

Supply Data Analysis

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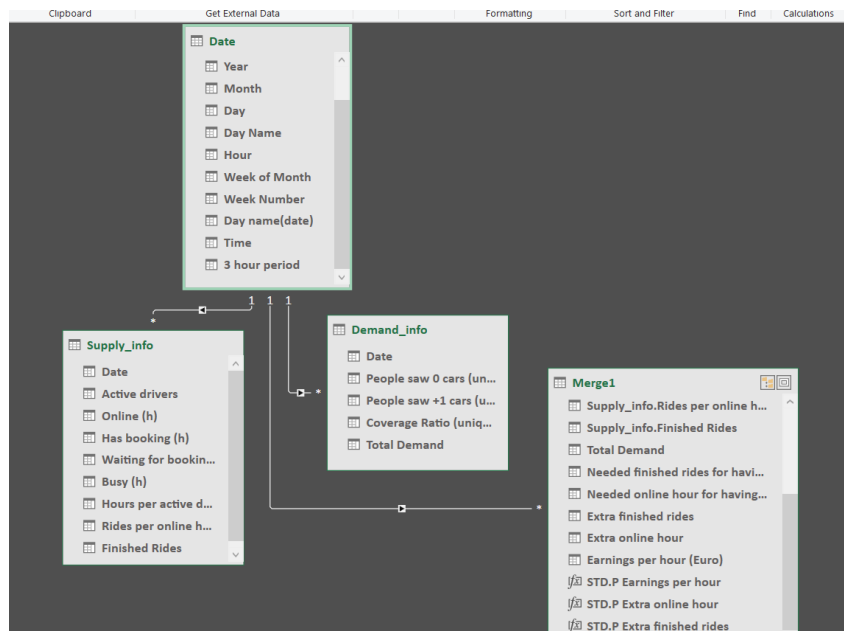
Tallinn, 2020

There are two points that should be mentioned:

1. Regarding the point that mentioned in the task → “Note that if time period has 0 values in all columns, it would be skipped (no row)”, some values in one or two columns were zero, but there were no rows with zero values in all columns ,so I didn’t skip any rows.
2. There is no information for “2016-12-07 05” in sheet “Hourly_OverviewSearch_1.csv”
3. Because I used the actual week numbers of the months , there are seven weeks instead of 5 weeks.

To solve the task first I made a data model from two work sheets “Hourly_OverviewSearch” and “Hourly_DriverActivity_1”, and named them “Demand_info” and “Supply_info” respectively.

To have access to all data in Demand_info and Supply_info by Year, month, week, day, day name, hours, etc. I made another sheet named “Date” and created a relationship between “Date” and Demand_info and Supply_info. As you can see in the picture below:



Question 1: Show which 36 hours in a week are most undersupplied.

Show/describe your decision based on sample data.

To solve this question, I made a pivot table with “24 hours” in the rows, and weeks which are separated by days in the columns. The value inside each cell shows the coverage ratio of corresponding week, day and hour.

Hours	Monday(14)	Tuesday(15)	Wednesday(16)	Thursday(17)	Friday(18)	Saturday(19)	Sunday(20)	Monday(21)	Tuesday(22)	Wednesday(23)
00:00	63	85	87	93	90	95	98	79	94	
01:00	50	80	90	83	91	93	98	73	58	
02:00	67	100	80	85	95	94	86	71	63	
03:00	67	67	86	54	81	90	91	40	33	
04:00	50	50	60	60	63	73	85	71	100	
05:00	50	33	100	75	25	87	91	60	100	
06:00	83	67	67	33	22	63	77	38	80	
07:00	53	34	54	42	59	33	80	44	69	
08:00	51	38	62	66	57	45	67	43	79	
09:00	49	56	74	63	66	53	72	60	84	
10:00	78	72	91	74	78	74	72	74	87	
11:00	81	92	86	80	77	70	69	100	100	
12:00	86	83	86	74	67	80	86	87	88	
13:00	86	88	84	54	77	82	78	83	96	
14:00	75	81	87	75	76	86	93	84	95	
15:00	92	76	89	70	55	83	92	79	100	
16:00	85	86	79	66	65	84	89	91	100	
17:00	100	77	79	73	82	88	93	100	97	
18:00	84	82	82	73	80	88	98	86	85	
19:00	84	82	86	84	88	85	97	85	88	
20:00	86	79	93	90	88	80	93	100	89	
21:00	90	88	94	93	89	97	96	100	97	
22:00	82	82	78	94	87	96	93	97	96	
23:00	72	100	95	86	91	100	100	92	79	
Grand Total	1764	1778	1969	1740	1749	1919	2094	1837	2057	

Then for each week, minimum 36 values (which show 36 most undersupplied hours) has been highlighted by creating below rules:

Rule (applied in order shown)	Format	Applies to	Stop If True
Bottom 36 - All Values	AaBbCcYyZz	=SAJ\$4:SAJ\$27	<input type="checkbox"/>
Bottom 36 - All Values	AaBbCcYyZz	=SAC\$4:SAI\$27	<input type="checkbox"/>
Bottom 36 - All Values	AaBbCcYyZz	=SV\$4:SAB\$27	<input type="checkbox"/>
Bottom 36 - All Values	AaBbCcYyZz	=SS\$4:SU\$27	<input type="checkbox"/>
Bottom 36 - All Values	AaBbCcYyZz	=SO\$4:SR\$27	<input type="checkbox"/>

Most undersupplied 36 hours in each week

Coverage Ratio																		
	Weeks																	
	Week 3 of Nov						Week 4 of Nov								Week 5 of Nov			
Hours	Monday(14)	Tuesday(15)	Wednesday(16)	Thursday(17)	Friday(18)	Saturday(19)	Sunday(20)	Monday(21)	Tuesday(22)	Wednesday(23)	Thursday(24)	Friday(25)	Saturday(26)	Sunday(27)	Monday(28)	Tuesday(29)	Wednesday(30)	
00:00	63	85	87	93	90	95	98	79	94	86	93	89	98	100	94	79	96	
01:00	50	80	90	83	91	93	98	73	58	70	89	95	91	100	80	86	94	
02:00	67	100	80	85	95	94	86	71	63	86	69	86	95	100	82	33	82	
03:00	67	67	86	54	81	90	91	40	33	70	27	80	100	100	67	80	48	
04:00	50	50	60	60	63	73	85	71	100	50	33	67	78	85	13	60	35	
05:00	50	33	100	75	25	87	91	60	100	100	80	67	91	100	33	50	61	
06:00	83	67	67	33	22	63	77	38	80	80	73	60	89	100	46	67	56	
07:00	53	34	54	42	59	33	80	44	69	82	65	63	100	38	47	71	62	
08:00	51	38	62	66	57	45	67	43	79	55	63	57	90	58	67	76	84	
09:00	49	56	74	63	66	53	72	60	84	61	65	57	79	73	72	66	73	
10:00	78	72	91	74	78	74	72	74	87	76	78	82	76	70	93	85	79	
11:00	81	92	86	80	77	70	69	100	100	80	81	75	93	68	80	80	91	
12:00	86	83	86	74	67	80	86	87	88	100	76	82	91	71	96	86	81	
13:00	86	88	84	54	77	82	78	83	96	86	86	93	93	87	85	84	76	
14:00	75	81	87	75	76	86	93	84	95	90	92	76	87	100	83	85	91	
15:00	92	76	89	70	55	83	92	79	100	96	90	86	92	94	80	74	76	
16:00	85	86	79	66	65	84	89	91	100	96	100	84	94	78	95	64	91	
17:00	100	77	79	73	82	88	93	100	97	95	93	79	84	92	94	70	97	
18:00	84	82	82	73	80	88	96	86	85	83	87	80	94	89	98	64	93	
19:00	84	82	86	84	88	85	97	85	88	92	88	94	85	87	95	77	90	
20:00	86	79	93	90	88	80	93	100	89	98	100	88	96	91	95	90	86	
21:00	90	88	94	93	89	97	96	100	97	95	95	96	96	91	95	87	87	
22:00	82	82	78	94	87	96	93	97	96	100	91	86	98	94	87	95	87	
23:00	72	100	95	86	91	100	100	92	79	99	88	94	98	85	84	93	84	

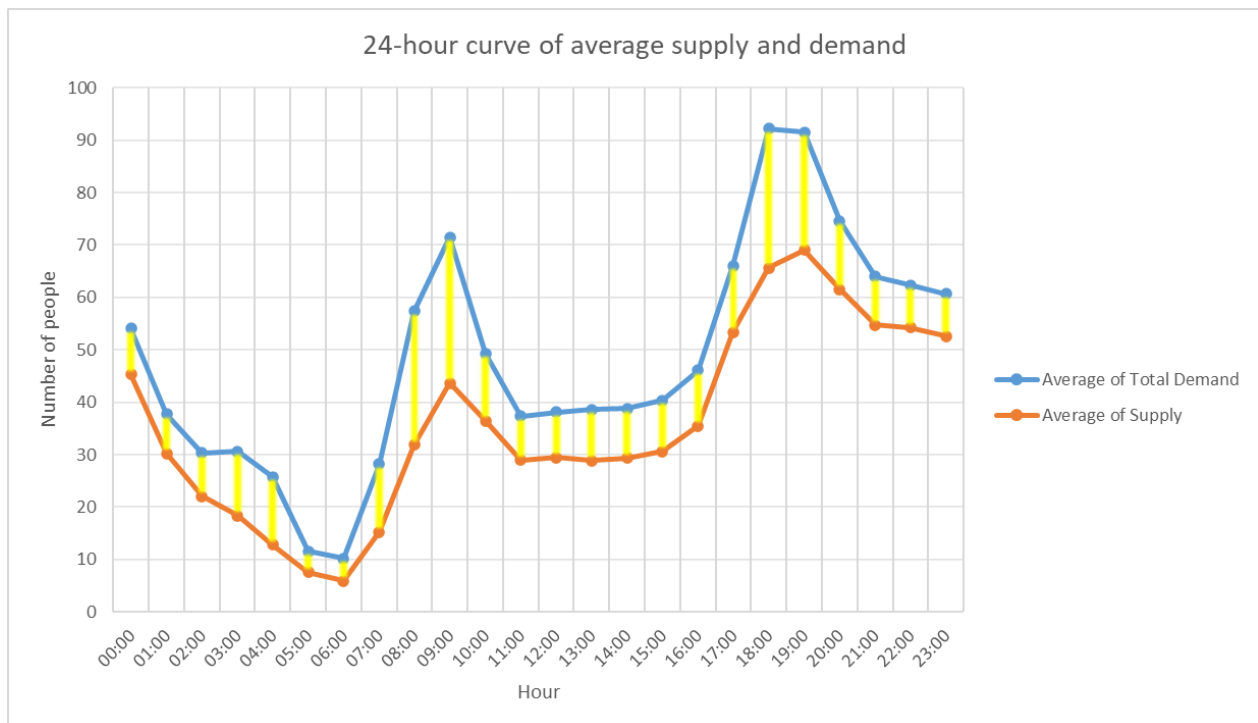
Coverage Ratio	Week 1 of Dec			Week 2 of Dec						Week 3 of Dec						Week 4 of Dec		
	Thursday(1)	Friday(2)	Saturday(3)	Sunday(4)	Monday(5)	Tuesday(6)	Wednesday(7)	Thursday(8)	Friday(9)	Saturday(10)	Sunday(11)	Monday(12)	Tuesday(13)	Wednesday(14)	Thursday(15)	Friday(16)	Saturday(17)	Sunday(18)
00:00	84	79	100	89	71	86	94	82	81	89	88	72	60	80	68	70	69	92
01:00	94	80	90	79	75	61	100	88	89	90	95	68	59	55	81	54	58	77
02:00	84	94	100	88	78	67	72	53	76	68	77	50	88	52	56	31	60	98
03:00	56	87	95	87	80	33	100	46	59	42	73	29	67	20	41	23	45	83
04:00	62	45	92	88	43	25	50	20	20	35	39	0	100	50	38	42	34	54
05:00	50	58	89	74	50	67		60	63	57	41	0	75	60	100	67	68	73
06:00	17	40	100	78	60	33	69	29	33	67	56	17	47	75	50	60	47	83
07:00	55	57	67	83	72	54	57	55	45	75	63	38	37	56	45	37	58	80
08:00	72	91	70	45	67	68	62	63	54	52	44	41	29	46	39	48	47	100
09:00	95	92	90	83	67	63	70	79	54	65	61	52	45	51	57	45	40	42
10:00	71	95	86	90	79	67	80	90	62	90	58	61	70	73	64	58	33	68
11:00	88	100	70	85	89	76	92	87	78	83	45	88	79	93	70	62	45	69
12:00	80	90	86	86	87	77	91	82	86	67	48	87	67	76	64	54	72	80
13:00	88	75	85	89	81	78	82	86	65	79	62	76	69	95	51	27	67	71
14:00	87	90	84	80	83	77	82	87	66	76	61	86	74	68	53	47	69	73
15:00	88	86	96	97	76	79	89	89	74	83	78	77	67	79	58	31	74	84
16:00	90	94	81	92	82	93	87	90	56	81	71	79	66	77	70	39	86	75
17:00	85	94	96	95	93	96	91	65	72	93	65	84	63	61	56	81	72	87
18:00	85	97	92	85	75	59	58	52	60	81	74	85	57	41	37	73	76	83
19:00	85	92	91	89	75	83	63	70	80	78	70	81	73	51	44	52	72	87
20:00	92	92	83	94	88	90	87	88	69	85	86	98	95	79	61	66	64	79
21:00	89	96	91	85	85	88	91	75	61	100	77	66	90	85	86	80	79	89
22:00	88	93	97	85	90	91	82	87	68	91	83	77	83	84	98	84	94	69
23:00	84	86	97	75	87	88	78	88	95	87	51	83	83	85	72	96	89	78

To solve this question, first “Total Demand” for each date has been calculated as below:

Then, I made a pivot table which shows the “Total Demand” and “People saw +1 car” for corresponding hours (in rows), and weeks and days (in columns). The very last two columns in the pivot table show the average of Total Demand and average of people saw +1 car for specific hours(in a period of 7 weeks).The results has been presented in the picture below:

Hours	Total Average of Total Demand	Total Average of People saw +1 cars (unique)
00:00	54	45
01:00	38	30
02:00	30	22
03:00	31	18
04:00	26	13
05:00	12	8
06:00	10	6
07:00	28	15
08:00	57	32
09:00	72	44
10:00	49	36
11:00	37	29
12:00	38	29
13:00	39	29
14:00	39	29
15:00	40	31
16:00	46	36
17:00	66	53
18:00	92	66
19:00	92	69
20:00	75	62
21:00	64	55
22:00	62	54
23:00	61	53
Grand Total	48	36.0

To illustrate match/mismatch of demand and supply, a cure has been created as below:

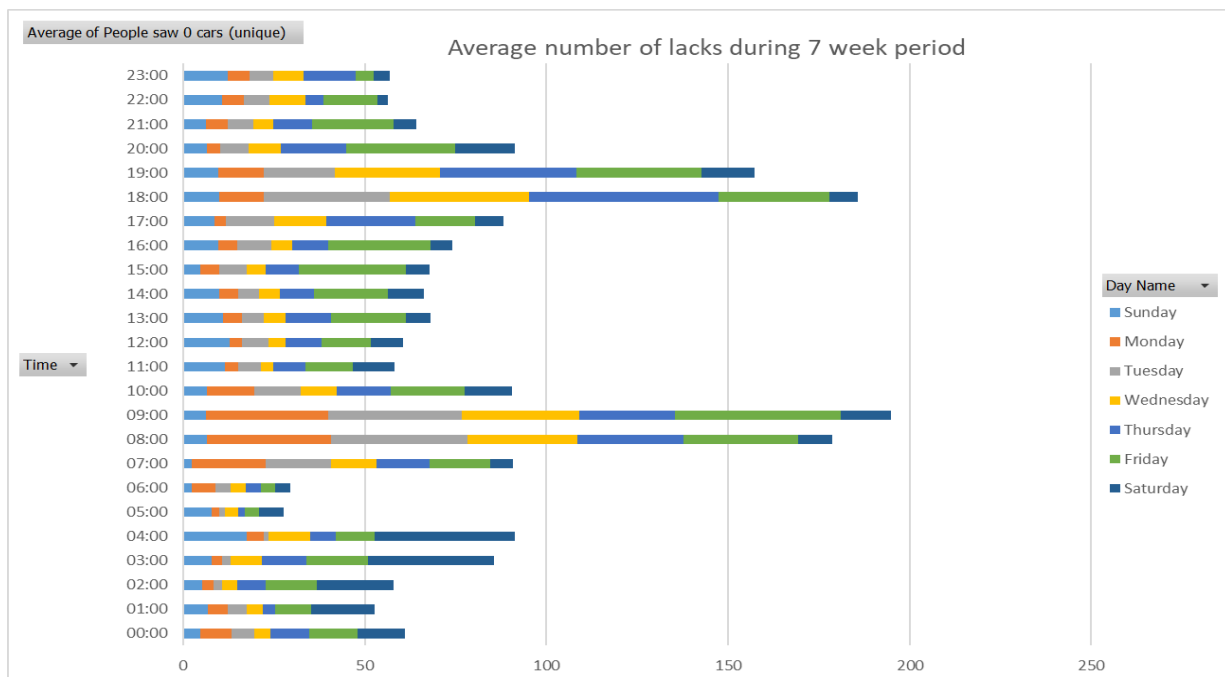
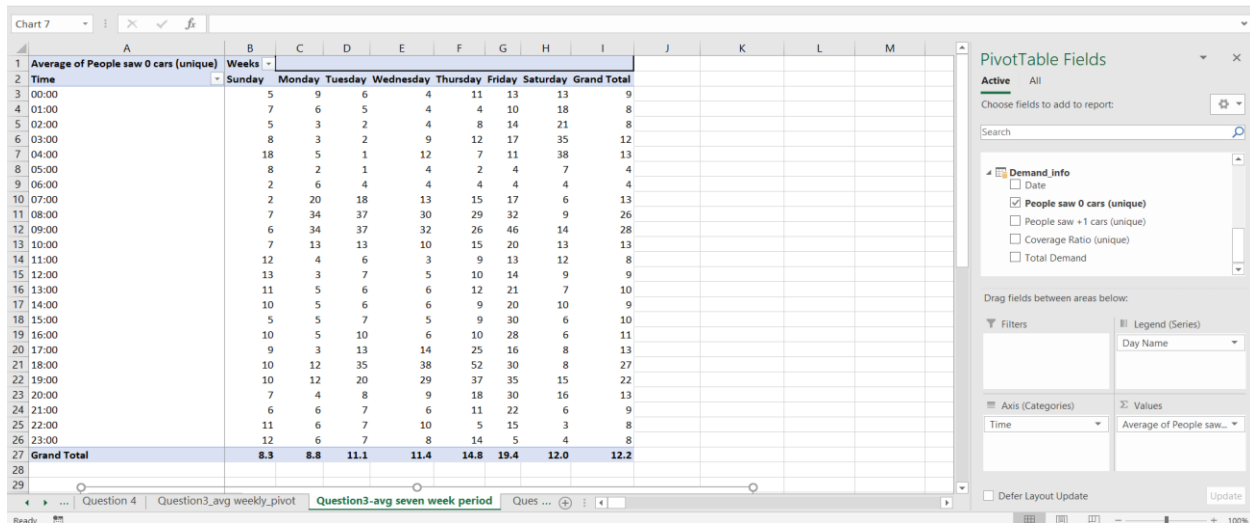


Question 3: Visualization of hours where we lack supply during a weekly period.

This one we can send to drivers to show when to online for extra hours.

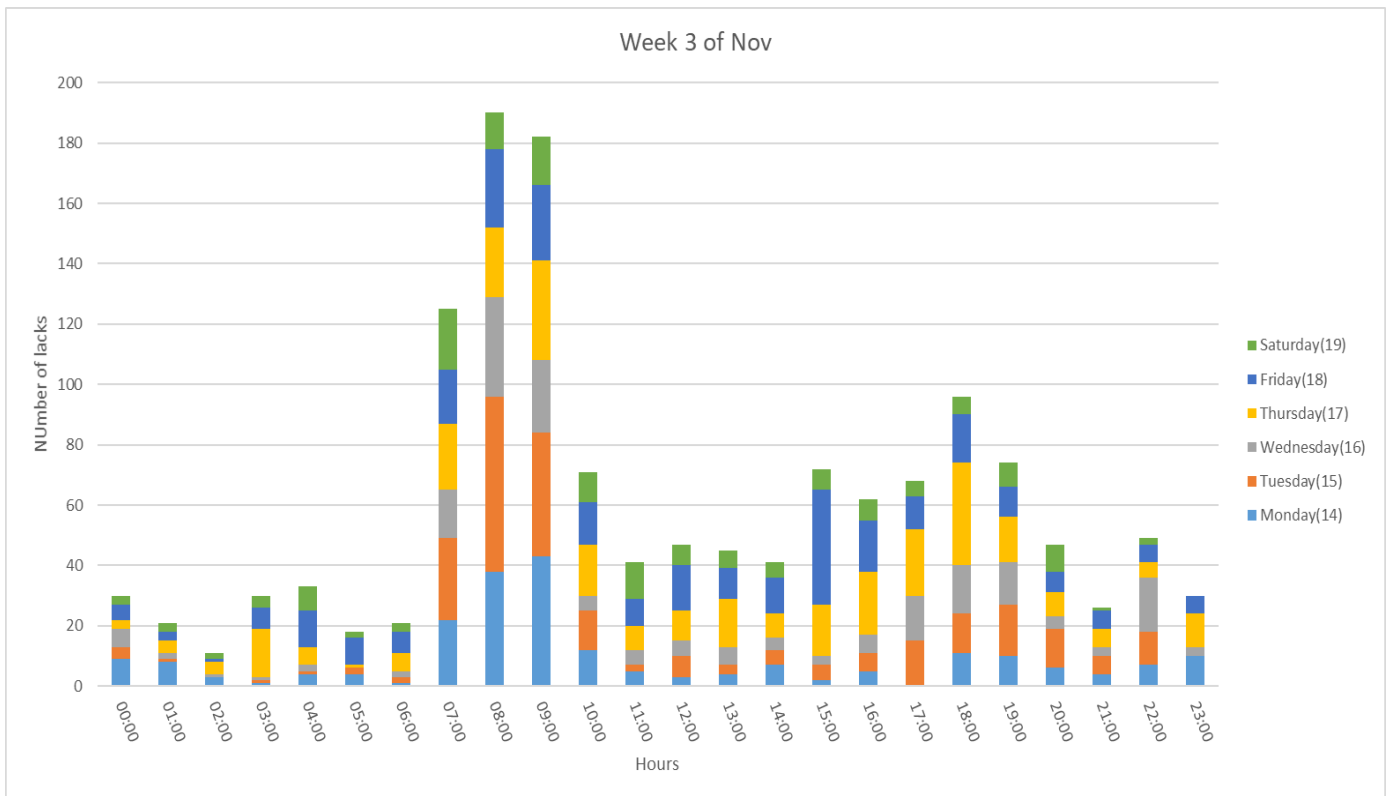
To solve this question, I came up with two points of view:

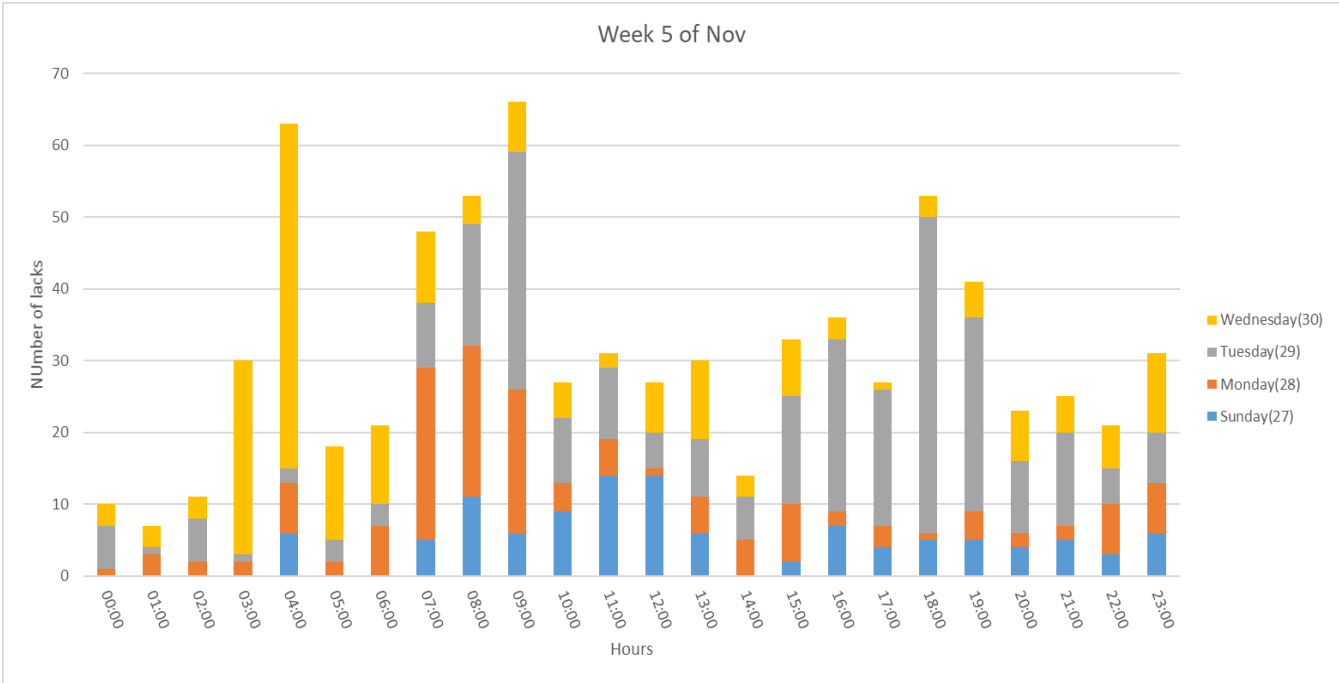
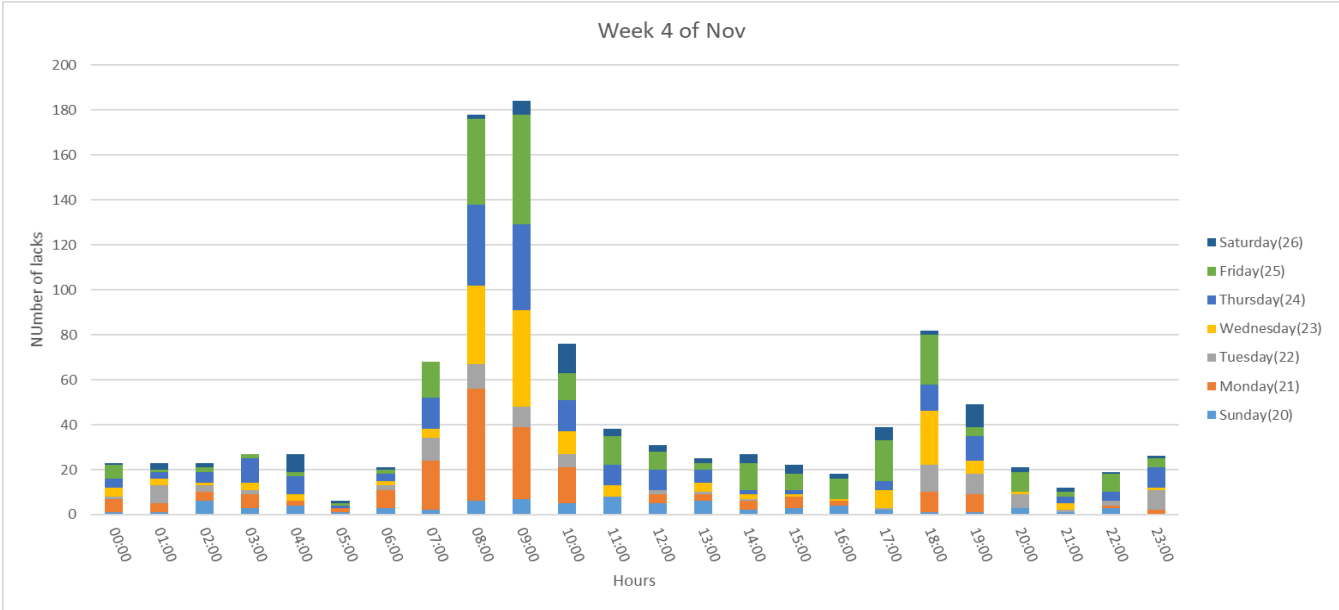
1. Creating one bar chart that has “hours” in y-axis and “number of people saw 0 car” in x-axis. The value of bars shows the average number of people saw 0 car during whole 7 weeks. Bars separated by colors which show the week days. In order to do this, I made a pivot table with hours in rows, and day name in columns, the value of each cell shows the average number of people saw 0 cars corresponding to specific hours and week days.

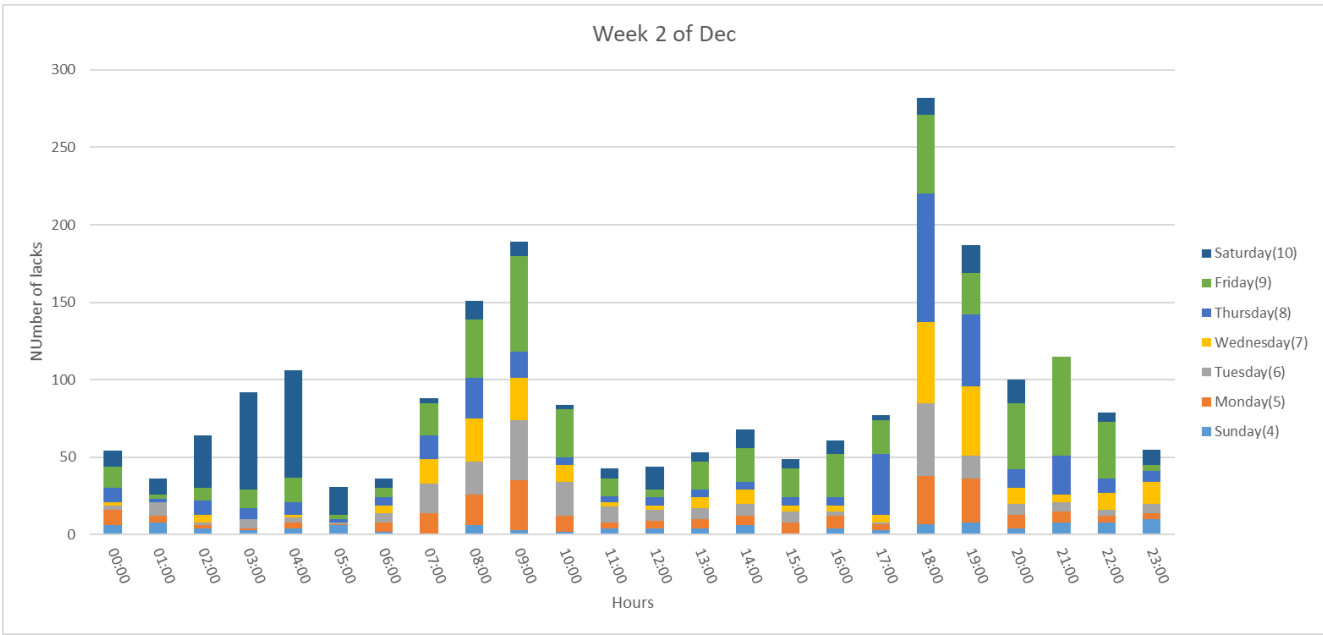
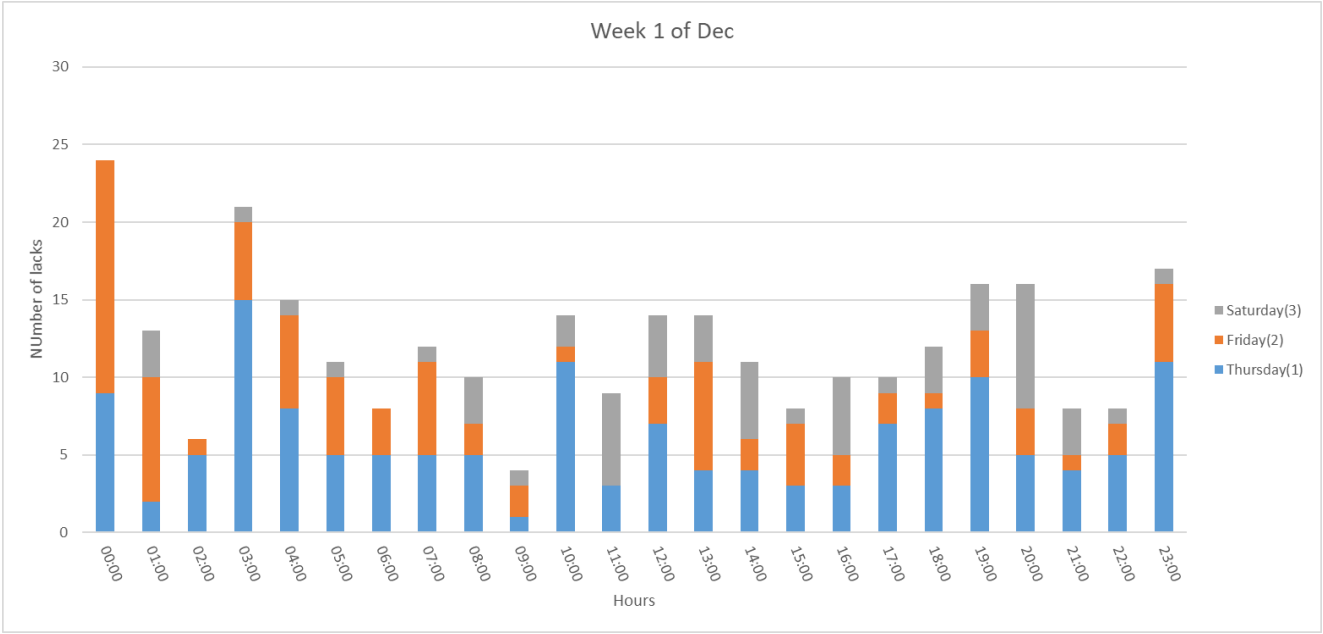


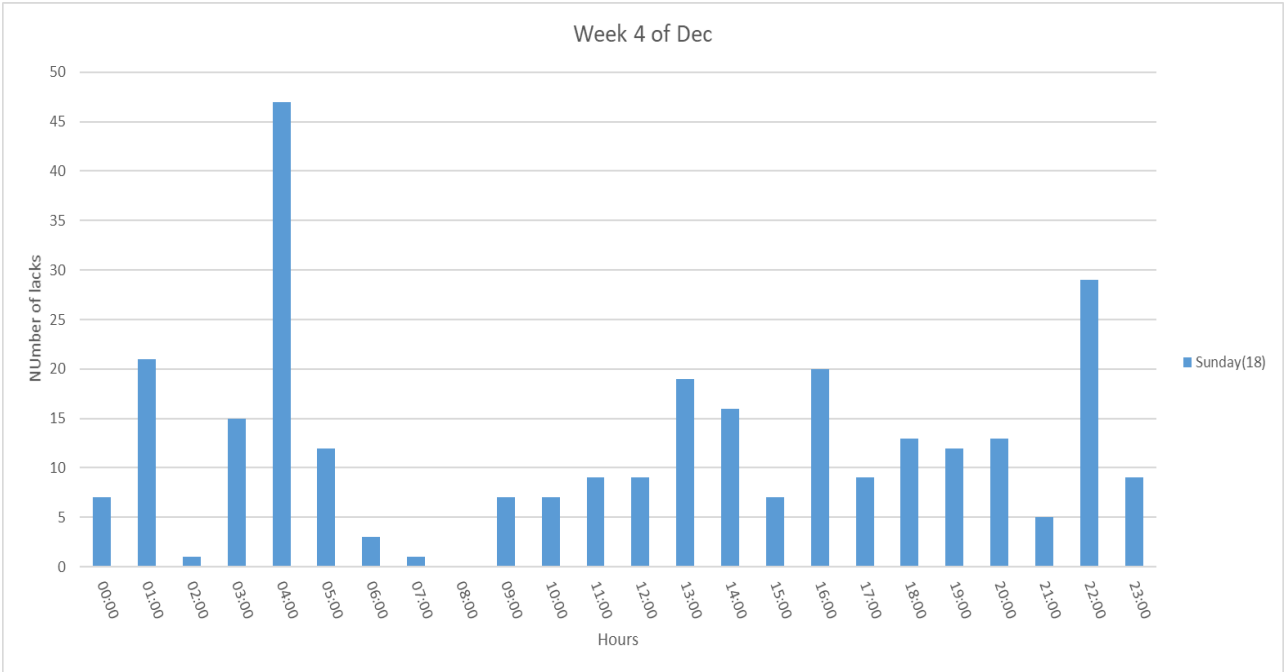
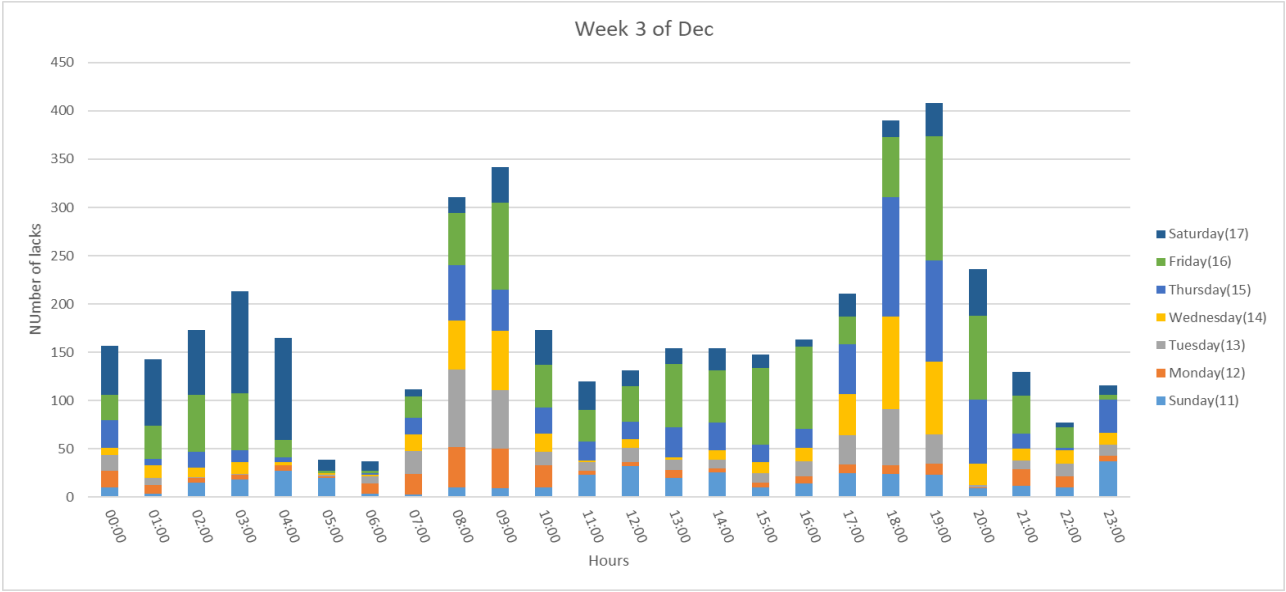
2. Creating 7 bar charts for each week which illustrate the number of people saw 0 cars in corresponding hours, week and week days.

Average of People saw 0 cars (unique)									
Weeks									
Week 3 of Nov									
Time	Monday(14)	Tuesday(15)	Wednesday(16)	Thursday(17)	Friday(18)	Saturday(19)	Sunday(20)	Monday(21)	Tuesday
00:00	9	4	6	3	5	3	1	6	
01:00	8	1	2	4	3	3	1	4	
02:00	3	0	1	4	1	2	6	4	
03:00	1	1	1	16	7	4	3	6	
04:00	4	1	2	6	12	8	4	2	
05:00	4	2	0	1	9	2	1	2	
06:00	1	2	2	6	7	3	3	8	
07:00	22	27	16	22	18	20	2	22	
08:00	38	58	33	23	26	12	6	50	
09:00	43	41	24	33	25	16	7	32	
10:00	12	13	5	17	14	10	5	16	
11:00	5	2	5	8	9	12	8	0	
12:00	3	7	5	10	15	7	5	4	
13:00	4	3	6	16	10	6	6	3	
14:00	7	5	4	8	12	5	2	4	
15:00	2	5	3	17	38	7	3	5	
16:00	5	6	6	21	17	7	4	2	
17:00	0	15	15	22	11	5	2	0	
18:00	11	13	16	34	16	6	1	9	
19:00	10	17	14	15	10	8	1	8	
20:00	6	13	4	8	7	9	3	0	
21:00	4	6	3	6	6	1	1	0	
22:00	7	11	18	5	6	2	3	1	
23:00	10	0	3	11	6	0	0	2	
Grand Total	9.1	10.5	8.1	13.2	12.1	6.6	3.3	7.9	









Question 4: Estimate number of hours needed to ensure we have a high Coverage Ratio during most peak hours.

In order to solve this task, I made a pivot table that has hours in rows, and weeks and week days in columns. The values of the last three columns of pivot table show the average of total demand, average of people saw +1 cars and average of online hours during 7 weeks in corresponding with specific hours.

	DC	DD	DE	DF	DG	DH	DI	DJ	DK
Time	Total Average of Total Demand	Total Average of People saw +1 cars (unique)	Total Average of Online (h)						
00:00	54	45	25						
01:00	38	30	20						
02:00	30	22	16						
03:00	31	18	13						
04:00	26	13	10						
05:00	12	8	10						
06:00	10	6	9						
07:00	28	15	12						
08:00	57	32	17						
09:00	72	44	22						
10:00	49	36	26						
11:00	37	29	24						
12:00	38	29	22						
13:00	39	29	21						
14:00	39	29	22						
15:00	40	31	23						
16:00	46	36	26						
17:00	66	53	30						
18:00	92	66	33						
19:00	92	69	37						
20:00	75	62	39						
21:00	64	55	36						
22:00	62	54	34						
23:00	61	53	29						
Grand Total	48.28247914	36.04171633	23.19761905						

Then I calculated average coverage ratio by below formula:

average coverage ratio= (avg people saw +1 car/ avg total demand) *100

*Total demand=People saw 0 cars+ people saw +1 cars

E42					=100*C42/B42
Hours	Average of Total Demand	Total Average of People saw +1 cars (unique)	Total Average of Online (h)	Average coverage ratio	
00:00	54	45	25	84	
01:00	38	30	20	80	
02:00	30	22	16	73	
03:00	31	18	13	60	
04:00	26	13	10	50	
05:00	12	8	10	66	
06:00	10	6	9	59	
07:00	28	15	12	54	
08:00	57	32	17	56	
09:00	72	44	22	61	
10:00	49	36	26	74	
11:00	37	29	24	78	
12:00	38	29	22	77	
13:00	39	29	21	75	
14:00	39	29	22	76	
15:00	40	31	23	76	
16:00	46	36	26	77	
17:00	66	53	30	81	
18:00	92	66	33	71	
19:00	92	69	37	75	
20:00	75	62	39	83	
21:00	64	55	36	86	
22:00	62	54	34	87	
23:00	61	53	29	87	

Because I needed a specific number for determining high coverage ratio, I used quartiles method. I chose 75th percentile corresponding to 78 % as a high coverage:

*E42:E65 refers to average coverage ratio obtained from above formula.

Quartiles	Results for avg coverage ratio	Notes
0	=QUARTILE(E42:E65,[@Quartiles])	Min value
1	63	25th percentile
2	75	50th percentile
3	78	75th percentile
4	87	Max value

To select the peak hours, I needed a specific number as a high demand. I used quartiles method and chose 75th percentile equals to 64 as below:

*B42:B65 refers to avg total demand.

Quartiles	Results for avg total demands	Notes
0	=QUARTILE(B42:B65,[@Quartiles])	Min value
1	34	25th percentile
2	43	50th percentile
3	64	75th percentile
4	92	Max value

Then I applied a rule to choose all the demands above 64 and their corresponding hours. So, picture below shows the peak hours.

Hours	Average of Total Demand	Total Average of People saw +1 cars (unique)	Total Average of Online (h)	Average coverage ratio
00:00	54	45	25	84
01:00	38			
02:00	30			
03:00	31			
04:00	26			
05:00	12			
06:00	10			
07:00	28			
08:00	57			
09:00	72			
10:00	49			
11:00	37			
12:00	38			
13:00	39			
14:00	39			
15:00	40			
16:00	46			
17:00	66			
18:00	92			
19:00	92			
20:00	75	62	39	83
21:00	64	55	36	86
22:00	62	54	34	87
23:00	61	53	29	87

Conditional Formatting Rules Manager

Show formatting rules for: This Table

New Rule...

Edit Rule...

Delete Rule

Rule (applied in order shown)	Format	Applies to
Cell Value > 64	AaBbCcYyZz	=B\$42:B\$65

OK

Close

- a) Assume that Finished Rides have an average value of €10 (80% goes to driver, 20% is our revenue).
- b) Assume the same level of demand with increased supply, base it on RPH over 3-hour periods, but with increased supply.
- c) Assume that with extra hours we will capture “missed coverage” or people attributed to “People saw 0 cars” in demand data.

To solve this task, first I created a new column in Data sheet in my data model to have 3-hour periods, as below:

fx =if('Date'[Time]="00:00" 'Date'[Time]="01:00" 'Date'[Time]="02:00" , "00:00-02:00",if('Date'[Time]="03:00" 'Date'[Time]="04:00" 'Date'[Time]="05:00" , "03:00-05:00",if('Date'[Time]="06:00" 'Date'[Time]="07:00" 'Date'[Time]="08:00" , "06:00-08:00",if('Date'[Time]="09:00" 'Date'[Time]="10:00" 'Date'[Time]="11:00" , "09:00-11:00",if('Date'[Time]="12:00" 'Date'[Time]="13:00" 'Date'[Time]="14:00" , "12:00-14:00",if('Date'[Time]="15:00" 'Date'[Time]="16:00" 'Date'[Time]="17:00" , "15:00-17:00",if('Date'[Time]="18:00" 'Date'[Time]="19:00" 'Date'[Time]="20:00" , "18:00-20:00",if('Date'[Time]="21:00" 'Date'[Time]="22:00" 'Date'[Time]="23:00" , "21:00-23:00"))))))													
Date_extracted	Year	Month	Day	Day Name	Hour	Week of Month	Week Number	Day name(date)	Time	3 hour period	Add Column		
12/18/2016 12:00:00	2016	12	18	Sunday	11:00 PM	4	Week 4 of Dec	Sunday(18)	23:00	21:00-23:00			
12/18/2016 12:00:00	2016	12	18	Sunday	10:00 PM	4	Week 4 of Dec	Sunday(18)	22:00	21:00-23:00			
12/18/2016 12:00:00	2016	12	18	Sunday	9:00 PM	4	Week 4 of Dec	Sunday(18)	21:00	21:00-23:00			
12/18/2016 12:00:00	2016	12	18	Sunday	8:00 PM	4	Week 4 of Dec	Sunday(18)	20:00	18:00-20:00			
12/18/2016 12:00:00	2016	12	18	Sunday	7:00 PM	4	Week 4 of Dec	Sunday(18)	19:00	18:00-20:00			
12/18/2016 12:00:00	2016	12	18	Sunday	6:00 PM	4	Week 4 of Dec	Sunday(18)	18:00	18:00-20:00			
12/18/2016 12:00:00	2016	12	18	Sunday	5:00 PM	4	Week 4 of Dec	Sunday(18)	17:00	15:00-17:00			
12/18/2016 12:00:00	2016	12	18	Sunday	4:00 PM	4	Week 4 of Dec	Sunday(18)	16:00	15:00-17:00			
12/18/2016 12:00:00	2016	12	18	Sunday	3:00 PM	4	Week 4 of Dec	Sunday(18)	15:00	15:00-17:00			
12/18/2016 12:00:00	2016	12	18	Sunday	2:00 PM	4	Week 4 of Dec	Sunday(18)	14:00	12:00-14:00			
12/18/2016 12:00:00	2016	12	18	Sunday	1:00 PM	4	Week 4 of Dec	Sunday(18)	13:00	12:00-14:00			
12/18/2016 12:00:00	2016	12	18	Sunday	12:00 PM	4	Week 4 of Dec	Sunday(18)	12:00	12:00-14:00			
12/18/2016 12:00:00	2016	12	18	Sunday	11:00 AM	4	Week 4 of Dec	Sunday(18)	11:00	09:00-11:00			
12/18/2016 12:00:00	2016	12	18	Sunday	10:00 AM	4	Week 4 of Dec	Sunday(18)	10:00	09:00-11:00			
12/18/2016 12:00:00	2016	12	18	Sunday	9:00 AM	4	Week 4 of Dec	Sunday(18)	09:00	09:00-11:00			
12/18/2016 12:00:00	2016	12	18	Sunday	8:00 AM	4	Week 4 of Dec	Sunday(18)	08:00	06:00-08:00			
12/18/2016 12:00:00	2016	12	18	Sunday	7:00 AM	4	Week 4 of Dec	Sunday(18)	07:00	06:00-08:00			
12/18/2016 12:00:00	2016	12	18	Sunday	6:00 AM	4	Week 4 of Dec	Sunday(18)	06:00	06:00-08:00			

Then I merged 3 sheets date,Supply_info and Demand_info by , and added calculated columns as below:

Total Demand:

= Table.AddColumn("#Expanded Supply_info", "Demand", each [#"Demand_info.People saw 0 cars (unique)"]+[#"Demand_info.People saw +1 cars (unique)"])													
nd_info.People saw +1 cars (unique)	Demand_info.Coverage Ratio (unique)	Supply_info.Online (h)	Supply_info.Bids per online hour	Supply_info.Finished Bids	ABC	123							
32						12							
64						28							
39						16							
48						15							
77						36							
62						32							
61						26							
60						24							
37						12							
43						14							
46						22							
35						10							
20						5							
15						2							
5						1							
10						2							
4						null							
15						5							
33						11							
55						30							
72						27							
64						25							
69						29							

Needed finished rides for having 100% coverage ratio:

The screenshot shows the 'Custom Column' dialog box in Power Query. The 'New column name' is 'Needed finished rides for having 100% coverage ratio'. The 'Custom column formula' is
$$= [Total Demand] * [Supply_info.Finished Rides] / [#Demand_info.People saw +1 cars (unique)]$$
 The 'Available columns' list includes Date, Day Name, Hour, Demand_info.People saw 0 ca..., Demand_info.People saw +1..., Demand_info.Coverage Ratio..., Supply_info.Online (h), and Supply_info.Rides per hour. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list.

*I haven't used "rides per hour" in calculations directly, because it is obtained by finished rides divide by online hour, I calculated Needed finished rides for having 100% coverage by using mathematical constant proportionality.

Another way to calculate finished rides for having 100% coverage, would be, first calculating Needed online hours for having 100% coverage ratio, then multiply it by RPH. It gives us approximate similar numbers.

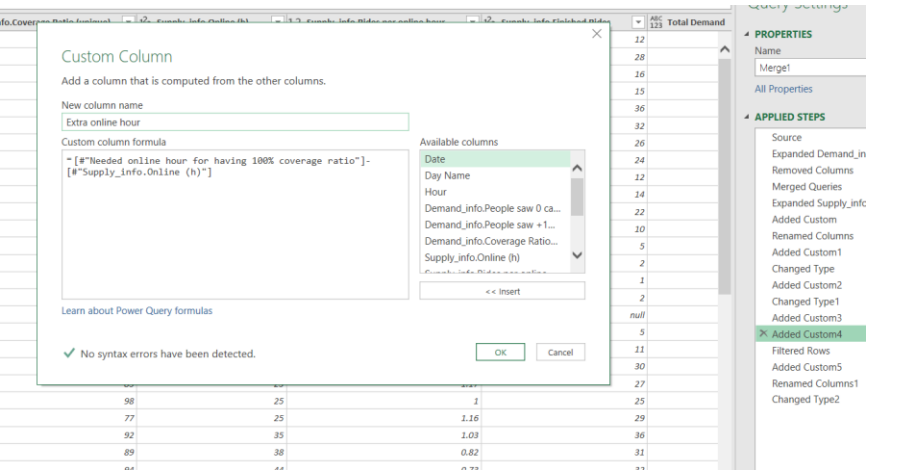
Extra finished rides:

The screenshot shows the 'Custom Column' dialog box in Power Query. The 'New column name' is 'Extra finished rides'. The 'Custom column formula' is
$$= ([\text{"Needed finished rides for having 100% coverage ratio"}] - [Supply_info.Finished Rides])$$
 The 'Available columns' list is the same as in the first screenshot. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list.

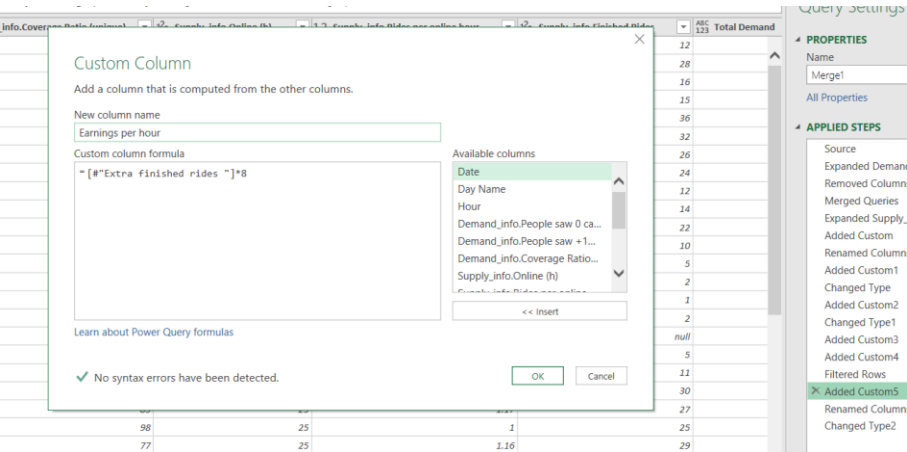
Needed online hours for having 100% coverage ratio:

The screenshot shows the 'Custom Column' dialog box in Power Query. The 'New column name' is 'Needed online hour for having 100% coverage ratio'. The 'Custom column formula' is
$$= [Total Demand] * [#Supply_info.Online (h)] / [#Demand_info.People saw +1 cars (unique)]$$
 The 'Available columns' list is the same as in the first screenshot. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list.

Extra online hour:



Earnings per hour:



Then I created a pivot table as below:

*Values in each cell refers to all Sundays, Mondays, etc. regardless which week it is.

Row Labels	Average of Total Demand	Average of Earnings per hour (Euro)	STD.P Earnings per hour	Average of Extra online hour	STD.P Extra online hour	Average of Extra finished
Sunday						
00:00-02:00	71	18	14	2	2	
01:00	65	22	26	4	3	
02:00	49	21	27	3	3	
03:00-05:00						
03:00	49	29	27	3	2	
04:00	49	75	74	8	6	
05:00	26	24	27	4	3	
06:00-08:00						
06:00	12	11	15	3	2	
07:00	7	16	17	6	6	
08:00	17	14	14	6	4	
09:00-11:00						
09:00	20	8	0	5	2	
10:00	23	13	11	4	1	
11:00	34	27	19	6	3	
12:00-14:00						
12:00	44	30	33	6	3	
13:00	45	30	25	5	2	
14:00	40	30	40	5	4	
15:00-17:00						
15:00	38	11	8	3	2	
16:00	49	34	19	6	3	
17:00	55	30	30	4	3	
18:00-20:00						
18:00	60	34	30	5	3	
19:00	62	32	25	5	2	

To calculate confidence levels for hourly earnings and extra online hours, we need to calculate average of hourly earnings, average of extra online hour, standard deviation of hourly earnings and extra online hour :

Measure	PivotTable Fields
Table Name: Merge1	Active
Measure Name: STD.P Earnings per hour	Choose fields to add to report:
Value Description:	Search
Formula: $\text{=STDEV.P(Merge1[Earnings per hour (Euro)])}$	<input checked="" type="checkbox"/> Extra finished rides <input checked="" type="checkbox"/> Extra online hour <input checked="" type="checkbox"/> Earnings per hour (Euro) <input checked="" type="checkbox"/> STD.P Earnings per hour <input checked="" type="checkbox"/> STD.P Extra online hour <input checked="" type="checkbox"/> STD.P Extra finished rides
Category: General	Drag fields between areas below:
OK	Filters
Cancel	Columns
	Rows
	Values

The I applied below rule to determine 36 hours in a week with highest demand (based on average total demand):

Row Labels	Average of Total Demand	Average of Earnings per hour (Euro)	STD.P Earnings per hour	Average of Extra online hour	STD.P Extra online hour	Average of Extra finished
Sunday						
00:00-02:00						
00:00	71	18	14	2	2	
01:00	65	22	26	4	3	
02:00	49	21	27	3	3	
03:00-05:00						
03:00	49	29	27	3	2	
04:00	49					
05:00	26					
06:00-08:00						
06:00	12					
07:00	7					
08:00	17					
09:00-11:00						
09:00	20					
10:00	23					
11:00	34					
12:00-14:00						
12:00	44					
13:00	45					
14:00	40					
15:00-17:00						
15:00	38	11	8	3	2	
16:00	49	34	19	6	3	
17:00	55	30	30	4	3	
18:00-20:00						
18:00	60	34	30	5	3	
19:00	62	32	25	5	3	

Conditional Formatting Rules Manager

Show formatting rules for: This PivotTable

New Rule...

Edit Rule...

Delete Rule

Rule (applied in order shown)

Format

Applies to

Stop If True

Top 36 - All Values

AaBbCcYyZz

= \$B\$4:\$B\$6,\$B\$8:\$B\$10,\$B\$12:\$B\$14

OK

Close

Apply

The results of 5 confidence levels can be found in the picture below:

Row Labels	Average of Total Demand	Hourly earning with 75% confidence level		Extra online hour with 75% confidence level		Hourly earning with 80% confidence level		Extra online hour with 80% confidence level		Hourly earning with 85% confidence level		Extra online hour with 85% confidence level		Hourly earning with 95% confidence level		Extra online hour with 95% confidence level		Hourly earning with 99% confidence level		Extra online hour with 100% confidence level	
		Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit
Sunday																					
00:00-02:00																					
00:00	71	2	33	1	4	0	35	0	4	-2	37	0	5	-9	45	-1	6	-43	78	-5	10
01:00	65	-8	53	0	8	-12	56	-1	8	-16	61	-1	9	-30	74	-3	11	-95	139	-12	19
02:00	49	-10	51	0	6	-13	55	-1	7	-17	59	-1	7	-31	73	-2	8	-97	138	-9	15
03:00-05:00																					
03:00	49	-2	60	1	6	-6	63	0	6	-10	68	0	7	-24	82	-1	8	-91	148	-7	14
04:00	49	-10	160	1	15	-20	170	1	15	-31	182	0	16	-70	220	-3	19	-251	402	-17	33
05:00	26	-7	55	1	8	-10	58	0	8	-15	63	0	9	-28	76	-2	11	-94	142	-9	18
06:00-08:00																					
06:00	12	-6	28	1	5	-8	30	0	6	-10	33	0	6	-18	40	-1	7	-54	77	-6	12
07:00	7	-4	36	-1	13	-6	38	-1	13	-9	41	-2	14	-18	50	-5	17	-60	92	-20	32
08:00	17	-1	30	1	11	-3	32	1	12	-5	34	0	12	-13	41	-2	15	-46	75	-13	25
09:00-11:00																					
09:00	20	8	8	2	8	8	8	2	8	8	8	2	9	8	8	0	10	8	8	-6	16
10:00	23	0	25	3	6	-1	27	3	6	-3	28	3	6	-8	34	2	6	-35	61	-1	9
11:00	34	5	49	3	10	2	52	3	10	-1	55	2	10	-11	65	1	12	-58	113	-6	19
12:00-14:00																					
12:00	44	-8	69	2	10	-12	73	1	10	-18	78	1	11	-35	96	-1	13	-117	178	-9	21
13:00	45	1	60	3	7	-2	63	3	7	-6	67	2	8	-20	80	1	9	-82	143	-3	13
14:00	40	-15	76	1	10	-20	81	0	10	-27	87	0	11	-47	108	-2	13	-145	206	-12	22
15:00-17:00																					
15:00	38	2	21	1	5	1	22	1	5	-1	23	1	5	-5	27	0	6	-25	47	-4	10
16:00	49	12	56	3	9	9	58	2	9	6	61	2	9	-4	71	1	11	-51	118	-6	17
17:00	55	-4	65	1	8	-8	69	0	9	-13	74	0	9	-29	89	-2	11	-103	163	-11	19
18:00-20:00																					
18:00	60	-1	68	2	8	-5	72	2	9	-10	77	1	9	-25	93	0	11	-99	167	-7	17
19:00	62	3	61	2	8	0	64	1	9	-4	68	1	9	-18	82	-1	11	-80	144	-8	18
20:00	56	4	28	2	7	3	29	2	7	1	31	1	7	-4	36	0	8	-29	61	-5	13
21:00-23:00																					
21:00	46	4	41	2	5	1	43	2	5	-1	46	1	5	-10	54	1	6	-50	94	-3	9
22:00	59	-8	75	1	7	-13	80	1	7	-19	86	1	8	-37	105	-1	9	-127	194	-7	16
23:00	48	-22	112	0	11	-30	119	-1	12	-39	129	-1	13	-69	159	-4	16	-213	302	-16	28
Monday																					
00:00-02:00																					
00:00	33	4	41	2	7	1	43	2	7	-1	46	1	8	-10	54	0	9	-50	94	-5	15
01:00	18	6	22	2	7	5	23	2	7	4	24	2	8	1	27	4	9	-15	43	-5	15
02:00	11	6	13	2	5	5	14	1	5	5	14	1	5	3	16	0	6	-5	24	-3	10
03:00-05:00																					
03:00	6	-1	9	2	7	-1	9	1	7	-2	10	1	8	-4	12	0	9	-14	22	-6	15
04:00	7	8	8	-7	38	8	8	-10	40	8	8	-13	43	8	8	-23	54	8	8	-71	102
05:00	4	8	24	3	10	8	24	2	11	7	25	2	11	3	29	0	13	-13	45	-8	21
06:00-08:00																					
06:00	12	2	40	1	16	0	42	0	16	-3	45	-1	17	-11	53	-4	21	-52	94	-20	37
07:00	42	47	116	7	16	44	120	6	16	39	124	6	17	23	140	4	19	-49	213	-6	29
08:00	72	79	215	11	21	71	223	11	22	62	233	10	22	31	264	8	25	-115	409	-3	35
09:00-11:00																					
09:00	84	90	182	13	19	85	187	12	19	78	194	12	19	57	215	10	21	-41	313	4	27
10:00	57	14	44	4	12	12	45	4	13	10	48	3	13	3	54	1	15	-29	86	-7	24
11:00	30	2	14	1	7	2	14	1	8	1	15	0	8	-2	18	-1	10	-14	30	-8	16
12:00-14:00																					
12:00	30	3	10	2	4	2	11	2	4	2	11	1	5	0	13	1	5	-8	21	-2	8
13:00	29	7	16	4	6	6	16	4	6	6	17	3	6	4	19	3	6	-6	29	1	8
14:00	29	6	13	2	7	5	14	2	7	5	14	2	7	3	16	1	8	-5	24	-4	13
15:00-17:00																					
15:00	28	5	20	3	8	5	21	3	9	4	22	3	9	0	25	1	10	-15	41	-4	16
16:00	36	6	26	2	7	5	27	2	6	3	29	1	7	-1	33	0	8	-23	55	-4	12
17:00	46	-3	25	-1	5	-4	27	-1	6	-6	28	-1	6	-12	35	-3	7	-42	64	-9	14
18:00-20:00																					
18:00	77	2	85	2	10	-3	89	1	10	-9	95	0	11	-27	114	-1	13	-116	202	-10	21
19:00	73	8	75	3	11	-4	79	3	11	-11	84	2	12	-16	99	1	13	-88	171	-8	22
20:00	48	-1	24	0	5	-3	25	0	5	-4	27	0	6	-10	32	-1	7	-37	59	-6	12
21:00-23:00																					
21:00	42	-3	48	0	9	-6	51	-1	10	-10	54	-1	10	-21	66	-3	13	-76	121	-13	23
22:00	44	3	39	1	7	1	41	1	7	-2	43	1	7	-10	52	0	8	-48	90	-6	14
23:00	34	0	38	2	7	-2	40	1	7	-5	43	1	7	-13	51	0	8	-54	92	-5	14
Tuesday																					
00:00-02:00																					
00:00	28	-5	47	1	8	-8	50	0	9	-11	53	0	9	-23	65	-2	11	-78	120	-10	20
01:00	14	0	13	3	7	-1	14	3	7	-2	15	2	8	-5	18	1	9	-20	33	-3	13
02:00	7	-1	9	-3	15	-1	9	-4	16	-2	10	-6	18	-4	12	-10	22	-14	22	-30	42
03:00-05:00																					
03:00	5	32	32	3	12	32	32	2	12	32	32	1	13	32	32	-1	15	32	32	-11	25
04:00	3	8	8	-1	15	8	8	-2	16	8	8	-3	17	8	8	-6	20	8	8	-23	37
05:00	3	8	8	-2	15	8	8	-3	16	8	8	-4	18	8	8	-8	21	8	8	-26	40
06:00-08:00																					
06:00	10	3	22	3	11	2	23	2	12	1	25	2	12	-3	29	0	14	-23	49	-10	24
07:00	37	33	120	8	17	28	125	8	18	22	131	7	18	3	151	5	20	-90	243	-5	30
08:00	79	23	277	6	28	9	292	4	30	-9	309	3	31	-66	367	-2	36	-337	638	-26	60
09:00-11:00																					
09:00	93	61	231	10	23	51	240	9	24	39	252	9	25	1	290	6	28	-181	472	-8	42
10:00	53	14	63	6	12	5	65	5	13	8	69	5	13	-3	80	3	15	-55	132	-4	22
11:00	36	4	31	1	8	3	33	1	9	1	35	0	9	-5	41	-1	11	-34	70	-9	19
12:00-14:00																					
12:00	34	6	26	3	7	5	27	3	7	3	29	2	8	-1	33	1	9	-23	55	-3	13
13:00	34	4	31	2	7	3	33	2	7	1											

Row Labels	Average of Total Demand	Hourly earning with 75% confidence level		Extra online hour with 75% confidence level		Hourly earning with 80% confidence level		Extra online hour with 80% confidence level		Hourly earning with 85% confidence level		Extra online hour with 85% confidence level		Hourly earning with 95% confidence level		Extra online hour with 95% confidence level		Hourly earning with 99% confidence level		Extra online hour with 100% confidence level	
		Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit
Wednesday																					
00:00-02:00																					
00:00	43	7	16	1	4	6	16	1	5	6	17	1	5	4	19	0	6	-6	29	-4	30
01:00	26	-8	33	0	-10	36	0	-13	39	9	-13	39	-1	9	-22	-3	11	-67	92	-12	20
02:00	14	0	25	2	-4	-1	27	2	-8	4	-3	28	2	5	-8	34	2	5	61	0	7
03:00-05:00																					
03:00	17	-21	79	-1	13	-27	84	-1	13	-34	91	-2	14	-56	114	-5	17	-163	221	-19	31
04:00	19	-26	170	3	19	-37	181	-2	20	-50	194	1	21	-94	238	-2	24	-303	447	-19	41
05:00	11	24	24	-1	7	24	24	-2	8	24	24	-2	8	24	24	-4	10	24	24	-12	18
06:00-08:00																					
06:00	12	6	15	2	7	6	16	2	7	5	16	2	7	3	18	1	8	-6	27	-4	13
07:00	32	23	60	6	13	21	60	5	13	18	65	5	13	10	74	4	15	-30	114	-3	22
08:00	72	39	172	7	23	32	179	6	23	24	188	23	25	-7	218	2	28	-149	360	-15	45
09:00-11:00																					
09:00	49	33	207	9	21	23	217	8	22	11	229	7	23	-28	268	5	25	-214	454	-9	39
10:00	49	16	45	5	13	14	47	4	13	12	49	4	14	-4	55	2	16	-26	87	-7	25
11:00	30	2	14	2	6	2	14	1	7	1	15	1	7	-2	18	0	8	-14	30	-5	13
12:00-14:00																					
12:00	2	2	27	1	7	1	28	1	7	-1	30	0	7	-6	35	-1	9	-32	61	-8	15
13:00	38	1	31	2	8	-1	33	2	8	-3	35	1	9	-10	42	0	10	-43	75	-7	17
14:00	32	2	21	3	6	1	22	3	6	-1	23	3	6	-5	27	2	6	-25	47	-1	9
15:00-17:00																					
15:00	36	2	24	2	7	0	25	1	7	-1	27	1	8	-6	32	0	9	-30	55	-6	14
16:00	36	0	25	2	7	-1	27	2	7	-3	28	1	8	-8	34	0	9	-35	61	-5	14
17:00	87	-15	92	0	11	-22	98	0	12	-29	106	-1	13	-53	130	-4	15	-168	245	-15	27
18:00-20:00																					
18:00	110	-11	267	0	20	-27	283	-2	22	-47	303	-4	24	-110	366	-10	40	-407	663	-42	72
19:00	101	-20	247	1	24	-36	263	-1	25	-54	281	-2	27	-115	342	-7	32	-401	628	-32	56
20:00	69	-4	55	2	9	-7	58	1	9	-11	62	1	9	-24	76	-1	11	-87	138	-8	18
21:00-23:00																					
21:00	57	0	41	2	5	-2	44	2	5	-5	47	2	5	-14	56	2	6	-59	100	-1	8
22:00	67	8	63	2	9	4	66	1	9	1	70	1	10	-12	82	-1	12	-71	141	-9	20
23:00	70	7	63	1	7	4	67	1	7	0	71	1	7	-13	83	0	8	-73	144	-6	14
Thursday																					
00:00-02:00																					
00:00	59	-8	88	2	8	-13	93	1	9	-20	100	1	9	-41	121	0	10	-143	223	-7	17
01:00	28	5	20	1	5	5	21	1	5	4	22	1	5	0	25	0	6	-15	41	-3	9
02:00	26	-1	36	4	4	-3	39	3	4	-6	41	3	7	-14	50	2	7	-54	90	-1	12
03:00-05:00																					
03:00	24	15	58	5	18	13	61	5	19	5	64	4	20	0	73	1	23	-46	119	-13	36
04:00	13	15	25	13	15	15	25	14	15	23	26	3	14	12	28	3	14	-38	58	-18	44
05:00	5	-2	7	1	7	-2	8	1	7	-3	8	0	6	-5	10	-1	7	-14	19	-5	12
06:00-08:00																					
06:00	7	1	31	6	22	0	32	5	23	-2	34	4	24	-8	41	1	27	-40	72	-16	44
07:00	31	14	95	9	33	8	100	12	33	2	106	8	32	-15	124	3	4	-103	211	-4	16
08:00	69	25	218	7	20	14	229	7	21	21	242	6	22	-42	286	3	25	-248	491	-11	39
09:00-11:00																					
09:00	81	29	202	4	21	19	212	4	22	7	223	19	23	-32	262	-1	26	-217	447	-19	44
10:00	59	12	84	5	14	8	88	5	15	3	93	4	15	-13	109	2	17	-80	186	-7	27
11:00	42	-3	54	3	9	-6	57	3	9	-10	61	3	10	-22	74	1	11	-83	134	-5	18
12:00-14:00																					
12:00	38	12	33	5	10	10	34	5	10	9	36	5	10	4	41	4	11	-19	64	-1	16
13:00	41	5	43	2	13	2	46	1	13	0	48	0	14	-9	57	-2	17	-50	98	-14	29
14:00	37	-7	45	1	10	-10	48	1	10	-13	51	0	11	-25	63	-2	13	-80	118	-11	22
15:00-17:00																					
15:00	38	7	28	2	8	0	30	2	8	4	31	1	9	-1	36	0	11	-24	59	-7	17
16:00	50	0	55	0	10	-4	58	0	10	-7	62	-1	11	-20	74	-3	13	-79	133	-12	27
17:00	84	3	138	1	16	-5	146	2	17	-14	155	1	18	-45	186	-2	21	-180	330	-16	38
18:00-20:00																					
18:00	128	-39	458	2	39	-67	487	0	41	-102	521	-3	43	-214	633	-11	52	-745	1164	-50	90
19:00	117	-43	437	1	39	-60	471	-1	41	-101	509	-2	43	-213	603	-11	50	-733	1077	-40	71
20:00	94	-40	389	1	15	-52	184	-1	16	-67	198	-4	18	-115	246	-7	21	-341	472	-25	39
21:00-23:00																					
21:00	7	-7	96	2	9	-13	102	1	10	-20	109	1	10	-43	133	-1	12	-153	243	-9	21
22:00	67	9	67	1	8	1	68	5	29	27	72	1	28	6	72	0	29	-147	52	-4	10
23:00	79	0	112	2	10	-6	118	2	11	-14	126	1	11	-39	151	-1	13	-157	269	-9	21
Friday																					
00:00-02:00																					
00:00	67	16	83	3	9	12	87	2	9	7	92	2	9	-8	107	1	11	-80	179	-6	17
01:00	39	-25	105	0	8	-33	113	0	8	-41	121	-1	10	-151	151	-3	11	-210	290	-11	20
02:00	34	-57	185	-5	19	-71	199	-6	20	-87	215	-7	21	-142	270	-13	27	-400	528	-37	51
03:00-05:00																					
03:00	14	11	120	1	15	-18	127	0	16	-165	14	17	17	-57	176	4	20	-196	305	-20	36
04:00	20	16	51	1	21	14	53	0	22	11	56	-2	24	3	64	-6	28	-35	102	-28	50
05:00	8	1	37	1	16	-1	39	0	17	5	42	-1	18	-12	50	-5	21	-50	88	-20	37
06:00-08:00																					
06:00	7	6	22	5	17	5	23	4	18	4	24	3	19	3	27	1	21	-15	43	-13	35
07:00	35	26	115	7	14	20	120	7	14	14	127	7	15	-6	147	5	16	-102	243	-2	23
08:00	71	48	189	6	17	40	197	5	18	30	207	4	18	-2	238	2	21	-152	389	-10	33
09:00-11:00																					
09:00	7	102	46	7	25	31	328	4	26	12	346	4	28	-48	406	0	32	-332	691	-20	52
10:00	67	7	111	3	17	1	117	7	18	-6	125	1	19	-30	148	-2	22	-141	260	-17	37
11:00	51	8	46	3	12	6	48	2	12	3	51	1	13	-5	59	-1	15	-46	100	-10	25
12:00-14:00																					
12:00	47	-5	78	3	12	-9	83	-2	12	-15	89	-2	13	-34	107	0	15	-122	196	-10	25
13:00	27	-23	147	-2	27	-32															

To calculate the values in the table above, I used below formula:

75% confidence level:

Lower limit=average-1.15*standard deviation

Upper limit=average+1.15*standard deviation

Confidence Level	Z Value
70%	1.036
75%	1.15
80%	1.282
85%	1.44
90%	1.645
95%	1.96
98%	2.326
99%	2.576
99.50%	2.807
99.90%	3.291
99.99%	3.891
100.00%	4.417

Please find the excel file in the link below:

<https://drive.google.com/drive/folders/17alaLADb3e7JQz6Sn2Rq-dBAa44LuqXu?usp=sharing>