Design of traffic signals at junction and analysis of traffic surveys

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Abstract: ***The world's population grows daily. Due to accidents, the number of cars on the road is increasing, generating delays and reduced safety. To minimise these issues, we must study traffic analysis and obey safety rules. This article calculates traffic volume and service level for each lane of an LR-Type staggered junction at Pamur Bus Station, Kanigiri, Prakasam. For accuracy and fewer mistakes, traffic data was collected manually for seven days per 4-lane and 8-directions. This article reports maximum flow density per lane, vehicle flow per lane, peak hours, design of traffic signals and how many vehicles have been transformed into passenger cars. IRC: 93-1985 also studied safety criteria such space, number of cars, travel duration, and delays to swiftly move vehicles at junctions. optimal cycle, green, lane, pedestrian crossing, and delay time models.***

Keywords: Traffic volume, LR-Type staggered intersection, service level, manual mode, PCUs.

I. INTRODUCTION

Road safety in developing nations. Indian accidents have increased due to car proliferation and inadequate road infrastructure. Many accidents result from poor road geometry, traffic, and regulation. Build a safe road network by assessing accident causes, factors, and scenarios. Innovative design and control may address system issues. Road accident data may identify hotspots. Addressing accident-prone areas involves substantial investigation.

International companies sold more cars despite terrible roads. Social, political, etc. National accident rate: Daily, 235 people die and 1243 are wounded in car accidents. Night traffic accounts for 15% of 24-hour volume—8 times more than day traffic in India—but 60% of accidents occur at night. Drivers cause most accidents due to reflexes, fatigue, inexperience, or toxicants, according to national data. Road accidents have other causes. These are: 1. Road 2. Vehicle/road user 3. Ecology. Local traffic surveys may be accurate. Traffic surveys measure volume and vehicles. Roadside paper pads held comments. Office traffic analysis and video cameras have replaced this. Transportation engineers use traffic surveys to create infrastructure, find issues, and test concepts. Some traffic volume assessments categorise cars and roads. Hourly and daily volume vary substantially. Vehicle flow and categorization are monitored in traffic volume surveys. Key words are needed before the traffic study: The PCU measures roadway volume. IRC-set DSV is for single- or double-lane roads. Traffic volume studies may aim: 1. Design Goals Pavements, bridges, and highway amenities are geometrically and structurally engineered. b) Fewer junction turns, channelization, flaring, and traffic limitations. B) Pavement, intersection, and other designs use pedestrian volume studies.

2. Dynamic traffic control Road users benefit from flow/congestion data in traffic signal design, junction efficiency, and network productivity. 3. Other goals Demand forecasting for highways and facilities. Traffic volume analysis includes design, planning, improvement, dynamic traffic management, highway utilisation estimation, accident rate calculation, and traffic stream. Our investigation begins with bridge-crossing automobile identification. UK vehicle categorization standards. Taxis, people carriers, and under-16-seat cars move often. 3-wheelers, Land Rovers, Range Rovers, Jeeps, and windowed ambulances. 'Car' has caravan.

Every car-type delivery and transit vehicle with more space is an LGV. Including milk floats, windowless ambulances, and miniature cars. Middle-sized, single-rear-wheel delivery vans

dominate. Side guards between axles or four rear wheels are forbidden on 'LGV' automobiles.
Normal Items Vehicle 1: Double-rear-wheeled ambulances, tractors (without trailers), tarmac pressing road rollers, box vans, huge vans, and middle-sized vehicles. Ordinary Items Second car: Four-axle articulated stiff. OGV1 trailer- or caravan-haulers are included. Public service vehicles and works buses above 16 seats and 3.5 tonnes are PSVs. "MC" covers all motorcycles and sidecars. Pc: All pedal bikes, passenger. Common Confusing Factors:
Minibus or bus Under-16-seat minibuses are classified as cars. Bus-sized PSVs carry 16. Confused about the category? Use car. LGV/OGV1 van/middle-sized vehicle with single or double rear wheels LGV vans/middle-sized vehicles having one rear wheel, OGVs two. Detecting numerous rear wheels is hard. Double wheels are common on large cars. List illegible cars as OGV1. Vehicles are ambulances. Cars with windows are ambulances. LGVs without windows resemble vans. OGV1s have two rear wheels like box/middle trucks.

An autonomous traffic signal was suggested by Ishant Sharma and colleagues (2015) for Madhya Marg in Chandigarh. The pre-timed signals were developed by using Webster's approach and the I.R.C method of signal design. All of these methods were used in the design process. Webster's technique determines the optimal cycle duration, while the IRC method determines the minimum green time based on the amount of time it takes pedestrians to cross the approach lane. The count was determined by playing back the movie on the laptop at a slow pace. In this work, he has compared pre-timed signals with automated signals, and it has been shown that automated signals are more efficient than pre-timed signals. This is because automated signals reduce the amount of time that is lost and enhance the capacity.

Rubiyah Yusuf and colleagues (1996) presented a combination of fuzzy logic technology and electromagnetic sensors. In this combination, the electromagnetic sensors were responsible for counting the number of cars, and the fuzzy logic technology was responsible for allotting green time to the traffic in order to clear the intersection in an efficient manner. When it comes to managing the traffic, this approach has been shown to be quite successful.

The crossroads in Vidisha, Madhya Pradesh, was the location where Sachin Jat and his colleagues (2015) constructed a traffic light. Manually, without the use of any devices or sensors, the traffic volumes were gathered with the corresponding vehicle classifications, which included passenger vehicles, commercial vehicles, and agricultural vehicles. The construction of the traffic light in accordance with the IRC approach includes the implementation of the highest possible PCU on the junction in each direction.
In a report that was given by Saleem Akhter and colleagues (2015), an effort was made to determine whether or not providing traffic signals or rotaries would be more effective. Data on the amount of classified traffic was gathered over a period of twelve minutes. It was decided to transform the categorised volume into a common unit that is known as the passenger car unit. In order to determine the traffic volume in PCU/hr, the data from the previous 12 minutes is then scaled to one hour. It has been determined that the traffic capacity of rotary stands at 3017 PCU/hr, which is more than the maximum traffic volume that a rotary is capable of managing, which is 3000 PCU/hr. Therefore, a traffic light system that has a total cycle period of 140 seconds ought to be implemented at the junction.
In 2013, Shamsul Haque conducted research on the features of the traffic flow on the Dhaka-Sylhet route in Bangladesh. They determined the fluctuations in traffic flow on a weekly and monthly basis, as well as the traffic growth trend and the proportion of heavy vehicles. According to the findings presented in their paper, the Dhaka-Sylhet highway has the highest average percentage of Bus/Truck/Covered Truck 2 axle from 2007 to 2009, which is 42.46% in the traffic stream. Additionally, the daily directional distribution varies from approximately 47% to 53%, and the average growth rate of total traffic has been found to be 23.79% per year. Ahad Ullah (2015) conducted research on the elements that contribute to the rise of traffic on three of Bangladesh's most important highways. They discovered that the traffic growth factor on the route between Dhaka and Sylhet is 23.79%.
Road networks have unusual staggered junctions. The left–right (LR) and right–left (RL) varieties of staggered junctions are two T-legged intersections with a gap between them. The motorist meets the branches in the sequence in which they appear on

the main route. A side road intersects the primary route, which has a higher volume, at the staggered intersections. A staggered intersection is not separated. The primary road is split into two lanes shortly before the crossroads, generating two smaller crossings with the crossroads that resemble a four-legged junction. Most staggered junction material prioritises safety and performance without signal control. Mahalel et al. compared two staggered junctions to a four-legged cross intersection without signal control for safety and functionality. Non-signal-controlled staggered junctions, like RL ones, have improved delays, stops, and capacity. Ceder and Eldar proposed an optimal T-junction distance for queue length, carrying capacity, and accident risk for non-signal-controlled RL-type staggered crossings. Staggered intersections are uncontrolled when traffic is light, like cross crossings. Major road traffic grows, making the crossing too narrow for smaller cars. Thus, right-of-way distribution needs signal control. Designing staggered junction signal timing is difficult due of geography. Signal time at a staggered intersection depends on the kind and distance between T-legged intersections. Liner control, established by Ma et al., allowed main traffic to traverse the stagger junction uninterrupted. RL staggered junctions should restrict and reroute minor road left-turns to force them through the junction numerous times, according to Wu et al. Both methods are empirical, situational, and unanalyzed. Zeng et al. discovered three-phase signal control works for RL staggered intersections. In contrast to RL, minor road left-turns conflict, making it unsuitable for LR. Staggered junctions are two T-legged crossings handled when the split distance is larger than 50m and a single intersection otherwise, according to the Specification for Setting and Installation of Road Traffic Signals (GB14886-2006). At isolated fixed-time signalised junctions with four phases, inter-green time (yellow time plus all-red clearing intervals) separates conflicting traffic between phases. The split distance increases the inter-green duration at staggered intersections, delaying the intersection when it is near capacity.

The study's primary goals are to: Measure different traffic volumes at a chosen intersection of the Pamur-Kanigiri-Podili-Garlapeta roads. Maximum vehicle flow density per lane, maximum vehicle flow per lane, peak hours, headway, and the quantity of vehicles converted to passenger car units (PCU) are all considered. the examination of safety standards, including space, vehicle count, travel duration, and easy-to-move vehicle delays at junctions. This study was conducted using IRC: 93-1985. To assess the road's capacity and service quality. To create signals, a delay time model, and optimal cycle duration.

2. METHODOLOGY

Site for Data Collection: Selected Pamur-Kanigiri-Podili-Garlapeta road intersection, big accidents, increased traffic, delays. Data Collection Method: Traffic volume counts may be done manually or automatically. Vehicle categorization, turning motions, direction of travel, pedestrian movements, and vehicle occupancy are usually determined by manual counts. Vehicle hourly patterns, daily or seasonal growth trends, and yearly traffic forecasts are usually calculated using automatic counts. Regarding the data acquired at that route linking our institution, we collected it for one day throughout a week. Data analysis and procedure. We learned how many cars passed that route at that moment from the data. We translated every data to PCU (Passenger Car Unit) by multiplying it with its IRC-6 PCU factor. The maximum flow density, vehicle flow, peak hours, time headway, and number of vehicles have been translated into passenger car units. The examination of safety needs such space, number of cars, journey duration, and delay to easy-moving vehicles at junctions. This analysis followed IRC: 93-1985. To assess road capacity, design of traffic signals and service.

3 EXPERIMENTAL PROGRAMS

3.1.1 Study location

This work attempts to find a suitable signal control method for the LR type of staggered intersection as an isolated intersection. Recently, the sorting strategy has emerged as a promising new way to lower the delays of the intersections. Figure 1 represented geometrical view of the junction

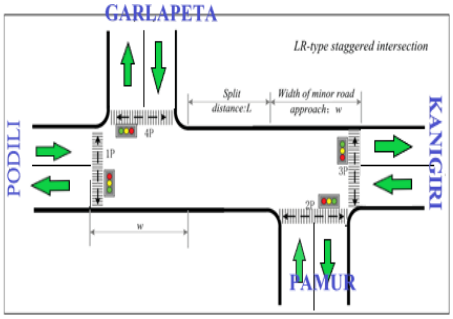

Fig. 1 Geometrical view of the junction

Traffic study done at a small intersection of Traffic at Pamur-Kanigiri-Podili-Garlapeta roads Date: 02/01/2023 to 09/01/2023.

- Counting Period: 7 days (Every hour)
- Weather Condition: It was initially a sunny day but afterwards it became cloudy
- Survey Location: Pamur-Kanigiri- Podili-Garlapeta
- Observation: Classified Vehicle Count
- Method: Manual Method.
- Duration: Every hour thought out day same as 1 total week.
- Equipment's: Data Sheet, Stop Watch.

We have adapted Manual Method. In this method, data is collected using a Data Sheet. Data recorded on data sheets; data can be recorded with tick mark on a pre-prepared field form. A stopwatch is necessary to measures desired count interval.

3.1.2 Data collection:

The data taken as recorded format designed by own process according to LR-Type staggered intersection at Pamur Bus station, Kanigiri

From fig 2.1, 4- Roads, 8 Directions (In and out), data observed 7 days at each and every hour with continually the division as follows

I. PODILI-KAN (IN)
II. KAN-PODILI (OUT)
III.KAN-GARLAPETA(OUT)
IV.GARLAPETA-KAN(IN)
V. CIRCLE-KAN(OUT)
VI. KAN-CIRCLE (IN)
VII. PAMUR-KAN(OUT)
VIII. KAN-PAMUR (IN)

Passenger car, Tempo, Auto-ricksaw, Jeep,Van,Ag tractor	a
Truck, Bus, Ag tractor with trailer	b
Motor-bike, Scooter and Cycle	c
Ricshaw	d
Horse-drawn vehicle	e
Two Bullock cart	f
Single Bullock cart, Hand-cart	g
Other vehicles	h

Tables 1 to 4 explained the traffic data in the respected direction and respected time and converted with PCU also

5. CONCLUSIONS

The numbers of bikes travelling are more when compared to autos and cars. The number of autos and cars are more when compared to buses so, if numbers of buses are increased, then the dependency on Public transports increase. This will make decrease in number of personal vehicles. Hence the congestion gets reduced and free Flow of Traffic will be possible. It adds to comfortless of a road user. We are settled on a suggestion that if the No. of buses could be increased then the traffic system would become efficient. So huge modification is recommended in the public transportation.

- The maximum flow of vehicles observed during Weekday is 9051 Vehicles/day.
- The Peak Time of Traffic Flow during Weekday is 7/01/2020-08/01/2020 in the direction of KAN-PODILI ROAD.
- The maximum flow of vehicles observed during Weekend is 377 Vehicles/ Hr.
- The Peak Time of Traffic Flow during Weekend is 8.00 AM - 9.00 AM.
- The maximum flow of vehicles (Truck, Bus, Ag tractor with trailer) observed during Weekday is 1121 Vehicles/day.
- The maximum flow of vehicles (Passenger car, Tempo, Auto-ricksaw, Jeep,Van,Ag tractor) observed during Weekday is 3375 Vehicles/day.
- The maximum flow of vehicles (Motor-bike, Scooter and Cycle) observed during Weekday is 4304 Vehicles/day.
- The maximum flow of vehicles (Ricshaw) observed during Weekday is 140 Vehicles/day.
- The maximum Level of services observed during Weekday is 0.33, with grade A, in the direction of II.
- The Level of services of remains directions observed during Weekday, with grade A.
- Optimum Cycle time-90sec
- Green time as per lanes various from 20 to 24sec
- lane capacity -369veh/hr
- pedestrian crossing-6sec
- No limitations with the study.

i. The survey conducted for 24 hours.
ii. collection of data with help of 15 to 20 persons.

SCOPE OF FUTURE WORK

The present study is focused mainly on traffic volume only. Speed-flow studies are useful to evaluate the more parameters. There is a scope on speed flow studies on urban road links for future work.

6. REFERENCES

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Table 1 the details of the traffic in the direction on the road of Podili to Kanigiri (in & out) on 02/01/2020-09/01/2020

Name of Road	1-PODILI-KAN(IN) 2-KAN-PODILI(OUT)						Date		02/01/2020-09/01/2020										
Time Duration (Hr)	Type of vehicles																		
	a		b		c		d		e		f		g		h		Total		Total
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
10am to 11am	1225	1261	224	178	1670	1725	4	31	0	0	0	0	0	3	290	188	3106	3140	5768
11am to 12 am	1267	1310	137	153	1645	1700	12	8	0	0	0	0	0	0	231	223	3034	3138	5718
12am to 1pm	1132	1273	127	218	1665	1685	6	27	0	0	0	0	0	5	324	228	2953	3113	5514
1pm to 2pm	1195	1000	217	176	1585	1415	6	11	0	0	0	0	0	1	391	210	2963	2558	4920
2pm to 3pm	1140	1107	145	116	1405	1475	9	7	0	0	0	0	0	0	320	260	2761	2553	4734
3pm to 4pm	1253	1158	115	133	1655	1826	0	4	0	0	0	0	0	0	269	240	2968	3068	5527
4pm to 5pm	1130	1205	119	112	1469	1565	2	0	0	0	0	0	0	0	281	246	2771	2756	5000
5pm to 6pm	1200	1190	127	130	1510	1555	1	3	0	0	0	0	0	0	363	228	2836	2720	4965
6pm to 7pm	1115	1225	136	131	1434	1360	2	0	0	0	0	0	10	0	237	235	2757	2561	4846
7pm to 8pm	913	925	194	183	1170	1165	14	5	0	0	0	0	4	0	188	123	2268	2242	4199
8pm to 9pm	954	865	517	499	1323	1971	18	7	0	0	0	0	4	3	252	695	3350	2660	5063
9pm to 10pm	714	760	511	530	1777	1343	8	7	0	0	0	0	1	3	682	552	3451	2163	4380
10pm to 11pm	541	441	315	448	941	801	0	0	0	0	0	0	0	0	308	297	1989	1458	2842

11pm to 12pm	283	170	176	171	304	147	0	0	0	0	0	0	0	0	107	25	738	498	1104
12pm to 1am	242	152	178	217	127	101	1	2	0	0	0	0	0	0	46	31	552	455	930
1am to 2am	203	173	177	244	88	108	0	0	0	0	0	0	0	1	39	14	464	512	923
2am to 3am	188	183	196	182	64	52	0	0	0	0	0	0	0	0	67	51	486	367	735
3am to 4am	189	222	194	178	146	123	4	3	0	0	0	0	0	1	62	43	552	488	935
4am to 5am	252	245	222	212	313	383	8	5	0	0	0	0	1	0	137	58	810	793	1408
5am to 6am	252	278	224	235	402	424	19	21	0	0	0	0	0	0	48	51	875	967	1743
6am to 7am	321	434	294	312	722	749	20	27	0	0	0	0	0	0	119	72	1296	1570	2675
7am to 8am	451	615	291	367	1372	1167	25	16	0	0	0	0	0	0	370	166	2092	2117	3673
8am to 9am	599	497	336	313	1349	1424	9	18	0	0	0	0	0	0	430	373	2321	2149	3667
9am to 10am	534	451	169	226	1257	984	4	12	0	0	0	0	0	0	435	81	1645	1890	3019
Total	17293	17140	5341	5664	25393	25248	172	214	0	0	0	0	20	17	5996	6218	50566	45936	84288
PCU	17293	17140	16023	16992	12697	12624	258	321	0	0	0	0	120	102	5567.5	5663	50072	43498	82339

Table 2 The details of the traffic in the direction on the road of Garlapeta to Kanigiri (in & out) on 02/01/2020-03/01/2020

Name of Road	4-GARLAPETA-KAN(IN) 3-KAN-GARLAPETA(OUT)						Date		02/01/2020-09/01/2020										
Time Duration (Hr)	Type of vehicles																		
	a		b		c		d		e		f		g		h		Total		Total
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
10am to 11am	1255	1397	217	209	1735	1805	7	2	0	0	0	0	0	0	0	0	3214	3413	6627
11am to 12 am	1216	1305	70	77	1665	1556	0	1	0	0	0	0	0	0	0	0	2951	2939	5890
12am to 1pm	1026	1115	65	96	1350	1520	7	11	0	0	0	0	0	0	0	0	2448	2742	5190
1pm to 2pm	896	1025	88	100	1205	1250	4	3	0	0	0	0	0	0	0	0	2193	2378	4571
2pm to 3pm	860	910	27	49	995	1090	2	0	0	0	0	0	0	0	0	0	1884	2049	3933
3pm to 4pm	1205	1037	99	143	1430	1415	10	0	0	0	0	0	0	0	0	0	2744	2595	5339
4pm to 5pm	950	1125	86	152	1270	1180	16	30	0	0	0	0	0	0	0	0	2322	2487	4809
5pm to 6pm	995	1080	135	156	1260	1290	0	12	0	0	0	0	0	0	0	0	2390	2538	4928
6pm to 7pm	1030	965	126	83	1190	1240	2	3	0	0	0	0	0	0	0	0	2348	2291	4639
7pm to 8pm	880	833	87	97	1010	1150	5	5	0	0	0	0	0	1	0	0	1982	2086	4068
8pm to 9pm	274	296	56	88	2044	2166	60	27	0	0	0	0	0	0	0	0	2434	2577	5011
9pm to 10pm	193	206	14	42	1447	1653	42	23	0	0	0	0	0	0	0	0	1696	1924	3620
10pm to 11pm	86	113	16	10	322	308	9	18	0	0	0	0	0	0	0	0	433	449	882
11pm to 12pm	37	64	19	24	152	188	6	0	0	0	0	0	0	0	0	0	214	276	490
12pm to 1am	34	51	7	10	78	71	0	0	0	0	0	0	0	0	0	0	119	132	251
1am to 2am	35	30	6	7	69	82	0	1	0	0	0	0	0	0	0	0	110	120	230
2am to 3am	37	37	19	22	70	80	0	2	0	0	0	0	0	0	0	0	126	141	267
3am to 4am	67	64	13	15	101	115	0	5	0	0	0	0	0	0	0	0	181	199	380
4am to 5am	90	95	18	10	156	179	2	5	0	0	0	0	0	0	0	0	266	289	555
5am to 6am	167	184	26	32	389	426	26	12	0	0	0	0	0	0	0	0	608	654	1262
6am to 7am	202	223	35	54	945	886	45	38	0	0	0	0	0	0	0	0	1227	1201	2428

7am to 8am	363	316	41	63	1948	1827	78	71	0	0	0	0	0	0	0	0	2430	2277	4707
8am to 9am	365	376	223	178	2231	2592	65	55	0	0	0	0	0	0	0	0	2884	3201	6085
9am to 10am	367	477	145	140	2081	2726	29	27	0	0	0	1	0	0	0	0	2622	3371	5993
Total	12630	13324	1638	1857	25143	26795	415	351	0	0	0	1	0	1	0	0	39826	42329	82155
PCU	12630	13324	4914	5571	12571.5	13397.5	622.5	526.5	0	0	0	8	0	6	0	0	30738	32833	63571

Table 3 The details of the traffic in the direction on the road of Circle to Kanigiri (in & out) on 02/01/2020-03/01/2020

Name of Road	5-CIRCLE-KAN(OUT) 6-KAN-CIRCLE (IN)						Date		02/01/2020-09/01/2020										
Time Duration (Hr)	Type of vehicles																		
	a		b		c		d		e		f		g		h		Total		Total
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
10am to 11am	1201	1292	95	131	1340	1433	59	62	0	0	0	0	0	0	0	0	2695	2918	5613
11am to 12 am	1179	1102	95	123	1247	1288	73	64	0	0	0	0	0	0	0	0	2594	2577	5171
12am to 1pm	1186	1174	91	106	1317	1321	71	59	0	0	0	0	0	0	0	0	2665	2660	5325
1pm to 2pm	1095	1115	98	100	1352	1264	57	40	0	0	0	0	0	0	0	0	2602	2519	5121
2pm to 3pm	1302	1196	83	82	1447	1432	36	29	0	0	0	0	0	0	0	0	2868	2739	5607
3pm to 4pm	1353	1461	123	110	1584	1587	45	33	0	0	0	0	0	0	0	0	3105	3191	6296
4pm to 5pm	1401	1361	120	118	1546	1400	53	39	1	0	0	0	0	0	0	0	3121	2918	6039
5pm to 6pm	1255	1253	122	189	1315	1476	65	58	0	0	0	0	0	0	0	0	2757	2976	5733
6pm to 7pm	1291	1258	206	198	1633	1633	49	56	0	0	0	0	0	0	0	0	3179	3145	6324
7pm to 8pm	927	1152	187	224	1351	1535	13	19	0	0	0	0	0	0	0	0	2478	2930	5408
8pm to 9pm	1180	1299	203	231	2058	2275	34	47	0	0	0	0	0	0	0	0	3475	3852	7327
9pm to 10pm	1038	817	220	205	1593	1495	48	25	0	0	0	0	0	0	0	0	2899	2542	5441
10pm to 11pm	266	259	149	153	390	357	2	3	0	0	0	0	0	0	0	0	807	772	1579
11pm to 12pm	103	103	86	108	97	116	3	0	0	0	0	0	0	0	0	0	289	327	616
12pm to 1am	81	76	74	90	45	47	1	0	0	0	0	0	0	0	0	0	201	213	414
1am to 2am	61	62	73	78	36	37	0	0	0	0	0	0	0	0	0	0	170	177	347
2am to 3am	79	101	89	130	65	51	0	0	0	0	0	0	0	0	0	0	233	282	515
3am to 4am	135	138	111	137	139	140	2	2	0	0	0	0	0	0	0	0	387	417	804
4am to 5am	259	281	190	178	407	349	14	22	0	0	0	0	0	0	0	0	870	830	1700
5am to 6am	401	464	220	231	742	831	35	32	0	0	0	0	0	0	0	0	1398	1558	2956
6am to 7am	841	833	241	223	1356	1378	43	57	0	0	0	0	0	0	0	0	2481	2491	4972
7am to 8am	965	1169	285	272	1673	1745	42	49	0	0	0	0	0	0	0	0	2965	3235	6200
8am to 9am	1130	1106	239	256	2507	2540	42	43	0	0	0	0	0	0	0	0	3918	3945	7863
9am to 10am	1288	1095	301	337	2357	2184	54	42	0	0	0	0	0	0	0	0	4000	3658	7658
Total	20017	20167	3701	4010	27597	27914	841	781	1	0	0	0	0	0	0	0	52157	52872	105029
PCU	20017	20167	11103	12030	13798.5	13957	1261.5	1171.5	4	0	0	0	0	0	0	0	46184	47325.5	93509.5