

Computational Analysis of Transportation System



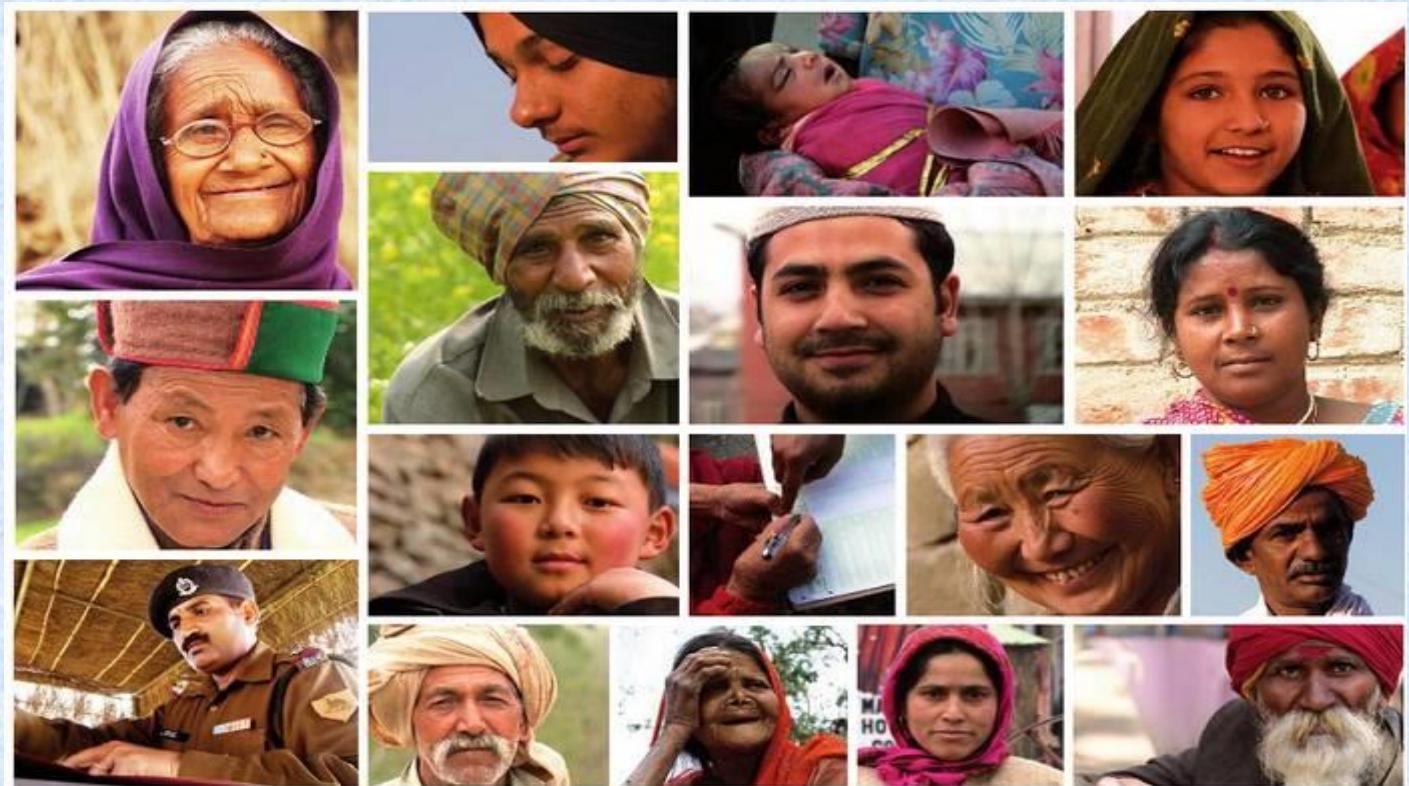
PUJARI KUMAR VISHWAKARMA

Question-1:- List down the questions asked in Census 2011. Specifically compile list of questions related to travel.

Answer:- Following questions are asked in Census 2011 related to travel -

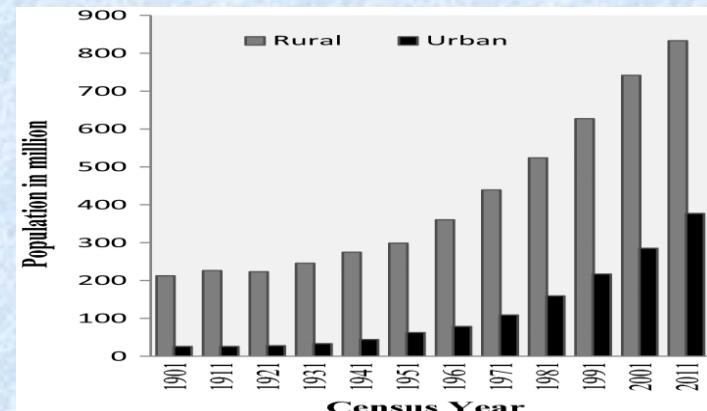


1. Sex
2. Literacy Status: Literate -1/ Illiterate -2
3. Highest educational level attained
4. Occupation
5. Nature of the industry, trade or services
6. Class of workers
7. Seeking or available for work
8. Non-economic activity
9. Travel to place of work- i) one way distance ii) mode of travel
Migration characteristics Fill for person
who has come to this village/town from elsewherePlace of last residence
(a) if within India (b) at the time of migration
10. Migration characteristics Fill for person
11. Reason for migration
12. Duration of stay in this village/town since migration



Question-2:- Define Urban Area and classify them as per Census.

Answer:- Urban areas: An urban area is a densely populated region that includes both residential and commercial zones, characterized by various infrastructures, facilities, and services to cater to the concentrated population. Urban areas serve as centers for economic, cultural, and social activities and typically have higher population densities compared to rural areas.



In India, the Census of India defines urban areas based on a specific set of criteria. The classification of areas as urban or rural is determined by the Census of India based on the following attributes:

1. Population Size: Urban areas are defined based on a minimum population threshold. Any settlement with a population of 5,000 or more is classified as an urban area.
2. Population Density: In addition to the population size, the density of population is also considered in classifying areas as urban. Areas with a population density of at least 400 persons per square kilometer are also classified as urban, irrespective of their population size.
3. Occupation: The nature of occupations and economic activities is also considered. Areas where a significant portion of the population is engaged in non-agricultural activities are more likely to be classified as urban.
4. Urban Local Bodies: Areas that come under the jurisdiction of urban local bodies (e.g., municipal corporations, municipalities, or town areas) are classified as urban areas.

Overall, Urban Area conclude that,

- (a) All places with a Municipality, Corporation, Cantonment, or Notified Town Area
- (b) All other places, which satisfied the following criteria:
 - (i) A minimum population of 5,000.
 - (ii) At least 75% of the male working population was non-agricultural.
 - (iii) A density of population of at least 400 sq. Km. (i.e. 1000 per sq. Mile)

Based on these criteria, the Census of India classifies areas as follows:

1. Statutory Towns: These are areas that have been notified as urban areas by state governments and are governed by urban local bodies like municipal corporations or municipalities.
2. Census Towns: These are areas that have a minimum population of 5,000, a population density of at least 400 persons per square kilometer, and are not classified as statutory towns. Census towns may not have traditional local government bodies but are considered urban areas for statistical purposes.
3. Outgrowths: Outgrowths are adjacent areas that have a population of at least 5,000 and are situated within the jurisdiction of a statutory town or a census town.
4. Urban Agglomerations: Urban agglomerations are clusters of towns and cities that have grown together to form a continuous urban spread. These agglomerations are treated as a single urban entity.

Question-3:- Sort the state for the following cases :-

- Population Density
- Highway Density
- Urbanization Level
- Percentage of Population below Poverty Line in India.

Also for all criterion, group different states in four categories (lowest= < 25 percentile; low = 25 percentile to 50 percentile; moderate= 50 percentile to 75 percentile; highest= >75 percentile)

Answer:-

Data for four categories was downloaded from respective websites and sorted. The data is compiled in an Excel sheet. The highway density data was obtained from NHAI portal. BPL data is obtained from respective census website, Percentiles were calculated and used to sort states in the Excel sheet "Percentile calculations of 4 categories which are as follows:

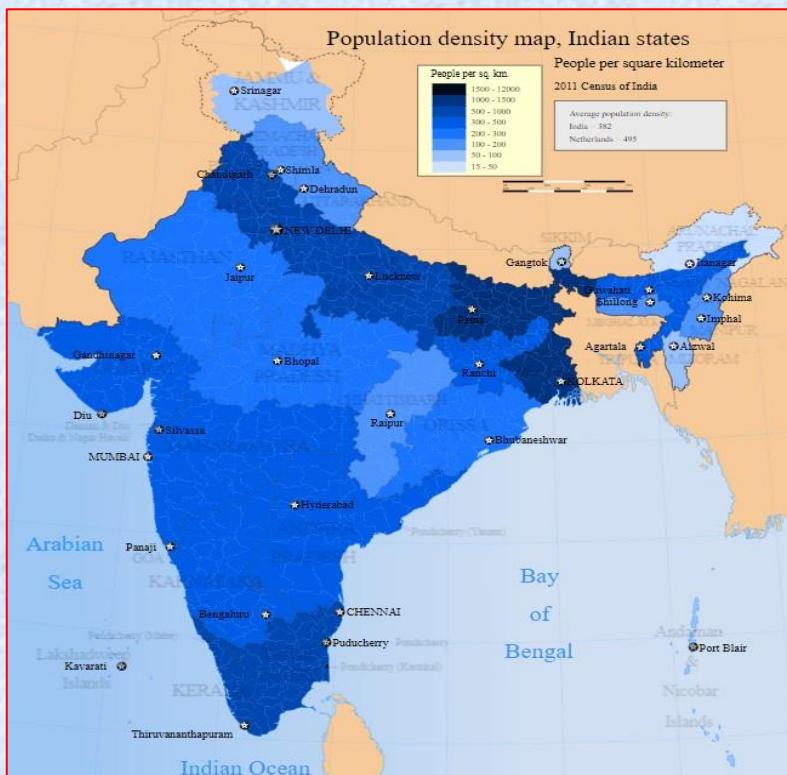
List of states and union territories of India by population (2011 Census of India):-

State or Union Territory	Population	Decadal growth	Rural population	Urban population	Population Density
		(2001–2012)			
Uttar Pradesh	199812341	20.20%	15,53,17,278	4,44,95,063	828/km ² (2,140/sq mi)
Maharashtra	112374333	16%	6,15,56,074	5,08,18,259	365/km ² (950/sq mi)
Bihar	104099452	25.40%	9,23,41,436	1,17,58,016	1,102/km ² (2,850/sq mi)
West Bengal	91276115	13.80%	6,21,83,113	2,90,93,002	1,029/km ² (2,670/sq mi)
Madhya Pradesh	72626809	20.30%	5,25,57,404	2,00,69,405	236/km ² (610/sq mi)
Tamil Nadu	72147030	15.60%	3,72,29,590	3,49,17,440	555/km ² (1,440/sq mi)
Rajasthan	68548437	21.30%	5,15,00,352	1,70,48,085	201/km ² (520/sq mi)
Karnataka	61095297	15.60%	3,74,69,335	2,36,25,962	319/km ² (830/sq mi)
Gujarat	60439692	19.30%	3,46,94,609	2,57,45,083	308/km ² (800/sq mi)
Andhra Pradesh	49577103	11.00%	3,49,66,693	1,46,10,410	303/km ² (780/sq mi)
Odisha	41974219	14.00%	3,49,70,562	70,03,656	269/km ² (700/sq mi)
Telangana	35003674	13.58%	2,13,95,009	1,36,08,665	312/km ² (810/sq mi)
Kerala	33406061	4.90%	1,74,71,135	1,59,34,926	859/km ² (2,220/sq mi)
Jharkhand	32988134	22.40%	2,50,55,073	79,33,061	414/km ² (1,070/sq mi)

Assam	31205576	17.10%	2,68,07,034	43,98,542	398/km ² (1,030/sq mi)
Punjab	27743338	13.89%	1,73,44,192	1,03,99,146	551/km ² (1,430/sq mi)
Chhattisgarh	25545198	22.60%	1,96,07,961	59,37,237	189/km ² (490/sq mi)
Haryana	25351462	19.90%	1,65,09,359	88,42,103	573/km ² (1,480/sq mi)
NCT of Delhi	16787941	21.20%	4,19,042	1,63,68,899	11,297/km ² (29,260/sq mi)
Jammu and Kashmir	12267032	23.60%	90,64,220	32,02,812	297/km ² (770/sq mi)
Uttarakhand	10086292	18.80%	70,36,954	30,49,338	189/km ² (490/sq mi)
Himachal Pradesh	6864602	12.90%	61,76,050	6,88,552	123/km ² (320/sq mi)
Tripura	3673917	14.80%	27,12,464	9,61,453	350/km ² (910/sq mi)
Meghalaya	2966889	27.90%	23,71,439	5,95,450	132/km ² (340/sq mi)
Manipur ^[c]	2570390	24.50%	17,93,875	7,76,515	122/km ² (320/sq mi)
Nagaland	1978502	-0.6%	14,07,536	5,70,966	119/km ² (310/sq mi)
Goa	1458545	8.20%	5,51,731	9,06,814	394/km ² (1,020/sq mi)
Arunachal Pradesh	1383727	26.00%	10,66,358	3,17,369	17/km ² (44/sq mi)
Puducherry	1247953	28.10%	3,95,200	8,52,753	2,598/km ² (6,730/sq mi)
Mizoram	1097206	23.50%	5,25,435	5,71,771	52/km ² (130/sq mi)
Chandigarh	1055450	17.20%	28,991	10,26,459	9,252/km ² (23,960/sq mi)
Sikkim	610577	12.90%	4,56,999	1,53,578	86/km ² (220/sq mi)
Dadra and Nagar Haveli and Daman and Diu	585764	55.10%	2,43,510	3,42,254	970/km ² (2,500/sq mi)
Andaman and Nicobar Islands	380581	6.90%	2,37,093	1,43,488	46/km ² (120/sq mi)
Ladakh	274000	17.80%	43,840	2,30,160	2.8/km ² (7.3/sq mi)
Lakshadweep	64473	6.30%	14,141	50,332	2,013/km ² (5,210/sq mi)
India	1210569573	17.70%	83,34,63,448	37,71,06,125	382/km² (990/sq mi)

Population Density Ranking of states

Sr.no	States	Population	Area (Sq. Km)	Density (Pop/Sq. Km)	SEX Ratio (Male/ 1000 Female)
1	NCT Delhi	16787941	1483	11320.26	868
2	Chandigarh	1055450	114	9258.33	818
3	Puducherry	1247953	490	2546.84	1037
4	Daman and Diu	243247	111	2191.41	711
5	Lakshadweep	64473	30	2149.1	946
6	Bihar	104099452	94163	1105.52	918
7	West Bengal	91276115	88752	1028.44	953
8	Kerala	33406061	38852	859.83	1084
9	Uttar Pradesh	199812341	240928	829.34	912
10	Dadra and Nagar Haveli	343709	491	700.02	711
11	Haryana	25351462	44212	573.41	879
12	Tamil Nadu	72147030	130060	554.72	996
13	Punjab	27743338	50362	550.88	895
14	Jharkhand	32988134	79716	413.82	948
15	Assam	31205576	78438	397.84	958
16	Goa	1458545	3702	393.99	973
17	Maharashtra	112374333	307713	365.19	929
18	Tripura	3673917	10486	350.36	960
19	Karnataka	61095297	191791	318.55	973
20	Gujarat	60439692	196244	307.98	919
21	Andhra Pradesh	84580777	275045	307.52	993
22	Orissa	41974218	155707	269.57	979
23	Madhya Pradesh	72626809	308252	235.61	931
24	Rajasthan	68548437	342239	200.29	928
25	Chhattisgarh	25545198	135192	188.95	991
26	Uttarakhand	10086292	53483	188.59	963
27	Meghalaya	2966889	22429	132.28	989
28	Manipur	2855794	22327	127.91	992
29	Himachal Pradesh	6864602	55673	123.3	972
30	Nagaland	1978502	16579	119.34	931
31	Sikkim	610577	7096	86.05	890
32	Jammu and Kashmir	12541302	222236	56.43	890
33	Mizoram	1097206	21081	52.05	976
34	Andaman and Nicobar Islands	380581	8249	46.14	876
35	Arunachal Pradesh	1383727	83743	16.52	938



• States <= 25 percentile
(Density <= 160.435 Pop/Sq. Km)

Meghalaya
Manipur
Himachal Pradesh
Nagaland
Sikkim
Jammu and Kashmir
Mizoram
Andaman and Nicobar Islands
Arunachal Pradesh

• States with percentile 25-50
(Density 160.435-350.36 Pop/Sq. Km)

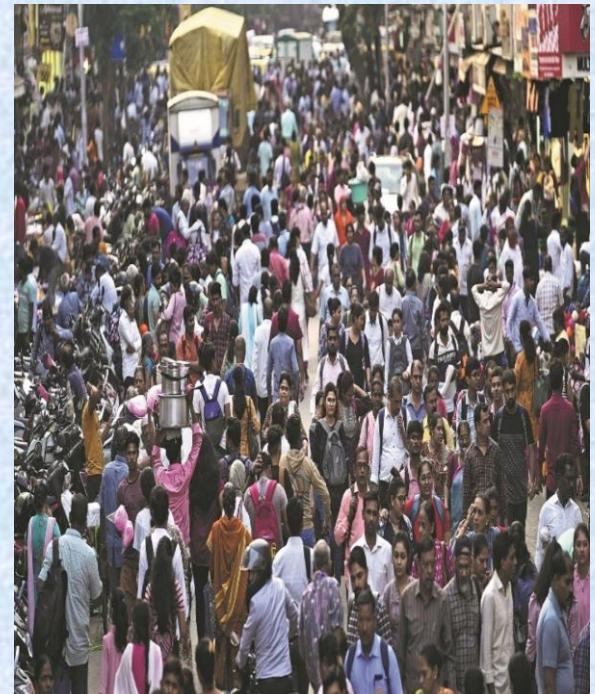
Tripura
Karnataka
Gujarat
Andhra Pradesh
Orissa
Madhya Pradesh
Rajasthan
Chhattisgarh
Uttarakhand

• States with percentile 50-75
(Density 350.36-764.68 Pop/Sq. Km)

Dadra and Nagar Haveli
Haryana
Tamil Nadu
Punjab
Jharkhand
Assam
Goa
Maharashtra

• States with percentile >75
(Density 764.68 Pop/Sq. Km)

NCT Delhi
Chandigarh
Puducherry
Daman and Diu
Lakshadweep
Bihar
West Bengal
Kerala
Uttar Pradesh



FOR HIGHWAY DENSITY

Ranking of States based on Highway Density							
Sr.no	SYM	State/U.T.	Existing length NH	%age of NH	Length of existing NH in km/ 1000 sq km as per Morth Report	Area (Sq.Km)	Calculated Length of existing NH in km/ 1000 sq km
1	DD	Daman & Diu	22	0.02	196.4	111	198.2
2	CH	Chandigarh	15	0.01	134	114	131.6
3	DL	NCT Delhi	157	0.12	105.9	1483	105.9
4	NL	Nagaland	1548	1.17	93.4	16579	93.4
5	TR	Tripura	854	0.64	81.4	10486	81.4
6	GA	Goa	293	0.22	76.8	3702	79.1
7	MN	Manipur	1750	1.32	78.4	22327	78.4
8	HR	Haryana	3166	2.39	71.6	44212	71.6
9	MZ	Mizoram	1423	1.07	67.5	21081	67.5
10	SK	Sikkim	463	0.35	65.2	7096	65.2
11	PB	Punjab	3274	2.47	65	50362	65
12	DH	Dadra & Nagar Haveli	31	0.02	63.7	491	63.1
13	MH	Maharashtra	17757	13.4	57.7	307713	57.7
14	BR	Bihar	5358	4.04	56.9	94163	56.9
15	PY	Puducherry	27	0.02	54.3	490	55.1
16	UK	Uttarakhand	2949	2.23	52.8	53483	55.1
17	TN	Tamil Nadu	6742	5.09	51.8	130060	51.8
18	ML	Meghalaya	1156	0.87	51.5	22429	51.5
19	AS	Assam	3909	2.95	49.8	78438	49.8
20	UP	Uttar Pradesh	11737	8.86	49.2	240928	48.7
21	HP	Himachal Pradesh	2607	1.97	46.8	55673	46.8
22	KL	Kerala	1782	1.34	45.8	38852	45.9
23	JH	Jharkhand	3367	2.54	42.2	79716	42.2
24	WB	West Bengal	3664	2.77	41.3	88752	41.3
25	AN	A & N Islands	331	0.25	40.1	8249	40.1
26	AP	Andhra Pradesh	10708	8.07	41.8	275045	38.9
27	KA	Karnataka	7335	5.54	38.2	191791	38.2
28	OR	Odisha	5762	4.35	37	155707	37

29	GJ	Gujarat	6635	5.01	33.8	196244	33.8
30	AR	Arunachal Pradesh	2537	1.92	30.3	83743	30.3
31	RJ	Rajasthan	10342	7.81	30.2	342239	30.2
32	MP	Madhya Pradesh	8772	6.62	28.5	308252	28.5
33	CG	Chhattisgarh	3606	2.72	26.7	135192	26.7
34	JK	Jammu & Kashmir	2423	1.83	10.9	222236	10.9
35	LD	LAKSHADWEEP	0	0	0	30	0

•States <= 25 percentile

Karnataka
Odisha
Gujarat
Arunachal Pradesh
Rajasthan
Madhya Pradesh
Chhattisgarh
Jammu & Kashmir
LAKSHADWEEP

•States with percentile 25-50

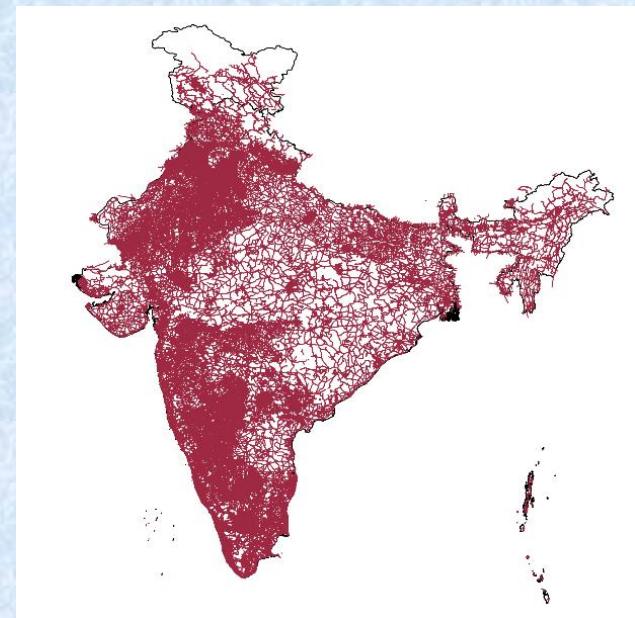
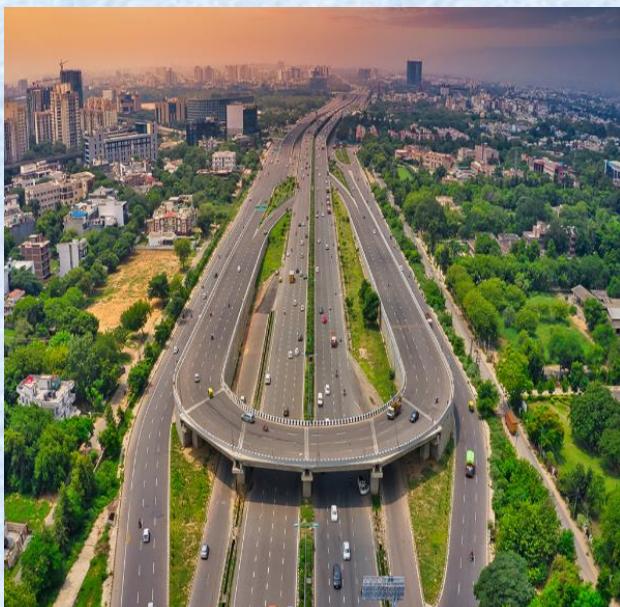
Meghalaya
Assam
Uttar Pradesh
Himachal Pradesh
Kerala
Jharkhand
West Bengal
A & N Islands
Andhra Pradesh

•States with percentile 50-75

Sikkim
Punjab
Dadra & Nagar Haveli
Maharashtra
Bihar
Puducherry
Uttarakhand
Tamil Nadu

•States with percentile >75

Daman & Diu
Chandigarh
NCT Delhi
Nagaland
Tripura
Goa
Manipur
Haryana
Mizoram



FOR UBRANIZATION LEVEL

Ranking of States based on Urbanization					
Sr.No	SYM	States	Population	Urban population	Urbanization level(%)
1	DL	NCT Delhi	16787941	16368899	97.5
2	CH	Chandigarh	1055450	1026459	97.25
3	LD	Lakshadweep	64473	50332	78.07
4	DD	Daman and Diu	243247	182851	75.17
5	PY	Puducherry	1247953	852753	68.33
6	GA	Goa	1458545	906814	62.17
7	MZ	Mizoram	1097206	571771	52.11
8	TN	Tamil Nadu	72147030	34917440	48.4
9	KL	Kerala	33406061	15934926	47.7
10	DH	Dadra and Nagar Haveli	343709	160595	46.72
11	MH	Maharashtra	112374333	50818259	45.22
12	GJ	Gujarat	60439692	25745083	42.6
13	KA	Karnataka	61095297	23625962	38.67
14	AN	A/N Islands	380581	143488	37.7
15	PB	Punjab	27743338	10399146	37.48
16	HR	Haryana	25351462	8842103	34.88
17	AP	Andhra Pradesh	84580777	28219075	33.36
18	WB	West Bengal	91276115	29093002	31.87
19	UK	Uttarakhand	10086292	3049338	30.23
20	MN	Manipur	2855794	834154	29.21
21	NL	Nagaland	1978502	570966	28.86
22	MP	Madhya Pradesh	72626809	20069405	27.63
23	JK	Jammu and Kashmir	12541302	3433242	27.38
24	TR	Tripura	3673917	961453	26.17
25	SK	Sikkim	610577	153578	25.15
26	RJ	Rajasthan	68548437	17048085	24.87
27	JH	Jharkhand	32988134	7933061	24.05
28	CG	Chhattisgarh	25545198	5937237	23.24
29	AR	Arunachal Pradesh	1383727	317369	22.94

30	UP	Uttar Pradesh	199812341	44495063	22.27
31	ML	Meghalaya	2966889	595450	20.07
32	OR	Orissa	41974218	7003656	16.69
33	AS	Assam	31205576	4398542	14.1
34	BR	Bihar	104099452	11758016	11.29
35	HP	Himachal Pradesh	6864602	688552	10.03

•States <= 25 percentile (value 24.69)

Jharkhand
Chhattisgarh
Arunachal Pradesh
Uttar Pradesh
Meghalaya
Orissa
Assam
Bihar
Himachal Pradesh

•States with percentile 25-50(value 24.69-31.87)

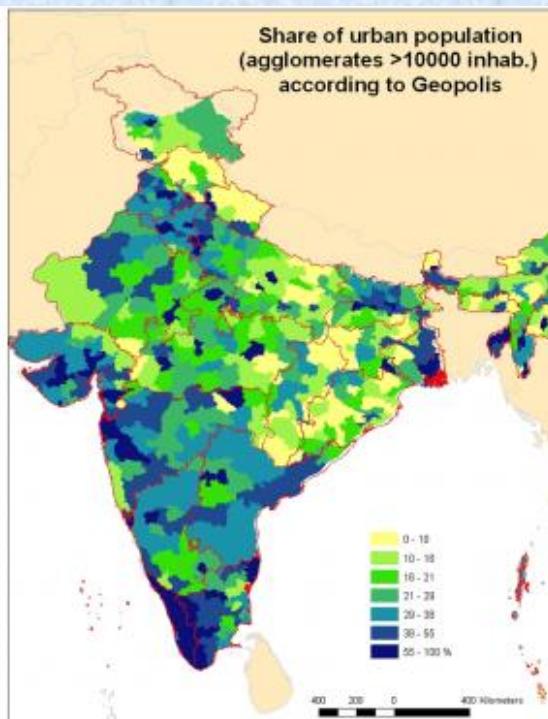
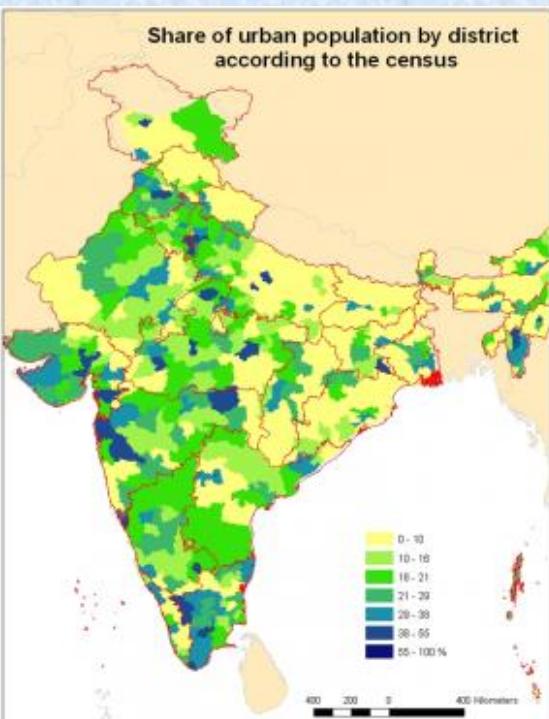
West Bengal
Uttarakhand
Manipur
Nagaland
Madhya Pradesh
Jammu and Kashmir
Tripura
Sikkim
Rajasthan

•States with percentile 50-75 (Value 37.87-47.21)

Dadra and Nagar Haveli
Maharashtra
Gujarat
Karnataka
Andaman and Nicobar Islands
Punjab
Haryana
Andhra Pradesh

•States with percentile >75

NCT Delhi
Chandigarh
Lakshadweep
Daman and Diu
Puducherry
Goa
Mizoram
Tamil Nadu
Kerala



FOR PERCENTAGE OF POPULATION BELOW POVERTY LINE IN INDIA

Ranking of States based on Poverty (in Descending order)			
State/UT	State/UT specific poverty line		% of population living below the Multidimensional Poverty Index in 2021
	RURAL(Rs)	URBAN(Rs)	
Bihar	932	1152	51.91
Jharkhand	748	974	42.16
Chhattisgarh	738	849	39.03
Uttar Pradesh	768	941	37.79
Manipur	1118	1170	36.89
Madhya Pradesh	771	897	36.65
Meghalaya	888	1154	32.67
Assam	828	1008	31.98
Rajasthan	905	1002	29.46
Odisha	695	861	29.35
Dadra and Nagar Haveli	—	—	27.36
Nagaland	1270	1302	25.23
Arunachal Pradesh	930	1060	24.27
West Bengal	1783	2381	21.43
Gujarat	778	923	18.6
Uttarakhand	880	1082	17.72
Tripura	798	920	16.65
Maharashtra	967	1126	14.85
Telangana	—	—	13.74
Karnataka	902	1089	13.2
Jammu and Kashmir	891	988	12.58
Andhra Pradesh	860	1009	12.3
Haryana	1015	1169	12.3
Mizoram	1066	1155	9.8
Himachal Pradesh	913	1064	7.62
Daman and Diu	—	—	6.82
Chandigarh	—	—	5.97
Punjab	1054	1155	5.59
Tamil Nadu	880	937	4.89
Delhi	1145	1134	4.79
Andaman and Nicobar Islands	—	—	4.3
Sikkim	930	1226	3.82
Goa	1090	1134	3.76
Lakshadweep	—	—	1.82
Puducherry	1301	1309	1.72
Kerala	1018	987	0.71

•States <= 25 percentile (value 5.97)

- Punjab
- Tamil Nadu
- Delhi
- Andaman and Nicobar Islands
- Sikkim
- Goa
- Lakshadweep
- Puducherry
- Kerala

**•States with percentile 25-50
(value 5.97-14.95)**

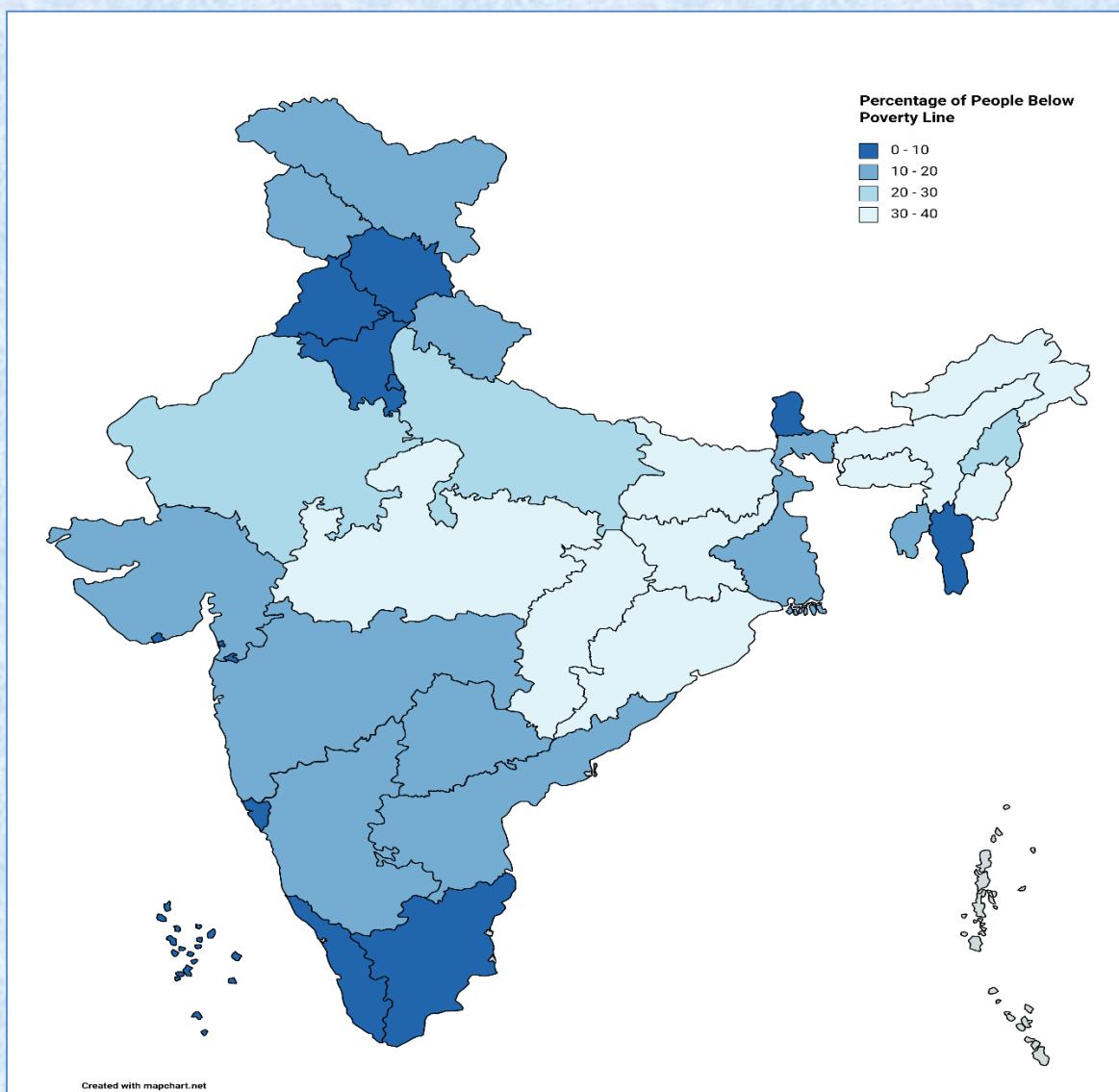
- Telangana
- Karnataka
- Jammu and Kashmir
- Andhra Pradesh
- Haryana
- Mizoram
- Himachal Pradesh
- Daman and Diu
- Chandigarh

•States with percentile 50-75 (Value 14.95-29.35)

- Dadra and Nagar Haveli
- Nagaland
- Arunachal Pradesh
- West Bengal
- Gujarat
- Uttarakhand
- Tripura
- Maharashtra

•States with percentile >75

- Bihar
- Jharkhand
- Chhattisgarh
- Uttar Pradesh
- Manipur
- Madhya Pradesh
- Meghalaya
- Assam
- Rajasthan
- Odissa



OBSERVATIONSON THE BASIS OF THE BAR CHART:-

Population Density:-

- < 25 group prefers on foot and bus mode
- 25-50 group prefers Moped/Scooter/Motor Cycle mode
- 50-75 group prefers train mode
- > 75 group prefers bicycle mode
- Trip length > 50 is favored by > 75 group
- Trip length 31-50 is favored by 50-75 group
- Trip length 25-50 is favored by 25-50 group

Highway Density:-

- < 25 group prefers bus mode
- 25-50 group prefers on foot mode
- 50-75 group prefers Moped/Scooter/Motor Cycle mode
- > 75 group prefers train mode
- Trip length > 50 is favored by 25-50 group
- Trip length 6-10 is favored by 75 group
- Trip length 2-5 is favored by 50-75 group
- Trip length 0-1 is favored by 25-50 group

Urbanization Level:-

- < 25 group prefers on foot and bicycle mode
- 25-50 group prefers on foot, bicycle, bus, and two-wheeler mode
- 50-75 group prefers Moped/Scooter/Motor Cycle mode, bicycle, bus, foot, and train mode
- > 75 group prefers bus mode
- Trip length > 50 is favored by 25-50 group
- Trip length 31-50 is favored by 50-75 group
- Trip length 21-30 is favored by 50-75 and > 75 groups
- Trip length 11-20 is favored by > 75 group
- Trip length 0-1 is favored by > 75 group

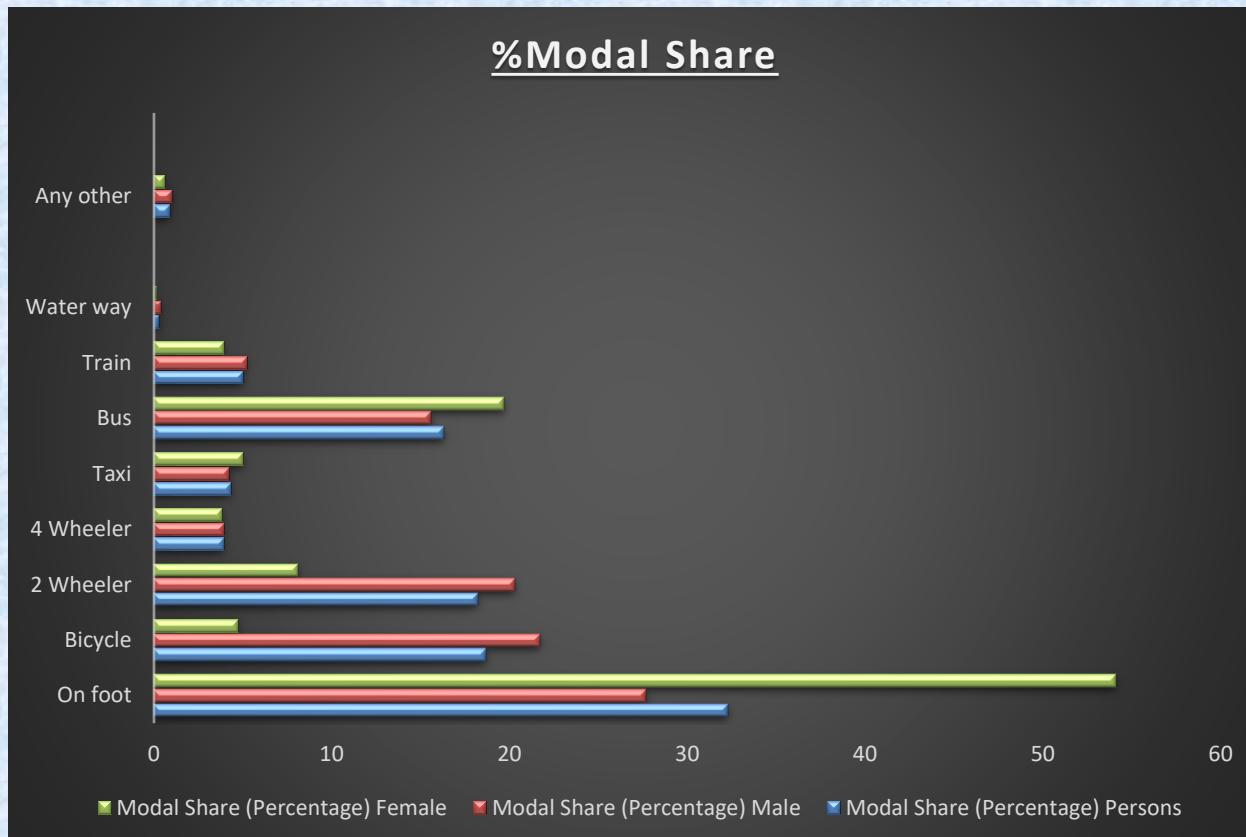
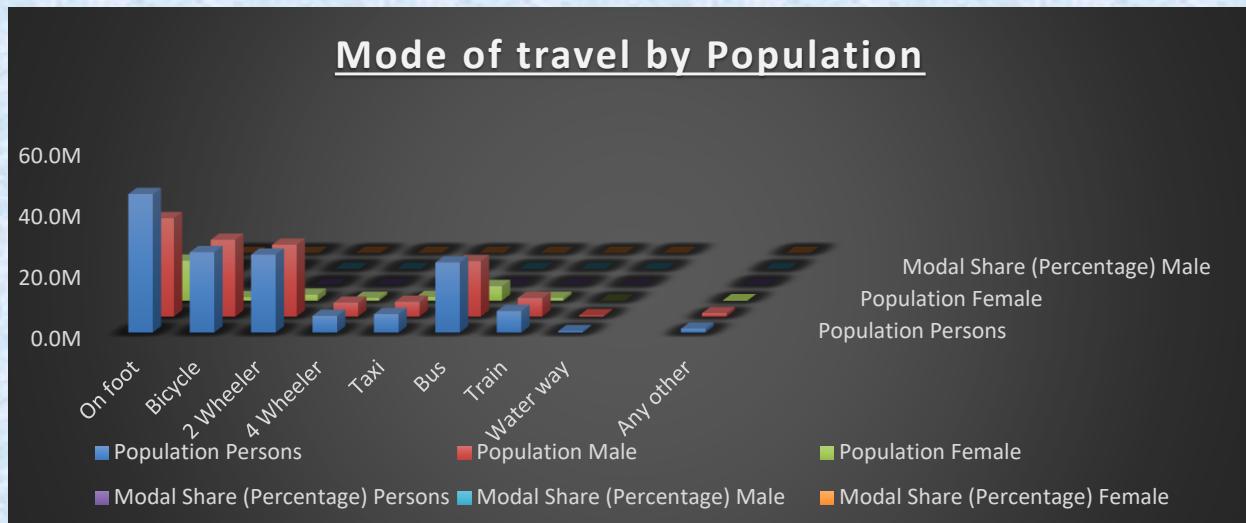
Percentage of Population below BPL in India:-

- < 25 group prefers bus mode
- 25-50 group prefers Moped/Scooter/Motor Cycle mode
- 50-75 group prefers train mode
- > 75 group prefers on foot mode
- Trip length > 50 is favored by 25-50 group
- Trip length 31-50 is favored by 50-75 group
- Trip length 21-30 is favored by 25-75 group
- Trip length 11-20 is favored by 25-50 group
- Trip length 6-10 is favored by < 25 group
- Trip length 2-5 is favored by > 75 group
- Trip length 0-1 is favored by > 75 group

MODAL SHARE:

Modal share Analysis of India by Mode of travel:-

Mode of Travel	Population			Modal Share (Percentage)		
	Persons	Male	Female	Persons	Male	Female
On foot	45266568	32179223	13087345	32.3	27.7	54.1
Bicycle	26272609	25126597	1146012	18.7	21.7	4.7
Moped/Scooter/Motor Cycle	25464837	23515078	1949759	18.2	20.3	8.1
Car/JEEP/Van	5476050	4554050	922000	3.9	3.9	3.8
Tempo/Autorickshaw/Taxi	6040414	4833680	1206734	4.3	4.2	5.0
Bus	22901495	18149317	4752178	16.3	15.6	19.7
Train	7015528	6080715	934813	5.0	5.2	3.9
Water transport	489029	458318	30711	0.3	0.4	0.1
Any other	1307392	1160773	146619	0.9	1.0	0.6
Total	140233922	116057751	24176171	100	100	100



Modal Share based on Population Density Percentile Distribution

1.Highly Populated Dense State

Sum of number	Column Labels									
Row Labels	Any other	Bicycle	Bus	Car/JEEP/Van	Moped/Scooter/I	On foot	Tempo/Auto	Train	Water transp	Grand Total
BIHAR		42620	1277831	237472	79657	500563	1800911	160172	317891	5123 4422240
CHANDIGARH		5626	101508	26438	48624	84689	54330	11558	1267	135 334175
DAMAN & DIU		162	10687	6854	1887	15376	67645	3803	646	1174 108234
KERALA		35024	359995	2662132	276011	981016	2346235	221689	183947	49347 7115396
LAKSHADWEEP		93	6065	49	59	2533	5412	53	32	492 14788
NCT OF DELHI		60429	479369	1162768	575757	749366	1179205	122700	157266	2302 4489162
PUDUCHERRY		1101	64462	57925	8658	119411	49602	7330	1589	7062 317140
UTTAR PRADESH		157078	4046176	879333	386323	2176047	4141200	560968	642557	11913 13001595
WEST BENGAL		156677	3648334	1623649	314864	688365	3870932	218559	1522973	51102 12095455
Grand Total		458810	9994427	6656620	1691840	5317366	13515472	1306832	2828168	128650 41898185

2.Moderately Populated Dense State

Sum of number	Column Labels									
Row Labels	Any other	Bicycle	Bus	Car/JEEP/Van	Moped/Scooter/I	On foot	Tempo/Auto	Train	Water transp	Grand Total
ANDAMAN & NICOBAR		644	6936	28015	5611	18735	35011	2912	111	3406 101381
ANDHRA PRADESH		99127	1542145	1730141	270293	1874364	2902420	793002	197045	78099 9486636
DADRA & NAGAR HAV		227	10500	10427	3129	16313	42205	8553	391	55 91800
GUJARAT		79275	1428230	699129	353887	2740585	2492336	899543	149942	40329 8883256
HARYANA		37347	599093	436386	240413	617205	957738	175521	151963	2637 3218303
KARNATAKA		69252	748108	2543914	534964	1701363	3145484	443851	141417	28435 9356788
MAHARASHTRA		141465	1804128	2357256	666514	3373336	5085701	924514	2440987	53579 16847480
PUNJAB		50212	1192881	392940	176425	1020797	1088387	126543	60070	3898 4112153
Grand Total		477549	7332021	8198208	2251236	11362698	15749282	3374439	3141926	210438 52097797

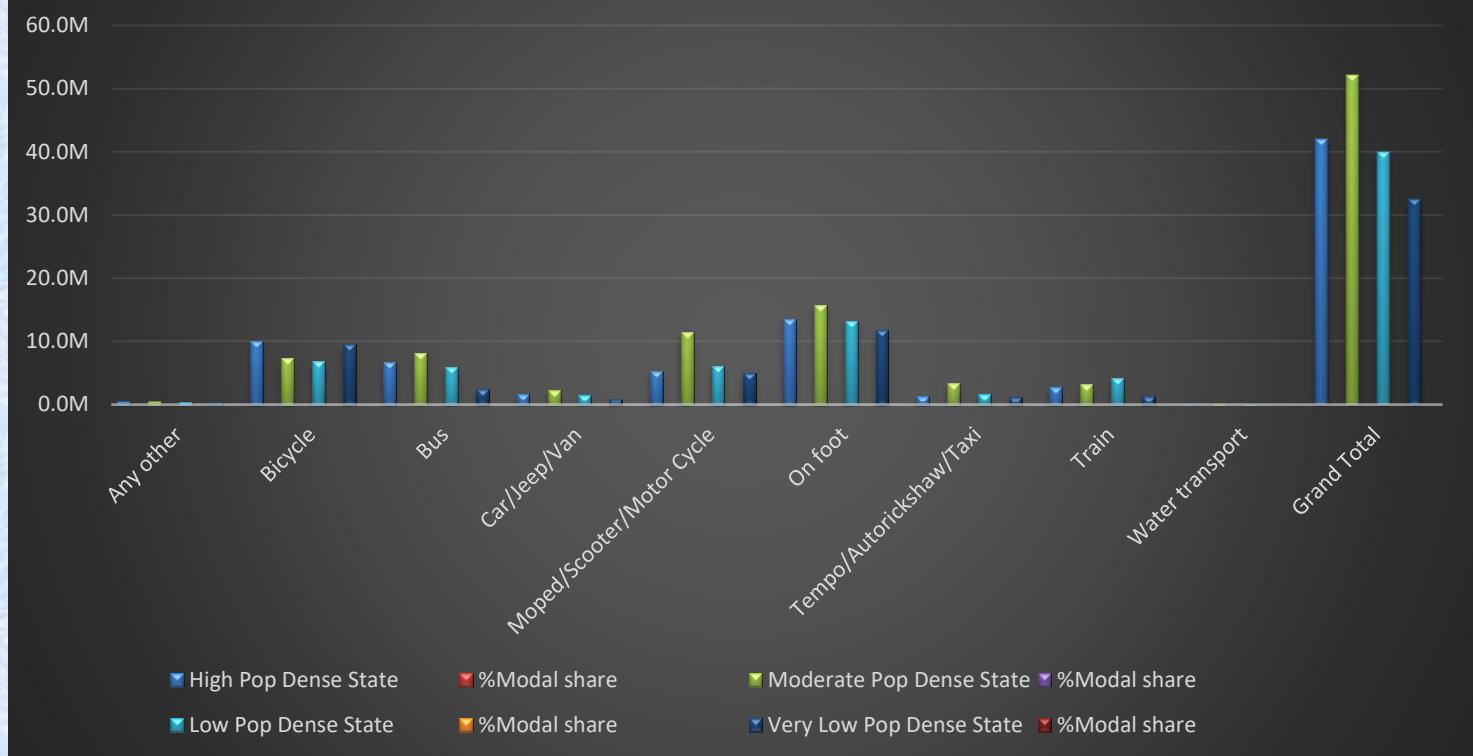
3.Low Populated Dense State

Sum of number	Column Labels									
Row Labels	Any other	Bicycle	Bus	Car/JEEP/Van	Moped/Scooter/I	On foot	Tempo/Auto	Train	Water transp	Grand Total
JAMMU & KASHMIR		12836	39999	503825	78022	85012	505585	36487	19501	6864 1288131
MAHARASHTRA		141465	1804128	2357256	666514	3373336	5085701	924514	2440987	53579 16847480
MANIPUR		4640	42736	40064	16093	49055	93493	32689	3157	4986 286913
NAGALAND		2881	6743	16008	22620	10691	118805	19800	699	66 198313
RAJASTHAN		82668	954035	1179920	258980	1645072	2699387	283300	155259	4452 7263073
SIKKIM		1026	534	3448	20467	1455	60636	9212	423	18 97219
TRIPURA		4169	144237	44866	25406	45577	266704	41402	4443	1105 577909
UTTARAKHAND		13870	208438	136953	66391	223227	503155	56627	18613	813 1228087
WEST BENGAL		156677	3648334	1623649	314864	688365	3870932	218559	1522973	51102 12095455
Grand Total		420232	6849184	5905989	1469357	6121790	13204398	1622590	4166055	122985 39882580

4.Very Low Populated Dense State

Sum of number	Column Labels									
Row Labels	Any other	Bicycle	Bus	Car/JEEP/Van	Moped/Scooter/I	On foot	Tempo/Auto	Train	Water transp	Grand Total
ARUNACHAL PRADE		4553	8239	6552	15122	13623	98205	3378	770	99 150541
ASSAM		35896	1041780	408509	90610	327518	1736610	116593	57863	9449 3824828
BIHAR		42620	1277831	237472	79657	500563	1800911	160172	317891	5123 4422240
CHHATTISGARH		15352	732874	99306	47895	553102	708684	37883	50128	742 2245966
HIMACHAL PRADESH		3286	24930	304312	35936	71009	440590	9741	4582	778 895164
JHARKHAND		21359	949583	168791	73165	553501	1259203	174579	112869	1495 3314545
MEGHALAYA		5370	6706	31459	39206	11636	164520	40856	972	145 300870
ODISHA		31185	1431140	332014	73187	790585	1478828	84434	104582	34549 4360504
UTTAR PRADESH		157078	4046176	879333	386323	2176047	4141200	560968	642557	11913 13001595
Grand Total		316699	9519259	2467748	841101	4997584	11828751	1188604	1292214	64293 32516253

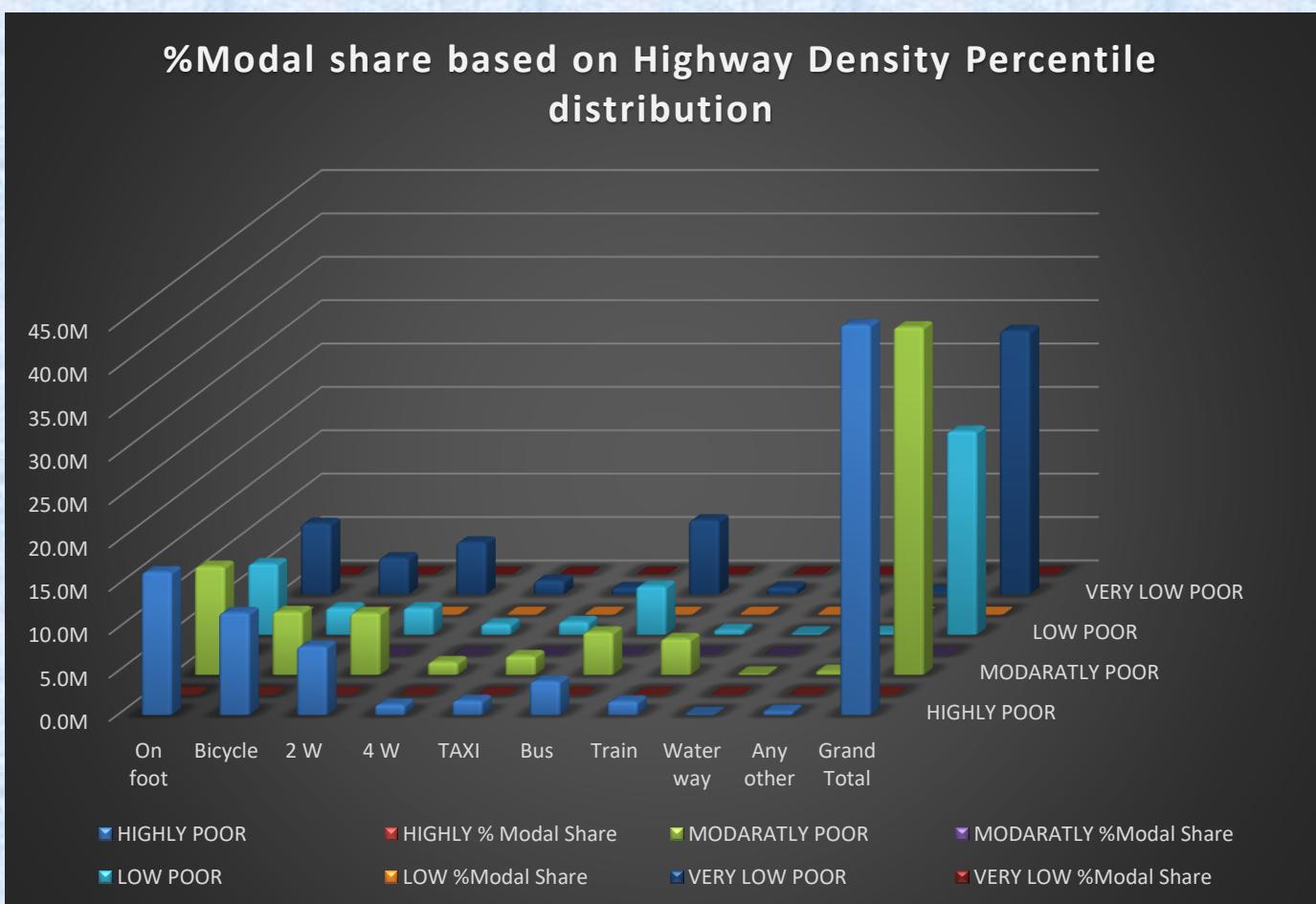
%Modal share based on Population Density Percentile



TRAVEL	Highly Populated Dense State	%	Moderate Populated	%	Low Populated Dense State	%	Very Low Populated	%
MODE		Modal	Dense State	Modal		Modal	Dense State	Modal
Any other	458810	1.10	477549	0.92	420232	1.05	316699	0.97
Bicycle	9994427	23.85	7332021	14.07	6849184	17.17	9519259	29.28
Bus	6656620	15.89	8198208	15.74	5905989	14.81	2467748	7.59
Car/Jeep/Van	1691840	4.04	2251236	4.32	1469357	3.68	841101	2.59
Moped/Scooter/Motor Cycle	5317366	12.69	11362698	21.81	6121790	15.35	4997584	15.37
On foot	13515472	32.26	15749282	30.23	13204398	33.11	11828751	36.38
Tempo/Autorickshaw/Taxi	1306832	3.12	3374439	6.48	1622590	4.07	1188604	3.66
Train	2828168	6.75	3141926	6.03	4166055	10.45	1292214	3.97
Water transport	128650	0.31	210438	0.40	122985	0.31	64293	0.20
Grand Total	41898185	100.00	52097797	100.00	39882580	100.00	32516253	100.00

Modal Share based on Highway Density Percentile Distribution

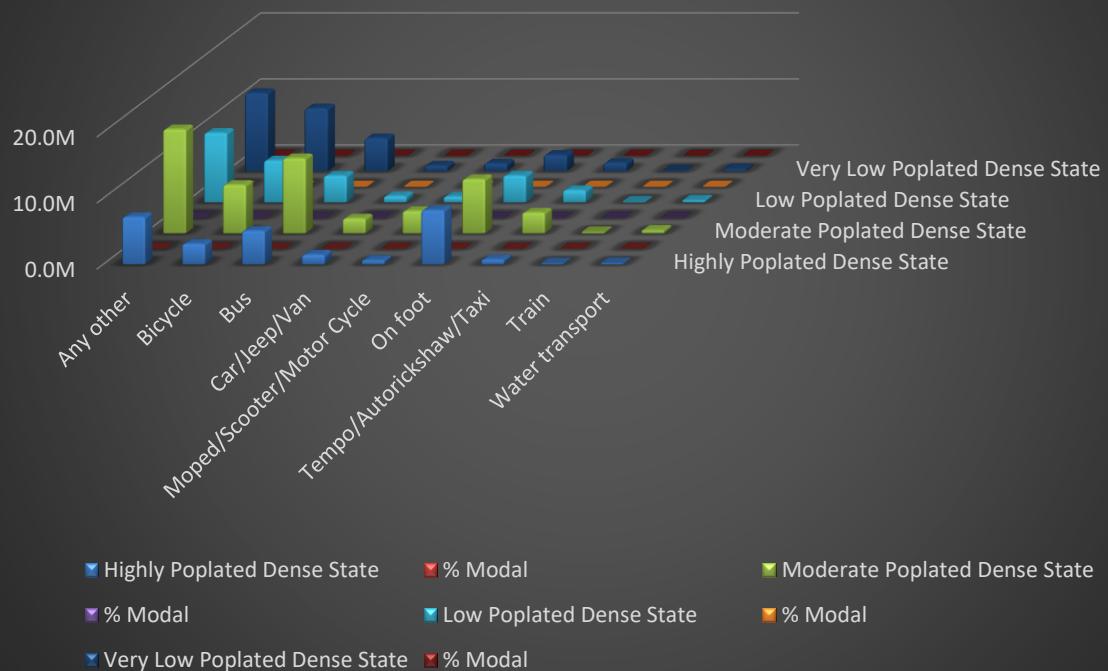
Travel Mode	HIGH DENSE		MODARATE		LOW		VERY LOW	
	NH STATE	% Modal Share	NH STATE	%Modal Share	NH STATE	%Modal Share	NH STATE	%Modal Share
On foot	2895423	29.73	11942907	29.22	16896721	33.7	13531517	34.26
Bicycle	1399053	14.36	6616591	16.19	11626585	23.19	6630380	16.79
2 W	1708010	17.54	8238968	20.16	6702191	13.37	8815668	22.32
4 W	968519	9.94	1518119	3.71	1492019	2.98	1497393	3.79
TAXI	423757	4.35	1530328	3.74	2138899	4.27	1947430	4.93
Bus	1888056	19.39	7308505	17.88	7836341	15.63	5868593	14.86
Train	321997	3.31	3224172	7.89	2722919	5.43	746440	1.89
Water way	14163	0.15	148616	0.36	205734	0.41	120516	0.31
Any other	120394	1.24	338755	0.83	514461	1.03	333782	0.85
Grand Total	9739372	100	40866961	99.98	50135870	100.01	39491719	100



Modal Share based on Urbanisation Percentile Distribution

TRAVEL MODE	Highly Populated	%	Moderate Populated	%	Low Populated	%	Very Low Populated	%
	Dense State	Modal	Dense State	Modal	Dense State	Modal	Dense State	Modal
Any other	7172242	26.91	15749282	30.23	10516293	36.31	11828751	36.38
Bicycle	3094583	11.61	7332021	14.07	6326746	21.84	9519259	29.28
Bus	5072308	19.03	11362698	21.81	4032247	13.92	4997584	15.37
Car/Jeep/Van	1445593	5.42	2251236	4.32	938120	3.24	841101	2.59
Moped/Scooter/Motor Cycle	620794	2.33	3374439	6.48	856577	2.96	1188604	3.66
On foot	8182922	30.7	8198208	15.74	4052617	13.99	2467748	7.59
Tempo/Autorickshaw/Taxi	731511	2.74	3141926	6.03	1849877	6.39	1292214	3.97
Train	140338	0.53	210438	0.4	73960	0.26	64293	0.2
Water transport	195809	0.73	477549	0.92	317335	1.1	316699	0.97
Grand Total	26656100	100	52097797	100	28963772	100	32516253	100

%Modal share based on Urbanisation based Distribution



Modal Share based on Poverty Percentile Distribution

1.High Poverty states data-

Sum of number Row Labels	Column Labels	Any other	Bicycle	Bus	Car/Jeep/Van	Moped/Scooter/Motor Cycle	On foot	Tempo/Autorickshaw/Taxi	Train	Water transport	Grand Total	
ASSAM		35896	1041780	408509	90610		327518	1736610	116593	57863	9449	3824828
BIHAR		42620	1277831	237472	79657		500563	1800911	160172	317891	5123	4422240
CHHATTISGARH		15352	732874	99306	47895		553102	708684	37883	50128	742	2245966
JHARKHAND		21359	949583	168791	73165		553501	1259203	174579	112869	1495	3314545
MADHYA PRADESH		38568	1281690	503884	135277		1283793	2397596	158501	124809	4554	5928672
MANIPUR		4640	42736	40064	16093		49055	93493	32689	3157	4986	286913
MEGHALAYA		5370	6706	31459	39206		11636	164520	40856	972	145	300870
ODISHA		31185	1431140	332014	73187		790585	1478828	84434	104582	34549	4360504
RAJASTHAN		82668	954035	1179920	258980		1645072	2699387	283300	155259	4452	7263073
UTTAR PRADESH		157078	4046176	879333	386323		2176047	4141200	560968	642557	11913	13001595
Grand Total		434736	11764551	3880752	1200393		7890872	16480432	1649975	1570087	77408	44949206

2.Moderate Poverty states data-

Sum of number Row Labels	Column Labels	Any other	Bicycle	Bus	Car/Jeep/Van	Moped/Scooter/Motor Cycle	On foot	Tempo/Autorickshaw/Taxi	Train	Water transport	Grand Total	
ARUNACHAL PRADESH		4553	8239	6552	15122		13623	98205	3378	770	99	150541
DADRA & NAGAR HAVELI		227	10500	10427	3129		16313	42205	8553	391	55	91800
GUJARAT		79275	1428230	699129	353887		2740585	2492336	899543	149942	40329	8883256
MAHARASHTRA		141465	1804128	2357256	666514		3373336	5085701	924514	2440987	53579	16847480
NAGALAND		2881	6743	16008	22620		10691	118805	19800	699	66	198313
TRIPURA		4169	144237	44866	25406		45577	266704	41402	4443	1105	577909
UTTARAKHAND		13870	208438	136953	66391		223227	503155	56627	18613	813	1228087
WEST BENGAL		156677	3648334	1623649	314864		688365	3870932	218559	1522973	51102	12095455
Grand Total		403117	7258849	4894840	1467933		7111717	12478043	2172376	4138818	147148	40072841

3.Low Poverty states data-

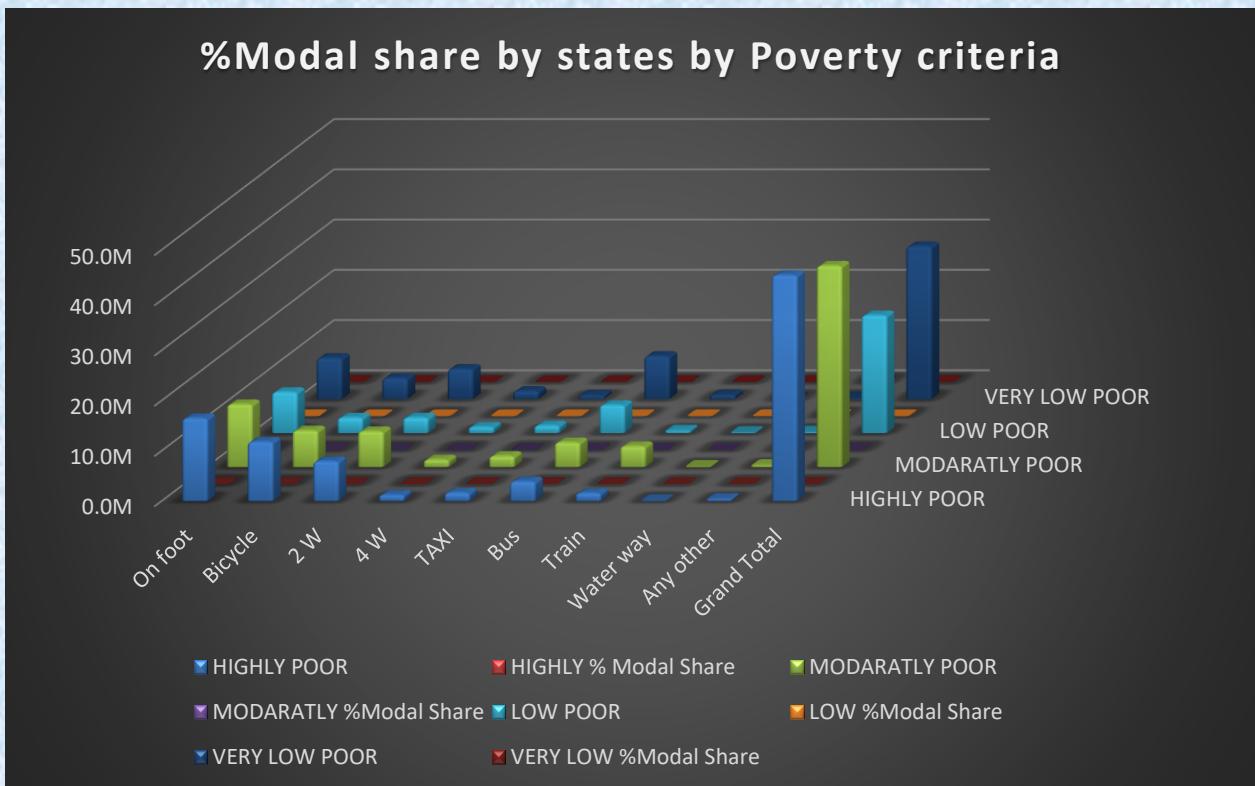
Sum of number Row Labels	Column Labels	Any other	Bicycle	Bus	Car/Jeep/Van	Moped/Scooter/Motor Cycle	On foot	Tempo/Autorickshaw/Taxi	Train	Water transport	Grand Total	
ANDHRA PRADESH		99127	1542145	1730141	270293		1874364	2902420	793002	197045	78099	9486636
CHANDIGARH		5626	101508	26438	48624		84689	54330	11558	1267	135	334175
DAMAN & DIU		162	10687	6854	1887		15376	67645	3803	646	1174	108234
HARYANA		37347	599093	436386	240413		617205	957738	175521	151963	2637	3218303
HIMACHAL PRADESH		3286	24930	304312	35936		71009	440590	9741	4582	778	895164
JAMMU & KASHMIR		12836	39999	503825	78022		85012	505585	36487	19501	6864	1288131
KARNATAKA		69252	748108	2543914	534964		1701363	3145484	443851	141417	28435	9356788
MIZORAM		1588	2591	20656	9487		15211	80693	8161	404	100	138891
Grand Total		229224	3069061	5572526	1219626		4464229	8154485	1482124	516825	118222	24826322

4.Very Low Poverty states data-

Sum of number Row Labels	Column Labels	Any other	Bicycle	Bus	Car/Jeep/Van	Moped/Scooter/Motor Cycle	On foot	Tempo/Autorickshaw/Taxi	Train	Water transport	Grand Total	
ANDAMAN & NICOBAR ISLANDS		644	6936	28015	5611		18735	35011	2912	111	3406	101381
GOA		3552	12089	134016	28232		120840	76810	8123	2152	1658	387472
KERALA		35024	359995	2662132	276011		981016	2346235	221689	183947	49347	7115396
LAKSHADWEEP		93	6065	49	59		2533	5412	53	32	492	14788
NCT OF DELHI		60429	479369	1162768	575757		749366	1179205	122700	157266	2302	4489162
PUDUCHERRY		1101	64462	57925	8658		119411	49602	7330	1589	7062	317140
PUNJAB		50212	1192881	392940	176425		1020797	1088387	126543	60070	3898	4112153
SIKKIM		1026	534	3448	20467		1455	60636	9212	423	18	97219
TAMIL NADU		88234	2057817	4112084	496878		2983866	3312310	237377	384208	78068	13750842
Grand Total		240315	4180148	8553377	1588098		5998019	8153608	735939	789798	146251	30385553

DATA TABLE-

Travel Mode	HIGHLY		MODARATLY		LOW		VERY LOW	
	POOR	% Modal Share	POOR	%Modal Share	POOR	%Modal Share	POOR	%Modal Share
On foot	16480432	26.91	12478043	30.23	8154485	36.31	8153608	36.38
Bicycle	11764551	11.61	7258849	14.07	3069061	21.84	4180148	29.28
2 W	7890872	19.03	7111717	21.81	3069061	13.92	5998019	15.37
4 W	1200393	5.42	1467933	4.32	1219626	3.24	1588098	2.59
TAXI	1649975	2.33	2172376	6.48	1482124	2.96	735939	3.66
Bus	3880752	30.7	4894840	15.74	5572526	13.99	8553377	7.59
Train	1570087	2.74	4138818	6.03	516825	6.39	789798	3.97
Water way	77408	0.53	147148	0.4	118222	0.26	146251	0.2
Any other	434736	0.73	403117	0.92	229224	1.1	240315	0.97
Grand Total	44949206	100	40072841	100	23431154	100.01	30385553	100.01

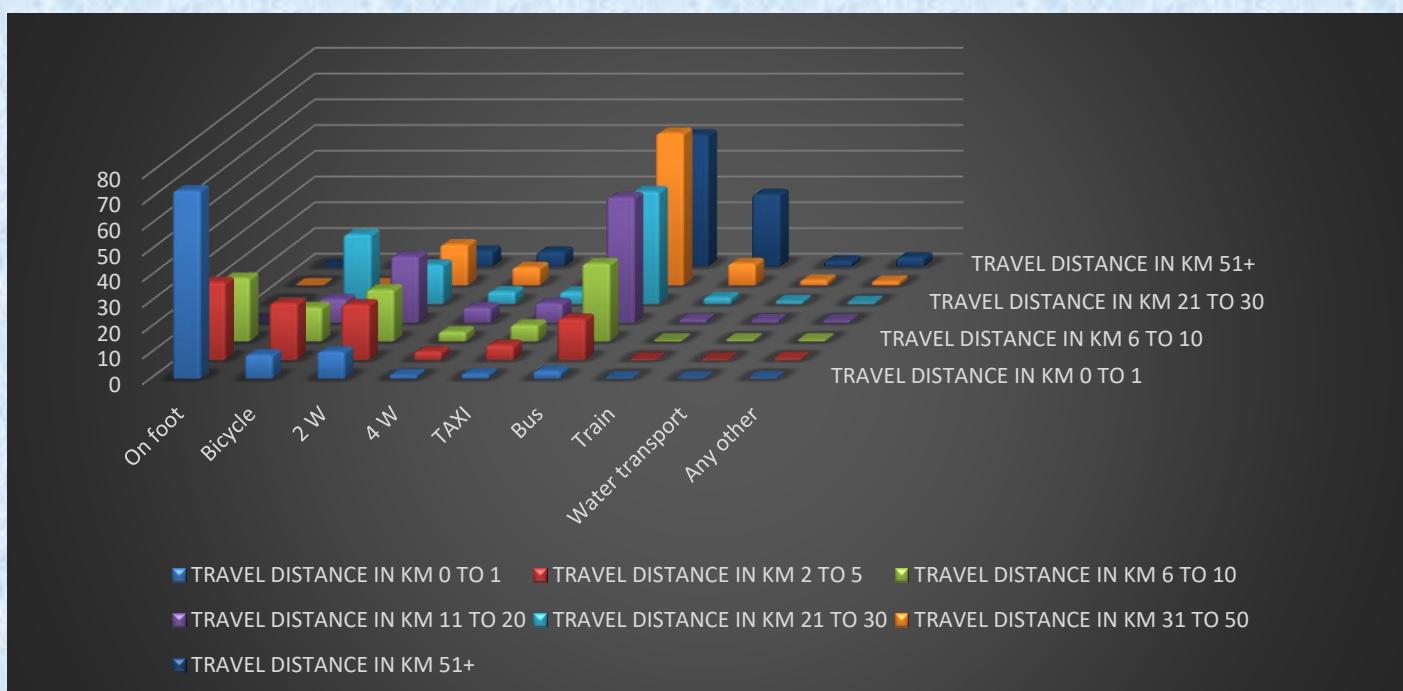


TRIP LENGTH DISTRIBUTION

TRIP LENGTH DISTRIBUTION BASED ON POPULATION DENSITY:-

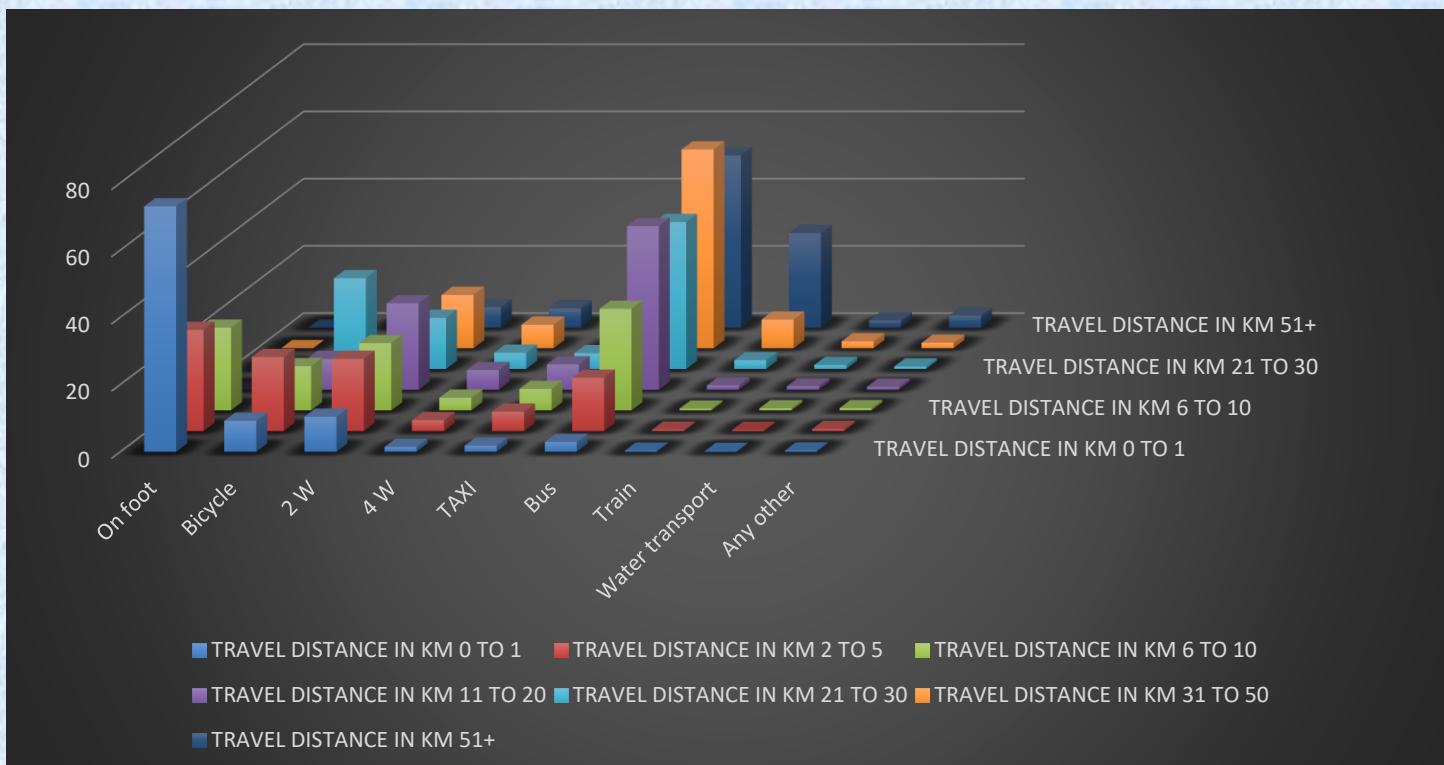
For High population density States:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.83	29.71	27.2	0	0	0	0
Bicycle	14.23	35.84	24.79	20.86	40.63	0	0
2 W	5.82	14.35	14.59	19.87	11.13	13.45	4.81
4 W	1.34	3.29	4.46	8.42	6.39	8.57	3.69
TAXI	1.12	3.4	3.7	4.94	2.92	3.96	1.7
Bus	2.01	11.06	21.31	34.75	25.26	39.92	28.78
Train	0.93	1.17	2.68	9.51	12.48	31.86	57.57
Water transport	0.15	0.19	0.25	0.39	0.35	0.71	1.35
Any other	0.56	1.01	1.02	1.27	0.84	1.53	2.11



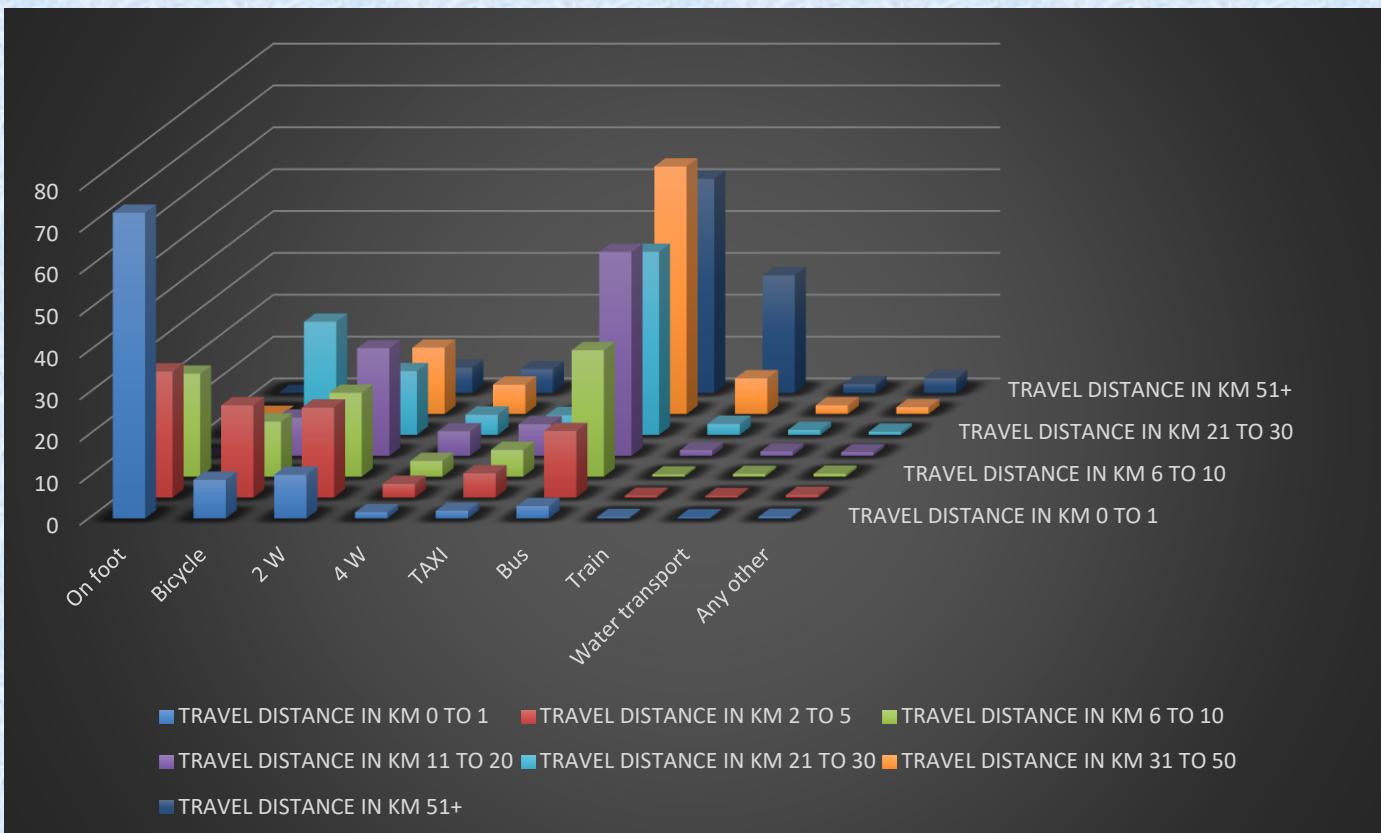
FOR MODERATE POPULATION DENSITY:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	71.07	28.65	24.08	0	0	0	0
Bicycle	10.97	26.96	17.5	11.12	21.32	0	0
2 W	11.29	23.87	22.99	26.6	15.64	14.01	6.25
4 W	1.4	3.24	4.21	6.84	6	7.19	5.5
TAXI	1.37	4.21	4.93	5.52	3.51	4.25	3.18
Bus	2.49	10.69	20.76	35.26	33.37	40.85	48.73
Train	0.92	1.67	4.53	13.19	18.81	31.5	32.07
Water transport	0.11	0.13	0.29	0.55	0.58	0.91	1.22
Any other	0.39	0.58	0.71	0.93	0.77	1.3	3.05



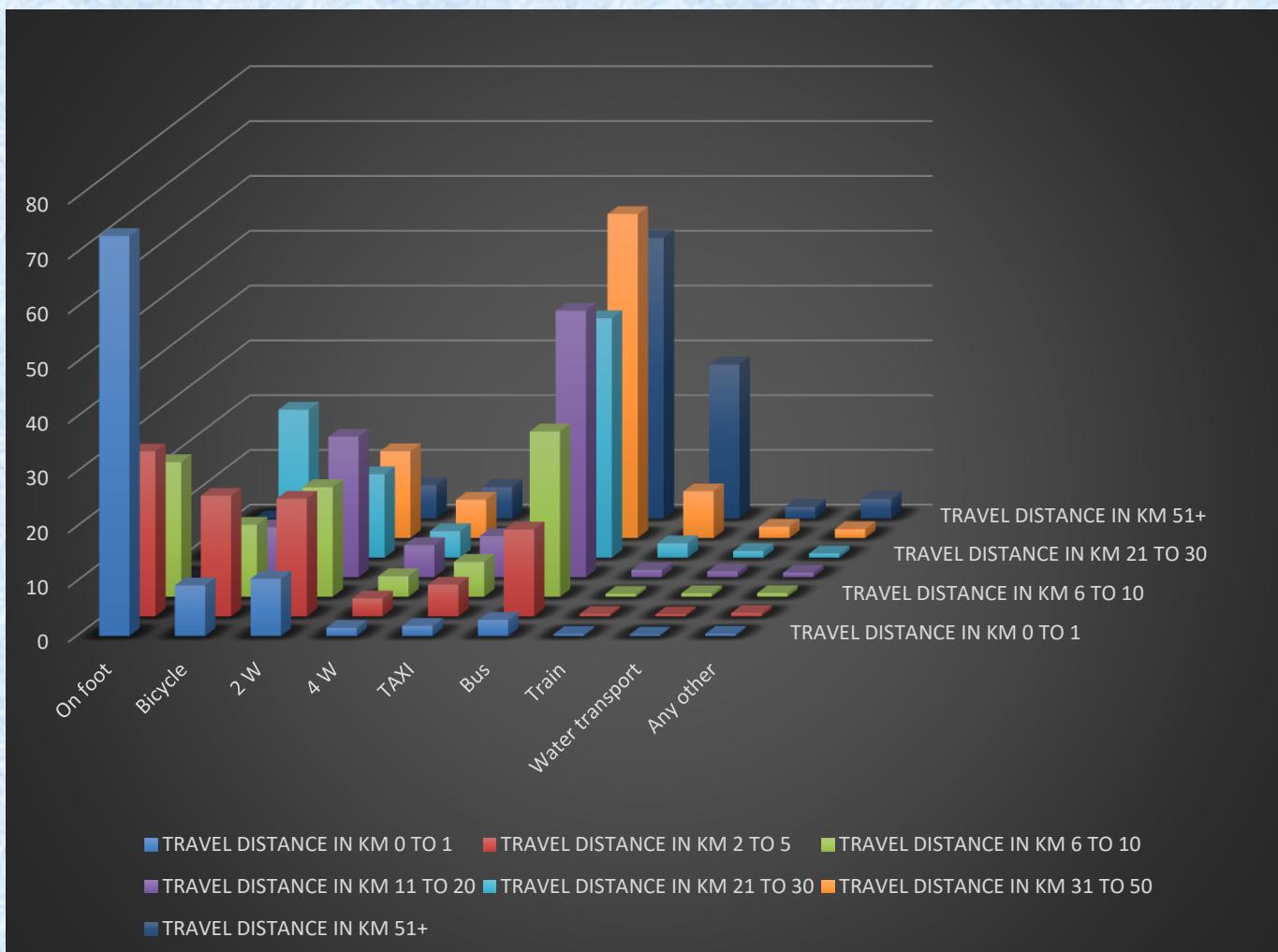
FOR LOW POPULATION DENSITY:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	71.85	33.72	26.99	0	0	0	0
Bicycle	9.96	25.47	17.71	13.35	29.94	0	0
2 W	12.26	24.77	25.11	31.18	18.26	20.58	8.42
4 W	1.27	2.54	4	7.47	6.27	8.4	6.06
TAXI	1.52	5.72	7.99	9.54	5.98	6.97	3.96
Bus	2.14	6.42	16.3	35.02	34.93	53.09	53.36
Train	0.46	0.54	0.67	1.59	2.87	7.8	23.35
Water transport	0.13	0.18	0.39	0.7	0.77	1.31	1.69
Any other	0.41	0.65	0.84	1.15	1	1.85	3.17



FOR VERY LOW POPULATION DENSITY:

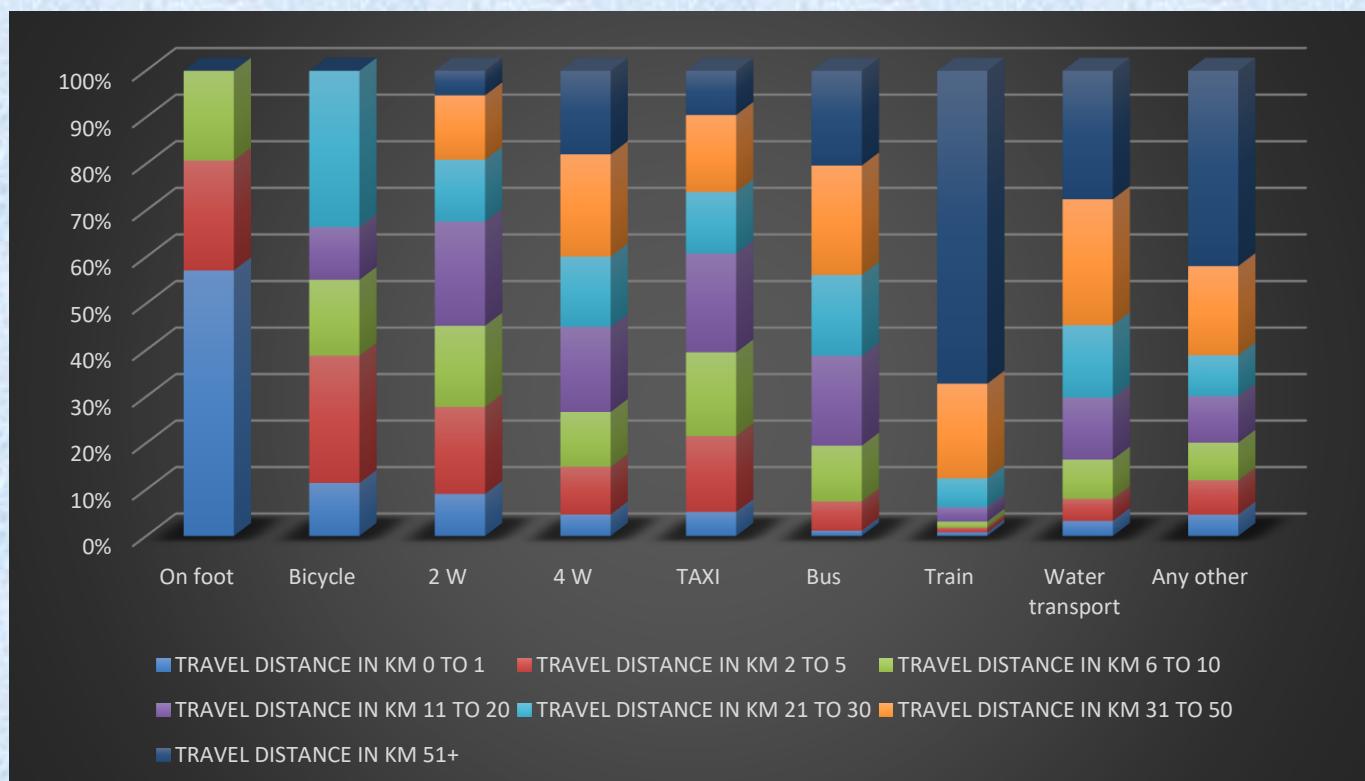
TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	85.25	46.6	38.45	0	0	0	0
Bicycle	2.14	6.66	3.91	3.23	10.61	0	0
2 W	3.78	10.62	8.85	12.64	8.07	7.34	2.77
4 W	2.79	7.81	7.2	11.8	10.48	12.21	10.28
TAXI	1.67	7.04	5.06	5.96	4.65	4.47	3.62
Bus	3.47	19.6	34.61	63.73	63.43	72.33	71.63
Train	0.27	0.34	0.36	0.48	0.61	1.27	8.1
Water transport	0.25	0.57	0.58	0.52	0.44	0.45	0.43
Any other	0.37	0.77	0.97	1.65	1.7	1.93	3.18



TRIP LENGTH DISTRIBUTION BASED ON POPULATION DENSITY:-

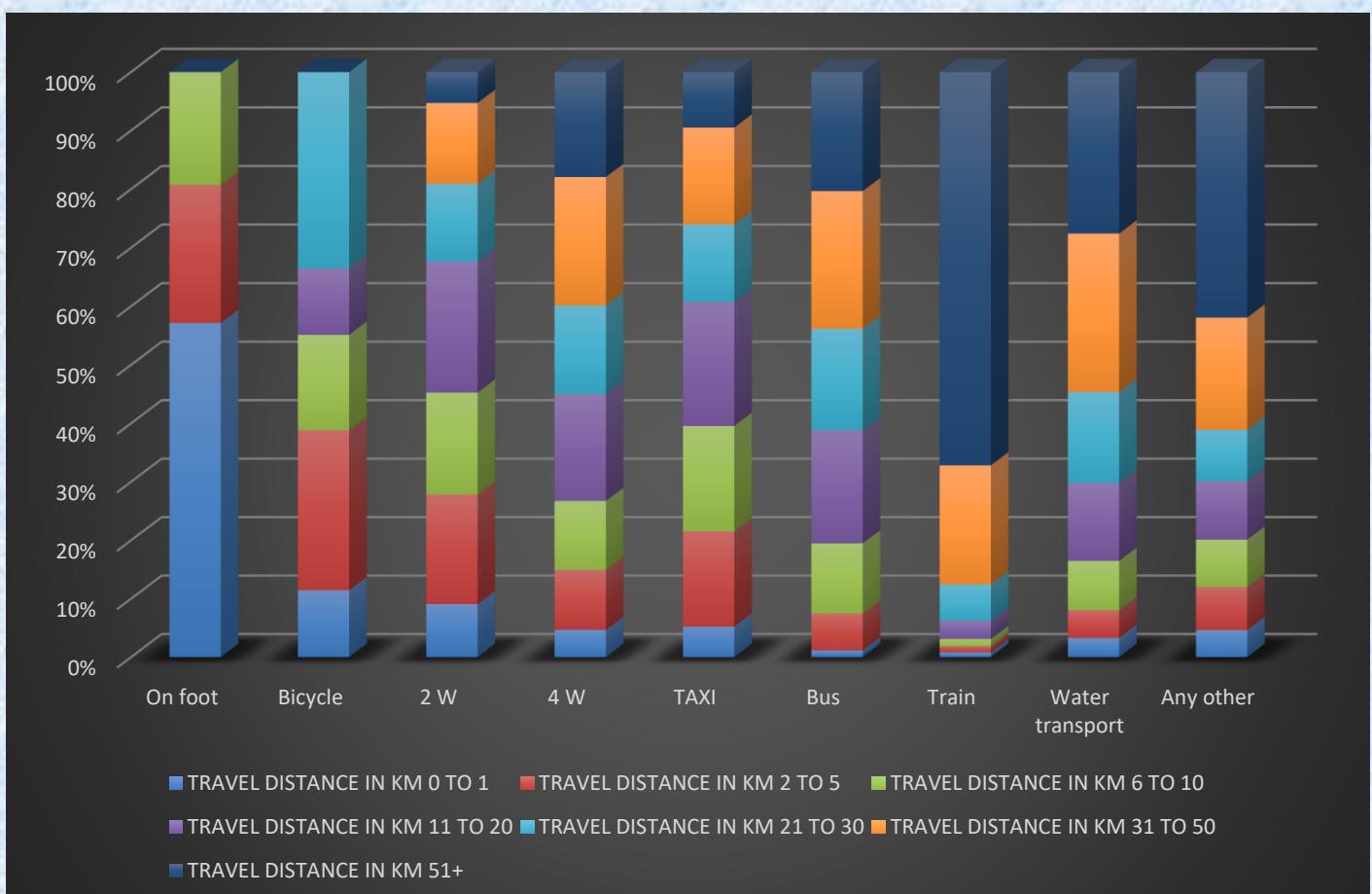
FOR HIGH POPULATION DENSITY:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	76.7	29.45	17.93	0	0	0	0
Bicycle	6.86	24.02	17.07	9.21	13.83	0	0
2 W	8.39	20.04	20.94	23.94	17.2	14.85	6.97
4 W	2.93	7.48	10.87	17.87	20.01	21.76	9.84
TAXI	1.4	5.02	5.81	5.15	3.86	5.21	3.59
Bus	2.51	11.85	24.47	37.07	35.41	41.5	50.01
Train	0.47	0.79	1.7	5.31	8.13	14.58	26.24
Water transport	0.13	0.14	0.13	0.09	0.09	0.14	0.45
Any other	0.62	1.22	1.09	1.36	1.47	1.95	2.9



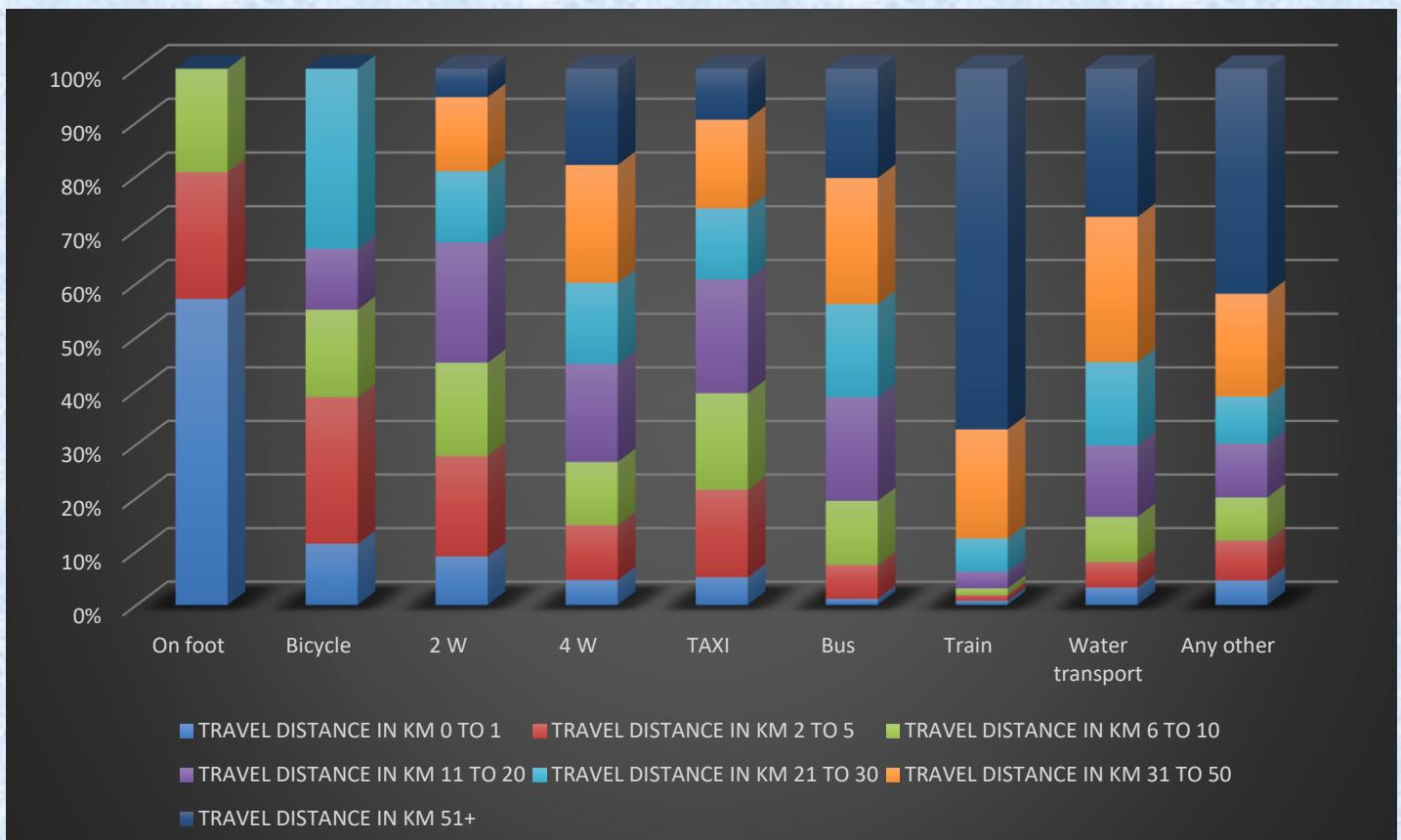
FOR MODERATE HIGHWAY DENSITY:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	70.66	28.27	25.06	0	0	0	0
Bicycle	10.49	26.13	16.46	10.24	22.12	0	0
2 W	11.81	24.39	22.89	26.76	15.55	14.26	6.56
4 W	1.37	3.08	3.9	6.5	5.45	6.55	5.47
TAXI	1.44	4.09	4.46	5.01	3.36	4.24	3.28
Bus	2.68	11.43	21.23	35.53	32.17	38.89	44.45
Train	1.08	1.89	4.97	14.44	19.96	33.77	35.81
Water transport	0.12	0.13	0.31	0.62	0.64	1.04	1.41
Any other	0.35	0.59	0.71	0.91	0.75	1.26	3.02



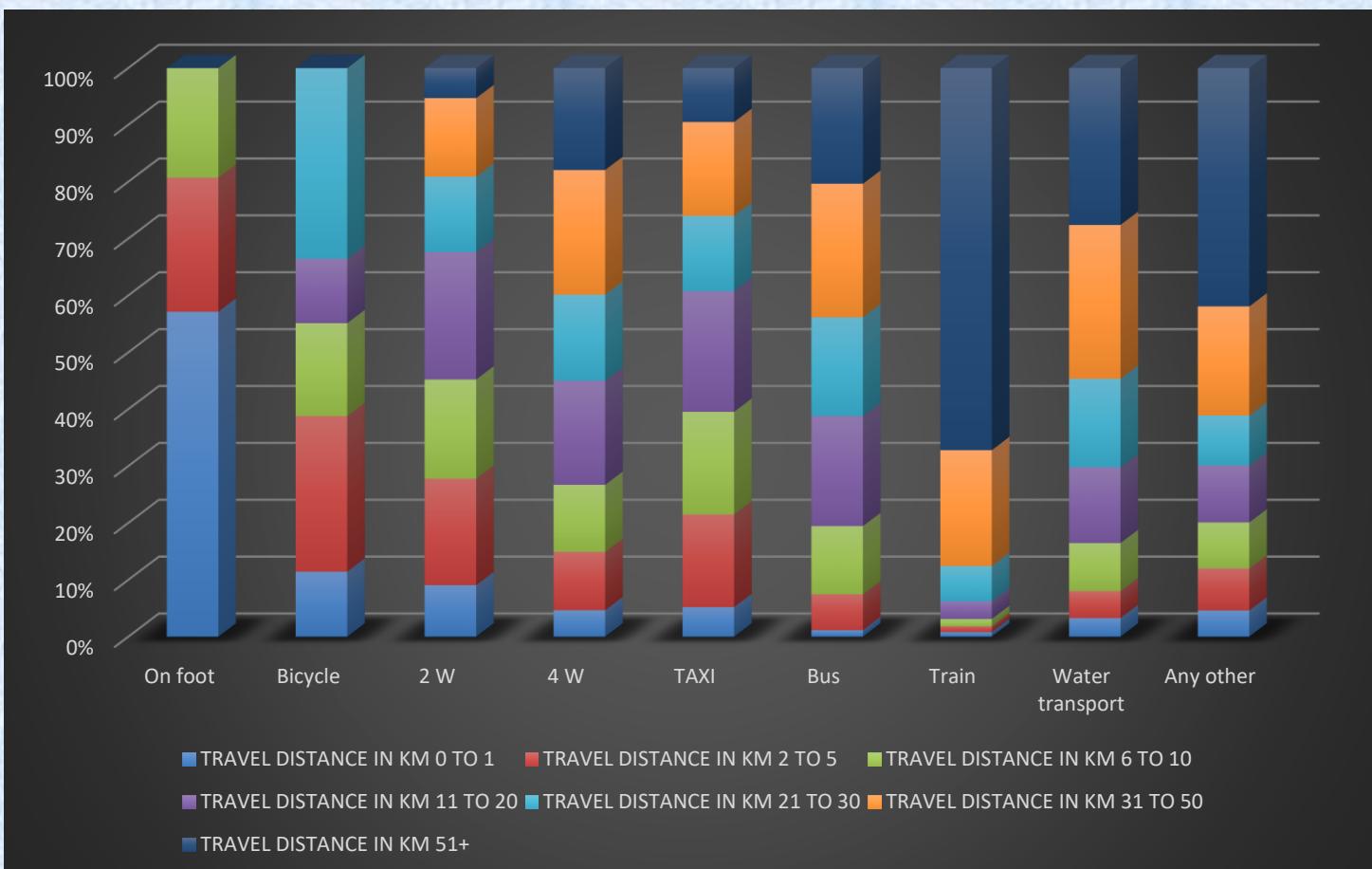
FOR LOW HIGHWAY DENSITY:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.42	31.24	29.25	0	0	0	0
Bicycle	14.3	34.59	23.79	20.97	41.76	0	0
2 W	6.54	15.27	14.93	20.77	11.02	13.86	4.87
4 W	1.12	2.6	3.21	5.4	3.76	5.98	3.91
TAXI	1.27	4.63	5.59	7.6	3.92	4.89	2.2
Bus	1.93	9.64	19.75	35.79	27.94	46.07	37.06
Train	0.75	0.94	2.11	7.62	10.24	26.45	47.91
Water transport	0.15	0.24	0.4	0.64	0.59	1.15	1.49
Any other	0.52	0.86	0.96	1.21	0.77	1.6	2.57



FOR VERY LOW HIGHWAY DENSITY:

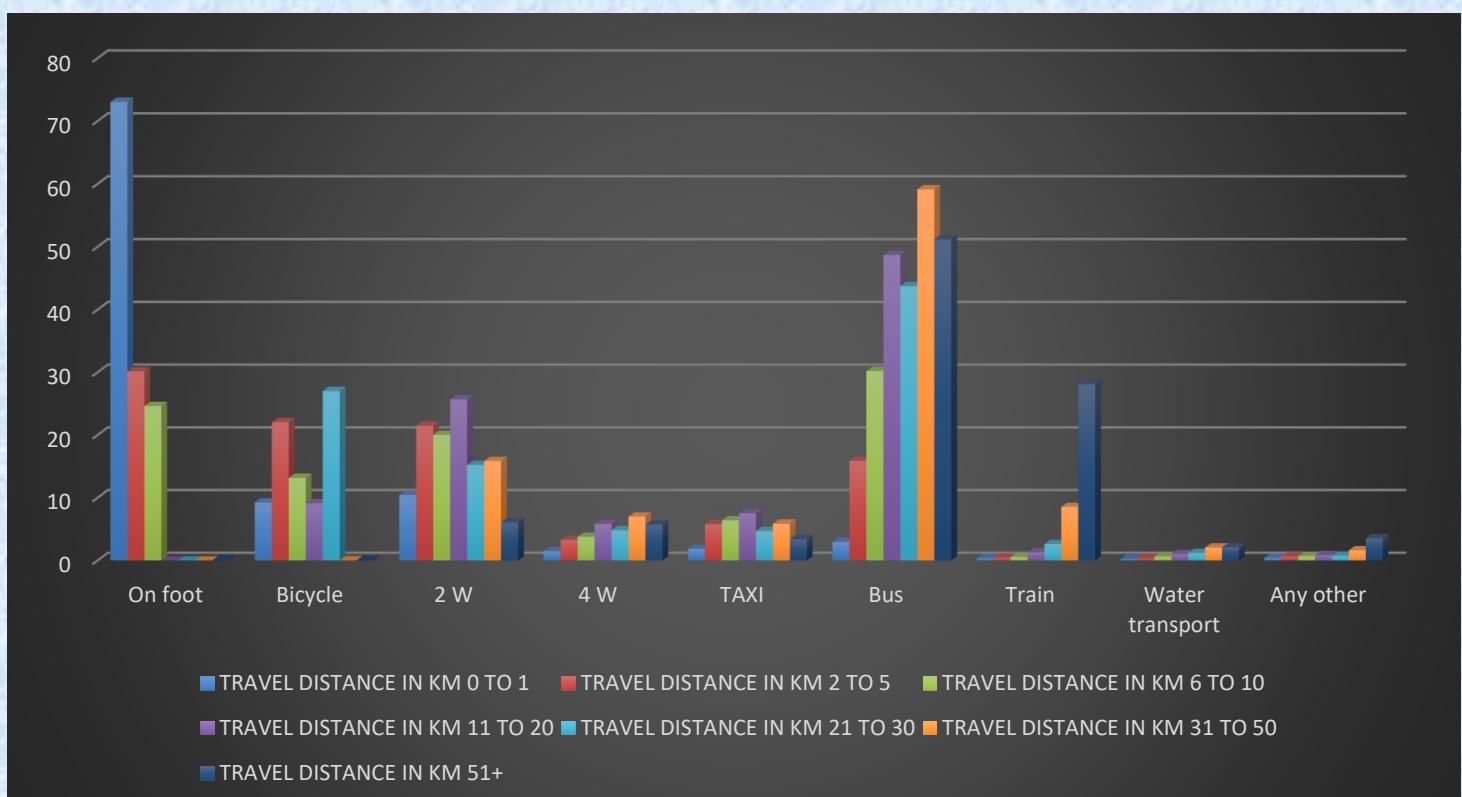
TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	72.47	34.45	26.4	0	0	0	0
Bicycle	9.25	24.56	17.84	13.96	28.72	0	0
2 W	12.31	25.3	25.93	31.58	18.91	20.64	8.33
4 W	1.37	2.74	4.37	8.04	6.75	8.66	6.04
TAXI	1.39	4.98	6.85	8.18	5.47	6.24	3.65
Bus	2.21	6.71	16.88	34.99	35.55	53.89	54.85
Train	0.46	0.52	0.64	1.53	2.99	7.92	22.92
Water transport	0.13	0.14	0.26	0.53	0.57	0.89	1.39
Any other	0.41	0.61	0.82	1.19	1.04	1.76	2.83



TRIP LENGTH DISTRIBUTION BASED ON URBANISATION :-

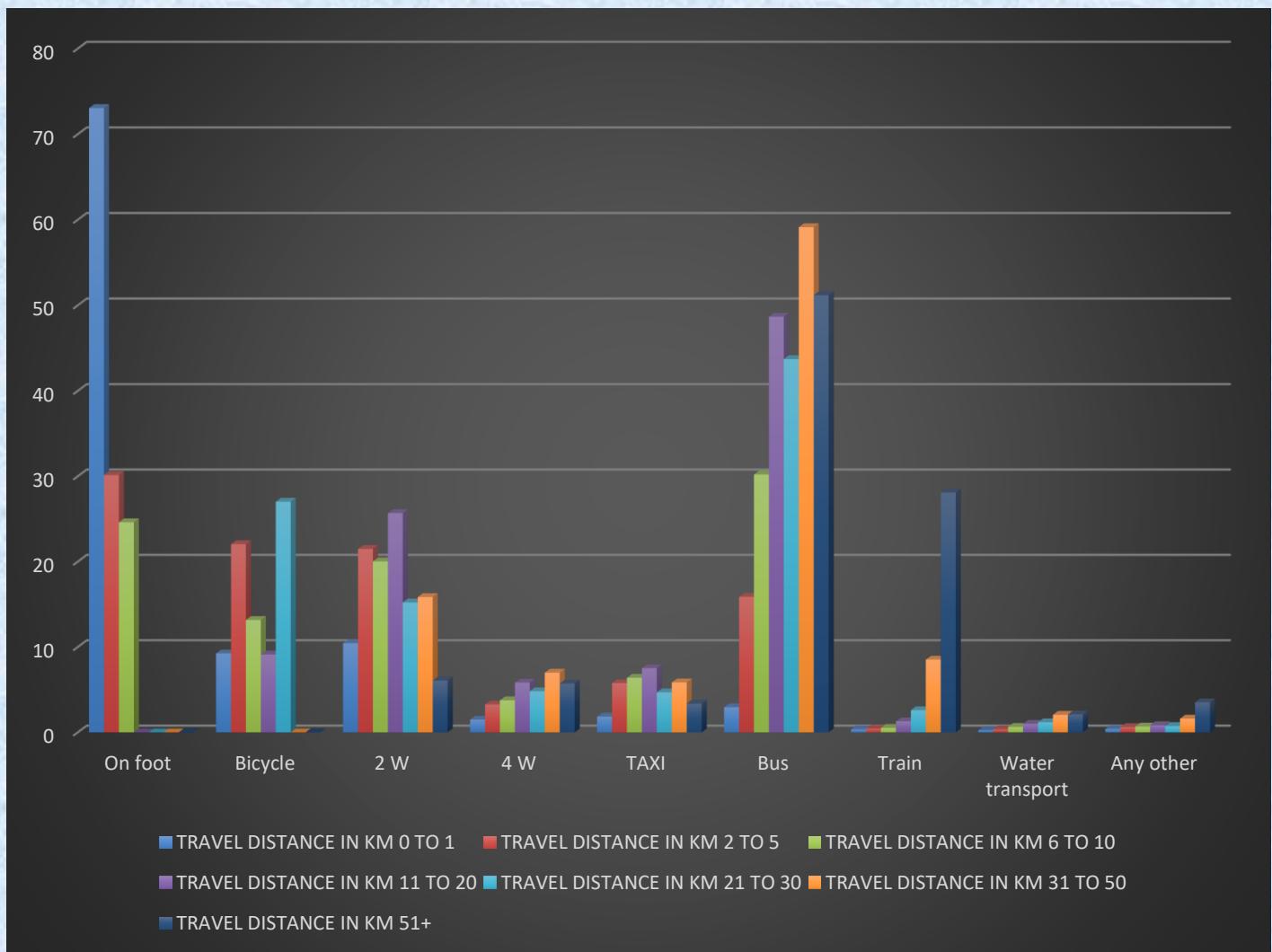
FOR HIGH URBANIZATION:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.36	27.07	15.35	0	0	0	0
Bicycle	8.43	19.55	10.94	5.81	11.43	0	0
2 W	10.18	22.5	22.81	23.95	16.44	12.87	5.2
4 W	1.86	4.42	5.82	9.31	9.73	10.41	5.77
TAXI	1.27	2.68	2.29	2.33	2.53	3.5	2.38
Bus	4.04	22.5	40.52	53.12	51.53	59.58	57.08
Train	0.31	0.53	1.3	3.97	6.51	10.81	24.79
Water transport	0.23	0.26	0.47	0.77	0.92	1.43	1.62
Any other	0.32	0.48	0.51	0.73	0.9	1.41	3.16



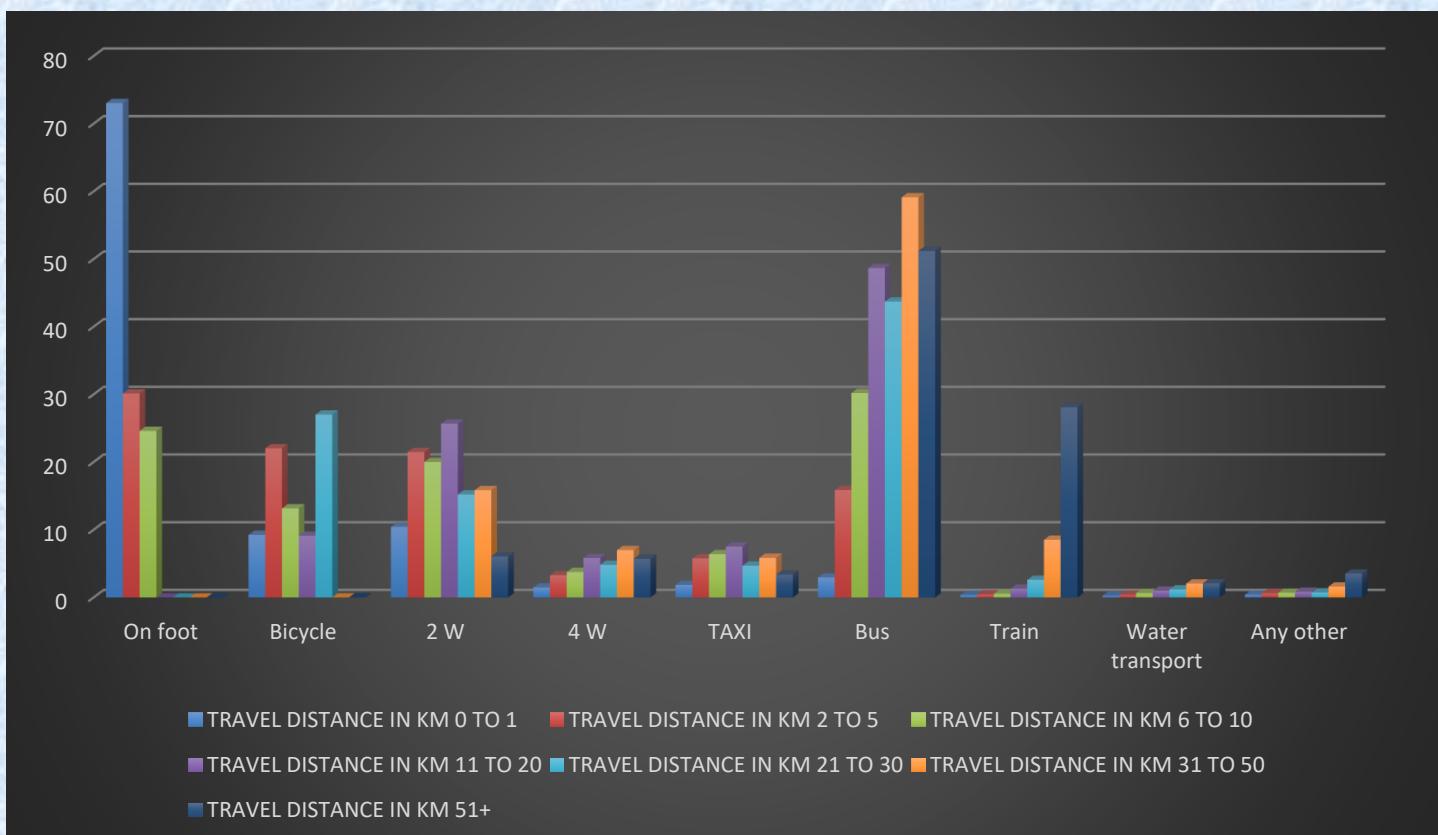
FOR MODERATE URBANIZATION:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	70.78	29.71	26.31	0	0	0	0
Bicycle	8.59	22.74	13.78	8.66	22.05	0	0
2 W	12.87	25.99	24.03	28.59	16.72	15.79	7.58
4 W	1.57	3.31	4.56	8.17	7.16	8.12	6.37
TAXI	2.06	7.01	8.47	9.29	5.95	6.66	4.99
Bus	2.65	8.87	17.93	32.76	30.57	37.95	44.67
Train	0.91	1.49	3.75	10.85	15.96	28.82	31.26
Water transport	0.14	0.17	0.34	0.59	0.7	1.16	2.03
Any other	0.43	0.69	0.83	1.09	0.9	1.48	3.1



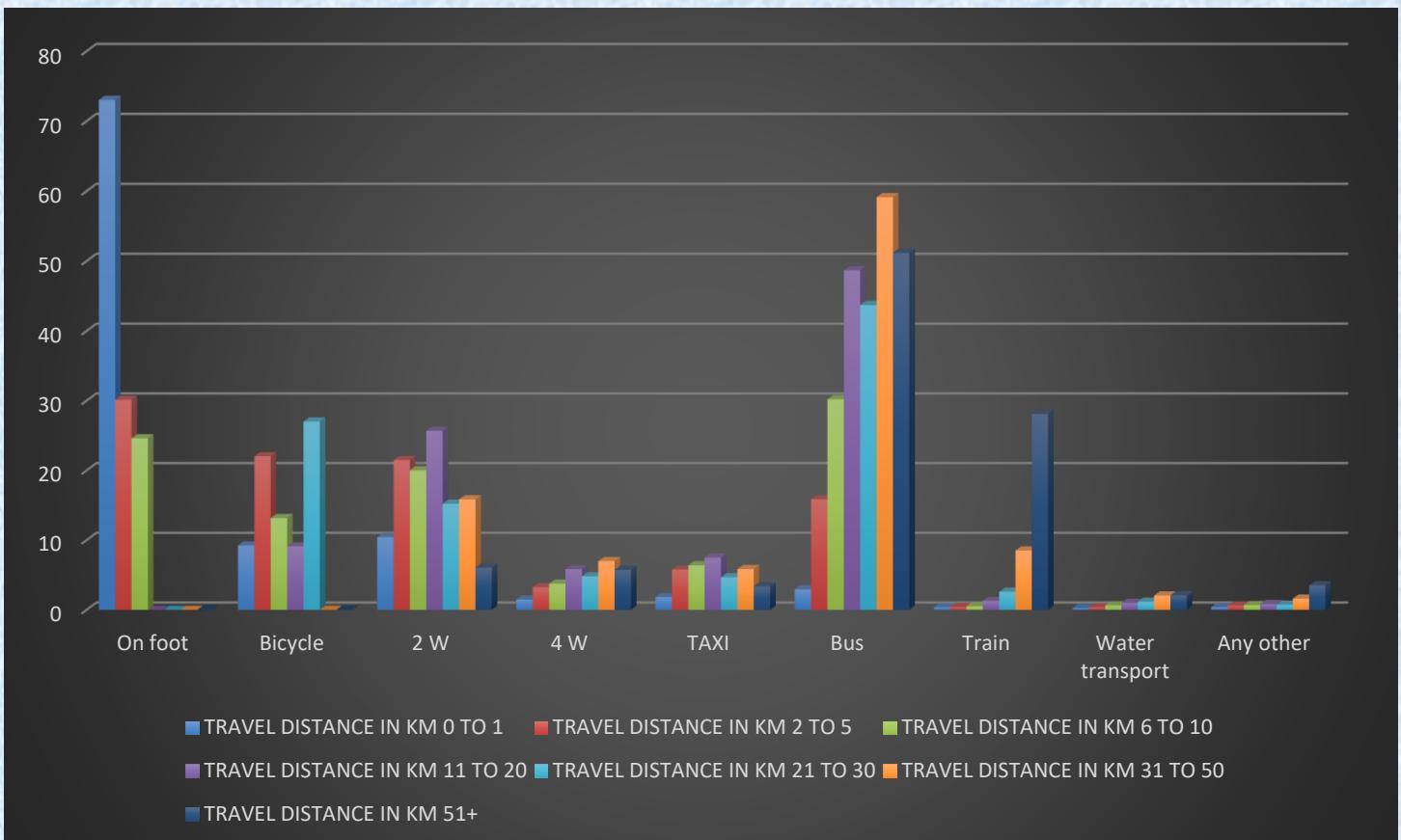
FOR LOW URBANIZATION:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	74.32	35.53	30.5	0	0	0	0
Bicycle	13.39	33.26	23.61	18.33	34.65	0	0
2 W	7.22	16.72	16.91	21.36	10.76	11.81	4.07
4 W	1.17	2.76	4.14	6.6	4.19	5.62	3.8
TAXI	0.84	3.25	4.35	5.29	2.58	2.83	1.65
Bus	1.72	6.39	16.15	35.29	30.78	46.65	40.96
Train	0.72	1.01	2.96	11.3	15.74	31.02	45.85
Water transport	0.13	0.16	0.22	0.3	0.27	0.45	1.14
Any other	0.5	0.9	1.17	1.53	1.04	1.61	2.54



FOR VERY LOW URBANIZATION:

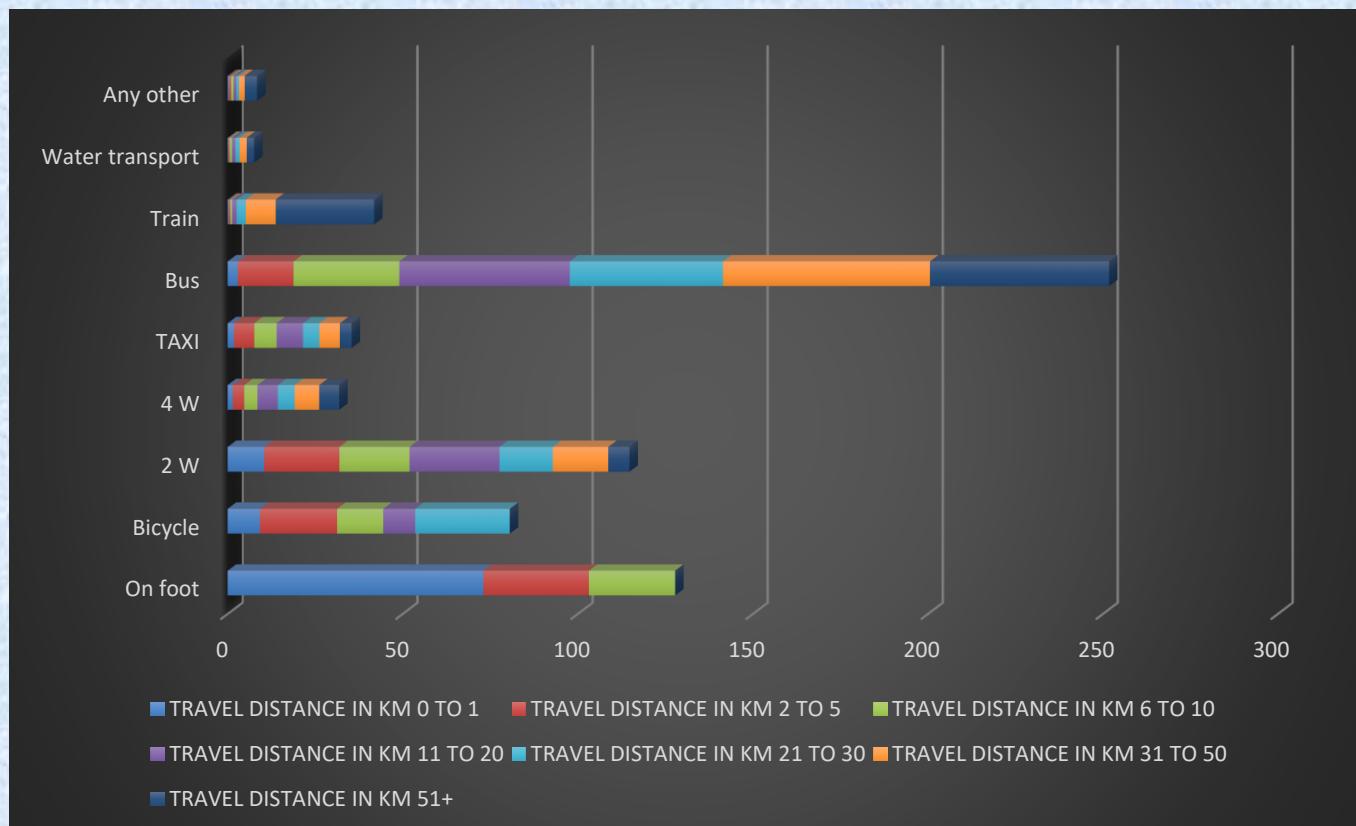
TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.11	33.12	33.37	0	0	0	0
Bicycle	15.07	40.13	33.53	35.51	55.91	0	0
2 W	7.46	16.61	16.83	26.73	13.69	24.22	8.09
4 W	1	2.03	2.51	5.19	3.6	8.02	4.76
TAXI	0.93	3.55	4.98	8.25	3.64	5.43	1.92
Bus	1.03	2.7	6.38	18.91	17.46	43.48	38
Train	0.81	0.89	1.23	3.67	4.72	16.49	44.41
Water transport	0.08	0.13	0.21	0.41	0.26	0.56	0.51
Any other	0.51	0.84	0.96	1.32	0.72	1.79	2.3



TRIP LENGTH DISTRIBUTION BASED ON POVERTY :-

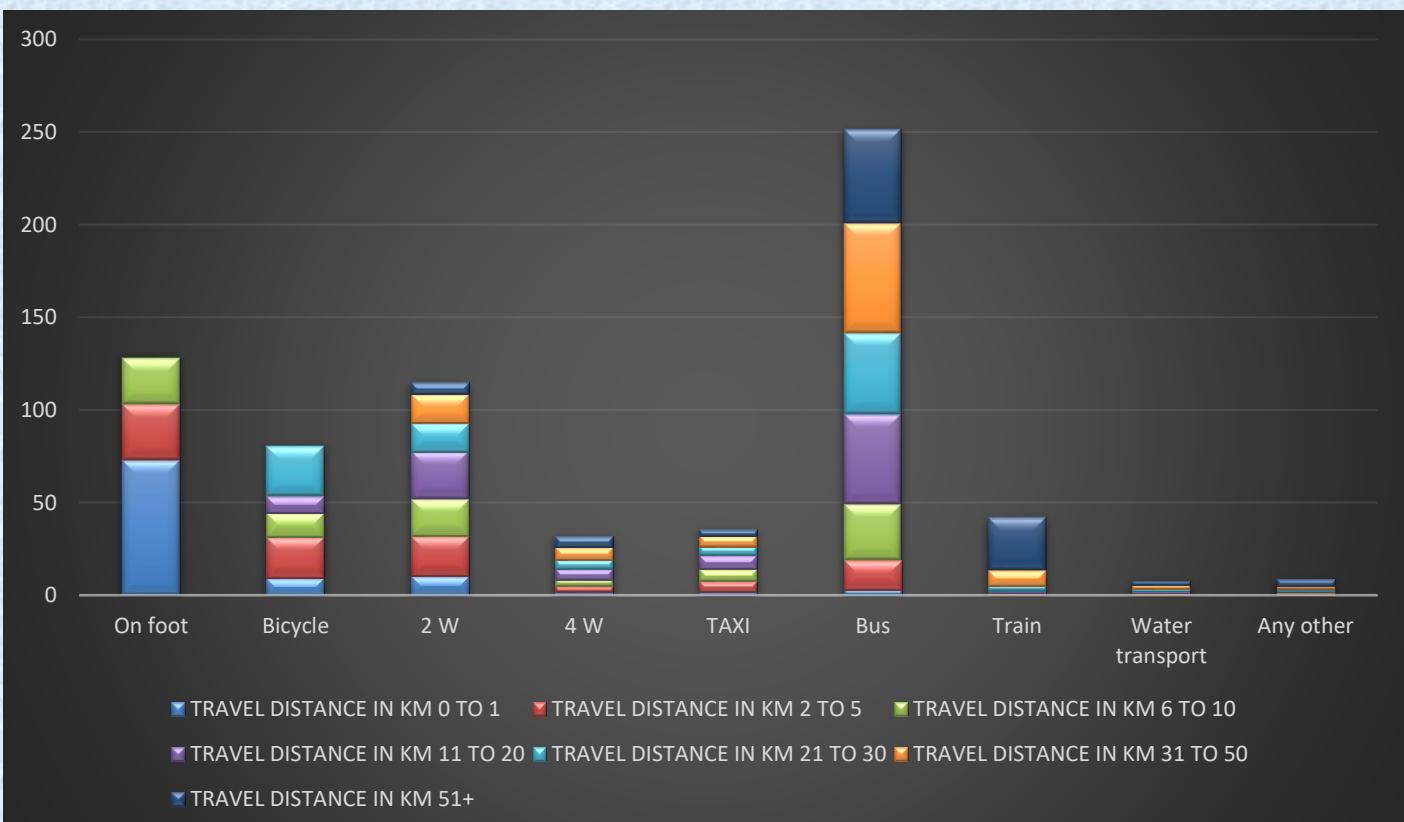
FOR HIGH URBANIZATION:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.2	35.99	33.5	0	0	0	0
Bicycle	14.44	37.13	32.21	33.34	52.34	0	0
2 W	8.62	18.1	18.72	28.87	15.38	25.93	9.09
4 W	0.86	1.71	2.25	4.28	3.02	6.67	4.62
TAXI	0.83	3.11	4.57	7.22	3.07	4.6	1.79
Bus	0.92	2.49	6.62	21.14	20.56	45.37	41.16
Train	0.62	0.72	1.04	3.36	4.51	14.98	40.41
Water transport	0.1	0.16	0.29	0.58	0.41	0.74	0.6
Any other	0.4	0.59	0.8	1.2	0.72	1.71	2.31



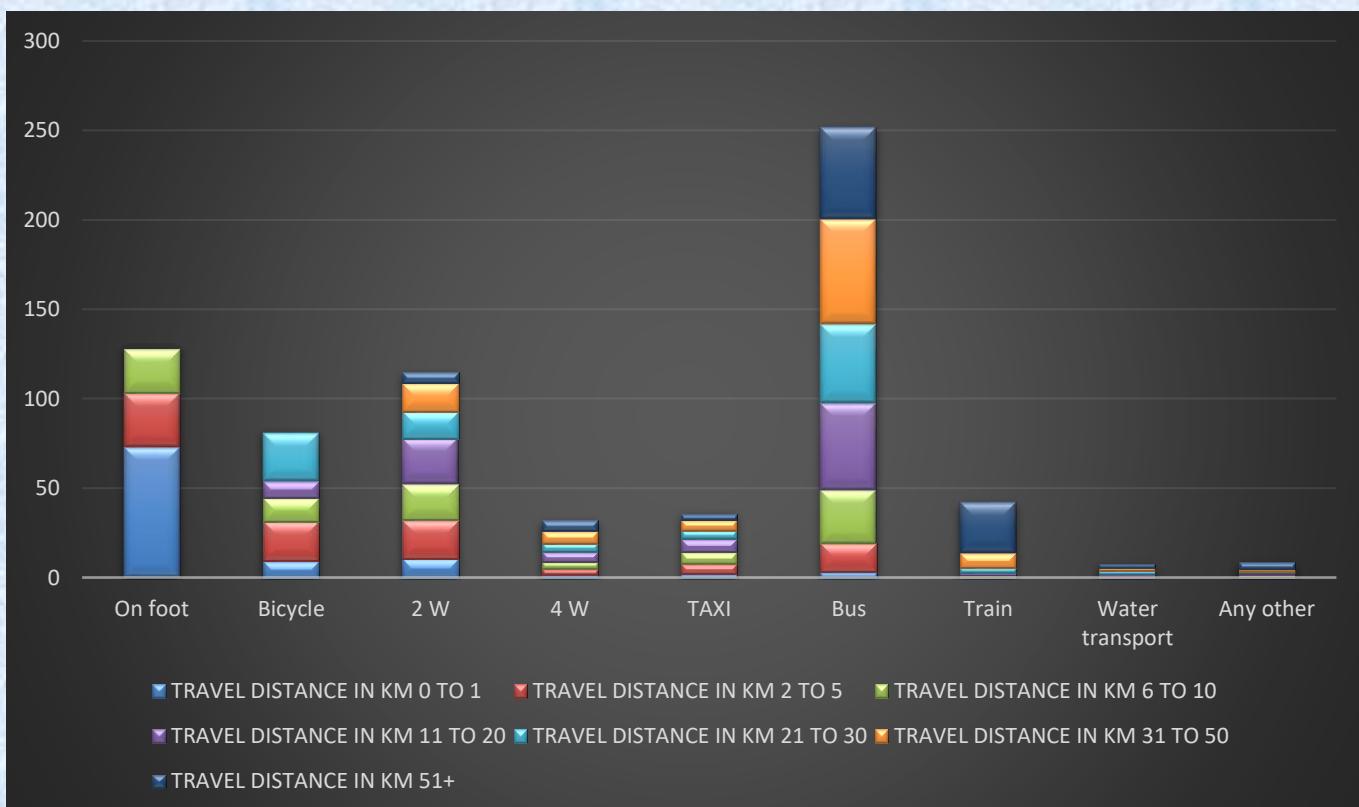
FOR MODERATE URBANIZATION:

TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	71.47	29.4	27.77	0	0	0	0
Bicycle	11.89	29.86	19.86	15.36	31.58	0	0
2 W	9.55	21.3	20.12	24.77	13.65	14.39	6.27
4 W	1.41	3.08	4.19	7.5	5.72	6.86	4.75
TAXI	1.64	5.56	6.48	7.74	4.75	5.55	3.55
Bus	2.3	8.11	15.86	28.71	24.04	33.62	33.1
Train	1.11	1.73	4.53	14.28	19.01	37.4	48.18
Water transport	0.12	0.13	0.21	0.4	0.42	0.8	1.76
Any other	0.51	0.84	0.97	1.24	0.85	1.39	2.41



FOR LOW POVERTY:

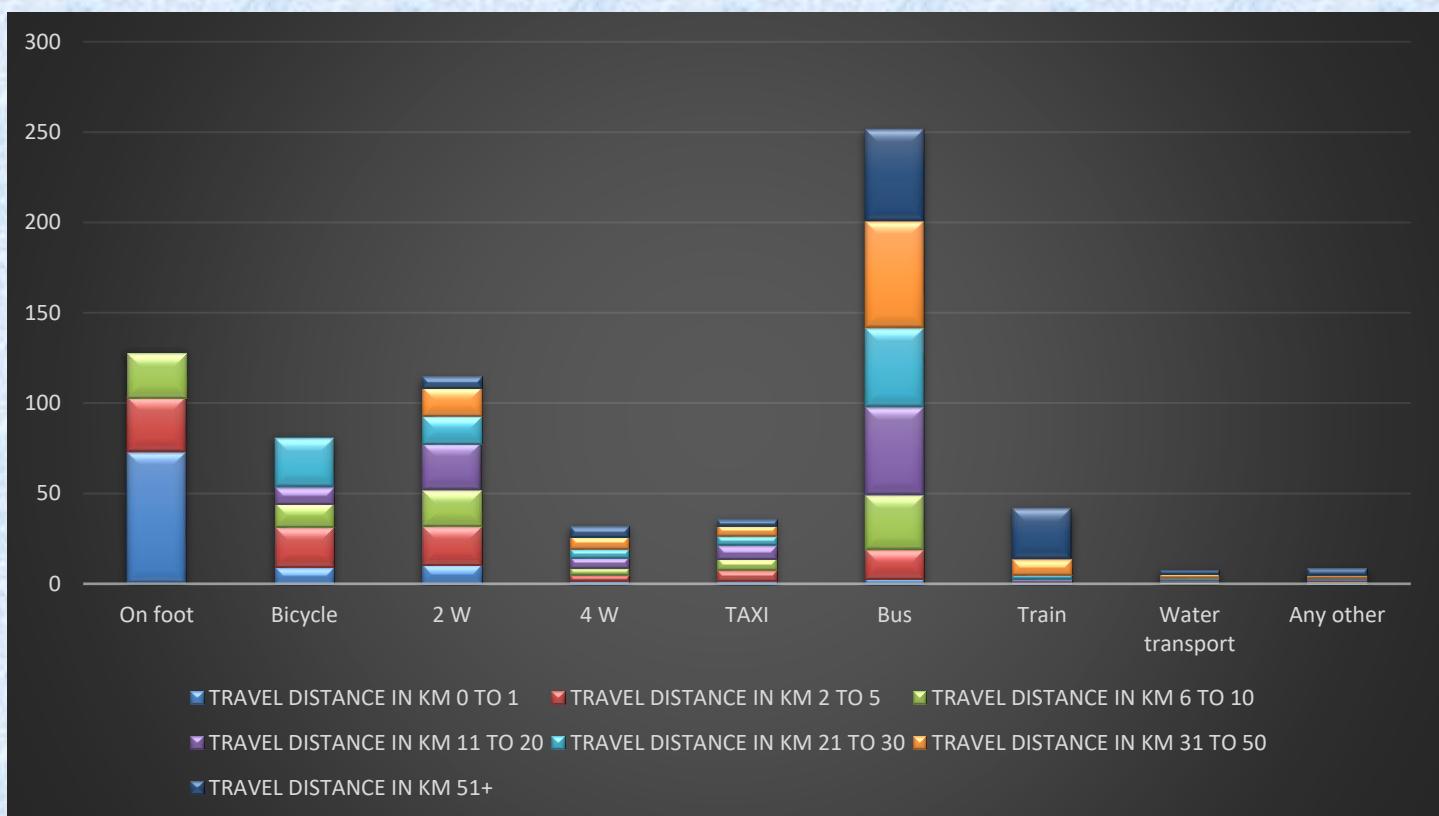
TRAVEL DISTANCE IN KM							
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.95	31.4	20.16	0	0	0	0
Bicycle	8.81	23.25	14.62	7.99	15.46	0	0
2 W	10.71	23.42	24.14	26.26	16.72	13.7	5.19
4 W	1.7	4.14	6.22	10.43	10.41	11.37	6.06
TAXI	0.95	3.25	4.18	4.28	3.12	3.77	2.41
Bus	2.97	13.09	28.27	45.61	46.42	58.39	61.41
Train	0.39	0.61	1.32	3.89	6.21	10.26	20.88
Water transport	0.12	0.13	0.29	0.5	0.54	0.8	0.8
Any other	0.4	0.71	0.8	1.04	1.13	1.71	3.26



FOR VERY LOW POVERTY:

TRAVEL DISTANCE IN KM

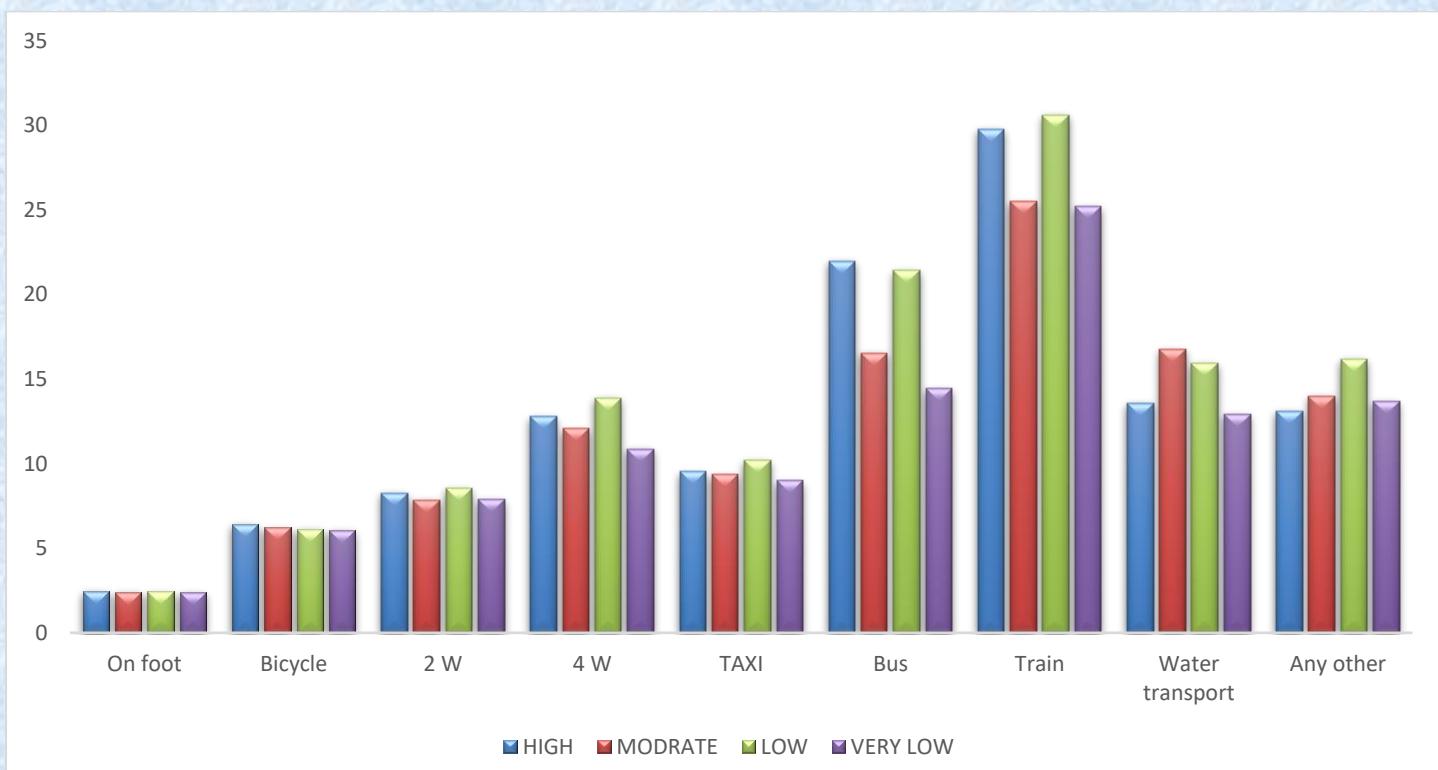
MODE	0 TO 1	2 TO 5	6 TO 10	11 TO 20	21 TO 30	31 TO 50	51+
On foot	73.05	30.13	24.61	0	0	0	0
Bicycle	9.24	22.04	13.16	9.12	27.02	0	0
2 W	10.44	21.49	20.02	25.69	15.22	15.85	6.06
4 W	1.49	3.27	3.76	5.83	4.82	6.99	5.71
TAXI	1.85	5.78	6.39	7.52	4.69	5.85	3.36
Bus	2.95	15.88	30.21	48.68	43.72	59.13	51.18
Train	0.35	0.43	0.53	1.3	2.6	8.52	28.1
Water transport	0.25	0.36	0.64	1.01	1.18	2.05	2.09
Any other	0.39	0.62	0.68	0.84	0.74	1.61	3.52



AVERAGE TRIP LENGTH:

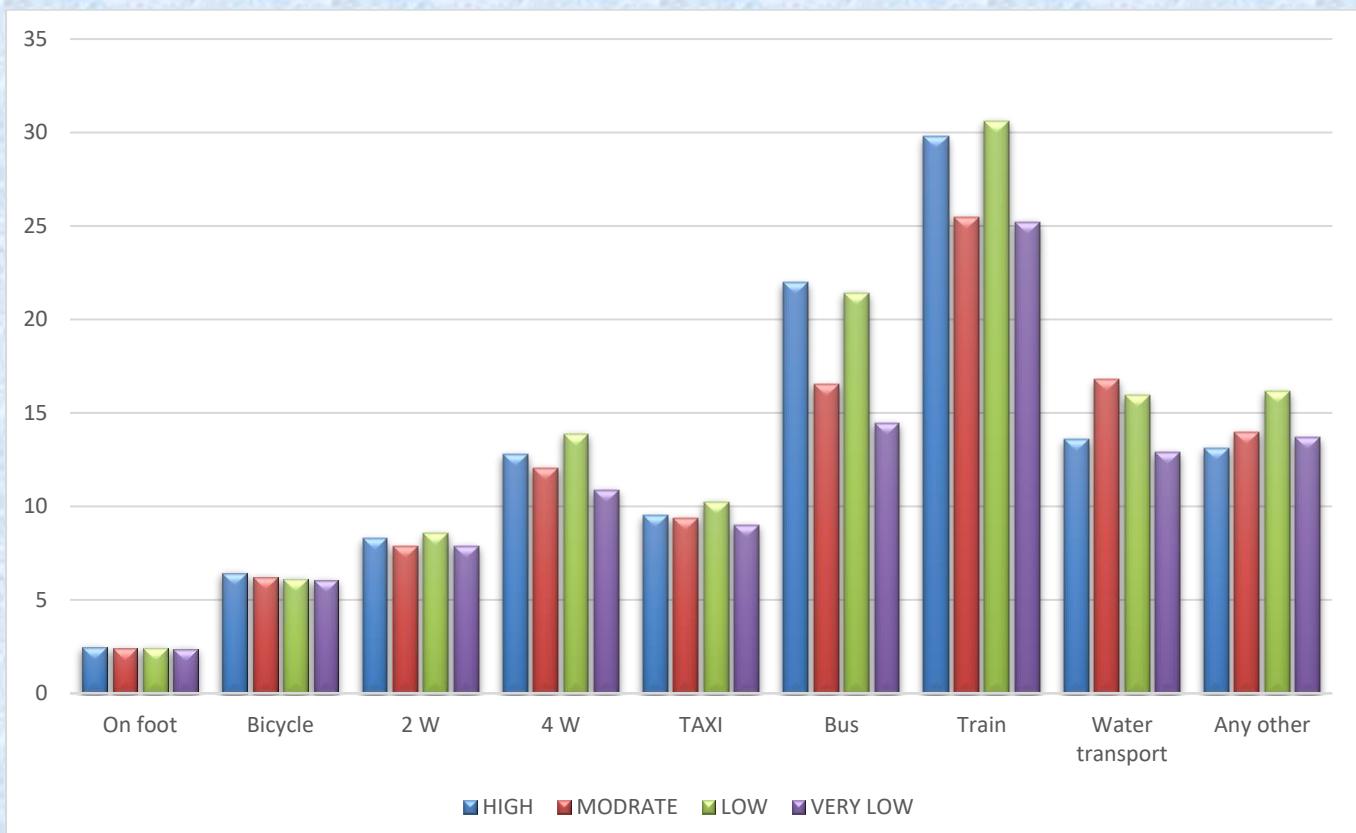
- Average trip length based on population density:-

MODE	HIGH	MODRATE	LOW	VERY LOW
On foot	2.29	2	2.6	2.3
Bicycle	5.88	6	6.45	6.24
2 W	7.81	8	8.46	7.97
4 W	10.99	13	14.68	11.12
TAXI	8.88	10	10.27	8.77
Bus	16.45	20	22.23	15.93
Train	28.66	31	32.08	19.62
Water transport	16.81	17	15.51	9.47
Any other	11.06	15	15.11	15.73



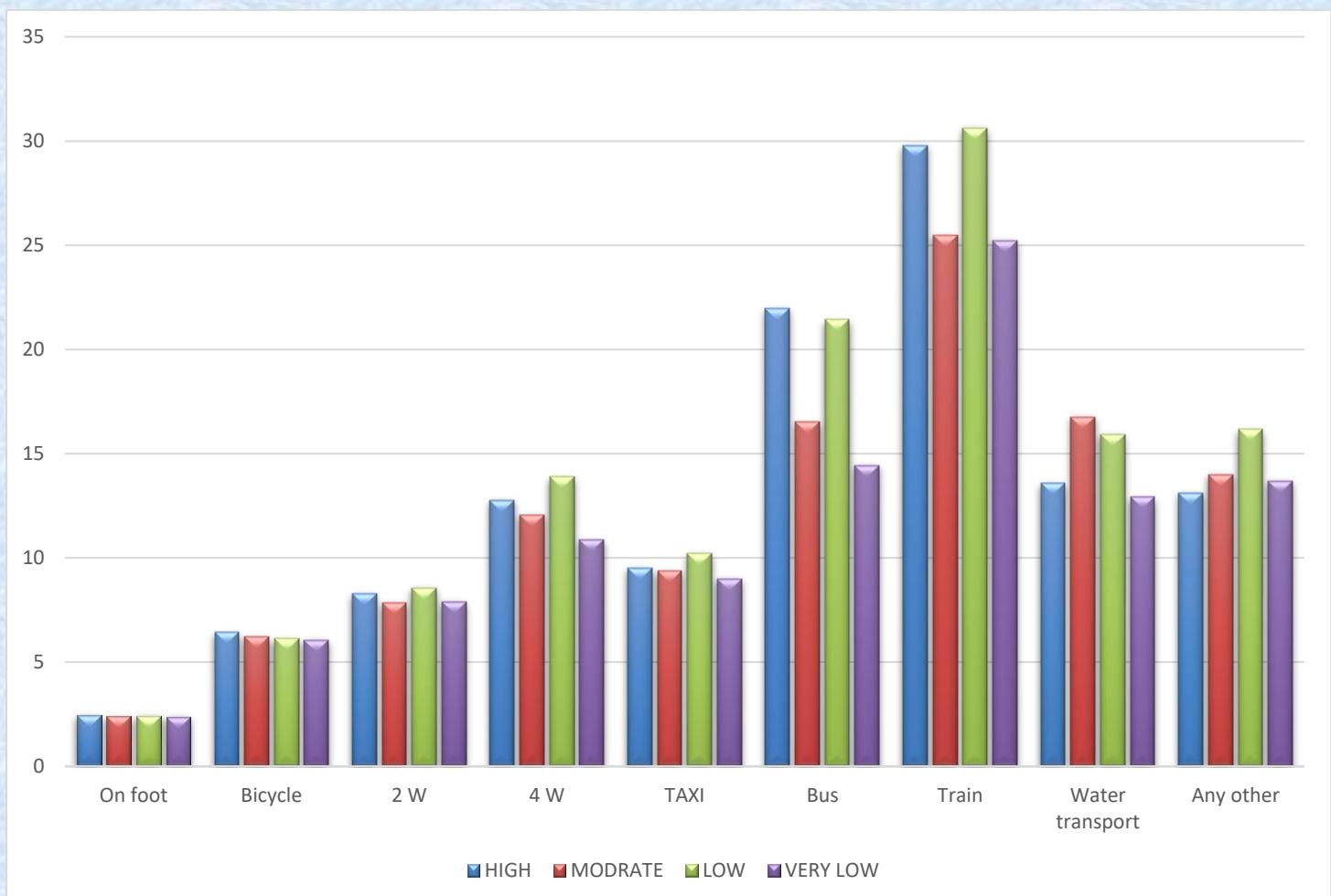
•Average Trip Length (Km) based on Highway Density:

MODE	HIGH	MODRATE	LOW	VERY LOW
On foot	2.18	2.49	2.52	2
Bicycle	5.78	6.54	6.39	6
2 W	7.7	8.42	8.63	8
4 W	11.83	12.96	12.32	13
TAXI	8.79	10.04	9.38	10
Bus	17.67	17.96	19.48	19
Train	24.37	28.79	29.1	29
Water transport	11.84	17.21	16.3	14
Any other	12.89	14.86	15.35	14



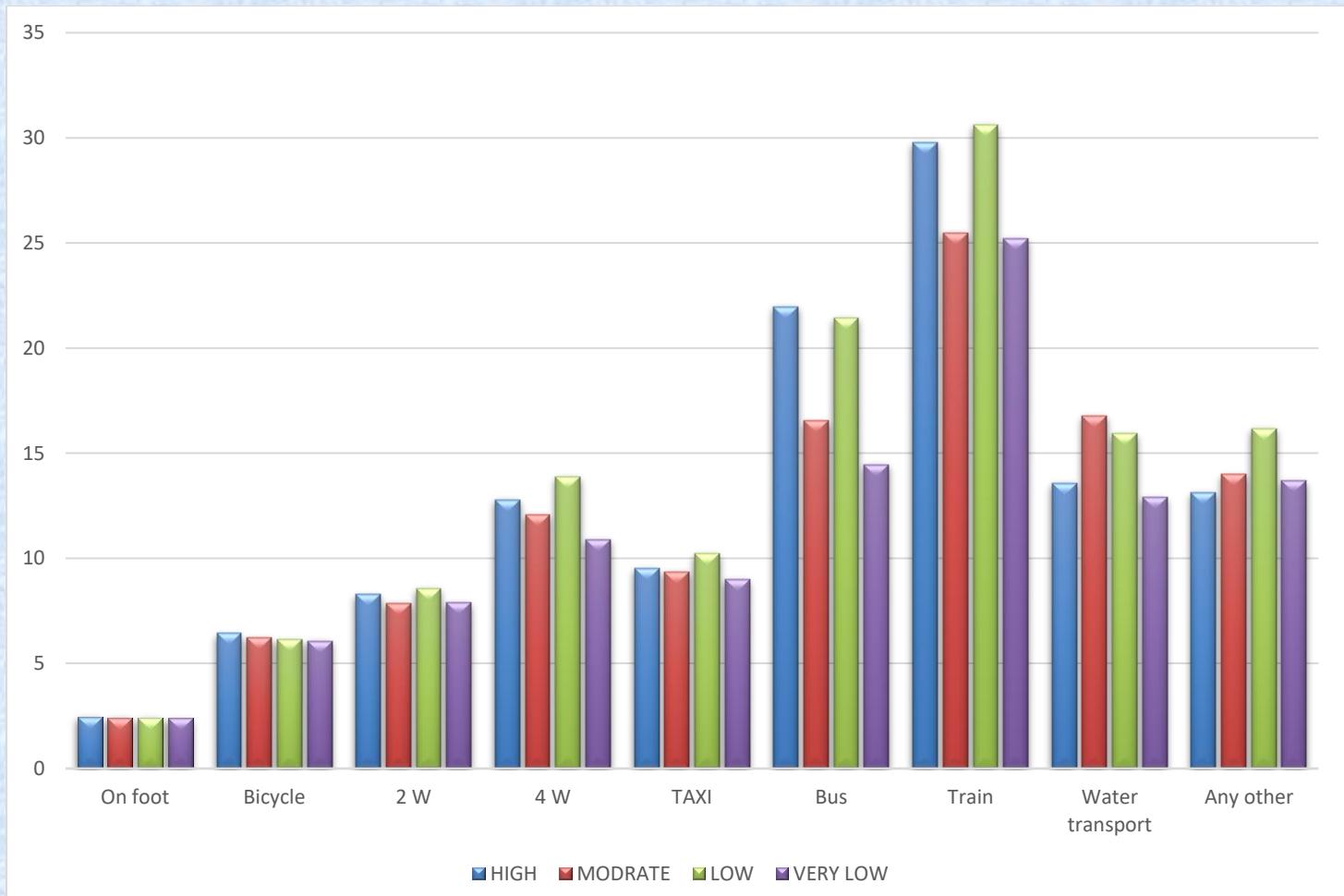
•Average Trip Length (Km) based Urbanisation:

MODE	HIGH	MODRATE	LOW	VERY LOW
On foot	2.09	2.5	2.5	2.58
Bicycle	5.35	6.22	6.56	6.7
2 W	7.3	8	8.26	9.05
4 W	10.44	12.7	13.11	13.42
TAXI	8.77	9.5	9.62	10.22
Bus	13.71	18.14	19.67	23.03
Train	25.38	28.7	28.38	29.01
Water transport	14.31	20.35	10.65	14.27
Any other	13.48	14.46	14.49	14.58



•Average Trip Length (Km) based Poverty:-

MODE	HIGH	MODRATE	LOW	VERY LOW
On foot	2.46	2.4	2.42	2.38
Bicycle	6.43	6.21	6.12	6.07
2 W	8.28	7.86	8.55	7.89
4 W	12.78	12.07	13.88	10.87
TAXI	9.52	9.36	10.22	8.99
Bus	21.98	16.53	21.42	14.45
Train	29.79	25.49	30.62	25.22
Water transport	13.58	16.77	15.93	12.91
Any other	13.12	13.99	16.17	13.68



Summary

Based on the data and analysis provided, the overall summary of the assignment is as follows:

The assignment focused on four categories: Urban areas, Highway Density, Urbanization, and Percentage of Population Below Poverty Line (BPL) in India. Here are the key findings:

1. Urban Areas:

Urban areas are densely populated regions with both residential and commercial zones. They provide various infrastructures and services to cater to the concentrated population. Urban areas serve as centers for economic, cultural, and social activities and generally have higher population densities compared to rural areas. The assignment defines urban areas based on two criteria: (a) Places with a Municipality, Corporation, Cantonment, or Notified Town Area, and (b) Other places that meet specific criteria, including a minimum population of 5,000, at least 75% of the male working population engaged in non-agricultural activities, and a population density of at least 400 persons per square kilometer.

2. High and Low-Density States:

Based on the data, the assignment identifies states with high and low population densities. High-density states include NCT Delhi, Chandigarh, Puducherry, Daman and Diu, Lakshadweep, Bihar, West Bengal, Kerala, and Uttar Pradesh. Conversely, low-density states comprise Meghalaya, Manipur, Himachal Pradesh, Nagaland, Sikkim, Jammu and Kashmir, Mizoram, Andaman and Nicobar Islands, and Arunachal Pradesh.

3. Highway Density:

The assignment also examines the highway density in different states. States with high highway density are Chandigarh, NCT Delhi, Nagaland, Tripura, Goa, Manipur, and Haryana. On the other hand, states with low highway density include Karnataka, Odisha, and Arunachal Pradesh.

4. Urbanization:

Urbanization levels were analyzed for various states. States with high urbanization include NCT Delhi, Chandigarh, Lakshadweep, Daman and Diu, Puducherry, Goa, Mizoram, and Tamil Nadu. Conversely, states with low urbanization levels are Jharkhand, Chhattisgarh, Arunachal Pradesh, Uttar Pradesh, Meghalaya, Odisha, Assam, and Bihar.

5. Percentage of Population Below Poverty Line:

The assignment explores the percentage of the population below the poverty line in different states. States with high poverty levels include Bihar, Jharkhand, Chhattisgarh, Uttar Pradesh, Manipur, Madhya Pradesh, Meghalaya, Assam, Rajasthan, and Odisha. In contrast, states with low poverty levels are Punjab, Tamil Nadu, Delhi, Andaman and Nicobar Islands, Sikkim, Goa, Lakshadweep, Puducherry, and Kerala.

6. Modal Share and Trip Length Analysis:

The assignment also analyzes modal share and trip length preferences based on population density, highway density, and urbanization levels. Based on that, overall on foot mode and Bicycle mode choose more in corresponding density distribution, increases with all mode.

Overall, the assignment provides insights into the characteristics and variations of urban areas, highway density, urbanization levels, and poverty percentages in different states. The modal share and trip length analysis suggest some correlations based on the mentioned factors, but further details and conclusions are not available in the provided summary.

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India's urbanization rate by state (%). (2023). Retrieved from cdn.ihs.com.