



## COVER

## Far Away but Together, the very first virtual Council Meeting was successful!



The 112<sup>th</sup> REAAA Governing Council meeting was held virtually on 7<sup>th</sup> July 2020. Previously it was scheduled to be held in Jakarta with the hospitality provided by the Indonesian Road Development Association (IRDA). However, due to the increasing concerns related to the COVID-19 pandemic, the Secretariat decided to hold it on-line. After a few pre-meeting test runs, approximately 40 Council members and representatives from member countries participated and discussed many important issues concerning the operation of the Association.

In addition to periodic reports, it was agreed to modify the existing schedules of the Association to reflect the post-pandemic situation. It was also agreed that REAAA would organize a webinar on the impact of COVID-19 and government responses to current demands in terms of the management of the road and transport system in the region.

The next (113<sup>th</sup>) Governing Council Meeting will be held on 27<sup>th</sup> November 2020 on-line. It will be the last Council Meeting before the 16<sup>th</sup> REAAA Conference and General Meeting in Manila, Philippines. We ask all members to stay healthy and safe, and we will see you again soon.



**Dr Sunghwan Kim**  
Chair of REAAA Korean Chapter



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## President's Message

### Greetings!

In 2013, one of the key discussion themes at the REAAA Conference was 'The Road Factor in Economic Transformation'. In these times of ongoing recovery from this current pandemic, I propose to rephrase it, 'The Road Factor in Economic Recovery and Resilience' as a reminder to all our members of our important role in having a real-world positive impact in our respective countries, particularly on the economy and the lives of our people.

Our history shows us that we have always overcome and adjusted to the challenges that face or endanger our societies. Needless to say, this pandemic is, so far, the biggest test we have faced among all recent catastrophes and disasters. Its effect upon our road networks is felt in the sudden halt of infrastructure works all over the world, including our region and my country, the Philippines.

Accordingly, and similar to many other countries in our region, the construction sector was one of the hardest hit. In the Philippines, I was one of the government officials who called for the resumption of construction works, both in the public and private sector, subject to health and safety protocols, having in mind the economic benefits associated with infrastructure projects. In May 2020, the Philippines and other member countries thankfully resumed infrastructure work including the construction, repair and maintenance of our roads.

I am pleased to note that risk reduction in the Philippines has moved beyond Disaster Risk Reduction and Management (DRRM) and Climate Change Adaptation (CCA). It has taken on a resilience lens, with the view of harmonizing DRRM, CCA and human security and advancing 'building back better' approaches. This resilience framing requires consideration of the complex and changing global risk landscape, and taking transformative actions to reduce the impact of disasters and emergencies on our lives, livelihoods and health, among others.

In this Newsletter, our members have prepared COVID-19-related articles such as its impact on the road transport sector in our region, including case studies of the response to tackling COVID-19.

As REAAA continues to promote the science and practice of road engineering and related professions in the Asia-Pacific region, let's remind our members that our roads represent the path to the multifarious recoveries each of our countries will have a trek – health, economic, psychological trauma, fear and anxiety. It is in this context that this Newsletter takes on a unique significance in these particular times – challenging our resilience as individual nations and global communities in this one world we share. Together with the other members of the governing Council and the co-opted Council members, I hope you stay safe and contribute to each of our countries' road to recovery and resilience.

Mabuhay!



**Romeo S. Momo Sr**  
Congressman  
House of Representatives  
President, REAAA





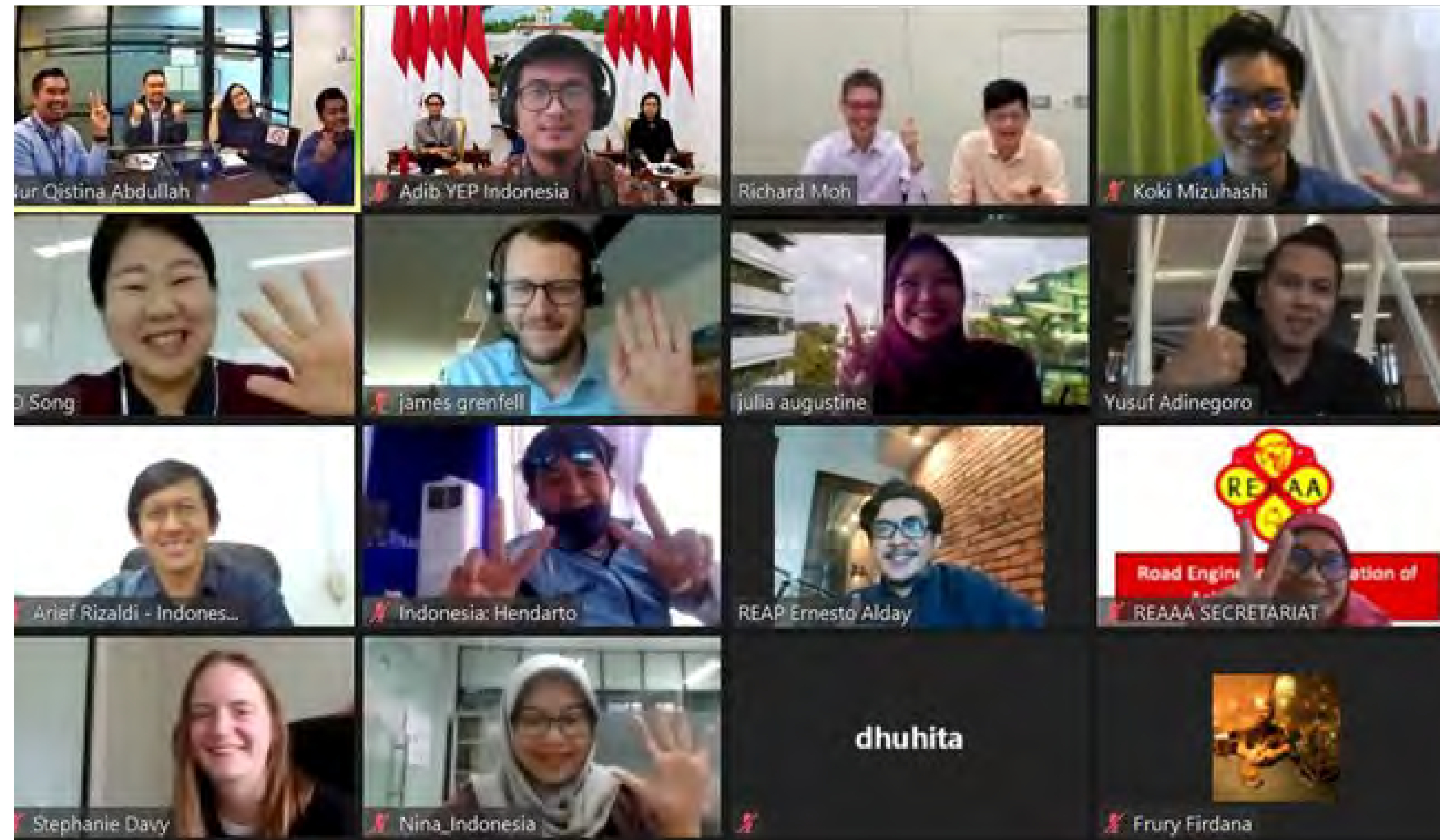
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## 17<sup>th</sup> REAAA Young Professionals Meeting 10<sup>th</sup> July 2020

Hosted by : Road Engineering Association of Malaysia (REAM)



The 17<sup>th</sup> REAAA Young Professionals meeting was held on 10<sup>th</sup> July 2020 from 9.00 am to 12.00 pm. It was held virtually using the Zoom platform after the meeting in Jakarta was cancelled due to the COVID-19 pandemic. This was the first REAAA Young Professionals meeting to be held virtually. It was hosted by the Road Engineering Association of Malaysia (REAM) Young Professionals and attended by representatives from Indonesia, Malaysia, Taiwan, Philippines, Japan, Korea and Australia. The meeting was set up to be a sharing session addressing the theme, 'How the COVID-19 pandemic is affecting road engineering in your country – young professional point of view.'

Muhamad Taufek bin Ismail from Malaysia reported how the road construction industry in Malaysia is being affected by the Movement Control Order imposed by the Malaysian Government. This has resulted in the suspension of all construction work since March, with on-site work conditionally resuming in May. The work resumed with limited work activities, a limited number of workers, the compulsory inspection of workers and separate vehicle operations.

Julia Agustine from Indonesia reported the Indonesian Government's reaction to the pandemic in terms of increasing expenditure to counter the economic impacts of the crisis. The Government has introduced a budget reallocation program refocusing strategy to overcome the effect of the pandemic on the economy.

A presentation by the Ministry of Transportation and Communications, Taiwan, focussed on the 3-11% decrease in freeway traffic volumes by all types of vehicles between February and April 2020. It was reported that the last domestic case of COVID-19 in Taiwan was identified on 12<sup>th</sup> April 2020 and there were no new cases until July 2020. This study is discussed in further detail in a separate article in this edition of the Newsletter.

IO Song from Korea reported on how the Government of Korea had responded to the COVID-19 pandemic. The Government has introduced a strategy to ensure safe road transport operation and to minimize the reduction in economic and logistics activities. There is no lockdown or control of movement in Korea. The Government has also introduced an initiative to support road transport operations such as exemptions from tolls and a rent grace period for the operators of service areas.

Koki Mizuhashi from Japan reported that the Government had initiated an emergency declaration to reduce the infection rate. He also reported that Japan had postponed the 2020 Olympic Games due to the pandemic. Other initiatives that are being introduced include converting manual toll collection booths to Electronic Toll Collection system, with 93% utilization rate.

Ernesto Alday from the Philippines shared details of the Philippines' Construction Safety Guidelines for the Implementation of infrastructure projects during the COVID-19 pandemic. Three types of quarantine have been introduced to the construction industry in Philippines during the crisis. Projects are being classified according to the types of quarantine, with project operation being dependent on the quarantine category.

James Grenfell from Australia shared his thoughts on how the government has reacted to control the pandemic. Temperature check points have been introduced and people are limiting their movement. Whilst there are no restrictions in some countries, the Government of Victoria imposed a curfew and limited the movement of people to within 5 km of their home and also only allowed travel for 2 hours a day. These restrictions have since been eased but not completely removed.

At the end of the session, it was agreed that the presentation material would be shared and a technical report would be prepared summarizing each presentation. The report could be included in the next issue of the any suitable REAAA publication.

After the session, Ernesto Alday from the Philippines presented the plan for the 16<sup>th</sup> REAAA conference, which is scheduled to be held in June 2021 in Manila. Young Professionals are encouraged to participate by submitting an abstract for the conference.



**Ir Hamzah Hashim**  
Road Engineering Association of Malaysia





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## Interview with Ir. Haji Zulakmal Haji Sufian, Honorary Secretary-General of REAAA

**Q** Please briefly introduce yourself & your responsibilities (related to REAAA)

**A** I am a former government servant and serve in the Public Works Department Malaysia since 1984 until 1<sup>st</sup> October 2020. My last post in the department was as the Deputy Director-General of the Public Works. I have been appointed the Honorary Secretary-General of REAAA since March 2017. Among the responsibilities that come with the post is to follow through on the decisions made at REAAA Council meetings while at the same time analyzing and proposing further improvements to the organization via the same. I am also responsible for overseeing the operation of the REAAA Secretariat in Kuala Lumpur.



**Q** As an organizer, can you share your experience with the 112<sup>th</sup> Council Meeting, the first on-line council meeting of REAAA?

**A** As we are all aware, the COVID-19 pandemic took us all by surprise early this year. In our last Council meeting in Taiwan, it was decided then that the 112<sup>th</sup> Council meeting would be held in Indonesia in April 2020. However, after being advised by our members in Indonesia, and acknowledging the fact that various travel restrictions due to the pandemic were prevalent at that time in member countries, the Secretariat obtained the approval of the President to hold the 112<sup>th</sup> Council meeting on-line.

Among the main challenges in organizing on-line meetings are the selection of a stable online platform available in member countries, time zone differences, and identifying a venue with suitable facilities. The Secretariat carried out a survey among council members and, based on that survey, we decided to run the meeting on the Zoom platform. The Public Works Department in Kuala Lumpur kindly offered a suitable venue for the meeting. We would like to think that the meeting was successfully organized and future online meetings can be considered should the pandemic still persist.

**Q** What are the follow-ups after the council meeting? Any plans for the next virtual meeting/event?

**A** The 112th Council meeting made many decisions to be followed through by the Secretariat. Amongst them is an online seminar on topics related to COVID-19, memberships issues, the theme for next year's REAAA Conference, etc. It is the duty of the Secretariat to take immediate actions on the decisions made. Pertaining to the COVID-19 seminar, the Secretariat is currently in the midst of preparation and the arrangements will be shared amongst REAAA member countries real soon.

**Q** There have been a lot of virtual meetings in the road engineering and transportation sector due to the pandemic recently. Do you have any advice or lessons to share for effective virtual meetings?

**A** Among the concerns related to virtual meeting/events is how to keep its members/viewers engaged for the duration of the meeting/event. Proper arrangement must be made, including:

- Choosing a stable and good online meeting platform.
- Prior to a virtual meeting, all participants should test the technology and make sure they are comfortable with the major features. This can be done by Council members assigning their helpers to familiarize themselves with the selected software packages.
- The meeting must have a clear objective and agenda which should be circulated well before the meeting. During the meeting, use the agenda and clearly outline the next steps (including timing and accountabilities) after each Agenda item and at the end of the meeting.
- An icebreaking session should be conducted to get everyone talking.
- Minimize presentation length.
- If a poll is to be conducted during the meeting, capture it in real-time to make sure all voices are heard.
- The meeting participants should use a good webcam and sit close to it so that they can see each other's facial expressions and body language.

**Q** Would you like to add any other comments?

**A** Members of REAAA must embrace the real objectives of the Association. Since its formation on 15<sup>th</sup> June 1973, REAAA has enabled road players within the Asia-Pacific region to come together and discuss and share their experiences for the mutual benefits of members. Throughout the years, REAAA members have supported conferences/meetings organized by member countries. The interaction between members has resulted in many exchanges of technologies and business ventures been set up. In my opinion, these noble objectives should be perpetuated by the Association.

In that respect, REAAA must expand its membership and attract new members, especially from the institutions and young engineers. Between the four-year interval of REAAA Conferences, we should organize more events to initiate better interaction among members, while at the same time getting some financial benefits. During this pandemic, on-line events under the REAAA banner should be encouraged, some of which, we may consider charging nominal fees.



**Ila**  
REAAA Secretariat



**IO Song**  
REAAA Korean Chapter





## Special Articles 1

# COVID-19: Key Lessons for the Road and Transport Community



**Patrick Malléjacq**  
Secretary General, PIARC



**Caroline Evans**  
National Transport Commission, Australia



**Consequences of the Covid-19 on the Hellastron Network in Greece**  
(Attica Tollway, Metamorphosis East Plaza on 5 March and 2 April 2020  
(from Bill Halkias presentation on 8 April 2020)

*This article was prepared by Patrick Malléjacq (Secretary General of PIARC) and Caroline Evans (Principal Policy Advisor, National Transport Commission, Australia, Chair of PIARC T 1.4). It is based on an earlier article published in PIARC's Route/Roads magazine by the PIARC COVID-19 Response Team.*

## Introduction

The COVID-19 pandemic is an unprecedented global health and societal emergency that required immediate and effective action in multiple dimensions. All of us have a key role to play in minimizing the likelihood of virus transmission and the impact on individuals, communities, and businesses, as well as supporting a strong and sustainable recovery.

In this context, road transport, which is an essential service critical to maintaining the movement of key workers, goods, supplies and services, must remain operational. Effective crisis management, including for global pandemics such as COVID-19 that may disrupt road operations in multiple ways, requires cooperation and coordination among several stakeholders. These stakeholders include government decision-makers, road owners and operators, public

transport and other transit and traffic agencies, including private companies providing transport, logistics and mobility services, and emergency services and road users.

It is anticipated that COVID-19 and its impacts will last for some time. As a result of the medium- to long-term implications for roads and transport sector organizations, the PIARC General Secretariat, with approval from the President of PIARC and the Chair of the Strategic Planning Commission, moved quickly, in March 2020, to establish a formal PIARC COVID-19 Response Team. The major objective of this Team is the rapid sharing of knowledge and practices between PIARC members on the impacts of, and responses to, the pandemic and the associated economic and social crisis. The membership of the Response Team is provided in the Appendix.

In an effort to share time-sensitive information on actions taken by road and transport administrations during this crisis, which could also be of use to other jurisdictions, the PIARC COVID-19 Response Team organized a series of webinars for practitioners and experts to share their experience, knowledge, and some of the most effective responses that are emerging regarding COVID-19. It is recognized that, while current practices are not yet fully validated, and what works in some parts of the world may not be relevant globally, these shared experiences can be valuable tools during crisis management, where a good idea now could save lives, improve business resilience and minimize service disruption both now and in the future. This article presents some of the key observations and learnings from these webinars.

## Early Issues Emerging from the COVID-19 Pandemic

In preparing for the webinars, the Response Team first looked to identify the key issues and emerging trends for COVID-19 across PIARC members and the roads and transport sector, with the following six categories being initially evident:

- Ensuring employees' health and safety.
- Maintaining activity and business continuity.
- Impacts on transportation.
- Business relationships.
- Customer, stakeholder relationships and collaboration.
- Security.

## PIARC COVID-19 Webinars

A total of 24 international webinars were held between March and July 2020, with 17 presented in English, three in French and four in Spanish.

In order to allow more open and frank disclosure of information and debate from the webinars' participants, PIARC issued a disclaimer:





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*“The ideas and examples shared here are for illustration only and to support timely and mission-critical responses by road and transport agencies in tackling the COVID-19 pandemic. They do not necessarily represent official policy of PIARC or its members and may be subject to further evaluation in delivering recommendations for policy and practice in due course. While care has been taken in the preparation of this material, no responsibility is accepted in its use for any omission or damage that may be caused.”*

The webinars provided an overview of the current situation with COVID-19 in different countries, including:

- the issues faced by road operators and administrations
- best practices from relevant PIARC reports
- emerging planning, operational and customer service responses.

All webinars provided an opportunity for questions and answers. They included a diverse portfolio of presentations from more than 90 speakers from all parts of the world.

More importantly, the webinars touched on a number of areas including:

- alternative approaches and measures taken by road and transport administrations
- business continuity
- the role of road network operations and ITS
- consequences and threats to road operators and tolling authorities
- issues relating to public versus private and individual versus mass transport perspectives
- the identification of the impacts of COVID-19 on freight, mobility, and resilience.

Finally, they provided an opportunity for private sector and supply chain viewpoints, and how companies are being impacted as well as the many public agencies world-wide.

A dedicated area of the PIARC website has been created with copies of all the videos and presentation slides from all the webinars. This information can be found on the PIARC Special Website on Covid-19 Response:

<https://www.piarc.org/en/News-Agenda-PIARC/Coronavirus-PIARC-and-Covid-19>.

This valuable information is accessible to everyone, for free. In addition, two Bulletins summarizing the findings from the webinars have been published and are available in the PIARC virtual library.

## Webinar Registrations

A total of 860 participants attended the webinars, of whom 33% were women. Information regarding participation in the webinars follows.

## PIARC & COVID-19: Strong Participation Worldwide



In Asia, attendance was strongest in India, Japan, Malaysia, China and Indonesia. PIARC is very thankful to the distinguished speakers from REAAA countries, including:

- Alan Colegate, Main Roads Western Australia – member of PIARC Committee 1.1, Performance of Transport Administrations, and English Secretary and Workgroup Co-Leader.
- Jun Takeuchi, Japan – Technical Advisor to PIARC General Secretariat.
- Christina Heffner, Queensland Department of Transport and Main Roads, Australia – member of PIARC Committee TC 2.3, Freight.
- Dato’ Dr Dennis Ganendra, – Minconsult Sdn. Bhd, Malaysia – member of REAAA Governing Council.
- Professor Seonha Lee, Kongju National University, Korea – member of PIARC Committee TC 1.1, Performance of Transport Administrations.
- Mr Chandrasekar & Ms Wee Ping Koh, Land Transport Authority, Singapore – members of PIARC Committee TC 2.4, Road Network Operations/ITS.
- Caroline Evans, National Transport Commission – Chair of PIARC Committee TC 1.4, Climate Change and Resilience of Road Networks.





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PIARC is also very proud that the following international partner organizations agreed to take part in its webinars and could share their specific experience and projects.

While the first webinars were held in response to an invitation to the First Delegates of PIARC only, and later to Technical Committee (TC) Chairs and Secretaries, these events attracted considerable interest and further participation from PIARC members and other transport professionals across the world. As a result, registrations were then also extended from TC Chairs and Secretaries to other Committee members and, eventually, the last webinar was open to all (upon registration).

Additional interest was identified through access to the webinar videos and presentations, via PIARC's website. The recordings represent a total of more than 47 hours of presentations.

## Many PIARC Partner Organisations agreed to join our Webinars as panelists



- In addition to many panelists from the network of PIARC members

## Summary of Key Emerging Issues

Based on the webinar series, the following key issues and commonalities have been identified across the topics, countries and organizations that presented. The issues validate, and further expand, the evidence base identified, reflecting on the six early-issues categories identified by the COVID-19 Response Team set out above.

- General impacts on the road and road transport sector.
- Employee health and safety.
- Maintaining activity and business continuity.
- Impacts on the transportation of passengers and goods.
- Business relationships.
- Collaboration and relationships with customers, stakeholders, and other organizations.
- Security.

The early findings are presented in two PIARC Briefing Notes, which can be downloaded from PIARC's website.

It is evident that the economic and social impact of COVID-19 is widespread across governments and private sector operators in the road transport sector. In addition to the extensive consequences associated with reduced revenues across the sector, it has also been acknowledged that there are impacts on banking systems and loan disbursements. In some countries there is a slowdown in the execution of development projects due to the impact on project financing, and access to the required inputs that are imported.

Finally, a pandemic is an unwanted event which has a low probability, but very high consequences at the economic and social levels. An emerging theme is that a future pandemic will (and must) find the road and transport administrations more resilient and better prepared for the phases of prevention, containment, robustness, recovery and adaptation in the face of this event, to enable the world to return to a (new) normality, and armed with a battery of measures aimed at assisting employees, customers, suppliers and the public.

## Final Remarks

In many parts of the world, relaunching the economy is now a high priority on the political agenda. Roads and road construction are ideally placed to play a leading role in investment plans, not only because the sector is vital to the social and economic fabric of society, but also because road construction is a purveyor of jobs that can help address the unemployment juggernaut. These issues, and how they are handled across the globe, was the topic of the first PIARC webinar of the new season, which took place on 30 September 2020, in Spanish. Following its initial activities, the PIARC COVID-19 Response Team is continuing to organize further webinars, bringing in new countries, organizations and focus areas.





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The webinar program continues to provide a useful global platform to share relevant information and practices from around the world on pandemic impacts and responses for the road and transport community and to assist in promoting best practice approaches. As the pandemic continues, and the world looks towards eventual recovery, PIARC intends to continue sharing insights which road and transport administrations could use in making critical strategic and operational decisions and preparing for the 'new normal' that may follow the current 'perfect storm' of circumstances, both in terms of challenges which must be tackled and opportunities which could be exploited. While for now most of the information shared addresses immediate actions during the critical phase of the pandemic, it is equally important to share experiences and information in the future as the world's economies begin to reopen and recovery steps commence.

For PIARC, this concerted effort is a learning experience, which has been shared at the global level. We broke new ground, used new tools, established new norms on how to get things done quickly. Getting information out to our community was fast tracked: we took immediate action and delivered valuable needed information in a very short amount of time and across the globe. This also means that this work did not go through the rigorous exercise of validation that PIARC reports typically go through.

It is therefore now time, while we continue the webinar program, to revisit and re-assess what was shared, and validate and identify good practices that can serve well in the future, especially now that a re-emergence of the pandemic seem to be occurring in many countries. The input gleaned from the PIARC webinars, together with the analysis of the results of an international survey that the COVID-19 Response Team developed in September, will feed into a formal report on the early impacts of the pandemic on the roads and transport sector which is to be published before the end of the year. Evaluation will be very important. Many countries and operators decided on, and implemented, measures in a hurry and we now need to step back and analyze what worked and what did not work, through time-tested evaluation methods. We also need to start from the viewpoint of the customers' and road transport users' expectations. Have they changed? What new policies should be developed? What are the available resources to be put towards these expectations? What is the new revenue situation?

The experience and the fallout from the COVID-19 crisis will also be reflected in the work that several PIARC Technical Committees and Task Forces will incorporate into their work. For example, you can expect PIARC Committee TC 1.2 to analyse the impact of the crisis on the economic analysis of road projects, and PIARC Committee TC 2.3 to share best practice on how to manage freight efficiently in a pandemic situation, to name just a few.

## References

- <https://www.piarc.org/en/News-Agenda-PIARC/Coronavirus-PIARC-and-Covid-19>
- <https://www.piarc.org/en/order-library/33290-en-COVID-19:%20Key%20Lessons%20for%20the%20Road%20and%20Transport%20Community%20from%20theLatest%20PIARC%20Webinars>
- <https://www.piarc.org/en/order-library/33167-en-COVID-19:%20Key%20Lessons%20for%20the%20Road%20Community%20from%20the%20first%20PIARC%20Webinars>

## Appendix: Membership of PIARC COVID-19 Response Team

- Patrick Malléjacq, Secretary General, PIARC (Chair) (FR)
- Christos Xenophontos, Rhode Island DOT, TC 1.1 Chair (USA)
- José Manuel Blanco Segarra, Ministerio de Transportes, Movilidad y Agenda Urbana, TC 1.1 Spanish Secretary (ES)
- Jonathan Spear, Atkins, TC 1.1 WG 2 Leader (UK)
- Fabio Pasquali, ANAS SpA, TC 1.2 Chair (IT)
- Caroline Evans, National Transport Commission, TC 1.4 Chair (AU)
- Yukio Adachi, Hanshin Expressway Engineering Corporation, TC 1.5 Chair (JP)
- Andrea Simone, University of Bologna, TC 2.1 Chair (IT)
- Luis Miranda-Moreno, TC 2.1 Spanish Secretary (CA)
- Martin Ruesch, Rapp Trans Ltd, TC 2.3 Chair (CH)
- Valentina Galasso, Deloitte Consulting, TC 2.4 Chair (IT)
- Pascal Rossigny, CEREMA, TC 3.3 French Secretary (FR)
- Saverio Palchetti, ANAS SpA, TF 3.1 Chair (IT)
- Andrea Peris, Paraguay National Committee (PY)







## Special Article 2

## Effect of 2020 COVID-19 on Freeway Traffic Volume in Taiwan

**Shing-Hua JAW**

Director General, Freeway Bureau, Ministry of Transportation and Communications, Republic of China (Taiwan).

**Ming-June CHO**

Division Chief, Traffic management division, Freeway Bureau, Ministry of Transportation and Communications, Republic of China (Taiwan).

**Ming-Jer TSAI**

Section Manager, Traffic operation section, Traffic management division, Freeway Bureau, Ministry of Transportation and Communications, Republic of China (Taiwan).

**Yu-Kai HUANG**

Junior Engineer, Traffic operation section, Traffic management division, Freeway Bureau, Ministry of Transportation and Communications, Republic of China (Taiwan).

The 2019 novel coronavirus (COVID-19) is highly contagious and lethal. In the beginning of 2020, COVID-19 became a global outbreak which has caused infections and deaths all over the world.

In Taiwan, the first case of COVID-19 was found on January 21, 2020. And the first case of COVID-19 from Pan Shi marine ship was found on April 18, 2020. We take lots of effort to avoid confirmed cases increasing. For example, we strengthened the disinfection and built thermal imaging system for surveillance in freeway service area, shown in Figure 1 and 2.



Figure1. Disinfection in freeway service area



Figure2. Thermal imaging system for surveillance in freeway service area

Fortunately, the last domestic case in Taiwan was found on April 12, 2020. There had not been any new cases until Nov. 1, 2020. Since then, Taiwan's domestic epidemic has been controlled and gradually abating.

Transportation can be perceived as an induced demand which represents a demand responsive to economic activity. When COVID-19 outbreak caused significant impacts, it also had significant impacts on freeway traffic volume. Therefore, this report aims to explore the impacts of freeway traffic volume in Taiwan from January to October by comparing data in 2019 and 2020. We take this report as a reference in case it would have another epidemic outbreak in the future. The results of this study are as follows.

- Comparing data in 2019 and 2020, 2020 freeway traffic volume in all types of car gradually decreased by 3-11% from January to October. It started to pick up in May. And in June, it increased by 4% from 2019 on weekdays, and increased by 8% from 2019 in August on weekends. These fluctuations are related to the impact of the epidemic, shown in Figure 3.

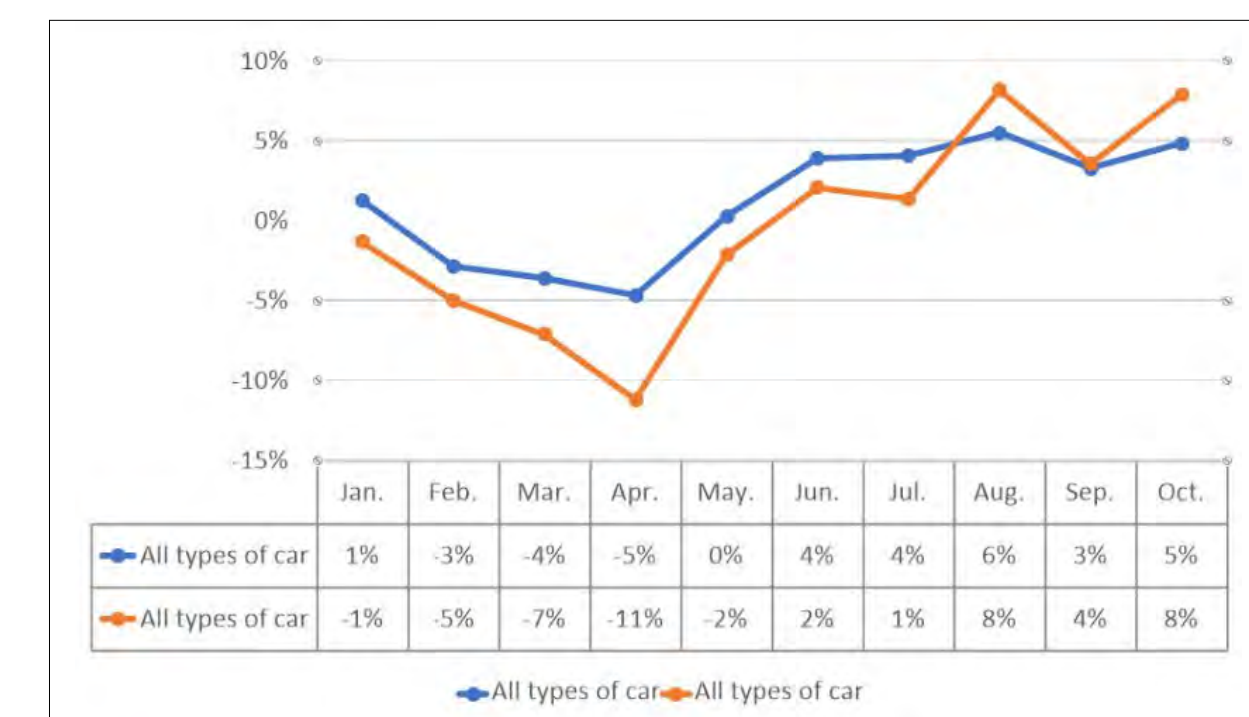


Figure3. Comparison of freeway traffic volume on all types of car between 2019 and 2020

- Freeway traffic volume on weekends decreased more than weekdays. It decreased by 11%, and then gradually increased by 8% on weekends. And it decreased by 5%, and then gradually increased by 6% on weekdays.
- The decline in the traffic volume of buses was more serious than other kinds of vehicles. It decreased by 47% in April on weekdays, and decreased by 69% in April on weekends, shown in Figure 4 and 5.

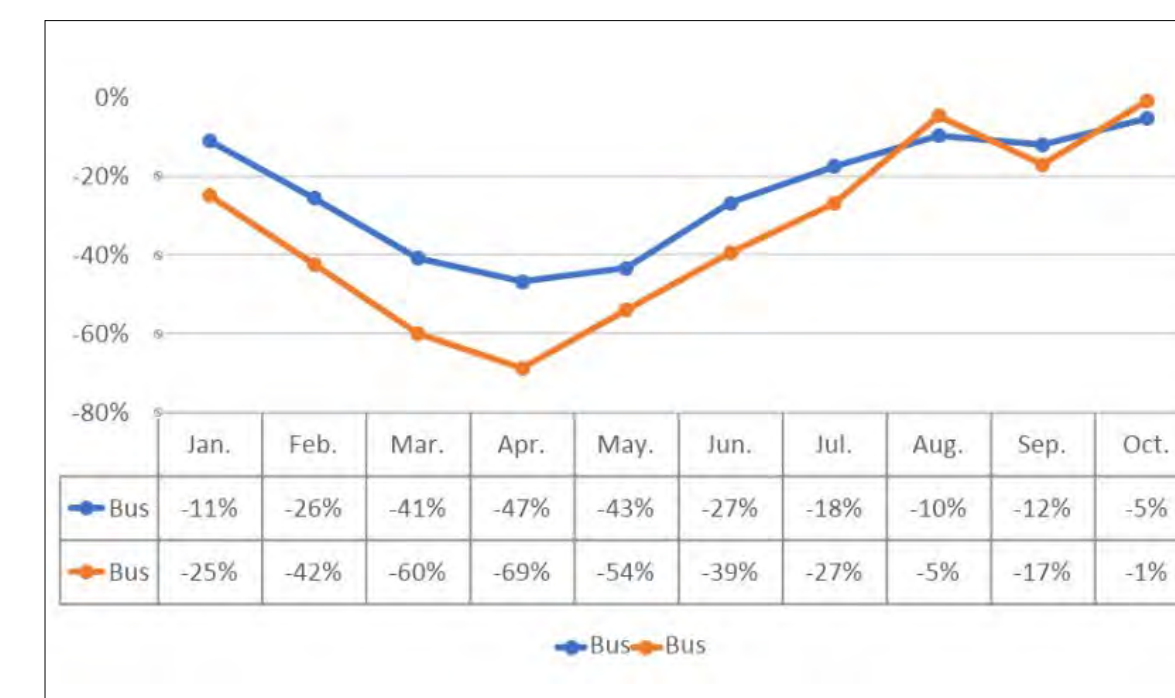


Figure4. Comparison of freeway traffic volume on bus between 2019 and 2020

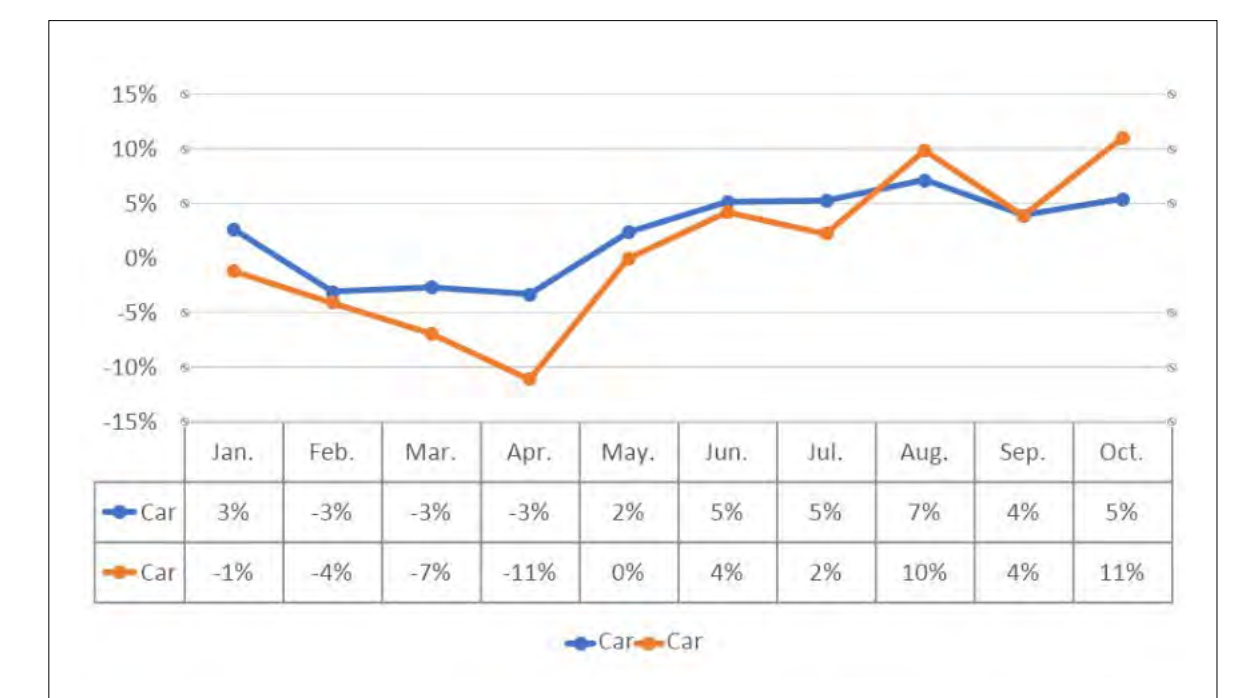


Figure5. Comparison of freeway traffic volume on car between 2019 and 2020





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- Compared to different areas, freeway traffic volume in northern region decreased the most. It decreased by 12%, and then gradually increased by 4%. The central region decreased by 12%, and then gradually increased by 10%. The southern region increased the most. It decreased by 10%, and then gradually increased by 15%, shown in Figure 6 and 7.

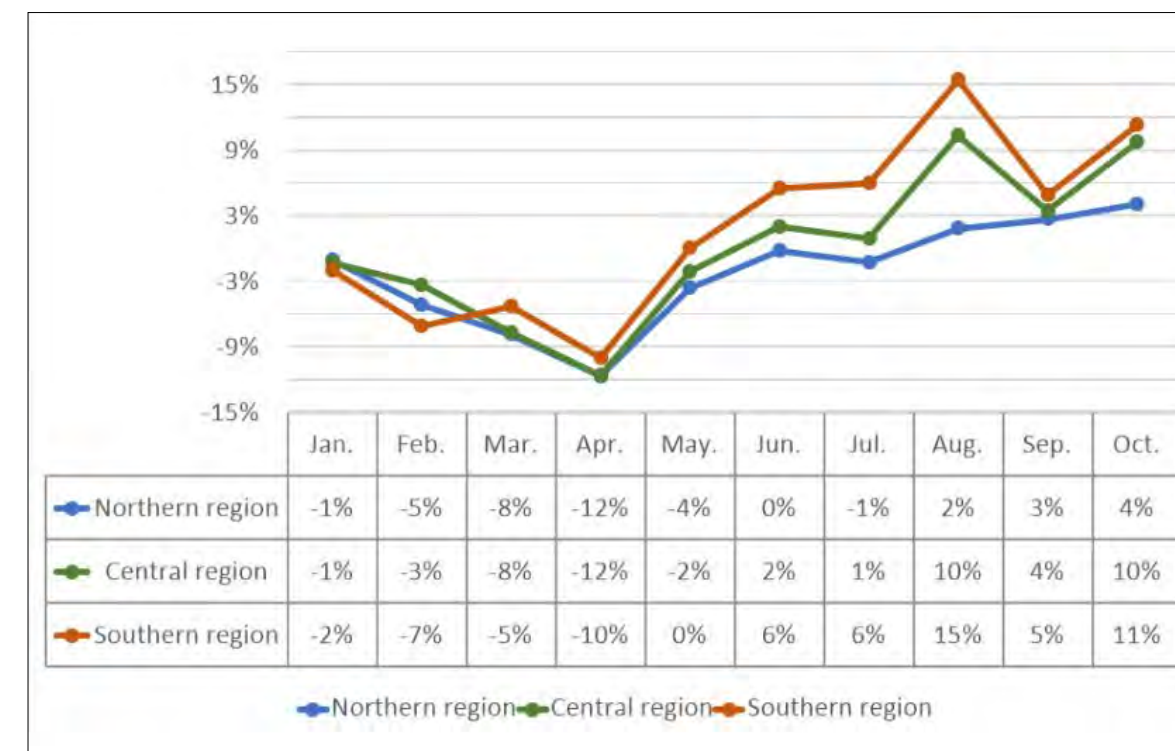


Figure 6. Comparison of weekdays traffic volume in different regions between 2019 and 2020

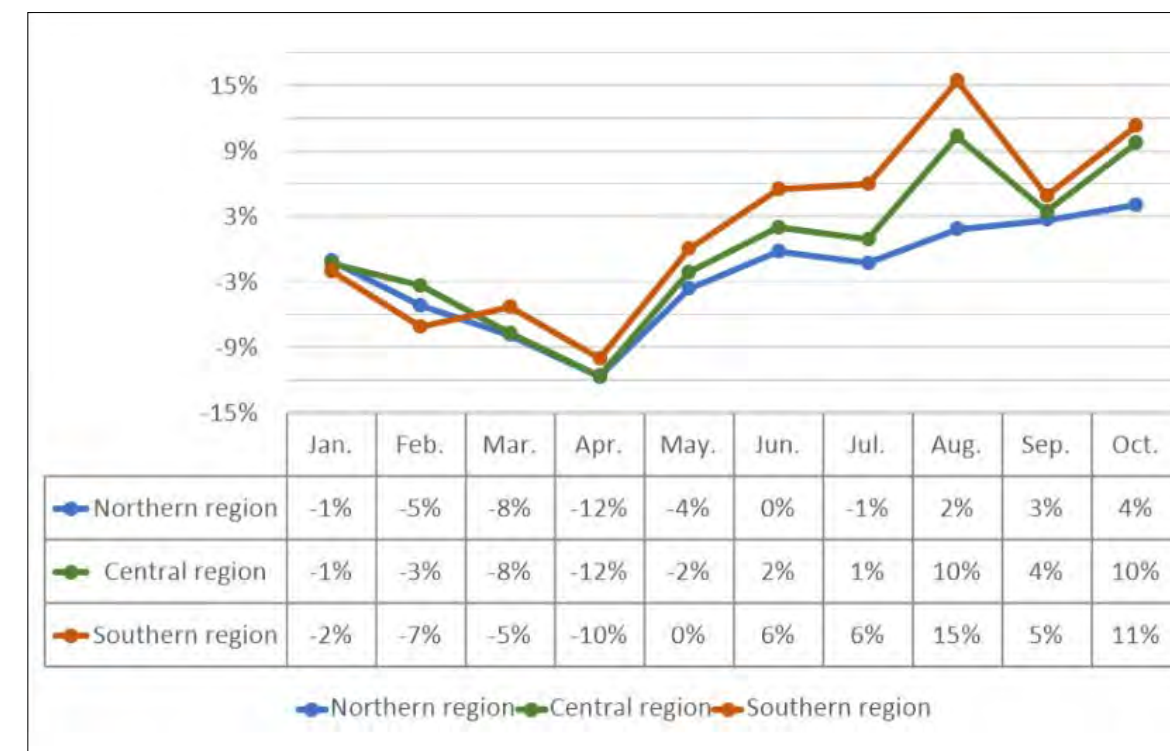


Figure 7. Comparison of weekends traffic volume in different regions between 2019 and 2020

- Compared to different freeways, traffic volume of Freeway No.1 decreased by 12%, and then gradually increased by 6%. Elevated road of Freeway No.1 decreased the most by 0-21%. The increase in traffic volume in Freeway No.3 ranked in the second place. It decreased by 9%, and then gradually increased by 13%. Freeway No.5 increased the most by 1-13%, as shown in Figure 8 and 9.

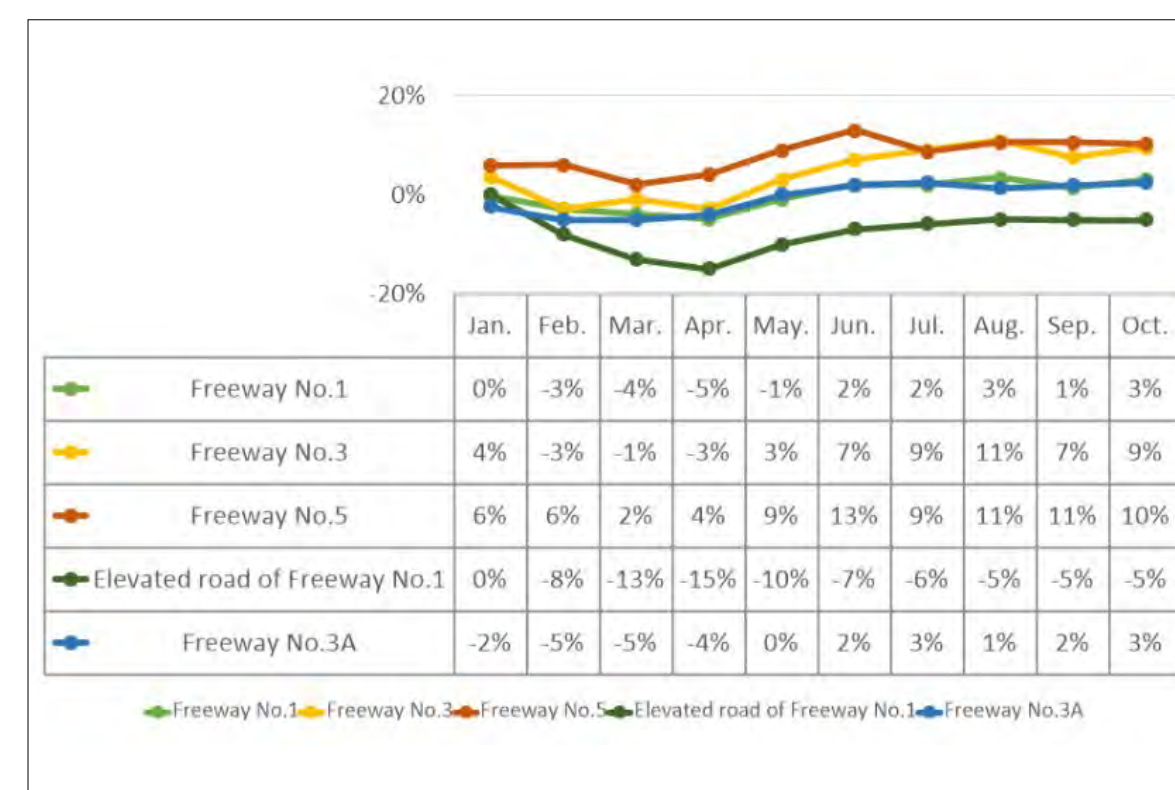


Figure 8. Comparison of weekdays traffic volume on different freeways between 2019 and 2020

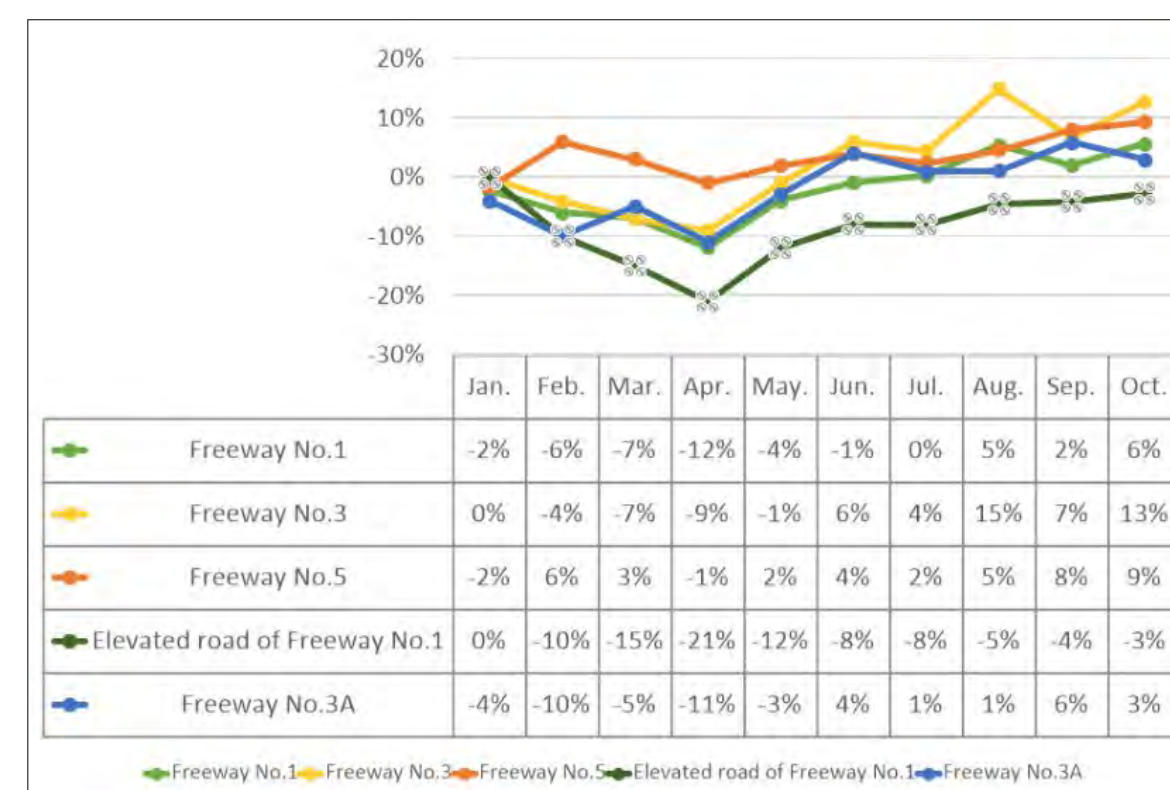


Figure 9. Comparison of weekends traffic volume on different freeways between 2019 and 2020

- Compared to the cause of diagnosis, we found that indigenous cases and the cases from Panshi marine ship have a stronger connection with the trend of freeway traffic volume.

- In Taiwan, we have several long holidays. Lunar New Year Festival, Peace Memorial Day, and Tomb Sweeping Festival were all obviously affected by the epidemic. The traffic volume on those national holidays decreased by 3-15%. And after domestic epidemic started to gradually abate, it increased by 8% on Dragon Boat Festival, shown in Figure 10.

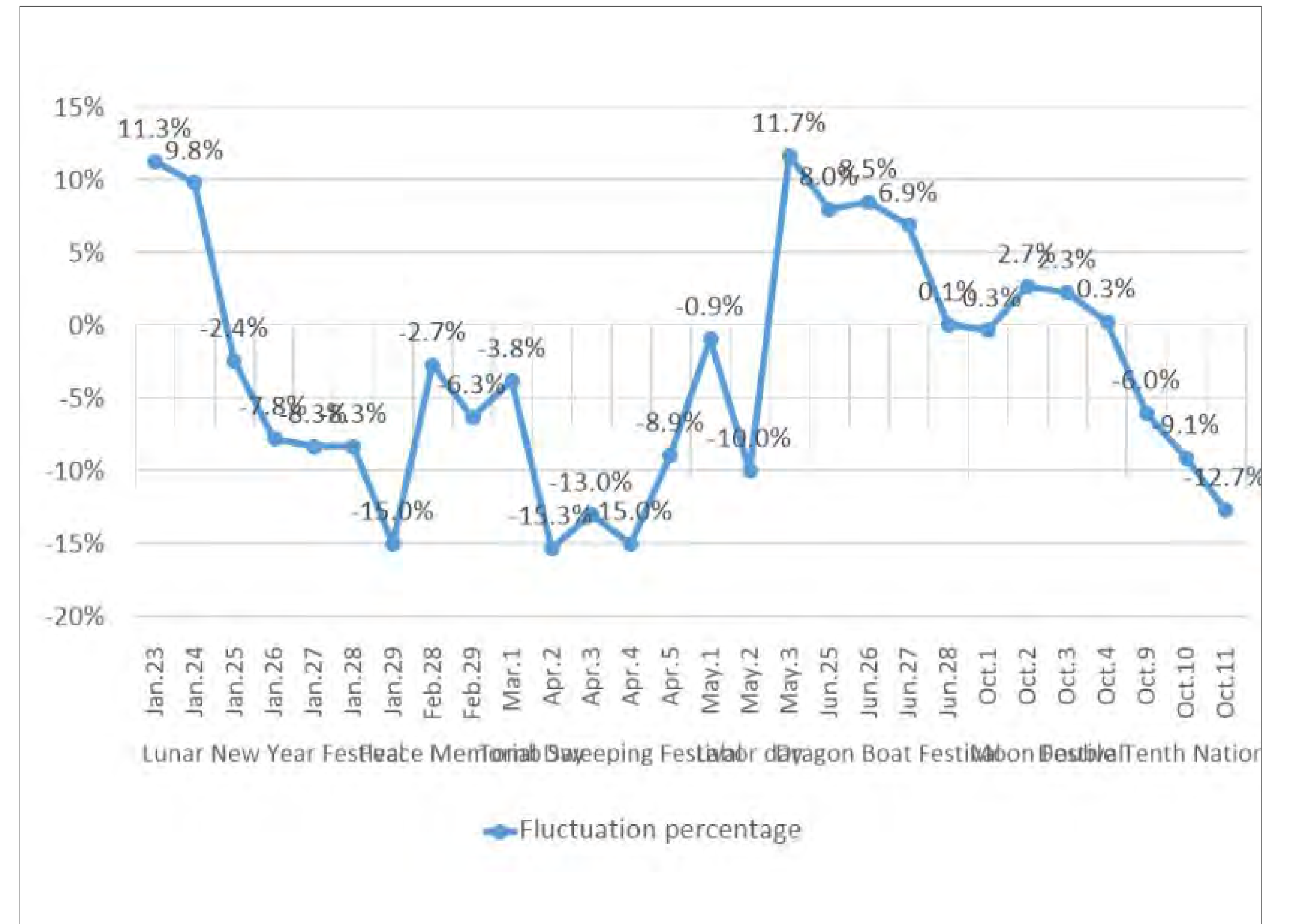


Figure 10. Comparison of traffic volume on different long holidays between 2019 and 2020

In conclusion, freeway traffic volume gradually decreased from January to October, and started to pick up in May. It shows that COVID-19 has a stronger connection with the trend of freeway traffic volume. We will keep track of this case until the epidemic is over.





## Special Article 3

## The Spread of COVID-19 and the Change in Demand for Urban Shared Mobility

### – Focus on Cases of Daegu in the First Half of 2020



**Junghwa Kim**  
Assistant Professor,  
Kyonggi University,  
Korea



**Hojeung Kim**  
Senior Research Fellow, Korea  
Research Institute of Human  
Settlement, Korea



**Keun wook Kim**  
Director, Daegu Digital Industry  
Promotion Agency,  
Korea

A temporal and spatial analysis of the changes in demand for urban transportation in Daegu Metropolitan City, Korea, before and after social distancing was implemented amid the COVID-19 pandemic, was conducted. The study looked into the changes in usage patterns of public transportation, the shared transportation system, and the mobility support system for anyone affected by reduced mobility. Better ways were suggested to respond to the paradigm shift in urban transportation demand in the post-COVID-19 era.

#### Spread of COVID-19 and social distancing

*'Social distancing' is implemented under the initiative of the government to curb the spread of infectious diseases.*

The number of confirmed cases in Daegu Metropolitan City surged in February 2020, including the 31<sup>st</sup> coronavirus patient (super spreader) among the confirmed cases<sup>1</sup>. A week later, the number of confirmed cases<sup>1</sup>, which had been one as of 18<sup>th</sup> February 2020, increased to about 450, and subsequently exceeded 5,000 by early March. On 15<sup>th</sup> March, the government declared Daegu Metropolitan City and parts of Gyeongsangbuk-do Special Disaster Areas. It also implemented social distancing measures nationwide, including limiting any unnecessary contact with others outside citizen's homes, in an attempt to limit the rapid transmission of COVID-19.

On 22<sup>nd</sup> March, Prime Minister Chung Sye-kyun, the head of the Central Disaster and Safety Countermeasure Headquarters (CDSCH), announced 15 days of intensive social distancing measures. The policy measures involved a social campaign aimed at reducing human-to-human contact to contain the infectious disease, including the closing of schools, working from home, and cancelling meetings as well as maintaining the required social distancing during personal contact. The goal was to reduce the potential contact between infected and uninfected people to slow down the spread of the disease and ultimately minimize the fatality rate.

As can be seen in Figure 1, three strengthened social distancing processes were implemented between 2<sup>nd</sup> March and 5<sup>th</sup> April (15 days), 6<sup>th</sup> April and 19<sup>th</sup> April (14 days), and 20<sup>th</sup> April and 5<sup>th</sup> May (16 days).

1) Regardless of clinical features, those who had been confirmed to have the virus according to the test criteria for diagnosis were assigned a number and managed by the Korea Disease Control and Prevention Agency in Korea

Source: Based on Daegu Metropolitan City data.

2) Founded in 2011, it is the largest car-sharing company in Korea

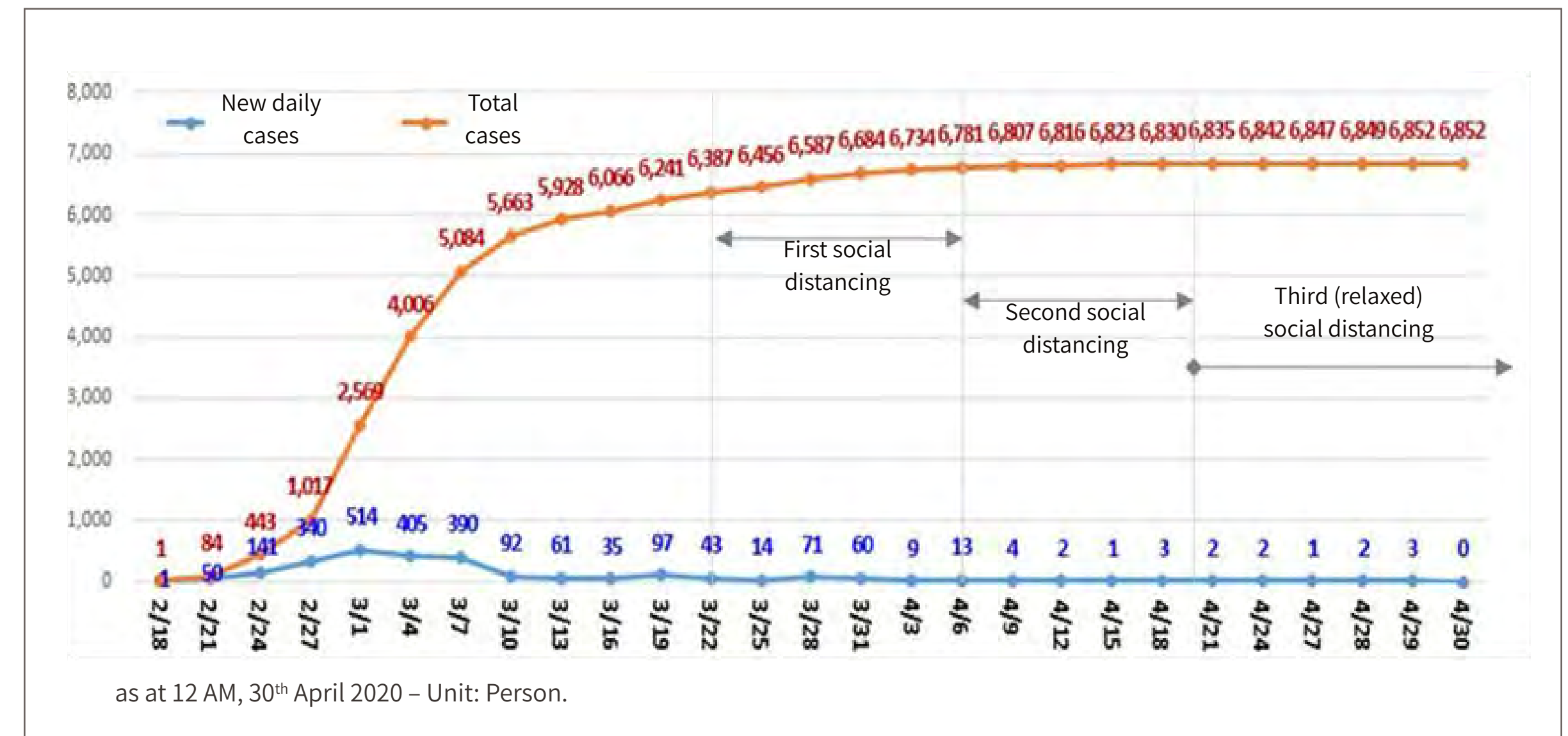


Figure 1: Trend in the number of confirmed cases and deaths in the Daegu region during when social distancing was implemented

#### Was the shared transportation system in Daegu Metropolitan City also affected?

*The number of users dropped to less than half that for the same period last year, but the overall hours of use increased.*

SOCAR<sup>2)</sup>, a car-sharing system established in 2011, is the largest car-sharing company in Korea and, unlike rental cars, it charges gas mileage at a driving rate per kilometer.

The number of SOCAR users in Daegu was 63.9 % between January and April 2020, and 46.1% between March and April, less than half compared to the previous year. On the other hand, the average hours of use between January and April 2020 increased by 2.05 times compared to the same period in 2019. Between January and February, the hours of use increased 1.76 times compared to the previous year, but in March the increase was more than three times that in 2019. This is presumed to have been partly attributable to the shift in demand for long-distance transportation from public transportation to shared transportation, but further analysis is required.

In the case of shared transportation for people with reduced mobility, the change in the usage patterns varied according to the type of disability.

After conducting a time-series analysis on the numbers of users of Nadeuri Call<sup>3)</sup>, a transportation support system for people with reduced mobility<sup>4)</sup>, the use fell sharply after 18<sup>th</sup> February 2020 and then slowly recovered (Figure 4).

3) Special means of transportation operated by the Daegu Infrastructure Corporation to secure mobility rights and enhance mobility convenience for people with reduced mobility.

4) People who experience inconvenience in mobility in their daily lives, such as those with disabilities, the aged, pregnant women, people with infants, and children (Article 2 subparagraph 1 of the Act on Promotion of the Transportation Convenience of Mobility Disadvantaged Persons).





# REAAA Newsletter

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The traffic volume fell the most among elderly people and those with brain and visual disabilities. While the number of people with mental and intellectual disabilities reduced, it also recovered relatively quickly. In terms of transporting people with a kidney disability, the traffic volume did not decrease significantly after the onset of the COVID-19 pandemic. The transport of intellectual-disabled people recovered the fastest after an initial sharp drop in usage.

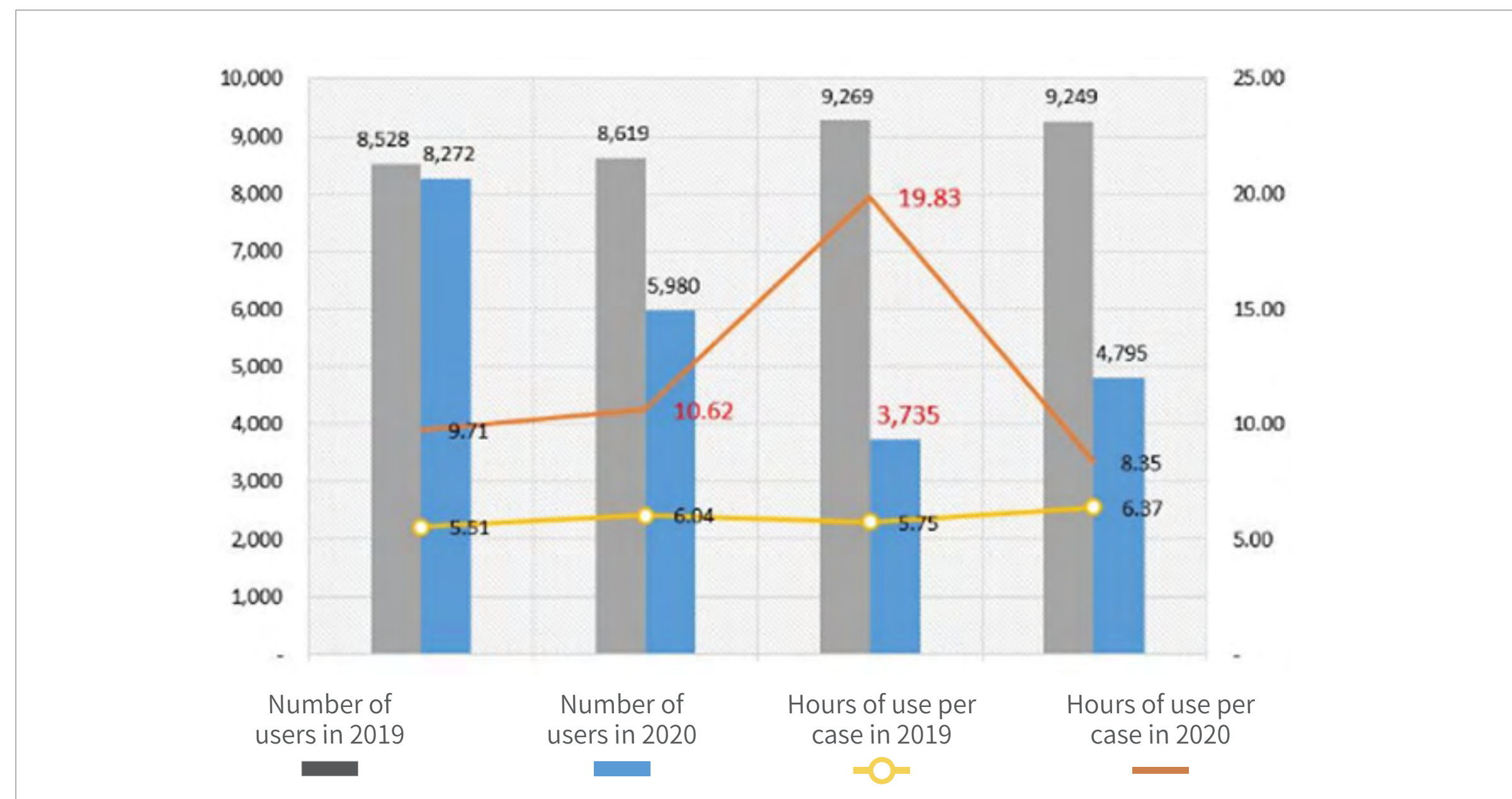


Figure 2: Total usage of SOCAR in Daegu Metropolitan City / Unit: Case, hour Source: Reference to internal SOCAR data

## Policy direction for Urban Shared Mobility in the post-COVID-19 era

The necessity to provide supportive measures which activate a non-contact and low-density transportation system.

As the paradigm of the preferred transportation system shifts from public transportation to non-contact, low-density individual means of transport during an emergency, the urban road network also requires an operating system in response. Depending on traffic control measures to be adopted, such as social, it is necessary to establish a special scenario for road network operation and congestion management within a city, along with a complementary public transport system.

It is necessary to develop policy measures which actively support the use of shared transportation – a relatively low-density means compared to public transportation – and improve the transportation network so that it aids the use of non-contact transportation systems focussed around the city center. This includes building a system that allows a part

5) Kidney disability is identified as a type of disability that requires mobile support for transport to dialysis facilities at a hospital, even in the event of the rapid spread of COVID-19.

of a road to be converted into an operational space for bicycles and personal mobility devices (only during the period of emergency and intensified social distancing due to the spread of infectious diseases), promotes the purchase of Personal Mobility Device s using emergency disaster relief funds (financial support provided to all nationals), and provides public subsidies for shared transportation fees. In particular, since there are population groups who need regular outpatient treatment at hospitals even during the outbreak of infection (e.g. people with disabilities and those who need kidney dialysis), policy support should be provided to ensure that they do not have difficulty using shared transportation.

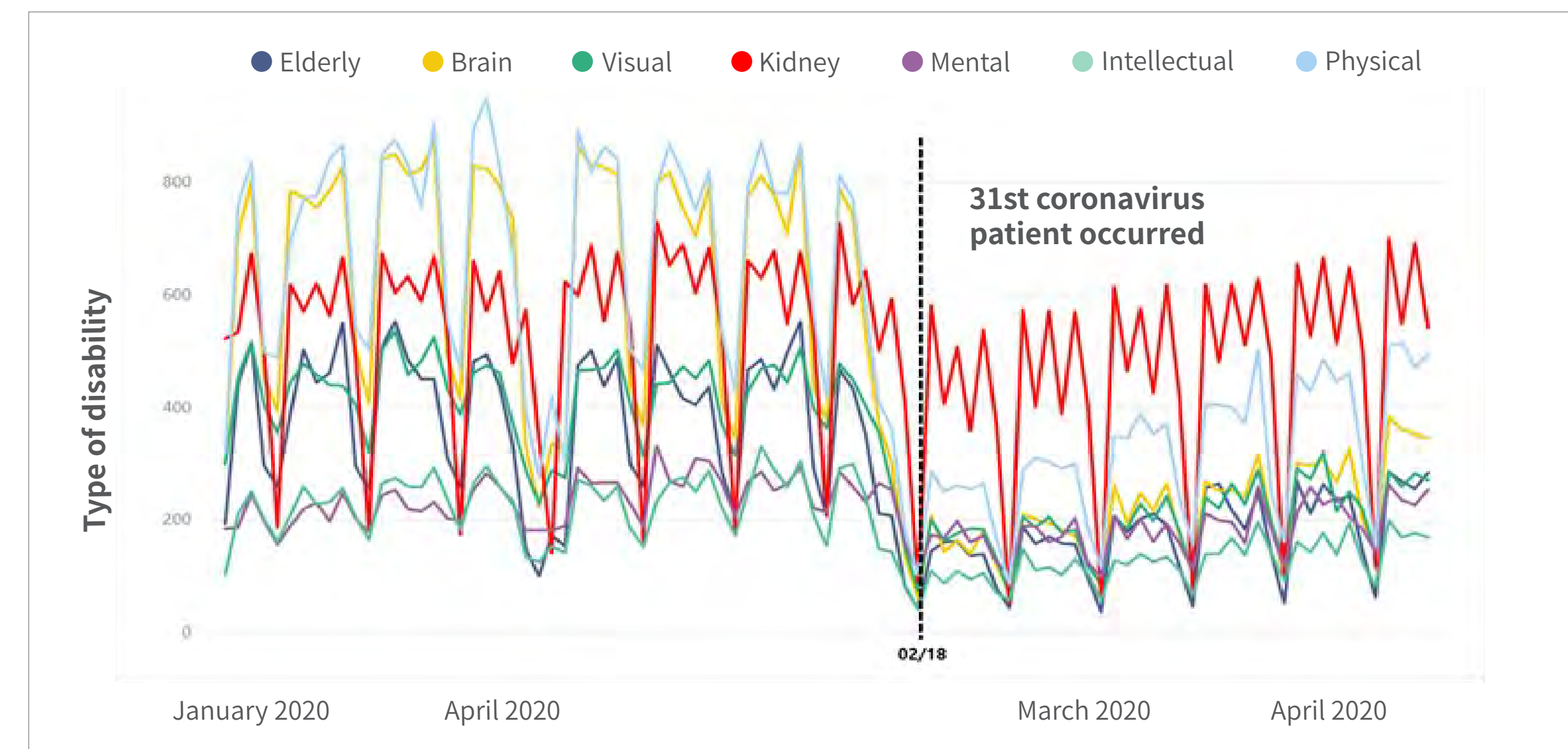


Figure 3: Change in use of the mobility support system (Nadeuri Call) for people with reduced mobility before and after COVID-19 (January-April 2020 )

## References

- Daegu Metropolitan Transit Corporation, <https://www.dtro.or.kr/> (accessed on 13th May 2020).
- Daegu Disaster and Safety Countermeasures Headquarters [http://www.daegu.go.kr/safety/index.do?menu\\_id=00933453](http://www.daegu.go.kr/safety/index.do?menu_id=00933453) (accessed on 1st June 2020).
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# REAAA Newsletter

Road Engineering Association of Asia and Australasia

## Special Article 4

### What We Do in the Time of the COVID-19 Pandemic

Yusuf Adinegoro, Indonesian Road Development Association



**Yusuf Adinegoro, PhD**

Directorate-General of Highways, Indonesian  
Road Development Association



Figure 1: Examples of drainage revitalization and bridge painting on road preservation projects Source: [www.pu.go.id](http://www.pu.go.id).

Based on Ministry data, the target budget allocation for this labour-intensive work is USD 70 million, or 6% of the national road budget (USD 2 billion). Within four months of the program commencing in May 2020, 34,232 workers had been registered. Whilst the number of jobs that are being created is not comparable to the number of jobs lost due to the pandemic, the contribution of the road sector, in terms of keeping people employed, is significant. There

are other non-road sector areas using the same approach. Labour-intensive road and non-road projects being managed by the Ministry of Public Works involve an estimated 500,000 people and total spending of USD 530 million, or 8% of the total national budget allocation. Although there are no official figures yet, it is estimated that about 2.1 million people are unemployed in Indonesia at the moment. The number of jobs created using this labour-intensive approach is helping to generate resiliency in the economy.

The biggest shift due to the pandemic has occurred in the major cities. The labour-intensive approach is less suited to cities that are at the epicentre of the pandemic such as Jakarta, which has a population of 10 million. Civil construction projects in large cities, such as drainage concrete, are more likely not suitable for this labour-intensive work. For example, the replacement of drainage concrete cannot be conducted using a mix of stone and concrete material; the replacement may require more skilled labour and heavy machinery. Therefore, the current strategy is currently being assessed in terms of how to modify the delivery system to make it more suited to different types of civil works.

However, this policy believed has, to date, had a positive influence on the economy and to society. Although labour-intensive protocols have been strictly applied to prevent the virus spreading among the workers, the development of software to help workers record daily progress may be effective in avoiding direct contact between the workers and the administrators. Such software could also be applied to other low-skilled workers, such as those who work in data collection and analysis, who would also eventually benefit from this policy. This is an example of how governments can use their money to not only create job opportunities, but also invent new technologies.

In summary, the adoption of appropriate government policies during the COVID-19 pandemic is very critical. The government has been challenged to be adaptable when managing this potentially multi-dimensional crisis, and to manage the transition from the existing system to the new system.







# REAAA Newsletter

Road Engineering Association of Asia and Australasia

## REAAA Updates

## REAAA Fellowship Program



Mr. Naveed Iqbal Wahla from Pakistan



Ambassador of Mongolia,  
Her Excellency Shagdar Battsetseg



At the 103rd REAAA Council meeting, held in Dubai in March 2016, it was agreed that REAAA would establish a Fellowship Program. The objective of the program is to provide financial support to REAAA members from developing countries to attend REAAA events as a speaker.

Financial assistance provided by the sponsor meets travel, accommodation and daily allowance costs for the invited Fellows during the conference.

REAAA plans to make this a continuing program. It is seeking Council support to identify potential Fellows and potential sponsors for future programs.

Due to the COVID-19 pandemic and the cancelling of the Business Forum in Indonesia, it has been decided to focus on the 16th REAAA Conference, to be held in June 2021 in Manila, Philippines.

REAAA invites relevant organisations to be one of the sponsors for the upcoming event. REAAA is seeking contributions of US\$2,000-\$3,000 for each Fellowship from the organizers of Conferences, or companies/organisations who are willing to sponsor members from developing countries to attend the event.

Sponsorship will support attendance at the 8th REAAA Business Forum and the 16th REAAA Conference in Manila, Philippines, in June 2021.



**Dato' Ir. Dr. Dennis Ganendra**  
Fellowship Coordinator





# REAAA Newsletter

Road Engineering Association of Asia and Australasia

## REAAA Updates

## Second Mino Best Project Award: Rescheduling is decided!



Trophy and Certificate for the First Mino Best Project Award

Owing to the current situation regarding the COVID-19 pandemic, the REAAA Governing Council has decided to extend the submission deadlines and corresponding timeline to give participants more time to submit their applications for the Second Mino Best Project Award.

### New Schedule

- |                                  |   |
|----------------------------------|---|
| • 30 <sup>th</sup> November 2020 | Deadline for nomination   |
| • end of January 2021            | Announcement of award winners by the Committee  |
| • mid-February 2021              | Endorsement of the winners by Governing Council   |
| • 17 <sup>th</sup> June 2021     | Second Mino Best Project Award ceremony at the 16 <sup>th</sup> REAAA Conference in Manila, Philippines |

### Award Criteria

- Category I (high-volume road) – high-volume expressways/major highways which contribute to the economic and social development in the region.
- Category II (community road) – community and rural roads which contribute to community and social development in the local region.
- Only projects which have been constructed in Asia and Australasia are eligible for consideration.
- Nominated projects must have been completed between July 2016 and June 2020.
- Both members and non-members of REAAA can nominate a project. However, all nominations must be lodged by a member of the REAAA Governing Council

### MinoBestProjectAwardCommittee

Nominated projects will be evaluated by the Mino Best Project Award Committee from the points of view of social effectiveness, technical excellence and environmental friendliness/awareness.

#### The members of the Mino Best Project Award Committee are:

Mr Katsuji Hashiba (Chair)	Japan
Mr Kieran Sharp	Australia
Dr Taufil Wdjoyono	Indonesia
Dr Sung-Hwan Kim	Korea
Mr Zulakmal Bin Sufian (Secretariat)	Malaysia
Dr Yung-Hui Chou	Taiwan

Further information about the Second Mino Best Project Award, including the nomination form, will be lodged on the REAAA Website soon: [www.reaaa.net/](http://www.reaaa.net/).

**The Deadline for nomination is 30th November 2020**  
**We are waiting for your submission!**



**Katsuji Hashiba**  
Chair of the Mino  
Best Project Award Committee





## REAAA Updates

### Pavement Technology Committee Activities

The REAAA Pavement Technology Committee has been collecting responses to a questionnaire on pavement structures. The objective of the questionnaire is to share knowledge on the current procedures being used for structural pavement design and rehabilitation among REAAA member countries. The output will be a compendium of the current design and rehabilitation procedures being used in the region.

Currently, responses have been received from all but two of the 11 member countries, and the preparation of the report is proceeding. Some responses have presented design procedures in detail by showing pictures or Figures, while others have replied by selecting the most appropriate multiple choice option viable. The initial deadline for responses was extended as a result of the COVID-19 pandemic.

The next progress report will be tabled at the next Governing Council meeting, to be conducted.



**Kieran Sharp**  
REAAA Technical Committee



**Keizo Kamiya**  
REAAA Technical Committee



## Congratulations!

### Congratulations to PWD Malaysia!



We are pleased to inform members that the Government of Malaysia has approved the appointment of YBhg Dato' Ir Haji Mohamad Zulkefly bin Sulaiman as the Director-General of the Public Works Department (PWD) Malaysia on 24th July 2020. The letter of appointment was presented by YBhg Datuk Seri Mohd Zuki bin Ali, Chief Secretary to the Government of Malaysia on 23rd July 2020.

REAAA would like to express its heartfelt congratulations to YBhg Dato' Ir Haji Mohamad Zulkefly bin Sulaiman, the Director General of Public Works Department Malaysia. Dato' Zulkefly bin Sulaiman is currently the Vice President of Road Engineering Association of Asia and Australasia (REAAA).

The REAAA wishes him all success with this demanding and prestigious task!



**Ila**  
REAAA Secretariat







## What's new?

## 50<sup>th</sup> Anniversary of Gyeongbu Expressway and the Road Day 2020



The Ministry of Land, Infrastructure and Transport and the Korea Road Association jointly hosted the 2020 Road Day event on 7<sup>th</sup> July 2020 at the K-Hotel in Seoul. Under the theme of “50 Years of Miracle! 100 Years of Hope!”, the Road Day celebrates the achievements of road industry development. It has been held every year since 1992. This year’s event was more meaningful as it celebrated the 50<sup>th</sup> anniversary of the opening of the Gyeongbu Expressway.

The Gyeongbu Expressway is the main artery connecting Seoul, the capital city of Korea, and Busan, the second biggest city with port. As the key axis of the national road network, various industrial complexes have been developed along the Expressway and it has been the basis for rapid economic growth.

The event was held in accordance with government quarantine guidelines designated to prevent the spread of COVID-19. About 250 people attended the event, including Prime Minister Chung Sye-kyun, Second Vice Minister Sohn Myung-soo of the Ministry of Land, Infrastructure and Transport, President Kim Jin-sook of the Korea Road Association who is also CEO of the Korea Expressway Corporation, and executives of road transport-related companies.



In a commemorative speech, Prime Minister Chung Sye-kyun said that the Gyeongbu Expressway had made the entire nation a “one-day life zone” and the symbol of Korea’s economic growth. Whilst a vast network of roads has been constructed over the past 50 years, the next 100 years will need to focus on building “safer and more environment-friendly roads”.

Following the Prime Minister’s speech, President Kim Jin-sook of the Korea Road Association celebrated the 50<sup>th</sup> anniversary of the Gyeongbu Expressway and provided words of encouragement to all road professionals.

A total of 77 people was presented with governmental prizes and Ministry of Land, Infrastructure and Transport awards in recognition of their contributions to the development of the road transport industry in Korea.





## Overview of Gyeongbu Expressway Project

Total length	Construction cost	Major specification	Number of workers	Number of items of equipment
428 km(four lanes)	42.9 billion KRW	317 bridges, 6 tunnels, 19 interchanges	8,920,000	1,650,000

The construction of the Gyeongbu Expressway was carried out with the aim of supporting Korea's national economic growth by establishing a national transportation network. Construction commenced on 1<sup>st</sup> February 1968 and completed on 7<sup>th</sup> July 1970, two years and five months later. It was an unprecedented project in the history of road development in Korea.

The project faced many problems from the beginning, including insufficient financing, rough terrain and poor equipment. Despite these obstacles, the project was successfully completed with the strong commitment of the government.

Since its opening in 1970, Korea has successfully developed an inter-regional transportation system and achieved rapid economic growth. The Gyeongbu Expressway is not just an expressway for Koreans, it is a symbol of modernization.

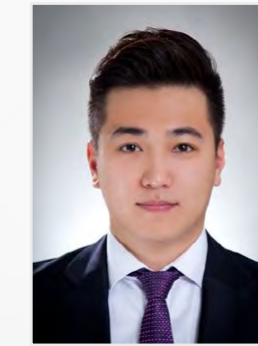
In 2004, the Gyeongbu Expressway was also designated as part of the Asian Highway No.1 connecting Busan to Japan and to China, India, Iran and further to the European motorway network. The Gyeongbu Expressway is expected to be an important transportation route linking Korea and partner countries, especially in Asia and Australia.



**Bona Hong**  
REAAA  
Korean Chapter



**Insoo Yeo**  
REAAA  
Korean Chapter



**Sung Chun Seo**  
REAAA  
Korean Chapter

## Gyeongbu Expressway Timeline

National Archives of Korea,  
Korea Expressway Corporation

1967~

1968



**February**

Groundbreaking of 1<sup>st</sup> section  
(Seoul~Osan)



**February**

Construction of Gyeongbu  
Expressway commences



**April**

Groundbreaking of 2<sup>nd</sup> section  
(Osan~Cheonan~Daejeon)



**September**

Groundbreaking of 3<sup>rd</sup> section  
(Daegu~Busan)

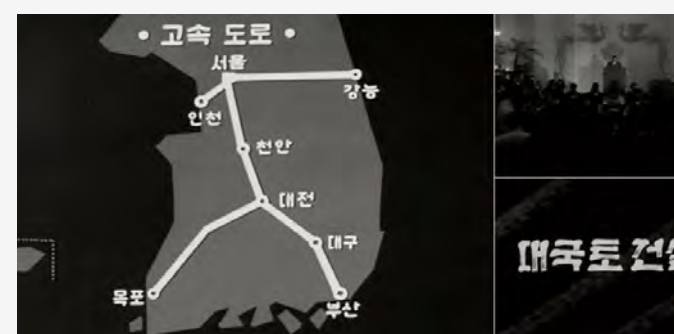


**December**

Opening of 1<sup>st</sup> section  
(Seoul~Osan)

1967~

1968



**August**

Opening of entire Gyeongbu  
Expressway



**December**

Launch of the National  
Expressway Construction  
Planning Investigation Group

1969



**January**

Groundbreaking of 4<sup>th</sup> section  
(Daejeon~Daegu)



**December**

Opening of 2<sup>nd</sup> section  
(Osan~Cheonan~Daejeon)  
and 3<sup>rd</sup> section

1970



**July**

Opening of entire Gyeongbu  
Expressway





Calendar of Events

Calendar of Seminars, Conferences, Workshops and Meetings of the Association: (2020-2021)

Date	Event	Place	Remarks
TBC	18 <sup>th</sup> YEP Meeting	Zoom meeting	Online meeting
27 <sup>th</sup> November 2020	113 <sup>th</sup> REAAA Governing Council meeting	Zoom meeting	Online meeting
15 <sup>th</sup> –17 <sup>th</sup> June 2021	16 <sup>th</sup> REAAA Conference	Manila, Philippines	Physical meeting
	114 <sup>th</sup> & 115 <sup>th</sup> REAAA Governing Council meetings		
	8 <sup>th</sup> REAAA Business Forum		
	19 <sup>th</sup> YEP Meeting		
	13 <sup>th</sup> HORA Meeting		
1 <sup>st</sup> –3 <sup>rd</sup> September 2021	Low Volume Roads Workshop	New Plymouth, New Zealand	Council members will be able to register at the REAAA member rate. Council members who choose to attend the Workshop can spend the weekend of 4 <sup>th</sup> –5 <sup>th</sup> September travelling between New Plymouth and Christchurch. They will need to make their own travel and accommodation arrangements.
6 <sup>th</sup> –7 <sup>th</sup> September 2021	20 <sup>th</sup> YEP Meeting	Christchurch, New Zealand	Physical meeting
	116 <sup>th</sup> REAAA Governing Council meeting		
	Technical tour		







# REAAA Newsletter

Road Engineering Association of Asia and Australasia

## REAAA WELCOMES NEW MEMBERS

The membership of REAAA as at 30 June 2020 was 1,353. The REAAA Council and Chapters have approved the following 41 new members for the period between from 01 Sept 2019 to 30 June 2020.

Institutional	1
Life	7
Ordinary	33
<b>Total</b>	<b>41</b>

The list of new members approved at 112th REAAA Council Meeting by zoom meeting on 07 July 2020 is as follow:

### Institutional Members

Yeng Hsing Co., Ltd	I.0379 Taiwan
---------------------	---------------

### Life Members

Charito M. Ebalde	L.0298 Philippines	Abdul Rani Ismail	L.0417 Malaysia
Alex Bote	L.0419 Philippines	Liezl S. Manaligod	L.0421 Philippines
Maricon C. Salvador	L.0422 Philippines		

### Status Changed from Ordinary to Life

Alfredo V. Hipolito	O.3351 to L.0418 Philippines	Park Ji-Hyun	O.3405 to L.0420 Korea
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### Ordinary Members

Abdul Munir Muhammad Murit	O.3768 Malaysia	Ben Sims	O.3769 Australia
Brittany Croft	O.3770 Australia	Georgia O'Connor	O.3771 Australia
Tan Poi Cheong	O.3772 Malaysia	Ir. Rosnan Hussin	O.3773 Malaysia
Ir. Yu Pow Seng	O.3774 Malaysia	Ir. Nasruddin Rahmat	O.3775 Malaysia
Ir. Long Ahmad Burhanuddin Long Hassan	O.3776 Malaysia	Ir. Massilawati Salwa Mukhtar	O.3777 Malaysia
Justin Moss	O.3778 Malaysia	Khair Akyazrul Azmi	O.3779 Malaysia
Roszaidi Roslan	O.3780 Malaysia	Tony Hodges	O.3781 New Zealand
Brent Holmes	O.3782 New Zealand	Regan McRandle	O.3783 New Zealand
Murray Gardyne	O.3784 New Zealand	Ir. Fu Yee Woei	O.3785 Malaysia
Ramesh Kumar A/L Puspasagaram	O.3786 Malaysia	Mohd Amraz Adenan	O.3787 Malaysia
Mohd Khairul Nizam Sharip	O.3788 Malaysia	Azleen Jaludin	O.3789 Malaysia
Lloyd Baker	O.3790 Australia	Dr. Didier Bodin	O.3791 Australia
Dr. Peter Cairney	O.3792 Australia	Katie Gurrie	O.3793 Australia
Dr. Charles Karl	O.3794 Australia	Shannon Malone	O.3795 Australia
Dr. Tim Martin	O.3796 Australia	Brayden McHeim	O.3797 Australia
Jim McNeill	O.3798 Australia	Nigel Powers	O.3799 Australia
Dr. Atteeq Ur-Rehman	O.3800 Australia		



# REAAA Newsletter

Road Engineering Association of Asia and Australasia

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