



## 6.0 Conclusion

Transport modeling can be used to analyze the current transport system and to learn how it would contribute to the future. Providing a better transport facilities to the people living in Colombo and people who come to the city for various purposes including business transactions is current most important problem in the Colombo as well as the country. To have an idea about transport patterns surrounding the Colombo, it is important to selecting the study area not only including Colombo Municipal area but it should include the wider area. For this study whole Western Province, which includes Colombo, Gampaha and Kalutara District was selected.

Models that calibrated for the Colombo Metropolitan Area were inter trip generations for private vehicles. Private vehicle trips show different trip patterns depending upon the trip purposes. Therefore models were calibrated as home based work trips, home based other trips and non-home based trips. In Sri Lanka as a third world country, public transport service plays the main role when the passenger transport is considered. In Western Province 15.6% of passenger transport is by private vehicles while 72.9% passengers use buses and 11.5% passengers use rail, i.e. totally 84.4% of passengers use public transport (UDA, 1997). Therefore, to full fill the future traffic prediction on passengers, there should be the estimation of public transport. To do the traffic assignment in the network, it is also important to consider the goods vehicles. One way of assigning trips to the network is calibrating a model for all vehicles types and distribute the different vehicles using modal share trip model. The disadvantage of this process is different type of vehicles shows different trip patterns. Therefore, the best way is, calibrate different models for different trip patterns and assigning the trips to the network.

When consider the study area, inter DSD traffic shows the highest amount of traffic, but intra DSD trips i.e. generating traffic in any DSD and attracting to the same DSD, plays a big role in urban areas. To collect intra DSD traffic data more detailed surveys could be done which are money and time consume. For Colombo Municipal Area intra zonal traffic was about 440,000 per day in 1994 (UOM, 1995), but 12,970 was the only recorded amount from CMR study. In other hand, even that traffic data is available, detailed socio-economic data such as residential / commercial flow area, number of schools in the area, number of school students in the area, other educational institutes and there student's data are needed to calibrate a

model. By the Colombo Traffic Study (UOM, 1995) some of the intra zonal traffic models have been done, but only for Colombo Municipal area.

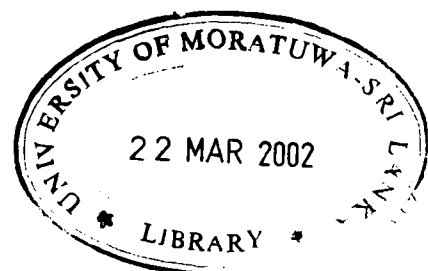
Calibrated three models were mainly based on socio-economic data and road network data. Mainly used socio-economic data were population, jobs, employment and household from Department of Census and Statistics, Vehicle Registration data from Commission of Motor Traffic and Vehicle Fleet from University of Moratuwa. Network data were taken from the University of Moratuwa. Model calibration was fully dependent upon the primary database.

Population, jobs and exponent of vehicle ownership were directly proportional with trip generations while time and distance were inversely proportional. Except non-home based trip generation, number of jobs in trip attraction zone shows higher co-efficient than population. This simply describes that the increment of job opportunities creates more trips than the increment of population in the same amount. Even that the vehicle ownership is co-related with population, it's exponentially related with trip generation. That is vehicle ownership has not direct relationship with trip generation but it describes increment of trips, which are generated due to population in generation zone and job in attraction zone. Vehicle ownership is also an indicator of income because to own a vehicle for a person or for a household they should achieve certain income level, not only to buy a vehicle but also to maintain it.

In calibration of three models, separate co-efficiencies are achieved for time and distance. In one hand it may advantage that the time and distance are considered separately rather than considering speed in the model. The network changers such as widening the road or changing the surface condition of the road is changed the speed of the road but it does not reflect by distance, only by the time. In some cases such as adding the new road between two junctions, change the speed of the roads if the new road is used. Between some towns travel time would be reduced if the new road was economical. If the distance between some junctions reduces due to the new road, the minimum distance between some towns will decrease. The co-efficient of distance is higher than the travel time between generation and attraction zones.

These three models can be used to future traffic projection between DSD in Western Province. As co-relation coefficient shown in Table 4.3, trips are highly co-related with population. In Sri Lanka population is increased with decreasing growth rate (Table 3.5). In

study area average growth rate of population is 1.1 to 1.4. According to the 2010 employment 3,295,260 (UDA, 1997), growth rate of jobs would be 4.2% per annum. Estimated vehicle fleet can be taken from 'Report on Estimation of Operational Vehicle Fleet'. Number of households can be calculated using average household size and the population.



## **APPENDIX I**



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## **SOCIO-ECONOMIC DATA PREPARATION**

## I Estimation of Operational Vehicle Fleet by DSD for 1996

For this estimation a percentage method was used. Estimated vehicle fleet for motor cycles, cars, dual purpose vehicles, buses (non-route buses and route buses), lorries, land vehicles and three-wheelers were available for the whole Western Province (Kumarage, 1997). The vehicles registration statistics for the data of Western Province were available at the DSD levels for motor cycle, cars, lorries, omni buses, private motor coaches, dual purpose vehicles, land vehicles, ambulances and hearses, duty free vehicles, commercial vehicles (Commission of Motor Traffic, 1996). This raw data can be shown as Table I-I and Table I-II .

Table I-I Estimation of Operational Vehicle Fleet – 1996

Vehicle Type	Estimated Vehicle Fleet for Western Province
Motor Cycle	237,046
Car	93,654
Lorry	18,612
Bus	10,874
Van	74,015
Land Vehicles	3,391
Three Wheeler	32,840
<b>Total</b>	<b>437,592</b>

When estimating vehicle fleets at the DSD level using percentage of vehicle registered, it was found that the types of vehicles were not compatible. Therefore some vehicle types were combined in the registered data which were compatible with the vehicle types of the vehicle fleet data. These combined vehicle types can be shown as Table I-III.

Another problem that arose was that the 3-wheelers were excluded from the vehicle registration data. To estimate the three wheeler percentage 'an average was taken using all vehicle types' since three wheelers do not show any special vehicle characteristics and assume that 3-wheelers show the patterns of every vehicle type. This estimation does not affect to other vehicle types, but affects to total number of vehicles. Data did not available for cross checking.

**Table I-II Vehicle Registration in Western Province by DSD - 1996**

Name of the DSD	Motor	Car	Lorry	Omni	Private	D P	Land	Amb.	D F O	Comm.	Total
	Bike			Bus	Coach	Vehi.	Vehi.	Hearse	Vehi.	Vehi.	
	1	2	3	4	5	6	7	8	9	10	
Colombo	42055	52193	20763	1375	3304	17730	5151	129	10029	42	152771
Hanwella	3475	687	672	239	83	372	206	4	0	0	5738
Hamagama	5950	1569	964	198	167	726	225	2	0	0	9801
Kaduwela	6533	3301	1533	276	224	1385	343	0	1011	0	14606
Maharagama	5924	4120	1139	329	275	1558	165	0	0	0	13510
Kesbewa	7492	2692	607	367	217	1297	171	0	0	0	12843
Nugegoda	5059	6380	1301	198	231	1923	182	2	46	0	15322
Dehiwala	7436	8422	1690	305	381	2934	227	2	8	0	21405
Moratuwa	5616	2868	1391	176	288	1499	274	4	53	0	12169
Kolonnawa	4610	2401	1132	247	152	660	120	0	16	0	9338
Gampaha	6211	1559	731	194	131	568	199	0	4	0	9597
Divulapitiya	4799	414	666	112	100	258	738	0	4	0	7091
Katana	6048	1335	868	116	262	955	360	6	0	0	9950
Negombo	5463	1135	708	49	136	900	151	2	0	0	8544
Wattala	5393	1502	1053	131	161	956	107	0	17	0	9320
Ja Ela	5884	1279	760	167	187	782	937	0	4	0	10000
Kelaniya	4300	2326	1141	121	123	968	139	0	1	0	9119
Biyagama	4527	1388	791	194	184	602	158	0	11	0	7855
Weke	4257	574	402	99	97	182	233	0	8	0	5852
Attanagalla	4807	868	505	10	246	422	313	0	2	0	7173
Minuwangoda	6198	721	564	116	104	352	317	0	0	0	8372
Mirigama	4756	609	501	87	85	277	455	0	2	0	6772
Mahara	4892	1395	743	322	123	571	145	0	0	0	8191
Beruwala	2859	496	346	55	175	446	199	0	0	0	4576
Matugama	1660	281	200	52	23	142	167	0	0	0	2525
Walallawita	824	43	61	20	6	28	77	0	10	0	1069
Agalawatta	1421	138	149	19	27	60	113	0	0	0	1927
Dodangoda	1072	112	161	36	25	60	100	0	7	0	1573
Bulathsinhala	1115	70	159	26	19	50	136	0	0	0	1575
Horana	4335	609	695	84	114	366	326	0	0	0	6529
Bandaragama	3614	468	378	102	122	173	187	0	0	0	5044
Kalutara	3164	796	446	132	114	508	141	0	59	0	5360
Panadura	4045	1634	734	159	189	739	144	1	14	0	7659
Total Colombo	94150	84633	31192	3710	5322	30084	7064	143	11163	42	267503
Total Gampaha	67535	15105	9433	1718	1939	7793	4252	8	53	0	107836
Total Kalutara	24109	4647	3329	685	814	2572	1590	1	90	0	37837
Western Province	185794	10438	43954	6113	8075	40449	12906	152	11306	42	413176

Note: D P Vehi. - Dual Purpose Vehicles  
D F O Vehi. - Duty Free Office Vehicles

Amb. Heares - Ambulance and Hearses  
Comm Vehi. - Commercial Vehicles

Table I-III Combined Vehicle Types of Vehicle Registered Data

Vehicle Types of Vehicle Registered Data	Combined Vehicle Types According to Vehicle Fleet Data	Assumptions
Motor cycle	Motor cycle	
Cars + Duty free Vehicles	Cars	Most of the duty free vehicles are cars
Lorry	Lorry	
Omni Bus	Bus	
Private Coaches + Dual Purpose + Ambulance / Hearses	Dual Purposes	It seems incorrect to assume ambulances and hearses as a dual purpose vehicles. However it could not be neglected although the accounted number was very low.
Land Vehicles	Land Vehicles	

Method of Calculation Adopted



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- Original data of estimation of vehicle fleet (Kumarage, 1997) (Table I-I) and vehicle registration (Commission of Motor Traffic, 1996) (Table I-II) was used.
- Vehicle types of vehicle registration were combined according to the vehicle types of estimated vehicle fleet (Table I-III and Table I-IV).
- Percentages were calculated according to the vehicle type (Table I-V).
- Vehicle fleet was estimated for DSDs using total vehicle fleet and percentage of vehicles (Table 3.9).
- Using population and household data, the vehicle ownership rate per thousand population and per household were estimated as shown in Tables 3.10 and 3.11.



Table I-IV Combined Vehicle Types of Vehicle Registered Data - 1996

Name of the DSD	Motor	Car	Lorry	Bus	Van	Land	Three	Total	Total with Three Wheeler
	Cycle					Vehicles	Wheeler		
	1	2+9	3+10	4	5+6+8	7	11		
Colombo	42055	62222	20805	1375	21163	5151	25462	152771	178233
Hanwella	3475	687	672	239	459	206	956	5738	6694
Hamagama	5950	1569	964	198	895	225	1634	9801	11435
Kaduwela	6533	4312	1533	276	1609	343	2434	14606	17040
Maharagama	5924	4120	1139	329	1833	165	2252	13510	15762
Kesbewa	7492	2692	607	367	1514	171	2141	12843	14984
Nugegoda	5059	6426	1301	198	2156	182	2554	15322	17876
Dehiwala	7436	8430	1690	305	3317	227	3568	21405	24973
Moratuwa	5616	2921	1391	176	1791	274	2028	12169	14197
Kolonnawa	4610	2417	1132	247	812	120	1556	9338	10894
Gampaha	6211	1563	731	194	699	199	1600	9597	11197
Divulapitiya	4799	418	666	112	358	738	1182	7091	8273
Katana	6048	1335	868	116	1223	360	1658	9950	11608
Negombo	5463	1135	708	49	1038	151	1424	8544	9968
Wattala	5393	1519	1053	131	1117	107	1553	9320	10873
Ja_Ela	5884	1283	760	167	969	937	1667	10000	11667
Kelaniya	4300	2327	1141	121	1091	139	1520	9119	10639
Biyagama	4527	1399	791	194	786	158	1309	7855	9164
Weke	4257	582	402	99	279	233	975	5852	6827
Attanagalla	4807	870	505	10	668	313	1196	7173	8369
Minuwangoda	6198	721	564	116	456	317	1395	8372	767
Mirigama	4756	611	501	87	362	455	1129	6772	7901
Mahara	4892	1395	743	322	694	145	1365	8191	9556
Beruwala	2859	496	346	55	621	199	763	4576	5339
Matugama	1660	281	200	52	165	167	421	2525	2946
Walallawita	824	53	61	20	34	77	178	1069	1247
Agalawatta	1421	138	149	19	87	113	321	1927	2248
Dodangoda	1072	119	161	36	85	100	262	1573	1835
Bulathsinhala	1115	70	159	26	69	136	263	1575	1838
Horana	4335	609	695	84	480	326	1088	6529	7617
Bandaragama	3614	468	378	102	295	187	841	5044	5885
Kalutara	3164	855	446	132	622	141	893	5360	6253
Panadura	4045	1648	734	159	929	144	1277	7659	8936
Total Colombo	94150	95796	31234	3710	35549	7064	44584	267503	312087
Total Gampaha	67535	15158	9433	1718	9740	4252	17973	107836	125809
Total Kalutara	24109	4737	3329	685	3387	1590	6306	37837	44143
Grand Total	185794	115691	43996	6113	48676	12906	68863	413176	482039

Note: Numbers in 1<sup>st</sup> row were references to table I-II.

Table I-V Percentages of Vehicle Registered Data by DSD's - 1996

DSD	MC	CAR	Lorry	Bus	Van	Estimated	
						Land-Veh.	3-wheeler
	1	2+9	3+10	4	5+6+8	7	11
Colombo	22.64	53.78	47.29	22.49	43.48	39.91	36.97
Hanwella	1.87	0.59	1.53	3.91	0.94	1.60	1.39
Hamagama	3.20	1.36	2.19	3.24	1.84	1.74	2.37
Kaduwela	3.52	3.73	3.48	4.51	3.31	2.66	3.54
Maharagama	3.19	3.56	2.59	5.38	3.77	1.28	3.27
Kesbewa	4.03	2.33	1.38	6.00	3.11	1.32	3.11
Nugegoda	2.72	5.55	2.96	3.24	4.43	1.41	3.71
Dehiwala	4.00	7.29	3.84	4.99	6.81	1.76	5.18
Moratuwa	3.02	2.52	3.16	2.88	3.68	2.12	2.95
Kolonnawa	2.48	2.09	2.57	4.04	1.67	0.93	2.26
Gampaha	3.34	1.35	1.66	3.17	1.44	1.54	2.32
Divulapitiya	2.58	0.36	1.51	1.83	0.74	5.72	1.72
Katana	3.26	1.15	1.97	1.90	2.51	2.79	2.41
Negombo	2.94	0.98	1.61	0.80	2.13	1.17	2.07
Wattala	2.90	1.31	2.39	2.14	2.29	0.83	2.26
Ja_Ela	3.17	1.11	1.73	2.73	1.99	7.26	2.42
Kelaniya	2.31	2.01	2.59	1.98	2.24	1.08	2.21
Biyagama	2.44	1.21	1.80	3.17	1.61	1.22	1.90
Weke	2.29	0.50	0.91	1.62	0.57	1.81	1.42
Attanagalla	2.59	0.75	1.15	0.16	1.37	2.43	1.74
Minuwangoda	3.34	0.62	1.28	1.90	0.94	2.46	2.03
Mirigama	2.56	0.53	1.14	1.42	0.74	3.53	1.64
Mahara	2.63	1.21	1.69	5.27	1.43	1.12	1.98
Beruwala	1.54	0.43	0.79	0.90	1.28	1.54	1.11
Matugama	0.89	0.24	0.45	0.85	0.34	1.29	0.61
Walallawita	0.44	0.05	0.14	0.33	0.07	0.60	0.26
Agalawatta	0.76	0.12	0.34	0.31	0.18	0.88	0.47
Dodangoda	0.58	0.10	0.37	0.59	0.17	0.77	0.38
Bulathsinhala	0.60	0.06	0.36	0.43	0.14	1.05	0.38
Horana	2.33	0.53	1.58	1.37	0.99	2.53	1.58
Bandaragama	1.95	0.40	0.86	1.67	0.61	1.45	1.22
Kalutara	1.70	0.74	1.01	2.16	1.28	1.09	1.30
Panadura	2.18	1.42	1.67	2.60	1.91	1.12	1.85

Note: Numbers in 1<sup>st</sup> row were references to table I-II.

## II Estimation of Jobs by DSD for 1996

The following are the assumptions that have been made for estimation of private sector jobs.

- There are no changes in the agricultural employment from 1981 to 1994.
- Agricultural employees reside and work in the same DSD.
- Percentage of private sector jobs equals to the public and agricultural job percentage.
- Self-employees are included in private sector job category.
- Number of employees in the Western Province are doing jobs in the same province.
- Employees who travel from neighbouring provinces to Western Province for jobs are amounted to 2% total employees of Western Province (Department of Census and Statistics, 1997a).

These assumptions are over simplified in that

- In 1994 agricultural jobs in Western Province would have been over estimated due to changes in land use patterns from 1981 to 1994.
- Trips due to agricultural jobs do not effect to the Inter trips.
- Most of the industrial jobs are situated in industrial zones, but not all over the study area. Therefore private job pattern does not reflect by industrial jobs.
- Private jobs are over estimated, as self-employees were included. Sometimes self-employees could be shown in different trip patterns than the private sector job employees.

### Method of Calculation Adopted:

- According to the sixth assumption listed above the total number of jobs estimated in the Western Province (WP) was follows.

Total jobs in WP = total employed in WP + amount coming from neighbouring provinces.

$$\begin{aligned} &= 1,815,419 + 1,815,419 * 2\% \\ &= 1,851,727. \end{aligned}$$

- Total number of private sector jobs were estimated using the above step and the other jobs mentioned.

Total number of private jobs in WP = Total jobs (step 1) - Total of other jobs.

- The percentages of private sector jobs at DSD levels were calculated according to the total number of government jobs and agricultural employment.
- The number of private sector jobs at DSD levels were calculated using total number of private sector jobs (calculation step 2) and percentages of private sector jobs (calculation step 3).

These estimated jobs were compared with jobs estimated by CUTS. The comparison showed that there was an under estimation amounting to 252,147 by CUTS of the Colombo DSD. Other DSDs such as Homagama, Dehiwala, Katana and Ja-Ela were under estimated by thousands. Horana and Hanwella DSDs which were partly included in CUTS zoning shows 19,400 and 2,850 respectively while it was 69,863 and 60,241 according to the above estimation. Other areas over estimated by CUTS by the thousands. Estimation process, outcome and comparison were tabulated in Table I-VI.

Table I-VI Jobs Estimation and Comparison

Name of the DSD	1	1	1	2	3	1+2+3	4					5		
	State Sector 1994	Provincial Public Sector 1994	Semi Government 1994	Industrial Employees 1993	Agricultural Employees 1981	Sub Total 1995	Total Employees 1994	Total of Public & Agricultural	Public & Agricultural % (1994)	Estimated Private Sector 1994	Estimated Total Jobs 1994	Total Jobs (CUTS) 1995	Estimated - CUTS	
Colombo	55,860	15,185	60,787	89,795	1,329	222,956	791,709	133,161	32.9	349,181	572,137	319,990	252,147	
Hanwella	768	2,099	1,743	6,650	10,185	21,445		14,795	3.7	38,796	60,241	2,850	57,391	
Homagama	1,036	1,631	1,504	13,673	5,342	23,186		9,513	2.3	24,945	48,131	45,100	3,031	
Kaduwela	2,125	1,260	3,393	4,311	2,459	13,548		9,237	2.3	24,222	37,770	40,900	-3,130	
Maharagama	1,382	1,323	3,470	7,062	269	13,506		6,444	1.6	16,898	30,404	38,300	-7,896	
Kesbewa	196	1,507	1,814	7,105	1,722	12,344		5,239	1.3	13,738	26,082	53,000	-26,918	
Nugegoda	2,126	775	3,517	14,247	446	21,111		6,864	1.7	17,999	39,110	39,480	-370	
Dehiwela	5,178	1,819	4,001	36,012	683	47,693		11,681	2.9	30,630	78,323	69,030	9,293	
Moratuwa	945	1,875	4,459	6,499	1,047	14,825		8,326	2.1	21,833	36,658	42,280	-5,622	
Kolonnawa	2,382	1,176	4,004	6,017	450	14,029		8,012	2.0	21,009	35,038	44,030	-8,992	
Gampaha	1,575	2,501	1,433	3,488	2,903	11,900	665,423	8,412	2.1	22,058	33,958	42,500	-8,542	
Divlapitiya	404	1,283	730	250	5,849	8,516		8,266	2.0	21,675	30,191		30,191	
Katana	1,565	1,000	4,743	71,284	2,840	81,432		10,148	2.5	26,611	108,043	90,400	17,643	
Negombo	1,268	1,479	1,792	6,839	4,976	16,354		9,515	2.4	24,951	41,305	42,400	-1,095	
Wattala	948	1,305	1,238	17,203	1,343	22,037		4,834	1.2	12,676	34,713	36,300	-1,587	
Ja-Ela	2,104	1,389	1,931	19,000	934	25,358		6,358	1.6	16,672	42,030	38,000	4,030	
Kelaniya	605	1,048	2,169	13,997	243	18,062		4,065	1.0	10,659	28,721	41,500	-12,779	
Biyagama	362	946	1,674	34,059	1,377	38,418		4,359	1.1	11,430	49,848	60,950	-11,102	
Weke	334	1,442	538	2,108	6,299	10,721		8,613	2.1	22,585	33,306		33,306	
Attanagalla	1,253	1,815	1,118	4,735	3,985	12,906		8,171	2.0	21,426	34,332		34,332	
Minuwangoda	266	1,723	220	1,054	4,689	7,952		6,898	1.7	18,088	26,040	48,900	-22,860	
Mirigama	1,020	2,017	166	379	5,478	9,060		8,681	2.1	22,764	31,824		31,824	
Mahara	936	1,176	1,003	3,534	3,435	10,084		6,550	1.6	17,176	27,260	41,400	-14,140	
Beruwela	1,258	2,096	1,102	607	3,998	9,061	358,287	8,454	2.1	22,168	31,229		31,229	
Matugama	511	1,238	1,090	40	7,342	10,221		10,181	2.5	26,697	36,918		36,918	
Walallawita	247	847	209	0	6,116	7,419		7,419	1.8	19,454	26,873		26,873	
Agalawatta	156	971	465	32	11,038	12,662		12,630	3.1	33,119	45,781		45,781	
Dodangoda	144	595	321	679	5,296	7,035		6,356	1.6	16,667	23,702		23,702	
Bulathsinhala	346	1,072	471	815	12,523	15,227		14,412	3.6	37,792	53,019		53,019	
Horana	833	1,832	1,395	5,641	13,670	25,371		17,730	4.4	46,492	69,863	19,400	50,463	
Bandaragama	231	1,263	140	161	4,218	6,013		5,852	1.4	15,345	21,358	31,900	-10,542	
Kalutara	2,603	1,628	1,285	4,636	2,616	12,768		8,132	2.0	21,324	34,092	43,000	-8,908	
Panadura	998	1,883	1,010	3,202	1,692	8,785		5,583	1.4	14,640	23,425	32,100	-8,675	
Colombo District	71,998	28,650	88,692	191,371	23,932	404,643	791,709	213,272	52.7	559,251	963,894	694,960		
Gampaha District	12,640	19,124	18,755	177,930	44,351	272,800	665,423	94,870	23.4	248,772	521,572	442,350		
Kalutara District	7,327	13,425	7,488	15,813	68,509	112,562	358,287	96,749	23.9	253,700	366,262	126,400		
Total	91,965	61,199	114,935	385,114	136,792	790,005	1,851,419	404,891	100.0	1,061,723	1,851,728	1,263,710		
Percentage of employs come to western Province from other provinces							2%							
Total employs within the Western province							1,851,727							

Note:

1. Department of Census and statistics, 1997a
2. Urban Development Authority, 1996
3. Department of Census and Statistics, 1981
4. Department of Census and Statistics, 1997b
5. Halcrow Fox Association, 1996b

### III Estimation of average income for 1981 and 1994 by DSDs

Basically average income for urban and rural was done using urban and rural population ratios and average urban and rural income. Estimation steps could be summarised as follows.

- By multiplying mean income (Department of Census and Statistics, 1993) (Rs. per HH) and number of households, total income for urban and rural were separately found.

$$\begin{aligned}\text{Total income for urban} &= \text{mean income per HH for urban} * \text{No. of urban HH} \\ &= 8143.66 * 635,327 \\ &= 5173887077\end{aligned}$$

$$\begin{aligned}\text{Total income for rural} &= \text{mean income per HH for rural} * \text{No. Of rural HH} \\ &= 4242.09 * 2553392 \\ &= 10831718670\end{aligned}$$

- Average income per person was calculated, by dividing total income from the number of urban and rural persons separately. The final result of this calculation was shown in the Column numbered as 6 in table (I-VIII).

$$\begin{aligned}\text{Average income per urban person} &= \text{total income} / \text{number of urban persons} \\ \text{(Urban mean factor)} &= 5173887077 / 3077963 \\ &= \text{Rs. 1680.95 per person}\end{aligned}$$

$$\begin{aligned}\text{Average income per rural person} &= \text{total income} / \text{number of rural persons} \\ \text{(Rural mean factor)} &= 10831718670 / 11650129 \\ &= \text{Rs. 929.75 per person}\end{aligned}$$

- Urban population ratio for 1981 was calculated (column numbered 6 in table I-VII) using 1981 population and urban population (Department of Census and Statistics, 1981).

- Using urban population ratio for 1981 and total population of 1994, urban population and rural population for 1994 was estimated (column numbered as 7 and 8 in table I-VII).

Estimated urban population for 1994 = 1994 total population \* 1981 urban ratio

Estimated rural population for 1994 = 1994 total population - 1994 urban population

- Using urban and rural population ratios of 1981 (column numbered as 6 in table I-VII) and 1994 (column numbered as 8 in table I-VIII) average income rupees per person was calculated (column numbered 9 and 10 in table I-VIII).

Average income Rs. per person = Urban mean income per person \* Urban ratio +  
rural mean income per person \* (1-Urban ratio)

Using UDA urban population for 1994, rural population was calculated and some of DSDs (Kaduwela, Wattala and Panadura) show negative values because urban population is greater than the total population. Therefore UDA urban population for 1994 cannot be used. Estimated urban and rural population for 1994, using 1981 urban population ratio was not far to use (column numbered as 8 in table I-VII) since from 1981 to 1994 urbanisation changed widely.

For this study, urban population ratios were 'assumed' as in column numbered as 8 (table I-VIII), considering new industrial zones, employment data, population growth (1981 to 1994) etc. Using assumed urban population ratios, urban and rural population for 1994 were estimated for the study (column numbered as 4 and 5 in table I-VIII).

Table I-VII Estimation Steps of Average Income for 1981 and 1994

Name of the DSD	Total	Total	Urban	Rural	Urban	Estimated	Estimated
	population	Population	Population	Population	Population	Urban	Rural
	1994	1981	1981	1981	ratio	Population	Population
	2	3	4	5	1981	1994	1994
6	7	8					
Colombo	666,797	587,647	587,647	0	1.000	666,797	0
Hanwella	132,775	106,402	14,147	92,255	0.133	17,654	115,121
Homagama	140,825	141,752	25,911	115,841	0.183	25,742	115,083
Kaduwela	145,527	126,053	56,535	69,518	0.449	65,269	80,258
Maharagama	120,466	92,763	49,765	42,998	0.536	64,627	55,839
Kesbewa	163,366	120,892	6,547	114,345	0.054	8,847	154,519
Nugegoda	112,828	101,039	101,039	0	1.000	112,828	0
Dehiwela	217,551	173,529	173,529	0	1.000	217,551	0
Moratuwa	189,147	134,826	134,826	0	1.000	189,147	0
Kolonnawa	168,070	114,338	114,338	0	1.000	168,070	0
Gampaha	143,688	116,297	10,656	105,641	0.092	13,166	130,522
Divulapitiya	104,631	96,746	0	96,746	0.000	0	104,631
Katana	172,425	109,476	31,491	77,985	0.288	49,598	122,827
Negambo	145,813	103,706	70,404	33,302	0.679	98,990	46,823
Wattala	128,719	131,297	105,316	25,981	0.802	103,248	25,471
Ja-Ela	142,779	97,858	46,723	51,135	0.477	68,171	74,608
Kelaniya	129,204	84,461	36,738	47,723	0.435	56,200	73,004
Biyagama	111,728	94,237	0	94,237	0.000	0	111,728
Weke	113,949	95,575	0	95,575	0.000	0	113,949
Attanagalla	128,183	105,781	3,903	101,878	0.037	4,730	123,453
Minuwangoda	125,867	107,277	6,400	100,877	0.060	7,509	118,358
Mirigama	131,128	111,394	3,622	107,772	0.033	4,264	126,864
Mahara	129,621	108,391	0	108,391	0.000	0	129,621
Beruwela	128,330	111,479	42,801	68,678	0.384	49,271	79,059
Matugama	66,708	62,566	11,971	50,595	0.191	12,764	53,944
Walallawita	49,062	44,922	0	44,922	0.000	0	49,062
Agalawatta	84,328	69,619	2,508	67,111	0.036	3,038	81,290
Dodangoda	54,936	43,817	0	43,817	0.000	0	54,936
Bulathsinhala	65,350	62,649	0	62,649	0.000	0	65,350
Horana	108,112	122,846	8,812	114,034	0.072	7,755	100,357
Bandaragama	118,085	62,184	0	62,184	0.000	0	118,085
Kalutara	122,645	111,928	31,503	80,425	0.281	34,519	88,126
Panadura	140,793	137,694	80,476	57,218	0.584	82,287	58,506
<b>Colombo District</b>	<b>2,057,352</b>	<b>1,699,241</b>	<b>1,264,284</b>	<b>434,957</b>		<b>1,536,531</b>	<b>520,821</b>
<b>Gampaha District</b>	<b>1,707,735</b>	<b>1,362,496</b>	<b>315,253</b>	<b>1,047,243</b>		<b>405,875</b>	<b>1,301,860</b>
<b>Kalutara District</b>	<b>938,348</b>	<b>829,704</b>	<b>178,071</b>	<b>651,633</b>		<b>189,634</b>	<b>748,714</b>
<b>Western Province</b>	<b>4,703,435</b>	<b>3,891,441</b>	<b>1,757,608</b>	<b>2,133,833</b>		<b>2,132,040</b>	<b>2,571,395</b>

Note: 2. Department of census and Statistics, 1996



Table I-VIII: Estimation Steps of Average Income for 1981 and 1994

Name of the DSD	Urban	Rural	Study	Study	Urban	Rural	Study	Average	Average
	pop.	pop.	Urban	Rural	mean	mean	Urban	Income	Income
	1994	1994	pop.	pop.	fac.	fac.	Pop.	Rs./Person	Rs./Person
	2	3	1994	1994	6	7	ratio 1994	1981	1994
8	9	10							
Colombo	635,459	31,338	666,797	0	1,681	930	1.000	1,681	1,681
Hanwella	98,015	34,760	98,015	34,760			0.738	1,030	1,484
Homagama	97,520	43,305	97,520	43,305			0.692	1,067	1,450
Kaduwela	179,681	-34,154	145,527	0			1.000	1,267	1,681
Maharagama	119,591	875	120,466	0			1.000	1,333	1,681
Kesbewa	95,500	67,866	95,500	67,866			0.585	970	1,369
Nugegoda	110,123	2,705	112,828	0			1.000	1,681	1,681
Dehiwela	209,937	7,614	217,551	0			1.000	1,681	1,681
Moratuwa	186,321	2,826	189,147	0			1.000	1,681	1,681
Kolonnawa	129,040	39,030	168,070	0			1.000	1,681	1,681
Gampaha	42,320	101,368	42,320	101,368			0.295	999	1,151
Divulapitiya	8,300	96,331	8,300	96,331			0.079	930	989
Katana	130,000	42,425	130,000	42,425			0.754	1,146	1,496
Negambo	145,648	165	145,813	0			1.000	1,440	1,681
Wattala	171,483	-42,764	128,719	0			1.000	1,532	1,681
Ja-Ela	99,939	42,840	99,939	42,840			0.700	1,288	1,456
Kelaniya	128,415	789	129,204	0			1.000	1,256	1,681
Biyagama	50,305	61,423	50,305	61,423			0.450	930	1,268
Weke	13,940	100,009	13,940	100,009			0.122	930	1,022
Attanagalla	30,120	98,063	30,120	98,063			0.235	957	1,106
Minuwangoda	13,784	112,083	13,784	112,083			0.110	975	1,012
Mirigama	5,200	125,928	5,200	125,928			0.040	954	960
Mahara	29,650	99,971	29,650	99,971			0.229	930	1,102
Beruwela	71,860	56,470	71,860	56,470			0.560	1,218	1,350
Matugama	17,070	49,638	17,070	49,638			0.256	1,073	1,122
Walallawita	0	49,062	0	49,062			0.000	930	930
Agalawatta	3,000	81,328	3,000	81,328			0.036	957	956
Dodangoda	0	54,936	0	54,936			0.000	930	930
Bulathsinhala	2,580	62,770	2,580	62,770			0.039	930	959
Horana	14,280	93,832	14,280	93,832			0.132	984	1,029
Bandaragama	17,650	100,435	17,650	100,435			0.149	930	1,042
Kalutara	83,716	38,929	83,716	38,929			0.683	1,141	1,443
Panadura	140,976	-183	140,793	0			1.000	1,369	1,681
<b>Total Colombo</b>	<b>1,861,1</b>	<b>196,165</b>	<b>1,911,4</b>	<b>145,931</b>				<b>1,407</b>	<b>1,607</b>
<b>Total Gampaha</b>	<b>869,104</b>	<b>838,631</b>	<b>827,294</b>	<b>880,441</b>				<b>1,097</b>	<b>1,277</b>
<b>Total Kalutara</b>	<b>351,132</b>	<b>587,216</b>	<b>350,949</b>	<b>587,399</b>				<b>1,046</b>	<b>1,144</b>
<b>Total WP</b>	<b>3,081,4</b>	<b>1,622,0</b>	<b>3,089,6</b>	<b>1,613,7</b>				<b>1,176</b>	<b>1,337</b>

Note: WP - Western Province pop. - population

2. UDA -1996a

3. Rural pop. 1994 = Total population (1994) - UDA Urban population 1994

The main problem of this income estimation was, average income for fully urban or fully rural areas were the same. For example, 100% urbanized areas such as Colombo, Nugegoda, Dehiwala, Moratuwa, Kolonnawa have the same average income. It is clear that the average income of the aforementioned areas cannot be the same. Therefore this estimation will not give a correct picture of the income, of the area. One way to solve this problem is to find the relationship between income and vehicle ownership (VOR). The models could then use the VOR instead of income.



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## **APPENDIX II**



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## **SURVEY FORMS**

**UNIVERSITY OF MORATUWA / ROAD DEVELOPMENT AUTHORITY**  
**Highway Characteristics Survey**

**LINK CHARACTERISTICS**

Date: ..... Link Number: ..... Form No: .....  
 Enumerator: (1)..... (2)..... (3)..... (4).....

1. Link Number: .....
2. Road Classified Number: .....
3. Road Name: .....
4. Start Node Number: ..... Name: .....
5. End Node Number: ..... Name: .....
6. Road Width Av: .....metres (both sides)
7. Sidewalk Width Av: .....metres(per sides)
8. Shoulder Width Av: .....metres(per sides)
9. Centre Median width Av: .....metres(per sides)
10. Link Length .....km' s(upto 1 decimal place - eg.13.1)
11. Road Roughness .....mm/km (approximate)
12. Gradient ..... m/km
13. Curvature .....angles/km
14. Number of Openings      Metalled .....(Motorable)  
    Gravelled .....(Motorable)  
    Driveways .....(Motorable)
15. Maximum Free Flow Speed ..... km/hr
16. Travel Time..... Minutes

17. Land Use Frontage (both sides)

- (a) ..... % Residential
- (b) ..... % Industrial/Commercial
- (c) ..... % Bareland/Agricultural
- (d) ..... % Other
- Total      100      %

18. Number of Railway Crossings : .....  
Number of schools : .....

19. **For Urban Area Only** (where whole link is within urban area )

Number of Bus Halts ( both sides): .....  
Number of Pedestrian Crossings (Signalised): .....  
Number of Pedestrian Crossings (Unsignalised) : .....

Parking      (a) Unrestricted      : ..... %  
                  (b) No Parking            : ..... %  
                  (c) AM only                 : ..... %  
                  (d) PM only                 : ..... %  
                  (e) Bay Provided            : ..... %  
                  (f) Unable to Park         : ..... %

20. Number of Locations (from start node)

- (i) ..... at ..... km
- (ii) ..... at ..... km
- (iii) ..... at ..... km
- (iv) ..... at ..... km
- (v) ..... at ..... km
- (vi) ..... at ..... km
- (vii) ..... at ..... km
- (viii) ..... at ..... km
- (ix) ..... at ..... km
- (x) ..... at ..... km



## NODE CHARACTERISTICS

Road Name : ..... Date : ..... Ref : .....

Road Classified No : .....

Node Number : ..... Name : .....

Nodal Area .....(m) X ..... (m)

Type of Control 1. No Control 2. Signed 3. Roundabout 4. Signalised

Road Name : ..... Date : ..... Ref : .....

Road Classified No : .....

Node Number : ..... Name : .....

Nodal Area .....(m) X ..... (m)

Type of Control 1. No Control 2. Signed 3. Roundabout 4. Signalised

Road Name : ..... Date : ..... Ref : .....

Road Classified No : .....

Node Number : ..... Name : .....

Nodal Area .....(m) X ..... (m)

Type of Control 1. No Control 2. Signed 3. Roundabout 4. Signalised

Road Name : ..... Date : ..... Ref : .....

Road Classified No : .....

Node Number : ..... Name : .....

Nodal Area .....(m) X ..... (m)

Type of Control 1. No Control 2. Signed 3. Roundabout 4. Signalised

INTERVIEW QUESTIONNAIRE (GOODS VEHICLES)

SF 66

Location : ..... Date : ..... Recorder : ..... Direction : To Fort/From Fort/.....

1. Time : From ..... hrs. .... min. .... sec. To ..... hrs. .... min. .... sec.

2. Type of Vehicle  
 (i) Delivery Van  (iv) Tractors   
 (ii) Trucks (2 Axle)  (v) Carts   
 (iii) Container & Multi Axle

3. Origin of Trip Area : ..... 4. Destination of Trip Area : .....  
 Zone No :  Zone No :

5. Nature of Trip  
 (i) Producer to Wholesaler  (v) Retailer to User   
 (ii) Producer to User  (vi) Personal   
 (iii) Wholesaler to Retailer  (vii) Empty   
 (iv) Wholesaler to Wholesaler  (viii) Other

Location : ..... Date : ..... Recorder : ..... Direction : To Fort/From Fort/.....

1. Time : From ..... hrs. .... min. .... sec. To ..... hrs. .... min. .... sec.

2. Type of Vehicle  
 (i) Delivery Van  (iv) Tractors   
 (ii) Trucks (2 Axle)  (v) Carts   
 (iii) Container & Multi Axle

3. Origin of Trip Area : ..... 4. Destination of Trip Area : .....  
 Zone No :  Zone No :

5. Nature of Trip  
 (i) Producer to Wholesaler  (v) Retailer to User   
 (ii) Producer to User  (vi) Personal   
 (iii) Wholesaler to Retailer  (vii) Empty   
 (iv) Wholesaler to Wholesaler  (viii) Other

Colombo Traffic Study

TRAVEL COUNTING FORM

SF 67

Date : .....

Page No : .....

Road : .....

Direction : To Fort/From Fort/.....

Recorder : .....

Time : From : .... hrs. .... mints. .... sec.

Location : .....

To : .... hrs. .... mints. .... sec.

Vehicle Type		Vehicle Total	Pax. Total
Bicycle			
Motor Bike			
3 - Wheeler			
Car/Van/Jeep			
Office Van			
School Van			
Taxi			
Non Route Bus			
Delivery Van			
Trucks (2 Axle)			
Container & Multi Axel			
Tractors			
Carts			



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Colombo Traffic Study



PASSENGER INTERVIEW QUESTIONNAIRE

SF 68

Location : ..... Date : .....  
 Direction : To Fort/From Fort/... Recorder : ..... Form No : .....

1. Time : From ..... hrs. .... min. .... sec. To ..... hrs. .... min. .... sec.

2. Type of Vehicle

(i) Bicycle (iii) 3 - Wheeler (v) Office Van (vii) Taxi

(ii) Motor Bike (iv) Pax Car/Van/Jeep (vi) School Van (viii) Non Route Bus

3.

		W o r k	S c h o o l	E d u/ T r a i n	S h o p p i n g	B u s i n e s s	P e r s o n a l	S o c i a l	R e c r e a t o	C h a u f f e r o n l y
	Area	Zone No								
Origin										
Last Stop										
Next Stop										
Destination										

4. No of Occupants :

1. Time : From ..... hrs. .... min. .... sec. To ..... hrs. .... min. .... sec.



2. Type of Vehicle

(i) Bicycle (iii) 3 - Wheeler (v) Office Van (vii) Taxi

(ii) Motor Bike (iv) Pax Car/Van/Jeep (vi) School Van (viii) Non Route Bus

3.

		W o r k	S c h o o l	E d u/ T r a i n	S h o p p i n g	B u s i n e s s	P e r s o n a l	S o c i a l	R e c r e a t o	C h a u f f e r o n l y
	Area	Zone No								
Origin										
Last Stop										
Next Stop										
Destination										

4. No of Occupants :

Colombo Traffic Study



COLOMBO URBAN TRANSPORT STUDY SF80 - UNIVERSITY OF MORATUWA ROADSIDE INTERVIEW QUESTIONNAIRE (GOODS VEHICLES)		Location .....		Recorder : .....		Direction To : ..... From : .....		½ Hour Beginning : .....		Date : .....		Form No:	
		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>	
Vehicle Type	Ocp	Origin		Place at Origin	Destination		Purpose at Destination		Commodity Type				
1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer 5. Carts	1 2 3 4 5  <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer 6. Empty 7. Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer 6. Empty 7. Other		1. Agricultural Produce 2. Forestry Produce 3. Construction Materials 4. Petroleum Products 5. Industrial Input/Products 6. Foodstuff 7. Empty				
1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	1 2 3 4 5  <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer		1. Agricultural Produce 2. Forestry Produce 3. Construction Materials 4. Petroleum Products 5. Industrial Input/Products 6. Foodstuff 7. Empty				
1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	1 2 3 4 5  <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer		1. Agricultural Produce 2. Forestry Produce 3. Construction Materials 4. Petroleum Products 5. Industrial Input/Products 6. Foodstuff 7. Empty				
1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	1 2 3 4 5  <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....		1. Producer 2. Wholesaler 3. Retailer 4. Personal / Garage 5. Consumer		1. Agricultural Produce 2. Forestry Produce 3. Construction Materials 4. Petroleum Products 5. Industrial Input/Products 6. Foodstuff 7. Empty				

COLOMBO URBAN TRANSPORT STUDY SRS - UNIVERSITY OF MORATUWA NATIONAL COLLEGE OF ENGINEERING								Date : .....					Direction To : ..... From : .....								
Location : .....								24 Hours Beginning .....					Recorder : .....				Pg. No : .....				
Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	To t
Cycles	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Motor Bike	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	
3 - Wheeler & Taxi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
Car/Van/Jeep	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	
	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	
	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	
	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
Office Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
School Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Delivery Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Trucks (2 Axle)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Container/ M Axle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Others	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Carts	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

COLOMBO URBAN TRANSPORT STUDY SP-12 - UNIVERSITY OF MORATUWA ROADSIDE INTERVIEW QUESTIONNAIRE (PASSENGER VEHICLES)		Location .....	Recorder : .....	Date : .....	Direction To : ..... From : .....	½ Hour Beginning : .....	Form No: .....
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/>
Vehicle Type	Ocp	Origin	Place at Origin	Destination	Place at Destination		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		

SOUTHERN HIGHWAY FEASIBILITY STUDY SF95 - UNIVERSITY OF MORATUWA MANUAL CLASSIFIED COUNTS								Date : .....				Direction To : ..... From : .....									
Location : .....								½ Hours Beginning .....				Recorder : .....				Pg. No :					
Vehicle Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Tot
Cycles	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Motor Bike	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
3 - Wheeler & Taxi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
Car/ Van/ Jeep	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	
	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	
	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	
	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	
	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	
Office Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
School Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Non Route Bus	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Delivery Van	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Trucks (2 Axle)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Container/ M Axle	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
tractors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Carts	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

SOUTHERN HIGHWAY FEASIBILITY STUDY SF98 - UNIVERSITY OF MORATUWA ROADSIDE INTERVIEW QUESTIONNAIRE (PASSENGER VEHICLES) (FAST MOVING)		Location .....	Recorder: .....	Date : .....	Direction To : ..... From : .....	1/2 Hour Beginning : .....	Form No: .....
		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/>
Vehicle Type	Ocp	Origin	Place at Origin	Destination		Place at Destination	
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		
1. Motor Bike 2. 3 Wheeler & Taxi 3. Pax. Car/Van/Jeep 4. Office Van 5. School Van 6. Non Route Bus	1 2 3 4 5 <input type="text"/>	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other	1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. <input type="text"/>	1. Home 2. Work 3. School/Educ. 4. Business 5. Personal / Social/Other		

SOUTHERN HIGHWAY FEASIBILITY STUDY SF99 - UNIVERSITY OF MORATUWA ROADSIDE INTERVIEW QUESTIONNAIRE (GOODS VEHICLES PAST MOVING)		Location .....	Recorder : .....	Direction To : ..... From : .....	1/2 Hour Beginning : .....	Date : .....	Form No: .....
<b>Vehicle Type</b> 1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	<b>Ocp</b> 1 2 3 4 5	<b>Origin</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Destination</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Commodity Type</b> 1. Flour 2. Other Foodstuff 3. Tea, Rber. Conut 4. Paddy, Rice 5. Vegetable 6. Other Agri. Prod. 7. Livestock 8. Fish, Dry Fish 9. Forestry Prod. 10. Petroleum 11. Chemicals 12. Steel 13. Rubber Prod. 14. Other Indus. Prod. 15. Motor Vehicles 16. Fertilizer 17. Building Materials 18. Personal 19. Empty Bottles 20. Empty	<b>Load</b> 1. Empty 2. 1/4 3. 1/2 4. Full 5. Overload		
<b>Vehicle Type</b> 1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	<b>Ocp</b> 1 2 3 4 5	<b>Origin</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Destination</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Commodity Type</b> 1. Flour 2. Other Foodstuff 3. Tea, Rber. Conut 4. Paddy, Rice 5. Vegetable 6. Other Agri. Prod. 7. Livestock 8. Fish, Dry Fish 9. Forestry Prod. 10. Petroleum 11. Chemicals 12. Steel 13. Rubber Prod. 14. Other Indus. Prod. 15. Motor Vehicles 16. Fertilizer 17. Building Materials 18. Personal 19. Empty Bottles 20. Empty	<b>Load</b> 1. Empty 2. 1/4 3. 1/2 4. Full 5. Overload		
<b>Vehicle Type</b> 1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	<b>Ocp</b> 1 2 3 4 5	<b>Origin</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Destination</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Commodity Type</b> 1. Flour 2. Other Foodstuff 3. Tea, Rber. Conut 4. Paddy, Rice 5. Vegetable 6. Other Agri. Prod. 7. Livestock 8. Fish, Dry Fish 9. Forestry Prod. 10. Petroleum 11. Chemicals 12. Steel 13. Rubber Prod. 14. Other Indus. Prod. 15. Motor Vehicles 16. Fertilizer 17. Building Materials 18. Personal 19. Empty Bottles 20. Empty	<b>Load</b> 1. Empty 2. 1/4 3. 1/2 4. Full 5. Overload		
<b>Vehicle Type</b> 1. Delivery Van 2. Trucks (2 Axle) 3. Container & Multi Axle 4. Tractor with Trailer	<b>Ocp</b> 1 2 3 4 5	<b>Origin</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Destination</b> 1. Street : ..... 2. Village : ..... 3. Nearest Village : ..... 4. AGA Div/Prov. : .....	<b>Commodity Type</b> 1. Flour 2. Other Foodstuff 3. Tea, Rber. Conut 4. Paddy, Rice 5. Vegetable 6. Other Agri. Prod. 7. Livestock 8. Fish, Dry Fish 9. Forestry Prod. 10. Petroleum 11. Chemicals 12. Steel 13. Rubber Prod. 14. Other Indus. Prod. 15. Motor Vehicles 16. Fertilizer 17. Building Materials 18. Personal 19. Empty Bottles 20. Empty	<b>Load</b> 1. Empty 2. 1/4 3. 1/2 4. Full 5. Overload		



## **APPENDIX III**



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## **CONVERSION OF TRAFFIC DATA**



## I CUTS to CMR Conversion

CUTS survey data was similar to CMR data format but only the origin, destination coding were different than CMR. Therefore CUTS zones were re-coded according to the CMR TransPlan V.2 standard format.

## II S/H to CMR Conversion

Origin and Destination code numbers were re-coded according to the CMR TransPlan V.2 standard format. In Southern Highway study commodity types of Goods Interviews were entirely different than CMR format. Conversion of commodity type to place at origin and place at destination as follows Table III-I.

Table III-I Conversion of Commodity Type to Place at Origin and to Place at Destination

Commodity Type of Southern Highway Survey	Place at Origin / Place at Destination of GCTM
1. Flour	6. Empty
2. Other Foodstuff	6. Empty
3. Tea, Rubber, Rice	1. Producer
4. Paddy Rice	1. Producer
5. Vegetable	1. Producer
6. Other Agricultural Product	1. Producer
7. Livestock	1. Producer
8. Fish, Dry Fish	1. Producer
9. Forestry Product	2. Wholesaler
10. Petroleum	4. Personal / Garage
11. Chemicals	4. Personal / Garage
12. Steel	5. Consumer
13. Rubber Product	5. Consumer
14. Other Industrial Product	5. Consumer
15. Motor Vehicles	5. Consumer
16. Fertilizer	5. Consumer
17. Building Materials	3. Retailer
18. Personal	7. Other
19. Empty Bottles	5. Consumer
20. Empty	7. Other

### III Adjustment of Records

To retain the accuracy of the data the following two adjustments were done.

1. Adjustment of Manual Classified Count according to the interviews
2. Adjustment of missing interviews of bicycle and carts

In some survey locations, the Manual Classified Counts (MCC) were lower than the interview data at those locations. Such locations, almost all vehicles had been interviewed (i.e. 100% sample interviews) for some time period, but sometimes data may not be entered into the MCC survey forms. At some survey locations vehicle distribution was widely varied through the half and hour survey time periods. In some surveys such as CTS, only five minutes were devoted to MCC counts and 20 minutes for interviews. So the MCC and Interview data had to be projected to 30 minutes time periods. Then the MCC and the number of interviews were incompatible. As such, conditions i.e. if MCC was less than total interviews, MCC data was adjusted, as it equals to total number of interviews. Further this adjustment had been done considering the vehicle types.



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At some locations of CUTS and CMR, bicycles and carts had been counted for MCC but had not been interviewed sometimes for whole day or sometimes for certain time periods. Therefore bicycle and carts interview data were not available to analyze and to build up origin-destination and purpose matrixes. To eliminate this error, if MCC data existed in a given time period for a mentioned vehicle type but interview data did not available, then the interviews files for that location was seek backward for that vehicle type. If a record was found then it was used for the missing interview, and if not found, the file was seek forward. If a record could be found it was used. If there was not a single record for that vehicle type in that file, a new record had been generated according to the geo-graphic location of the survey location. Records generated for carts considered as goods vehicle records and bicycles considered as private vehicle records. If the survey locations situated in the middle of a DSD both origin and destination of newly generated interview record were the same DSD assuming that the carts and bicycles were normally doing short distance trips. If the survey location situated on or closer to a DSD boundary, then one of origin or destination was the same DSD and the other was the adjacent DSD determined by the direction of the survey. Number of occupancy was one (1) and commodity type was coded as undefined (98).

## **APPENDIX IV**



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**DATA CONVERSION  
FROM  
COLOMBO TRAFFIC STUDY  
TO  
THE FORMAT OF COLOMBO METROPOLITAN REGION TRAFFIC  
STUDY**

## **I Direction**

In Colombo Traffic Study (CTS) directions were coded as 1,2,3 and 4 representing the North, East, South and the West directions respectively. But the CMR surveys were done only to the Colombo direction. Directions of some MCC data of CTS were changed according to the directions of Passenger and Goods Vehicle Interviews (PVI and GVI). "Out bound" data of the evening were used to obtain missing "In bound" data of the morning and vice versa.

This adjustment worked well with trips other than school trips, because morning school trips were returned around 12 noon and 2 p.m., not in the evening. With the adjustment method used, some morning school trips were lost because data to fill the missing periods were taken from evening, not from the time school trips were expected to return. The total impact of this error was that a loss of school trips and an excess of non-school trips.

## **II Time Duration**



MCC counts were done for five minutes time periods and CMR standard program expects thirty minutes MCC counts. Therefore MCC counts of the CTS data were multiplied by 6.

## **III Origin and Destination**

Origin and Destination of goods vehicle interviews of CTS data were similar to CMR, only the zone coding was different and converted to the CMR coding format. But in CTS, origin and destination of the passenger vehicle interviews were entered as Origin, Last stop, Next stop and Destination. Origin and destination of the CTS were converted to CMR format as follows.

- If the Last stop and Next stop exist in CTS, then they were taken as origin and destination.
- If the last stop and next stop did not exist, then checked whether the Last stop and Destination exist in CTS, then they were taken as origin and destination.



- If above two situations did not exist, then checked whether the Origin and Next stop exist in CTS, then they were taken as origin and destination.
- If above three steps were false, then checked whether the Origin and Destination exist in CTS, then those two were directly taken as origin and destination.

#### **IV Conversion of CTS zone cording to CMR format**

In CTS zoning three basic categories could be seen. Those were inside CMC, inside Western Province except CMC and other Provincial zones except Western Province. Within CMC area 21 zones were coded and code numbers were started with 1 (eg. Zone 1 ->11, zone 5 -> 15 etc.). There were 34 zones in Western Province mainly according to the DSD of Western Province. Ratmalana and Dehiwela were shown in two different zones, at present these two were considered as one. These zones were coded starting with two (eg. Zone 1 -> 21, zone 34 -> 234). Provincial zones contained 8 zones and those were coded starting with 3. This coding system had been clearly explained in Tabel 2-1, 2-2 and 2-3, report on Colombo Traffic Study, volume 2, 1995.



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All the CTS zones were re-coded according to the CMR code numbers; Colombo DSD number was given to the 1<sup>st</sup> category of CTS zones and suitable DSD numbers were given to the 2<sup>nd</sup> category according to the DSD gazzertier of University of Moratuwa. In CMR study other provincial trips except to Western Province were loaded to the end points of the Western Province boundary. Those were Negombo, Divulapitiya, Mirigama, Hanwella and Bentota are given in “Appendix V” Entry/Exit points between Western Province and Outer Areas.

In CTS, the provincial data were re-coded according to the survey locations, to convert to the CMR format. As eg. in CMR entry/exit points for North-Western Province were Mirigama, Divulapitiya and Negombo. But in CTS details did not enough to distribute among these locations. They could only be identified as those come via Negombo by the people interviewed at Victoria Bridge survey location and others who came through the other survey locations. Hence trips only can be loaded to Negombo and Mirigama. Table IV-I. shows the CTS Provincial data re-coded according to the survey locations.

**Table IV-I CTS Provincial Data Conversion**

Provinces	CTS Code	Survey Location	CMR Code No.	CMR Entry/Exit DSD	Entry/Exit point (Loding Point)
Central	P1	E9,E10	210000	Mirigama	121200
		Else	230100	Hanwella	110200
Southern Sabaragamuwa	P2	All	300000	Beruwala	130100
	P3	E9,E10	910000	Hanwella	110200
		Else	920000	Mirigama	121200
North Western	P4	E10	620000	Negombo	120400
		Else	610000	Mirigama	121200
North Central Eastern	P5	All	700000	All	121200
	P6	E9,E10	530000	Mirigama	121200
		Else	520000	Hanwella	110200
Uva	P7	E1	820900	Beruwala	130100
		E9,E10	810200	Mirigama	121200
		Else	810000	Hanwella	110200
		All	400000	Mirigama	121200
Northern	P8	All	400000	Mirigama	121200

Note: E9 – Kelani Bridge E10 – Victoria Bridge

If CTS data was analyzed using CMR standard package TransPlan V.2, number of trip ends in Maharagama DSD could be high because some of the areas in CTS, which do not belong to Maharagama DSD were included to Maharagama. These were Udahamulla, Mirihana belongs to Nugegoda DSD; Kottawa belongs to Homagama DSD; Talawatugoda belongs to Kaduwela DSD (University of Moratuwa, 1995).

## V Vehicle Types

In CTS three-wheelers and taxis had been considered as two vehicle types, but in CMR these two types are considered as one vehicle type. Even that the CTS vehicle types were similar to the CMR (except three-wheelers and taxis); code numbers were different. Following Table IV-II shows the conversion of the coding of vehicle types.

## VI Time Period

Even the CTS and CMR surveys were done in the same time duration of the day (6 a.m. to 7 p.m.) they had been coded differently. Table IV-III shows the conversion of time periods of CTS to CMR standard format.

Table IV-II CTS Vehicle Types Conversion

CMR code number	Vehicle Type	CTS code numbers		
		MCC	GVI	PVI
1	Bicycle	1	-	1
2	Motor-Cycle	2	-	2
3	Three wheeler / Taxi	3/7	-	3/7
4	Car / Van / Jeep	4	-	4
5	Office Van	5	-	5
6	School Van	6	-	6
7	Non-Root bus	8	-	8
8	Delivery Van	9	1	-
9	Trucks ( 4 axl)	10	2	-
10	Container	11	3	-
11	Tractors	12	4	-
12	Carts	13	5	-

Note: MCC - Manual Classify Counts; GVI - Goods Vehicles Interviews; PVI - Private Vehicles Interviews.

Table IV-III CTS Time Period Conversion

CTS MCC Code No.	CTS PVI/GVI Code No.	No. of Time Periods	CMR Time Periods
1	1	1	6.00-6.30
2	2	2	6.30-7.00
3	3	3	7.00-7.30
4	4	4	7.30-8.00
5	5	5	8.00-8.30
6	-	6	8.30-9.00
7	6	7	9.00-9.30
8	7	8	9.30-10.00
9	8	9	10.00-10.30
10	9	10	10.30-11.00
11	10	11	11.00-11.30
12	11	12	11.30-12.00
13	12	13	12.00-12.30
14	13	14	12.30-1.00
15	14	15	1.00-1.30
16	15	16	1.30-2.00
17	16	17	2.00-2.30
18	17	18	2.30-3.00
19	-	19	3.00-3.30
20	18	20	3.30-4.00
21	19	21	4.00-4.30
22	20	22	4.30-5.00
23	21	23	5.00-5.30
24	22	24	5.30-6.00
25	23	25	6.00-6.30
26	24	26	6.30-7.00

## VII Occupancy

In CTS occupancy of Private Vehicle Interviews (PVI) had been entered and directly it was considered in the conversion. In CTS goods vehicle data did not recorded occupancy, but the CMR study occupancy of goods vehicles also recorded. Therefore it was assumed that occupancy of Goods Vehicles Interviews (GVI) of CTS as 1.

## VIII Purpose

Purpose of the trips in CTS data entirely different than CMR study format and in GVI it was recorded as "Nature of Trips". Following Tables IV-IV and IV-V shows PVI and GVI purposes conversion respectively.

Table IV-IV CTS Private Vehicle Interview Trip Purpose Conversion

CTS format		CMR Format	
Code number	Purpose	Code number	Purpose
1	Work		Work
2	School	3	School / Education
3	Education	3	School / Education
4	Shopping	5	Personal / Social
5	Business	4	Business
6	Personal	5	Personal / Social
7	Social	5	Personal / Social
8	Recreational	5	Personal / Social
9	Chaffer only	5	Personal / Social

Table IV-V CTS Goods Vehicles Interview Trip Purpose Conversion

CTS format		GCTM Format			
Code no.	Nature of Trips	Code no.	Place of Origin	Code no.	Place of Destination
1	Producer to Wholesaler	1	Producer	2	Wholesaler
2	Producer to User	1	Producer	5	User
3	Wholesaler to Retailer	2	Wholesaler	3	Retailer
4	Wholesaler to Wholesaler	2	Wholesaler	2	Wholesaler
5	Retailer to User	3	Retailer	5	User
6	Personal	4	Personal	4	Personal
7	Empty	6	Empty	6	Empty
8	Other	7	Other	7	Other



## IX Commodity Types

Commodity types of CTS different than CMR and conversion can be shown as Table IV-VI.

Table IV-VI CTS Commodity Types Conversion

CTS format		CMR Format	
Code No.	Commodity Type	Code No.	Commodity Type
1	Construction Materials	3	Construction Materials
2	Timber	2	Forestry Products
3	Textile	5	Industrial Input/Products
4	Agricultural Products	1	Agricultural Products
5	Foods	6	Foodstuff
6	Industrial Materials	5	Industrial Input/Products
7	Petroleum Products	4	Petroleum Products
8	Household Appliances	5	Industrial Input/Products
9	Fertile	5	Industrial Input/Products
10	Machinery	5	Industrial Input/Products
11	Manufactured Products	5	Industrial Input/Products
12	Other	98	Other
13	Empty	7	Empty



## X Rejected Data

In CMR any record with a blank field was rejected; and in CTS, records with blank fields and/or a -1 in a field were rejected.

## XI Software used to Convert Data

CTS data was converted by the Lotus macro programs and then converted to dBase (.dbf) files, before processing by CMR standard program. Format of data sheets of CTS before and after Macro program shown in Table IV-VII and IV-VIII.



## **APPENDIX V**



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## **ENTRY / EXIT POINT BETWEEN WESTERN PROVINCE AND OTHER PROVINCES**

## Entry / Exit Point Between Western Province and Other Provinces

Province	District	DSD	Code	Entry/Exit	Code
Central	Kandy	All	210000	Mirigama	121200
	Matale	All	220000	Mirigama	121200
	Nuwaraeliya	Nuwaraeliya	230100	Hanwella	110200
		Hanguranketa	230200	Mirigama	121200
		Kotmale	230300	Mirigama	121200
		Walapane	230400	Mirigama	121200
		Ambagamuwa	230500	Hanwella	110200
Southern	All	All	300000	Beruwala	130100
Northern	All	All	400000	Mirigama	121200
Eastern	Batticaloa	All	510000	Mirigama	121200
	Ampara	All	520000	Hanwella	110200
	Trincomalee	All	530000	Mirigama	121200
North Western	Kurunegala	Kurunegala	610100	Mirigama	121200
		Nikaweratiya	610200	Mirigama	121200
		Mahawa	610300	Mirigama	121200
		Polpitiyagama	610400	Mirigama	121200
		Kobeigane	610500	Divulapitiya	120200
		Bingiriya	610600	Divulapitiya	120200
		Panduwasnuwara	610700	Divulapitiya	120200
		Wariyapola	610800	Mirigama	121200
		Kuliyapitiya	610900	Divulapitiya	120200
		Pannala	611000	Divulapitiya	120200
		Alawwa	611100	Mirigama	121200
		Poigahawela	611200	Mirigama	121200
		Mawatagama	611300	Mirigama	121200
		Ridigama	611400	Mirigama	121200
		Ibbagamuwa	611500	Mirigama	121200
		Giribawa	611600	Mirigama	121200
		Galgamuwa	611700	Mirigama	121200
	Puttalama	All	620000	Negombo	120400
North Central	All	All	700000	Mirigama	121200
Uva	Badulla	Badulla	810100	Hanwella	110200
		Mahiyanganaya	810200	Mirigama	121200
		Ridimaliyadda	810300	Mirigama	121200
		Kandeketiya	810400	Hanwella	110200
		Migahakivula	810500	Hanwella	110200
		Soranatota	810600	Hanwella	110200
		Uva Paranagama	810700	Mirigama	121200
		Welimada	810800	Mirigama	121200
		Haputale	810900	Hanwella	110200
Haldummulla	811000	Hanwella	110200		

Province	District	DSD	Code	Entry/Exit	Code
		Bandarawela	811100	Hanwella	110200
		Ella	811200	Hanwella	110200
		Hali Ela	811300	Hanwella	110200
		Passara	811400	Hanwella	110200
	Monaragala	Monaragala	820100	Hanwella	110200
		Bibile	820200	Mirigama	121200
		Madulla	820300	Mirigama	121200
		Medagama	820400	Hanwella	110200
		Badalkumbura	820500	Hanwella	110200
		Wellawaya	820600	Hanwella	110200
		Siyambalanduwa	820700	Hanwella	110200
		Buttala	820800	Hanwella	110200
Uva	Monaragala	Kataragama	820900	Beruwala	130100
		Tanamalwila	821000	Hanwella	110200
Sabaragamuwa	Ratnapura	All	910000	Hanwella	110200
		All	920000	Mirigama	121200



## **APPENDIX VI**



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## **TRIP PURPOSE MATRIXES**

PASSENGER TRIP GENERATIONS AND ATTRACTIONS - ( Two Way Trips )

DS Divisions Data-Base : C:\GCTM\DS\DIV.DBF  
 Survey Data Directory : C:\GCTM\SRVS8  
 Identification Number : 10

Vehicle	Types		
	Cycles	0	Non Route Bus 0
	Motor Bike	0	Delivery Van 0
	3-Wheeler & Tad	0	Trucks (2 Axel) 0
	Car/Van/Jeep	0	Container/m.Axel 0
	Office Van	0	Tractors 0
	School Van	0	Carts 0

Trip	Types		
	Home Based Work Trips	0	School Based Trips -
	Home Based School Trips	-	Work Based Trips -
	Home Based Other Trips	-	Other Trips -
	No Trips	-	

Generations Between Internal DS Divisions (Inter DS Divisional)

From To	110100	110200	110300	110400	110500	110600	110700	110800	110900	111000	120100	120200	120300	120400	120500	120600	120700	120800	120900	121000	121100	121200	121300	130100	130200	130300	130400	130500	130600	130700	130800	130900	131000	Total
110100	0	8	47	859	148	92	1943	1693	206	314	859	24	7	151	5	0	20	2068	85	0	4	0	292	0	0	0	0	14	15	3	17	2	8021	
110200	136	0	81	125	19	37	29	19	14	15	17	0	1	7	0	0	10	6	55	0	0	0	0	0	0	0	0	0	1	0	0	0	0	572
110300	1206	9	0	323	577	124	357	157	46	5	2	0	4	5	9	1	4	4	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2838	
110400	2848	36	94	0	80	77	530	154	8	210	18	0	2	0	7	0	11	0	2	0	0	0	0	0	0	0	0	21	0	23	9	4135		
110500	2381	4	50	407	0	72	313	155	0	0	4	0	5	0	3	0	16	18	0	3	0	0	0	0	0	0	0	3	0	13	0	3446		
110600	2130	0	58	142	198	0	373	438	33	76	1	1	0	0	0	0	7	14	0	0	0	0	0	0	0	0	0	19	3	0	0	3494		
110700	7513	22	28	316	83	105	0	157	99	78	20	1	11	7	36	7	72	21	2	3	3	7	0	0	5	0	0	9	0	0	34	8639		
110800	4841	46	169	136	26	43	551	0	192	4	0	1	95	21	62	7	2	11	0	0	0	0	0	0	0	0	0	4	0	23	9	6241		
110900	1827	15	105	52	56	57	101	861	0	7	8	0	20	0	19	0	1	9	3	0	0	0	0	4	0	0	0	7	0	6	45	3205		
111000	2368	4	56	118	5	3	80	2	0	0	12	0	445	0	4	0	39	5	0	0	0	0	4	0	0	0	0	0	0	0	0	0	3146	
120100	479	18	1	11	6	0	2	38	2	19	0	3	32	10	0	87	123	96	22	120	81	20	178	0	0	0	5	0	0	10	5	1368		
120200	40	0	0	0	0	2	0	0	0	0	10	0	46	43	0	11	2	9	0	0	75	0	0	0	0	0	0	0	0	2	0	0	238	
120300	354	3	0	3	0	0	7	1	0	0	11	11	0	0	84	41	57	11	0	0	2	6	0	0	0	0	0	0	0	0	0	0	591	
120400	86	0	6	0	0	0	8	15	0	0	3	18	19	0	22	44	12	0	3	2	0	0	8	0	0	0	0	3	0	0	0	0	248	
120500	2176	1	0	9	0	0	118	119	0	0	20	3	245	24	0	192	0	17	0	2	2	18	0	0	0	0	0	0	0	0	0	0	2947	
120600	825	0	0	9	27	0	10	0	0	0	32	0	77	83	282	0	38	10	0	0	3	29	0	0	0	0	0	1	2	0	0	1429		
120700	7081	1	0	0	2	13	290	25	0	46	69	0	28	0	22	80	0	65	0	5	11	7	6	0	0	0	0	0	0	6	0	7757		
120800	817	0	0	1	2	2	6	11	0	1	5	0	0	2	0	5	57	0	12	12	5	0	0	0	0	0	0	0	0	0	0	0	938	
120900	43	85	10	33	8	1	4	2	1	2	270	0	16	0	2	6	10	131	0	0	5	0	3	0	0	0	0	0	0	2	0	635		
121000	193	2	3	12	9	1	2	3	0	0	255	2	127	10	8	21	32	35	6	0	15	0	38	0	0	0	5	0	0	0	0	779		
121100	176	0	0	0	0	0	0	0	0	0	243	38	16	40	102	27	24	12	21	37	0	4	30	0	0	0	0	3	0	1	0	773		
121200	38	0	4	3	1	0	3	4	0	0	61	0	47	2	0	11	6	0	0	0	7	0	12	0	0	0	0	0	0	0	0	200		
121300	2410	7	0	11	0	0	9	0	0	0	142	0	45	2	41	46	25	53	0	18	0	0	0	0	0	0	0	0	0	0	0	2809		
130100	8	0	6	0	2	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	17	0	49		
130200	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	43		
130300	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57	
130400	2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
130500	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	6	
130600	3	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	114	
130700	270	48	12	43	104	52	17	10	7	0	1	0	1	0	0	2	1	0	4	1	0	1	0	0	15	0	0	34	0	5	2	7	636	
130800	14	0	0	0	0	4	9	36	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	47	0	18	0	178		
130900	70	0	0	3	3	32	5	30	68	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	7	33	0	64	0	344		
131000	600	0	16	73	8	155	100	329	372	0	0	3	16	0	0	11	0	0	0	0	0	0	0	0	0	0	6	6	145	0	0	1840		
Total																																		67721

PASSENGER TRIP GENERATIONS AND ATTRACTIONS - ( Two Way Trips )

DS Divisions Data-Base : C:\GCTMDS\DIV.DBF  
 Survey Data Directory : C:\GCTMSRV\S8  
 Identification Number : 11

Vehicle	Types			
	Cycles	0	Non Route Bus	0
	Motor Bike	0	Delivery Van	0
	3-Wheeler & Taxi	0	Trucks (2 Axle)	0
	Car/Van/Jeep	0	Container/m.Axe	0
	Office Van	0	Tractors	0
	School Van	0	Carts	0

Trip	Types			
	Home Based Work Trips	-	School Based Trips	-
	Home Based School Trips	0	Work Based Trips	-
	Home Based Other Trips	0	Other Trips	-
	No Trips			

Generations Between Internal DS Divisions (Inter DS Divisional)

From	To	110100	110200	110300	110400	110500	110600	110700	110800	110900	111000	120100	120200	120300	120400	120500	120600	120700	120800	120900	121000	121100	121200	121300	130100	130200	130300	130400	130500	130600	130700	130800	130900	131000	Total	
110100		0	22	138	485	705	246	5074	3538	305	2206	58	0	893	53	2152	322	1394	16	23	36	7	13	427	8	3	0	0	0	23	0	32	86	18264		
110200		119	0	125	69	50	25	33	20	0	20	14	3	10	6	0	1	1	11	249	8	9	21	8	0	1	0	0	0	36	2	7	8	859		
110300		690	175	0	843	1845	407	587	202	83	26	4	0	20	0	3	8	11	0	29	6	0	2	1	4	1	2	0	0	16	2	19	26	5013		
110400		1991	96	571	0	178	67	747	149	32	296	10	8	13	29	8	0	19	9	26	0	0	0	2	0	0	0	0	0	27	0	8	23	4304		
110500		2136	29	1068	61	0	470	473	340	46	0	2	0	67	0	0	0	0	0	2	2	0	0	0	6	3	0	0	0	1	22	9	25	71	4831	
110600		783	14	105	152	879	0	721	725	142	14	1	7	10	0	2	12	12	0	2	2	0	1	23	0	4	0	0	0	22	7	21	11	3673		
110700		14432	25	193	417	583	159	0	234	111	68	13	41	20	16	1	2	27	2	18	0	6	1	18	3	0	0	0	0	3	24	10	37	66	16530	
110800		7567	3	71	81	343	236	910	0	713	0	9	8	34	0	0	8	22	5	1	18	1	1	8	10	0	0	0	6	26	3	23	100	10208		
110900		1139	14	15	47	164	176	245	2310	0	43	8	0	0	0	9	0	2	11	2	2	1	2	30	20	0	0	5	0	0	14	9	65	75	4408	
111000		4796	17	12	277	3	37	132	36	17	0	0	0	6	0	89	213	152	39	9	6	0	4	0	0	0	0	0	0	0	0	0	0	2	5845	
120100		582	15	9	12	34	19	9	10	1	77	0	28	51	50	86	325	166	66	229	628	306	70	779	1	3	0	0	0	3	0	8	5	3569		
120200		182	3	0	0	5	1	21	3	3	10	72	0	41	53	37	84	0	0	3	55	211	0	8	0	0	0	0	0	0	0	0	0	5	796	
120300		1043	7	0	1	0	15	0	4	13	12	88	19	0	41	143	341	0	10	2	19	4	10	6	0	0	0	0	0	1	0	0	0	1778		
120400		124	0	0	7	17	4	67	4	0	7	38	19	96	0	111	23	29	2	5	22	0	35	0	0	0	0	0	0	0	5	2	21	638		
120500		4055	0	26	0	13	4	12	0	2	56	101	22	142	57	0	720	241	30	4	15	0	3	98	0	0	0	0	0	0	0	5	0	5606		
120600		696	4	0	1	1	5	8	61	9	54	228	13	7	35	425	0	130	13	18	16	8	6	343	0	0	0	0	0	0	0	3	0	2084		
120700		2423	1	3	6	10	10	6	23	0	52	225	10	66	13	191	254	0	86	9	130	0	200	1	0	0	0	0	0	0	0	0	10	3728		
120800		310	29	4	12	21	0	50	12	0	31	80	0	20	0	10	90	193	0	18	14	0	9	0	0	0	0	4	0	0	0	0	1	907		
120900		41	585	29	40	44	100	19	5	22	12	854	0	20	10	3	25	35	112	0	31	44	25	32	0	0	0	0	3	1	2	1	2094			
121000		166	9	3	11	3	0	45	2	5	0	1057	2	60	44	4	75	41	20	11	0	210	0	43	0	1	0	0	0	5	2	3	1	1822		
121100		211	0	1	0	4	0	19	1	0	0	1146	176	18	30	42	57	8	26	35	85	0	13	33	0	0	0	0	2	0	0	0	0	1907		
121200		50	6	0	11	1	0	1	7	0	2	209	6	18	30	15	50	0	9	0	0	18	0	39	4	0	0	0	1	1	2	0	0	478		
121300		780	16	0	8	3	13	16	3	0	9	969	0	42	104	38	255	360	55	10	38	69	7	0	0	0	0	0	1	0	0	0	0	2797		
130100		96	0	0	3	14	19	4	5	31	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	4	167	0	0	0	0	160	63	574		
130200		11	1	0	0	3	3	0	7	0	0	1	0	0	0	0	0	0	0	1	0	3	0	9	0	0	0	0	22	7	3	0	0	98		
130300		4	5	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	426	
130400		14	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	37	
130500		0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	28	
130600		2	0	13	4	1	2	0	4	7	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	647	
130700		127	134	14	60	21	135	54	64	10	1	7	3	4	1	0	6	0	12	1	1	0	1	2	6	0	0	0	0	0	137	0	138	54	1050	
130800		47	9	3	10	18	48	16	35	6	0	2	0	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	24	550	0	88	148	1009	
130900		151	4	12	14	34	24	21	58	65	0	0	0	10	8	0	2	8	0	1	2	3	7	0	72	0	0	0	10	0	60	99	0	210	874	
131000		679	8	34	5	129	66	129	291	108	0	13	4	19	0	0	0	4	1	2	0	0	0	55	0	0	0	4	5	49	36	164	0	1806		
Total																																				108686



PASSENGER TRIP GENERATIONS AND ATTRACTIONS - ( Two Way Trips )

DS Divisions Data-Base : C:\GCTMDS\DIV.DBF  
 Survey Data Directory : C:\GCTMSRV8  
 Identification Number : 12

Vehicle	Types			
Cycles	0	Non Route Bus	0	
Motor Bike	0	Delivery Van	0	
3-Wheeler & Taxi	0	Trucks (2 Axle)	0	
Car/ Van/Jeep	0	Container/m.Axe	0	
Office Van	0	Tractors	0	
School Van	0	Carts	0	

Trip	Types			
Home Based Work Trips	-	School Based Trips	0	
Home Based School Trips	-	Work Based Trips	0	
Home Based Other Trips	-	Other Trips	0	
No Trips	-			

Generations Between Internal DS Divisions (Inter DS Divisional)

From	To	110100	110200	110300	110400	110500	110600	110700	110800	110900	111000	120100	120200	120300	120400	120500	120600	120700	120800	120900	121000	121100	121200	121300	130100	130200	130300	130400	130500	130600	130700	130800	130900	131000	Total	
110100		0	156	213	1856	2383	899	10736	6123	919	1568	40	15	366	295	1119	741	4132	87	6	13	22	3	648	22	0	3	1	0	0	28	10	34	194	32630	
110200		150	0	67	72	34	10	22	5	0	7	0	0	3	0	0	0	2	2	79	0	1	0	2	0	0	0	0	0	0	13	0	0	0	471	
110300		266	19	0	193	567	131	99	77	38	3	0	0	32	0	0	0	8	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1438	
110400		1642	25	112	0	44	34	252	89	78	177	2	0	1	4	0	0	1	10	1	1	2	0	7	0	0	0	0	0	0	8	0	3	0	2492	
110500		1610	0	136	36	0	701	250	353	64	2	8	0	1	5	0	0	11	9	3	3	0	0	0	0	0	0	0	0	0	10	3	0	0	3203	
110600		749	2	39	25	205	0	190	236	64	9	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	3	0	0	7	1	5	10	1550	
110700		12896	0	29	233	178	49	0	326	81	6	3	1	3	2	7	0	313	17	1	0	1	0	7	0	0	0	2	0	0	2	10	0	34	14204	
110800		7224	17	88	72	111	50	446	0	676	3	165	0	9	0	100	53	34	0	0	4	0	0	116	0	1	3	0	0	0	3	27	13	19	9235	
110900		774	13	13	19	12	19	121	5239	0	21	8	0	0	0	2	1	0	0	1	1	0	0	0	1	0	0	0	0	0	3	0	19	64	6330	
111000		5186	0	0	74	48	0	54	8	19	0	7	0	66	0	0	0	219	15	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	5700	
120100		168	3	0	7	0	1	9	6	1	2	0	11	6	13	51	47	78	25	110	108	62	8	144	0	0	0	0	0	0	0	0	3	2	2	865
120200		38	1	0	1	2	0	1	9	0	0	32	0	5	0	8	27	9	0	0	0	54	0	0	0	0	0	0	0	0	0	0	2	0	0	189
120300		1172	0	0	2	0	58	1	8	11	0	53	11	0	10	121	40	12	0	0	9	0	4	6	0	0	0	0	0	0	2	1	16	0	1578	
120400		169	9	0	0	9	3	0	14	11	0	53	3	28	0	22	40	224	0	0	5	6	6	36	0	0	0	0	0	0	0	0	3	0	0	624
120500		3094	0	6	0	0	0	14	0	0	0	50	4	56	25	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	3774
120600		668	0	0	5	0	0	157	211	0	50	70	21	0	40	3625	0	151	32	0	9	0	83	2	1	0	0	0	0	0	0	0	0	0	5126	
120700		7593	0	0	0	2	0	0	83	0	334	50	2	27	0	79	20	0	2	0	8	0	12	0	0	0	0	0	0	0	0	0	0	1	8213	
120800		742	0	0	7	5	4	5	21	3	19	58	3	52	0	7	28	66	0	21	1	6	0	15	1	0	0	0	0	0	0	0	0	4	1070	
120900		22	126	9	2	0	0	3	0	1	1	14	0	0	0	0	0	3	16	0	0	0	4	0	0	0	0	0	2	0	3	0	0	0	205	
121000		37	0	2	4	3	0	2	7	0	0	901	5	25	9	0	3	18	14	0	0	389	0	7	0	0	0	0	0	0	0	0	0	0	0	1425
121100		24	0	0	4	0	0	1	0	0	0	37	30	9	5	0	3	0	0	10	5	0	0	0	0	0	0	0	0	0	0	0	0	0	129	
121200		14	0	0	1	3	0	0	2	0	0	21	16	6	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	83	
121300		1235	0	0	0	4	0	1	0	0	0	68	0	30	0	10	19	601	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1975
130100		29	0	0	0	0	0	12	2	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	165	0	0	4	73	1	289		
130200		4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	0	0	21	0	0	57	
130300		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
130400		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
130500		0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	16	
130600		6	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167	0	18	0	193
130700		97	9	24	0	4	62	15	15	5	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8	56	0	113	0	52	461
130800		5	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	3	37	75	
130900		99	0	11	2	4	19	12	16	10	0	0	0	1	0	0	2	7	2	0	0	0	0	280	0	0	0	0	0	0	55	23	0	140	683	
131000		354	0	16	10	6	23	57	72	15	0	0	8	5	0	0	0	2	0	0	0	0	0	4	2	5	0	0	0	14	4	118	0	716		
Total																																			105003	

## **APPENDIX VII**



University of Moratuwa, Sri Lanka.  
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## **SUMMARY OF SOCIO-ECONOMIC DATA AND SPSS PROGRAM**

DATA LIST FILE 'c:\user\ik\purp\it1\tp\_purli.dat' FIXED /dsdi 1-6 dsdj 7-13  
 geni 14-20 atj 21-27 popi 28-34 huniti 35-41 hhi 42-48 hsizei 49-55 mci 56-62  
 cari 63-69 lorryi 70-76 busi 77-83 vani 84-90 landvi 91-97 t\_whi 98-104  
 statei 105-111 publi 112-118 semigi 119-125 indei 126-132 ag81i 133-139  
 privati 140-146 inc81i 147-153 inc94i 154-160 popj 161-167 hunitj 168-174  
 hhj 175-181 hsizej 182-188 mcj 189-195 carj 196-202 lorryj 203-209 busj 210-216  
 vanj 217-223 landvj 224-230 t\_whj 231-237 statej 238-244 pubj 245-251  
 semigj 252-258 indej 259-265 ag81j 266-272 privatj 273-279 inc81j 280-286  
 inc94j 287-293 ttime 294-302 disij 303-310 empi 311-318 empj 319-326  
 hbot 327-334 nhbt 335-342.

SAVE /OUTFILE 'c:\user\ik\purp\it1\tp\_purli.SYS'.

GET /FILE 'c:\user\ik\purp\it1\tp\_purli.SYS'.

```

select if (dsdi<>dsdj).
compute empihh = (empi/hhi).
compute empipop = 0.
compute empipop = (empi/popoi).
compute empjpop = 0.
compute empjpop = (empj/popj).
compute empijpop = (empipop*empjpop).
compute tvehi = 0.
compute tvehi = MCI+CARi+VANI+T_Whi.
compute tvehj = 0.
compute tvehj = MCj+CARj+VANj+T_Whj.
compute tvehiHH = 0.
compute tvehiHH = (tvehi/HHI).
compute tvehjHH = 0.
compute tvehjHH = (tvehj/HHj).
compute tvehijHH = 0.
compute tvehijHH = (tvehihh*tvehjhh).
compute ltvehij = 0.
compute ltvehij = ln(tvehijhh).
compute ltvehiHH = 0.
compute ltvehiHH = ln(tvehi/HHI).
compute ltvehjHH = 0.
compute ltvehjHH = ln(tvehj/HHj).
compute jobj = 0.
compute jobj = statej+pubj+semigj+indej+privatj.
compute jobi = 0.
compute jobi = statei+pubi+semigi+indei+privati.
compute ljobj = 0.
compute ljobj = ln(jobj).
compute j1j=0.
compute j1j=(PRIVATJ+INDEJ).
compute j2ipop=0.
compute j2ipop=(jobi/POPi).
compute jobij=jobi*jobj.

```



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 www.lib.mrt.ac.lk

```

compute ljobij = ln(jobij).
COMPUTE lhhijobj=0.
COMPUTE Lhhijobj=Ln(HHI+JOBj).
compute ldisij = 0.
compute ldisij = ln(disij).
compute ctime = ttime * 60.
compute ltime = 0.
compute ltime = ln(ctime).
compute lHHI = ln(HHI).
compute popij = popi*popj.
compute lpopij = ln(popij).
compute lPOPI = 0.
compute lPOPI = ln(POPI).
compute lPOPj = 0.
compute lPOPj = ln(POPj).
compute lINC81I = 0.
compute lINC81I = ln(INC81I).
compute INC81IH = 0.
compute INC81IH = (INC81I/HHI).
compute INC81jh = 0.
compute INC81jh = INC81j/hhj.
compute INC81IjH = 0.
compute INC81IjH = INC81Ih*inc81jh.
compute INC94IH = 0.
compute INC94IH = (INC94I/HHI).
compute INC94jH = 0.
compute INC94jH = (INC94j/HHj).
compute INC94ijH = 0.
compute INC94ijH = INC94IH*inc94jh.
compute lGENI = ln(GENI).
COMPUTE cGENI=GENI+10.
COMPUTE LcGENI=LN(cGENI).
compute hbshbo =hb0t.
COMPUTE chbshbo=hbshbo+10.
COMPUTE Lchbshbo=LN(chbshbo).
COMPUTE cnhbt=nhbt+10.
COMPUTE Lcnhbt=LN(cnhbt).
compute j3jpop = jobj/popj.
compute jobijpop = j2ipop*j3jpop.
compute ljobijpp = ln(JOBIJPOP).
compute speed = 0.
compute speed = disij/ttime.
compute lspeed = ln(speed).
SAVE /OUTFILE 'c:\user\ik\purpl\it1\tp_purli.SYS'.

GET /FILE 'c:\user\ik\purpl\it1\tp_purli.SYS'.
select if (dsdi<>dsdj).

REGRESSION /VARIABLES lcGENI TVEHijhh LPOPI ljobj ldisij LTTIME

```



Variable(s) Entered on Step Number

- 1.. LJOB
- 2.. LPOPI
- 3.. LTTIME
- 4.. TVEHIJHH
- 5.. LDISIJ
- 6.. LPOPJ

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SPSS/PC+

5/13/98

\*\*\*\*\* MULTIPLE REGRESSION \*\*\*\*\*

Equation Number 1 Dependent Variable.. LCHBSHBO

Multiple R .92326  
 R Square .85241  
 Adjusted R Square .85156  
 Standard Error 8.25137

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	6	412483.38685	68747.23114
Residual	1049	71421.33282	68.08516

F = 1009.72416      Signif F = .0000

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SPSS/PC+

5/13/98

\*\*\*\*\* MULTIPLE REGRESSION \*\*\*\*\*

Equation Number 1 Dependent Variable.. LCHBSHBO

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
LJOB	.32063	.07917	.23116	4.050	.0001
LPOPI	.27141	.04989	.08306	5.440	.0000
LTTIME	-.35495	.09351	-.10467	-3.796	.0002
TVEHIJHH	1.68805	.16523	.22895	10.217	.0000
LDISIJ	-1.45743	.09706	-.43550	-15.015	.0000
LPOPJ	.26500	.13969	.10388	1.897	.0581
(Constant)	.70929	1.24946		.568	.5704

- 1.. LTTIME
- 2.. LPOPI
- 3.. LJOB
- 4.. TVEHIJHH
- 5.. LDISIJ

\*\*\*\*\* MULTIPLE REGRESSION \*\*\*\*\*

Equation Number 1 Dependent Variable.. LCGENI

Multiple R .95153  
 R Square .90541  
 Adjusted R Square .90496  
 Standard Error 5.64666

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	5	320443.29046	64088.65809
Residual	1050	33479.05594	31.88482

F = 2010.00563 Signif F = .0000

\*\*\*\*\* MULTIPLE REGRESSION \*\*\*\*\*

Equation Number 1 Dependent Variable.. LCGENI

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
LTTIME	-.51694	.08291	-.15135	-6.235	.0000
LPOPI	.46397	.04815	.11668	9.635	.0000
LJOB	.77685	.02257	.53627	34.414	.0000
TVEHIJHH	1.37342	.15295	.15958	8.979	.0000
LDISIJ	-.97882	.08861	-.28102	-11.047	.0000
(Constant)	-4.95811	.77513		-6.396	.0000







## **APPENDIX VIII**



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## **OUTPUTS OF MODELS (YEAR 1996 AND 2010)**



Output of model 1995

Home Based Work Trips

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total	
1	0	55	216	464	893	437	2279	1923	348	826	140	23	293	86	558	302	765	427	39	56	43	20	169	23	11	0	0	6	15	70	23	65	111	10626	
2	291	0	59	38	29	15	29	43	15	26	11	0	25	1	14	13	15	40	16	10	0	0	7	0	0	0	0	2	21	0	3	2	725		
3	975	54	0	167	183	95	138	147	61	72	13	0	40	6	33	26	36	46	14	10	0	0	12	0	0	0	0	6	36	5	12	18	2205		
4	2272	39	186	0	220	90	325	210	59	194	21	0	60	12	66	47	77	69	11	11	2	0	22	0	0	0	0	2	25	2	12	18	4052		
5	3725	27	187	201	0	317	684	427	115	139	20	0	59	12	66	46	78	66	6	8	2	0	22	2	0	0	0	2	28	5	18	31	6293		
6	2931	25	149	126	476	0	408	556	223	117	21	0	62	13	65	47	75	66	6	9	2	0	22	5	1	0	0	7	41	13	29	53	5548		
7	7955	19	109	232	535	211	0	543	110	302	28	0	73	16	101	64	127	92	6	10	4	0	32	2	0	0	0	1	23	3	17	31	10646		
8	5197	21	87	113	256	222	418	0	286	151	34	2	86	21	103	71	123	106	8	13	7	1	38	9	2	0	0	5	33	8	36	71	7528		
9	1780	17	72	62	131	167	162	539	0	67	17	0	55	11	50	39	56	54	3	6	1	0	17	13	5	0	0	2	7	40	14	59	205	3651	
10	3936	26	79	190	149	81	413	272	63	0	42	2	98	24	176	95	265	144	10	15	8	1	56	1	0	0	0	0	17	1	13	19	6196		
11	822	15	19	26	28	16	51	81	20	51	0	15	141	27	80	120	84	129	37	70	56	14	113	0	0	0	0	0	6	0	3	4	2028		
12	268	1	3	5	6	1	14	26	4	11	28	0	199	56	21	51	14	23	4	24	41	20	9	0	0	0	0	0	0	0	0	0	829		
13	565	4	12	18	20	11	35	58	15	33	42	37	0	285	65	189	44	47	5	21	42	9	24	0	0	0	0	0	2	0	2	2	1587		
14	500	3	9	14	16	8	30	50	12	28	25	32	813	0	54	148	37	41	2	12	21	6	18	0	0	0	0	0	1	0	0	1	1881		
15	2394	12	32	57	63	38	125	167	40	157	59	6	158	41	0	250	324	177	12	18	14	2	91	0	0	0	0	0	3	0	8	12	4265		
16	1148	8	21	34	37	22	69	102	26	73	77	17	379	101	218	0	117	99	10	23	39	7	64	0	0	0	0	0	5	0	5	7	2708		
17	3546	14	39	73	81	49	171	217	51	257	68	3	120	30	352	147	0	288	15	20	12	3	117	0	0	0	0	0	10	0	10	15	5708		
18	1226	20	26	36	38	23	73	111	26	82	61	1	76	17	115	73	174	0	24	21	9	1	76	0	0	0	0	0	8	0	4	6	2327		
19	365	32	33	24	18	9	24	42	10	23	55	3	52	7	30	32	31	82	0	72	10	10	34	0	0	0	0	0	11	0	0	0	1009		
20	368	15	17	15	13	6	22	39	8	20	72	13	83	14	28	41	28	52	50	0	30	28	31	0	0	0	0	0	5	0	0	0	998		
21	483	6	9	14	15	7	29	48	11	26	102	47	250	45	42	114	35	52	14	57	0	21	33	0	0	0	0	2	0	0	0	0	1462		
22	226	6	7	6	5	1	11	23	3	9	24	18	72	13	13	26	12	22	10	44	16	0	10	0	0	0	0	0	0	0	0	0	0	577	
23	1261	16	25	38	41	25	77	116	28	89	149	7	117	28	160	132	187	207	30	41	23	8	0	0	0	0	0	0	8	0	5	7	2825		
24	207	0	5	4	8	6	13	35	20	5	0	0	12	0	4	4	4	7	0	0	0	0	0	0	17	0	0	2	1	8	1	63	18	444	
25	116	0	1	0	1	0	4	17	8	0	0	0	4	0	0	0	0	0	0	0	0	0	0	14	0	0	4	13	7	10	0	27	5	232	
26	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	
27	62	0	0	0	0	0	0	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3	0	84		
28	137	0	5	2	5	4	7	22	11	2	0	0	6	0	0	0	0	3	0	0	0	0	0	7	24	0	0	10	22	10	37	8	322		
29	132	5	11	5	6	5	8	22	10	3	0	0	6	0	0	0	0	5	0	0	0	0	0	0	0	6	0	0	3	0	54	11	11	6	309
30	336	19	36	21	27	24	31	59	34	15	2	0	18	0	9	8	9	17	2	1	0	0	1	2	5	0	0	5	38	0	45	24	26	814	
31	379	13	30	20	31	31	36	70	46	17	2	0	21	0	11	10	12	16	0	0	0	0	1	9	10	0	0	17	34	140	0	49	41	1046	
32	363	4	15	12	22	20	29	74	59	14	2	0	20	0	11	9	11	14	0	0	0	0	0	45	20	0	0	16	8	29	15	0	81	693	
33	834	8	34	30	55	57	72	201	290	33	8	0	35	5	26	22	28	30	0	1	0	0	7	19	8	0	0	4	9	47	20	118	0	2001	

91,846

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbewa    | 11 Gampaha      | 16 Ja-Eia      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |

Output of model 1996

Home Based Other Trips

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	79	368	1068	1748	1023	5351	2855	608	2149	238	50	229	124	1047	427	1598	551	79	86	102	38	361	34	17	0	3	18	23	94	66	87	215	20737
2	217	0	118	79	55	42	49	54	31	55	26	3	19	6	28	21	31	53	51	27	8	9	27	1	1	0	0	2	13	43	16	10	13	1108
3	914	113	0	432	447	283	278	224	136	171	32	5	35	15	68	44	81	65	47	27	12	9	40	7	5	0	0	8	21	79	39	25	53	3715
4	2724	79	448	0	551	270	791	355	137	557	51	9	58	28	149	84	191	108	39	28	21	9	71	8	3	0	0	5	13	52	27	26	55	6947
5	4451	55	464	551	0	1172	1823	855	297	383	50	9	57	28	145	83	186	102	26	23	20	7	68	12	5	0	0	8	14	61	41	40	97	11133
6	2908	48	329	302	1306	0	897	1018	598	279	45	8	53	26	123	74	155	90	24	21	18	6	60	17	9	0	0	14	21	82	67	59	155	8812
7	12453	44	264	724	1670	737	0	1151	289	1066	73	13	77	39	250	124	350	160	28	28	30	10	106	12	5	0	0	7	11	50	34	40	99	19944
8	5297	37	167	256	622	664	915	0	694	348	67	13	72	36	186	106	243	140	26	27	28	10	92	21	9	0	0	11	15	57	42	64	133	10453
9	1507	30	137	132	287	518	306	922	0	143	34	5	42	20	84	54	102	65	15	15	13	4	43	32	15	0	2	18	20	74	65	119	680	5503
10	5278	52	171	538	369	240	1123	464	143	0	92	16	93	46	416	169	681	225	36	34	35	12	154	8	2	0	0	3	7	33	20	26	57	10543
11	656	28	36	55	54	43	86	102	38	102	0	61	162	61	161	246	179	215	122	188	226	50	370	1	0	0	0	1	12	4	8	17	3284	
12	193	7	10	16	15	12	24	32	11	26	79	0	269	154	44	102	33	34	24	69	186	85	39	0	0	0	0	0	0	0	0	0	3	1469
13	390	9	21	35	34	27	53	64	26	60	97	128	0	773	115	359	78	62	23	51	160	36	67	0	0	0	0	0	5	1	5	11	2690	
14	343	7	17	30	29	23	45	56	22	51	60	117	1224	0	95	264	65	52	15	33	88	28	52	0	0	0	0	0	4	0	4	0	9	2733
15	2589	27	68	144	140	106	265	251	84	418	146	29	174	88	0	540	906	332	44	45	59	17	295	4	0	0	0	0	2	18	11	17	36	6855
16	989	18	41	75	74	58	122	133	50	157	207	66	494	228	501	0	252	158	39	60	161	29	201	2	0	0	0	0	12	6	11	22	4166	
17	4077	31	84	191	187	139	384	337	106	707	168	22	124	63	936	282	0	580	51	50	53	18	378	6	0	0	0	1	3	22	14	21	44	9079
18	1189	43	56	90	85	66	146	163	55	195	169	18	82	40	287	147	486	0	86	57	46	16	280	2	0	0	0	0	3	18	7	11	24	3867
19	278	67	65	53	36	28	42	53	23	51	148	22	54	21	61	59	68	135	0	216	48	42	111	0	0	0	0	6	24	8	5	9	1733	
20	258	31	32	32	26	21	35	46	18	40	194	55	92	36	52	75	55	77	185	0	128	106	95	0	0	0	0	0	1	12	3	3	6	1714
21	375	15	20	32	31	24	49	60	23	53	291	189	338	118	87	247	75	79	52	160	0	77	109	0	0	0	0	0	6	0	4	9	2523	
22	143	13	14	14	11	8	17	25	8	19	61	79	77	36	25	45	25	29	42	122	71	0	35	0	0	0	0	0	4	0	0	1	924	
23	1120	34	52	87	83	66	142	158	56	194	419	34	129	61	367	271	455	403	104	105	95	33	0	2	0	0	0	2	17	7	12	24	4532	
24	121	3	11	11	16	19	18	39	40	11	2	0	6	0	7	5	8	6	0	0	0	0	2	0	53	1	13	23	11	18	20	138	49	651
25	77	3	9	7	9	11	10	24	23	6	0	0	2	0	2	1	3	2	0	0	0	0	0	58	0	4	41	76	32	29	26	78	27	560
26	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	6	0	0	0	0	0	0	1	0	26
27	36	1	3	1	1	2	1	8	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	44	0	0	15	14	7	17	6	197	
28	101	8	20	14	18	24	18	34	34	12	1	0	4	0	6	4	7	6	1	0	0	0	1	34	95	0	18	0	44	59	80	112	39	794
29	94	19	30	18	19	24	18	33	29	12	3	0	4	0	6	4	7	9	5	3	0	0	3	12	32	0	17	33	0	141	77	33	28	713
30	257	44	84	53	62	73	56	83	78	35	11	0	14	4	20	14	22	24	17	11	2	2	13	14	21	0	8	35	113	0	230	55	80	1535
31	279	29	67	46	67	93	62	97	106	37	10	0	15	5	23	16	26	21	11	7	2	0	12	29	33	0	9	77	95	347	0	118	125	1865
32	248	11	28	27	43	55	47	96	130	29	8	0	14	4	19	14	22	17	2	2	1	0	9	123	62	0	11	72	26	57	79	0	247	1503
33	662	17	66	66	115	164	129	307	827	71	19	1	27	11	46	32	53	37	7	7	6	1	24	50	24	0	4	27	26	94	96	278	0	3294

155,602

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbewa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |

Output of model 1996

Non-home Based Trips

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total	
1	0	85	474	1218	2939	1677	8940	6200	1047	3180	325	46	412	167	1872	720	3226	1026	83	104	96	35	553	40	20	0	0	22	30	114	65	127	302	35145	
2	143	0	105	59	41	23	30	34	16	31	13	0	11	0	13	9	16	46	35	14	0	0	11	0	0	0	0	5	27	2	1	2	687		
3	752	102	0	430	491	247	261	195	103	125	15	0	24	4	41	26	50	51	29	13	0	0	19	0	0	0	0	10	53	15	14	31	3101		
4	2100	64	471	0	590	209	787	298	91	469	27	0	44	13	100	56	133	84	21	13	4	0	39	0	0	0	0	4	30	8	13	29	5697		
5	4409	37	467	514	0	1252	2367	809	231	292	26	0	43	12	103	56	140	79	10	8	4	0	38	2	0	0	0	4	35	15	23	58	11034		
6	3801	36	359	278	1893	0	1234	1337	617	245	30	0	50	15	110	63	146	87	12	11	5	0	43	8	2	0	0	6	13	65	38	47	124	10675	
7	10942	20	201	558	1931	664	0	1085	205	796	38	0	56	18	173	83	256	120	8	10	7	0	60	1	0	0	0	2	26	10	21	55	17346		
8	8182	26	162	227	711	776	1171	0	911	345	58	4	82	29	210	112	294	170	15	18	14	2	86	14	4	0	0	5	10	48	24	62	188	13960	
9	2061	21	131	106	305	533	334	1357	0	115	24	0	44	13	82	51	105	69	6	7	4	0	34	23	9	0	0	11	15	67	42	127	837	6533	
10	5709	36	144	490	351	193	1171	472	105	0	80	5	101	36	452	173	891	273	21	22	18	3	149	0	0	0	0	1	20	6	15	34	10971		
11	624	17	20	31	35	23	64	87	23	85	0	34	163	39	152	225	177	224	93	161	172	26	376	0	0	0	0	0	3	0	1	6	2861		
12	117	0	0	2	3	0	8	14	0	9	42	0	268	103	23	68	14	17	6	36	112	37	14	0	0	0	0	0	0	0	0	0	893		
13	383	2	10	19	23	15	40	55	16	47	75	105	0	1115	121	471	75	56	10	32	123	17	48	0	0	0	0	0	0	0	0	3	2861		
14	316	0	7	14	17	11	32	44	12	37	38	82	2214	0	95	341	60	45	3	15	50	9	35	0	0	0	0	0	0	0	0	0	1	3478	
15	2789	11	38	86	102	69	212	238	60	373	117	12	200	75	0	680	1163	338	23	26	30	4	275	0	0	0	0	0	6	0	8	19	6954		
16	1018	7	22	44	52	35	97	120	34	134	165	39	718	258	644	0	288	153	19	35	104	11	169	0	0	0	0	3	0	4	10	4183			
17	5107	16	50	122	148	99	334	354	83	784	146	7	135	50	1237	325	0	694	30	32	26	5	402	0	0	0	0	0	9	1	11	26	10233		
18	1075	27	30	47	52	35	101	133	32	156	120	3	54	22	235	111	456	0	52	31	17	2	202	0	0	0	0	0	6	0	2	9	3020		
19	195	52	45	30	20	11	22	32	8	28	110	6	37	6	39	35	45	120	0	162	21	17	72	0	0	0	0	0	10	0	0	0	1123		
20	200	17	17	15	13	7	20	30	6	23	156	28	74	15	35	49	39	62	134	0	79	62	65	0	0	0	0	2	0	0	0	0	1148		
21	271	5	6	12	14	8	26	38	8	31	244	133	366	76	60	204	50	59	27	117	0	42	69	0	0	0	0	0	0	0	0	0	1866		
22	97	4	4	3	2	0	6	12	0	7	36	40	59	14	12	26	12	18	19	83	37	0	16	0	0	0	0	0	0	0	0	0	507		
23	1217	19	30	53	60	41	115	148	38	184	435	13	125	43	408	268	559	431	72	79	55	14	0	0	0	0	0	6	0	4	12	4429			
24	93	0	2	1	6	6	9	27	25	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	35	0	0	11	2	8	7	142	35	415	
25	35	0	0	0	0	0	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	7	42	12	9	4	40	7	190	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	23	
28	48	0	2	0	1	3	2	11	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	54	0	0	0	20	28	31	64	13	295	
29	46	3	8	1	3	4	4	11	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	13	0	99	35	13	8	267	
30	166	22	47	23	33	37	32	52	46	13	0	0	5	0	6	3	7	12	3	0	0	0	0	2	8	0	0	19	99	0	170	36	50	891	
31	219	13	38	21	41	55	41	69	72	17	0	0	8	0	10	6	12	11	0	0	0	0	1	15	20	0	0	58	88	377	0	95	92	1379	
32	214	1	15	12	26	31	31	79	104	13	0	0	8	0	9	6	12	10	0	0	0	0	1	111	45	0	0	56	17	43	46	0	242	1132	
33	684	6	48	40	91	121	108	324	952	44	9	0	21	3	33	22	41	30	0	0	0	0	12	38	15	0	0	18	18	84	64	331	0	166,454	

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|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbawa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |



Output of model 1996

Total Trip Generations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total	
1	0	219	1058	2750	5520	3137	16570	10978	2003	6155	703	119	934	377	3477	1449	5589	2004	201	246	241	93	1083	97	48	0	3	46	68	278	154	279	629	66508	
2	651	0	282	176	125	80	108	131	62	112	50	3	55	7	55	43	62	139	102	51	8	9	45	1	1	0	0	2	20	91	18	14	17	2520	
3	2641	269	0	1029	1121	625	677	566	300	368	60	5	99	25	142	96	167	162	90	50	12	9	71	7	5	0	0	8	37	168	59	51	102	9021	
4	7096	182	1105	0	1361	569	1903	863	287	1220	99	9	162	53	315	187	401	261	71	52	27	9	132	8	3	0	0	5	19	107	37	51	102	16696	
5	12585	119	1118	1266	0	2741	4874	2091	643	814	96	9	159	52	314	185	404	247	42	39	26	7	128	16	5	0	0	8	20	124	61	81	186	28460	
6	9640	109	837	706	3675	0	2539	2911	1438	641	96	8	165	54	298	184	376	243	42	41	25	6	125	30	12	0	0	20	41	188	118	135	332	25035	
7	31350	83	574	1514	4136	1612	0	2779	604	2164	139	13	206	73	524	271	733	372	42	48	41	10	198	15	5	0	0	7	14	99	47	78	185	47936	
8	18676	84	416	596	1589	1662	2504	0	1891	844	159	19	240	86	499	289	660	416	49	58	49	13	216	44	15	0	0	16	30	138	74	162	447	31941	
9	5348	68	340	300	723	1218	802	2818	0	325	75	5	141	44	216	144	263	188	24	28	18	4	94	68	29	0	2	31	42	181	121	305	1722	15687	
10	14923	114	394	1218	869	514	2707	1208	311	0	214	23	292	106	1044	437	1837	642	67	71	61	16	359	9	2	0	0	3	8	70	27	54	110	27710	
11	2102	60	75	112	117	82	201	270	81	238	0	110	466	127	393	591	440	568	252	419	454	90	859	1	0	0	0	1	21	4	12	27	8173		
12	578	8	13	23	24	13	46	72	15	46	149	0	736	313	88	221	61	74	34	129	339	142	62	0	0	0	0	0	0	0	0	0	0	3	3191
13	1338	15	43	72	77	53	128	177	57	140	214	270	0	2173	301	1019	197	165	38	104	325	62	139	0	0	0	0	0	0	0	0	0	0	7138	
14	1159	10	33	58	62	42	107	150	46	116	123	231	4251	0	244	753	162	138	20	60	159	43	105	0	0	0	0	0	0	0	0	0	0	8092	
15	7772	50	138	287	305	213	602	656	184	948	322	47	532	204	0	1470	2393	847	79	89	103	23	661	4	0	0	0	0	2	32	11	33	67	18074	
16	3155	33	84	153	163	115	288	355	110	364	449	122	1591	587	1363	0	657	410	68	118	304	47	434	2	0	0	0	0	0	0	0	0	0	11057	
17	12730	61	173	386	416	287	889	908	240	1748	382	32	379	143	2525	754	0	1562	96	102	91	26	897	6	0	0	0	1	3	41	15	42	85	25020	
18	3490	90	112	173	175	124	320	407	113	433	350	22	222	79	637	331	1116	0	162	109	72	19	558	2	0	0	0	0	0	0	0	0	0	9214	
19	838	151	143	107	74	48	88	127	41	102	313	31	143	34	130	126	144	337	0	450	79	69	217	0	0	0	0	0	6	45	8	5	9	3865	
20	826	63	66	62	52	34	77	115	32	66	83	422	96	249	65	115	165	122	191	369	0	237	196	191	0	0	0	0	1	19	3	3	6	3860	
21	1129	26	35	58	60	39	104	146	42	110	637	369	954	239	189	565	160	190	93	334	0	140	211	0	0	0	0	0	0	0	0	0	0	5851	
22	466	23	25	23	18	9	34	60	11	35	121	137	208	63	50	97	49	69	71	249	124	0	61	0	0	0	0	0	0	0	0	0	0	1	2008
23	3598	69	107	178	184	132	334	422	122	467	1003	54	371	132	935	671	1201	1041	206	225	173	55	0	2	0	0	0	2	31	7	21	43	11786		
24	421	3	18	16	30	31	40	101	85	18	2	0	19	0	12	9	13	14	0	0	0	0	0	2	0	105	1	13	36	14	34	28	343	1510	
25	228	3	10	7	10	11	14	47	36	6	0	0	6	0	2	1	3	3	0	0	0	0	0	0	95	0	4	52	131	51	48	30	145	39	982
26	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	6	0	0	0	0	0	0	0	0	0	53
27	108	1	3	1	1	2	1	14	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	16	64	0	0	15	21	17	7	20	6	304
28	286	8	27	16	24	31	27	67	54	14	1	0	10	0	6	4	7	9	1	0	0	0	0	1	50	173	0	18	0	74	109	121	213	60	1411
29	272	27	49	24	28	33	30	66	47	15	3	0	10	0	6	4	7	14	5	3	0	0	3	12	49	0	17	49	0	294	123	57	42	1289	
30	759	85	167	97	122	134	119	194	158	63	13	0	37	4	35	25	38	53	22	12	2	2	14	18	34	0	8	59	250	0	445	115	156	3240	
31	877	55	135	87	139	179	139	236	224	71	12	0	44	5	44	32	50	48	11	7	2	0	14	53	63	0	9	152	217	864	0	262	259	4290	
32	825	16	58	51	91	106	107	249	293	56	10	0	42	4	39	29	45	41	2	2	1	0	10	279	127	0	11	144	51	129	140	0	570	3528	
33	2180	31	148	136	261	342	309	832	2069	148	36	1	83	19	105	76	122	97	7	8	6	1	43	107	47	0	4	49	53	225	180	727	0	8452	

413.902

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbawa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |

Output of example of 2010

Home Based Work Trips

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
0	91	413	1426	3086	1054	10928	6735	932	1868	300	43	551	185	1228	636	1831	810	61	115	78	39	338	55	21	0	0	9	14	112	36	140	262	33397
574	0	81	66	53	26	52	69	30	46	21	0	35	6	23	22	25	53	22	19	1	2	14	0	0	0	0	2	26	1	9	8	1286	
2230	73	0	284	322	148	244	239	107	123	25	0	55	13	50	42	58	62	20	19	2	3	21	5	1	0	0	5	45	9	23	34	4262	
7141	56	267	0	435	150	663	386	113	338	40	2	87	24	104	76	128	98	17	22	6	3	39	6	0	0	0	2	33	5	25	36	10302	
14184	40	277	399	0	540	1529	836	222	252	40	2	89	24	109	79	137	98	11	18	7	2	39	10	1	0	0	2	38	10	36	61	19092	
7831	36	209	227	875	0	765	947	388	201	39	2	87	24	98	74	121	91	10	18	6	2	37	14	4	0	0	1	6	52	19	52	92	12328
41609	30	173	505	1267	390	0	1199	229	568	57	4	116	34	176	113	237	144	11	22	11	4	59	10	1	0	0	1	34	8	37	65	47114	
20582	32	134	233	553	386	960	0	545	276	65	6	129	39	169	119	215	156	14	26	14	6	65	21	6	0	0	1	4	45	14	66	131	25012
4834	26	104	117	250	267	312	924	0	119	33	1	78	21	77	63	92	75	7	14	5	2	30	26	9	0	0	3	6	52	20	99	340	8006
8978	37	110	324	264	127	717	438	110	0	71	6	131	38	252	142	397	189	15	26	14	6	85	6	0	0	0	0	22	4	25	36	12570	
1794	21	29	48	54	29	92	132	39	88	0	23	185	42	114	175	127	167	48	104	76	23	165	1	0	0	0	0	8	0	10	12	3606	
539	4	8	14	16	6	28	44	12	24	48	0	256	82	32	76	25	31	7	38	56	31	17	0	0	0	0	0	0	0	1	1	1396	
1336	8	19	37	42	21	69	99	31	61	71	52	0	416	96	278	70	65	9	35	60	17	39	0	0	0	0	0	5	0	8	9	2953	
1175	6	16	31	36	18	60	87	26	51	45	45	1071	0	80	218	59	56	4	22	31	12	31	0	0	0	0	0	3	0	6	7	3196	
6255	18	47	106	122	64	238	286	76	267	98	11	214	65	0	373	499	238	18	31	22	7	138	4	0	0	0	0	12	0	17	25	9251	
2742	14	32	64	73	39	128	171	50	125	125	26	502	149	312	0	180	132	15	38	55	13	97	2	0	0	0	0	8	0	13	17	5122	
9671	22	58	136	158	83	331	377	95	437	114	8	165	50	518	224	0	389	21	35	20	8	178	5	0	0	0	0	15	1	21	31	13171	
2959	29	39	68	75	39	137	187	50	140	100	4	103	29	167	110	265	0	32	35	15	6	115	1	0	0	0	0	12	0	12	16	4745	
694	44	46	43	34	17	44	67	22	42	88	6	69	13	44	48	48	105	0	105	15	17	51	0	0	0	0	14	0	5	5	1686		
789	22	25	31	29	14	43	66	20	38	116	20	110	24	42	62	45	69	64	0	43	43	48	0	0	0	0	0	8	0	4	4	1779	
986	11	15	28	31	15	52	78	23	46	158	63	320	67	61	163	54	67	19	84	0	32	51	0	0	0	0	3	0	5	6	2438		
440	10	12	15	14	5	23	39	11	20	41	26	93	23	21	40	21	30	15	66	24	0	0	0	0	0	0	2	0	0	0	0	1009	
2803	24	37	69	77	42	137	189	53	150	233	11	154	44	226	193	279	269	40	63	33	15	0	2	0	0	0	0	11	0	13	17	5184	
448	2	10	13	20	13	27	61	40	14	3	0	19	0	9	9	10	12	0	0	0	0	0	0	27	0	0	0	12	0	102	33	887	
225	0	5	5	8	4	12	30	18	5	0	0	8	0	1	2	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	453
51	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
112	0	1	0	1	0	3	13	5	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6	13	0	0	1	5	0	10	1	174	
249	3	10	9	13	10	16	36	23	8	0	0	10	0	3	4	4	6	0	0	0	0	0	15	33	0	0	9	27	16	61	18	583	
219	9	16	12	14	10	16	35	20	9	0	0	10	0	3	4	4	6	0	0	0	0	0	4	10	0	0	4	0	63	16	22	13	521
702	27	51	41	52	39	57	96	61	30	9	0	26	3	16	15	17	25	4	6	0	0	5	8	9	0	0	6	35	0	59	41	45	1485
676	18	42	36	53	48	59	105	77	32	8	0	29	4	18	18	21	22	2	4	0	0	5	18	15	0	0	18	31	164	0	78	66	1667
777	8	23	27	43	34	55	120	102	28	8	0	29	4	19	18	21	21	0	2	0	0	5	74	29	0	0	18	7	36	21	0	132	1661
1990	13	51	58	104	92	134	331	491	61	18	0	50	11	41	36	47	43	1	6	0	0	15	36	13	0	0	5	8	59	28	189	0	3931

Total Home Based Work Trip Generations (Inter DSD) 240,319

- 1 Colombo
- 2 Hanwella
- 3 Homagama
- 4 Kaduwela
- 5 Maharagama
- 6 Kesbawa
- 7 Nugegoda
- 8 Dehiwala
- 9 Moratuwa
- 10 Kolonnawa
- 11 Gampaha
- 12 Divulapitiya
- 13 Katana
- 14 Negombo
- 15 Wattala
- 16 Ja-Ela
- 17 Kelaniya
- 18 Biyagama
- 19 Weke
- 20 Attanagalla
- 21 Minuwangoda
- 22 Mirigama
- 23 Mahara
- 24 Beruwela
- 25 Matugama
- 26 Walallawita
- 27 Agalawatta
- 28 Dodangoda
- 29 Bulathsinhala
- 30 Horana
- 31 Bandaragama
- 32 Kalutara
- 33 Panadura

Output of example of 2010

Home Based Other Trips

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	132	728	3334	6897	2532	30442	11376	1594	4551	475	88	466	266	2450	914	4010	1140	125	168	180	67	712	74	31	0	6	27	27	162	97	174	483	73728
2	387	0	153	116	84	60	77	80	48	79	39	6	27	12	39	30	45	69	64	39	13	14	38	5	3	0	0	4	15	55	22	17	22	1662
3	1949	146	0	646	695	398	454	344	204	245	47	8	48	24	95	63	116	88	60	40	17	14	56	13	9	0	1	11	24	99	50	39	78	6081
4	8588	106	626	0	992	416	1561	631	225	843	78	15	84	45	223	126	296	154	52	44	31	16	105	15	7	0	0	8	15	69	37	42	88	15538
5	17764	77	674	993	0	1889	4040	1657	509	604	80	15	87	47	229	130	307	153	37	37	31	13	104	23	10	0	0	12	16	84	55	65	157	29899
6	7512	64	445	480	2173	0	1601	1665	919	410	67	13	75	39	177	107	231	124	32	32	26	11	86	29	14	0	1	18	23	105	85	87	230	16881
7	73432	65	412	1464	3786	1303	0	2589	543	1784	122	23	124	68	429	208	627	255	41	48	47	18	171	25	10	0	0	10	13	73	47	68	173	87978
8	22196	53	250	476	1253	1094	2092	0	1195	559	107	21	110	60	300	168	404	212	38	44	42	18	143	36	16	0	1	15	17	80	57	102	304	31463
9	3971	41	190	216	490	769	559	1524	0	215	52	10	61	32	124	81	154	92	22	24	21	9	64	49	23	0	3	22	23	97	84	174	1003	10199
10	11221	69	227	807	578	340	1822	708	214	0	130	23	124	66	568	233	955	295	47	49	48	19	210	14	5	0	0	5	9	43	27	40	84	18980
11	1322	38	49	85	86	62	140	155	59	147	0	78	210	85	217	330	248	276	151	250	284	67	490	4	0	0	0	2	17	7	14	27	4900	
12	353	11	16	26	26	19	40	49	20	40	108	0	341	204	60	137	47	45	31	93	232	110	53	0	0	0	0	0	4	0	3	8	2076	
13	868	14	30	57	59	43	93	103	43	90	138	166	0	1054	161	493	114	84	31	72	207	49	93	3	0	0	0	0	9	4	11	19	4108	
14	760	12	26	49	51	37	80	90	37	76	86	152	1602	0	132	363	96	70	21	48	115	39	73	2	0	0	0	0	7	2	9	16	4051	
15	6504	37	95	230	236	157	472	411	133	612	209	40	236	125	0	755	1317	445	58	65	79	26	408	10	2	0	0	2	3	25	16	28	56	12793
16	2226	25	57	118	122	85	209	211	79	229	289	86	650	313	688	0	360	209	50	83	208	41	274	6	0	0	0	1	17	9	19	35	6699	
17	10795	43	118	310	321	209	700	561	168	1043	243	32	171	92	1337	401	0	788	67	72	73	27	528	12	3	0	0	3	5	30	20	33	69	18274
18	2711	57	77	141	140	97	251	259	87	283	237	25	110	58	398	204	692	0	109	80	61	24	382	6	0	0	0	4	25	11	20	38	6587	
19	473	85	84	77	55	41	65	78	35	73	199	29	69	29	81	79	92	169	0	282	62	56	145	2	0	0	0	0	7	30	11	10	15	2433
20	509	41	45	51	44	32	60	71	30	59	266	72	120	51	72	103	79	101	229	0	163	138	128	1	0	0	0	2	17	5	7	13	2509	
21	694	21	28	49	50	36	78	89	36	77	388	234	428	156	115	325	104	101	65	210	0	100	144	1	0	0	0	0	9	2	8	16	3564	
22	251	19	21	24	20	14	30	39	16	30	84	100	98	49	35	61	36	39	52	161	89	0	48	0	0	0	0	0	7	0	1	5	1329	
23	2307	45	70	133	132	94	230	242	86	276	574	45	170	85	496	367	632	521	129	142	123	45	0	7	0	0	0	3	23	11	20	38	7046	
24	243	6	17	20	29	30	34	62	62	20	6	0	11	3	13	10	15	11	0	1	0	0	6	0	68	3	15	28	12	24	27	192	73	1041
25	135	7	15	13	17	18	19	36	36	12	1	17	0	5	0	6	4	7	5	0	0	0	1	81	0	6	45	88	36	34	107	40	811	
26	26	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	10	0	0	0	1	0	5	0	55	
27	58	3	7	5	5	6	6	14	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	24	57	0	0	18	21	19	10	26	11	306
28	163	13	27	22	29	34	29	50	51	19	4	0	8	1	10	12	10	12	10	3	2	0	5	48	119	0	20	0	48	72	99	151	56	1113
29	133	25	39	27	29	34	27	45	42	20	6	0	7	0	10	11	13	8	6	0	0	6	19	41	0	18	39	0	168	94	47	40	961	
30	490	57	110	80	96	103	90	124	115	52	19	1	20	8	29	22	33	33	23	17	5	5	20	23	29	0	10	42	122	0	282	78	113	2251
31	438	38	85	66	96	124	89	134	148	53	16	0	21	9	31	24	36	28	15	12	4	3	18	41	43	0	10	89	102	410	0	159	171	2513
32	489	16	40	45	69	79	78	146	191	45	14	0	20	8	29	22	34	24	5	6	3	0	15	171	80	0	13	85	29	72	99	0	347	2274
33	1488	24	91	105	188	236	221	480	1231	106	31	5	38	19	66	47	80	52	11	13	11	4	36	73	33	0	5	33	29	119	121	390	0	5386

Total Home Based Other Trip Generations (Inter DSD) 385,489

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbewa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |



Output of example of 2010

Non-Home Based Trips

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total	
1	0	141	875	3240	9058	3701	33914	18428	2493	6660	646	82	757	334	3863	1430	7105	1895	131	195	168	65	1049	66	36	0	2	31	34	185	100	251	644	97602	
2	276	0	149	101	72	39	54	57	32	56	25	0	19	3	23	18	29	66	50	25	2	3	21	0	0	0	0	6	37	6	7	8	1184		
3	1597	143	0	719	840	383	451	318	176	209	29	0	37	11	64	43	81	73	42	24	3	3	32	5	1	0	2	11	71	23	27	55	5473		
4	5710	93	696	0	1107	344	1524	534	166	797	50	2	68	25	160	92	220	125	32	26	10	3	66	5	0	0	0	5	44	14	27	54	11999		
5	13922	57	709	965	0	2106	4927	1523	424	511	49	2	68	25	169	96	240	122	18	19	10	1	66	9	1	0	1	5	52	24	45	106	26272		
6	9094	53	521	484	3368	0	2237	2256	1049	411	53	3	74	28	168	100	234	126	19	21	11	2	70	18	6	0	0	9	15	89	55	80	206	20860	
7	44300	34	321	1129	4187	1186	0	2246	399	1440	72	5	92	36	296	145	459	191	15	22	15	3	104	9	0	0	0	3	40	19	42	105	56915		
8	26636	41	251	437	1432	1325	2486	0	1662	608	103	10	127	52	343	186	500	259	25	35	25	9	142	29	10	0	8	12	70	37	109	330	37299		
9	4995	34	195	190	555	853	616	2304	0	198	45	2	67	25	129	83	171	102	12	16	9	2	56	43	17	0	0	15	17	92	61	207	1369	12480	
10	12066	53	208	820	603	301	2000	765	178	0	130	11	143	58	664	262	1357	379	31	38	28	9	227	6	0	0	0	2	29	12	29	59	20468		
11	1277	26	32	56	66	41	113	143	44	142	0	49	227	62	222	336	270	308	126	242	241	42	557	0	0	0	0	0	7	0	8	15	4652		
12	230	1	3	9	10	4	19	27	6	20	69	0	366	154	37	103	26	26	11	57	156	57	25	0	0	0	0	0	0	0	0	0	1416		
13	837	7	18	39	46	28	76	95	32	84	123	149	0	1663	183	708	120	81	17	53	175	29	76	0	0	0	0	0	3	0	6	11	4659		
14	691	4	14	30	37	22	61	78	26	66	65	118	3079	0	144	513	97	66	7	27	73	17	57	0	0	0	0	0	1	0	3	8	5304		
15	6558	20	59	153	188	113	388	405	108	622	191	20	286	118	0	1034	1811	477	35	45	46	10	419	2	0	0	0	0	12	3	18	37	13178		
16	2233	13	35	80	97	60	174	201	62	224	264	57	1002	389	948	0	445	215	29	57	149	21	257	0	0	0	0	0	7	0	11	22	7052		
17	12413	26	78	218	274	163	617	607	148	1308	239	14	196	81	1865	501	0	983	44	53	41	12	615	4	0	0	0	0	15	6	23	49	20593		
18	2379	40	47	86	97	59	183	223	60	260	193	7	93	37	350	171	703	0	73	51	28	8	306	0	0	0	0	0	11	0	10	20	5495		
19	362	73	66	53	37	21	41	54	19	49	172	11	53	12	59	55	71	164	0	240	32	28	109	0	0	0	0	0	15	0	1	4	1801		
20	408	27	28	31	28	15	39	52	16	43	247	41	105	27	55	77	63	88	181	0	112	93	101	0	0	0	0	0	6	0	0	3	1886		
21	529	10	12	25	29	16	49	64	20	54	378	183	500	114	90	300	79	83	38	175	0	64	104	0	0	0	0	0	1	0	1	5	2923		
22	187	8	9	10	9	3	16	24	5	17	60	58	84	25	21	42	22	27	28	125	54	0	28	0	0	0	0	0	0	0	0	0	862		
23	2523	30	46	93	108	68	199	242	69	303	682	22	176	69	595	400	847	592	98	122	80	25	0	0	0	0	0	0	11	1	12	24	7437		
24	195	0	7	9	17	15	21	48	47	9	0	0	6	0	5	4	7	6	0	0	0	0	0	0	0	52	0	0	15	3	13	12	226	60	777
25	70	0	0	0	2	2	4	15	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	8	51	14	14	9	66	16	324	
26	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
27	23	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	6	0	57	
28	90	0	6	3	8	9	9	21	20	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	38	45	102	25	495	
29	80	7	14	7	10	11	10	21	18	4	0	0	0	0	0	0	0	2	0	0	0	0	0	2	19	0	0	17	0	127	50	25	17	441	
30	333	34	69	44	61	61	58	87	80	28	5	0	10	0	12	9	15	19	7	4	0	0	5	9	15	0	0	24	107	0	230	61	84	1471	
31	386	21	56	39	70	85	68	108	118	33	5	0	14	1	18	13	22	17	3	2	0	0	6	27	30	0	0	70	95	479	0	149	145	2080	
32	435	5	25	26	51	53	59	130	176	27	5	0	14	1	18	13	22	17	0	0	0	0	6	178	65	0	0	68	19	59	66	0	386	1924	
33	1501	12	72	74	164	193	194	533	1584	78	20	0	34	10	54	38	68	46	2	5	1	0	23	66	24	0	0	23	21	113	90	525	0	5568	

Total Non-Home Based Trip Generations (Inter DSD) 380,949

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbewa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walalawita    | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Beruwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |

Output of example of 2010

Total Trip Generation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	364	2016	8000	19041	7287	75284	36539	5019	13079	1421	213	1774	785	7541	2980	12946	3845	317	481	426	171	2099	215	88	0	8	67	75	459	233	565	1389	204727
2	1237	0	383	283	209	125	183	206	110	181	85	6	81	21	85	70	99	188	136	83	16	19	73	5	3	0	0	4	23	118	29	33	38	4132
3	5776	362	0	1649	1857	929	1149	901	487	577	101	8	140	48	209	148	255	223	122	83	22	20	109	23	11	0	1	13	40	215	82	89	167	15816
4	21439	255	1589	0	2534	910	3748	1551	504	1978	168	19	239	94	487	294	644	377	101	92	47	22	210	26	7	0	0	8	22	146	56	94	178	37839
5	45870	174	1660	2357	0	4535	10496	4016	1155	1367	169	19	244	96	507	305	684	373	66	74	48	16	209	42	12	0	0	13	23	174	89	146	324	75263
6	24437	153	1175	1191	6416	0	4603	4868	2356	1022	159	18	236	91	443	281	586	341	61	71	43	15	193	61	24	0	1	28	44	246	159	219	528	50069
7	159341	129	906	3098	9240	2879	0	6034	1171	3792	251	32	332	138	901	466	1323	590	67	92	73	25	334	44	11	0	0	10	17	147	74	147	343	192007
8	69414	126	635	1146	3238	2805	5538	0	3402	1443	275	37	366	151	812	473	1119	627	77	105	81	33	350	86	32	0	1	24	33	195	108	277	765	93774
9	13800	101	489	523	1295	1889	1487	4752	0	532	130	13	206	78	330	227	417	269	41	54	35	13	150	118	49	0	3	40	46	241	165	480	2712	30685
10	32265	159	545	1951	1445	768	4539	1911	502	0	331	40	398	162	1484	637	2709	863	93	113	90	34	522	26	5	0	0	5	11	94	43	94	179	52018
11	4393	85	110	189	206	132	345	430	142	377	0	150	622	189	553	841	645	751	325	596	601	132	1212	5	0	0	0	0	2	32	7	32	54	13158
12	1122	16	27	49	52	29	87	120	38	84	225	0	963	440	129	316	98	102	49	188	444	198	95	0	0	0	0	0	4	0	4	9	4888	
13	3041	29	67	133	147	92	238	297	106	235	332	367	0	3133	440	1479	304	230	57	160	442	95	208	3	0	0	0	0	17	4	25	39	11720	
14	2626	22	56	110	124	77	201	255	89	193	196	315	5752	0	356	1094	252	192	32	97	219	68	161	2	0	0	0	0	0	11	2	18	31	12551
15	19317	75	201	489	546	334	1098	1102	317	1501	498	71	736	308	0	2162	3627	1161	111	141	147	43	965	16	2	0	0	2	3	49	19	63	118	35222
16	7201	52	124	262	292	184	511	583	191	578	678	169	2154	851	1948	0	985	556	94	178	412	75	628	8	0	0	0	1	32	9	43	74	18873	
17	32879	91	254	664	753	455	1648	1545	411	2788	596	54	532	223	3720	1126	0	2160	132	160	134	47	1321	21	3	0	0	3	5	60	27	77	149	52038
18	8049	126	163	295	312	195	571	669	197	683	530	36	306	124	915	485	1660	0	214	166	104	38	803	7	0	0	0	4	48	11	42	74	16827	
19	1529	202	196	173	126	79	150	199	76	164	459	46	191	54	184	182	211	438	0	627	109	101	305	2	0	0	0	0	7	59	11	16	24	5920
20	1706	90	98	113	101	61	142	189	66	140	629	133	335	102	169	242	187	258	474	0	318	274	277	1	0	0	0	0	2	31	5	11	20	6174
21	2209	42	55	102	110	67	179	231	79	177	924	480	1248	337	266	788	237	251	122	469	0	196	299	1	0	0	0	0	13	2	14	27	8925	
22	678	37	42	49	43	22	69	102	32	67	185	184	275	97	77	143	79	96	95	352	167	0	94	0	0	0	0	0	9	0	1	5	3200	
23	7633	99	153	295	317	204	566	673	208	729	1489	78	500	198	1317	960	1758	1382	267	327	236	85	0	9	0	0	0	0	3	45	12	45	79	19667
24	886	8	34	42	66	58	82	171	149	43	9	0	36	3	27	32	29	0	1	0	0	0	6	0	144	3	15	46	15	49	42	520	166	2705
25	430	7	20	18	27	24	35	81	67	17	1	0	13	0	7	6	9	8	0	0	0	0	1	148	0	6	56	153	56	65	46	218	69	1588
26	79	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	10	0	0	0	1	0	5	0	109	
27	193	3	8	5	6	6	9	28	17	3	0	0	3	0	0	0	0	0	0	0	0	0	0	33	90	0	0	18	24	26	10	42	12	537
28	502	16	43	34	50	53	54	107	94	29	4	0	18	1	13	12	16	16	3	2	0	0	5	82	228	0	20	0	79	137	160	314	99	2191
29	432	41	69	46	53	55	53	101	80	33	6	0	17	0	13	11	15	23	8	6	0	0	6	25	70	0	18	60	0	358	160	94	70	1923
30	1525	118	230	165	209	203	205	307	255	110	33	1	56	11	67	46	6	77	34	27	5	5	30	40	53	0	10	72	264	0	571	180	242	5207
31	1500	77	183	141	219	257	216	347	343	118	29	0	64	14	67	55	79	67	20	18	4	3	29	86	88	0	10	177	228	1053	0	386	382	6260
32	1701	29	88	98	163	166	192	396	469	100	27	0	63	13	66	53	77	62	5	8	3	0	26	423	174	0	13	171	55	167	186	0	865	5859
33	4979	49	214	237	456	521	549	1344	3306	245	69	5	122	40	161	121	195	141	14	24	12	4	74	175	70	0	5	61	58	291	239	1104	0	14885

1,006,757

1 Colombo	6 Kesbewa	11 Gampaha	16 Ja-Ela	21 Minuwangoda	26 Walallawita	31 Bandaragama
2 Hanwella	7 Nugegoda	12 Divulapitiya	17 Kelaniya	22 Mirigama	27 Agalawatta	32 Kalutara
3 Homagama	8 Dehiwala	13 Katana	18 Biyagama	23 Mahara	28 Dodangoda	33 Panadura
4 Kaduwela	9 Moratuwa	14 Negombo	19 Weke	24 Beruwela	29 Bulathsinhala	
5 Maharagama	10 Kolonnawa	15 Wattala	20 Attanagalla	25 Matugama	30 Horana	



Increment of Trip Generations from 1996 to 2010

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	145	958	5250	13521	4150	58714	25561	3016	6924	718	94	840	408	4064	1531	7357	1841	116	235	185	78	1016	118	40	0	5	21	7	181	79	286	760	138219
2	586	0	101	107	84	45	75	75	48	69	35	3	26	14	30	27	37	49	34	32	8	10	28	4	2	0	0	2	3	27	11	19	21	1612
3	3135	93	0	620	736	304	472	335	187	209	41	3	41	23	67	52	88	61	32	33	10	11	38	16	6	0	1	5	3	47	23	38	65	6795
4	14343	73	484	0	1173	341	1845	688	217	758	69	10	77	41	172	107	243	116	30	40	20	13	78	18	4	0	0	3	3	39	19	43	76	21143
5	33285	55	542	1091	0	1794	5622	1925	512	553	73	10	85	44	193	120	280	126	24	35	22	9	81	26	7	0	0	5	3	50	28	65	138	46803
6	14797	44	338	485	2741	0	2064	1957	918	381	63	10	71	37	145	97	210	98	19	30	18	9	68	31	12	0	1	8	3	58	41	84	196	25034
7	127991	46	332	1584	5104	1267	0	3255	567	1628	112	19	126	65	377	195	590	218	25	44	32	15	136	29	6	0	0	3	3	48	27	69	158	144071
8	50738	42	219	550	1649	1143	3034	0	1511	599	116	18	126	65	313	184	459	211	28	47	32	20	134	42	17	0	1	8	3	57	34	115	318	61833
9	8452	33	149	223	572	671	685	1934	0	207	55	8	65	34	114	83	154	81	17	26	17	9	56	50	20	0	1	9	4	60	44	175	990	14998
10	17342	45	151	733	576	254	1832	703	191	0	117	17	106	56	440	200	872	221	26	42	29	18	163	17	3	0	0	2	3	24	16	40	69	24308
11	2291	25	35	77	89	50	144	160	61	139	0	40	156	62	160	250	205	183	73	177	147	42	353	4	0	0	0	0	1	11	3	20	27	4985
12	544	8	14	26	28	16	41	48	23	38	76	0	227	127	41	95	37	28	15	59	105	56	33	0	0	0	0	0	0	2	0	4	6	1697
13	1703	14	24	61	70	39	110	120	49	95	118	97	0	960	139	460	107	65	19	56	117	33	69	3	0	0	0	0	0	10	3	18	23	4582
14	1467	12	23	52	62	35	94	105	43	77	73	84	1501	0	112	341	90	54	12	37	60	25	56	2	0	0	0	0	0	6	2	14	20	4459
15	11545	25	63	202	241	121	496	446	133	553	176	24	204	104	0	692	1234	314	32	52	44	20	304	12	2	0	0	2	1	17	8	30	51	17148
16	4046	19	40	109	129	69	223	228	81	214	229	47	563	264	585	0	328	146	26	60	108	28	194	6	0	0	0	0	1	12	3	23	35	7816
17	20149	30	81	278	337	168	759	637	171	1040	214	22	153	80	1195	372	0	598	36	58	43	21	424	15	3	0	0	2	2	19	12	35	64	27018
18	4559	36	51	122	137	71	251	262	84	250	180	14	84	45	278	154	544	0	52	57	32	19	245	5	0	0	0	0	1	16	4	25	35	7613
19	691	51	53	66	52	31	62	72	35	62	146	15	48	20	54	56	67	101	0	177	30	32	88	2	0	0	0	0	1	14	3	11	15	2055
20	880	27	32	51	49	27	65	74	34	57	207	37	86	37	54	77	65	67	105	0	81	78	86	1	0	0	0	0	1	12	2	8	14	2314
21	1080	16	20	44	50	28	75	85	37	67	287	111	294	98	77	223	77	61	29	135	0	56	88	1	0	0	0	0	0	5	2	10	18	3074
22	412	14	17	26	25	13	35	42	21	32	64	47	67	34	27	46	30	27	24	105	43	0	33	0	0	0	0	0	0	5	0	1	4	1192
23	4035	30	46	117	133	72	232	251	86	262	486	24	129	66	382	289	557	341	61	102	63	30	0	7	0	0	0	0	1	14	5	24	36	7881
24	465	5	16	26	36	27	42	70	64	25	7	0	17	3	15	14	19	15	0	1	0	0	4	0	39	2	2	10	1	15	14	177	64	1195
25	202	4	10	11	17	13	21	34	31	11	1	0	7	0	5	5	6	5	0	0	0	0	1	53	0	2	4	22	5	17	16	73	30	606
26	37	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	0	0	0	1	0	4	0	56
27	85	2	5	4	5	4	8	14	11	3	0	0	2	0	0	0	0	1	0	0	0	0	0	17	26	0	0	3	3	9	3	22	6	233
28	216	8	16	18	26	22	27	40	40	15	3	0	8	1	7	8	9	7	2	2	0	0	4	32	55	0	2	0	5	28	39	101	39	780
29	160	14	20	22	25	22	23	35	33	18	3	0	7	0	7	7	8	9	3	3	0	0	3	13	21	0	1	11	0	64	37	37	28	634
30	766	33	63	68	87	69	86	113	98	47	20	1	19	7	22	21	27	24	12	15	3	3	16	22	19	0	2	13	14	0	126	65	86	1967
31	623	22	48	54	80	78	77	111	119	47	17	0	20	9	23	23	29	19	9	11	2	3	15	33	25	0	1	25	11	189	0	124	123	1970
32	873	13	30	47	72	60	85	147	110	44	11	0	21	9	27	24	32	21	3	6	2	0	16	144	47	0	2	27	4	53	46	0	295	2351
33	2799	18	66	101	195	179	240	512	1237	97	33	4	39	21	56	45	73	44	7	16	6	3	31	68	23	0	1	12	5	66	59	377	0	6433

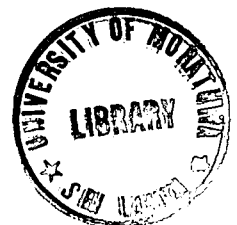
Total Difference of Trip Generation (Inter DSD) 592,855

- |              |              |                 |                |                |                  |                |
|--------------|--------------|-----------------|----------------|----------------|------------------|----------------|
| 1 Colombo    | 6 Kesbawa    | 11 Gampaha      | 16 Ja-Ela      | 21 Minuwangoda | 26 Walallawita   | 31 Bandaragama |
| 2 Hanwella   | 7 Nugegoda   | 12 Divulapitiya | 17 Kelaniya    | 22 Mirigama    | 27 Agalawatta    | 32 Kalutara    |
| 3 Homagama   | 8 Dehiwala   | 13 Katana       | 18 Biyagama    | 23 Mahara      | 28 Dodangoda     | 33 Panadura    |
| 4 Kaduwela   | 9 Moratuwa   | 14 Negombo      | 19 Weke        | 24 Benuwela    | 29 Bulathsinhala |                |
| 5 Maharagama | 10 Kolonnawa | 15 Wattala      | 20 Attanagalla | 25 Matugama    | 30 Horana        |                |

## APPENDIX IX



## OUTPUTS OF EXAMPLE 2



Output of Example (2) without change of jobs in Colombo DSD

Home Based Work Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	445	1602	4034	7286	3463	19222	15651	3122	7229	1213	220	2100	722	4146	2355	5992	2964	314	503	355	211	1353	265	137	17	38	86	116	500	209	617	1006	87495
2	2632	0	492	399	321	188	304	407	208	302	164	35	236	76	168	166	182	337	168	151	49	60	124	45	35	1	11	21	56	193	53	98	90	7773
3	8529	448	0	1490	1628	815	1182	1213	603	707	181	40	338	112	305	266	345	373	155	150	55	60	158	74	49	3	15	35	73	291	94	171	223	20179
4	20132	341	1401	0	1946	769	2698	1721	588	1766	247	52	482	161	548	423	661	532	135	155	77	62	241	75	44	2	12	29	55	216	73	173	224	36041
5	33446	251	1408	1791	0	2552	5646	3442	1076	1290	243	50	475	159	550	422	672	511	99	132	75	52	235	91	50	2	12	33	55	237	95	226	337	55711
6	25582	242	1138	1142	4107	0	3348	4417	1997	1094	248	53	493	165	536	426	646	510	101	137	77	57	238	120	67	5	17	50	78	324	150	319	519	48402
7	73167	196	846	2059	4684	1724	0	4395	1032	2710	309	59	574	192	809	556	1056	693	96	144	92	60	317	90	47	1	10	30	48	204	83	220	336	96841
8	47801	209	695	1051	2288	1824	3524	0	2573	1400	362	73	669	227	825	616	1028	791	115	174	110	76	362	147	77	6	19	47	70	271	116	375	678	68600
9	16087	183	585	607	1207	1390	1397	4338	0	666	218	49	448	150	433	367	505	431	80	118	69	53	201	184	95	7	22	61	82	322	157	575	1811	32898
10	34631	247	637	1696	1346	707	3411	2201	620	0	428	76	745	248	1367	801	2117	1051	131	187	119	77	501	79	43	2	11	27	45	167	66	180	237	54200
11	7107	164	200	291	311	194	477	699	248	523	0	170	1044	272	647	983	712	942	312	617	464	171	942	48	24	0	5	12	26	92	29	98	110	17934
12	2357	70	87	119	125	78	178	270	108	174	309	0	1449	496	217	459	176	214	83	254	357	218	141	25	11	0	0	3	11	45	11	49	50	8143
13	5050	92	148	227	243	154	358	523	204	368	424	330	0	2264	546	1523	406	386	96	235	370	139	253	44	23	0	4	10	19	70	25	87	94	14716
14	4446	80	130	198	214	135	314	462	180	318	285	289	5759	0	463	1201	350	338	70	164	215	109	209	39	20	0	2	8	16	62	21	78	82	16259
15	21029	145	291	557	608	365	1080	1375	426	1447	562	102	1164	384	0	1985	2564	1276	141	210	160	84	772	63	32	0	6	18	29	109	44	137	173	37340
16	10057	119	212	360	391	242	624	863	302	711	716	184	2710	837	1668	0	970	738	128	248	342	118	565	54	28	0	5	14	24	90	34	112	131	23599
17	31547	164	342	699	772	458	1463	1777	517	2327	642	85	901	302	2663	1201	0	2048	160	229	149	88	980	69	36	0	7	20	32	122	50	154	203	50206
18	10754	207	252	384	401	246	659	940	301	793	582	69	588	197	309	826	1407	0	222	231	124	78	659	50	26	0	5	14	29	107	34	107	128	21128
19	3190	292	298	276	224	138	264	395	164	281	536	79	425	120	284	311	309	623	0	631	132	140	328	35	25	0	7	13	36	124	34	72	71	9859
20	3272	168	183	202	188	118	249	376	149	253	679	154	643	173	267	378	280	416	405	0	283	284	306	33	20	0	5	9	25	88	24	67	67	9763
21	4141	106	129	188	200	125	295	436	166	297	916	396	1792	412	371	931	335	411	153	511	0	224	323	38	18	0	2	7	17	65	19	71	76	13169
22	2015	101	111	122	114	73	159	249	102	157	276	193	561	170	161	265	160	212	129	412	179	0	144	22	14	0	2	5	16	59	14	44	48	6287
23	11003	176	246	397	422	262	686	975	322	853	1312	108	875	281	1239	1081	1511	1484	266	390	227	126	0	54	28	0	5	15	29	106	36	114	137	24767
24	1913	58	101	111	144	113	174	349	255	121	60	14	149	47	91	95	96	106	22	37	18	14	46	5	182	17	37	63	49	111	65	607	226	5489
25	1092	48	73	71	87	68	103	203	142	73	34	5	92	26	53	56	55	64	17	25	8	9	25	195	0	16	65	127	81	123	62	299	118	3516
26	312	13	19	19	21	14	25	52	29	20	8	0	33	5	13	15	13	19	1	6	0	0	4	35	32	0	6	9	23	5	36	18	809	
27	622	38	51	47	51	38	59	116	72	46	24	2	64	17	32	36	33	45	12	20	4	7	15	78	121	8	0	35	52	75	26	103	51	2000
28	1280	62	103	94	117	99	132	242	174	93	40	7	103	30	64	66	67	78	22	31	10	11	32	130	236	8	36	0	100	198	135	389	146	4332
29	1188	99	139	114	125	104	135	241	161	100	49	9	105	31	63	67	67	94	35	43	13	17	36	70	106	5	35	68	0	408	141	169	121	4158
30	2977	195	323	256	305	255	320	529	368	206	92	21	186	59	128	128	137	179	70	79	29	34	74	92	94	6	28	81	247	0	377	274	290	8441
31	3218	150	280	237	329	311	349	602	469	223	89	21	205	66	146	143	158	169	55	69	28	29	75	148	132	9	31	150	224	965	0	484	413	9976
32	3284	88	170	182	260	224	307	651	587	198	87	20	203	66	143	141	154	159	34	53	27	21	71	453	207	10	35	147	89	244	166	0	760	9243
33	7464	116	313	336	546	518	659	1649	2597	370	142	33	308	102	257	234	288	270	51	78	45	36	124	238	116	7	24	76	91	367	201	1070	0	18724

- 1 Colombo
- 2 Kandy
- 3 Nuwara
- 4 Kandy
- 5 Nuwara
- 6 Kandy
- 7 Nuwara
- 8 Kandy
- 9 Nuwara
- 10 Kandy
- 11 Nuwara
- 12 Kandy
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- 26 Kandy
- 27 Nuwara
- 28 Kandy
- 29 Nuwara
- 30 Kandy
- 31 Nuwara
- 32 Kandy
- 33 Nuwara

828002

Output of Example (2) without change of jobs in Colombo DSD

Home Based Other Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	356	1525	4779	7931	4357	24379	12846	2809	9610	1042	228	965	554	4368	1818	6887	2238	340	396	430	168	1544	186	101	15	39	98	103	393	279	420	991	92213
2	1009	0	528	390	280	215	248	269	176	285	151	43	111	61	150	122	168	250	240	152	67	70	148	39	34	4	20	36	76	205	98	79	93	5818
3	4064	503	0	1945	2010	1246	1235	996	647	803	174	50	174	99	315	221	378	297	222	151	79	69	202	66	52	7	26	61	104	346	191	148	268	17147
4	12304	359	1884	0	2479	1188	3483	1570	652	2538	257	69	269	152	653	389	849	469	189	155	116	72	336	68	44	5	20	49	72	235	141	149	278	31493
5	20425	258	1949	2481	0	5046	8047	3763	1379	1756	252	67	265	151	636	383	832	446	136	130	114	60	321	88	53	5	21	60	75	271	195	214	464	50346
6	12910	229	1390	1368	5803	0	3915	4418	2724	1285	230	64	249	141	544	345	696	395	126	123	106	59	289	112	68	8	27	84	102	353	300	296	721	39481
7	58812	214	1122	3267	7541	3190	0	5108	1350	4835	351	85	347	197	1078	561	1540	680	142	152	152	74	483	90	50	5	19	54	64	226	165	212	475	92641
8	25062	185	730	1188	2850	2909	4128	0	3201	1616	329	85	329	188	820	487	1084	606	138	150	145	77	431	128	71	8	27	71	81	257	200	323	876	48780
9	6986	156	605	629	1329	2283	1390	4076	0	685	184	54	207	118	386	267	473	298	92	97	87	51	219	177	96	11	34	98	101	328	296	570	3087	25466
10	23680	250	745	2430	1680	1068	4937	2043	680	0	441	98	415	232	1782	757	2960	950	178	180	177	85	694	69	40	4	16	42	54	161	114	152	288	47405
11	2860	149	181	276	270	213	402	468	204	494	0	281	693	293	700	1073	792	900	526	837	957	245	1605	37	20	0	9	18	30	79	47	70	107	14852
12	868	60	74	104	101	82	136	169	85	152	380	0	1134	686	214	466	173	169	127	331	797	392	198	18	9	0	2	7	12	36	21	34	47	7083
13	1786	70	118	190	187	151	263	310	151	308	462	562	0	3347	517	1568	369	283	125	254	694	185	319	31	16	0	5	14	18	52	35	56	82	12529
14	1565	61	104	166	164	133	229	273	134	264	298	517	5075	0	428	1160	313	242	92	177	395	152	255	27	14	0	4	12	15	46	31	51	73	12471
15	11582	142	315	672	655	485	1185	1117	413	1917	674	151	748	406	0	2327	3909	1381	210	226	274	105	1292	54	29	1	11	29	35	103	75	111	194	30827
16	4411	104	200	365	360	280	562	606	260	743	943	302	2060	1003	2125	0	1112	671	189	290	694	157	893	42	23	0	8	21	26	76	54	82	132	18797
17	18528	162	383	888	869	631	1717	1498	514	3231	774	123	543	301	3968	1237	0	2402	240	248	251	109	1655	60	33	2	12	33	39	117	87	126	231	41011
18	5311	211	264	431	410	314	668	738	284	913	774	105	366	204	1234	657	2114	0	380	277	219	102	1230	43	24	0	10	24	38	103	61	85	141	17732
19	1238	311	302	266	193	154	215	261	137	263	685	123	251	120	286	283	322	579	0	964	231	213	505	29	24	1	13	23	47	124	62	56	72	8353
20	1174	160	167	177	149	121	186	230	115	215	408	186	251	351	351	270	344	787	0	559	483	439	25	17	0	9	16	31	79	41	47	62	8249	
21	1625	92	114	172	169	135	239	285	135	273	1296	803	1409	529	389	1071	350	349	241	714	0	357	493	27	14	0	5	12	19	54	32	50	73	11527
22	656	87	91	97	82	69	108	140	72	121	302	358	346	185	137	223	139	150	201	560	323	0	180	15	10	0	5	8	18	48	24	28	41	4824
23	4973	172	246	421	403	314	646	715	286	907	1875	171	563	294	1567	1187	1977	1671	453	483	424	171	0	44	25	1	10	24	35	97	61	87	143	20444
24	584	43	77	82	105	115	115	205	218	88	41	13	57	31	63	56	69	58	23	26	20	12	41	0	252	33	74	119	66	102	114	655	256	3812
25	379	46	72	64	75	83	78	136	140	61	28	8	40	20	42	38	46	41	23	22	13	11	28	294	0	44	180	324	146	148	141	382	156	3309
26	101	12	18	16	17	18	17	32	28	15	6	0	11	3	9	9	10	10	4	5	0	1	5	55	59	0	23	23	20	28	20	41	24	638
27	195	35	47	39	41	43	40	70	64	35	19	4	25	11	23	22	25	26	17	17	7	6	16	107	219	21	0	86	96	67	60	113	62	1679
28	489	67	114	96	116	137	113	183	191	88	38	11	49	26	58	50	64	56	33	31	17	15	39	187	431	24	95	0	189	268	362	536	211	4385
29	432	110	157	115	119	137	110	171	164	91	46	14	49	26	56	49	61	68	53	44	21	23	44	88	163	16	88	158	0	596	348	183	159	3960
30	1162	214	380	267	307	347	275	388	385	191	84	27	88	48	114	94	127	129	99	79	40	40	87	97	120	14	57	165	442	0	971	279	389	7503
31	1198	153	307	235	323	428	293	442	507	201	76	25	93	52	124	101	141	116	74	64	37	32	83	162	170	18	59	327	374	1404	0	555	588	8761
32	1156	77	151	158	226	271	229	453	624	168	69	22	88	49	113	94	127	99	40	43	34	20	72	586	292	21	69	310	124	260	356	0	1141	7553
33	3032	103	309	330	550	741	601	1370	3783	358	120	37	142	81	224	169	253	184	60	65	58	36	135	257	134	13	42	135	122	407	424	1280	0	15565

- 1 Colombo
- 2 Hometh
- 3 Matugama
- 4 Katubed
- 5 Maharagama
- 6 Embayaya
- 7 Nugegoda
- 8 Debbemas
- 9 Debbemas
- 10 Esiripaya
- 11 Galle
- 12 Debbemas
- 13 Kalam
- 14 Nugegoda
- 15 Wariya
- 16 Jalu
- 17 Kandy
- 18 Rajagaha
- 19 Welisara
- 20 Anuradhapura
- 21 Mahawapaya
- 22 Mirigama
- 23 Mirigama
- 24 Periyaya
- 25 Debbemas
- 26 Mahawapaya
- 27 Rajagaha
- 28 Rajagaha
- 29 Rajagaha
- 30 Rajagaha
- 31 Rajagaha
- 32 Rajagaha
- 33 Rajagaha

Output of Example (2) without change of jobs in Colombo DSD

Non-Home Based Trips - 2001																																	Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
1	0	3728	18231	49792	112854	63552	321357	235660	45536	150147	13418	1986	15709	6698	70555	28185	127479	37337	3302	4433	3684	1711	21723	2088	1116	138	306	1038	1215	4284	2670	5813	12952	1368697
2	5768	0	3748	2497	1796	1093	1370	1509	938	1559	801	172	662	281	747	642	871	1757	1380	808	265	293	708	171	159	21	65	152	360	1110	363	384	407	32855
3	27615	3671	0	16404	18371	8918	9376	7161	4271	5257	884	194	1084	465	1677	1207	2066	1916	1205	777	291	288	962	321	241	30	83	264	508	1934	774	846	1462	120526
4	74415	2413	16187	0	21713	7555	27670	10818	3835	19238	1314	264	1749	745	3702	2257	5010	3012	948	784	430	290	1682	326	207	26	67	210	349	1224	545	830	1396	211211
5	168801	1738	18143	21731	0	50289	92471	32978	10481	13526	1437	281	1927	826	4222	2544	5851	3196	690	699	464	260	1840	467	274	30	76	287	400	1558	877	1376	2811	442553
6	100725	1120	9333	8013	53286	0	32478	36342	18523	7558	1061	212	1449	622	2966	1857	4036	2304	490	518	346	200	1337	476	279	27	73	320	436	1733	1142	1575	3723	294557
7	467795	1289	9012	26952	89995	29830	0	49641	10559	42515	2182	383	2753	1172	7835	4069	11955	5321	705	856	664	346	3049	510	289	32	79	289	383	1389	810	1453	3037	777148
8	313142	1296	6282	9617	29296	30469	45312	0	39490	15478	2644	472	3269	1413	8011	4570	11497	6301	852	1052	805	439	3562	927	498	52	129	446	562	1932	1176	2909	8060	551957
9	66996	892	4149	3775	10309	17194	10672	43723	0	4314	1073	233	1526	660	2665	1816	3457	2198	431	503	365	221	1280	1056	536	44	118	494	556	2085	1460	4491	28662	217954
10	220259	1479	5092	18884	13266	6995	42843	17089	4302	0	3180	454	3549	1495	15589	6256	31492	9002	924	1073	844	406	5351	351	207	25	61	197	271	874	481	891	1555	414738
11	20628	797	897	1352	1477	1029	2304	3059	1122	3332	0	1295	5368	1549	4981	7744	5956	7069	3026	5648	5548	1139	12594	173	97	11	33	80	132	359	163	368	516	99847
12	3464	195	225	310	329	234	460	621	277	540	1468	0	7274	3058	825	2103	624	655	373	1244	3102	1274	626	59	33	0	9	24	41	110	48	116	141	29863
13	20398	554	928	1519	1672	1185	2455	3194	1345	3140	4533	5422	0	58201	6290	24655	4189	3037	886	2155	6305	1336	2859	252	149	23	49	119	153	405	226	503	657	158793
14	10367	281	475	772	855	607	1246	1647	695	1577	1560	2716	69353	0	3082	10966	2111	1563	352	779	1741	571	1365	129	75	7	22	58	77	207	114	261	339	115971
15	106795	731	1676	3749	4273	2832	8147	9126	2742	16085	4905	716	7334	3015	0	25805	44203	12160	1086	1324	1324	482	10506	279	156	17	44	138	171	511	307	662	1091	272392
16	41054	605	1161	2199	2477	1706	4071	5010	1798	6211	7338	1758	27659	10323	24830	11524	5911	1007	1765	4192	806	7017	244	140	17	42	118	151	424	245	537	793	173134	
17	194164	858	2078	5106	5958	3879	12509	13180	3580	32697	5902	545	4916	2078	44481	12052	0	24271	1274	1476	1181	498	14872	309	170	18	47	154	191	580	355	764	1337	391481
18	53929	1641	1827	2910	3085	2098	5279	6849	2157	8863	6642	542	3379	1458	11602	5862	23014	0	2708	1966	1207	561	10410	272	158	20	53	140	230	655	294	608	927	161348
19	5676	1533	1368	1090	793	532	833	1104	505	1083	3381	368	1175	392	1233	1189	1437	3220	0	4748	748	697	2168	89	79	8	31	71	158	454	158	190	229	36738
20	6996	824	809	828	737	515	928	1250	540	1154	5795	1126	2620	795	1379	1912	1529	2147	4360	0	2705	2337	2418	107	75	9	31	66	128	338	132	215	257	45062
21	6438	301	336	504	544	382	798	1060	435	1006	6302	3110	8479	1966	1528	5026	1355	1460	761	2995	0	1180	1796	80	45	2	12	34	57	156	70	163	212	48592
22	2873	318	320	326	292	212	400	556	253	466	1242	1225	1727	619	535	929	548	653	680	2484	1132	0	658	48	39	3	15	29	61	156	58	94	132	19082
23	35650	752	1043	1847	2020	1384	3438	4400	1429	5986	13446	590	3616	1448	11389	7906	16023	11828	2072	2516	1687	645	0	175	99	10	28	87	126	378	186	394	608	133208
24	3350	177	340	350	501	481	563	1119	1150	384	181	53	313	134	296	270	326	303	82	108	72	46	170	0	1320	91	208	518	267	464	449	5035	1422	20542
25	1912	176	273	238	314	301	340	643	624	243	109	32	199	83	177	165	192	188	79	83	44	39	103	1408	0	115	524	1702	672	676	522	2162	697	15036
26	272	28	40	36	40	34	44	78	59	35	16	1	38	11	24	25	25	30	10	13	3	4	13	109	128	0	35	43	61	32	92	48	1471	
27	573	79	104	85	96	86	102	183	150	80	41	10	74	28	56	56	59	71	34	38	14	17	32	241	568	34	0	183	223	212	107	289	137	4060
28	2002	191	337	273	371	389	385	649	648	261	103	27	181	75	177	159	197	189	80	82	39	35	104	622	1915	44	191	0	701	1051	1184	2509	741	15908
29	2176	418	600	419	480	492	471	758	677	332	155	42	215	90	204	188	225	286	165	146	58	65	138	299	703	39	215	651	0	3483	1476	870	659	17193
30	6751	1131	2011	1291	1641	1721	1503	2291	2232	939	368	98	493	211	532	460	600	714	415	337	139	146	362	456	622	49	179	860	3071	0	6210	1792	2325	41955
31	4911	433	941	672	1079	1325	1024	1628	1824	605	197	51	324	138	374	311	431	377	170	155	74	65	209	516	562	30	106	1132	1519	7242	0	2323	2218	32965
32	8894	379	854	849	1407	1520	1527	3349	4668	929	366	101	594	258	669	564	767	645	168	209	142	85	367	4807	1935	72	237	1997	744	1740	1933	0	10092	52868
33	20775	423	1549	1499	3014	3767	3346	9729	31242	1701	539	129	814	352	1156	874	1408	1030	213	262	194	126	594	1423	653	39	117	617	591	2369	1936	10583	0	103066

1 Colombo	4 Kandy	7 Nugegoda	10 Kottarawa	13 Katana	16 Ja, Ela	19 Welisara	22 Murgala	25 Maragala	28 Delegoda	31 Rantawala
2 Hanwara	5 Maharagala	8 Deegoda	11 Gampaha	14 Nugegoda	17 Kandy	20 Anuragoda	23 Maragala	26 Walawala	29 Rantawala	32 Kandy
3 Hanwara	6 Kandy	9 Maragala	12 Deegoda	15 Maragala	18 Maragala	21 Maragala	24 Maragala	27 Maragala	30 Maragala	33 Maragala

6422771



Output of Example (2) without change of jobs in Colombo DSD

Total Trips - 2001																																	Total	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
1	0	4529	21358	58605	128071	71372	364958	264157	51467	166987	15673	2434	18773	7974	79069	32358	140358	42539	3956	5332	4469	2110	24620	2539	1354	170	383	1222	1433	5178	3158	6850	14948	1548405
2	9409	0	4767	3285	2397	1495	1922	2185	1322	2146	1116	251	1009	417	1064	930	1221	2345	1788	1112	381	423	980	256	228	25	96	209	492	1508	514	561	590	46446
3	40208	4622	0	19839	22010	10979	11793	9370	5522	6767	1239	284	1597	675	2297	1694	2789	2586	1582	1078	424	417	1322	461	341	39	124	360	684	2572	1059	1165	1953	157853
4	106852	3113	19471	0	26138	9511	33852	14108	5075	23542	1819	386	2500	1058	4903	3069	6520	4013	1271	1094	623	423	2258	470	296	33	98	298	476	1676	759	1152	1898	278745
5	222672	2247	21500	26003	0	57867	106164	40183	12936	16572	1931	399	2667	1136	5408	3350	7354	4153	925	961	653	372	2397	646	376	37	108	390	530	2066	1168	1816	3611	548610
6	139216	1591	11861	10523	63196	0	39741	45177	23244	9937	1540	329	2190	929	4045	2629	5379	3209	717	778	529	316	1863	708	414	40	117	454	616	2410	1592	2191	4963	382440
7	599774	1699	10979	32278	102220	34744	0	59143	12941	50060	2842	528	3675	1561	9723	5186	14552	6694	943	1152	907	481	3850	690	386	37	107	374	494	1819	1057	1885	3847	966630
8	386004	1690	7706	11856	34433	35202	52965	0	45264	18495	3335	630	4267	1828	9656	5672	13610	7698	1105	1376	1059	592	4355	1202	645	66	175	565	712	2460	1493	3607	9614	669337
9	90069	1231	5338	5011	12845	20867	13459	52137	0	5665	1475	336	2181	929	3484	2450	4436	2926	604	717	522	324	1700	1417	727	61	174	652	739	2734	1913	5635	33559	276319
10	278571	1977	6474	23010	16293	8770	51191	21333	5601	0	4049	628	4709	1975	18738	7814	36568	11004	1233	1440	1141	569	6546	499	291	30	88	266	370	1202	661	1222	2081	516343
11	30615	1110	1277	1918	2057	1436	3184	4227	1574	4349	0	1746	7105	2115	6328	9800	7460	8912	3863	7102	6968	1555	15141	258	142	11	46	110	188	530	238	536	734	132633
12	6689	326	385	532	554	394	774	1060	471	867	2157	0	9857	4240	1256	3029	973	1038	584	1829	4256	1884	965	102	52	0	11	33	64	191	80	199	238	45089
13	27234	716	1194	1935	2102	1490	3076	4028	1700	3817	5419	6314	0	63812	7354	27746	4963	3706	1107	2645	7368	1660	3431	327	188	23	58	143	190	528	287	646	833	186038
14	16378	422	709	1136	1233	875	1789	2383	1009	2160	2142	3522	80187	0	3973	13327	2774	2143	514	1121	2352	832	1829	196	108	7	28	78	109	315	167	389	495	144701
15	139407	1018	2281	4979	5536	3683	10412	11618	3581	19449	6140	968	9246	3805	0	30117	50677	14817	1437	1760	1758	672	12569	396	218	19	61	184	235	723	425	910	1458	340558
16	55522	828	1572	2925	3228	2228	5257	6478	2360	7666	8997	2244	32430	12164	28623	0	13606	7321	2303	5228	1081	8474	341	190	17	55	153	202	591	333	732	1056	215530	
17	244239	1184	2803	6693	7599	4968	15690	16456	4610	38255	7318	753	6359	2680	51112	14490	0	26720	1673	1953	1581	694	17507	439	239	20	66	208	262	619	492	1044	1771	482698
18	69993	2059	2342	3725	3896	2658	6605	8527	2741	10569	7999	715	4334	1859	13745	7145	26535	0	3310	2475	1549	741	12299	365	208	21	69	177	297	865	389	800	1195	200208
19	10104	2136	1967	1633	1210	824	1313	1760	806	1626	4602	570	1851	632	1804	1782	2067	4422	0	6343	1111	1050	3001	152	128	9	51	107	242	702	254	318	373	54950
20	11442	1152	1159	1207	1074	754	1363	1856	804	1622	7363	1539	3672	1153	1697	2641	2079	2908	5552	0	3547	3104	3163	165	112	9	44	91	184	504	198	330	386	63074
21	12204	499	580	864	913	642	1332	1781	736	1576	8514	4309	11680	2907	2288	7028	2040	2221	1155	4221	0	1761	2612	142	77	2	19	53	94	274	121	285	361	73288
22	5544	506	522	545	489	354	667	945	427	743	1820	1776	2634	974	832	1417	847	1015	1010	3455	1634	0	983	85	62	3	21	42	95	263	97	165	220	30192
23	51626	1101	1536	2666	2845	1960	4770	6091	2037	7747	16633	869	5054	2023	14195	10175	19510	14963	2791	3389	2338	942	0	273	151	10	43	126	190	580	283	595	888	178420
24	5847	278	517	543	750	709	852	1673	1623	592	282	80	518	211	450	421	490	467	126	172	110	72	257	0	1754	141	319	700	382	678	628	6297	1903	29843
25	3383	270	417	374	476	452	521	981	907	378	172	45	331	130	272	259	293	293	119	130	65	60	156	1897	0	175	769	2154	899	947	725	2842	970	21861
26	684	52	77	71	79	65	87	163	116	69	30	1	82	20	46	50	48	56	15	24	3	5	21	199	220	0	64	72	70	113	56	168	90	2918
27	1390	152	202	170	188	168	202	368	287	161	83	16	163	56	111	114	117	142	64	75	25	33	63	427	908	63	0	303	371	375	192	505	250	7739
28	3771	320	554	463	603	625	630	1073	1013	441	180	45	333	131	299	274	328	322	135	144	66	62	175	939	2581	75	321	0	990	1518	1682	3434	1098	24626
29	3795	627	897	648	723	733	716	1169	1002	522	250	65	369	147	323	303	354	449	252	233	92	105	218	456	972	59	336	877	0	4487	1966	1222	939	25311
30	10890	1540	2714	1814	2253	2323	2098	3208	2985	1337	544	146	768	319	774	681	864	1022	584	495	208	220	523	645	837	70	264	1105	3760	0	7558	2345	3005	57899
31	9327	735	1528	1144	1732	2063	1666	2671	2800	1029	361	97	622	255	645	555	729	561	300	288	139	127	366	826	864	57	195	1609	2117	9611	0	3362	3219	51702
32	13334	544	1175	1190	1893	2015	2074	4454	5879	1295	522	143	885	372	925	799	1048	903	242	305	203	126	509	5845	2434	103	342	2453	957	2245	2455	0	11993	69665
33	31271	642	2171	2165	4110	5027	4606	12748	37622	2429	801	199	1264	534	1637	1276	1959	1484	324	405	298	197	853	1918	903	59	184	828	804	3143	2562	12933	0	137355

1 Colombo 4 Kalutara 7 Nugegoda 10 Kaluwana 13 Katana 16 Ja\_Ela 19 Weer 22 Migama 25 Manigama 28 De\_Sangeeta 31 Bantaramulla  
 2 Nugegoda 5 Mahipala 8 Dohewa 11 Gampaha 14 Nugegoda 17 Ererawa 20 Attaragoda 23 Malawa 26 Walawala 29 Bantaramulla 32 Kalutara  
 3 Manigama 6 Ererawa 9 Manigama 12 De\_Sangeeta 15 Weraba 18 Ererawa 21 Manigama 24 Bantaramulla 27 Attaragoda 30 Ererawa 33 Panadura

7,967,424

Output of Example (2) After reducing jobs in Colombo DSD by 10 %

Home Based Work Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	445	1602	9388	7286	3463	19222	15651	3122	7229	1213	220	2100	722	4146	2355	5992	2964	314	503	355	211	1353	265	137	17	38	86	116	500	209	617	1006	92848
2	2424	0	492	940	321	188	304	407	208	302	164	35	236	76	168	166	182	337	168	151	49	60	124	46	35	1	11	21	56	193	53	98	90	8107
3	7857	448	0	3476	1628	815	1182	1213	603	707	181	40	338	112	305	266	345	373	155	150	55	60	158	74	49	3	15	35	73	291	94	171	223	21494
4	18549	341	1401	0	1946	769	2698	1721	588	1766	247	52	482	161	548	423	661	532	135	155	77	62	241	76	44	2	12	29	55	216	73	173	224	34459
5	30817	251	1408	4175	0	2552	5646	3442	1076	1290	243	50	475	159	550	422	672	511	99	132	75	52	235	91	50	2	12	33	55	237	95	226	337	55466
6	23570	242	1138	2667	4107	0	3348	4417	1997	1094	248	53	493	165	536	426	646	510	101	137	77	57	238	120	67	5	17	50	78	324	150	319	519	47916
7	67416	196	846	4798	4684	1724	0	4395	1032	2710	309	59	574	192	809	556	1056	693	96	144	92	60	317	90	47	1	10	30	48	204	83	220	336	93829
8	44044	209	695	2455	2288	1824	3524	0	2573	1400	362	73	669	227	825	616	1028	791	115	174	110	76	362	147	77	6	19	47	70	271	116	375	678	66247
9	14822	183	585	1423	1207	1390	1397	4338	0	666	218	49	448	150	433	367	505	431	80	118	69	53	201	184	95	7	22	61	82	322	157	575	1811	32450
10	31909	247	637	3955	1346	707	3411	2201	620	0	428	76	745	248	1367	801	2117	1051	131	187	119	77	501	79	43	2	11	27	45	167	66	180	237	53737
11	6547	164	200	689	311	194	477	699	248	523	0	170	1044	272	647	983	712	942	312	617	464	171	942	48	24	0	5	12	26	92	29	98	110	17773
12	2171	70	87	289	125	78	178	270	108	174	309	0	1449	496	217	459	176	214	83	254	357	218	141	25	11	0	0	3	11	45	11	49	50	8127
13	4653	92	148	540	243	154	358	523	204	368	424	330	0	2264	546	1523	406	386	96	235	370	139	253	44	23	0	4	10	19	70	25	87	94	14632
14	4096	80	130	474	214	135	314	462	180	318	285	289	5759	0	463	1201	350	338	70	164	215	109	209	39	20	0	2	8	16	62	21	78	82	16185
15	19376	145	291	1309	608	365	1080	1375	426	1447	562	102	1164	384	0	1985	2564	1276	141	210	160	84	772	63	32	0	6	18	29	109	44	137	173	36437
16	9266	119	212	850	391	242	624	863	302	711	716	184	2710	837	1668	0	970	798	128	248	342	118	565	54	28	0	5	14	24	90	34	112	131	23298
17	29067	164	342	1637	772	458	1463	1777	517	2327	642	85	901	302	2663	1201	0	2048	160	229	149	88	980	69	36	0	7	20	32	122	50	154	203	48665
18	9908	207	252	905	401	246	659	940	301	793	582	69	588	197	909	626	1407	0	222	231	124	78	659	50	26	0	5	14	29	107	34	107	128	20803
19	2939	292	298	656	224	138	264	395	164	281	536	79	425	120	284	311	309	623	0	631	132	140	328	35	25	0	7	13	36	124	34	72	71	9986
20	3014	168	183	482	188	118	249	376	149	253	679	154	643	173	267	378	280	416	405	0	283	284	306	33	20	0	5	9	25	88	24	67	67	9786
21	3815	106	129	450	200	125	295	436	166	297	916	396	1792	412	371	931	335	411	153	511	0	224	323	36	18	0	2	7	17	65	19	71	76	13105
22	1856	101	111	297	114	73	159	249	102	157	276	193	561	170	161	265	160	212	129	412	179	0	144	22	14	0	2	5	16	59	14	44	48	6303
23	10137	176	246	937	422	262	686	975	322	853	1312	108	875	281	1239	1081	1511	1484	266	390	227	126	0	54	28	0	5	15	29	106	36	114	137	24441
24	1762	58	101	271	144	113	174	349	255	121	60	14	149	47	91	95	96	106	22	37	18	14	46	0	182	17	37	63	49	111	65	607	226	5498
25	1005	48	73	178	87	68	103	203	142	73	34	5	92	26	53	56	55	64	17	25	8	9	25	195	0	16	65	127	81	123	62	299	118	3537
26	286	13	19	57	21	14	25	52	29	20	8	0	33	5	13	15	13	19	1	6	0	0	4	35	32	0	6	9	23	5	36	18	822	
27	572	38	51	121	51	38	59	116	72	46	24	2	64	17	32	35	33	45	12	20	4	7	15	78	121	8	0	35	52	75	26	103	51	2025
28	1179	62	103	231	117	99	132	242	174	93	40	7	103	30	64	66	67	78	22	31	10	11	32	130	236	8	36	0	100	198	135	389	146	4368
29	1094	99	139	277	125	104	135	241	161	100	49	9	105	31	63	67	67	94	35	43	13	17	36	70	106	5	35	68	0	408	141	169	121	4227
30	2742	195	323	609	305	255	320	529	368	206	92	21	186	59	128	128	137	179	70	79	29	34	74	92	94	6	28	81	247	0	377	274	290	8559
31	2964	150	280	565	329	311	349	602	469	223	89	21	205	66	146	143	158	169	55	69	28	29	75	148	132	9	31	150	224	965	0	484	413	10050
32	13025	88	170	437	260	224	307	651	587	198	87	20	203	66	143	141	154	159	34	53	27	21	71	453	207	10	35	147	89	244	166	0	760	9239
33	6876	116	313	795	546	518	659	1649	2597	370	142	33	308	102	257	234	288	270	51	78	45	36	124	238	116	7	24	76	91	367	201	1070	0	18595

- 1 Colombo
- 4 Kandy
- 7 Negombo
- 10 Kottawa
- 13 Kandy
- 16 Ja\_Eh
- 19 Wala
- 22 Mirigama
- 25 Mirigama
- 28 Dondra
- 31 Sandaragama
- 2 Hanwala
- 5 Mahawagala
- 8 Dondra
- 11 Gampaha
- 14 Negombo
- 17 Kelera
- 20 Attaragala
- 23 Mahara
- 26 Wabara
- 29 Bulthotala
- 32 Kandy
- 3 Hamugama
- 6 Kandy
- 9 Moratuwa
- 12 Deraniyagala
- 15 Wariya
- 18 Boppana
- 21 Marawagala
- 24 Beruwa
- 27 Agalawala
- 30 Horana
- 33 Panara

Output of Example (2) after reducing jobs in Colombo DSD by 10 %

Home Based Other Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	356	1525	6773	7931	4357	24379	12846	2809	9610	1042	228	965	554	4366	1818	6887	2238	340	396	430	188	1544	186	101	15	39	98	103	393	279	420	991	94207
2	975	0	528	556	280	215	248	269	176	285	151	43	111	61	150	122	168	250	240	152	67	70	148	39	34	4	20	36	76	205	98	79	93	5950
3	3929	503	0	2758	2010	1246	1235	996	647	803	174	50	174	99	315	221	378	297	222	151	79	69	202	66	52	7	26	61	104	346	191	148	268	17826
4	11895	359	1884	0	2479	1188	3483	1570	652	2538	257	69	269	152	653	389	849	469	189	155	116	72	336	68	44	5	20	49	72	235	141	149	278	31083
5	19746	258	1949	3518	0	5046	8047	3763	1379	1756	252	67	265	151	636	383	832	446	136	130	114	60	321	88	53	5	21	60	75	271	195	214	464	50704
6	12480	229	1390	1941	5803	0	3915	4418	2724	1285	230	64	249	141	544	345	696	395	126	123	106	59	289	112	68	8	27	84	102	353	300	296	721	39625
7	56858	214	1122	4630	7541	3190	0	5108	1350	4835	351	85	347	197	1076	561	1540	680	142	152	152	74	483	90	50	5	19	54	64	226	165	212	475	92051
8	24229	185	730	1687	2850	2909	4128	0	3201	1616	329	85	329	188	820	487	1084	606	138	150	145	77	431	128	71	8	27	71	81	257	200	323	876	48446
9	6754	156	605	894	1329	2283	1390	4076	0	685	184	54	207	118	386	267	473	298	92	97	87	51	219	177	96	11	98	101	328	296	570	3087	25500	
10	22893	250	745	3446	1680	1068	4937	2043	680	0	441	98	415	232	1782	757	2960	950	178	180	177	85	694	69	40	4	16	42	54	161	114	152	288	47633
11	2784	149	181	395	270	213	402	468	204	494	0	281	693	293	700	1073	792	900	526	837	957	245	1605	37	20	0	9	18	30	79	47	70	107	14875
12	838	60	74	151	101	82	136	169	85	152	380	0	1134	686	214	466	173	169	127	331	797	392	198	18	9	0	2	7	12	36	21	34	47	7101
13	1727	70	118	273	187	151	263	310	151	308	462	562	0	3347	517	1568	369	283	125	254	694	185	319	31	16	0	5	14	18	52	35	56	82	12552
14	1512	61	104	239	164	133	229	273	134	264	298	517	5075	0	428	1160	313	242	92	177	395	152	255	27	14	0	4	12	15	46	31	51	73	12491
15	11197	142	315	956	655	485	1185	1117	413	1917	674	151	748	406	0	2327	3909	1381	210	226	274	105	1292	54	29	1	11	29	35	103	75	111	194	30726
16	4264	104	200	522	360	280	562	606	260	742	943	302	2060	1003	2125	0	1132	671	189	290	694	157	893	42	23	0	8	21	26	76	54	82	132	18806
17	17912	162	383	1261	869	631	1717	1498	514	3231	774	123	543	301	3988	1237	0	2402	240	248	251	109	1655	60	33	2	12	33	39	117	87	126	231	40769
18	5134	211	264	615	410	314	668	738	284	913	774	105	366	204	1294	657	2114	0	380	277	219	102	1230	43	24	0	10	24	38	103	61	85	141	17739
19	1197	311	302	381	193	154	215	261	137	263	685	123	251	120	286	283	322	579	0	964	231	213	505	29	24	1	13	23	47	124	62	56	72	8427
20	1135	160	167	255	149	121	186	230	115	215	889	260	498	186	251	351	270	344	767	0	559	483	439	25	17	0	9	16	31	79	41	47	62	8287
21	1571	92	114	248	169	135	239	285	135	273	1296	803	1469	529	389	1071	350	349	241	714	0	357	493	27	14	0	5	12	19	54	32	50	73	11549
22	634	87	91	142	82	69	108	140	72	121	302	358	346	185	137	223	139	150	201	560	323	0	180	15	10	0	5	8	18	48	24	28	41	4846
23	4808	172	246	601	403	314	646	715	286	907	1875	171	563	294	1567	1187	1977	1671	453	483	424	171	0	44	25	1	10	24	35	97	61	87	143	20458
24	564	43	77	121	105	115	115	205	218	88	41	13	57	31	63	56	69	58	23	26	20	12	41	0	252	33	74	119	66	102	114	655	256	3831
25	366	46	72	95	75	83	78	136	140	61	28	8	40	20	42	38	46	41	23	22	13	11	28	294	0	44	180	324	146	148	141	382	156	3327
26	97	12	18	27	17	18	17	32	28	15	6	0	11	3	9	9	10	10	4	5	0	1	5	55	59	0	23	20	28	20	41	24	645	645
27	189	35	47	59	41	43	40	70	64	35	19	4	25	11	23	22	25	26	17	17	7	8	16	107	219	21	0	86	96	87	60	113	62	1693
28	473	67	114	141	116	137	113	183	191	86	38	11	49	26	58	50	64	56	33	31	17	15	39	187	431	24	95	0	189	268	362	536	211	4412
29	417	110	157	167	119	137	110	171	164	91	46	14	49	26	56	49	61	68	53	44	21	23	44	88	153	16	68	158	0	596	348	183	159	3997
30	1123	214	380	383	307	347	275	388	385	191	64	27	86	48	114	94	127	129	99	79	40	40	87	97	120	14	57	165	442	0	971	279	389	7579
31	1158	153	307	337	323	428	293	442	507	201	76	25	93	52	124	101	141	116	74	64	37	32	83	162	170	18	59	327	374	1404	0	555	588	8823
32	1117	77	151	228	226	271	239	453	624	168	69	22	86	49	113	94	127	99	40	43	34	20	72	586	292	21	69	310	124	260	356	0	1141	7584
33	2931	103	309	472	550	741	601	1370	3783	558	120	37	142	81	224	169	263	184	60	65	58	36	135	257	134	13	42	135	122	407	424	1280	0	15605

719148

- 1 Colombo
- 2 Hanwella
- 3 Marangana
- 4 Kandy
- 5 Marangana
- 6 Kandy
- 7 Negombo
- 8 Deiyala
- 9 Marangana
- 10 Kandy
- 11 Negombo
- 12 Deiyala
- 13 Kandy
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- 24 Kandy
- 25 Kandy
- 26 Kandy
- 27 Kandy
- 28 Kandy
- 29 Kandy
- 30 Kandy
- 31 Kandy
- 32 Kandy
- 33 Kandy



Output of Example (2) after reducing jobs in Colombo DSD by 10 %

Non-Home Based Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	3550	17366	90584	107503	60539	306121	224487	43377	143028	12781	1891	14963	6380	67215	26848	121434	35567	3145	4223	3509	1629	20693	1989	1062	131	291	988	1157	4081	2543	5537	12337	1346945
2	5416	0	3748	4777	1796	1093	1370	1509	938	1559	801	172	662	281	747	642	871	1757	1380	808	265	293	708	171	159	21	65	152	360	1110	363	384	407	34784
3	25934	3671	0	31335	18371	8918	9376	7161	4271	5257	884	194	1084	465	1677	1207	2066	1916	1205	777	291	288	962	321	241	30	83	264	508	1934	774	846	1462	133776
4	115272	3987	26704	0	35818	12467	45644	17848	6332	31737	2174	443	2892	1236	6112	3729	8270	4974	1570	1300	715	484	2780	544	348	49	116	353	583	2026	906	1375	2309	341096
5	158527	1738	18143	41508	0	50289	92471	32978	10481	13526	1437	281	1927	826	4222	2544	5851	3196	690	699	464	260	1840	467	274	30	76	287	400	1558	877	1376	2811	452055
6	94594	1120	9333	15310	53286	0	32478	36342	18523	7558	1061	212	1449	622	2918	1857	4336	2304	490	518	346	200	1337	476	279	27	73	320	436	1733	1142	1575	3723	295724
7	439323	1289	9012	51478	89995	29830	0	49641	10559	42515	2182	383	2753	1172	7838	4069	11955	5321	705	856	664	346	3049	510	289	32	79	289	383	1389	810	1453	3037	773201
8	294062	1296	6282	18375	29296	30469	45312	0	39490	15478	2644	472	3259	1413	8011	4570	11497	6301	852	1052	805	439	3562	927	498	52	129	446	562	1932	1176	2909	8060	541654
9	62918	892	4149	7219	10309	17194	10672	43723	0	4314	1073	233	1526	660	2585	1816	3457	2198	431	503	365	221	1280	1056	536	44	118	494	556	2085	1460	4491	28662	217319
10	206853	1479	5092	36071	13266	6995	42643	17089	4302	0	3180	454	3549	1495	15589	6256	31492	9002	924	1073	844	406	5351	351	207	25	61	197	271	874	481	891	1555	418518
11	19372	797	897	2591	1477	1029	2304	3059	1122	3332	0	1295	5368	1549	4881	7744	5956	7069	3026	5648	5548	1139	12594	173	97	11	33	80	132	359	163	368	516	99829
12	3253	195	225	601	329	234	460	621	177	540	1468	0	7274	3058	628	2103	624	655	373	1244	3102	1274	626	59	33	0	9	24	41	110	48	116	141	29942
13	19156	554	928	2909	1672	1185	2455	3194	1345	3140	4533	5422	0	58201	6292	24655	4189	3037	886	2155	6305	1336	2859	252	149	23	49	119	153	405	226	503	657	158941
14	9735	281	475	1483	855	607	1246	1647	695	1577	1560	2716	69353	0	3052	10966	2111	1563	352	779	1741	571	1365	129	75	7	22	58	77	207	114	261	339	116051
15	100295	731	1676	7169	4273	2832	8147	9126	2742	16085	4905	716	7334	3015	0	25805	44203	12160	1086	1324	1324	482	10506	279	156	17	44	138	171	511	307	662	1091	269311
16	38555	605	1161	4209	2477	1706	4071	5010	1798	6211	7338	1758	27659	10323	24835	11624	5911	1007	1765	4192	806	7017	244	140	17	42	118	151	424	245	537	793	172644	
17	182346	858	2078	9760	5958	3879	12509	13180	3580	32697	5902	545	4916	2078	4448	12052	24271	1274	1476	1181	498	14872	309	170	18	47	154	191	580	355	764	1337	384316	
18	50646	1641	1827	5566	3085	2098	6849	2157	8863	6642	542	3379	1458	11652	5862	28314	0	2708	1966	1207	561	10410	272	158	20	53	140	230	655	294	608	927	160721	
19	5330	1533	1368	2091	793	532	833	1104	505	1083	3381	368	1175	392	1233	1189	1437	3220	0	4748	748	697	2168	89	79	8	31	71	158	454	158	190	229	37393
20	6570	824	809	1590	737	515	928	1250	540	1154	5795	1126	2620	795	1379	1912	1529	2147	4360	0	2705	2337	2418	107	75	9	31	66	128	338	132	215	257	45397
21	6046	301	336	971	544	382	798	1060	435	1006	6302	3110	8479	1966	1528	5026	1355	1460	761	2995	0	1180	1796	80	45	2	12	34	57	156	70	163	212	48666
22	2698	318	320	632	292	212	400	556	253	466	1242	1225	1727	619	535	929	548	653	680	2484	1132	0	658	48	39	3	15	29	61	156	58	94	132	19212
23	33480	752	1043	3537	2020	1384	3438	4400	1429	5986	13446	590	3616	1448	11389	7906	16023	11828	2072	2516	1687	645	0	175	99	10	28	87	126	378	186	394	608	132727
24	3146	177	340	677	501	481	563	1119	1150	384	181	53	313	134	295	270	326	303	82	108	72	46	170	0	1320	91	208	518	267	464	449	5035	1422	20665
25	1795	176	273	464	314	301	340	643	624	243	109	32	199	83	177	165	192	188	79	83	44	39	103	1408	0	115	524	1702	672	676	522	2162	697	15145
26	255	28	40	77	40	34	44	78	59	35	16	1	38	11	24	25	25	30	10	13	3	4	13	109	128	0	35	43	42	61	32	92	48	1495
27	537	79	104	171	96	86	102	183	150	80	41	10	74	28	55	56	59	71	34	38	14	17	32	241	568	34	0	183	223	212	107	289	137	4111
28	1880	191	337	530	371	389	385	649	648	261	103	27	181	75	177	159	197	189	80	82	39	35	104	622	1915	44	191	0	701	1051	1184	2509	741	16043
29	2043	418	600	809	480	492	471	758	677	332	155	42	215	90	204	188	225	286	165	146	58	65	138	299	703	39	215	651	0	3483	1476	870	659	17450
30	6339	1131	2011	2474	1641	1721	1503	2291	2232	939	368	98	493	211	532	460	500	714	415	337	139	146	362	456	622	49	179	860	3071	0	6210	1792	2326	42727
31	4611	433	941	1292	1079	1325	1024	1628	1824	605	197	51	324	138	374	311	431	377	170	155	74	65	209	516	562	30	106	1132	1519	7242	0	2323	2218	33286
32	8352	379	854	1631	1407	1520	1527	3349	4668	929	366	101	594	258	689	564	767	645	168	209	142	85	367	4807	1935	72	237	1997	744	1740	1933	0	10092	53108
33	19510	423	1549	2871	3014	3767	3346	9729	31242	1701	539	129	814	352	1155	874	1408	1030	213	262	194	126	594	1423	653	39	117	617	591	2369	1936	10583	0	103173

- 1 Colombo
- 4 Kandy
- 7 Negombo
- 10 Kandy
- 13 Kandy
- 16 Kandy
- 19 Kandy
- 22 Negombo
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- 31 Negombo
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- 79 Negombo
- 82 Negombo
- 85 Negombo
- 88 Negombo
- 91 Negombo
- 94 Negombo
- 97 Negombo
- 100 Negombo

6537427

Output of Example (2) after reducing jobs in Colombo DSD by 10 %

Total Trips - 2001																																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	4352	20493	106744	122720	68359	349722	252984	49308	159868	15036	2339	18028	7656	75723	31021	134314	40768	3799	5122	4294	2028	23589	2439	1301	163	368	1173	1375	4974	3031	6574	14334	1534000
2	8816	0	4767	6273	2397	1495	1922	2185	1322	2146	1116	251	1009	417	1064	930	1221	2345	1788	1112	381	423	980	256	228	25	96	209	492	1508	514	561	590	48841
3	37720	4622	0	37569	22010	10979	11793	9370	5522	6767	1239	284	1597	675	2297	1694	2789	2586	1582	1078	424	417	1322	461	341	39	124	360	684	2572	1059	1165	1953	173095
4	145716	4687	29988	0	40243	14424	51825	21139	7571	36041	2679	564	3642	1548	7313	4541	9780	5975	1893	1610	906	618	3357	688	437	56	147	431	710	2478	1120	1697	2811	406638
5	209089	2247	21500	49201	0	57887	106164	40183	12936	16572	1931	399	2667	1136	5408	3350	7354	4153	925	961	653	372	2397	646	376	37	108	380	530	2066	1168	1816	3611	558224
6	130645	1591	11861	19919	63196	0	39741	45177	23244	9937	1540	329	2190	929	4045	2629	5379	3209	717	778	529	316	1863	708	414	40	117	454	616	2410	1592	2191	4963	383265
7	563597	1699	10979	60906	102220	34744	0	59143	12941	50060	2842	528	3675	1561	9723	5186	14552	6694	943	1152	907	481	3850	690	386	37	107	374	494	1319	1057	1685	3847	959081
8	362354	1690	7706	22517	34433	35202	52965	0	45264	18495	3335	630	4267	1828	9656	5672	13610	7698	1105	1376	1059	592	4355	1202	645	66	175	565	712	2460	1493	3607	9614	656348
9	84493	1231	5338	9536	12845	20867	13459	52137	0	5665	1475	336	2181	929	3484	2450	4436	2926	604	717	522	324	1700	1417	727	61	174	652	739	2734	1913	5635	33559	275269
10	261655	1977	6474	43472	16293	8770	51191	21333	5601	0	4049	628	4709	1975	18738	7814	36568	11004	1233	1440	1141	569	6546	499	291	30	88	266	370	1202	661	1222	2081	519888
11	28703	1110	1277	3674	2057	1436	3184	4227	1574	4349	0	1746	7105	2115	6328	9800	7460	8912	3863	7102	6968	1555	15141	258	142	11	46	110	188	530	238	536	734	132477
12	6262	326	385	1040	554	394	774	1060	471	867	2157	0	9857	4240	1256	3029	973	1038	584	1829	4256	1884	965	102	52	0	11	33	64	191	80	199	236	45170
13	25535	716	1194	3722	2102	1490	3076	4028	1700	3817	5419	6314	0	63812	7354	27746	4963	3706	1107	2645	7368	1660	3431	327	188	23	58	143	190	526	287	646	833	186125
14	15344	422	709	2196	1233	875	1789	2383	1009	2160	2142	3522	80187	0	3973	13327	2774	2143	514	1121	2352	832	1829	196	108	7	28	78	109	315	167	389	495	144727
15	130868	1018	2281	9434	5536	3683	10412	11618	3581	19449	6140	968	9246	3805	0	30117	50677	14817	1437	1760	1758	672	12569	396	218	19	61	184	235	723	425	910	1458	336474
16	52085	828	1572	5581	3228	2228	5257	6478	2360	7666	8997	2244	32430	12164	28623	36992	14921	1437	2303	5228	1081	8474	341	190	17	55	153	202	591	333	732	1056	214748	
17	229325	1184	2803	12658	7599	4968	15690	16456	4610	38255	7318	753	6359	2680	51112	1499	24720	1677	1953	1581	694	17507	439	239	20	66	208	262	819	492	1044	1771	473750	
18	65688	2059	2342	7086	3896	2658	6605	8527	2741	10569	7999	715	4334	1859	13745	7145	26535	0	3310	2475	1549	741	12299	365	208	21	69	177	297	365	389	800	1195	199263
19	9465	2136	1967	3128	1210	824	1313	1760	806	1626	4602	570	1851	632	1804	1782	2067	4422	0	6343	1111	1050	3001	152	128	9	51	107	242	702	254	316	373	55806
20	10719	1152	1159	2327	1074	754	1363	1856	804	1622	7363	1539	3672	1153	1897	2641	2079	2908	5552	0	3547	3104	3163	165	112	9	44	91	184	504	198	330	386	63471
21	11431	499	580	1669	913	642	1332	1781	736	1576	8514	4309	11680	2907	2288	7028	2040	2221	1155	4221	0	1761	2612	142	77	2	19	53	94	274	121	255	361	73320
22	5187	506	522	1071	489	354	667	945	427	743	1820	1776	2634	974	832	1417	847	1015	1010	3455	1634	0	983	85	62	3	21	42	95	263	97	165	220	30361
23	48425	1101	1536	5074	2845	1960	4770	6091	2037	7747	16633	869	5054	2023	14195	10175	19510	14983	2791	3389	2338	942	0	273	151	10	43	126	190	580	283	595	888	177626
24	5472	278	517	1069	750	709	852	1673	1623	592	282	80	518	211	450	421	490	467	126	172	110	72	257	0	1754	141	319	700	382	678	628	6297	1903	29994
25	3167	270	417	738	476	452	521	981	907	378	172	45	331	130	272	259	293	293	119	130	65	60	156	1897	0	175	769	2154	699	947	725	2842	970	22008
26	638	52	77	161	79	65	87	163	116	69	30	1	82	20	46	50	48	58	15	24	3	5	21	199	220	0	64	72	70	113	56	168	90	2962
27	1298	152	202	351	168	168	202	368	287	161	83	16	163	56	111	114	117	142	64	75	25	33	63	427	908	63	0	303	371	375	192	505	250	7828
28	3531	320	554	902	603	625	630	1073	1013	441	180	45	333	131	299	274	328	322	135	144	66	62	175	939	2581	75	321	0	990	1518	1682	3434	1098	24824
29	3553	627	897	1254	723	733	716	1169	1002	522	250	65	369	147	323	303	354	449	252	233	92	105	218	456	972	59	338	877	0	4487	1966	1222	939	25675
30	10205	1540	2714	3465	2253	2323	2098	3208	2985	1337	544	146	768	319	774	681	864	1022	584	495	208	220	523	645	837	70	264	1106	3760	0	7558	2345	3005	58865
31	8733	735	1528	2194	1732	2063	1666	2671	2800	1029	361	97	622	255	645	555	729	661	300	288	139	127	366	826	864	57	195	1609	2117	9611	0	3352	3219	52158
32	12495	544	1175	2296	1893	2015	2074	4454	5879	1295	522	143	885	372	925	799	1048	903	242	305	203	126	509	5845	2434	103	342	2453	957	2245	2455	0	11993	69932
33	29317	642	2171	4137	4110	5027	4606	12748	37622	2429	801	199	1264	534	1637	1276	1959	1484	324	405	298	197	853	1918	903	59	184	828	804	3143	2562	12933	0	137374

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- 1 Colombo
- 4 Kandy
- 7 Negombo
- 10 Kelaniya
- 13 Kurunegala
- 16 Nuwara-Eliya
- 19 Welisara
- 22 Mirigama
- 25 Mahipala
- 28 D. Sangha
- 31 Bentota
- 2 Hanthota
- 5 Matara
- 8 Dehliya
- 11 Galle
- 14 Negombo
- 17 Kelaniya
- 20 Atharugoda
- 23 Mahara
- 26 Wadduwela
- 29 Pussellawa
- 32 Kandy
- 3 Mahipala
- 6 Kandy
- 9 Mirigama
- 12 Dehliya
- 15 Wadduwela
- 18 Mirigama
- 21 Mirigama
- 24 Dehliya
- 27 Agawwala
- 30 Kurunegala
- 33 Puttalam

8,079,589

Output of Example (2) Comparison of the Inter trips before and after the reducing jobs in Colombo DSD by 10 %

Home Based Work Trips - 2001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	0	0	5354	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5354	
2	-206	0	0	541	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	
3	-671	0	0	1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1315	
4	-1583	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1583	
5	-2629	0	0	2384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-245	
6	-2011	0	0	1525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-486	
7	-5751	0	0	2739	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3012	
8	-3757	0	0	1404	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-2353	
9	-1265	0	0	817	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-449	
10	-2722	0	0	2259	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-464	
11	-559	0	0	398	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-161	
12	-186	0	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-16	
13	-398	0	0	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-84	
14	-350	0	0	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-74	
15	-1653	0	0	751	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-902	
16	-791	0	0	490	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-301	
17	-2480	0	0	938	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1542	
18	-846	0	0	521	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-325	
19	-251	0	0	379	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	128	
20	-258	0	0	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	
21	-326	0	0	262	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-64	
22	-159	0	0	175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
23	-655	0	0	539	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-326	
24	-151	0	0	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
25	-67	0	0	107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	
26	-25	0	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
27	-50	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	
28	-101	0	0	137	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	
29	-94	0	0	164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	
30	-235	0	0	353	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	118	
31	-254	0	0	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74	
32	-259	0	0	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-4	
33	-567	0	0	458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-129	

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- 1 Colonn
- 2 Haremb
- 3 Hingurissa
- 4 Kattawa
- 5 Maharagama
- 6 Kaduwela
- 7 Nugegoda
- 8 Delemulla
- 9 Maradana
- 10 Kottawala
- 11 Galle
- 12 Delemulla
- 13 Kalam
- 14 Hingurissa
- 15 Wimala
- 16 Delemulla
- 17 Weyl
- 18 Maradana
- 19 Maradana
- 20 Maradana
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- 24 Maradana
- 25 Maradana
- 26 Maradana
- 27 Maradana
- 28 Maradana
- 29 Maradana
- 30 Maradana
- 31 Maradana
- 32 Maradana
- 33 Maradana

Output of Example (2) Comparison of the Inter trips before and after the reducing jobs in Colombo DSD by 10 %

Home Based Other Trips - 2001																																	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
1	0	0	1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1994
2	-34	0	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133	
3	-135	0	814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	678	
4	-409	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-409	
5	-679	0	1037	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	358	
6	-429	0	574	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	
7	-1954	0	1364	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-590	
8	-833	0	499	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-334	
9	-232	0	266	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	
10	-787	0	1016	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	229	
11	-96	0	119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	
12	-29	0	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	
13	-60	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	
14	-52	0	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	
15	-385	0	284	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-101	
16	-147	0	156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
17	-616	0	374	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-242	
18	-177	0	184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
19	-41	0	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	
20	-39	0	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	
21	-54	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	
22	-22	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	
23	-166	0	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
24	-20	0	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	
25	-13	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	
26	-4	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
27	-7	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
28	-17	0	44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	
29	-15	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	
30	-39	0	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	
31	-40	0	102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	
32	-39	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	
33	-101	0	142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	

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Output of Example (2) Comparison of the Inter trips before and after the reducing jobs in Colombo DSD by 10 %

Non-Home Based Trips - 2001																																					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total			
1	0	-177	-865	40792	-5351	-3014	-15236	-11173	-2159	-7119	-637	-95	-745	-318	-3346	-1337	-6044	-1771	-157	-211	-175	-82	-1030	-99	-53	-7	-15	-50	-58	-204	-127	-276	-615	-21752			
2	-352	0	0	2280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1928		
3	-1681	0	0	14931	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13250	
4	40856	1573	10517	0	14105	4912	17974	7031	2497	12499	860	178	1142	491	2410	1472	3260	1962	622	516	286	195	1098	218	141	23	50	143	233	802	360	545	913	129885			
5	-10275	0	0	19776	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9502		
6	-6131	0	0	7298	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1167	
7	-28472	0	0	24526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3947	
8	-19060	0	0	8757	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10302	
9	-4078	0	0	3443	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-635	
10	-13406	0	0	17187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3780	
11	-1256	0	0	1239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-17	
12	-211	0	0	291	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	
13	-1242	0	0	1390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148
14	-632	0	0	711	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	
15	-6501	0	0	3420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3081
16	-2499	0	0	2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-490
17	-11818	0	0	4654	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-7164
18	-3283	0	0	2656	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-627
19	-346	0	0	1001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	655
20	-426	0	0	762	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336
21	-392	0	0	467	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75
22	-175	0	0	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	130
23	-2170	0	0	1689	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-481
24	-205	0	0	327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	123
25	-117	0	0	226	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109
26	-17	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
27	-35	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51
28	-122	0	0	257	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
29	-133	0	0	390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	257
30	-411	0	0	1183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	772
31	-299	0	0	620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	321
32	-542	0	0	782	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	240
33	-1265	0	0	1372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	107
																																				114656	

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Output of Example (2) Comparison of the Inter trips before and after the reducing jobs in Colombo DSD by 10 %


Total Trips- 2001																																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total		
1	0	-177	-865	48139	-5351	-3014	-15236	-11173	-2159	-7119	-637	-95	-745	-318	-3346	-1337	-6044	-1771	-157	-211	-175	-82	-1030	-99	-53	-7	-15	-50	-58	-204	-127	-276	-615	-14405		
2	-593	0	0	2988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2395		
3	-2488	0	0	17730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15242	
4	38864	1573	10517	0	14105	4912	17974	7031	2497	12499	860	178	1142	491	2410	1472	3260	1962	622	516	286	195	1098	218	141	23	50	143	233	802	360	545	913	127893		
5	-13583	0	0	23197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9615	
6	-8572	0	0	9396	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	825	
7	-36177	0	0	28628	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-7549
8	-23650	0	0	10660	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-12989
9	-5576	0	0	4526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-1050
10	-16916	0	0	20461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3545
11	-1911	0	0	1756	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-155
12	-427	0	0	508	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82
13	-1699	0	0	1787	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88
14	-1034	0	0	1060	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
15	-8539	0	0	4455	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-4084
16	-3437	0	0	2656	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-781
17	-14914	0	0	5966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-6948
18	-4306	0	0	3361	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-945
19	-639	0	0	1495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	856
20	-724	0	0	1120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	397
21	-773	0	0	805	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
22	-357	0	0	525	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168
23	-3201	0	0	2408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-793
24	-375	0	0	526	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150
25	-217	0	0	364	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	148
26	-46	0	0	91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45
27	-92	0	0	181	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89
28	-240	0	0	439	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	198
29	-242	0	0	606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	364
30	-685	0	0	1651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	966
31	-593	0	0	1050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	456
32	-840	0	0	1106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	267
33	-1953	0	0	1972	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19






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