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# Winners and losers from COVID-19

## Evidence from Google search data for Egypt

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Evolving pieces of evidence show that services are hardest hit by the COVID-19 pandemic, both globally and in Egypt. Employing Google search data, we examine the implications of COVID-19 on demand for various services in Egypt.

- We find that demand for those services that require face-to-face interaction, including hotels and restaurants, air travel and tourism services, significantly dipped after Egypt detected the first COVID-19 case and more so after the Egyptian government introduced major restrictions and curfews. For instance, in the first two months of the outbreak of the pandemic, February and March, demand for hotel and restaurant services contracted by about 70 percent.
- In contrast, demand for services that substitute or reduce personal interactions, such as information and communications technologies (ICT) and delivery services, have enjoyed a significant boost. Demand for ICT services tripled, while demand for delivery services doubled in the four months since the outbreak of the pandemic.
- Intuitively, these results suggest that individuals and enterprises operating in these sectors are expected to experience heterogenous impacts and damages associated with the pandemic. Our results, along with other evolving evidence, reinforce that those services and sectors negatively affected by the outbreak and spread of COVID-19 deserve attention.
- Finally, our analysis highlights the potential of near real-time "big data" to substitute and complement conventional data sources to estimate economic impacts and, hence, inform immediate and medium-term policy responses.

### Background and motivation

COVID-19 is disrupting the livelihoods of billions of people across the globe. Besides the obvious health impacts and death tolls caused by COVID-19, there have been and will be severe damages to national and global economies. Travel restrictions as well as business closure across many countries of the world have left many people unemployed. These economic consequences are expected to vary across countries, depending on the spread and intensity of the pandemic and associated government responses (Abay et al. 2020; Koren and Pető 2020). Furthermore, the direct and indirect economic consequences and damages associated with COVID-19 are expected to vary across sectors. Those sectors and activities involving face-to-face interactions are likely to be disproportionally affected, while those sectors functionally dependent on the internet or remote work arrangements are likely to be less affected (Dingel and Neiman 2020). This implies that individuals working in different sectors are likely to experience varying impacts of the pandemic.[1]

The consequences and damages caused by such pandemics are also expected to depend on governments' policies and responses. Governments as well as international development and donor agencies are preparing rescue packages and large-scale initiatives to save jobs and enterprises. Government efforts and rescue packages can only be effective if they are informed by evidence on who loses (benefits) and by how much because of the COVID-19 pandemic. Evidence on the intensity of damage across various sectors, although difficult to avail, can inform governments' short and long-term responses to the crisis. This is particularly crucial for developing and emerging economies with limited fiscal space and, hence, have limited resources to be allocated among competing needs. Empirical evidence on the size and breadth of damages across various sectors can improve the targeting and effectiveness of these rescue packages and programs. This note aims to contribute to this scant evidence base using an unconventional source of data focusing on Egypt.

As of 10 June 2020, data from the Johns Hopkins University show that Egypt is the second most COVID-19 affected country in Africa with a total of 38,284 confirmed cases, following South Africa. Economic activity in the Middle East and North Africa region is projected to contract by almost 4 percent in 2020 due to the COVID-19 pandemic (World Bank 2020). Recent predictions expect Egypt's GDP to contract by about 8.6 percent for the last quarter of the fiscal year 2019/20. Since the outbreak of the pandemic, Egypt mandated a partial lockdown period from April to June involving curfew hours and bans on public gatherings, while also suspending international passenger flights and domestic tourism. Figure A1 in the Appendix shows the timeline of Egypt's policy responses along with daily confirmed COVID-19 cases.

In response to the pandemic, the government of Egypt mobilized a EGP 100 billion (USD 6.25 billion) emergency response package. This is meant to support the most affected sectors, including export subsidies and other forms of support to the tourism and the real estate industries (IFPRI 2020). Furthermore, the government is introducing various initiatives and policy instruments to ease the burden of the pandemic on various sectors, including relaxing credit limits for businesses, providing tax-based incentives, instituting export bans, increasing pensions, and expanding cash transfer programs.[2] Such policy responses are expected to varyingly cushion the economic impact of the pandemic on different sectors (Breisinger et al. 2020a; Breisinger et al. 2020b). However, the effectiveness of these policy responses will heavily depend on whether these programs are well-targeted and informed by evidence on the breadth of the damage to each sector.

We examine demand for various services in Egypt and associated dynamics driven by the outbreak and spread of COVID-19. We employ Google search data to capture demand for major services. Our focus on services is motivated by evolving evidence showing that Egypt's services are hardest hit by the pandemic, e.g., Breisinger et. al (2020a; 2020b). The Google search index measures the extent to which a particular term or service is searched using the Google search engine. These queries represent individuals' contemporary interests, perceptions, and demands for different services. The relevance of web search data for understanding human behavior and human

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[1] Indeed, some argue that the pandemic is widening social and economic inequalities because of the heterogenous health and economic impacts of the pandemics across different groups of societies. See https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_740101/lang--en/index.htm

[2] A detailed policy response tracker for Egypt is accessible on: https://egyptssp.ifpri.info/2020/06/01/COVID-19-food-policy-response-monitor-for-egypt-2/

activities is increasing with the penetration of internet across the world, including in Egypt.[3] Several studies have used Google search data for: estimating consumer demand (e.g., Vosen and Schmidt 2011; Choi and Varian 2012; Gilchrist and Sands 2016; Rivera 2016).[4] Recently, Abay et al. (2020) employed these data for estimating the global impact of the COVID-19 pandemic on demand for services. Our approach in this note follows Abay et al. (2020), focusing on Egypt. Using these historical and near real-time time Google search data, we carefully examine the trends and evolution of demand for various services before and after the outbreak of the COVID-19 pandemic.

We find that demand for some services, as captured by Google search indexes, dipped (jumped) shortly after Egypt detected its first COVID-19 case and more so immediately after the Egyptian government introduced major restrictions and curfews. As the Egyptian government introduced major restrictions mid-March 2020, we observe significant dips and spikes in demand for some services. More specifically, we find that demand for services that involve face-to-face interactions, including hotels and restaurants, air travel, and tourism services, has substantially contracted since the outbreak of the pandemic. In contrast, demand for services that substitute or reduce personal interactions, such as information and communications technologies (ICT) and delivery services, have enjoyed a significant boost. Intuitively, these results suggest that individuals and enterprises operating in these sectors are expected to experience heterogenous impacts and damages associated with the pandemic. Our results highlight that those services and sectors negatively affected by the outbreak and spread of COVID-19 deserve special attention. Governments might consider employing distributive public policies that ensure equitable distribution of limited public resources to lessen the repercussions of COVID-19.

## Google search for measuring demand for services

We measure demand for various services using Google search queries.[5] We compile Google search queries for several terms and topics corresponding to various services. We broadly examine demand for the following services: (i) hotels and restaurants, (ii) air transport, (iii) tourism, (iv) information communication and technologies (ICT), and (v) delivery services. For each service, we employ several queries, both in English and Arabic.[6] Several studies have demonstrated and validated Google search data for predicting actual consumer demand (e.g., Vosen and Schmidt 2011; Rivera 2016; Havranek and Zeynalov 2019; Abay et al. 2020). More specifically, Abay et al. (2020) validate most of the search terms we employ in this study using actual data from several countries.

Google Trends provides a time series search index capturing the relative popularity of queries submitted to the Google search engine in a specific geographic area and time. The search index is expressed as the share of total queries, total searches for each term divided by the total number of queries submitted to Google in a specific geographic region and time. The maximum query share associated with each location (and across time) is normalized to be 100, and remaining shares are scaled relative to this maximum 100.[7] Because of these normalizations, the search frequency index

[3] Internet penetration in Egypt remains increasing, with more than half of the population having access to internet (World Bank 2020b), and the Ministry of ICT in Egypt recently announced that internet consumption increased by 50 percent.

[4] Other studies have used Google search data for predicting unemployment rate (Pavlicek and Kristoufek 2015); measuring job search (Baker and Fradkin 2017) and racial bias (Stephens-Davidowitz 2014; Chetty et al. 2020). More recently, some studies are using Google search data for understanding and quantifying the impact of COVID-19 on mental health (Brodeur et al. 2020), economic anxiety (Fetzer et al. 2020) and religiosity (Bentzen 2020).

[5] The google search query data come from trends.google.com.

[6] Keywords used for the various services are the following: restaurant and hotel: “restaurant, hotel, and مطعم”; flights and air travel: “flight, airport, EgyptAir, طيران, and مصر للطياران”; ICT: “ميكروسوفت تيم, zoom, تيك توك, TikTok, Microsoft teams, WebEx, Skype, and سكايب”; domestic tourism: “Karnak, Egyptian Museum, tour guide, historic, lonely planet, tourist, Luxor, Sharm Elsheikh, and Hurghada”; international tourism: “Karnak, Egyptian Museum, pyramids, Aswan, Luxor, Sharm Elsheikh, and Hurghada”; and delivery services: “otlob, دليفري, hotline, delivery, and توصيل”.

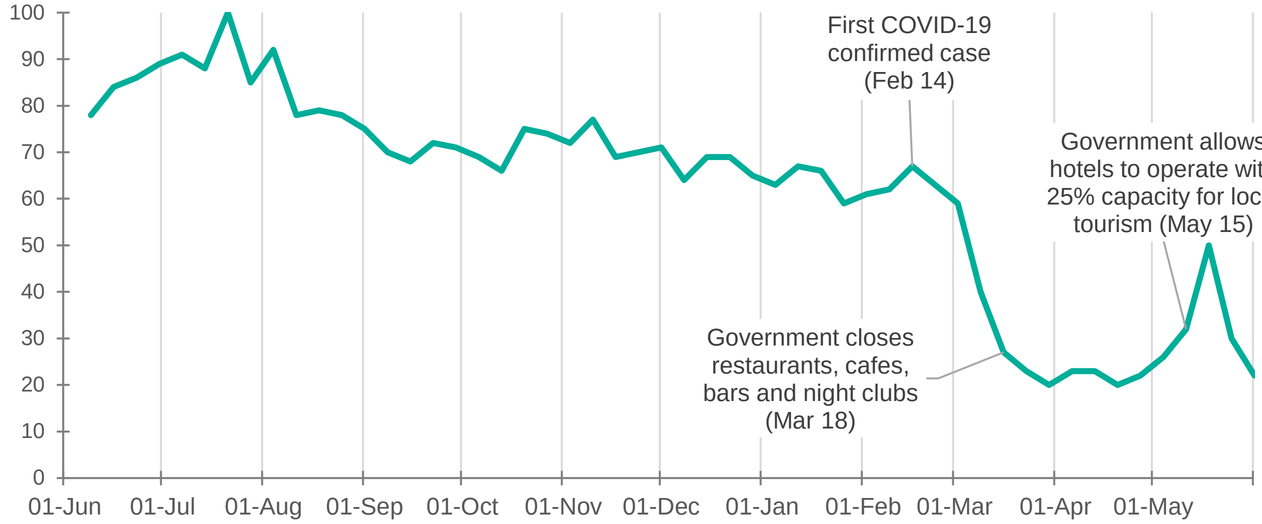
[7] For details, see https://support.google.com/trends/answer/4365533?hl=en

is always a number between 0 and 100. The Google search data we employ in this study are aggregated at weekly level.

## Loser and winner services

As the spread of the outbreak and government's restrictions intensify, several services show significant contractions, while other sectors enjoyed increased demand and economic activity. Figure 1 shows the popularity of search terms related to restaurants and hotels in Egypt. After the first COVID-19 confirmed case in Egypt on 14 February, Google search intensity for restaurants and hotels started to decline sharply. Such reduction is more pronounced immediately after the government of Egypt closed hotels, restaurants, and nightclubs on 18 March. For instance, on the week of 16 February the popularity index for restaurants and hotels is 67, while the corresponding index on the week of 30 March is 20, showing about a 70 percent reduction in the popularity of Google searches for restaurants and hotels. This contraction in the Google search index is consistent with other recent sources showing that 70 to 80 percent of future hotel bookings was cancelled (ECES 2020), and hotels and foods sector activities are estimated to decline by 60 percent during the fourth quarter of the fiscal year 2019/20 (Breisinger et al. 2020b). As part of a gradual reopening strategy, the government allowed hotels to operate at 25 percent capacity starting from 15 May 2020. Consistent with this, Figure 1 shows a slight increase in search popularity for restaurants and hotels after 15 May.

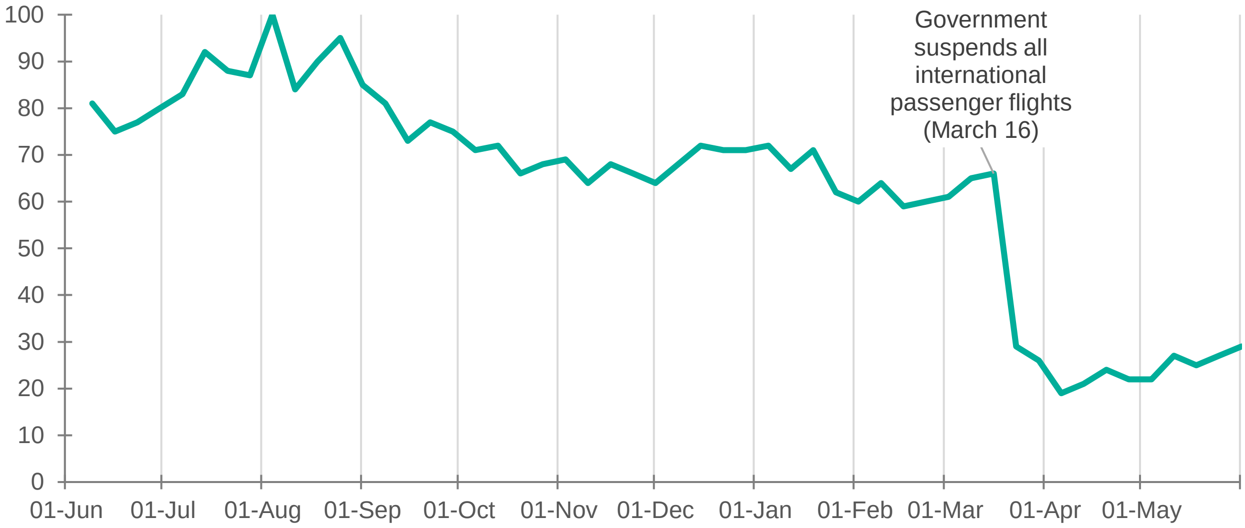
**Figure 1: Google search popularity for restaurants and hotels in Egypt, June 2019 to May 2020**




Source: Google Trends (https://www.google.com/trends).

Similarly, the popularity of search terms for passenger flights and air travel sharply declined after the government suspended all international passenger flights to and from Egypt on 16 March. Immediately after the suspension of international flights, the Google search index for air travel jumped from 66 points on the week of 16 March to 19 points on the week of 6 April, implying a 71 percent contraction in demand for air travel. Figure 2 shows that Google search intensity for flights did not drop to zero, probably as people continue to search for repatriation and chartered flights. Such decline in air transportation is also predicted by other studies (Breisinger et al. 2020b).

**Figure 2: Google search popularity for air travel in Egypt, June 2019 to May 2020**




Source: Google Trends (https://www.google.com/trends).

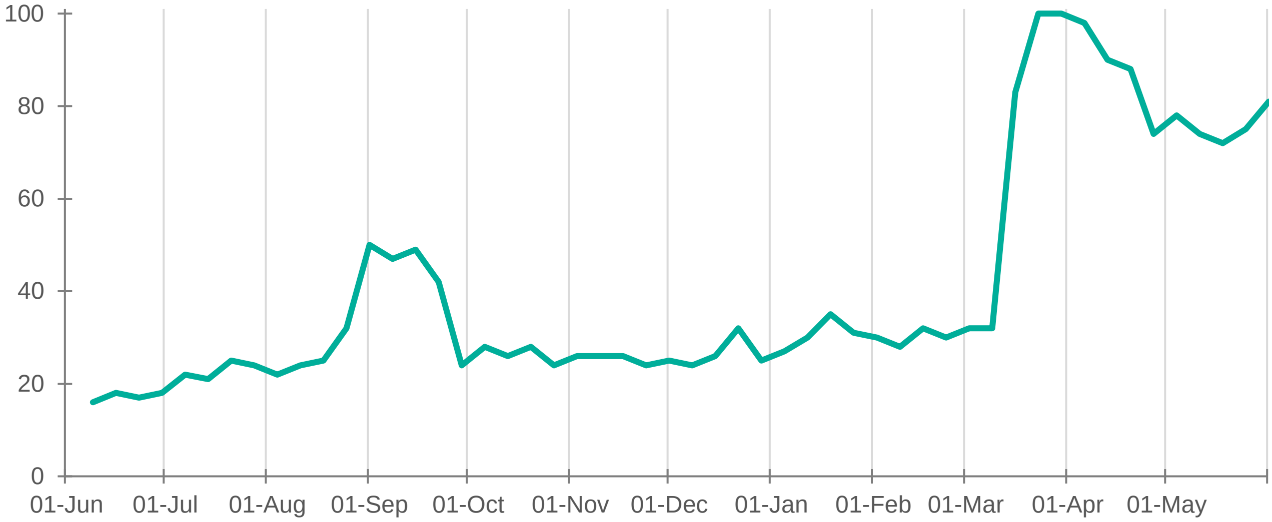
Figure 3 shows similar declining trend in Google search index for tourism-related services. Both international and domestic tourism in Egypt declined shortly after the outbreak of the pandemic and the government's decision to ban all public gatherings and international flights. The first graph in Figure 3 shows the trend in domestic Google searches for popular tourist attractions in Egypt, which we refer to as domestic tourism. The second graph shows corresponding global Google search popularity for tourist attractions in Egypt, which we refer to as international tourism. Both graphs show a sharp decline in demand for tourism services immediately after the government closed tourist attractions (9 March).

**Figure 3: Google search popularity for domestic and international tourism in Egypt, June 2019 to May 2020**


Source: Google Trends (https://www.google.com/trends).

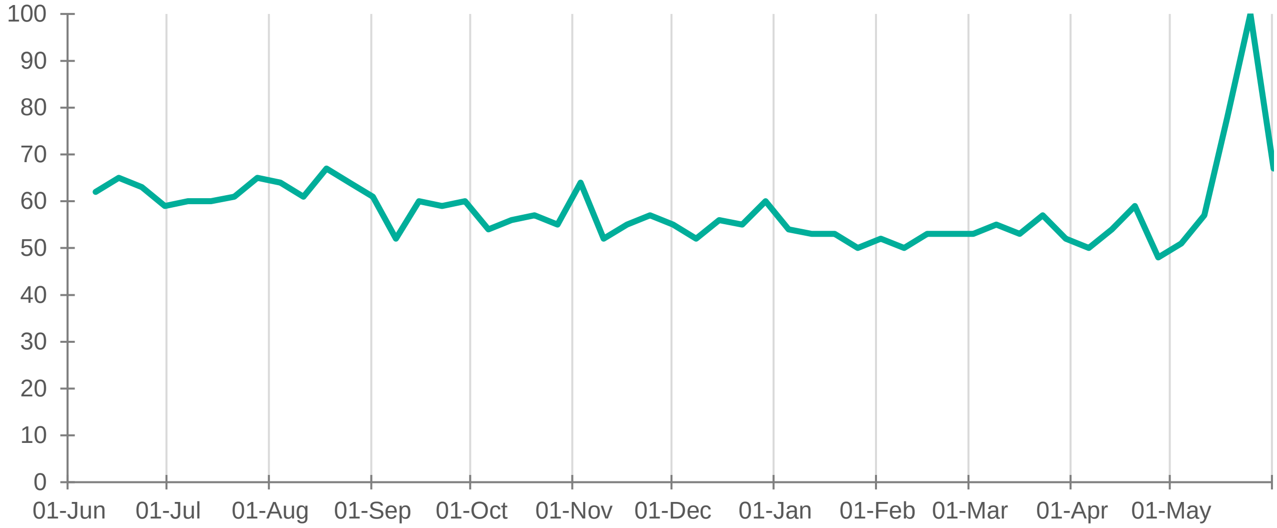
Meanwhile, those services and activities that involve limited face-to-face interactions or those that can substitute for personal interactions are enjoying substantial boost in demand during the pandemic. Demand for information and communication technologies (ICT) and delivery services increased over the past four months in Egypt. Figures 4 and 5 show that demand for ICT services tripled, while demand for delivery services doubled. For instance, Figure 4 shows that Google search popularity index associated with ICT services jumped from about 30 before the outbreak of the pandemic to about 100 in late-March. More recently, demand for ICT and delivery services are declining, consistent with the government's gradual reopening of some activities starting from late May.

**Figure 4: Google search popularity for information and communications technologies (ICT) services in Egypt, June 2019 to May 2020**




Source: Google Trends (https://www.google.com/trends).

**Figure 5: Google search popularity for delivery services in Egypt, June 2019 to May 2020**




Source: Google Trends (https://www.google.com/trends).

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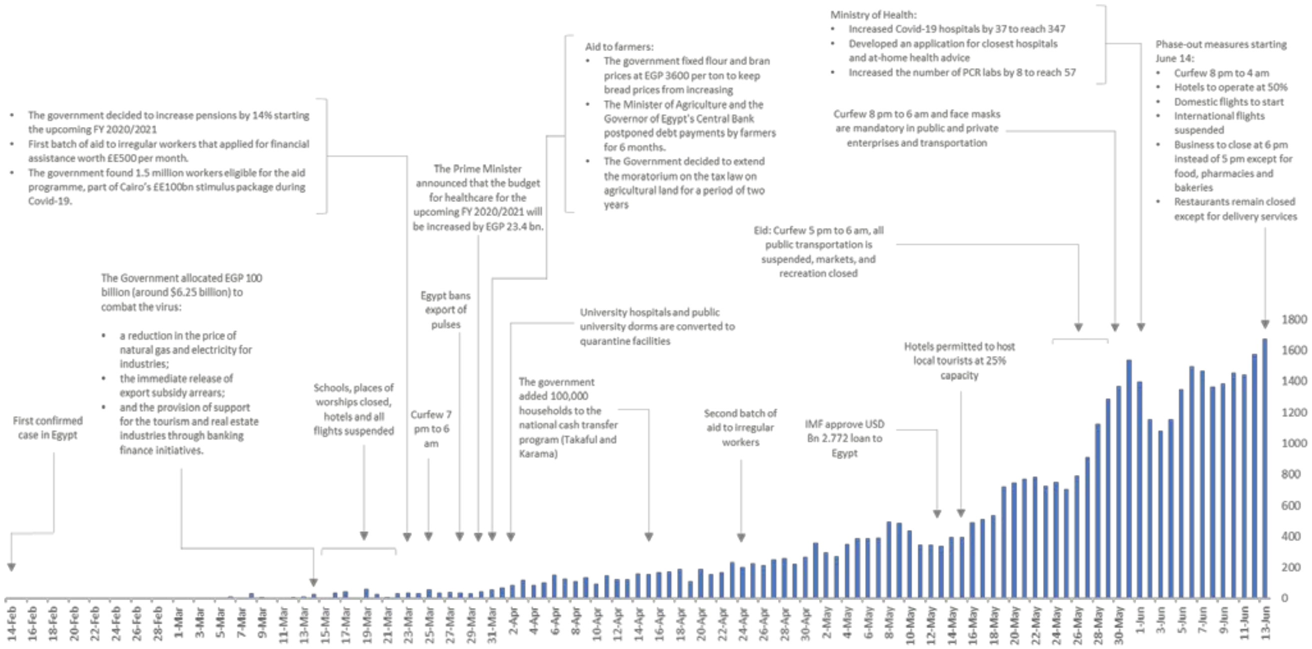
## Appendix

### Figure A1: Egypt Policy Monitor




Source: IFPRI Food Policy Monitor

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