

The Phenomenon of On-Street Parking In A Residential Area In Batam City

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Abstrak

Penelitian ini mengkaji penggunaan parkir perumahan di salah satu kota di Indonesia, Batam, melalui SNI 03-1733-2004 tentang pengelompokan jalan pada lingkungan perumahan (jalan lokal sekunder I, jalan lokal sekunder II, jalan lokal sekunder III). Fenomena parkir di kawasan perumahan tanpa tempat parkir pribadi, sehingga menggunakan jalan umum. Analisis pengumpulan data menggunakan observasi dan kuesioner serta dilengkapi dengan instrumen wawancara dan dokumentasi. Pengambilan sampel minimal dari populasi ditentukan dengan metode Slovin. Hasil penelitian menunjukkan bahwa kondisi jalan di lingkungan perumahan di Kota Batam didominasi oleh kendaraan roda empat tanpa parkir pribadi, sehingga menggunakan jalan umum. Sebagian responden memiliki ruang parkir pribadi, namun 19,8% responden menggunakan ruang parkir pribadinya untuk fungsi lain, seperti ruang yang telah dialih fungsikan untuk perdagangan. Beberapa responden merasa nyaman dengan fenomena parkir di luar lahan pribadi di kawasan perumahan, dan 24% pernah mengalami keributan akibat parkir di sepanjang jalan perumahan yang mengganggu aktivitas pengguna jalan. Penurunan kapasitas ruang jalan akibat parkir kendaraan roda empat sebesar 19,35% pada jalan lokal sekunder I, 20% pada jalan lokal sekunder II, dan 37,5% pada jalan lokal sekunder III. Kebijakan parkir di jalan lingkungan perumahan tidak tercantum dalam peraturan kota Batam.

Kata Kunci: Perumahan, Lingkungan, Parkir, Jalan, Kendaraan.

Abstract

This research examines residential parking use in one Indonesian city, Batam, via SNI 03-1733-2004 concerning road groupings in residential neighborhoods (a secondary local road I, secondary local road II, secondary local road III). The parking phenomenon in a residential area without a private parking lot, thus using public roads. Analysis of data collection using observations and questionnaires and equipped with interview and documentation instruments. Minimum sampling from the population is determined by the Slovin method. The results showed that the road conditions in residential neighborhoods in Batam City were dominated by four-wheeled vehicles without private parking, so that they used public roads. Some respondents have private parking spaces, but 19.8% of respondents use their private parking spaces for other functions, such as spaces that have been converted for commerce. Some respondents feel comfortable with the phenomenon of parking outside of private land in residential areas, and 24% have experienced commotion due to parking along residential roads, which disturbs the activities of road users. The decrease in road space capacity caused by four-wheeled vehicles parked was 19,35% on secondary local roads I, 20% on secondary local roads II, and 37,5% on secondary local roads III. Parking policies on residential neighborhood roads are not listed in Batam city regulations.

Keywords: residential, neighborhood, parking, road, vehicles.

1. INTRODUCTION

As one of the countries with the largest population globally, Indonesia impacts the high demand for housing areas. One phenomenon is that housing does not have parking spaces for vehicles, resulting in parking on the street. Parking facilities must be available at the destination (office, shopping, entertainment or recreation, and others) and in residential (in the form of a garage or parking lot). The unavailability of parking facilities can reduce the road's effective width and space capacity,

impacting traffic congestion. (Warpani, Swardjoko, 1990).

Research about parking in a residential area has been discussed before, such as (Seo & Kim, 2018) Nangok-dong was investigated. Most of the cars parked on the narrow road were due to pedestrian and residential environments' degeneration. This study investigated the study area's truth parking conditions and proposed some ideas for completing the parking complex problems in low-rise residential areas. (Omollo, 2020) The adoption of a positivist research

philosophy approach has shown through most occupancy count development is not according to planning standards used in regulating car parking space in Kisii City. Parking the vehicle on a residential, public street or in front of a neighbor's house or front of one's own House sometimes often causes uncomfortable and even interferes with activities (Putri, Kurniawan, & Alfian, 2020). The legal effort that could be made from that neighbor park the vehicle on the side of the road or in front of the neighbor's house/yard to be sued private with actions against the law and can be given criminal sanctions as is regulated in Article 1365 of the Civil Code (Nurhayani, 2017).

The research presented in this paper examines residential parking use on three data sources via SNI 03-1733-2004 concerning road groupings in residential neighborhoods (secondary local I, secondary local II, and secondary local III). Although they have limitations, all three surveys provide new insights into how the impact of parking spaces around homes is more common in one city in Indonesia, Batam. The results are broken down by residential neighborhood road conditions, road widths in residential neighborhoods, private parking lots, private parking lots with other functions, and residential neighborhood roads' comfort. As in big cities that regulate its existence on-street parking restrictions that may interfere with traffic, this has not been done to control people who park their vehicles in front of the House, resulting in disruption of the existing road system in a residential area. The phenomenon of parking in a residential area without a private parking lot, thus using public roads. In this case not only disturbs public order but also reduces its comfort and spoils the aesthetics. This analysis contrasts with the planning procedure for residential environments in urban areas. Parking policies on residential neighborhood roads are not listed in Batam city regulations. A critical analysis is given about parking phenomena to manage residential parking.

Parking policies in Indonesia are generally regulated in (Laws of The Republic Indonesia Number 22, 2009) concerning Road Traffic and Transport and (Government Regulation of The Republic of Indonesia Number 34, 2006) PBatam Parking policies are listed in Batam City Regulation number 3 of 2018 regarding administration and parking fees. On-street parking has been discussed before such as (Puspitasari & Mudana, 2017) to mention vehicle volume continues to increase, the presence of parking on the road body also inhibits the movement of vehicle traffic, an

understanding of parking spaces is needed by all stakeholders who serve as a reference for good parking space planning in the area and buildings (Jocunda & Purnomo, 2014).

A residential area is a group of houses within an urban area whose planning is required based on the Regional Spatial Plan and planning documents established by the government (National Standardization Agency, 2004). Housing is a group of houses that function as residential areas that are equipped with environmental infrastructure, one of which is parking (Keman, 2005)

Based on SNI 03-1773-2004 requirements for the construction of a residential environment in a residential area in an urban area, as follows:

- I. Scale (250 residents) of providing parking space of 100, m² which is located at the center of the neighborhoods.
- II. Scale (2,500 residents) provides 400 parking spaces m², located in the middle of the neighborhoods.
- III. Scale (30,000 residents) of parking lots 2000 m², which is located in the neighborhood center.
- IV. Scale (3120,000 residents) of land supply parking of 2000 m², which is located in the neighborhood center.

Table 1. Road Classification in a Residential Area

	Dimension							
	Pavement (m)	Roadside (m)	Pedestrian (m)	Sidewalk (m)	Road Benefit Area (m)	Road Owned Area (m)	Road Control Area (m)	Building Borderline (m)
Secondary Local Road I	3.0-7.0	1.5-2.0	1.5	0.5	10.0 - 12.0	13.0	4.0	10.5
Secondary Local Road II	3.0-6.0	1.0-1.5	1.5	0.5	10.0 - 12.0	12.0	4.0	10.0
Secondary Local Road III	3.0	0.5	1.2	0.5	8.0	8.0	3.0	7.0
Local Road I	1.5-2.0	0.5	-	0.5	3.5-4.0	4.0	2.0	4.0
Local Road II	1.2	0.5	-	0.5	3.2	4.0	2.0	4.0

2. METHOD

This research uses an interpretive method. Interpretive research relies heavily on qualitative data, but it can sometimes benefit from including quantitative data. Occasionally, the everyday use of qualitative and quantitative data can help generate unique insights into complex social phenomena that are not available from one type of data alone. Hence, mixed-mode designs that combine qualitative and quantitative data are often desirable (Bhattacharjee, 2012). This research is limited to the descriptive analysis of the research sites that focus on

Lubuk Baja and Batam Kota Subdistricts based on Road Classification in a Residential Area in Table.1, and data collection was carried out by questionnaire through Google form with additional instruments of observation and interviews.

In this research to analyze parking in residential areas, a survey was conducted using a questionnaire distributed via Google form. The survey results were obtained from each question described in descriptive explanations and road conditions documentation in the three classification groups.

1. Batam City District
 - a. Secondary Local Road I: Villa Panbil and Bukit Indah Sukajadi residents.
 - b. Secondary Local Road II: Orchid Park and Bella Vista
 - c. Secondary Local Road III: Kembang Sari and Citra Indah
2. Lubuk Baja District
 - a. Secondary Local Road I: Bukit Permata.
 - b. Secondary Local Road II: Kezia Residence.
 - c. Secondary Local Road III: Nagoya Indah Park, Marina Park, and Permata Baloi.

This research discusses the phenomenon of on-street parking at the residential area level in the city of Batam. Specific questions asked are:

1. How about the phenomenon of on-street parking in a residential area in Batam City.
2. How many decreases in road space capacity in Batam City residential area due to parking on the road?

Table 2. Research questions, data, approach

Research Question	Data
1. How about the phenomenon of on-street parking in a residential area in Batam City?	The questionnaire with the following questions: <ol style="list-style-type: none"> 1. The width of the road in a residential area as a parking lot 2. Garage /Home Parking Yard 3. Parked Cars Separate With Houses 4. Road Comfort in Housing When a Car Parked Along the Road 5. The Neighboring Atmosphere Due to Respondents' Cars Parked in Front of Houses 6. The position of the Respondent's neighbor's car

	7. The commotion caused by a car parked along the road in front of the House
2. How many decreases in road space capacity in Batam City residential area due to parking on the road?	$N = \frac{L}{k \cdot r}$ <p> N = number of cars that can be parked L = Length of the road </p>

The next step is to determine the minimum sample needed in the survey with the Slovin formula using population data for 2010.

1. Batam City District (N = 162.238 and e = 10%)

$$n = \frac{N}{1 + Ne^2}$$

= 100 respondents
2. Lubuk Baja District (N = 80.780 and e = 10%)

$$n = 100 \text{ respondents}$$

Table 3. Respondent Identity Data

	Amount (N)	Percentage (%)
Sex	221	
Male	118	53.4%
Female	103	46.6%
Profession	221	
Student	175	79.2%
Employee	42	19.0%
Business owner	2	0.9%
Unemployment	2	0.9%
District	221	
Lubuk Baja	4	45.7%
Batam City	44	46.2%
Other District	173	7.7%
Types of neighborhood roads	221	
Secondary local I	4	1.8%
Secondary local II	44	19.9%
Secondary local III	173	78.3%
Age	221	
18-24	204	92.3%
25-30	14	6.9%
>30	3	21.4%
Car Ownership	221	
Yes	177	80.1%
No	44	19.9%
Number of Cars	177	
1	114	64.4%

	Amount (N)	Percentage (%)
2	52	29.4%
3	9	5.1%
>3	2	1.1%

RESULTS AND DISCUSSION

2.1 The phenomenon of on-street parking in a residential area in Batam City

1. The width of the road in a residential area as a parking lot

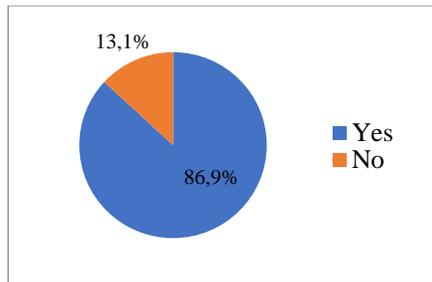


Figure 1. Percentage of Road Width in front of the House

Based on the Figure.1 shows the value of 86,9% indicates that the average road in a residential area of Batam City has enough space to park a vehicle, with observations in the field, as follows:

- a. Some residential areas with secondary local roads III make it possible to park cars on residential neighborhood roads. Some housing units cannot park vehicles on residential neighborhood roads.



Figure 2. Neighborhood Road Taman Nagoya Indah Resident
Source: Field Survey, 2020

- b. On residential areas with local roads, secondary I and II can park vehicles on residential neighborhood roads.



Figure 3. Neighborhoods Road Bukit Permata Resident
Source: Field Survey, 2020

2. Garage / Home Parking Yard

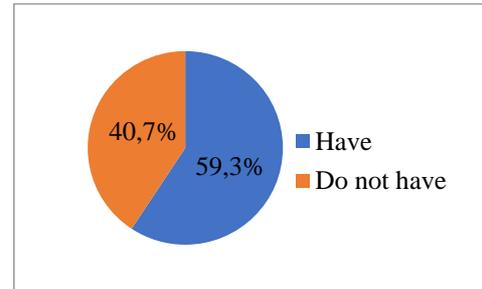


Figure 4. Percentage Ownership level of Garage / Private Parking Area

Based on Figure.4, some houses with secondary roads III had renovated their garage/parking lot as a more expansive space and were used for other functions or could only park two-wheeled vehicles.



Figure 5. Neighborhood Road Bella Vista Resident
Source: Field Survey, 2020

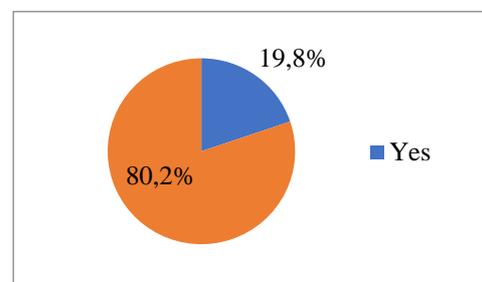


Figure 6. Percentage Ownership level of Garage/Private Parking Area

Figure 6 describes that most residential area residents have private parking and a small proportion use their yard for other functions.

3. Parked Cars Separate With Houses

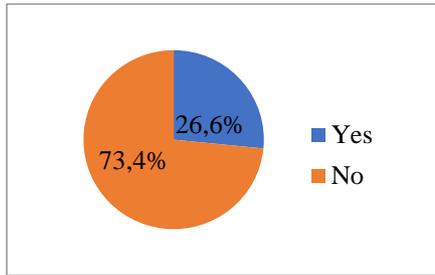


Figure 7. Percentage of parked cars separated from houses

Figure.7 shows the lack of a garage/parking lot. This condition occurs in housing with secondary local road III and housing with secondary local road II if the garage/parking space is inadequate.



Figure 8. Neighborhood Road Sumber Agung Resident

Source: Field Survey, 2020

4. Road Comfort in Housing When a Car Parked Along the Road

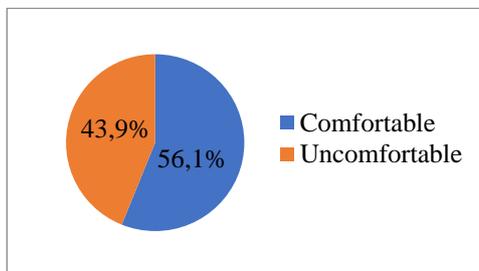


Figure 9. Percentage of Road Comfort in Housing when a Car Parked Along the road

Figure 9 shows the value of 56%, indicates that the level of comfort on the road in a residential area is only quite comfortable. Some residential areas have wide road widths to park vehicles, and there is space for cars to cross, on average found in housing with secondary roads I and II.



Figure 10. Neighborhood Road Orchid Park Resident

Source: Field Survey, 2020

5. The Neighboring Atmosphere Due to Respondents' Cars Parked in Front of Houses

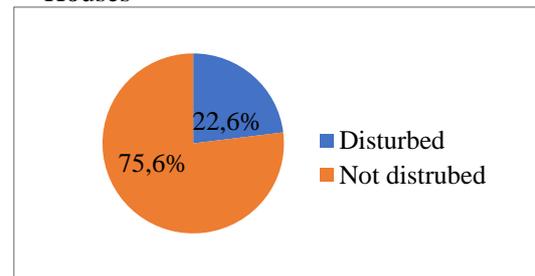


Figure 11. Percentage of The Neighboring Atmosphere Due to Respondents' Cars Parked in Front of Houses

From Figure.11 above, 75.6% of respondents said that their neighbors were not disturbed if their car was parked on the road in front of their house, based on the results of an interview with one of the respondents saying, "the road conditions in my housing are wide enough for three cars so that they don't disturb other neighbors."

6. The position of the Respondent's Neighbor's car

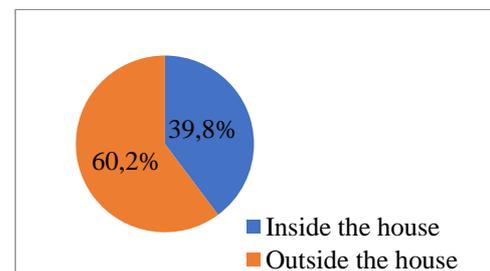


Figure 12. Percentage of Parked Respondents' Neighbors

Figure 12 shows the value of 60,2% states that the Respondent's neighbors tend to park their cars more outside the House. The field observations indicate that vehicles are parked outside the House in most housing, especially if the House does not have a sufficient parking garage and a wide residential street.

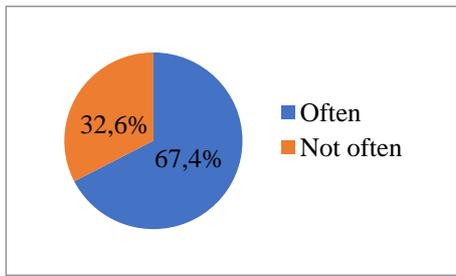


Figure 13. Percentage of Respondent's neighbor's car is often parked outside
Source: Field Survey, 2020

Figure 13 describes, according to one Respondent, the reason the neighbor's car was often parked outside was that the neighbor frequently traveled by car in the morning and returned home at night.



Figure 14. Neighborhood Road Marina Park Resident
Source: Field Survey, 2020

Figure 14 shows another reason that the space in front of the House will be filled by other neighbors to park their vehicles to make it difficult for the homeowner to leave the House.

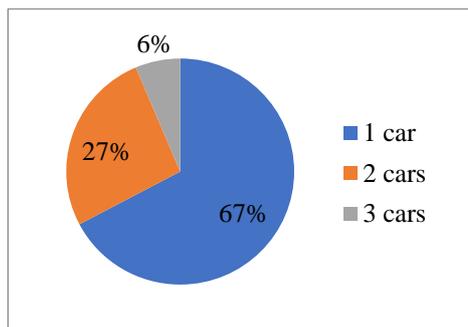


Figure 15. Percentage of Number of Respondent's Neighbor Car Parked Outside

Figure 15 shows the house/garage, and only 6.3% of the Respondent's neighbors park three cars outside the house/garage.

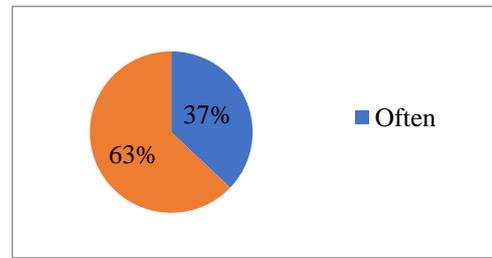


Figure 16. Percentage of Number of Respondent's Neighbor Car Parked Outside

Figure 16 shows that the average road in front of the Respondent's neighbor's House still has room to park the vehicle. On average, each residential garage can only park one car, as for houses with a home parking lot that can park more than one car. The home parking lot that can only accommodate one car must find another parking space or park it separately from the House.

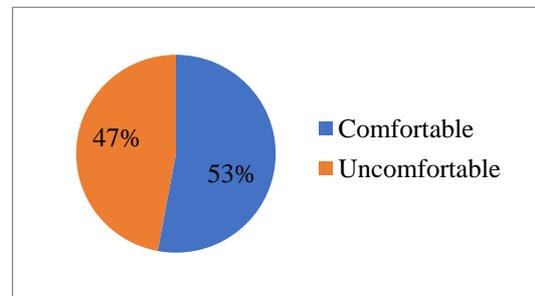


Figure 17. Percentage of Convenience Level Parking on the Street in Front of the House

Figure 17 shows a comparison of the percentage figures obtained close to half, and it shows that the respondents' comfort level in their housing environment is only quite comfortable. Some respondents complained that they were uncomfortable, saying, "If I don't park the car in front of the House, my neighbor will park the car so that my car can't get out and have to call the car owner. car."

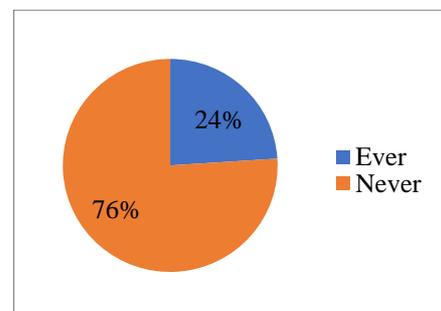


Figure 18. The percentage of commotion that occurred due to parked cars along the road in front of the House

Figure.18 shows the results of interviews with several respondents, one of the triggers for the commotion was a neighbor parking his car carelessly or on the road in front of another neighbor's house, and some said that parked cars prevented other neighbors' cars from going in and out of private parking lots/ home parking lots.

Decreases in road space capacity in Batam City residential area due to on-street parking

Each residential neighborhood road has a different size; here are some examples of calculations of reduced road space capacity resulting from on-street residential parking:

1. Secondary Local Road I (Bukit Permata Residents)

Bukit Permata neighborhood residential road is categorized as the secondary local road I so that it has a maximum pavement width of 7 m based on Table.1 and based on Figure. Three, there is six LV (Light Vehicles) cars parked on the residential neighborhood road. A decrease in road space capacity caused by six light vehicles parked in one lane by 19.35% SMP/hours.

2. Secondary Local Road II (Bella Vista Residents)

The Bella Vista residential neighborhood road is categorized as secondary road II so that it has a maximum pavement width of 6 m based on Table.1 and based on Figure.5, there are four LV (Light Vehicles) cars parked on the residential neighborhood road. The decrease in road space capacity caused by four light vehicles parked in one road segment by 20% SMP/hours.

3. Secondary Local Road III (Taman Nagoya Indah Residents)

The Nagoya Indah Park residential neighborhood road is categorized as secondary local road III so that it has a maximum pavement width of 3 m based on Table.1 and based on Figure. 2, there is four LV (Light Vehicles) cars parked on the residential neighborhood road. So the decrease in road space capacity is caused by six light vehicles parked on one lane by 37.5%

3.2 Parking Policy on Residential Neighborhood Roads in Batam City

In Batam city, the legal basis for parking regulations is listed in Batam City Regulation No. 3/2018 concerning administration and parking fees. There are two updates in the Batam City Regulation regarding parking: Batam City Regulation No. 1/2001 concerning road transportation traffic in the city and city regulation No. Batam 1/2012 concerning

administration and parking fees. Article 58 stipulates that the local government can take action against service users if the motorized vehicle is parked in a prohibited place for more than 10 minutes in the form of locking up the vehicle tire and pulling the motorized vehicle and subject to administrative fines, the office is not responsible for the completeness or integrity of the motorized vehicle during to remove (Regulation of The Batam Mayor Number 3 of 2018, 2018)

Research has been conducted by (Elvi, 2019) before 2018, illegal parking on the shoulder of the road often occurs, and the parking is disturbing comfort and traffic. After the city regulation Batam, no. 3/2018 imposed (Transportation Agency), Batam city began to encourage the towing of motorized vehicles parked on the road's shoulder. The result is increasingly reduced illegal parking on the shoulder of the road.

Fill in the city regulation No. Batam 3/2018 concerning the implementation and retribution of parking focuses on parking facilities in the space owned by the road, outside the special place, temporary parking, and parking fees that local governments, agencies, and individuals manage.

4. CONCLUSIONS

a. Secondary Local Road I

The road's width is extensive (\pm 7-8 m on the sidewalk width), and cars parked on the street are minimal. Every house has a garage, and several dwellings can park more than one car, very convenient to pass because almost every car is parked in the garage. A decrease in road space capacity is caused by vehicles parked in one residential area by 19.35%.

b. Secondary Local Road II

The width of the road is wide (\pm 5-6 m on the sidewalk width) and, some cars are parked on the residential neighborhood road but not as much as in housing with secondary local roads III, each House has a garage, convenient to pass because some cars are parked in the garage, and a 20% reduction in road space capacity caused by vehicles parked in one of the houses.

c. Secondary Local Road III

Wide road width (\pm 3 m on the width of the pavement) and along the road are met with cars parked on a residential neighborhood, some houses have and do not have a garage / renovated as more

space, less comfortable to pass, because the parked car is almost there in each residential road segment, and a decrease in road space capacity caused by vehicles parked in one housing area by 37.5%.

Policies related to parking on neighborhood roads are the rules on parking bans on neighborhood roads are not listed in the Batam city parking regulations, so public awareness of the Batam city is still very minimal and accustomed to parking on residential neighborhood roads and the Batam city parking regulations are more focused on the parking ban in households and parking fees.

This research's contributions are public space not used for personal gain. The low level of public awareness to provide private parking before deciding to buy a vehicle must be considered.

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