Impacts of COVID-19 on Mobility

Preliminary analysis of regional trends on urban mobility

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Disclaimer: This analysis is an assessment of the early impacts of COVID-19 on mobility based on the first available global data sets as of May 2020. It is a global analysis of urban mobility trends with an in-depth look on Asia and Latin America and the Caribbean. The situation might differ in specific regions and does not show a complete picture.

The interpretation of the analysis is based on the personal assumptions of the authors. It is not intended as an analysis to assess the efficiency of national policies regarding lockdowns. The authors are not health experts and do not provide any information on how to address pandemics.

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I. Introduction

On 11 March 2020 the COVID-19 outbreak was declared a global pandemic by the World Health Organisation (WHO). Shortly after, United Nations Secretary General António Guterres described the pandemic as "a human crisis, with multifaceted threats"[1] and "the greatest test that we have faced together since the formation of the United Nations."[2]

COVID-19 is having profound impacts on our lives and livelihoods, with intense strain on both our socio-economic and mobility systems. Many countries have implemented strong measures to contain the rapid spread of the virus, including lockdowns and social distancing. International travel has been quickly restricted. All non-essential business and activities have been temporarily suspended, in one way or another, in the most affected regions, causing significant economic downturns. Only essential services and workers, including passenger and freight transport related, are allowed to operate in many places, and where possible, work has shifted to remote arrangements.

In recent weeks, global data showing how mobility is being affected by COVID-19 in different regions has emerged, primarily from Google and Apple through their map services data and location history data. This analysis examines such data sets to describe the early impacts of the pandemic on global mobility. It looks at how regions and different income groups are affected, and seeks to provide a **preliminary answer to the question of how COVID-19 is impacting urban mobility and transport modes.** This analysis does not include freight transport, as it was not covered in the Google or Apple data sets. Aviation, an area which is strongly affected by COVID-19, is also not covered in this analysis. The authors would like to indicate that the data sets by Google and Apple do not reflect a complete picture of how mobility has changed due to COVID-19. Suggestions for complementary data and research, as well as for available compilations of resources are provided.

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[1] UN (2020). Note to Correspondents: Letter from the Secretary-General to G-20 Members. Available at: https://www.un.org/sg/en/content/sg/note-correspondents/2020-03-24/note-correspondents-letter-the-secretary-general-g-20-members

[2] UN (2020). UN launches COVID-19 plan that could 'defeat the virus and build a better world'. Available at: https://news.un.org/en/story/2020/03/1060702

II. Data sets: Background, limitations and identified gaps

II.A Mobility to destination data

The majority of the assessment is based on data provided by Google on mobility to major destinations. In March 2020, Google began to release COVID-19 Community Mobility Reports[3]. The data set includes time-series information at the national level and for major cities and regions. Information from 131 countries and over 1,100 cities is provided in this data set. The data reflects the impact of COVID-19 on mobility to: **retail and recreation**, **groceries and pharmacies**, **parks**, **public transport stations, workplaces, and residences,** from 15 February to 2 May 2020, as compared to average mobility data based on travel behaviour between 3 January and 6 February 2020. The data focuses on transport in communities, and does not cover rural transport, inter-city travel, or international mobility. Google updates the global data set weekly. In this brief we used the database released on 6 May 2020.

II.B Transport mode usage data

The second data set analysed in this article comes from Apple's Mobility Trends Reports[4]. This data set looks at how **queries in Apple Maps for driving, public transport and walking** have changed compared to a baseline date of 13 January 2020. A total of 62 countries and 89 cities are included, mostly representing middle and high-income countries. Apple releases daily updates of the data-base; and this analysis includes data through 5 May 2020.

II.C COVID-19 health impacts data

All information related to the number of cases and deaths due to COVID-19 is based on the data set by Our World in Data,[5] if not otherwise noted. It is a data set which is updated daily and allowed to be freely used, with data very close to figures collected by the WHO and other reliable sources.

II.D Complementary data and research

The data sets by Google and Apple do not reflect a complete picture of how mobility has changed due to COVID-19.

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[3] Google (2020). COVID-19 Community Mobility Reports. Available at: https://www.google.com/covid19/mobility/
[4] Apple (2020). Mobility Trends Reports. Available at: https://www.apple.com/covid19/mobility/
[5] Our World in Data (2020). Coronavirus Source Data. Available at: https://ourworldindata.org/coronavirus-source-data

The following data and research are complementary to the current study and may be incorporated in forthcoming research:

- Eco-Counter developed a dashboard[6] to show the impact of COVID-19 on cycling. At the time of this analysis, the dashboard focused mainly on cycling trends in European countries, with plans to expand the analysis to more regions.
- The Moovit Public Transit Index[7] indicates how public transport usage has changed since mid-January in cities around the world.
- The analysis does not include freight transport, as it was not covered in the Google or Apple data sets. However, a first global assessment of COVID-19's impact on freight for 2020 has been produced by the International Transport Forum[8], showing the impact on activity and emission of urban freight and inter-urban freight.
- Aviation, an area which is strongly affected by COVID-19, is also not covered in this analysis. The International Civil Aviation Organisation (ICAO) modelled estimates by showing the most optimistic scenario and the most pessimistic scenario.[9]

For more context and resources about the impact of COVID-19 on mobility, it is advised to refer to SLOCAT's resource page[10] and the Transformative Urban Mobility Initiative (TUMI)'s knowledge hub[11]. These pages contain relevant case studies on transport and COVID-19 and provide references to a variety of material by relevant organisations for all modes and all sectors.

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[6] Eco-Counter (2020). Understand the impact of the pandemic on cycling. Available at:
https://www.eco-compteur.com/en/covid19-dashboard/
[7] Moovit (2020). Public Transit Index. Available at:
https://moovitapp.com/insights/en/Moovit_Insights_Public_Transit_Index-countries
[8] International Transport Forum (2020). COVID-19 Transport Brief, How Badly Will the Coronavirus Crisis Hit Global Freight?
Available at: https://www.itf-oecd.org/sites/default/files/global-freight-covid-19.pdf
[9] https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx
[10] SLOCAT (2020). COVID-19 and the Sustainable Transport Community. Available at:
https://slocat.net/covid-19-and-the-sustainable-transport-community/
[11] TUMI (2020). Fighting Corona in Transport. Available at: https://www.transformative-mobility.org/corona

III. The impacts of COVID-19 on global mobility

III.A Changes to destinations

It is clear that the COVID-19 pandemic is changing the way we move around our cities and neighborhoods. Google's data allows us to compare COVID-19's impact on different regions and income groups to various destinations, revealing how mobility to these destinations has been impacted to date.

Retail and recreation

The percentage change in trips to retail and recreation decreased by 40-65% from the baseline across all regions (Figure 1). In March 2020, Europe encountered the strongest declines. But by April 2020, Latin America and the Caribbean (LAC) showed the steepest declines, while Europe began to show some signs of recovery. During April 2020, the percentage change in trips to retail and recreation was below half of the baseline in Africa, Europe and LAC. The most negative impact was in LAC which saw an impact of -66% on average.

The impact of COVID-19 on retail and recreation trips varies by income group. High-income countries have experienced larger declines in travel to these destinations, while low-income countries have seen less of a decrease. A potential reason can be that COVID-19 reached low-income countries later and measures restricting mobility were introduced slower.

Figure 1: Mobility to retail and recreation by region and income group

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

Figure 2: Mobility to groceries and pharmacies by region and income group

Grocery and pharmacy

In the second week of March 2020, trips to groceries and pharmacies increased to levels well above average in Europe, North America and Oceania (which account for the majority of high-income countries) (Figure 2). This suggests that people stocked up on groceries, household goods and medical supplies, planning for a disruption in supply chains and/or restrictions on access to groceries and pharmacies due to lockdowns.[12]. **Towards the end of April, mobility levels to groceries and pharmacies increased in Asia, Europe and North America, while Africa and LAC experienced a sustained reduction in percentage of trips.** The percentage of trips to groceries and pharmacies decreased by 70% in LAC at the lowest point in April.

The **analysis by income group** shows that in March and April, the biggest overall impact on trips to groceries and pharmacies was seen in middle-income countries. The trends for trips to these destinations fluctuate strongly in high-income countries.

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

It is difficult to identify specific reasons for the regional and income-based differences in impact to these destinations, however, some of the differences may be attributed to the different government responses to the pandemic, including the strictness of lockdown measures.

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[12] Lufkin, B. (2020). Coronavirus: The psychology of panic buying. BBC. Available at:
https://www.bbc.com/worklife/article/20200304-coronavirus-covid-19-update-why-people-are-stockpiling;
Winkie, L. (2020). A grocery store clerk explains what it's like on the front lines of coronavirus panic. Vox. Available at:
https://www.vox.com/the-goods/2020/3/17/21182155/grocery-store-coronavirus-clerk-q-a-immunocompromise

Parks

The mobility data to parks shows a **large diversity between the different regions** (Figure 3): In Europe and North America, the impact of COVID-19-related restrictions is relatively low (between -30 and -40%) by the end of March 2020, and increases again quickly in early April 2020 to a level close to and even above the January baseline. Again, the LAC region stands out with a distinctively high decrease in the percentage of people traveling to parks. The reason for this is unclear, but could be due to particularly strong travel restrictions in countries in the region and/or temporary closure of parks in countries of LAC.
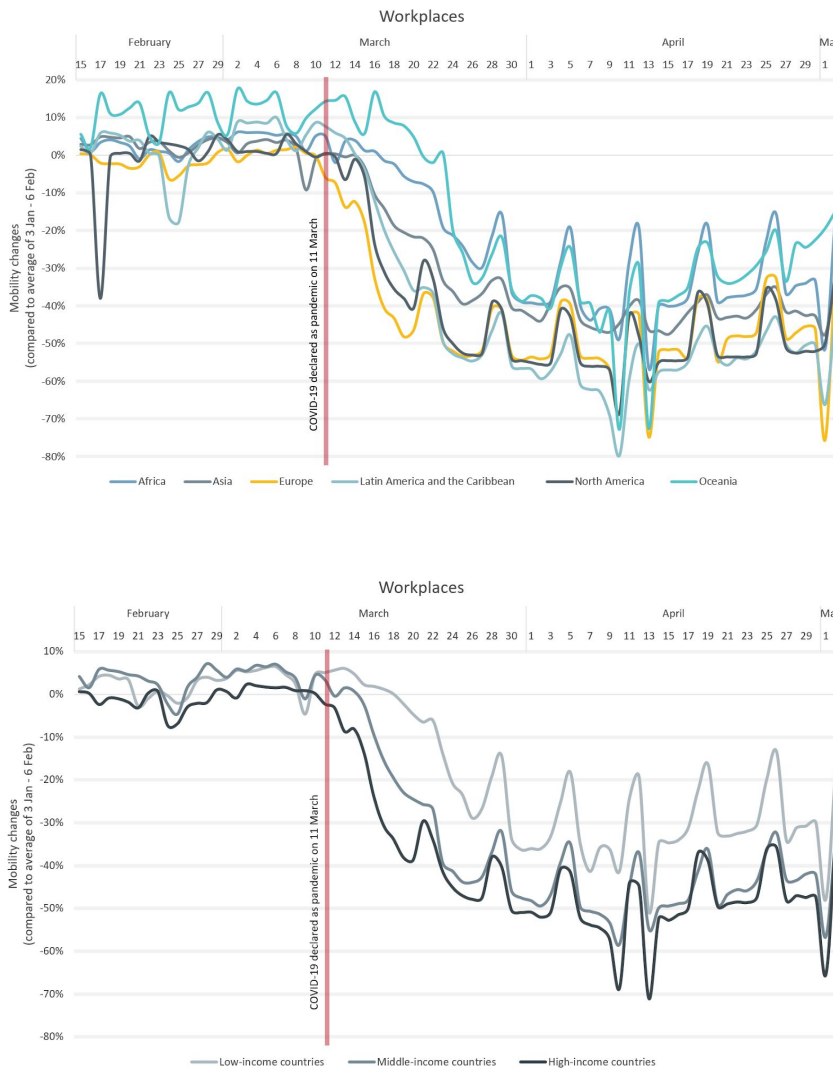
The second chart of Figure 3 shows that high-income countries start to increase and recover the number of trips being taken to parks throughout April. **Similar to trends in trips to retail and recreation, the slowest decrease in trips to parks is seen among low-income countries.**

Figure 3: Mobility to parks by region and income group
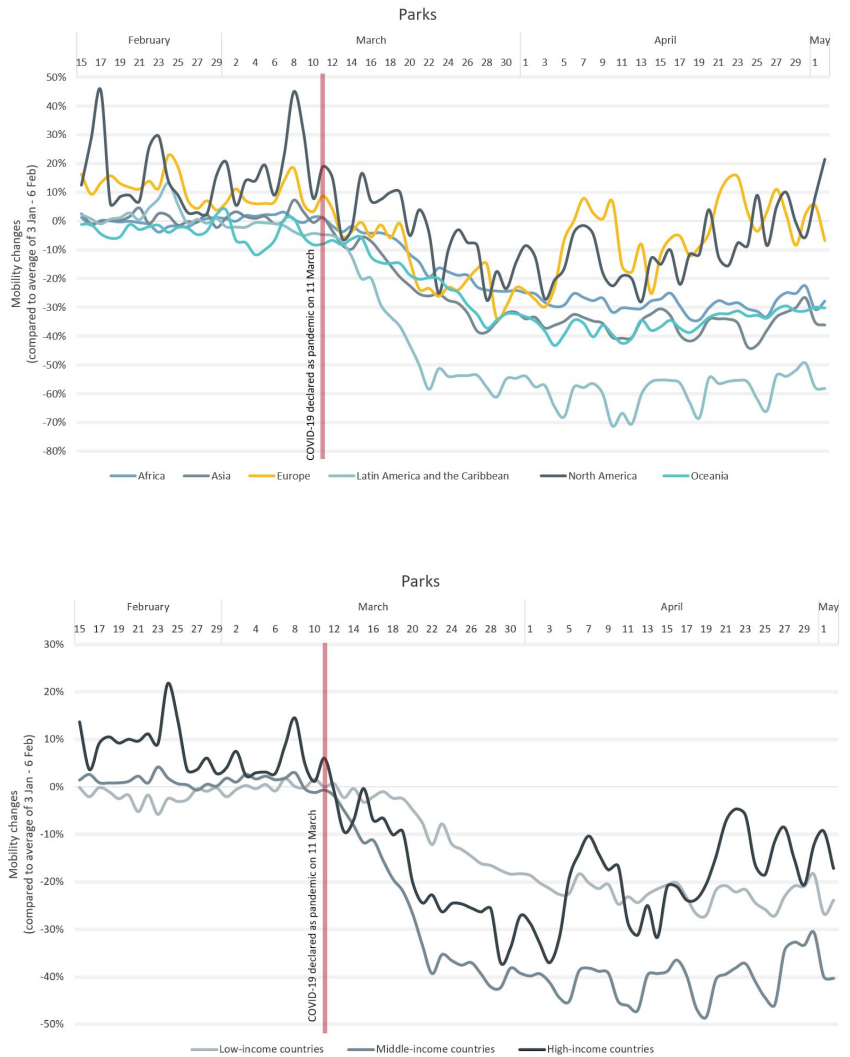
Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

![SLOCAT Partnership logo]

Workplaces

Figure 4: Mobility to workplaces by region and income group

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

The data analysis shows that less people are traveling to workplaces (Figure 4). **In all regions, the percentage of trips to workplaces decreased by at least 40% by mid-April.**

In countries severely impacted by COVID-19, national and local lockdowns have led to the restriction of mobility to essential services only. It is worth noting the high percentage of manufacturing and production-related jobs located in the Global South, requiring people to travel to factories. Mobility to work places in high-income countries shows a very significant reduction, which could be correlated to more teleworking arrangements than in the Global South. However, there is currently limited research on why these trends are occurring.

The spikes in both charts are on weekends, when the mobility to workplaces is closer to the baseline in January.

The reason for the decrease in percentage of trips to the workplace could be two-fold: 1. Due to the economic standstill many people have lost their job (permanently or temporarily); 2. More people are working from home. Regarding the first point, the International Labour Organisation estimates that COVID-19 could cause the equivalent of 305 million full-time job losses worldwide.[13] On the second point, COVID-19 has led to the world's biggest work-from-home experiment[14] and many companies are exploring alternative ways of working for the first time, switching to virtual meetings and other measures that allow people to avoid physical contact.

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[13] ILO (2020). As job losses escalate, nearly half of global workforce at risk of losing livelihoods. Available at:
https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_743036/lang--en/index.htm
[14] Liang, L.-H. (2020). How Covid-19 led to a nationwide work-from-home experiment. BBC. Available at:
https://www.bbc.com/worklife/article/20200309-coronavirus-covid-19-advice-chinas-work-at-home-experiment

Public transport stations

Comparing the impacts of COVID-19 on travel to different destinations, **it appears that trips to public transport stations have experienced the strongest decline.** Since the second week of March, there has been a steep decline in the number of people traveling to public transport stations in all regions. **By mid-April, the global percentage of trips to public transport stations was half of the baseline. LAC has again experienced the strongest decline** in trips to transport stations, with a decrease of 60% in April. The data shows that there is a lag in the impact on trips to public transport stations in low-income countries, with a smaller negative impact than in middle- and high-income countries. **It is unclear how informal transport, which in many cases does not have official stations, is reflected in the data.**

This indicator shows the significant negative impact that COVID-19 has had on the use of public transport. **Cities around the world are experiencing less public transport usage and lower occupancy rates.** A few illustrative examples from cities such as Jakarta and New York City, are included in TUMI's article on COVID-19.[15] In some cities, public transport service has even been suspended.[16]

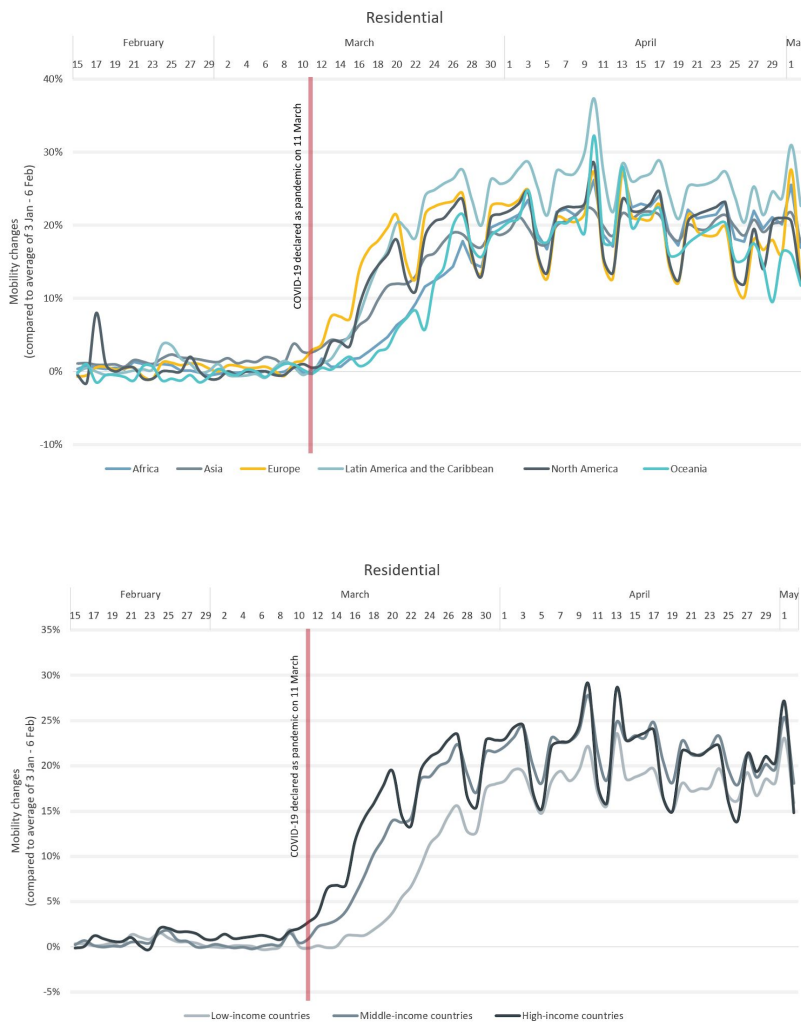**Figure 5: Mobility to public transport stations by region and income group**

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

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[15] Ibold, S., Medimorec, N., Wagner, A. and Peruzzo, J. (2020). The COVID-19 outbreak and implications to sustainable urban mobility – some observations. Available at:
https://www.transformative-mobility.org/news/the-covid-19-outbreak-and-implications-to-public-transport-some-observations
[16] Wikipedia (2020). Impact of the COVID-19 Pandemic on Public Transport. Available at:
https://en.wikipedia.org/wiki/Impact_of_the_COVID-19_pandemic_on_public_transport

Figure 6: Mobility to residencies by region and income group

Residential

(Top chart: Mobility changes compared to average of 3 Jan – 6 Feb; y-axis from -10% to 40%; x-axis from February 15 to May 1; vertical line marked "COVID-19 declared as pandemic on 11 March")

Legend: Africa — Asia — Europe — Latin America and the Caribbean — North America — Oceania

Residential

(Bottom chart: Mobility changes compared to average of 3 Jan – 6 Feb; y-axis from -5% to 35%; x-axis from February 15 to May 1; vertical line marked "COVID-19 declared as pandemic on 11 March")

Legend: Low-income countries — Middle-income countries — High-income countries

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

Residential mobility

What Google describes as "mobility to residential" **reflects people staying at home and within their residences.** It is the only area which has increased. **In all regions, the mobility to residences increased by around 12 to 25% compared to the baseline in January.** The biggest positive impact can be observed in the LAC region. Ignoring the outliers, the average rate for LAC in April was 25% above the baseline.

The income groups follow a similar pattern as for the previous destinations: Low-income countries show a delayed and lower percentage change than middle- and high-income countries. It possibly reflects that measures were introduced later than in middle- and high-income countries. This may indicate that low-income countries have less capacity to move towards teleworking and more people have to continue their commute (see section on mobility to workplaces above).

However, compared to the other destinations in this analysis, the increase in mobility to residential is lower than the reductions to other destinations. The reason could be that many people still have to travel to work, education and other essential services, despite official lockdowns and recommendations to stay at home.

The analysis of mobility to the various destinations shows that regions and income groups are impacted differently: LAC records the largest impact for the majority of aspects. Among income groups, high-income countries experience the biggest differences compared to the baseline.

III.B Changes for transport modes

The second area of major insights of this analysis is on transport modes. Apple's data on map queries indicates what kind of transport modes users have sought. Changes in the requests can be a proxy for the usage of these transport modes. The data set covers driving, public transport and walking and it allows a regional analysis but not an analysis by income group, due to a lack of data originating in low-income countries (probably related to the ongoing lack of informal transport services data).

Figure 7: Requests for transport modes
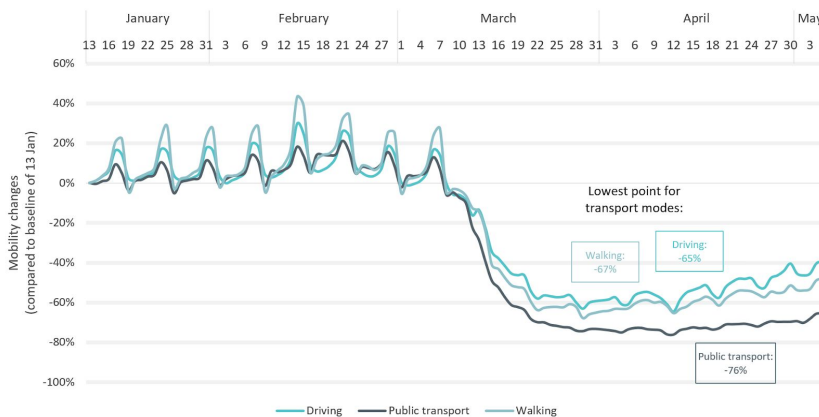
Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

### Driving, public transport and walking

Exploring Apple's data set on queries for transport modes across all regions, a reduction of 60 to nearly 80% compared to the baseline of 13 January 2020 for driving, public transport and walking can be identified. The decline started on 8 March 2020 and the biggest downtrend was reached in early April. **Public transport has seen the largest decline, reaching a 76% reduction in April 2020 at its lowest point.**

Walking and driving have experienced less pronounced impacts and it seems that these two mobility modes are already trending in the direction of pre-COVID levels.

Driving by region

The reduction in travel and mobility described above has also led to less driving across regions. According to the data, the map requests for driving halved in most regions compared to the baseline. **The strongest regional impact can be seen in Africa, followed by similar declines in LAC and Oceania.** Europe and North America have increased since April 2020, but they still stay below 20 to 30% below the baseline.

Figure 8: Changes in driving direction queries by region
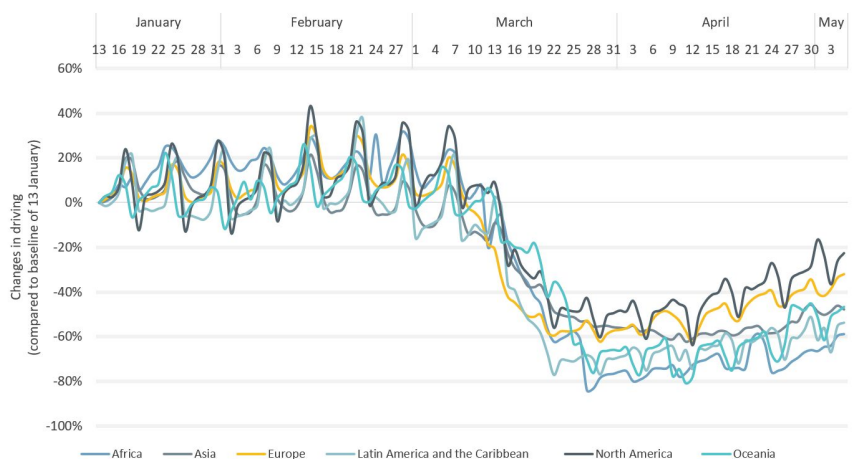
Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

Figure 9: Changes in public transport direction queries by region
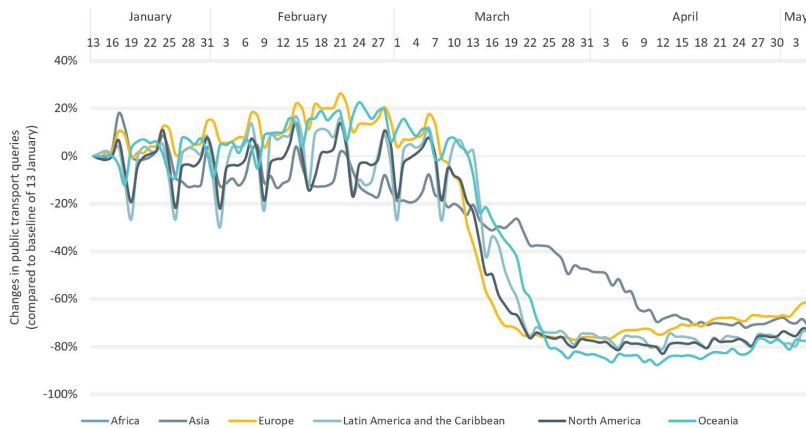
Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

Public transport by region

The use of public transport in all regions has been impacted heavily, experiencing a reduction by 60 to 80% below the average. This supports findings of the previous section regarding a massive reduction of trips to public transport stations.

The use of public transport **declined very rapidly in Africa, Europe, LAC, North America and Oceania after COVID-19 was declared a global pandemic.** The decline was at a slower pace in Asia. **By mid-April 2020 Asia reached declines similar to the other regions.**

Walking by region

Before the pandemic, walking always spiked in Europe and North America during the weekends. The interest for walking was on a few occasions above 50% of the baseline during these spikes. Then in March 2020 it took a strong decline and the weekend spikes disappeared. From the data it seems that the interest in walking is currently higher during weekdays in the case of North America. **The data shows that curfew and lockdown reduced mobility to the most essential activities.**

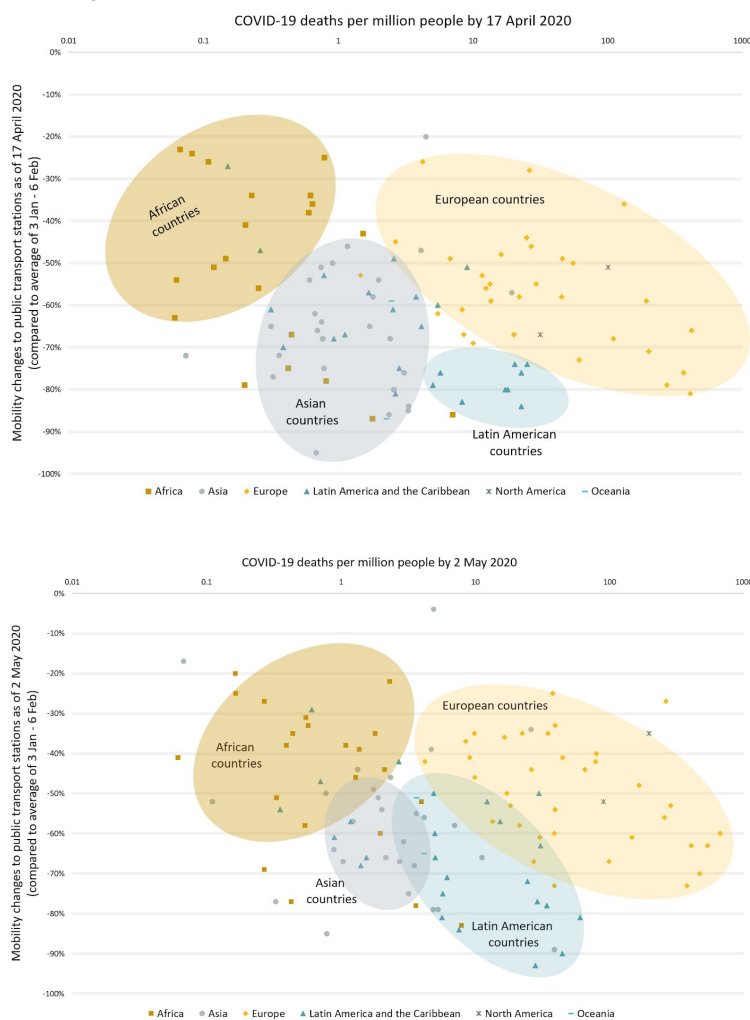### Figure 10: Changes in walking direction queries by region
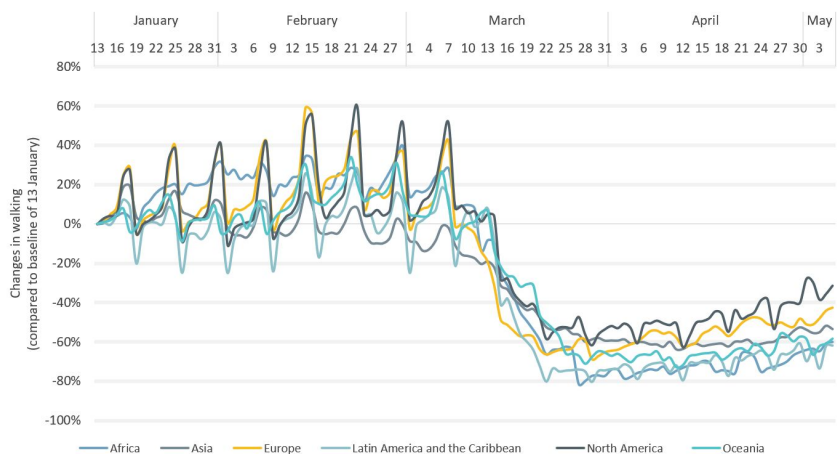
Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

Africa and LAC have the strongest decline in walking. Overall, queries for walking directions have more than halved in all regions. **Similar to driving, the data indicates a minor increase of walking queries since mid-April 2020. The trend is led by North America and Europe.**

III.C Preliminary findings in regions

The analysis of global mobility trends shows that, as of early May 2020, **the biggest reduction of trips is seen in the LAC region. For the majority of analysed aspects, mobility has been reduced by more than 50%. The transport mode with the strongest decrease is public transport** as shown by the data of Google and Apple. Data shows that high-income countries are registering more severe mobility declines than low- and middle-income countries. However, it is important to note that informal transport services are characteristic of the Global South and ongoing limitations on data availability prevail.

Figure 11: Clusters of deaths and public transport station mobility declines

COVID-19 deaths per million people by 17 April 2020

COVID-19 deaths per million people by 2 May 2020

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports, and Our World in Data (2020). Coronavirus Source Data

Plotting the number of registered deaths per million people due to COVID-19 against mobility to public transport stations for 17 April 2020 gives **clear clusters for countries in different regions** (Figure 11). On that day, the number of confirmed COVID-19 cases was at 2.117 million people and 147,000 deaths. By mid-April, many countries had introduced local movement restrictions and asserted potential capacity to fight the spread of COVID-19. **Countries in Africa relatively had the lowest registered number of deaths per million people and also present the lowest change of mobility to public transport stations.** It has been affected in a range between -20 and -60%. European countries, which have registered a wide range of COVID-19 fatalities, have also experienced a correlating wide range of reductions in mobility. There have been strong impacts on mobility in Asian countries with relatively moderate numbers of registered fatalities, including reductions by more than 50% of mobility to public transport stations. **The chart draws out the conclusion that LAC sees the strongest impact of mobility trend changes even though the number of registered deaths per million people is lower than in many European countries.**

Repeating this plot with data for the 2 May 2020 (3.3 million cases and 238,000 COVID-19 deaths) shows that **the distinctions became less clear.** The cluster of Asian countries became smaller and more outliers exist. The situation in LAC became more diverse, too. The number of registered fatalities keeps on increasing, while the disruptions to mobility seem to have declined in Asian and European countries. **A few LAC countries see public transport station mobility reduced by more than 80%.** However, it is hard to come to a specific conclusion or to identify patterns between the relationship of COVID-19 registered deaths and its impact on transport at this early stage. More research and analysis is required.

The next two sections of this paper provide more detail and insights on the impact of COVID-19 on mobility in the Asia and LAC regions. Asia is the epicentre of the early stages of the COVID-19 outbreak. LAC seems to encounter the largest impact in terms of percent changes in trips to major destinations.

IV. Mobility in Asia

Asia, as the epicentre of the early stages of the COVID-19 outbreaks, was the first region to implement lockdowns and other restrictive measures. It is important to note that the included data sets by Google and Apple do not cover China. Google Maps does not work in China and Apple Maps for China is only allowed to be viewed within the country[17], making it difficult to share the data with the public.

IV.A Changes to Destinations in Asia

Visualising the percentage changes of trips to the major destinations for Asia shows a similar pattern as shown above: **All major destinations record a decline with public transport stations showing the largest negative impact, while the trips to residencies increase.**

Mobility levels in these countries declined by around 50 to 60%. There was a 20% increase of mobility to residencies and it stayed constant at this level in April (Figure 12). Mobility to retail and recreation and public transport stations is following very similar trajectories.

The biggest difference compared to other regions is that mobility changes happened less rapidly than in other regions. The reasons are unclear.

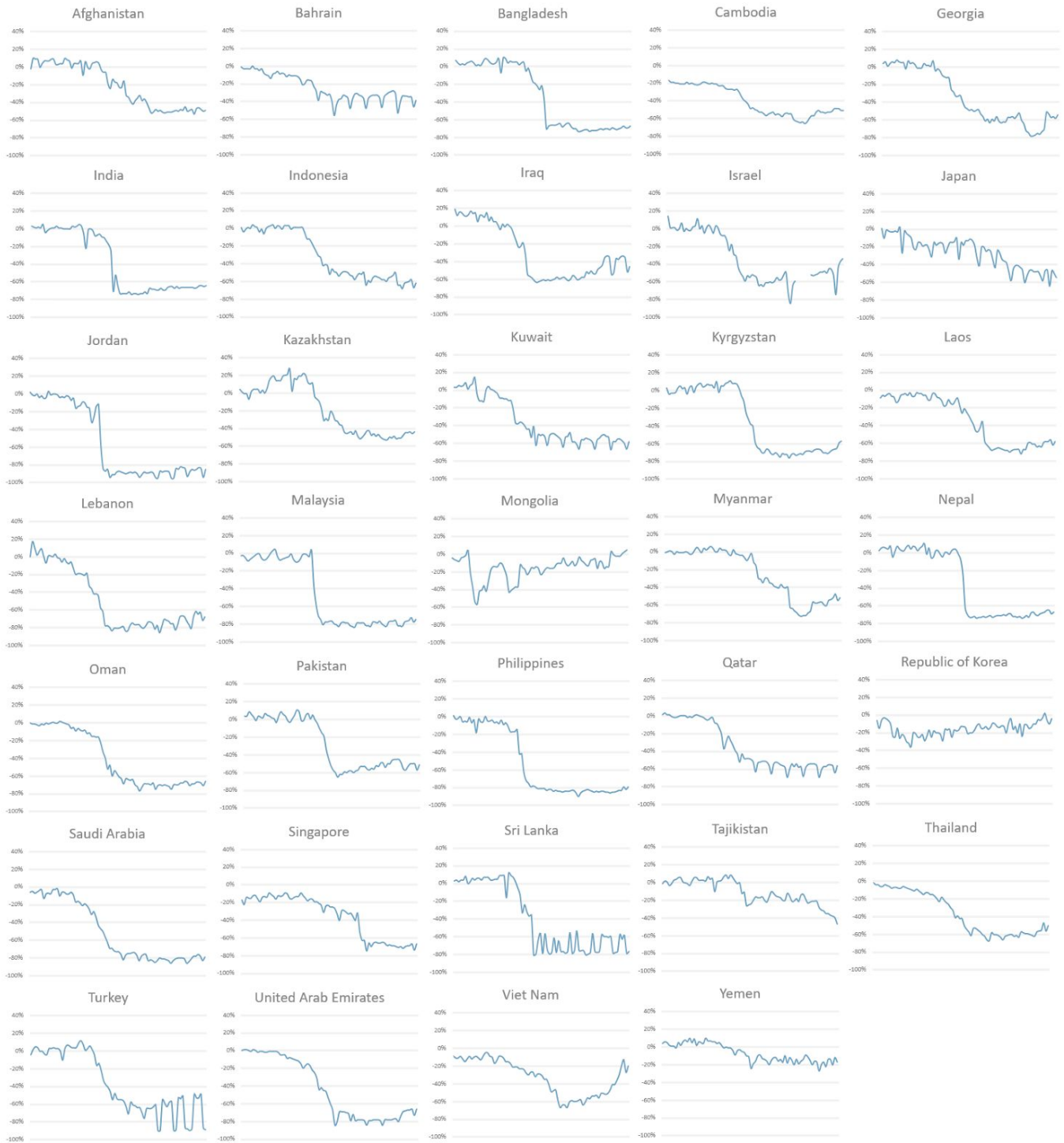**Figure 12: Mobility changes in Asia**
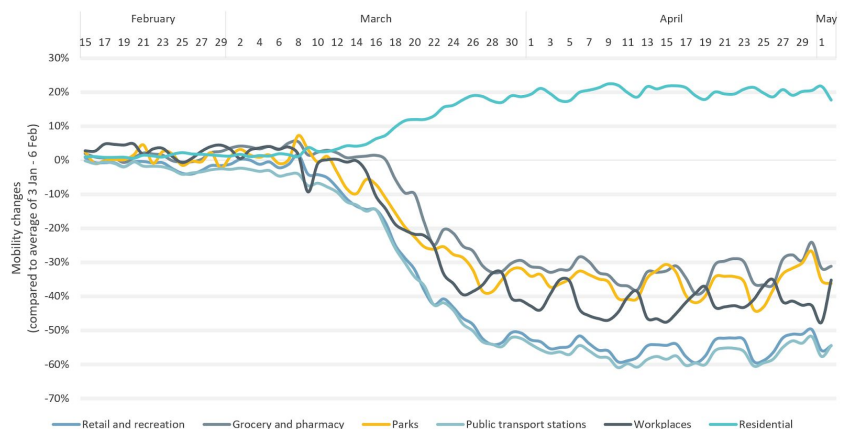
Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

Possible interpretations are that the spread of COVID-19 in Asian countries and the introduction of counter-measures happened at different speeds and that many Asian countries were impacted at a later stage, which allowed them to keep mobility levels at a certain level.

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[17] Wikipedia (2020). Apple Maps. Available at: https://en.wikipedia.org/wiki/Apple_Maps

The diversity of Asian countries is reflected in Figure 13, which shows the changes in mobility to public transport stations per country:
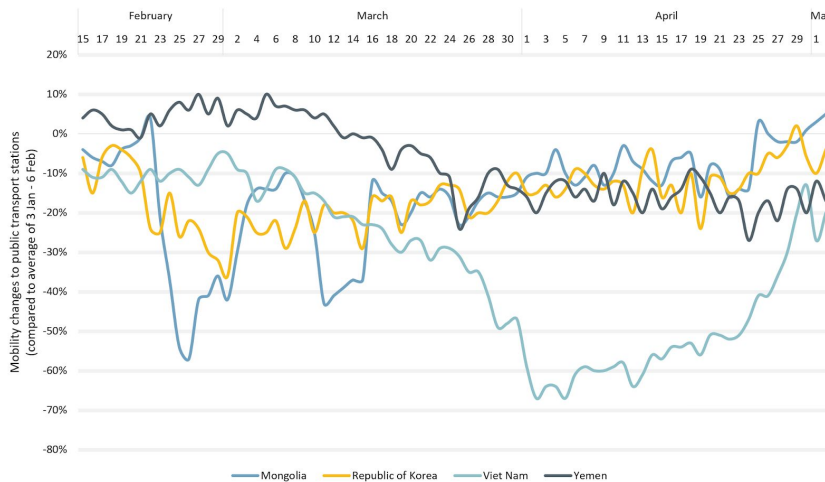
Figure 13: Changes in mobility to public transport stations in Asian countries

Sudden rapid declines are seen in Bangladesh, India, Iraq, Kyrgyzstan, Malaysia, Nepal, Pakistan and Sri Lanka. For example in the case of Bangladesh, mobility levels dropped significantly on March 26, the first day of national lockdown [18]. Looking at Malaysia, within a few days, the mobility to public transport stations was reduced by 80% and stayed at very low levels during April. Japan and Singapore had relatively modest declines until the beginning of April. Then it reduced to about half of the pre-COVID-19 average. Singapore, a country that implemented policies from very early on, shows that mobility to public transport stations was already below the baseline in February.

Figure 14: Asian countries recovering from mobility disruptions

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

In a few cases, there is already a sign of recovery (Figure 14). **Mobility to public transport stations has reached pre-COVID-19 levels in Mongolia and Korea**. **Vietnam is also very close to the baseline**, after having very low levels in the first three weeks of April 2020. Yemen has sustained the percentage change in trips to -10 to -20% of the baseline, which represents a very low impact compared to other countries worldwide.

Countries such as Korea[19] and Vietnam[20] are currently often referred to as success stories in terms of their treatment of the COVID-19 pandemic.

IV.B Changes for transport modes in Asia

In January and February 2020, data on transport mode requests showed a decline of public transport queries compared to the baseline of 13 January. A possible reason for the reduced interest at the end of January 2020 can be national holidays and the Lunar New Year, which is celebrated in a few East-Asian countries. Decline due to COVID-19 can be identified from the 7 March onwards.

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[18] Wikipedia (2020). COVID-19 pandemic in Bangladesh. Available at:
https://en.wikipedia.org/wiki/COVID-19_pandemic_in_Bangladesh
[19] Zastrow, M. (2020). How South Korea prevented a coronavirus disaster—and why the battle isn't over. Available at:
https://www.nationalgeographic.com/science/2020/05/how-south-korea-prevented-coronavirus-disaster-why-battle-is-not-over/
[20] Jones, A. (2020). Coronavirus: How 'overreaction' made Vietnam a virus success. BBC. Available at:
https://www.bbc.com/news/world-asia-52628283

Figure 15: Development of driving, public transport and walking in Asia
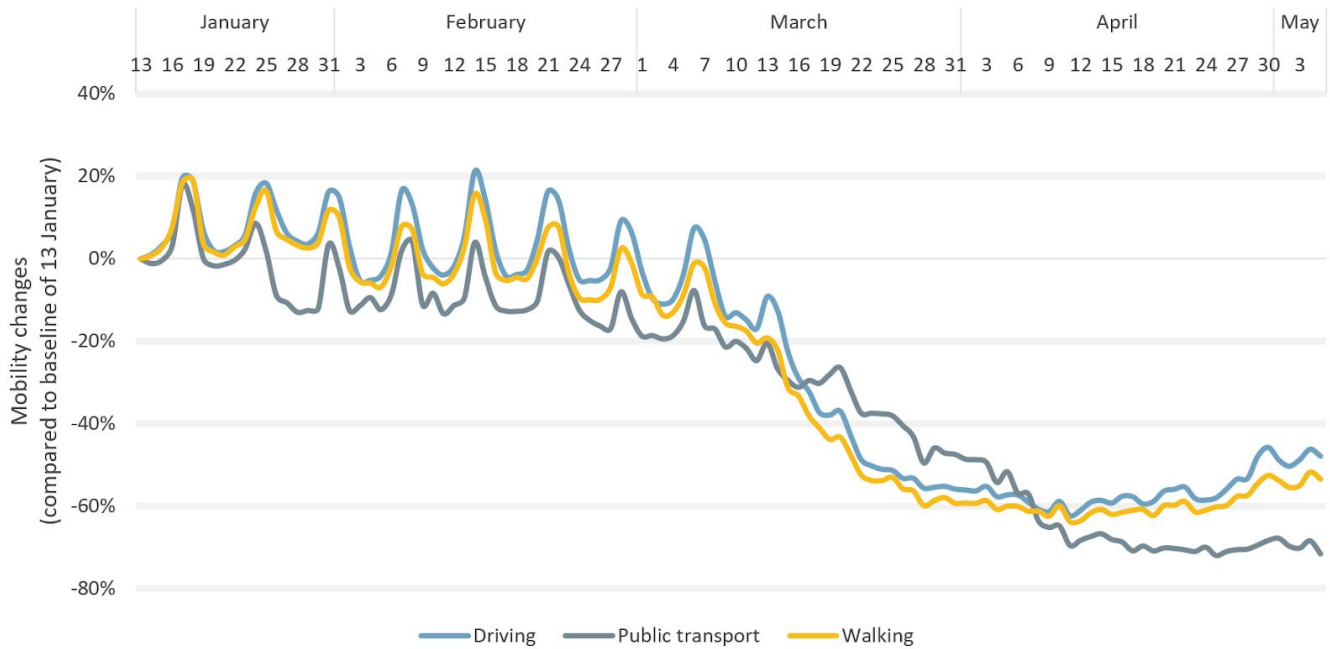
Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

In the case of Asia, in March 2020, driving and walking queries went down stronger and faster than public transport queries (Figure 15). Levels were around 10 to 15% lower than public transport queries. By the first week of April, **public transport saw a similar decline of direction requests and then fell even lower**. During the same period, driving and walking requests seem to increase again. Driving was at -47%, walking at -53% and public transport at -72% at the beginning of May.

V. Mobility in Latin America and the Caribbean

Mobility in LAC has been most impacted by the COVID-19 pandemic. The level of mobility disruptions during March and April 2020 shown by data is on average stronger than in other regions.

V.A Changes to Destinations in Latin America and the Caribbean
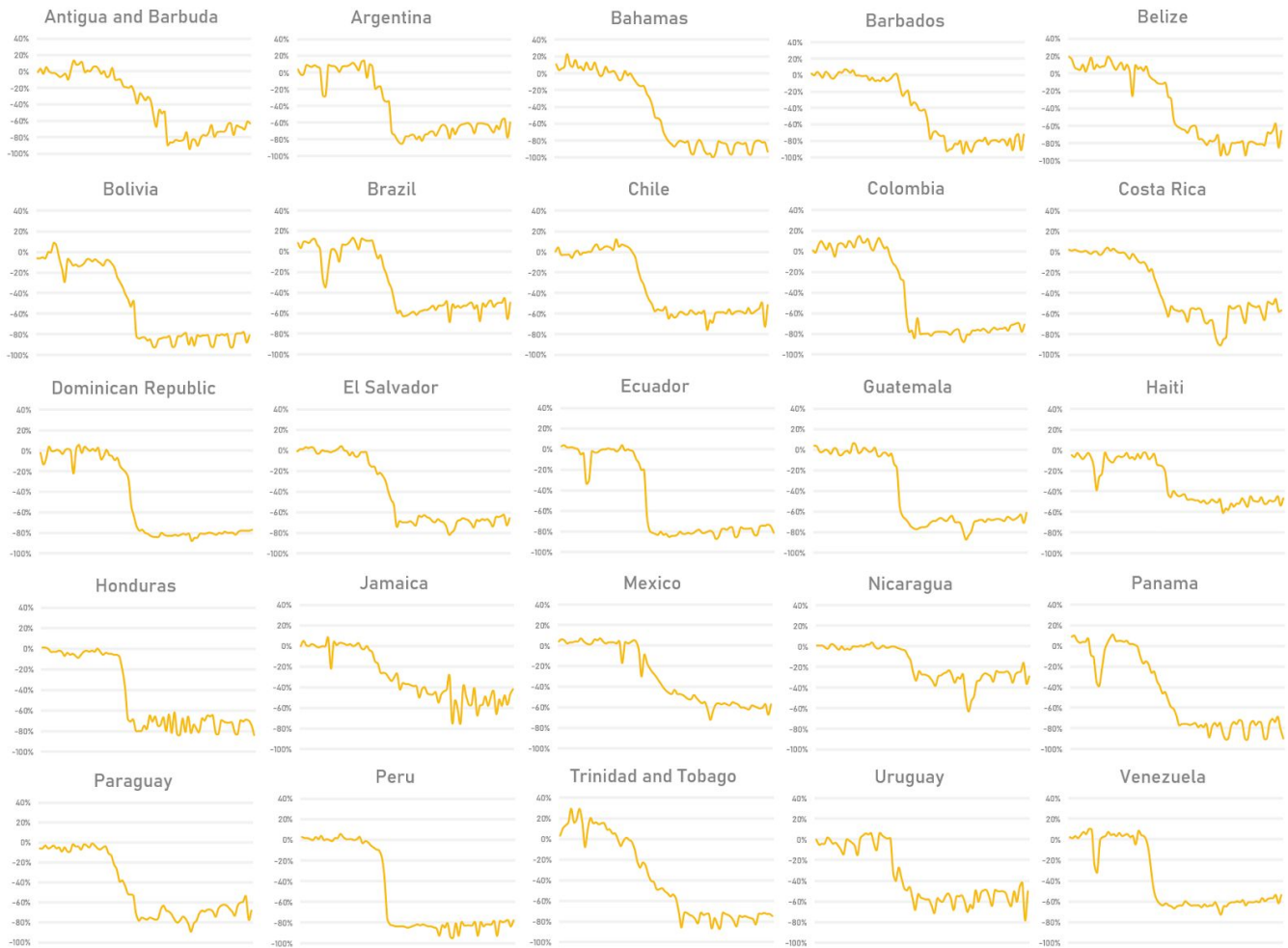
Figure 16: Mobility changes in LAC
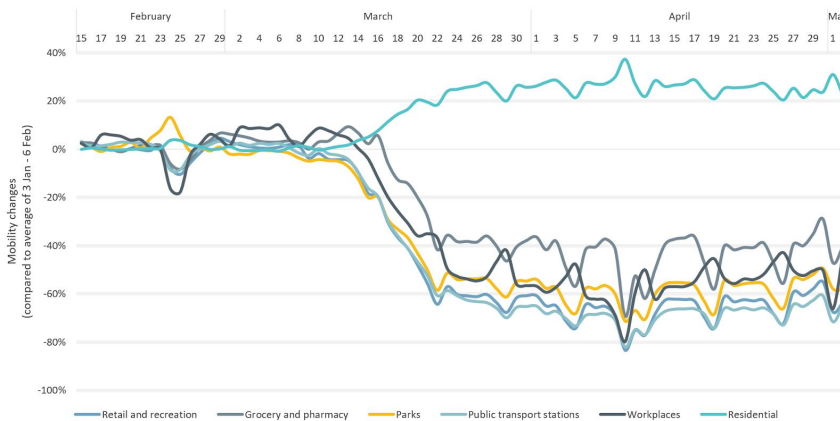
Similar to other regions, trips to public transport stations have been suffering the most in LAC, followed by retail and recreation (Figure 16). The reduction is very similar for mobility to parks and mobility to workplaces, except during weekends. Even fewer people than usual go to parks. Mobility to grocery stores and pharmacies has been least impacted but still reduced by around 40%.

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

The big difference compared to Asia, for example, is that mobility disruptions happened very quickly from the week of 16 March 2020, and levels have stayed more or less the same since then. The United Nations Economic Commission for Latin America and the Caribbean (ECLAC)'s COVID-19 Observatory outlines the measures introduced by many LAC countries to address the pandemic[21], with Belize, Brazil, Chile, Costa Rica and El Salvador introducing stringent measures.

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[21] ECLAC (2020). COVID-2019 Observatory for Latin America and the Caribbean: measures by country. Available at: https://eclac.maps.arcgis.com/apps/MapSeries/index.html?appid=57c96de0159641b095bd1c213c320ab9

Figure 17: Changes in mobility to public transport stations in LAC countries
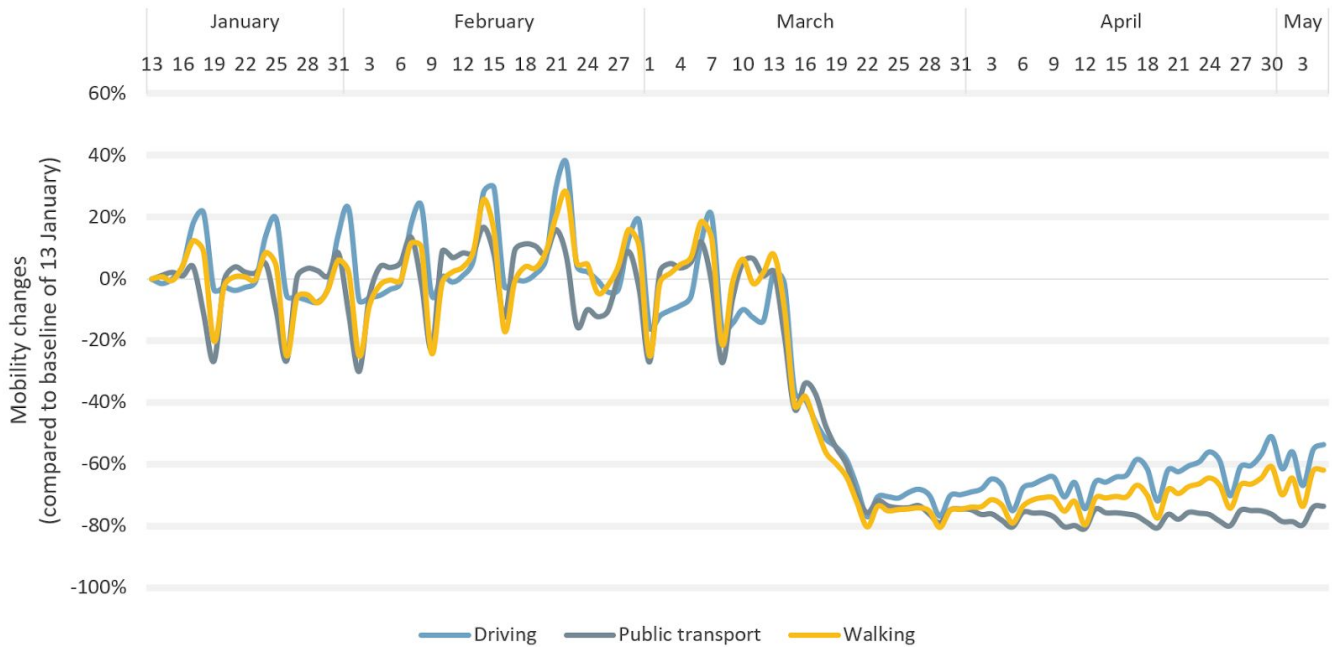

Source: SLOCAT analysis based on Google (2020). COVID-19 Community Mobility Reports

The overview of individual countries (Figure 17) shows that **mobility to public transport stations decreased significantly in every LAC country without any exception.** The majority of countries have experienced a reduction between -60 and -80%. Bahamas, Belize, Bolivia, Donimican Republic, Panama and Peru present very severe disruptions of more than 80%. Only Nicaragua has a very limited percent change of trips to public transport stations. Specific reasons cannot be identified in this case. Minor levels of recovery can be seen in Antigua and Barbuda and Paraguay but they are still well below the baseline.

V.B Changes for transport modes in Latin America and the Caribbean

Across LAC, the decline of queries for driving, public transport and walking happened at similar rates. After 13 March 2020, requests for these three transport modes fell very quickly. Within six days, it was 80% below the average of 13 January 2020 and stayed at this level from the last week of March. In April, **walking and driving started to experience a very slight increase and reached around 54% and 62% below the baseline, while public transport stayed at -74%.**

Figure 18: Transport mode changes in LAC

Source: SLOCAT analysis based on Apple (2020). COVID-19 Mobility Trends Reports

VI. Conclusions

This early analysis outlines how passenger mobility trends in urban environments have been impacted from the first weeks of the global COVID-19 pandemic. It does not provide a complete picture of how passenger transport is being impacted. The data shows the impact but not the cause. Various reasons (e.g. number of registered infections and deaths, dates and extent of curfews, lockdowns, social distancing) influence mobility behavior and none of them can be directly extracted from this initial trends analysis.

However, this analysis confirms what can be observed in many cities around the world right now: **The most visible impact is the very strong decline in the use of public transport. The percentage change of trips to public transport stations is the highest.** For this specific impact and many others, the strongest impact can be recognised in LAC and in high-income countries. This preliminary analysis identifies that a few countries in Asia already see a tendency towards recovery of mobility use. However, only time will show how mobility and transport modes are going to evolve in the coming weeks and whether any of the so-far temporary trends will be carried forward.

The impact of the pandemic is also showing how important mobility and logistics are to guarantee essential supplies and ensure mobility to essential workers. All this while confirming how sensitive our passenger and freight transport systems are to global disruptions.

There are many open questions regarding mobility impacts from COVID-19 that require further research and foresight analysis, including:

- **Is there going to be a consolidated shift to sustainable, low carbon transport modes?**
  - How is it going to impact overall decarbonisation goals and pathways?
  - What impact will economic stimulus packages by national governments and international financial institutions have - or should have - on transport modes?
- **What is the impact on transport emissions?**
  - Did COVID-19 lead to a reduction of transport emissions? And if so to what extent?
  - To what extent will emissions bounce back? How can we take advantage of the momentum to reduce the bounce back effect?
- **What are the impacts on logistics and delivery?**
  - How have global and local supply chains for essential services and products, as well as for home deliveries and urban logistics transformed worldwide? And what is the impact on transport emissions?
  - Are supply chains going to change permanently? Is the transport sector going to be addressed within discussions about new patterns for global value chains?
  - How are economic stimulus plans going to address freight?
- **Will some of the tactical solutions currently being implemented be maintained?**
  - Are the popup bike lanes, open streets and other tactical urbanism measures going to be transformed to permanent infrastructure?
  - Will the benefits of current measures be acknowledged and adequately integrated into long-term plans for systemic transformation (e.g. work-from-home measures, virtual events, etc.)?

Underpinning all these questions, there is one clear goal for the sustainable, low carbon transport movement. The lessons learned out of this crisis must be harnessed to accelerate and consolidate sustainable, low carbon transport and mobility patterns embedded in a balanced implementation of the Avoid-Shift-Improve framework.

For more information, SLOCAT's resource page[22] and the TUMI's knowledge hub[23] contain relevant case studies on transport and COVID-19 and provide references to a variety of material by relevant organisations for all modes and all sectors.

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