothesis hints at the point that, regional income differences are the results of differences in investment in human resource development in the past. And, hence, it is difficult to

Il Monteks. Ahluwalia, "Income, inequality: Some dimensions of the problem", in H. Chennery, M. Ahluwalia, Bell, John. H. Duloy, R. Jolly, "<u>Redistribution with Growth</u>", Oxford University Press, 1975, pp 16-17. L. London

<sup>12</sup> R. B. Hughes, Jr., "Interregional income differences: Self perpetuation", <u>The Southern Economic Journal</u>, Vol. XXVIII(4), July 1961, pp 41-45.

establish the causal relationship between the current investment on human resource and the current level of per capita product. On the basis of the selective age, Gunnar Myrdal asserts that the mobility widens inequality.<sup>13</sup> But, "any general statment, such as Myrdal's conclusion, that migration widens regional inequality, based as it is only on age selectivity, is not valid".<sup>14</sup> Further, although J. S. Williamson finds that there is a positive association between the size and regional inequalities for the United States,<sup>15</sup> however, size really makes no difference if areas are homogeneous.<sup>16</sup>

At this stage, it may be noted, that the importance of population growth is extensively discussed in the context of poverty and regional inequality, because of its immediate impact on per capita income levels. But its relationship to regional inequality has not yet been systematically studied. However, it is contended that regions which

<sup>13</sup> G. Myrdal, "Economic Theory and Underdeveloped Regions", London, 1957, pp 27.

<sup>14</sup> B. Okun Richards, W.Richardson, "Regional income inequality and internal population migration" <u>FEconomic</u> <u>Development and Cultural Change</u>, Vol.IX(2), Jan.1961, pp 143.

<sup>15</sup> J. S. Williamson, op. cit., pp 18-20.

<sup>16</sup> Heston, A., "Regional income differences in India and 'Historical' Pattern", <u>The Indian Economic Journal</u>, Vol.IX(2), Oct. 1967, pp 227.

experience a higher rate of growth of population will face lower levels of economic development on account of the inherent problems, namely, unemployment, under employment, increased pressure on land, massive rural out migration, growth of urban slums, resource reallocation in favour of production of mass consumption items. among other things, associated with the growth of population. But, S.Kuznets finds that, on the basis of the inter-country data, "in general, there is a positive association between rates of growth of population and total product". It implies that, whenever there is growth of population, it also results in the growth of worker participation ratio. This in turn will enhance the total product. However, Kuznets further argues that there is nothing of mechanical association. Therefore, it appears difficult to visualise the definite relationship between the growth of population and the level of per capita product.

Thus, on the whole, regional differences in worker participation rates, product per worker, degree of industrialisation, propertion of active population, degree of

<sup>17</sup> S. Kuznets, "Quantitate aspects of the economic growth of nations-I, Levels of variability of rates of growth," Economic Development and Cultural Change, Vol.5(1), Oct. 1956, pp 28.

urbanisation, literacy rates and 'infrastructure' are reflected in levels of regional development differences. More specifically, it can be said that regions with high levels of the factors mentioned above are positively associated with the high per capita product. It should, however, be noted that some of the above factors, although important from the view point of explanation of variations in per capita product, might not be exclusively independent but related to one another. The degree of industrialisation, for example, will be highly correlated to the degree of urbanisation and literacy rate. Therefore, it is necessary to eliminate the correlated explanatory variables and focus attention on strategic variables which play a crucial role in the explanation of variations in per capita product.

## 3. SOURCES OF VARIATIONS IN PER CAPITA INCOME

It is evident that there exist significant inter district income inequalities in Karnataka State in the past as well as at present ( see Chapter Two, Section Two). This phenomenon leads the researcher to probe into the sources of variations in the district per capita incomes of Karnataka. In the present work an attempt is made to examine the influence of the factors, namely, (a) the effective worker participation rate. (b) productivity of labour. (c) degree of industrialisation. (d) proportion of active population. (e) degree of urbanisation. (f) literacy rate. (g) infrastructure. on the inter-district income differences in the state. The selection of the factors. however, is based on the theoretical explanation given earlier and the availability of suitable data. The analysis is conducted on the cross-sectional data at the two points of time, i.e., 1960-61 and 1970-71. The Correlation and Multiple Regression Techniques are employed for the aforesaid purpose.

## A. SPECIFICATION OF VARIABLES AND SOURCES OF DATA

i) <u>Per capita income (or District per capita product)(Y)</u> — It is calculated by dividing the District Net Domestic Product by the District Total Population. After obtaining the data on the Net District Domestic Product and Population from the Bureau of Economics and Population Census Reports, respectively, the per capita income of districts for the years 1960-61 and 1970-71 are worked out at the 1960-61 prices.

ii) Effective worker participation rate  $(X_1)$  — It refers to the proportion of workers to the total population which is exclusive of the population in the age group of 0-9 years.

The effective worker participation rates for the period 1970-71 are calculated on the basis of workers and population given in the Population Census Reports of 1971. For the period 1960-61, the effective worker participation rates are worked out by using the adjusted workers of 1961 and the population figures of the 1961 Census Report. The adjusted workers for 1961 are estimated by the investigator ( see Chapter Three, Section Two ).

iii) <u>Productivity of labour ( or productivity )</u> (X<sub>2</sub>) — Productivity refers to product per worker. Productivity for each district is obtained by dividing the district Net Domestic Product to Total Workers in the respective districts. Productivity of labour for both the periods are worked out at the 1960-61 prices. For 1961, the denominator is the total adjusted workers.

iv) Degree of industrialisation  $(X_3)$  — The degree of industrialisation is measured as the percentage of non agricultural workers to total workers in each district. The sum of 1971 Census worker classifications in IV to IX. constitutes the non-agricultural workers in each district for the year 1970-71. Then, the percentage of non-agricultural workers to total workers, for each of the districts, is worked out. For the year 1961, the adjusted workers in the nine industrial categories, which are comparable to the

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1971 classification, are estimated in Chapter Three, Section Three. On the basis of these data, percentage of non-agricultural workers to total workers is calculated for the period 1960-61.

Active population  $(X_A)$  — In the present study, the v) active population of a district refers to the percentage of population in the age group of 15-59 to the total population of the district. This age composition selection is made, partly, on the account of physiological and socioeconomic conditions prevailing in the country ; and , partly, on the basis of the nature of data availability. The two decennial Population Census Reports on Karnataka State provide the population figures in different age groups. The 1971 Census provides, the distribution of population in the eight age groups, viz., 0-14, 15-19, 20-24, 25-29, 30-39, 40-49, 50-59, 60 + and age not stated. By addingup the population in the age groups of 15-19 to 50-59, the total population of each district in the age group of 15-59 is obtained . Then the percentage of the population in the age group of 15-59 to the total population in each district is worked out and used for the period 1970-71. The 1961 Census gives the distribution of the population in four age groups i.e., 0-14, 15-34, 35-59, 60 + and the age not stated. By taking the total population in the age group of 15-59, from the 1961 Census Report, the

percentage of the active population to the total population for each district is worked out and used for the period 1960-61.

vi) <u>Degree of urbanisation</u> (X<sub>5</sub>) — The degree of urbanisation is measured as the percentage of urban population to the total population in each district. The data are obtained from the two Population Censuses, viz., 1961 and 1971. Though, there is a slight difference in the definition of urbanisation between the 1961 Census and 1971 Census, such a difference does not affect significantly the results of the present study.

vii) Literacy rate  $(X_6)$  — Literacy rate is defined as the percentage of literate population to the total population which is exclusive of the population in the age group 0-4 years. Literacy rates are calculated for all the districts for the two reference periods by obtaining the necessary data from the Census Reports.

viii) Infrastructure facilities  $(X_7)$  — In the present analysis, the term 'infrastructure' or 'social over heads' includes the items, namely, road mileage, railway mileage post-offices, hospitals, dispensaries and public health centres, financial institutions, primary schools and colleges, rural electrification and the registered vehicles. To quantify the availability of infrastructure facilities,

the researcher has prepared the 'composite index of infrastructure<sup>1</sup>, in each of the districts for the periods 1960-61 and 1970-71. To prepare the districtwise 'composite index of infrastructure', the data on the aformentioned items are obtained from the state Bureau of Economics and Statistics. The basic data are given in Appendix Table 4.1 for the years 1960-61 and 1970-71. These absolute figures were further processed to derive some comparable indicators for each element: of the infrastructure. Such processed data are presented in Appendix Table 4.2 for the two reference periods. From the processed data, the investigator worked out the percentage index for each item , keeping the average of the aggregate as 100 in each case for Karnataka State. Then, the district-wise 'composite index of infrastructure' were constructed by calculating the mean values of the sum of percentage index of all the items.<sup>18</sup> The

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- 18. The similar method was employed to prepare the various composite indices of development. See
  - i) Report on <u>Block Development Plan For Jabugam</u>, <u>Vadodara District</u>, M.S.University of Baroda, May 1977, pp 4,
  - ii) Report on <u>Block Development Plan for Chotaudepur</u> <u>Taluka</u>, <u>Vododara District</u>, M.S.University of Baroda, Sept. 1980, pp 18.

indices of the different items and the 'composite index of infrastructure', thus worked out, for each of the districts of Karnataka are given in the Appendix Table 4.3 for the periods 1960-61 and 1970-71. The table reveals that the degree of relative dispersion among the different indices in a given category of infrastructure is rather high. The last row of the table shows the coefficient of variation for each head of the infrastructure. The results indicate that the highest degree of relative dispersion is found in registered vehicles in both the periods. The least dispersion is found in post-offices in 1970-71 as against that for primary schools in 1960-61.

The relevant data, on all the variables, are given in Table 4.1 for the years 1960-61 and 1970-71. Throughout the analysis, the per capita income will be considered as the dependent variable and the others as the explanatory variables.

It is evident, from the data, that there are wide variations in some of the explanatory variables at both the periods. To get an idea about the extent of variations in the variables, between the districts, the coefficient of variations were calculated and are indicated in the last row of Table 4.1. It can be observed, from the results given in the table, that the TABLE 4.1 : Sources Of Variations In District Per Capita Income, Karnataka : 1960-61 and .1970-711

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Sr. Districts	Worker par- ticipation rate(in %)	Effective worker par- ticipation rate(in %)	Productivi- ty Ter worker (in Rs.)	Degree of industrial- isation (in %)	Active population (in %)	Degree of urbanisation (in %)	Effective with the rate of the rate (1n %)	Level of Infrastru- (composite inday)	tevel of Thfrastruture (composite inday)
•	1960- 1970- 61 71	1960- 1970- 61 71	1960- 1970- 67	1960- 1970- 61 71	1960- 1970- 61 71	1960- 1970- 61 71	1960- 1970- 61 71	1960- 61	1970- <sup>1</sup>
1 Kođagu	39°71 40°40	<b>57.13</b> 55.65	1816 2385	25.75 27.81	53°31 54°07	13,22 15,51	42.83 51.12	152	135
2 Shimoga	33 <b>.</b> 80 32 <b>.</b> 01	49.71 46.30	16 <b>)3 1564</b>	35.05 26.07	52.43 49.55	25°59 23°61	33,40 42,98	III	112
3 U. K.	24.44 33.68	49°51 47°54	1358 TC61 T358	31°12 30.93	52.49 51.58	17.53 17.12	23.46 47.J2	06	107
4 Chikmagulur	35°94 74.61	52°34 49°25	1.24 1762	21.64 24.30	52.81 50.94	14,98 l5,62	32 <b>°7</b> 2 40.68	140	114
5 D. K.	37.96 38.61	54°71 54°34	r32 1052	31°26 41°14	49°61 50°42	17.93 20.27	38 <b>°</b> 22 50 <b>•</b> 63	TET	125
6 Bellary	38.78 37.99	55°00 53.74	<b>181 1096</b>	26,53 25,81	53 <b>.</b> 36 51 <b>.</b> 82	22.57 27.15	24.37 29.30	62	<b>J06</b>
7 Hassan	32.05 31.75	46.51 44.85	933 I <b>10</b> 8	13.81 19.58	51.34 50.57	12,00 13,55	28.79 35.73	TTT	106
8 Tu kur	33.99 34.02	48.19 47.75	82F 785	14.50 18.52	51.68 51.07	10,16 11.71	26 <b>.</b> 32 33.96	85	84
9 Chitradurga	37.54 37.17	54.19 52.99	74: 948	20.94 23.17	51.12 50.30	17.38 20.25	29.46 26.61	76	96
10 Belgaum	35,29 35,48	50.60 50.30	- 9 823	21.04 24.87	51.53 51.43	18.02 20.54	30,67 36.06	82	86
11 Mysorc	33.40 33.61	47.25 46.89	769 1155	24.83 29.09	52.73 52.47	24.83 25.47	24.80 29.71	TTT	105
12 Mandya	33.02 32.56	47°48 46 46	7,5 960	13.91 17.42	51,72 50,00	JL.15 13,76 <sup>-</sup>	20.33 26.34	108	OIT
13 Dharwad	35,55 35 <b>.</b> 50	51.28 50.19	717 863	25.92 29.46	51.24 S0.91	26 <b>.</b> 90 31.51	39.55 45 <b>.</b> 13	98	104
14 Bangalore	30°76 31.58	43,46 43,79	826 1159	46.26 57.22	52.96 54.38	54.20 55.44	39.86 49.41	178	179
15 Kolar	35°07 34°91	49°63 49°18	673 724	17°74 20.20	52.60 51.72	22 <b>.</b> 73 20 <b>.</b> 65	24°72 31.30	TTT	TOT
16 Raichur	38.13 37.22	54.40 52.43	590 I049	21.52 20.86	53 <b>.</b> 58 51.66	14.59 15.36	18.35 23.84	58	67
17 Gulbarga	35°62 34°94	50.43 50.52	620 931	25.04 26.29	52.96 51.30	16.18 17.78	17.18 22.29	59	11
18 Bijapur	36,21 35,56	51.75 50.62	556 702	22.23 24.91	52.37 50.85	18,88 21.21	28.84 32.34	11	78
19 Bidar	33°67 33°02	47.87 48.25	586 795	21.82 25.61	51.16 49.47	12.25 14.46	16,96 23 <b>.</b> 97	60	72
Karnataka	34.97 34.74	49.33 49.13	80, 1028	25.08 29.17	52.01 51.45	22.33 24.31	2°°80 36°83	100	100
Coefficient overlation(%)	of 6.69 6.98	6 <b>.</b> 84 6.60	42°74 37.00	32 <b>.33</b> 33,54	1.93 2.52	50 <b>.</b> 03 ~6 <b>.</b> 13	27.52 26.02	31°23	25°24
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Note : For computational procedure see the Text, Section 3.

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Source: Computed from 1) Appendix Tables 3.2, 3.4, 2.1, 2.2. 11) Census of India - 1961, vol.XI, Mysore, Part II(1), Statement No.C-II, 111) Census of India - 1971, Series-14, Mysore, Part II C(11) Table No.C-II, iv) Census of India - 1961, vol.XI, Mysors, Part II F(1), Table B-1, v) Census of India - 1971, Series 14, Mysore, Part I.A, Vol.II, Statement No.10.27, v1) Censu: of India - 1961, Vol.XI, Mysore, Part II-A, pp.17, vil)Census of India-1971, 14, Mysore, Part II-A, pp 41, v11) Census of India-1971, 14 Mysore, Part I-A,Vol.II, pp.615,4x)Appendix Table 4,3.

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highest and lowest variations were found in the degree of urbanisation and in the propertion of active population, respectively, during both the periods of analysis. The variations are not insignificant in respect of productivity of labour, degree of industrialisation, rate of literacy and the composite index of infrastructure in the reference periods. The significant variations in some of these factors will be seen to throw some light on the differring levels of development of districts in Karnataka. It is also to be noticed that the variations in the active population and degree of industrialisation have increased from 1960-61 to 1970-71, whereas in respect of effective worker participation rate, labour productivity, degree of urbanisation, literacy rate and composite index of infrastructure the decline was observed during the same period.

## B. INTERRELATIONS BETWEEN THE VARIABLES

Since the purpose of the study is to know the association of District Per Capita Income ( D.P.C.I. ) with each of the factors taken singly, the coefficients of determination ( $R^2$ ) between District Per Capita Income and each of the variables, viz., effective worker participation rate, productivity, degree of industrialisation, active population, degree of urbanisation, literacy rate, composite index of infrastructure, are worked out for the years

1960-61 and 1970-71. The results are given in the last rows of the correlation matrix, Table 4.2.

The results indicate that the high District per Capita Income is positively associated with the high levels of productivity, literacy rate and infrastructure The R<sup>2</sup> between the District Per Capita in Karnataka. Income and each of the three factors, viz., productivity, literacy rate and infrastructure, in 1960-61, turned out to be 0.97, 0.22 and 0.21 respectively. However, in 1970-71, District Per Capita Income showed positive and significant correlation with productivity and literacy rate only. The R<sup>2</sup> between District Per Capita Income and productivity, District Per Capita Income and literacy rate, were 0.96 and 0.28 respectively. Since the R<sup>2</sup> between District Per Capita Income and other factors, namely, effective worker participation rate, degree industrialisation, active population, degree of urbanisation, are not found to be significant at 5 % level, no definite conclusion can be drawn about their association. In fact, D.M. Nanjundappa's time series analysis reveals that there is a positive and significant correlation between education and economic development of Karnataka, 19

<sup>19</sup> D.M. Nanjundappa, "Dynamic factors in Economic Development", Economic Advisers Division, Planning Department, Government of Karnataka, 1977.

TABLE 4.2 : Coefficient Karnataka :	cient aka :	of Correlation Matrix of Variables of Inter-District Income Variations, 1970-71.	on Matrix o	of Variable	s of Inte	r-District	Income Var	riations,
Variables		۲x	x <sub>2</sub>	x <sub>3</sub>	X.4	x <sub>5</sub>	x <sub>6</sub>	x <sub>7</sub>
l Effective Worker Participation rate	(x <sup>1</sup> )	1.0000						
2 Productivity	$(x_{2})$	0.1958	1.0000					
3 Degree of Industrialisation	(x <sup>3</sup> )	-0.1234	0.1460	1.0000				
4 Active Population	(X <sub>4</sub> )	0•0819	0.4040	0.5175	1°0000			
5 Degree of Urbanisation	(x <sup>2</sup> )	-0-2691	•0•0482	0.8226	0 <b>.</b> 5269 <b>*</b>	1.0000		
6 Literacy Rate	(x <sup>e</sup> )	0.0631	·-0.5405	0,5960	0°3420	0.3821		
7 Index of Infrastructure	(x <sub>7</sub> )	-0.2145	0.4913		0.5616	0.6647 <sup>**</sup>	0.7415**	1.0000
District Per Capita	(X)	0.3758	0.9784*	0.1188	0.4416	<b>-</b> 0,0933	0.5265	0.4386
Income 1971		(0.1412)	(0.9573 <sup>**</sup> )(0.0141)	(0°0141)	(0.1950)	(0°0087)	(0.2721 <sup>*</sup> )	(0.1924)
District Per Capita	(X)	0,3519	0.9849	0.2937	0.2152	-0.1027	0.4688	0.4589
Income 1961		(0 <b>.1</b> 238)	("1070.")	(0.0862)	(0.0463)	(0.0105)	(0.2198")	(0.2105 <sup>*</sup> )
** Significant at the	ant at	the 1% level	.	* Signifi	Significant at the	he 5% level.	е <b>1.</b>	
Note: i) Figu	res ir	Figures in brackets are	e R		-		,	
· ii) The for	result the va	results given in t the variables.	the last row	row are obtained		on the basis of	of the 1961 year data	rear data
Source; Calcula	ted fr	Calculated from Tables 2	2 <b>.1</b> and 4.1	•				

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The Multiple Regression Technique may be employed to explain the variations in per capita income. But prior to that, it is also necessary to check interrelations between different explanatory variables. Such con exercise helps to solve the problem of multi-collinearity. However, in the present work, an attempt has been made to solve the problem of multi-collinearity with reference to the year 1970-71. The coefficient of correlation matrix of all the variables under examination is given in Table 4.2.

The correlation matrix reveals that the effective worker participation rate  $(x_1)$  is not at all correlated with any of the variables. The productivity  $(x_2)$  is correlated with literacy rate  $(x_6)$  and composite index of infrastructure  $(x_7)$ . The degree of industrialisation  $(x_3)$  is correlated with active population  $(x_4)$ , degree of industrialisation  $(x_5)$ , literacy rate  $(x_6)$  and composite index of infrastructure  $(x_7)$ . The active population  $(x_4)$  is correlated with the degree of industrialisation  $(x_5)$  and composite index of infrastructure  $(x_7)$ . The degree of urbanisation  $(x_5)$  is correlated with the composite index of in frastructure  $(x_7)$ . Finally, literacy rate  $(x_6)$  is found to be correlated with the composite of index of infrastructure  $(x_7)$ . Thus, after eliminating the intercorrelated

variables, only three variables, viz., the effective worker participation rate, productivity of labour and the degree of industrialization, are left.

#### C. THE MULTIPLE REGRESSION MODELS

The different hypotheses developed in the earlier section predict that the District Per Capita Income will be positively associated with the effective worker participation ratio, productivity of labour and degree of industrialisation. The functional relationship between the above variables may be expressed as follows,

 $Y = f(X_1, X_2, X_3, u),$ 

where, Y = District Per Capita Income ( in Rs.),  $X_1$  = effective worker participation ratio,  $X_2$  = product per worker ( in Rs.),  $X_3$  = degree of industrialisation ( ratio ),  $\dot{u}$  = error term, which represents the combined effect of all other factors.

The explanation in the variations in the dependent variable (Y), then, is sought by fitting the Multiple Regressions. The possible theoretical multiple regression models have been specified

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as	fol]	OWS	з,		- ,
Y	12	α	+	β <sub>1</sub> X <sub>1</sub>	+ $\beta_2 X_2 + \beta_3 X_3 + u_{1}$ (1)
Y	=	α	+	β <sub>l</sub> X <sub>l</sub>	+ u (2)
Y	11	α	+	$\beta_2 X_2$	+ ú (3)
Y	12	α	+	<sup>β</sup> 3 <sup>X</sup> 3	+ 11 (4)
Y	=	α	+	β <sub>l</sub> X <sub>l</sub>	+ $\beta_2 X_2$ + 4(5)
Y	=	α	+	βιχι	+ $\beta_{3}X_{3}$ + u(6)
Y	<u></u>	α	+	$\beta_2 x_2$	+ $\beta_3 X_3$ + u(7)

where, Y = District Per Capita Income, (Rs.),  $X_1 = effective worker participation ratio, X_2 = Producti$  $vity of labour (Rs), <math>X_3 = degree$  of industrialisation (workforce in non-agriculture sector/total workforce in all the sectors), u = stochastic term and  $d^{\dagger}s$  and  $\beta^{\dagger}s$  are the coefficients to be estimated. To estimate the coefficients, the Method of Least Squares may be employed.

## D. RESULTS OF THE REGRESSION

The multiple regressions have been fitted to the 'cross-section data for the years 1960-61 and 1970-71. The results are given in Table 4.3. 1 2 T

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Tasy	tion Constent	onstent '	Regression Coefficie. ts	of	Independent Variables	2	~ <b>1</b> (	07480 07
	H S	ਖ		#2	<b>P3</b> 73	ц.	¥	17101-1
960-61		-340,18	6/2,646 ** (85,18)	0,3567**		66-0	66*9	889,24
·	Ì	-431°2'.	1498,590 (966,832)			0.12		2 <b>°</b> 40
-	i	-12°17		0.3680 (0.0154)		<b>7</b> 6+0		570.64**
3	T	192,96			552 <b>。</b> 518 (436 <b>。</b> 14)	0.08		1.60
×	Ì	-344.01	676。554 ** (81。491)	0.3559** (0.007)		66°0	0°99	1415.82 <sup>4*</sup>
2	Ĩ	-644.50	1324.38 (937.66)		616°768 (413°97)	0,23	81°0	2 <b>°</b> 39
=	Ĩ	<b>"</b> ĭ,343		0.3720 (0.0167)	-62 <b>。</b> 691 (84.494)	0°97	0°96	269 <b>.</b> 47
11-016	ĩ	-512,89	\$74.795 (115.62)	0°3768** (0°0091)	9°726 (41°373)	66°0	66°0	677°03**
=	ĩ	-553 <b>。</b> 15	1911.11 (1141.67)			0.14		2.80
×	1	-44°69		0,3023 (0,020)		0°95		382 °92 **
=	Э.	334°72			217 <b>.</b> 28 (440.37)	10°0		0.24
z	ì	<b></b> 508,58	970.534 (110.77)	0°3772 (0°008)		66°0	66°0	1079.24 <sup>**</sup>
=	Ĩ	-684°36	2006.79 (1163.2)		306.826 (419.92)	0.17	0.07	1.62
-	1	-34.16		0,3937 **	-44.956	0,96	0.95	** 182 <b>.1</b> 4

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(Figures in brackets are standared errors of coefficients) \*\* Significant at 1% level.

The regression results (Equation 1) suggest that, the effective worker participation ratio and productivity are the only significant variables to explain the variations in District Per Capita Income of Karnataka State. The regression coefficients of the two factors, with expected signs before them, turned out to be highly significant in both the cross-section studies. It is also observed that the degree of industrialisation seems to have no significant impact on per capita income inequalities. The regression coefficient has positive sign before it in 1970-71, whereas it has a negative sign before it in 1960-61. Such a negative sign in 1960-61 is quite opposite to the view expressed by the hypothesis formulated earlier. However, the values of regression coefficients of degree of industrialisation are not at all significant, at 5 % level, in both the years. Hence, there is no serious concern about the hypothesis advanced. On the whole, the multiple regression models fitted to the data suggest that, the selected variables explain most of the district income inequalities in Karnataka for the periods 1960-61 and 1970-71. The overall fit, measured by the values of  $\overline{R}^2$ , turned out to be highly significant at 1% level of significance.

However, to know the extent to which each factor i.e.,  $X_1$ ,  $X_2$  and  $X_3$ , is individually significant in explaining the bar; ations in per capita income and how for they are significant, for the same purpose, when associated with each other alternatively, step regression equations (Equations 2 to 7) have been fitted to the 1960-61 and 1970-71 data.

The results, presented in Table 4.3, indicate that the productivity of labour turns out to be a highly significant factor, individually, in explaining the district income variations (Equation 3).  $\beta_2$  is found to be significant at 1 % level in both the periods. It also turns out to be significant when associated with either effective worker participation ratio or degree of industrialisation in both the cross-sectional analysis (Equation 5 and 7).

It was also found that, neither the effective worker participation ratio nor the degree of industrialisation is individually significant to explain the district income differences (Equation 2 and 4). However, the effective worker participation ratio turns out to be significant when associated with productivity in the periods under examination. The effective worker participation ratio, and productivity of labour together explain 99 % variations. But the effective worker participation ratio turns out to be insignificant when

associated with the degree of industrialisation. These two factors together explain only 13 % and 7 % variations in 1960-61 and 1970-71 respectively (Equation 6). Though, the degree of industrialisation and productivity together explain 96 % and 95 % variations in 1960-61 and 1970-71 respectively,  $\beta_3$  has negative sign before it in both the periods. Since  $\beta_3$  is not statistically significant at 5 % level, no decisive conclusions can be drawn about its influence on District Per Capita Income inequalities.

### 4. GROWTH OF FACTORS

Since the growth inequalities of some strategic variables implicitly explain the differing levels of economic development between the regions, the everage growth rates of all the factors are worked out for the decade 1961 to 1971 and are presented in Table 4.4 . The table reveals many facets of regional changes in the factors of income variations in Karnataka between the two bench-mark years. Considering the state's growth rate as the dividing line between the high and low growths, the high growth of District Per Capita Income is found to be associated with the low growth of the total workforce, workforce in the non-agriculture sector, active population and literates in Bijapur district only between the years

Sr. Districts	District Per Capita Income	Total Work- force	Labour Product- ivity	Workers in S + T Sectors	Active Popula- tion	Urban Popula- tion	Litera- tes	Change in composite index of infrastru- cture
l Kođagu	25 <b>.1</b> 3	19,24	23,86	22 <b>.</b> 21	15,86	27.26	30,14	-17
2 Shimoga	-14.17	21.15	-08,25	<b>-10,</b> 96	17,28	15 <b>.</b> 28	40.11	ч
3 U. K.	-25.16	20 <b>.41</b>	-22°31	16.47	17,35	19.69	33,19	17
4 Chikmagalur	22.13	18.75	24.97	25 <b>°</b> 02	. 15°93	22.25	36.09	-26
5 D. K.	<b>13</b> ,66	26,13	11.41	39.76	20,65	28 <b>.</b> 69	39.97	ю І
6 Bellary	27.16	20 <b>.1</b> 6	28.74	14.29	16.06	32,623	32.13	14
7 Hassan	15.06	21,88	15°79	42°08	17.49	28 <b>.</b> 03	35 <b>.</b> 27	រ ប
8 Tumkur	-05.24	19.14	-02°03	34.30	15 <b>.</b> 00	27.08	35 <b>•</b> 22	-1
9 Chitrædurga	22 <b>.72</b>	26.42	23,63	28.47	20 <b>.41</b>	32.79	37.55	11
10 Belgaum	<b>6</b> 5 <b>°</b> 60	22 <b>.81</b>	08 <b>•33</b>	31 <b>•1</b> 5	17.97	28.19	30.66	-4
ll Mysore	33.76	60 <b>.</b> 91	33 <b>.</b> 4 <b>1</b>	65 <b>。</b> 62	19 <b>.</b> 55	21.57	33,11	<b>1</b>
12 Mandya	18,21	26,59	19.27	36 <b>°</b> 94	19.4 <b>1</b>	36,98	40.10	N
13 Dharwad	16.94	19.94	16,92	26,94	16.13	28,91	27.89	9
14 Bangalore	30.60	37 <b>.</b> 96	28.73	41.41	27.53	27.24	40.19	Ч
15 Kolar	06 <b>°71</b>	17.01	07.04	25 <b>.</b> 00	13.48	06,38	33 <b>•</b> 05	-10
<b>15</b> Raichur	42 <b>.31</b>	25 <b>.</b> 55	43.76	17.78	19.45	26.14	39.72	თ
17 Gulbarga	32.00	21.92	33.40	21.88	16,93	26 <b>.</b> 79	36.78	12
18 Bijapur	19.60	<b>17.46</b>	20.80	24.07	<b>13.</b> 89	25.59	25.62	7
19 Bidar ,	<b>250</b> 9	21.86	26,29	30.12	16 <b>.</b> 98	31,82	41.76	12
Karnataka	17 <b>.</b> 93	23 <b>.</b> 39	22.67	31 <b>.</b> 24	18,50	26.05	35.13	1
C.V.(%) .:	100.68	40,89	92.19	53,98	17.55	26,37	13.09	1
	,	Source :	Same as the	sources	of Table 4	• T •		5

4.4 : Average Growth Rates of Sources of Inter-District Income Differences,

TABLE

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1961 and 1971. The high growth of District Per Capita Income and productivity are associated with the low growth of labourforce in the non-agriculture sector in as many as eight districts, viz., Kodagu, Chikmagalur, Chitradurga, Raichur, Gulbarga, Bijapur and Bidar. This is indicative of the insignificant contribution of industrialisation to the growth of these districts. Perhaps, the high growth of productivity in the Primary Sector may explain the high growth of income and the overall product per worker in the above districts. Further, it is to be noted that the low growth of District Per Capita Income and productivity are associated with the high growth of total workforce, workforce in the agriculture sector, active population and urbon population in Dakshina Kannada. It seems the high density and growth of population in the district may show such an association.

The coefficients of variation given in the last row of Table 4.4, reveal that there are wide variations in the growth rates of product per worker, workers in the nonagriculture sector, and total workforce, the coefficients of variation being 92.19 %, 53.98 % and 40.89 % respectively. The least variations are observed in the growth rates of literates between 1961 and 1971.

#### 5. CONCLUSION

i) Significant variations are found in some of the strategic factors of inter-district income differences in Karnataka for the periods 1960-61 and 1970-71. However, it is observed that the variations in the active population and the degree of industrialisation have increased from 1960-61 to 1970-71, wheareas, there has been a decline in respect of effective worker participation tate, labour productivity, degree of urbanisation, literacy rate and composite index of infra-structure during the same period.

ii) The correlation analysis revealed that the high District Per Capita Income is positively associated with the high levels of labour productivity, literacy rate and infrastructure in Karnataka. However, there seems to be no definite association between the District Per Capita Income and the factors like, effective worker participation rate, degree of industrialisation, active population and urbanisation.

iii) The Multiple Regression Analysis, conducted for the cross-sectional data for the years 1960-61 and 1970-71, indicates that the effective worker participation rate and labour productivity are the only significant variables to explain the inter-district income differences in Karnataka

Though, the degree of industrialisation was included in the multiple regression analysis, its coefficients were not found to be significant in both the periods of study. The selected variables explained almost all the District Per Capita Income variations in Karnataka for the years under examination.

iv) The growth rates, for the decade 1960-61 to 1970-71, exhibit wide variations in respect of productivity of labour, workforce in the non-agriculture sector, and total workforce as compared to the variations in the other factors.

APPENDIX TABLE	4~L ^		Basic Date	ta For f	au antaing up		The Indices		For The	The Districts of Karnataka	ats of	Karnat	aka .	1960-61	.61 and	and 1970-71.
Sr。 Districts No。	Rallway lenyth in K.Mş,	ay nin	Post ( es ( h	Offic- Nos:)	Hospitals, Dispendar ies & PoH. Centers(No	Hospitals, Dispendar- ies & P.H. Centers(Nos.)	1 84 19~		Primary Schools (Nos.)	A S	Collegus (all type (Nos.)	legus trypes)	Villages and towns electrified (Nos.)	es and ified	Registere vehicles (Nos.)	as ss c
	1960- 61	1970- 71	. 19 30- 61	1970- 71	1960- 61	1970- 71	1960- 61	-0261	1960- 61	11 11976.11	-1' 1960-71970- 61 71	1 1	1960- 61	1976- 71	1960- 61	1970- 71
1 Kodagu		3	67	158	48	44	77	53	332	36L	7	~	10	66	1173	2130
2 Shimoga	113	113	220	188	102	86	28	83	1683	1691	'n	11	363	915	1515	5450
3 U. K.	40	40	12.	300	52	ដ	34	75	1350	1486	რ	Ļ	4	276	876	183 <sup>r</sup>
4 Chikmagalur	97	97	120	257	92	6 u	23	<b>۲</b>	113	1248	4	4	225	543	907	1810
5 D. K.	16	16	637	694	58	126	106	225	1471	1584	20	28	145	369	3447	13350
6 Bellary	209	2 09	245	421	40	51	18	56	972	1283	4-	හ	101	364	1168	±097
7 Hassan	137	137	140	356	94	73	0T	47	1641	1825	6	7	166	528	660	2376
8 Tumkur	68	89	261	504	70	73	TT	52	2335	1584	4	8	510	878	657	1474
Chitradurga	121	121	238	421	LL	76	17	52	1567	1664	6	15	262	723	663	2479
10 Belgaum	217	217	367	615	τ. Γ	74	78	167	1952	2076	12	20	თ	235	2537	8412
11 Mysore	121	121	251	508	311	117	28	16	2088	2225	21	30	341	703	2485	7112
Mandya	64	64	124°	395 795	66	61	ហ	48	1352	1494	4	· ·	230	543	461	1313
Dharwad	306	306	£6£	516	52	6 93	89	5LT	1812	1852	30	27	40	592	1802	7742 -
Bangalore	290	348	241	496	122	166	82	254	2773	3341	37	54	843	1160	16064	51465
Kolar	241	241	138	342	96	86	13	50	2015	2172	ŝ	٢	814	135	1837	2316
Raichur	105	105	271	425	26	52	14	54	1098	1409	ស	ß	12	317	1821	3295
Gulbarga	225	225	375	534	τε	66	11	40	1354	1558	ΠO	12	ŋ	312	637	3023
Bijapur	201	201	354	645	44	61	57	66	1889	1953	ø	<b>7</b> 6	۵v	299	987	2693
Bidar	89	68	175	245	17	23	4	24	619	115	ヤ	4	ഹ	187	275	687
Karnataka	2699	2757	4669	82.08	- 1248	1341 =	=640	1695	28630	32630	175	274	4193	10401	: 39072	123259

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Stand Large all Number of Number	anau, vrovajst	3							,					-				-	- 
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Sr. Districts Lo.	Rcad in K. 100 s area	length M. per g.K.M.	Raflw lengt K.M. L <sup>TO</sup> r K.M.	lay per q.		r of Office akh of ation	Numbe Numbe s Hosp d.2.h res p lakh Popui	oltals pltals insarik i.Cent- ier or	63 10 1	at of			пора	trges trges lekh n ation			1	stere stere of atio
Kodagu27730.041.614.011.3714.010.6.67.55.55.55.55.55.55.55.55.55.55.55.55.55.55.55.612.70.332.912.70.332.911.00.352.127U. K.23330.396.3717.745.75.56.16.16.16.19.10.52.325123D. K.25350.130.130.139.03.95.61.11.459.61.10.52.331.25D. K.25350.110.120.120.139.65.61.11.451.451.3352.20D. K.350.200.120.130.156.61.14.3731.4721.055.20D. Hamsean34522.012.012.0130.15.14.50.83.71471190.71.11.30Parker31370.640.120.120.115.14.50.83.71471191.11.201.20Distributing21212.012.0115.015.05.51.41.41.41.41.4Plater31313131313131313131313131 <tr< th=""><th></th><th>1960- 61</th><th>1970- 71</th><th>_960- 61</th><th>1</th><th></th><th></th><th></th><th></th><th>,</th><th>- 1970. 71</th><th></th><th>1970</th><th>1</th><th>1970</th><th></th><th>1</th><th>- 1960-</th><th>F F</th></tr<>		1960- 61	1970- 71	_960- 61	1					,	- 1970. 71		1970	1	1970		1	- 1960-	F F
Rehimoga     29     41     1,07     1,47     25,7     51.1     6,1     0,1     0,0     20,1     0,0     20,1     0,1     0,0     20,1     0,1     0,0     20,1     0,1     0,0     20,1     20,1     0,1     0,0     20,1     20,1     10,1	l Koðagu	27	5	1	3	30.0	41.8	14,9	11.		14,0	1	95	0	0.5	J.5	) ,	J53	. 56
U. K.   23   33   0.39   0.6.37   17.7   45.7   6.1		29	41	1.07	1.07	21.6	29 <b>°</b> 8	10°0	6,6		6 <b>°4</b>		145	ő	0°8	2U.B	ស	149	4L
Chltmagelur     20     36     1.35     2.01     3.49     15.4     8.0     3.9     5.8     1.1     1.1     2.3     2.3     5     5     1.35     2.01     3.01     2.01     3.01     2.01     3.01     5.01     3.01     5.01     2.01 <td>3 U. K.</td> <td>23</td> <td>33</td> <td>0.39</td> <td>0°37</td> <td>11.7</td> <td>45°7</td> <td>6,1</td> <td>τ° ϶</td> <td>4°0</td> <td>8<b>°</b>8</td> <td></td> <td>175</td> <td>°<b>°</b>0</td> <td>1°1</td> <td>0°3</td> <td>3,</td> <td>127</td> <td>21</td>	3 U. K.	23	33	0.39	0°37	11.7	45°7	6,1	τ° ϶	4°0	8 <b>°</b> 8		175	° <b>°</b> 0	1°1	0°3	3,	127	21
D. K.     25     35     0.13     0.0     40.0     3.5     6.6     1.6     9.     82     1.4     21.3     5     20       Bellary     13     22     2.01     2.01     2.01     2.01     2.0.2     3.7.5     4.4     4.5     2.0     5.0     10.7     17.1     6     138       Hassan     34     52     2.01     2.01     15.6     72.3     10.5     6.6     1.1     4.3     733     168     1.0     7.2     22     74       Tunkur     31     37     0.64     19.1     1.0     5.1     4.5     0.0     0.7     17.1     6     138       Chitradurga     21     26     1.01     1.01     1.01     1.01     1.01     1.0     5.0     5.1     3.7     5.1     4.5     5.7     5.1     7.2     5.2     5.1     7.2     5.2     7.2     7.2     7.2     7.2     7.2     7.2     7.2     7.2     7.2		30	36	1.34	1,35	20°1	3 <b>4 °</b> 9	15.4	8.0		5°8		169	0°.	0°5	23.2	ъ	152	24
Bellary   13   22   2.01   2.01   2.03   37.5   4.4   4.5   2.0   5.0   101   14   0.   0.7   17.1   6   138     Hassan   34   52   2.01   15.6   7.0   5.1   4.5   0.6   1.1   4.3   37   166   1.4   0.   0.7   17.1   6   138     Tunkur   31   37   0.44   0.01   15.6   7.0   5.1   4.5   0.0   0.7   1.1   21.0   5.7   74     Chitradurga   21   26   1.12   1.01   1.01   1.01   1.01   1.01   1.01   1.01   1.01   2.0   5.5   1.7   5.7   5.1   4.5   5.7   122   129   13.1   2.4   2.7   5.1   4.7   125   10.7   1.4   2.2   2.4   4.1   4.2   4.1   4.2   5.1   4.2   4.2   14.2   14.2   5.1   4.5   1.2   1.4   5.7   4.2   12.2   5.4   4.2   14.2		25	35	€1°0	6T°0	40°7	35,8	7°5	<b>3.5</b>				82	ı,	1.4	21°3	<b>ц</b> )	220	68
Hassen 34 52 2.01 2.01 15.6 22.3 10.5 6.6 1.1 4.3 73 168 1., 0.6 7.2 2: 74 Turkur 31 37 0.84 0.84 19.1 31.0 5.1 4.5 0.8 3.2 171 159 0.7 0.5 20.8 3: 46 Chitradurga 21 26 1.12 1.012 1.02 21.7 30.1 7.0 5.4 1.6 3.7 14; 119 0.1 1.1 21.0 57 61 Belgaum 20 23 1.62 1.62 18.5 25.4 2.7 3.1 3.9 5.9 9f 86 0.7 0.8 0.7 21 128 Mysore 31 47 1.01 1.01 15.0 24.5 6.9 5.5 1.7 $4.7$ 125 107 1. 1.4 22.4 4: 149 Mysore 35 45 3.63 4.35 9.6 14.7 4.9 5.0 3.3 7.6 112 99 1. 2.8 36.4 4f 641 1 Dharwad 24 29 2.23 2.03 10.7 22.6 7.6 5.3 0.6 $4.2$ 1.6 112 99 1. 2.8 36.4 4f 641 1 Kolar 30 34 2.92 2.93 10.7 22.6 7.4 5.7 1.0 3.3 156 14.9 0. 0.7 0.4 2.8 76 41 1 Kolar 30 34 2.92 2.93 10.7 22.6 7.4 5.7 1.0 3.3 156 14.9 0. 0.7 2.8 36.4 4f 641 1 Kolar 10 18 0.74 0.75 24.6 30.0 2.4 3.7 1.3 5.8 10C 0.0 0.7 0.4 0.9 22 75 Bajapur 18 26 1.6 1.37 1.99 26.8 30.7 2.6 3.1 3.7 1.3 5.8 10C 0.0 0.7 0.4 2.7 46 Bijapur 18 26 1.6 1.07 1.4 2.2 2.9 1.3 7.5 2.6 7.6 2.9 3.8 107 2.0 0. 0.7 0.4 2.7 46 Bijapur 18 26 1.6 1.07 1.03 2.6 2.6 3.0 2.6 2.1 3.4 5.0 1.4 98 0.7 0.8 2.6 31 41 Kainataka 23 3.1 1.40 1.44 19.8 28.0 5.3 4.6 2.7 5.8 121 1.1 0.7 0.9 15.8 3E 166 Karnataka 23 1.40 1.44 19.8 28.0 5.3 4.6 2.7 5.8 121 2.11 0.7 0.9 15.8 3E 166	6 Bellary	13	22	2 <b>°</b> 11	2°11	26 <b>.</b> 8	37.5	4°4	4 <u>5</u>	2.0	5,0		114	•	0.7	17.1	ĕ	138	36
Turwtur     31     37     0.84     0.84     19.1     31.0     5.1     4.5     0.8     3.2     171     159     0.1     0.1     1.1     21.0     5.5     4.5       Chitradurga     21     26     1.42     1.01     1.01     21.7     30.1     7.0     5.4     1.6     3.7     147     119     0.1     1.1     21.0     5     5       Belgaum     20     29     1.47     1.26     1.02     1.50     24.5     5.7     3.1     3.7     1.47     1.2     1.01	7 Hassan	34	52	2°01	2.01	15 <b>°</b> 6	22°3	10.5	6 <b>°</b> 6		4°3	-	168	٦,	0.6	7.2	51	74	21
Chitradurga   21   26   1.12   1.01   21.0   5.4   1.6   3.7   147   1.01   21.0   5.5   5.1     Belgaum   20   29   1.62	8 Tunkur	31	37	0.84	0.84	19 <b>.</b> 1	31°0	2°7	4,5	0,8	3 <b>°</b> 2	171	159	<b>°°</b> 0	0.5	20,8	ž	46	6
Belgaum   20   28   1.62   18.5   25.4   2.7   3.1   3.9   5.9   91   86   0.0   0.8   0.7   21   128     Mysore   31   47   1.01   1.01   15.0   24.5   5.9   5.5   1.7   4.7   125   107   1.   1.4   22.4   47   149     Mandya   76   107   1.2   1.29   13.8   25.6   7.6   5.3   0.6   4.2   156   14   47   51     Dharwad   24   29   2.23   20.1   22.0   2.7   4.6   7.6   125   129   0.   0.6   4.7   149   51   14   14   51   14   14   51   14   51   14   51   14   51   14   51   14   51   14   51   14   51   14   51   14   51   15   51   51   51   51   51   51   51   51   51   51   51   51   51   51		21	26	_	1°12	21.7	30°1	7°0	5,4	9°1		145	611	0.0	1.1	21.0	່ທີ	51	17
Mysore     31     47     1.01     1.01     15.0     24.5     6.9     5.5     1.07     1.6     1.6     1.7     1.4     2.2.4     4:     149       Mandya     76     107     1.28     1.28     13.8     25.6     7.6     5.3     0.6     4.2     157     129     1.4     2.2.9     4:     149       Dharwad     24     29     2.23     2.23     2.01     22.0     2.7     4.0     4.6     7.6     93     78     1.1     1.2     2.9     4.7     4.9     5.0     3.3     7.6     11.2     2.6     4.7     4.9     5.0     3.3     7.6     1.2     1.4     4.6     4.7     4.7     4.9     5.0     3.3     7.6     11.6     1.6     1.4     142     142     142     142     142     142     142     142     142     142     142     142     142     142     142     142     142     141     16     16		20	33 8	l.62	1,62	រិ°ខ1	25,4	2.7	<b>З°1</b>	3,9	6 <b>.</b> 6	36	86	0.1	0.8	0:1	2(	128	34,
Mandya   76   107   1,28   1.29   13.8   25.6   7.6   5.3   0.6   4.2   157   129   0.   0.6   17.1   47   51     Dharwad   24   29   2.23   2.0.1   22.0   2.7   4.0   4.6   7.6   95   1.1   1.2   2.9   4.7   92     Bengalore   35   45   3.63   4.35   9.6   14.7   4.9   5.0   3.3   7.6   119   99   1.   2.8   46   41   1     Rolar   30   34   2.92   2.93   10.7   22.6   7.4   5.7   1.0   3.3   156   1.4   9   47   142     Kolar   10   18   0.7   0.73   2.4   3.7   1.3   3.3   1.6   1.4   3.7   1.4   98   0.7   2.9   47   142     Raichur   10   18   2.1   1.3   2.3   3.7   1.3   3.4   5.6   47   0.4   5.7   46   47	ll Mysore	31	47		1.01	15.0	24.5	<b>0°0</b>	5°2	1°1	4.7	125	107	J.	1.4	22 <b>.</b> 4	4.	149	Ϋ́́E
Dharwad   24   29   2.23   2.23   2.0.1   22.0   2.7   4.0   4.6   7.6   95   78   1.   1.2   2.9   4.5   92     Bengalore   35   45   3.63   4.35   9.6   14.7   4.9   5.0   3.3   7.6   119   99   1.   2.8   36.4   46   641   1     Kolar   30   34   2.92   2.93   10.7   22.6   7.4   5.7   1.0   3.3   156   2.43   0.   0.5   29.5   47   142     Kolar   10   18   0.74   0.75   24.6   30.0   2.4   3.7   1.3   3.8   100   2.0   0.9   0.5   32.5   47   142     Raichur   10   18   0.7   0.7   2.4   3.7   1.3   3.4   4.6   4.7   4.6     Bijapur   18   26   1.63   26.4   29.7   2.6   2.9   3.9   0.7   0.0   0.7   2.7   4.6 <th< td=""><td></td><td></td><td>102</td><td></td><td>1<b>.</b>29</td><td>13,8</td><td>25.6</td><td>7.06</td><td>5°3</td><td>0,6</td><td>۶<b>°</b>2</td><td>150</td><td>J 29</td><td><b>°</b></td><td>0,6</td><td>17.1</td><td>4C</td><td>51</td><td>11</td></th<>			102		1 <b>.</b> 29	13,8	25.6	7.06	5°3	0,6	۶ <b>°</b> 2	150	J 29	<b>°</b>	0,6	17.1	4C	51	11
Bengalore 35 45 3.63 4.35 9.6 14.7 4.9 5.0 3.3 7.6 119 99 1. 2.8 36.4 4f 641 1 Kolar 30 34 2.92 2.93 10.7 22.6 7.4 5.7 1.0 3.3 156 4.43 0. 0.5 29.5 47 142 Raichur 10 18 0.74 0.75 24.6 30.0 2.4 3.7 1.3 3.8 107 200 0. 0.4 0.9 22 75 Gulbarga 6 16 1.37 1.39 26.8 30.7 2.2 3.8 0.8 2.3 97 90 0. 0.7 0.4 27 46 Bijapur 18 26 1.18 1.13 22.5 2.6 7 1 3.4 5.0 114 98 0.7 0.8 0.7 22 59 Bidar 7 25 1 62 1.63 26.4 29.7 2.6 2.8 0.6 2.9 93 37 0. 0.5 0.8 31 41 Karnataka 23 33 1.40 1.44 19.8 28.0 5.3 4.6 2.7 5.8 121 1.1 0.7 0.9 15.8 36 166 Fources : 1) Road development in Karnataka State (Sixth Edition Governme, of Kamatics, 1979, pp 70-	13 Dharwad	24	29		2 <b>.</b> 23	20.1	22 <b>。</b> 0	2.7	<b>4</b> ° 0	4°6	7,6	6	78	, • T	ĩ.2	2.9	4-	92	33
Kolar   30   34   2.92   2.93   10.7   22.6   7.4   5.7   1.0   3.3   156   :43   0.   0.5   29.5   47   142     Raichur   10   18   0.74   0.75   24.6   30.0   2.4   3.7   1.3   5.8   100   0.5   0.4   0.3   22   75     Gulbarga   6   16   1.37   1.39   26.8   30.7   2.2   3.8   0.9   0.5   0.7   0.4   0.5   29   75     Bijapur   18   26   1.18   21.3   22.5   2.6   21   3.4   5.0   114   98   0.7   0.4   27   46     Bidar   7   25   1.62   2.6   2.9   3.7   3.7   3.7   3.7   3.7   3.7   3.7   3.7   3.7   3.7   3.7   3.9   97   90   0.7   0.4   0.7   27   46     Bidar   7   25   1.62   1.63   26.6   2.9   2.9   9.7		35	45	<b>`</b>	4°35	9.6	14.7	4°0	5°0	3 <b>*</b> 3	1.6	119	66	, J.,	3.8	36,4	46	641	1529
Raichur   10   18   0.74   0.75   24.6   30.0   2.4   3.7   1.3   3.8   10C   100   0.*   0.4   0.9   22   75     Gulbarga   6   16   1.37   1.39   26.8   30.7   2.2   3.8   0.8   2.3   97   90   0.   0.7   0.4   27   46     Bilapur   18   26   1.38   21.3   22.5   2.6   7   3.4   5.0   114   98   0.7   0.8   31   41     Bidar   7   25   162   1.63   26.4   29.7   2.6   2.9   93   87   0.0   0.7   25   59     Bidar   7   25   1.62   1.63   26.4   29.7   2.6   2.9   93   87   0.0   0.7   0.7   25   59     Bidar   7   25   1.64   19.4   19.8   28.0   5.6   114   98   0.7   0.8   14.1   1   4.6   2.7   5.8   121 <t< td=""><td></td><td>30</td><td></td><td></td><td>2.93</td><td>10°1</td><td>22<b>.</b>6</td><td>7 °4</td><td>5°7</td><td>1.0</td><td>3°3</td><td>156</td><td>.43</td><td>°0</td><td>0.5</td><td>29.5</td><td>47</td><td>142</td><td>72</td></t<>		30			2.93	10°1	22 <b>.</b> 6	7 °4	5°7	1.0	3°3	156	.43	°0	0.5	29.5	47	142	72
Gulbarga   6   16   1.37   1.39   26.8   30.7   2.2   3.8   0.8   2.3   97   90   0.   0.7   0.4   27   46     Bıjapur   18   26   1.18   21.3   22.5   2.6   7   3.4   5.0   114   98   0.7   0.7   22   59     Bidar   7   25   1.63   26.4   29.7   2.6   2.9   93   87   0.   0.5   0.8   31   41     Karnataka   23   31   1.40   1.44   19.8   28.0   5.8   121   11   0.7   0.9   15.8   36   166     Karnataka   23   31   1.44   19.8   28.0   5.8   121   11   0.7   0.9   15.8   36   166     Karnataka   23   31   1.46   1.94   19.8   28.0   166   166   166   166   166   166   167   10.9   167   166   166   166   166   166   166		10		0°14	0.75	24°6	30°0	2.4	3.7	1 <b>.</b> 3	3,8	TOC	00 7	, 0°,	0°4	6°0	22	75	23.
Bijapur   18   26   1.08   21.3   22.5   2.6   7   3.4   5.0   114   98   0.7   22   59     Bidar   7   25   162   1.63   26.4   29.7   2.6   2.8   0.6   2.9   93   37   0.   0.5   0.8   31   41     Karnataka   23   33   1.40   1.44   19.8   28.0   5.3   4.6   2.7   5.8   121   11   0.7   0.9   15.8   36   166     Karnataka   23   33   1.40   1.44   19.8   28.0   5.3   4.6   2.7   5.8   121   1.1   0.7   0.9   15.8   36   166     Sources   1   Road development in Karnataka State (Sixth Edition   Governme   of Kannat   of Kannat   of Kannat   0.9   157.0   0.9   0.6   0.6   0.6   0.6   166		ę		1.37	1 <b>.</b> 39	26.8	30.7	2°2	3.8	0.8	6.5	97	90	°0	0.7	0.4	32	46	17,
Bidar   7   25   1 62   1.63   26.4   29.7   2.6   2.8   0.6   2.9   92   37   0.   0.5   0.8   31   41     Karnataka   23   33   1.40   1.44   19.8   28.0   5.3   4.6   2.7   5.8   121   1.1   0.7   0.9   15.8   36   166     Karnataka   23   33   1.44   19.8   28.0   5.3   4.6   2.7   5.8   121   1.1   0.7   0.9   15.8   36   166     Sources   1   Road development in Karnataka State (Sixth Edition   Governme   of Kannat   of Yannat   370-   0.		18	26		1.18	21°3	22 <b>°</b> 5	2.6	۲ د	3°4	5°0	114	98	` <b>°</b> 0	0°8	0.7	22	59	13(
23 33 1.40 1.44 19.8 28.0 5.3 4.6 2.7 5.8 121 11 0.7 0.9 15.8 3E 166 : 1) Road development in Karnataka State (Sixth Edition Governme of Karnatics, 1979, pp 70-		٢	25	w	1 <b>.</b> 63	å	29°7	2,6		0.6	9 <b>.</b> 9	56	37	<b>°</b> 0	0.5	0 <b>°</b> 8	31	4 <b>1</b>	10
: 1) Road development in Karnataka State (Sixth Edition Governme ) of Kannai (3, 1979, pp	Karnataka	23	33	4	1。44		00	•	4°6	2.7	8°2	121	TT	0.1	6°0	1 0	3e	166	42.1
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D. K.     107     106     14     13     206     128     70     141     252     200     78       Bellary $557$ 67     151     147     135     134     83     98     74     86     88       Hassan     148     158     144     140     79     115     196     143     41     74     151       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Rindya     31     72     70     76     88     130     117     59     64     118       Mysore     135     142     72     70     76     88     130     122     63     81     103       Mysore     133     309     91     51     143     115     22     72     124       Madya     330     309     155     102     79     127     129     126	D. K.     107     106     14     13     206     128     70     141     252     200     78       Bellary $557$ 67     151     147     135     134     83     96     74     86     88       Hassan     148     158     144     140     79     115     96     98     74     86     88       Hassan     135     112     60     58     96     111     96     98     74     151     151       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Wysore     135     142     72     70     76     88     103     103     103     103     103     104     104     119     103       Madya     330     309     91     51     143     115     123     134     103       Madya     133     103     103     123	D. K.     107     106     14     13     206     128     70     141     252     200     78       Bellary     .57     67     151     147     135     134     83     98     74     86     88       Hassan     148     158     144     140     79     115     96     98     74     86     88       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Chitraduuga     91     79     80     73     137     136     137     144     119     81       Wandwa     135     142     72     70     76     88     130     132     81     103       Wandwa     104     88     155     102     79     127     124     119     98       Wandwa     104     88     153     125     167     131     176     124     103	Chikmaglur 130			102	3	291	174	144	117	157	152
Bellary $57$ $67$ $151$ $147$ $135$ $134$ $83$ $98$ $74$ $86$ $88$ Hassan $148$ $158$ $144$ $140$ $79$ $115$ $198$ $143$ $41$ $74$ $151$ Tunkur $135$ $112$ $60$ $58$ $96$ $111$ $96$ $98$ $30$ $55$ $141$ Tunkur $135$ $112$ $60$ $58$ $96$ $111$ $96$ $98$ $30$ $55$ $141$ Belgaum $87$ $85$ $116$ $113$ $993$ $91$ $51$ $67$ $144$ $119$ $81$ Mysore $135$ $142$ $72$ $70$ $76$ $88$ $130$ $122$ $64$ $118$ Mysore $135$ $142$ $72$ $70$ $91$ $143$ $115$ $52$ $72$ $72$ $124$ Mysore $136$ $104$ $88$ $150$ $70$ $76$ $88$ $144$ $119$ $81$ Mysore $130$ $104$ $80$ $70$ $70$ $124$ $107$ $122$ $121$ $77$ Bangalore $152$ $137$ $259$ $50$ $70$ $124$ $103$ $77$ $129$ Bangalore $152$ $137$ $259$ $102$ $102$ $124$ $107$ $124$ $37$ $57$ $124$ Bangalore $152$ $137$ $259$ $302$ $48$ $53$ $202$ $126$ $124$ $177$ $128$ Bangalore	Bellary     JS7     67     151     147     135     134     83     98     74     86     88       Hassan     148     158     144     140     79     115     196     143     41     74     151       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Chitraduuga     91     79     106     103     107     59     64     118       Belgaum     87     85     116     113     993     91     51     151     167     144     119     81       Mysore     135     142     72     70     76     88     151     173     117     119     81       Mandya     330     309     91     90     70     74     124     174     119     81       Mandya     330     91     143     115     125     124     170     131     77 <td>Bellary     55     67     151     147     135     135     136     144     147     135     135     135     141     147     135     141     74     151       Tumkur     135     112     60     58     96     111     96     93     30     55     141       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Pelgaum     87     85     116     113     93     91     51     67     144     119     81       Mandya     330     309     91     70     70     71     73     81     103       Mandya     330     309     91     70     71     74     113       Mandya     330     309     91     70     71     74     103       Mandya     330     309     162     123     11     143     117     103</td> <td>D. K. 107</td> <td></td> <td></td> <td>206</td> <td>2</td> <td>91</td> <td>4</td> <td>252</td> <td>200</td> <td>78</td> <td>74</td>	Bellary     55     67     151     147     135     135     136     144     147     135     135     135     141     147     135     141     74     151       Tumkur     135     112     60     58     96     111     96     93     30     55     141       Tumkur     135     112     60     58     96     111     96     98     30     55     141       Pelgaum     87     85     116     113     93     91     51     67     144     119     81       Mandya     330     309     91     70     70     71     73     81     103       Mandya     330     309     91     70     71     74     113       Mandya     330     309     91     70     71     74     103       Mandya     330     309     162     123     11     143     117     103	D. K. 107			206	2	91	4	252	200	78	74
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Mysore135142727076881301226381103Mandya330309919070911431152272124Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Kolar435553521241074580486683Kulbarga2648971351104283304080Gulbarga264884971351104283304080Bijapur787913310649671268694Bidar307613313310649611268694Karnataka100100100100100100100100100100100100	Mysore     135     142     72     70     76     88     130     122     63     81     103       Mandya     330     309     91     90     70     91     143     115     22     72     124       Dharwad     104     88     159     155     102     79     51     87     170     131     77       Bangalore     152     137     259     302     48     53     92     109     122     131     77       Bangalore     152     137     259     302     48     51     140     123     131     98       Kolar     130     103     209     203     54     81     140     124     37     57     129       Raichur     13     55     135     110     42     83     30     40     80       Bidar     78     73     133     106     49     61     126     64     94	Mysore135142727076881301326381103Mandya330309919070911431152272124Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga2648971351104283304080Bijapur73761161131331064961225077Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Belgaum			<b>603</b>	<b>1</b> 6	51	67	144	119	81	77
Mandya330309919070911431152272124Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Kolar13010320920354811401243757129Raichur435553521241074583304080Gulbarga264884971351104283304080Bijapur787913310649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100	Mandya330309919070911431152272124Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Kolar43555353521241074583304080Gulbarga264884971351104283304080Bijapur787984821081164961225077Bidar30761161131331064961225077Karnatka100100100100100100100100100100Karnatka100100100100100100100100100100Karnatka100100100100100100100100100100100Karnatka100100100100100100100100100100100Karnatka100100100100100100100100100100100Karnatka100100100	Mandya330309919070911431152272124Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Kolar13010320920354811401243757129Kolar4355535313610745804880Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar3076116113133106496122507575.51Karnataka100100100100100100100100100100100C.V. (%)58.3451.5558.2553.5354.5158.5251.7527.5157.51	Mysore 135			76	88	130	122	63	81	103	96
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar3076116113133106496122507677Karnataka100100100100100100100100100100Karnataka100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Dharwad1048815915510279518717013177Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Kolar13010320920354811401243757129Ratchur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225076Karnataka100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	330			01	16	143	115	22	72	124	116
Bangalore15213725930248539210912213198Kolar130103209203548114012437571291Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100100100100	Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur787984871351104283304080Bidar707611611313310649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5564.1538.4268.5251.7527.51	Bangalore15213725930248539210912213198Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Dharwad	Ч		102	61	51	87	170	131	<i>LL</i>	<b>1</b> 1
Kolar   130   103   209   203   54   81   140   124   37   57   129   1     Raichur   43   55   53   52   124   107   45   80   48   66   83     Gulbarga   26   48   84   97   135   110   42   83   30   40   80     Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100 <t< td=""><td>Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51</td><td>Kolar13010320920354811401243757129Ratchur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.558<math>64.15</math>38.42<math>68.52</math><math>51.75</math><math>27.51</math></td><td>Bangalore 152</td><td></td><td></td><td>48</td><td>53</td><td>92</td><td>109</td><td>122</td><td>131</td><td>98</td><td>68</td></t<>	Kolar13010320920354811401243757129Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Kolar13010320920354811401243757129Ratchur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.558 $64.15$ 38.42 $68.52$ $51.75$ $27.51$	Bangalore 152			48	53	92	109	122	131	98	68
Raichur   43   55   53   52   124   107   45   80   48   66   83     Gulbarga   26   48   84   97   135   110   42   83   30   40   80     Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100	Raichur   43   55   53   52   124   107   45   80   48   66   83     Gulbarga   26   48   84   97   135   110   42   83   30   40   80     Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100	Raichur435553521241074580486683Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100C.V. (%)58,3451,5058,2963,6734,6623,5864,1538,4268,5251,7527,51	Kolar 130			54	81	140	124	37	57	129	129
Gulbarga   26   48   84   97   135   110   42   83   30   40   80     Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100	Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Gulbarga264884971351104283304080Bijapur7879848210811649671268694Bidar30761161131331064961225077Karnataka100100100100100100100100100100C.V. (%)58.3451.5058.2963.6734.6623.5864.1538.4268.5251.7527.51	Raichur			<b>1</b> 24	101	45	80	48	66	83	06
Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100<	Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100<	Bijapur   78   79   84   82   108   116   49   67   126   86   94     Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100<	Gulbarga			<b>135</b>	110	42	83	30	40	80	81
Bidar 30 76 116 113 133 106 49 61 22 50 77   Karnataka 100 100 100 100 100 100 100 100 100   Annotaka 100 100 100 100 100 100 100 100 100	Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100	Bidar   30   76   116   113   133   106   49   61   22   50   77     Karnataka   100   100   100   100   100   100   100   100   100     C.V. (%)   58.34   51.50   58.29   63.67   34.66   23.58   64.15   38.42   68.52   51.75   27.51	Bijapur			108	116	49	67		86	94	88
IO0 IO0 IO0 IO0 IO0 IO0 IO0 IO0   F0 20 5 7 5 5 7 7 7 7 7 7	100 100 100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100 100 100	Bidar	Ч		133	106	49	61	22	20	LL	78
·· (v) EO 24 E1 EO EO 20 E2 E7 24 EE 20 42 E0 E0 E1 7E 27 E1 27 A	•V• (%) 58.34 51.50 58.29 63.67 34.66 23.58 64.15 38.42 68.52 51.75 27.51	•V• (%) 58.34 51.50 58.29 63.67 34.66 23.58 64.15 38.42 68.52 51.75 27.51	100			100	100	100	100	100	100	100	100
** / * 00°24 3T*30 30°24 3T*30 3**00 7**00 7**00 7**00 7**00 7**00 7**00 7**00 7**00 / ***	Contd	Contd	•V• (%) 58.34 5	•50 58 <b>•</b> 2	9 63.6	4.6	е е	4 ° 1	4	•	1.7	7.5	7.4

APPENDIX TABLE	4 <b>.</b> 3 <b>:</b> (0	: (Contd)		-						
Sr. Districts	Colleges	10	Towns & electri:	s & Villages trified	Registe Vehicle		Composite	Index	of Infrast	Infrastructure
NO.	1960-61	1970-71	1960-61	1970-71	1960–61	1970-71	1960-61	-61	1970	0-71
l Kodagu	88	56	22	56	336	127	152	(2)	135	(2)
2 Shimoga	43	68	132	134	06 :	66	TTT	(6.5)	112	(2)
3 U, K.	57	122	0	54	<b>77</b>	51	06	(13)	101	(1)
4 Chikmagalur	100	56	147	141	92	58	140	(3)	114	(4)
5 D. K.	186	156	135	140	133	163	131	(4)	125	(8)
6 Bellary	57	78	108	156	LL	87	92	(77)	106	(8.5)
7 Hassan	143	67	46	58	45	51	TTT	(6,5)	106	(8.5)
8 Tunkur	43	56	132	102	29	22	85	(14)	84	(12)
9 Chitradurga	114	122	133	147	37	42	67	(11)	96	(13)
10 Belgaum	86	89	4	51	<i>LL</i>	82	82	(12)	86	(14)
11 Mysore	186	156	142	113	06	81	TTT V	(6.5)	105	(10)
12 Mandya	57	67	108	104	31	27	108	(6)	IIO	(9)
13 Dharwad	143	133	18	. 211	55	78	98	(01)	104	(11)
14 Bangalore	214	311	230	120	386	363	178	(T)	179	(1)
15 Kolar	29	56	187	122	86	36	ΤΤΤ	(6.5)	TOT	(12)
16 Raichur	11	44	Q	58	45	55	58	(19)	67	(61)
17 Gulbarga	100	78	ო	61	28	4 <b>1</b>	59	(18)	11	(18)
18 <b>B</b> ijapur 19 Bidar	57 86	89 5 <b>6</b>	4 N	59 81	36 25	32 26	71 60	(16) (17)	78 72	(16) (17)
Karnataka	100	100	100	100	100	100	100		100	
C • V • (%)	54.86	62.61	89 • 64	37.50	106.01	97 <b>。</b> 07	31.23		25.24	
	Note : Source :	The figures Appendix Tab	le	the paren 4.2 .	parenthesis a. •	are ranks	in desce	descending o	order.	ł

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