

# Studying parking policies and proposing solutions for illegally parked vehicles in North and East Zone of Surat City

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**Abstract** - Issues regarding parking space are becoming more widespread as these cities grow in size. For many years, parking in metropolitan areas has been either free or at the lowest possible rate. Because there isn't enough parking space in cities, illegal parking is a major issue. Furthermore, when the number of private automobiles on the road increases, the supply and demand balance of parking spaces is disrupted in many cities. As a result, parking spots are few, which is considered as the major source of parking problems in urban regions. Inadequate land use planning contributes to this mismatch. A scarcity of parking spots, an overabundance of private autos, and traffic jams caused by visitors looking for parking spaces or vehicles parked in prohibited areas are just a few examples of prevalent parking challenges. The study will look at several parking issues in various parking sites in Surat's North-East zone and seek to solve them. Parking regulations must therefore be adopted in regions where traffic concerns caused by illegally parked autos on the road must be addressed.

**Key Words:** Parking Issues, Traffic Congestion, Parking Space, Parking Policy (SMC)

## 1. INTRODUCTION

Parking is something that almost everyone is acquainted with and that virtually all of us do every day. Parking is critical since every excursion with a car begins and concludes in a parking lot. However, parking in congested places is an annoyance that can increase drivers' stress levels, reduce their daily productivity, and pollute the environment.

Flow effectiveness. As a result, we are continuously looking for transportation solutions that will provide us with not just more mobility, but also increased economic productivity and a cleaner environment. A careful analysis of the parking features, as well as the Demand and Regulatory mechanisms that are available for limiting parking, is extremely beneficial to both a traffic engineer and a town planner.

### 1.1 Parking requirement

A well-functioning motor traffic infrastructure is crucial to the growth of a city. A major amount of the city's economic and commercial operations may be served by motor traffic.

They require a parking area where people may load and unload their vehicles. Parking impacts mode of transportation choice because persons who own vehicles are more inclined to drive to their destination if parking is conveniently available near the destination and economical. In other words, the availability of low-cost or free parking serves as an incentive. Parking is a significant impediment to driving one's own car.

Canal Oriented Development (COD) Creates Space Concept aims to create a mixed-use development of to along the banks of the canal, giving the image and practicality of the waterfront. It is used as a natural attraction of society. And economic activity is used. COD has the potential of a landlocked country without a traditional port to promote waterfront development (Buckman, 2016). The main advantage of COD is that it offers the luxury of being able to develop a large number of sites along the drainage area. For harbor fronts, you are limited to one. Depending on the activity and size along the trail, there may be different zones based on the sense of place caused by the sensitivity of the water. Creating functional neighborhoods in a sustainable environment is a great help in creating vibrant and inclusive neighborhoods and public spaces.

### 1.2 Conceptual framework

Parking structures are an essential part of traffic engineering. The bulk of the general public reaches public spaces, commercial centres, and urban areas via vehicles, mostly automobiles and bicycles. The availability of parking in the region determines the viability of these sites.

There are two kinds of parking areas

(1) Off-street parking

(2) On-street parking

(1) On-street parking

On-street parking occurs when cars are parked along the sides of the street. This is often handled by government entities. The following are some examples of common forms of on-street parking.

(1) Off-street parking

Off-street parking refers to parking facilities that are offered at a location distinct from the curb. This sort of parking has the advantage of reducing traffic congestion. The biggest downside, though, is that some motorists would have to travel a longer distance after parking their vehicle. It is not practicable to offer off-street parking at regular intervals, particularly in city commercial districts. Surface parking lots and multi-story parking are the two most basic forms of off-street parking.

Off-street parking facilities include:

1. surface car parks,
2. multi-story car parks,
3. roof parks,
4. mechanical car parks, and
5. underground car parks.

2. Literature study

**Parking futures: An international review of trends and speculation** (Jeffrey Rosenblum, Anne W. Hudson, Eran Ben-Joseph, 2020)

This article presents an overview of growing parking patterns, focusing on the United States. We identify and describe five relevant developments and technologies that will aid in catalysing change: differentiating parking costs, lowering parking minima, pricing and dynamic pavement allocation, designing hybrid parking structures, and preparing for an autonomous era and "mobility as a service." This article illustrates these tendencies with case studies that highlight existing practises, governance issues, and potential future situations.

**The effectiveness of parking policies to reduce parking demand pressure and car use** (Xiang Yan, Jonathan Levine, Robert Marans, 2018)

The findings of this study are based on faculty and staff commuting trips to a university campus. The data reported here are most suited to informing parking policies aimed at influencing long-term and long-duration parking, such as office and residential parking laws. The results are less transferrable to retail parking and downtown parking, which draws visitors with a variety of trip reasons, varying parking frequencies and durations, and a lack of familiarity with local parking circumstances. More broadly, the findings of our study have numerous important policy implications that may be used in a variety of circumstances. First and foremost, price remains the single most effective parking strategy for changing travel behaviour.

3. STUDY AREA PROFILE

The city of Surat is situated at latitude 21°15'N and longitude 72°52'E on the banks of the river Tapi having coastline of the Arabian Sea on its west at a distance of about 19.4 Km by boat along the Tapi stream and about 16 Km by road towards Dumas. It is 13 m above the mean sea level. Surat city is located in well-developed South Gujarat region. The city occupies a pivotal position on the Ahmedabad – Mumbai regional corridor centrally located at a distance of 260 km North of Bombay and 224 km South of Ahmedabad, as well as on the 225 km long industrial belt, having direct linkages with the industrial urban centres of Vadodara, Ankleshwar and Vapi.

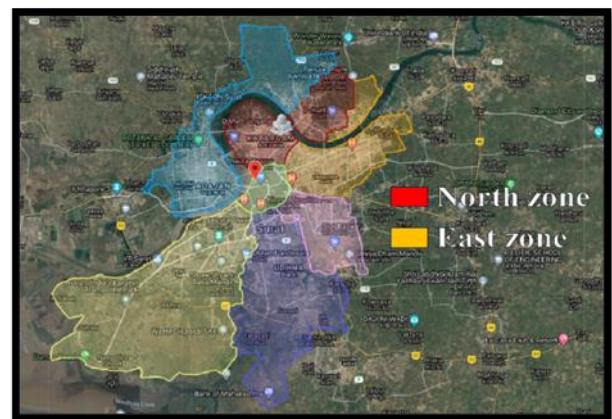


Fig. 1 Zone Map of Surat City

The paper discusses the study area - North and East Zone of Surat city. The area of North Zone is about 51.263 Sq. Km. which is 11.13% of the total area of the city. In the NZ, there are 12 administrative wards and the population is about 7,16,110 having a population density of 19392 per km<sup>2</sup> of.

The East zone of Surat city has the highest population of other zones. East zone having 11, 86,950 populations and 30303 Per Sq.km. density and the area of east zone is 93.769 km<sup>2</sup>. Critical zone defined based on highest population and most congested area. So, there is need to provide more parking space to meet the demand.



Fig:2 Study Area

### 4. DATA ANALYSIS AND PLANNING PROPOSAL

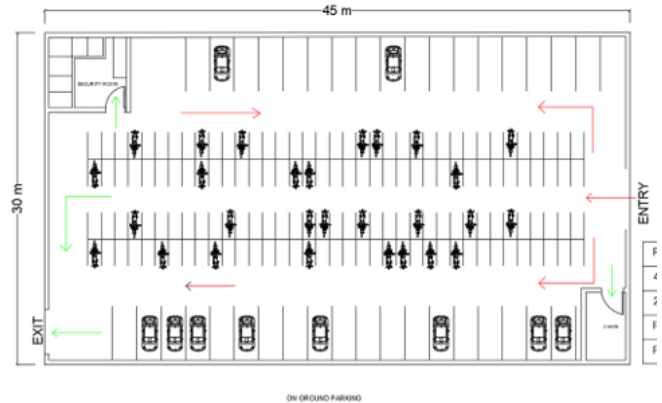
Following Data was Collected At different Selected Study Area at Time Interval Morning 10am to 11am and at evening 5pm to 6pm for continue 15 days duration. This is sample of one day survey Sample.

**Table:1** Survey Data

No.	Area Discription	Time	Day:1			
			2W	3W	4W	Others
1	Mansarowar, Amroli	10 -11 AM	199	12	12	3
		5-6 PM	201	10	27	5
2	Sayan Road, Amroli	10 -11 AM	20	4	5	5
		5-6 PM	58	5	7	6
3	Baroda Prestige market	10 -11 AM	40	7	7	2
		5-6 PM	46	9	8	3
4	VIP Circles Green Road,Uttran	10 -11 AM	52	4	5	2
		5-6 PM	60	3	8	3
5	Maruti Chowk,Varachha	10 -11 AM	175	5	10	3
		5-6 PM	180	6	13	4



**Fig: 4** Location of Off-street parking at VIP Circle, Uttran Road



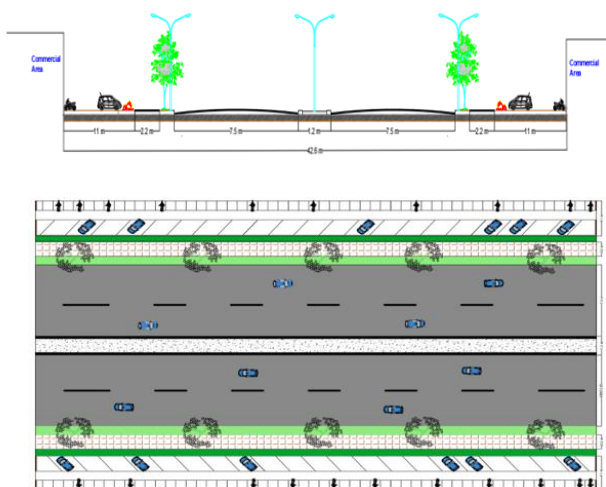
**Fig: 5** Off-Street Parking proposal at Uttran Road

No.	Area Description	Road Width(m)
1	Mansarowar, Amroli	14
2	Sayan Road, Amroli	9
3	Baroda Prestige market	9
4	VIP Circles Green Road,Uttran	7.5
5	Maruti Chowk,Varachha	12

**Table:2** Capacity of Parking

Parking Area	480 sq. m
4 Wheeler Capacity	25
2 Wheeler Capacity	150
Parking space for one 2W	1.65 sq. m
Parking space for one 4W	12.50 sq. m

This figure shows the proposed to the different Study area.



**Fig: 3** Road Section with provision of o-street parking

### 5. CONCLUSIONS

With the remarkable explosion in private motor vehicles, one of the biggest issues that commuters face is a serious shortage of parking space. The requirement for parking in city Commercial and business areas has expanded at an alarming rate. A defined duration sampling survey and vehicle count were conducted on the study area to determine demand and supply, indicating the need for appropriate parking space based on the analysis of the selected study areas.

It is seen that Mansarovar Road and VIP Circle did not have wide enough road on Uttaran Road which could not provide On-street parking. Also, Baroda prestige market and their

nearby area as well as Maruti chowk lame hunuman road that at which parking demand is high. So multi-level parking is most viable that place because busy area is there.

Sayan Road, which includes a market, commercial area, and residential areas, is the single location where parking problems must be solved by provided separate parking space for that problematic area.

North Zone Surat City where not a single authorized parking has been provided so there is a need to provide authorized parking which the government should take into consideration.

## 6. LIMITATIONS

- This solution will only work in these Five areas as there is a problem of spacing elsewhere.
- Parking has been provided in only five places. But if this place still needs parking, then parking should be provided there also. Parking facilities can be provided in North Zone by increasing road width.

## REFERENCES

1. SGArchitects. (n.d.). Parking Management Strategy: Case of Udaipur.
2. Sharma, K. M., Prjapati, P., & Jain, M. (2017). Problem of Parking and their Possible Solutions with Special Reference to Kota City. 2(1), 18–24.
3. Shifan, Y., & Burd-Eden, R. (2001). Modeling response to parking policy. *Transportation Research Record*, 1765, 27–34. <https://doi.org/10.3141/1765-05>
4. Shoup, D. C. (1999). The trouble with minimum parking requirements. *Transportation Research Part A: Policy and Practice*, 33(7–8), 549–574. [https://doi.org/10.1016/S0965-8564\(99\)00007-5](https://doi.org/10.1016/S0965-8564(99)00007-5)
5. Simićević, J., Vukanović, S., & Milosavljević, N. (2013). The effect of parking charges and time limit to car usage and parking behaviour. *Transport Policy*, 30, 125–131. <https://doi.org/10.1016/j.tranpol.2013.09.007>
6. Souza, L. F., & Ciência, P. (2016). A proposal of an architecture for a Smart Parking based on intelligent agents and A proposal of an architecture for a Smart Parking based on intelligent agents and embedded systems. September, 18–21.
7. SUBRAMANI, T. (2012). Study on Existing Parking Condition On Major Roads in Salem and Suggestions for Improvement. *IOSR Journal of Engineering*,

02(04), 704–710. <https://doi.org/10.9790/3021-0204704710>

8. Yan, X., Levine, J., & Marans, R. (2018). The effectiveness of parking policies to reduce parking demand pressure and car use. February 2020. <https://doi.org/10.1016/j.tranpol.2018.10.009>
9. Jayaswal, S. D. (2020). Parking management plan for commercial area of city. A case study of old city, Vadoda