COVID-19

MagicBox update – April 14

Effects of social distancing measures

Colombia, Cote d'Ivoire, India, Indonesia, Malaysia, Mexico, Nigeria
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NEW
Nigeria Report ........................................................................................................ pages 7-15
(New: Includes poverty disaggregation)

Exploration Section ................................................................................................ pages 16-18
(this week, sustainability of lockdowns and socioeconomic differences of social distancing: USA and Germany)

Colombia Report ..................................................................................................... pages 19-25
(New: Added this week)

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Overview

Through **data partnerships** with private sector companies **Magic Box** (UNICEF's big data initiative) has access to **aggregated and anonymized human mobility** for multiple countries.

Mobility data can tell us what the situation is in the country, how people are reacting to the enacted polices and highlight differences in regions.

**This deck shows insights for 7 programme countries:**

**Colombia, Cote d'Ivoire, India, Indonesia, Malaysia, Mexico, and Nigeria**

Further, this deck, contains an **exploration section** with insights for non-programme countries which are currently experiencing an epidemic (USA) and countries which are ahead of the epidemic curve (Germany).
National Reports Structure

For each country we show an analysis on

- **Data coverage:** Analysis of potential bias of mobility data
- **Policy changes:** Analysis of social distance policies implemented in the country
- **Social Distancing – National level:** Monitoring average daily travelled distance & time spent at home
- **Socioeconomic differences:** Social distancing inequalities based on poverty levels
  - *Large cities – Zoom in*
- **Subnational analysis:** Social distancing disaggregated subrationally
- **Changes in place visitation:** Disaggregation of mobility by type of place visited

* New this week. Only for Nigeria. Waiting for poverty data for other countries
Limitations of current approach

The Mobility data presented here is collected through smartphones, but not everybody has a smartphone. Especially the most vulnerable are not represented in this smartphone datasets.

To make the analysis more representative we need:

- Data partnerships with local mobile network operators
- Collaborations with local academics/groups to adapt the analysis to the local context
Some highlights

- **MagicBox** has now data for 7 Program Countries: *Colombia and Cote d'Ivoire added this week*

- We are **incorporating analysis of Socio-economic differences of Social Distancing**. Key to understand impact and adequateness of mobility restrictions in low income settings. Only Nigeria (and US) this week

- **Change on movement behavior remains high (or growing)**, correlating with implemented policies:
  - In Nigeria, *poor populations* are increasing the time spent at home, but this *increase in poor areas is half the one observed in rich areas*
  - Strengthening *social distancing policies remains a go-to Government practice*: All countries analyzed have been increasing policies for social distancing while seeing an increase in number of confirmed cases
Nigeria
April 14th 2020
Data Coverage

- We have **26,458,956 datapoints** for **67,981 users** (out of 196 million inhabitants)
- A large majority of users live in Lagos and Abuja

**Representativeness of data**

**Concentration of data**

Data from: Cuebiq
Analysis from: UNICEF MagicBox
**Policy changes**

Sharp increase on Containment Policies.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels.

Data from: https://www.bsg.ox.ac.uk/research/research-projects/oxford-covid-19-government-response-tracker
https://www.acaps.org/covid19-government-measures-dataset

Analysis from: UNICEF MagicBox
We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:

- Travel has been reduced to ~40% of Feb levels
- People spend ~15% more time at home
- Combinations of lockdown policies have changed behavior

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Disaggregating social distancing behavior according to poverty levels we find that:

- Behavioral changes are different across wealth groups
- People living in poor areas (more than 50% living below poverty line) spend less time at home and have smaller changes in travel distances than people living in middle income (20%-50% people living below poverty line) and richer areas (less than 20% below poverty line)

Data from: Cuebiq + WorldPop
Analysis from: UNICEF MagicBox
Socioecn diff - Lagos

- Less than 20% below poverty line
- Between 20% - 50% below poverty line
- More than 50% below poverty line
Subnational analysis

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find:

- **Data for Nigeria is very noisy (regions with less than 2 users per 10k population are greyed out)**
- Compared to Feb travel distances in Lagos and Abuja have been reduced by ~50% compared to February
- Social policies and the closing of schools in Lagos has had an impact on mobility

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Subnational analysis

Nigeria

Abuja

Lagos

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes in place visitation

- **Retail & recreation**
  -49% compared to baseline
  Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

- **Grocery & pharmacy**
  -36% compared to baseline
  Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

- **Parks**
  -34% compared to baseline
  Mobility trends for places like national parks, public beaches, marinas, dog parks, plaza and public gardens.

- **Transit stations**
  -46% compared to baseline
  Mobility trends for places like public transport hubs such as subway, bus, and train stations.

- **Workplaces**
  -14% compared to baseline
  Mobility trends for places of work.

- **Residential**
  +19% compared to baseline
  Mobility trends for places of residence.

Data and analysis from: https://www.google.com/covid19/mobility/
Exploration Section

April 14th 2020

*Updates for other country offices are below*
In the US we are seeing large differences in mobility between counties above and below the median income. Individuals living in wealthier places are changing their behavior more drastically.

Looking at the effect of measures, there is a clear difference in mobility between places that enacted social distancing measures and places that did not.
Insights from Germany

In Germany mobility initially declined after the government enacted social distancing measures, however, recently there has been an increase. This has been linked to public perception of the restrictions, where a larger portion of the population is beginning to think measures are "too strict". 

Data from: Mobile Network Providers + Surveys
Analysis by: Frank Schlosser - Humboldt University and German CDC (Robert Koch Institute)
Data Coverage

We have **68,460,044 datapoints** from **103,710 users** (out of 49.7 million inhabitants)

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Policy changes

Sharp increase on Containment Policies.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels.

Current index: 95.24
Current Confirmed cases: 2852

Data from: https://www.bsg.ox.ac.uk/research/research-projects/oxford-covid-19-government-response-tracker
https://www.acaps.org/covid19-government-measures-dataset
Analysis from: UNICEF MagicBox
Changes in movement

We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:

- Travel has been reduced to ~30% of Feb levels.
- People spend ~25% more time at home.
- Lockdown policies have changed behavior.

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes across regions

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find that compared to average behavior in Feb:

- Travel distances are reduced to ~10-40% of February after measures were put in place
- Department of Amazonas does not have enough data for a robust analysis

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Subnational analysis

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes in movement by type of place

Colombia

Data and analysis from: https://www.google.com/covid19/mobility/

Retail & recreation
-85%
compared to baseline

Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Grocery & pharmacy
-66%
compared to baseline

Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

Parks
-79%
compared to baseline

Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.

Transit stations
-81%
compared to baseline

Mobility trends for places like public transport hubs such as subway, bus, and train stations.

Workplaces
-57%
compared to baseline

Mobility trends for places of work.

Residential
+26%
compared to baseline

Mobility trends for places of residence.

Data and analysis from: https://www.google.com/covid19/mobility/
Cote d'Ivoire
April 14th 2020
Data Coverage

- We have **2,582,782 datapoints** from **5,036 users** (out of 1,353 million inhabitants)
- A large majority of users live in Abijan

**representativeness of data**

**concentration of data**

Data from: Cuebiq
Analysis from: UNICEF MagicBox
We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:

- Travel has been reduced to ~50% of Feb levels
- People spend ~10% more time at home
- Combinations of lockdown policies has changed behavior

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes across regions

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find:

- **Data for Cote d'Ivoire is very noisy. Only Abidjan has enough data for an analysis.**

- Compared to Feb travel distances in Abidjan and have been reduced by ~50% compared to February

- Social policies and the closing of schools in Lagos has had an impact on mobility

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Subnational analysis

Cote d'Ivoire

April 14th 2020

Data from: Cuebiq
Analysis from: UNICEF MagicBox

No data
Changes in movement by type of place

Cote d'Ivoire

Data and analysis from: https://www.google.com/covid19/mobility/

April 14th 2020

Retail & recreation
-33%
compared to baseline

Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Grocery & pharmacy
-22%
compared to baseline

Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

Parks
-23%
compared to baseline

Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.

Transit stations
-37%
compared to baseline

Mobility trends for places like public transport hubs such as subway, bus, and train stations.

Workplaces
-7%
compared to baseline

Mobility trends for places of work.

Residential
+14%
compared to baseline

Mobility trends for places of residence.
India
April 14th 2020
Data Coverage

We have **143,996,606 datapoints** for **198,869 users** (out of 1,353 million inhabitants)

**representativeness of data**

**concentration of data**

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Policy changes

Sharp increase on Containment Policies.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels.

Analysis from: UNICEF MagicBox
Changes in movement

We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:

- Travel has been reduced to ~40% of Feb levels
- People spend ~15% more time at home
- Combinations of lockdown policies have changed behavior

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find that compared to average behavior in Feb:

- Travel distances are reduced to ~20-80% of February after where measures were put in place
- Drop is pronounced in New Delhi, Kolkata and in south western states

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Subnational analysis

Data from: Cuebiq
Analysis from: UNICEF MagicBox

reduction
Changes in movement by type of place

Retail & recreation
-77%
compared to baseline

Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Grocery & pharmacy
-65%
compared to baseline

Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

Parks
-56%
compared to baseline

Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.

Transit stations
-71%
compared to baseline

Mobility trends for places like public transport hubs such as subway, bus, and train stations.

Workplaces
-43%
compared to baseline

Mobility trends for places of work.

Residential
+21%
compared to baseline

Mobility trends for places of residence.

Data and analysis from: https://www.google.com/covid19/mobility/
Indonesia
April 14th 2020
We have **143,996,606 datapoints** from **198,869 users** (out of 267.7 million inhabitants).

- Regions with high number of users include Jakarta, Bali, and Balikapan.
- The region with least users is on the Papua Island.

**Data from:** Cuebiq  
**Analysis from:** UNICEF MagicBox
Policy changes

Increase on Containment Policies, sudden drop and loss of data.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels in Indonesia.

Current index: 80.95
Current Confirmed cases: 4557

Data from: https://www.bsg.ox.ac.uk/research/research-projects/oxford-covid-19-government-response-tracker
https://www.acaps.org/covid19-government-measures-dataset
Analysis from: UNICEF MagicBox
National changes in movement

We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:
- Travel has been reduced to ~50-60% of Feb levels
- People spend ~10% more time at home
- Lockdown policy has changed behavior

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes in movement by type of place

Indonesia

Data and Analysis from: https://www.google.com/covid19/mobility/

Retail & recreation: -43%
- Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Grocery & pharmacy: -24%
- Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

Parks: -50%
- Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.

Transit stations: -58%
- Mobility trends for places like public transport hubs such as subway, bus, and train stations.

Workplaces: -17%
- Mobility trends for places of work.

Residential: +14%
- Mobility trends for places of residence.
Subnational analysis

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find that compared to average behavior in Feb:

- Drop is consistent across all states and territories
- Reduction in travel distances varies from a reduction of ~90% (Jakarta) to ~35% reduction (Jambi)
- We need better poverty data to understand the effects of poverty on these reductions.

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Subnational analysis

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Malaysia
April 14th 2020
Data Coverage

- We have **58,629,841 datapoints** from **85,658 users** (out of 31.5 million inhabitants)
- Large adoption rates in Kuala Lumpur (25 /10k) and Labuan Island (36/10k)
Policy changes

Sharp increase on Containment Policies.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels.

Current index: 86
Current Confirmed cases: 4817

Data from: https://www.bsg.ox.ac.uk/research/research-projects/oxford-covid-19-government-response-tracker
https://www.acaps.org/covid19-government-measures-dataset
Analysis from: UNICEF MagicBox
We are here looking at how people’s behavior differs from normal (Feb 2020)

We find that on 12 April:

- **Travel has been reduced to 20% of Feb levels**
- People spend ~25% **more time at home**
- Lockdown policy has changed behavior

*Data from: Cuebiq  
Analysis from: UNICEF MagicBox*
Changes in movement by type of place

Malaysia

Data and Analysis from: https://www.google.com/covid19/mobility/

Retail & recreation
-81%
compared to baseline

Mobility trends for places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.

Grocery & pharmacy
-58%
compared to baseline

Mobility trends for places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.

Parks
-68%
compared to baseline

Mobility trends for places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.

Transit stations
-84%
compared to baseline

Mobility trends for places like public transport hubs such as subway, bus, and train stations.

Workplaces
-51%
compared to baseline

Mobility trends for places of work.

Residential
+31%
compared to baseline

Mobility trends for places of residence.

April 14th 2020
Subnational analysis

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

Compared to average behavior in Feb:

- **Travel distances are reduced to ~20-30% of February after social distancing was enacted**
- **Drop is consistent across all states and territories**
- Other measures incl. radius of gyration, time spent at home, and exploration behavior exhibit similar changes
Mexico
April 14th 2020
Data Coverage

- We have **877,499,283 datapoints** from **1,013,177 users** (out of 136.2 million inhabitants)
- Large adoption rates in some states (above 150/10k). Mexico City has (80/10k)
Policy changes
Gradual increase on Containment Policies.

Containment index computed by Oxford University considering Closures of Schools, Workplaces, Public transportation, cancellation of public events and restrictions for internal movements and international travels.

Data from: https://www.bsg.ox.ac.uk/research/research-projects/oxford-covid-19-government-response-tracker
https://www.acaps.org/covid19-government-measures-dataset
Analysis from: UNICEF MagicBox
National changes in movement

We are here looking at how people's behavior differs from normal (Feb 2020)

We find that on 12 April:

- **Travel has been reduced to 50% of Feb levels**
- People spend ~210% more time at home
- Public health measures have changed behavior

Data from: Cuebiq
Analysis from: UNICEF MagicBox
Changes in movement by type of place

**Retail & recreation**
-62% compared to baseline

**Grocery & pharmacy**
-19% compared to baseline

**Parks**
-52% compared to baseline

**Mobility trends**
- Places like restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters.
- Places like grocery markets, food warehouses, farmers markets, specialty food shops, drug stores, and pharmacies.
- Places like national parks, public beaches, marinas, dog parks, plazas, and public gardens.
- Places like public transport hubs such as subway, bus, and train stations.
- Places of work.
- Places of residence.

Data and Analysis from: https://www.google.com/covid19/mobility/
Subnational analysis

Looking across regions we see how people's behavior changes from normal (month of Feb 2020).

We find that compared to average behavior in Feb:

- Travel distances are reduced to ~30-40% of February after 14 Mar where public health measures were enacted.
- Drop is and consistent across all states, and largest for states close to the US.
- Other measures incl. radius of gyration, time spent at home, and exploration behavior exhibit similar changes.

Data from: Cuebiq
Analysis from: UNICEF MagicBox