DECEMBER 2017

FACTS and FIGURES #34

TRAFFIC IN PHNOM PENH

A report on traffic issues in Phnom Penh from 2014 to 2017

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Sahmakum Teang Tnaut, a Cambodian Urban NGO

FACTS and FIGURES #34
June 2017

is a publication on urban issues by Sahmakum Teang Tnaut (STT)

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Overview

As Phnom Penh city continues to grow, so too does the volume of traffic on its roads. Urban development typically brings more people to the city, where employment opportunities are greater than those in rural areas. Unfortunately, infrastructure has failed to keep pace with the rising population[i] in Cambodia's capital, and it is having a significant impact on road congestion, traffic accidents, and driver frustration. Ultimately, "congested roads are a strain on the environment, the economy and the overall quality of life".[1]

Phnom Penh's traffic congestion has no single explanation. The rapid increase in population goes some way to explaining the growth in traffic issues, but ultimately it is a multifaceted problem that stems from the public, authorities, and infrastructure quality alike.

The purpose of this research is to determine how severe issues related to traffic in Phnom Penh are. In collecting and categorising reports made to Urban Voice Cambodia (UVC)[ii] between 2014 and 2016, and by utilising the data and research conducted by STT during 2017, figures on traffic jams, accidents, and road conditions can be understood, and possible solutions considered.

Traffic jam at 7 Makara Sky Bridge (Source: STT, 2017)

[i] The last recorded population consensus for Phnom Penh was conducted in 2012, counting over 1.5 million people. In 2016, the governor of Phnom Penh speculated the city's population could reach 3 million by 2017. Meng, S. (2016). Phnom Penh's burgeoning population could tip almost 3 million. The Phnom Penh Post.

[ii] Urban Voice Cambodia is a platform that allows Phnom Penh citizens to define and record problems and seek solutions to urban issues.

Methodology

The key findings in this report utilise data collected from Urban Voice Cambodia (UVC) and research conducted by STT's research team. UVC is an online platform that allows Phnom Penh citizens to define and register issues and seek their solutions – it is a "map-based visualisation of development that allows anyone to contribute".[2] Primarily, it serves as a way for citizens of Phnom Penh to report and put on record issues in the city, including: sewerage problems, real estate projects, security camera presence, trash issues, and, for the purpose of this research, traffic and road related problems. All UVC data was collected from the website, then categorised and analysed using Microsoft Excel.

The following research analyses reports made to UVC between 2014 and 2016. In 2014, the information and communication technology (ICT) team at Sahmakum Teang Tnaut (STT) began providing training to youth, students, bloggers, activists, reporters, and tuk-tuk drivers. A total of 279 participants (90 women) attended the trainings in March, July and November of 2014. Participants were selected via information sharing through NGO networks and target communities of STT. Training covered how to make reports for UVC through the popular messaging application 'WhatsApp' as well as the purpose of Urban Voice and the use of online platforms in advocacy and research. The ICT team, who are the key personnel in submitting and verifying such reports to UVC, then upload reports to the platform from the information they receive. Because this training helped Phnom Penh citizens become better informed of UVC and how to build on its report database, the years 2014 to 2016 offer more data on the traffic situation in Phnom Penh than 2017.

Beyond utilising UVC for the data presented in this report, the STT research team visited 92 roads in 11 Phnom Penh districts[iii] to conduct an observation survey to determine road quality, safety, and traffic flow in 2017. 100% of this data collection was based on observations by the research team. These results are displayed within the "key findings". In addition to these observations, the research team also interviewed 10 residents from 10[iv] different districts, to understand how traffic affects their lives - the results of which are reported in "Resident Interviews".

Data and information collected from secondary sources have been necessary in providing sufficient background to the past, current, and possible future traffic issues in Phnom Penh. Most of this information has been sourced online from: local, national, and international newspapers, publicly available government and ministerial reports, and relevant surveys, blogs, and forums.

Limitations

Much of the data collected and presented in this report originates from information collected through UVC. The accuracy of this information relies heavily on Phnom Penh citizens accurately and frequently reporting traffic problems to the website. Where possible, incident reports try to be cross-referenced with secondary sources by the ICT team. Issues that have not been reported are not reflected in these findings, and this should be kept in mind when reading or citing this information.

[iii] 7 Makara, Chamkamon, Chbar Ampov, Chroy Changva, Dangkor, Daun Penh, Meanchey, Por Senchey, Russey Keo, SenSok, and Toul Kork.

[iv] Sen Sok, Chbar Ampov, Chroy Changva, Resseykeo, Pou Senchey, Chamkamon,Toul Kouk, Duan Penh, Meanchey, and Dangkor

Causes of bad traffic in Phnom Penh

In 2011, The Guardian wrote "[e]verything you want to know about Cambodia's city society is found in the traffic of Phnom Penh – social conformity mixed with anarchic individualism… the indifference of the police… the inability of old cultural ways to cope with the modern world".[3] It is important to realise there is no single culprit for the increase in traffic congestion and accidents in Phnom Penh. Traffic issues are the result of an urban sprawl, rapid development, and the inability of Phnom Penh's infrastructure to keep up with the growing volume of traffic. Below is an overview of some of these causes, and how they each continue to perpetuate traffic issues on Phnom Penh's roads.

1. Increasing population in the city, and rising number of vehicles on the roads
   The first explanation for Phnom Penh's traffic issues is there are simply too many vehicles on the road, caused by population growth within the city itself, but also an increase in those traveling into the city for work.[4] In addition to this, incomes have been increasing, and the growth in purchase of large vehicles is putting additional strain on roads that originally supported motorcycles (the average monthly income of a Phnom Penh resident grew by 817,000 KHR ($196 USD) between 2009 and 2014[5] and continues to increase, enabling more of the city's residents to purchase 'status symbol' vehicles).

2. Poor quality infrastructure
   The roads in Phnom Penh are certainly improving, with Prime Minister Hun Sen officially opening 'Hun Sen Boulevard' on 3 April 2017. At nearly 10 kilometers long and 60 meters wide, it is now the largest road in Phnom Penh.[6] Unfortunately, roads with numerous potholes and those susceptible to flooding continue to create congestion and cause accidents throughout the city. In June 2017, at the Annual Meeting of the "New Champions 2017" of the World Economic Forum held in China, H.E Sun Chanthol "highlighted the need for further private investment in Cambodia's infrastructure sector".[7] The Phnom Penh Post also argues "[s]tresses to Phnom Penh's road network are becoming increasingly apparent…" and conclude that "…careful planning is required to ensure that new construction is integrated with existing infrastructure".[8] Further investment from public and private sources to build new roads and repair existing roads will be necessary if Phnom Penh is to effectively tackle its increasing traffic issues.

3. Public disobedience of road rules and traffic law
   Public disobedience of road rules and laws is a contributing factor to congestion and accidents on Phnom Penh's roads - "[m]uch of the time, it is not the small roads that is the problem but how people drive, and even a motorbike could cause the whole traffic jam if the traffic laws are not obeyed".[9] Not only does this cause congestion, but often results in traffic accidents, with 36% of accidents caused by speeding.[10] However, in some cases it is not public disobedience of traffic laws that is the issue, but rather the limited public awareness of the existence of the laws or any type of road rules. Drivers must sit an exam on traffic laws to obtain a license, but since a license is not required to drive motorbikes with a capacity below 125cc (accounting for 85% of registered vehicles in the country),[11] many drivers do not need to demonstrate their understanding of traffic laws.

4. Poor enforcement of traffic laws by police and authorities

   Enforcement of the law can be a challenge, but more so when those tasked with implementing the law have little financial incentive to do so. Low incomes of traffic police (around $23 per month) in Phnom Penh has led to a rife existence of corruption, with one traffic officer commenting "[o]ur salary is too low…so we have to take the money from the truck driver".[12] To combat this behavior, from January 2016, officers were given permission to keep 70% of the traffic fines they collected, but this has the potential to encourage spurious fines to be issued.[13] The government does appear to be working towards increasing safety and efficiency through implementing new traffic laws and encouraging officers to implement them, but until enforcement is sufficient, traffic issues related to rule and law violations will continue. Vann Vat, an independent development expert, concludes "we already have a lot of streets, but we don't have a proper management system".[14]

Traffic congestion on Street 598 (Source: STT, 2017)

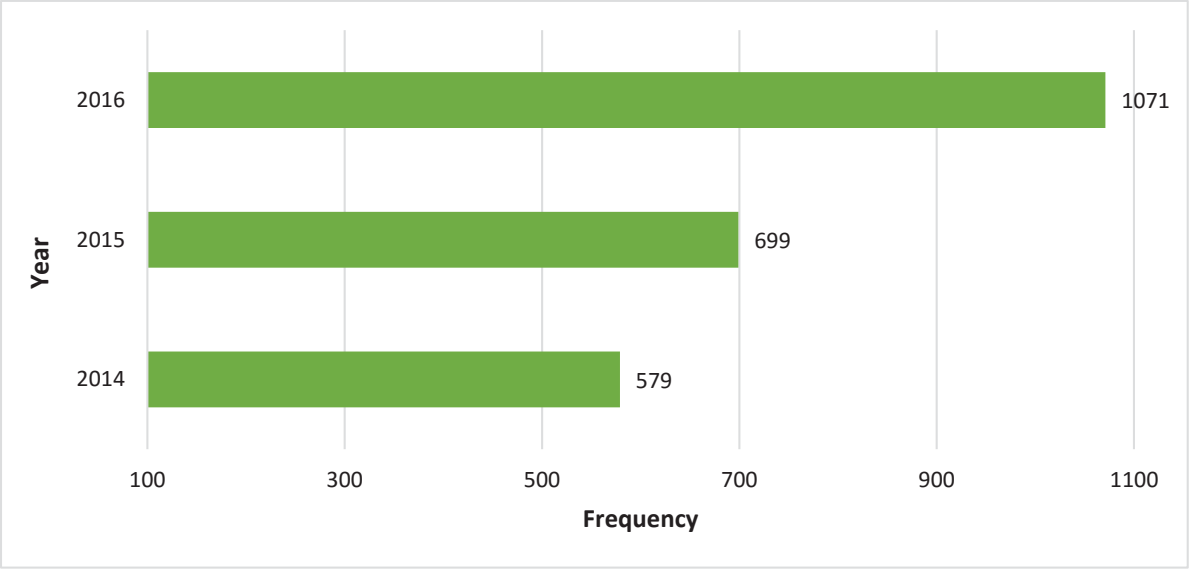
Traffic jam at a bus stop nearby Wat Toul Tompung, Mao Tse Toung Blvd (Source: STT, 2017)

Key Findings

A. Introduction

Traffic reports made to UVC have been increasing year on year (figure 1). The likely cause of this is two-fold: first, users are becoming better trained in how to use UVC to make reports, and second, extensive use of advanced technology (e.g. increased availability of mobile internet services and ownership of smart phones) allows users to make reports anywhere and at any time.[v]

Figure 1: Number of reports made to UVC



Source: UVC 2014 - 2016

B. Traffic Flow and Safety

Table 1: Traffic flow and safety reports made to UVC

Category	2014	2015	2016	Total
Traffic jam	69	125	910	**1,104**
Road block	28	12	19	**59**
Traffic accident	45	8	30	**83**
Total	155	223	961	**1,229**

Source: UVC 2014 - 2016

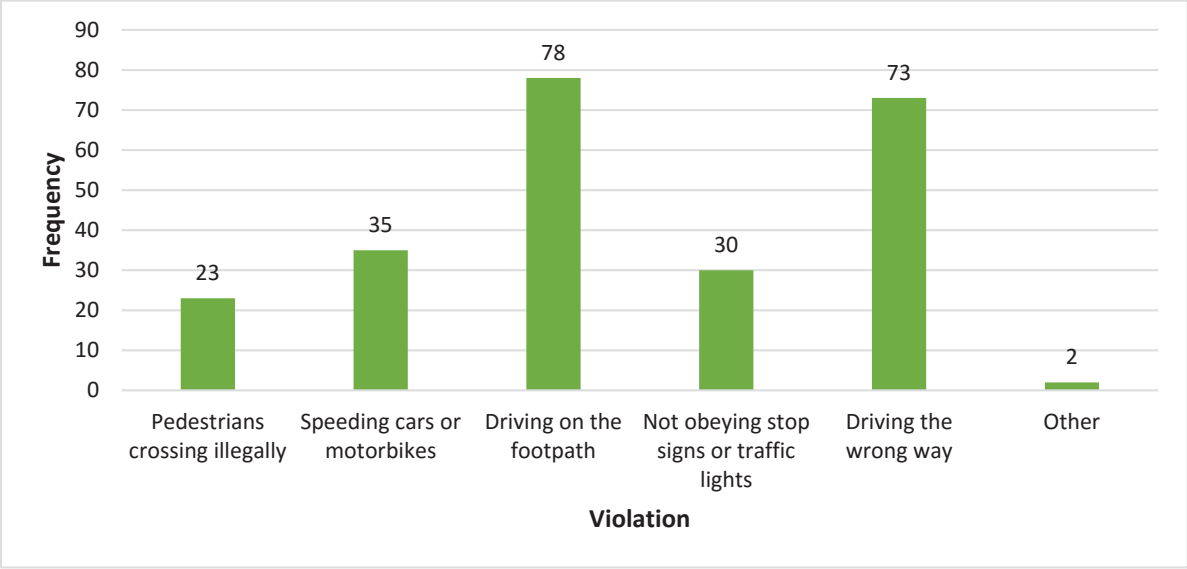
A total of 1,229 reports on traffic flow and safety were made to UVC between 2014 and 2016. Traffic jams are the most frequently reported issue in Phnom Penh city, with 910 reports made in 2016 alone, and 1,104 in total between 2014 and 2016. Traffic jams can be caused my multiple factors, including flooding, congestion, traffic accidents, road blocks, or general poor road conditions. Traffic accidents dropped significantly to eight in 2015 from 45 in 2014, but increased by 22 in 2016. Traffic accidents are common in Phnom Penh, and many would not have been reported to UVC for numerous reasons. Data from the

[v] STT cannot conclude that there has been a greater volume of incidents occurring since data collected relies heavily on technology and may not have been reported as frequently in past years.

Ministry of Interior shows that in the first half of 2017 alone, there were 1,883 traffic accidents, which resulted in 919 deaths. This is "an increase of 0.8 percent and 1.2 percent respectively on the same period last year".[vi, 15]

Contributing to traffic accidents and hindering road safety are violations to road safety guidelines/law. The following violations were recorded across 11 districts in Phnom Penh by the STT research team during 2017. Drivers will often mount the curb to skip to the front of a traffic queue, making it unsafe for pedestrians to use this area to walk. Similarly, drivers often drive down the wrong side of the road to avoid traffic jams.

Figure 2: Road violations



Source: traffic observation survey 2017

Safe use of roads requires implementing good driver knowledge and awareness. However, there are aspects of road safety that lie beyond road users, and fall on construction companies and authorities. Road markings are important in ensuring drivers can correctly read the road. In many cases, road markings have faded, or do not exist. 92 roads in 11 districts were visited and the following observations made:

Table 2: Visibility of road markings

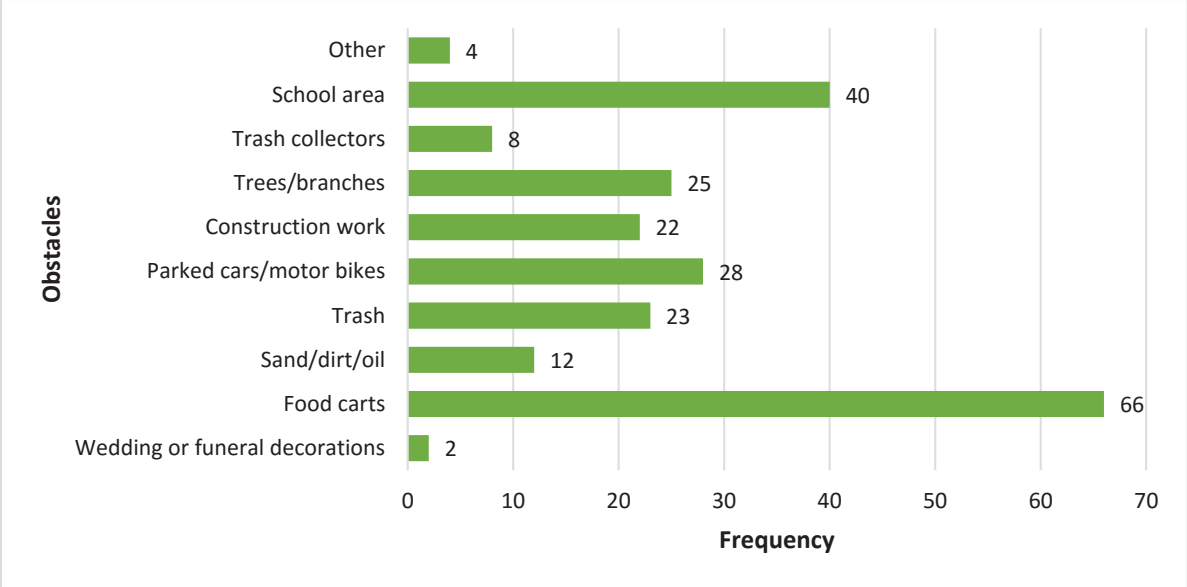
Are the lines of the road clearly marked?	Frequency	Percentage
Yes	27	29
No	54	59
Don't know	11	12

Source: traffic observation survey 2017

[vi] This is a reminder that data collected through UVC is heavily reliant on public participation, and figures may not reflect the true extent of traffic issues in Phnom Penh. Rather, they serve to provide *some* evidence and insight into the current situation.

Additionally, obstructions on roads (e.g. it is common to see wedding tents set up on roads, blocking lanes or streets), can create issues with traffic flow and safety. A total of 230 obstacles were recorded on the roads in 11 Phnom Penh districts.

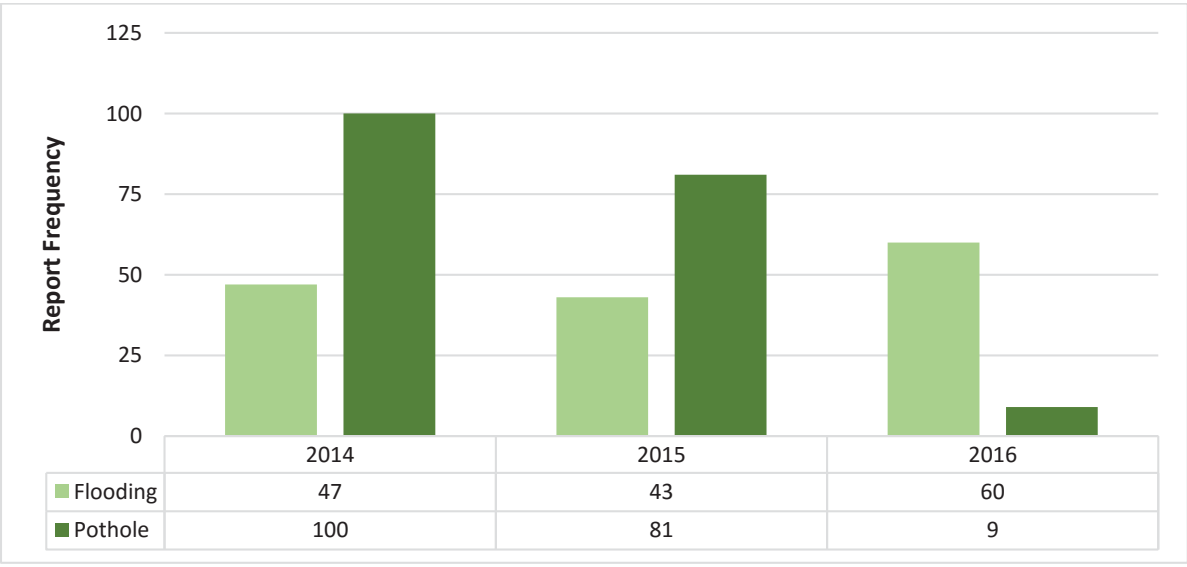
Figure 3: Obstacles affecting traffic



Source: traffic observation survey 2017

Considering traffic flow, when potholes and flooding appear separately they create a challenge for drivers attempting to navigate their vehicles around the affected area. However, when they appear together – as they often do – they not only hinder traffic flow, but can also threaten the safety of road users (when the roads are flooded, potholes are undetectable, and can cause motorbikes to crash). Road users will drive slower when roads are flooded, which adds to traffic build up. Flooding has been worsening in Phnom Penh city [16] and creates significant issues, particularly during the monsoon season (May to October).

Figure 4: Number of reported areas suffering from potholes and/or flooding



Source: UVC 2014 - 2016

Also affecting traffic flow is the width of a road, and the number of lanes available for use. In areas that carry a lot of traffic, additional lanes can greatly ease the flow of traffic. The number of lanes available in 11 districts in Phnom Penh were counted, and are recorded below.

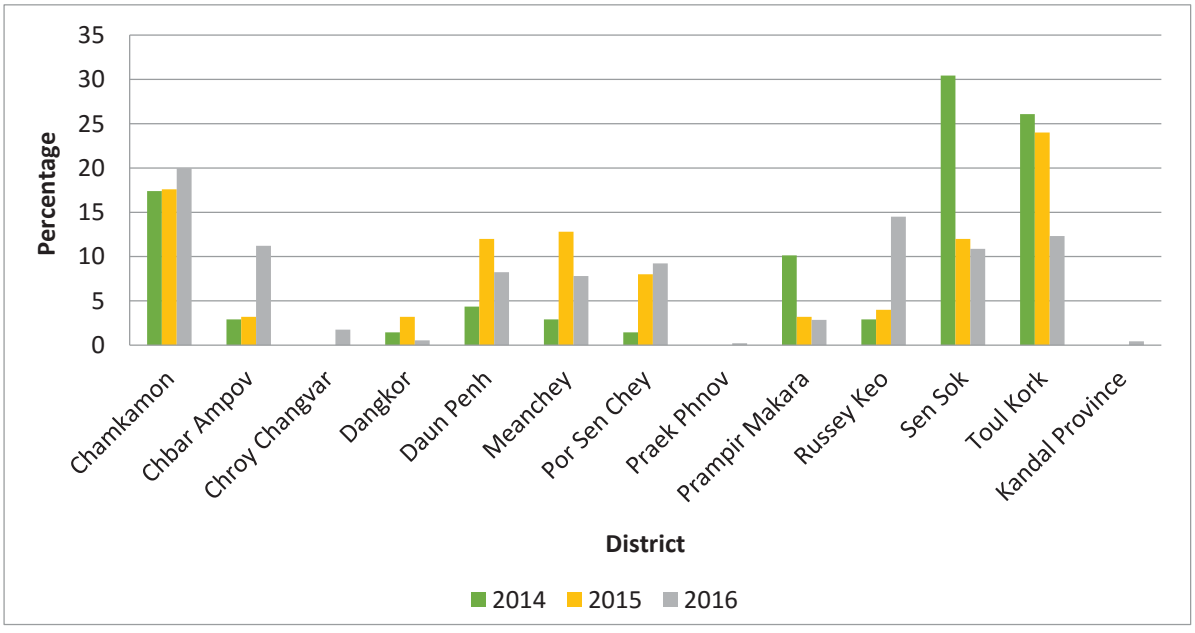
Table 3: Number of lanes available in 11 districts in Phnom Penh

Number of lanes	Frequency	Percentage
Only one lane	17	18
Two lanes	31	34
Three lanes	18	19
Four lanes	10	11
Five lanes	7	8
Six lanes	9	10
Total:	**92**	**100**

Source: traffic observation survey 2017

Traffic jams are the most reported traffic-related issue reported to UVC. A total of 1,104 reports were made to UVC between 2014 and 2016, with 910 of these made in 2016. It is unclear why there were so many reported incidents of traffic jams in 2016 (compared to previous years), but one explanation suggests driver frustration, combined with greater knowledge of UVC and how to make reports, is behind this significant surge in traffic jam reports. Table 4 below notes the district where the traffic jam was located.

Figure 5: Traffic jam frequency per district (as a percentage of annual traffic reports made to UVC)



Source: UVC 2014 - 2016

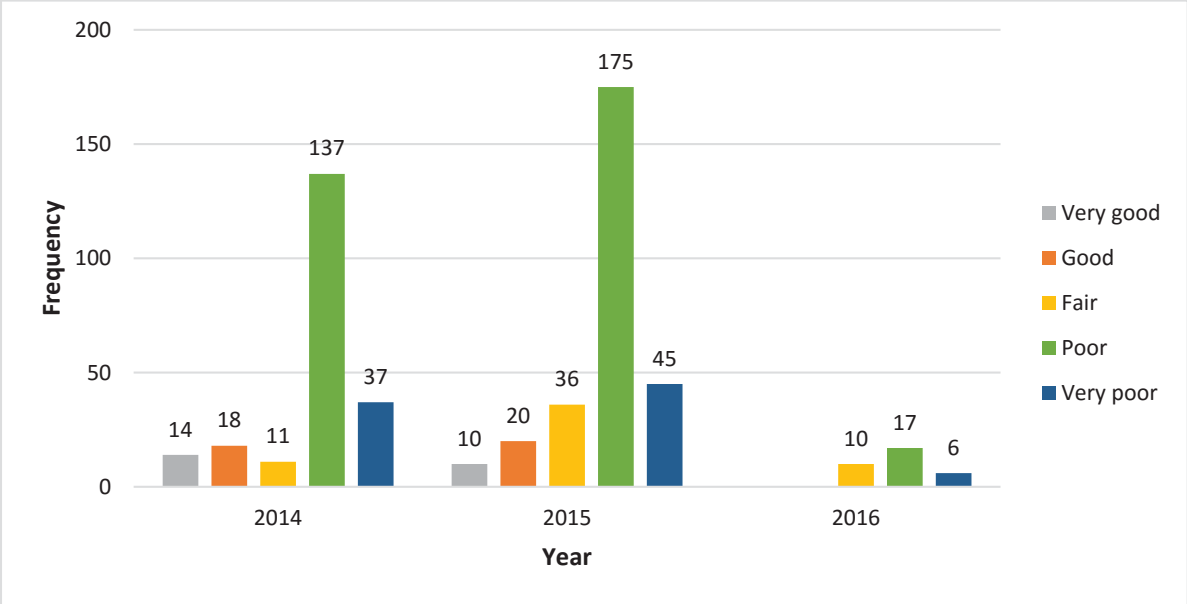
Of the 1,104 reports made from 2014 to 2016, Chamkarmon District had the most recorded traffic jams, with 216 over the three-year period. This was followed by Toul Kork with 160 reports, Russey Keo with

139 reports, and Sen Sok with 135 traffic jam reports. The least affected areas (as suggested by UVC data) were Prek Phnov with only two reports for the three-year period, followed by Kandal Province with 4 reports, and Dangkor with 10 reports.

C. Overall Infrastructure Quality and Road Conditions

Having looked already at the impact of flooding and potholes *(see subheading b. Traffic flow and safety)*, it is important to consider the overall quality and condition of Phnom Penh's roads. This may include factors such as road width and quality of materials used, as well as flooding or pothole presence.

Figure 6: Road conditions and infrastructure quality



Source: UVC 2014 - 2016

A total of 536 reports focusing on road condition were made between 2014 and 2016. 286 of these were made in 2015, while 217 and 33 were made in 2014 and 2016 respectively. From the chart in Figure 4, it is possible that road users are more likely to report road conditions to UVC if they are in poor, or very poor condition. Over the three years, there were 417 reports of "poor" and "very poor" road conditions, while there were only 119 reports of "fair", "good", and "very good" for the same period. More positively, there were 128 reports of road improvement works from 2014 to 2016. Only eight of these were reported in 2016, suggesting either a lack of road improvement works, or a reduction in the number of people reporting their existence to UVC.

The materials used to construct roads in Phnom Penh are an important determiner of road quality. Roads made from more durable material (concrete and asphalt) will cope better with vehicles, while roads constructed from dirt are more likely to crumble away, particularly during monsoon season.

Table 4: Road construction material

Construction Material	Frequency	Percentage
Concrete	17	19
Asphalt	72	78
Dirt	1	1
Gravel	2	2
Other	0	0
Total:	**92**	**100**

Source: traffic observation survey 2017

That most roads are constructed from concrete and asphalt is positive. However, regular maintenance is required to ensure emerging potholes or other issues can be dealt with before becoming too large an issue, subsequently impacting traffic.

Resident Interviews

To gain further insight into the current traffic situation in Phnom Penh, STT researchers interviewed a total 10 residents from 10 different districts in Phnom Penh. They were asked about their own road use, in addition to traffic volume and flow nearby, safety, and road hazards present.

A. Interviewee Details

Efforts have been made to try and gain insight from a range of respondents. The age and gender disaggregation of those interviewed are as displayed below.

Figure 7: Age range of respondents

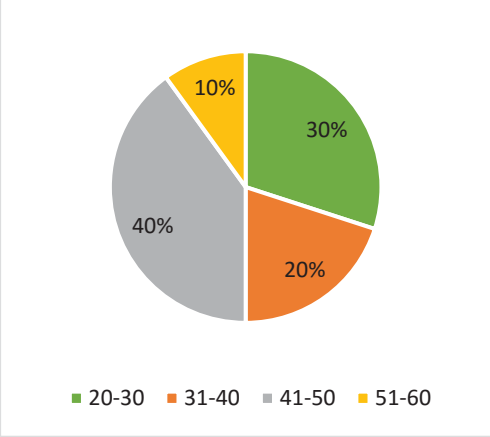
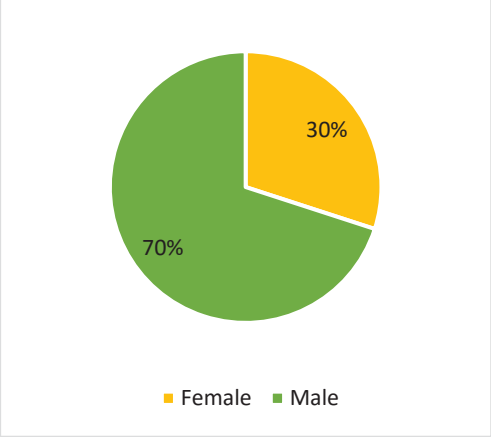


Figure 8: Gender of respondents

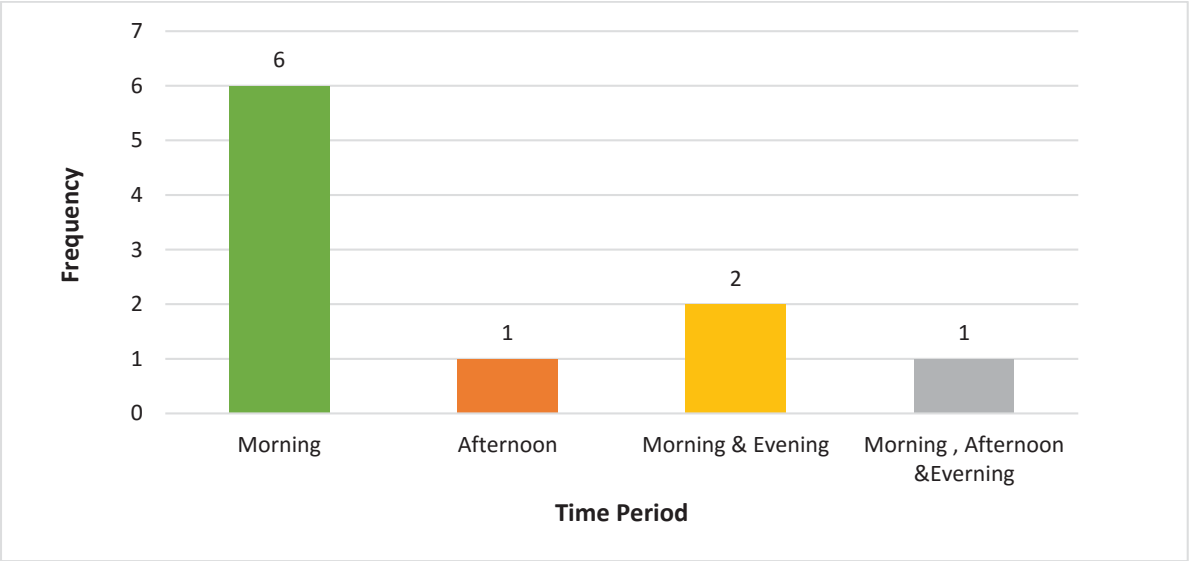


Source: Resident interviews 2017

B. Road use and Observations

90% of residents that were interviewed use the main roads every day, while only 10% reported that they only utilise it sometimes. The roads are at their busiest in the morning, when many workers are traveling to their place of employment. The quietest times are in the afternoon, while most people are at work.

Figure 9: Busiest periods

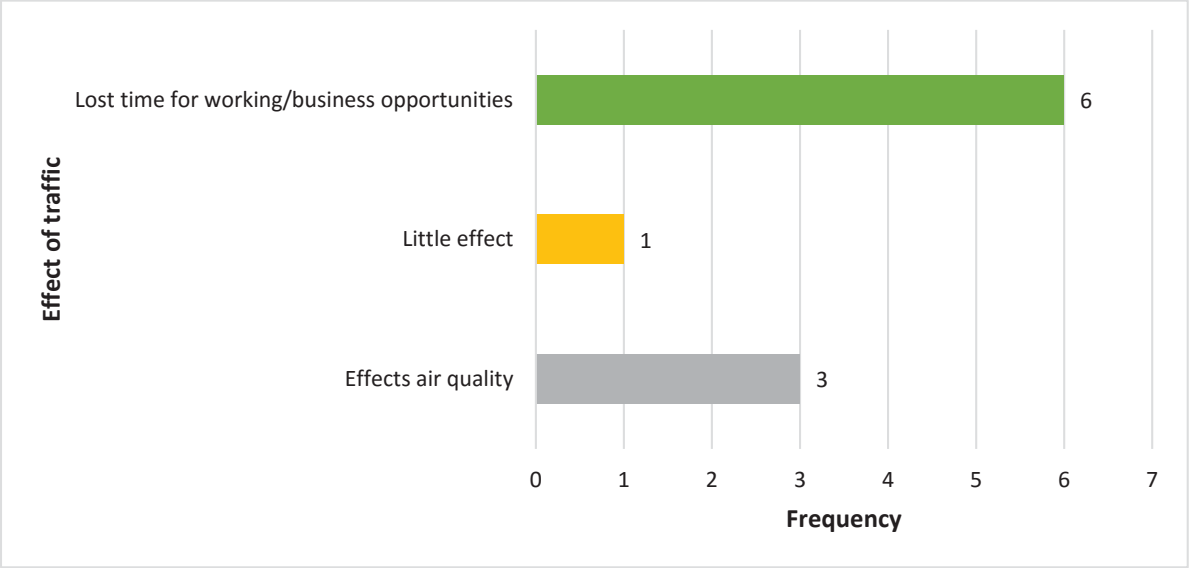


Source: Resident interviews 2017

The "busy period" usually lasts around one to three hours, but can last as long as four or five hours in some districts. The causes of such busy roads – according to the residents interviewed – vary, and include disobedience of road laws, overpopulated areas, too many cars, and roads close by to popular working areas (e.g. factories, schools, and universities).

When questioned on the flooding of the roads, only 20% reported that the roads near them flood often. 40% said the main road near them does not suffer from flooding, while another 40% reported that flooding does occur, but only rarely.

Figure 10: Effects of traffic on residents' lives

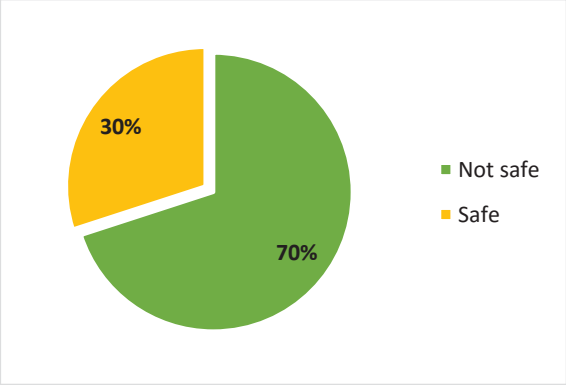


Source: Resident interviews 2017

The most frequently reported issue is the lost time for working and business opportunities. The time taken to travel on congested roads can have other subsequent effects such as workers being late to their jobs, or residents having less time in the day to conduct business if they are stuck in traffic.

Having considered the safety of drivers on the road, it is important to also look at the safety of pedestrians and residents who must cross these roads. When respondents were asked if both they and their family felt safe crossing the roads in their area, 70% reported that they did not.

Figure 11: Safety crossing the road



Source: Resident interviews 2017

Traffic jam on Preah Monivong Blvd (nearby Preah Monivong Bridge), Chamkarmon district, Phnom Penh (Source: STT, 2017)

Conclusions

From the data presented above, it is apparent that Phnom Penh does suffer from sub-optimal traffic conditions. Urban expansion and rapid population growth are creating greater strains on Phnom Penh's roads, and while investment into the current infrastructure is taking place around the city (as witnessed with the opening of 'Hun Sen Boulevard' on the 3rd of April 2017), continued investment and upgrading will be necessary in maintaining the current level of effectiveness and efficiency of the roads within the city.

Potholes and flooding are large contributors to traffic congestion and driver frustration. These may only be addressed with greater funding into current infrastructure – for example creating a solution to the lack of storage available for floodwater during rainy season, or upgrading roads using better quality materials. One possible way to ease many congested areas without investment into the current infrastructure is to reduce the number of obstacles on the roads. Food carts were reported to UVC as the most common obstacle, and this was also a concern of residents interviewed by STT researchers. Solutions to this issue may be multiple, such as the use of reflective clothing worn by food cart sellers or the construction of foot paths for sellers to travel by. Solutions related to infrastructure and services include the building of footpaths, pedestrian bridges, sky trains and increased public transport. Other responses from residents who were asked how congestion could be eased included: building additional roads and sky bridges, ensuring police play an active role in improving traffic flow, and encouraging drivers to respect traffic laws.

All stakeholders (road users, local and national authorities, and private companies) must work together to ensure the roads in Phnom Penh are efficient at dealing with heavy traffic loads, and safe for road users and pedestrians alike. Traffic and road law disobedience is a major contributor to traffic jams and road accidents, and efforts to understand and enforce these should be made by all road users. Greater efforts must be made to prevent such traffic violations – including speeding, driving on the footpath, and driving the wrong way – and the city may benefit from implementing an effective system to discipline those who commit such violations or through greater education of the general public on traffic laws. The roads may also benefit from additional signage, including traffic lights and pedestrian crossings, but ensuring these are obeyed by road users would be paramount to their success in easing traffic congestion and reducing road accidents.

(right) Traffic jam at Samdech Preah Mongkol Tepeacha Om Sum, and (left) Traffic congestion at Deum Thkov roundabout of Chamkarmon district (Source: STT, 2017)

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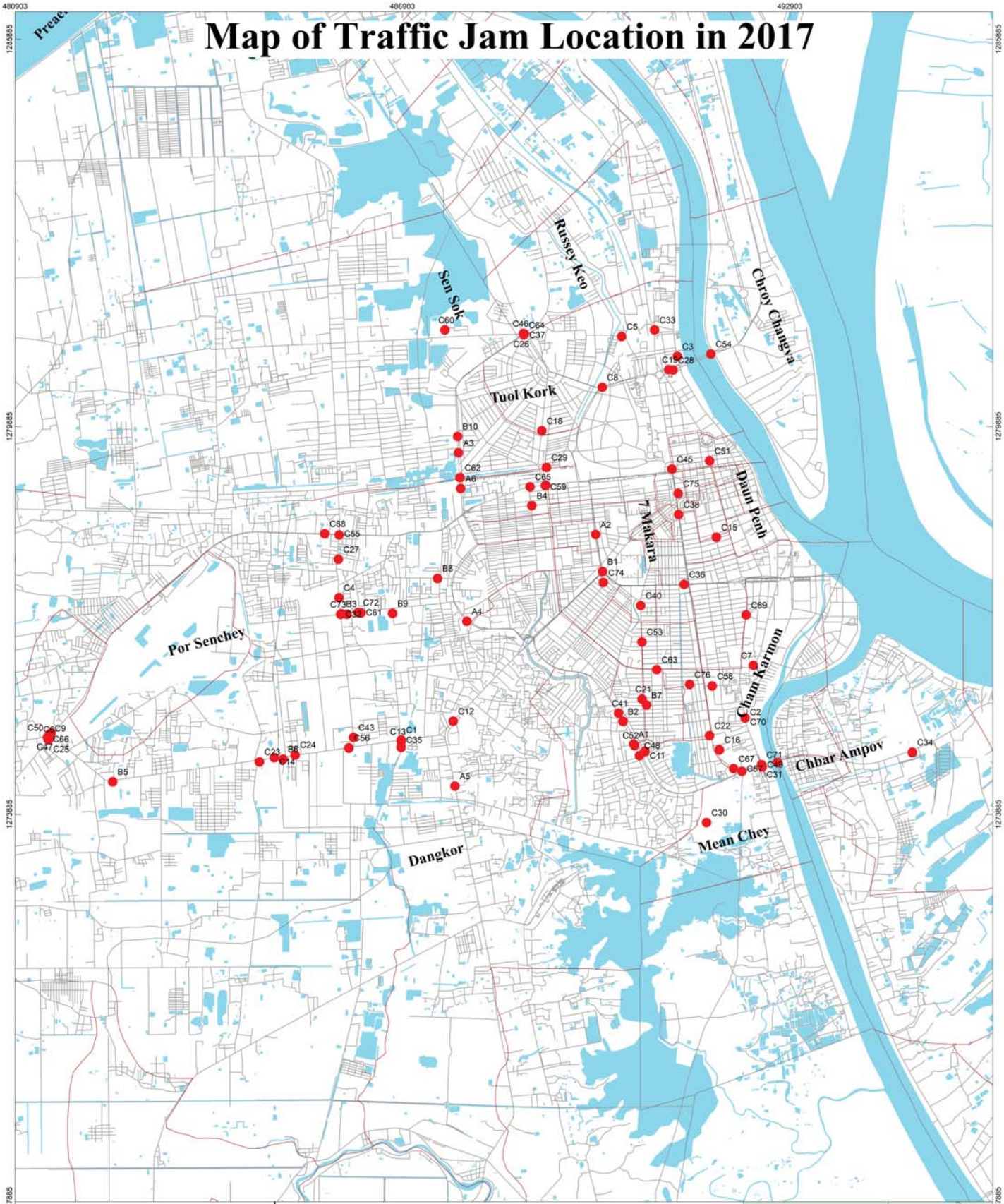
Map of Traffic Jam Location in 2017



0 1.75 3.5
Kilometers

Scale: 1:55,000
Coordinate System:
WGS 1984 UTM Zone 48N
Date: 12/13/2017

Cartographer: GIS Specialist

N

Sources: Location of traffic jam. Road (STT Phnom Penh road project, 2015). Khan boundary, Sangkat boundary (RGC degree, 2014).

កំណត់សម្គាល់
Legend

- ទីតាំងស្ទះចរាចរណ៍ Location of traffic jam
- ព្រំប្រទល់ខណ្ឌ Khan Boundary
- ព្រំប្រទល់សង្កាត់ Sangkat Boundary
- ទន្លេ បឹង រឺ ស្រះ River or Pond
- ផ្លូវក្នុងរាជធានីភ្នំពេញ Phnom Penh-Roads

7 Makara	Cham Karmon	Mean Chey	Sen Sok	Tuol Kork
C36	A1	C1	A4	A3
C38	A3	C12	A6	B10
Daun Penh	B1	C13	B3	B4
C3	B2	C24	B8	C17
C51	B7	C35	B9	C18
C15	C11	C74	C4	C59
C45	C16	Por Senchey	C14	C62
C33	C2	B5	C27	C65
Chroy Changva	C22	B6	C32	C8
C19	C40	C25	C43	A5
C28	C41	C39	C55	C23
C54	C48	C42	C56	C26
Chbar Ampov	C52	C44	C61	C29
C10	C53	C47	C72	C37
C20	C58	C6	C73	C46
C30	C63	C66	A2	C60
C31	C67	C75		C64
C34	C69	C9		
C49	C7	C50		
C71	C70			
Russey Keo	C76			
C5	C57			
	C21			

សមាគមទីប្រឹក្សាសង្គម
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