

**The effect of COVID-19 on Health Insurance
The mediating role of demographics and healthcare
service utilization**

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Abstract:

Purpose – The COVID-19 pandemic hit all countries and impacted lives, healthcare systems, and economies. The pandemic has changed the behaviors of suppliers and demanders across all markets and the health insurance is no different. The purpose of the paper is to investigate the impact of COVID-19 on health insurance, both social and private, through the channels of demographics and altered healthcare service utilization.

Design/methodology/approach – In this paper, the author draws on the literature to present how the COVID-19 has affected population demographics and healthcare service availability and utilization and the possible effects of such changes on health insurance. The author further reflects on the Egyptian case to predict the possible implications of the pandemic on the demographics and healthcare systems and consequently on health insurance in Egypt by looking at the latest surveys and official data that capture the effects of the pandemic in light of Egypt's initial population and healthcare system characteristics.

Findings – The paper shows that the COVID-19 affects the health insurance market through its effect on demographic characteristics and healthcare service utilization resulting from the population's altered medical profile. However, due to the complex nature of COVID-19 effects on these factors, the final impact on the health insurance remains inconclusive.

Keywords COVID-19, health insurance, demographics, healthcare service utilization, health financing, sustainability

Paper type Research paper

1. Introduction

The Coronavirus disease (COVID-19) was declared as a global pandemic by the World Health Organization (WHO) in March 2020. The first cases of this disease were reported by the end of the year 2019. Across the world, COVID-19 has infected many people, with its fast-spreading resulting in diverse measures undertaken including lockdown instructions. Consequently, this pandemic has had a multi-dimensional impact including social, economic and health, affecting many sectors around the Globe.

The insurance industry in general and the health insurance in particular has been among the industries affected by the prevalence of COVID-19. Thus, there has been a change in the behavior of both the insured and insurers. According to the literature, while it's still limited, there is a mix between both positive and negative impacts of the pandemic on the health insurance markets. These impacts differ by the country's profile, the pandemic situation and the measures taken, and the insurance scheme, through factors affecting both the demand and supply sides of the market, including the demographics and the utilization of healthcare services among others.

In recent years, Egypt has paid due attention to the development of the healthcare system and the improvement the structure of health financing, aiming at achieving lower out-of-pocket expenditures. According to the Egyptian Constitution ratified in 2014, every citizen has the right to an integrated health care in accordance with quality standards. The Constitution obliges the State to establish a Universal Health Insurance System for all Egyptians. In order to achieve this, the Universal Health Insurance Law was issued in 2018 as one of the steps towards the needed health system reform, which has been more highlighted by the emergence of COVID-19.

Therefore, and in light of Egypt's commitment towards a more efficient healthcare system and the pressure the COVID-19 pandemic has exerted on the healthcare systems and people's lives and risk exposure, it becomes increasingly important to study and monitor the external factors that affect health insurance systems and their sustainability. This paper thus examines the potential channels through which the COVID-19 pandemic may affect health insurance, focusing on the mediating channels of demographics and healthcare utilization as they give a reflection of other possible factors that can affect the supply and demand behaviors. The paper draws on the

literature to present how COVID-19 affects demographics and healthcare utilization and thus health insurance and then goes to reflect on the Egyptian case.

The rest of the paper is organized as follows: Section 2 presents an overview of the effect of COVID-19 on health insurance by surveying the literature; Section 3 focuses on the Egyptian case; Section 4 concludes.

2. Overview of the effect of COVID-19 on health insurance

A survey of the literature shows that COVID-19 affects the demand and supply sides of the health insurance market through its effect on demographic characteristics and healthcare service utilization resulting from the population's altered medical profile. These effects can be summarized in three main channels: the crisis impact on the life expectancy, years of life lost and fertility rates; its effect on employment outcomes and incomes; and lastly its direct long-term health impact and its indirect influence on the healthcare utilization for other medical conditions.

2.1. COVID-19 and Demographic Changes

By its nature as a fast-spreading communicable disease which has caused more than 6 million deaths worldwide, the COVID-19 has led to reduction in life expectancy, an increase in years of (potential) life lost (Y(P)LL), and disability-adjusted life years (DALYs)¹ (Chan *et al.*, 2021; Islam *et al.*, 2021; Mohanty *et al.*, 2020). In some instances, the COVID-19 caused the probability of death in the prime working-age group to rise. For instance, Vasishta *et al.* (2021) showed that the COVID-19 resulted in 1.06 million additional YPLL, with the majority of YPLL was among the working adults aged 45-64 years, leading to an increase of the dependency burden. This increase might lead to a reduction in incentives to purchase health insurance due to the increased burden by those dependents, especially young ones, on

¹ According to the World Health Organization, the Years of life lost (YLL) is a measure of premature mortality that takes into account both the frequency of deaths and the age at which it occurs by considering the number of cause-specific deaths multiplied by a loss function specifying the years lost for deaths as a function of the age at which death occurs. The Years of potential life lost (YPLL) is also a summary measure of premature mortality that reflects the sum of years lost from a predefined age, such as standard life expectancy.

The World Health Organization defines the disability-adjusted life years (DALYs) for a specific cause as the sum of the years of life lost due to premature mortality (YLLs) from that cause and the years of years of healthy life lost due to disability (YLDs) for people living in states of less than good health resulting from the specific cause.

the now-fewer working age population (Cheng & Yu, 2019). Unlike the consensus in the literature on the years of life lost, the effect of the pandemic on fertility rates is yet to be analyzed. Preliminary analysis shows that developing countries have exhibited different patterns in fertility in response to the pandemic with some countries witnessing stable trends, others show a small decline in births in the beginning of 2021 and a third group exhibiting increased birth rates temporarily at the end of 2020 and/or beginning of 2021 (UNFPA, 2021). Some factors contributing to these increased birth rates might be disruptions to family planning services and access to contraceptives (Ullah *et al.*, 2020; UNFPA, 2021).

Other studies have looked at the productivity loss along with the DALYs. Nurchis *et al.* (2020) assess the productivity loss from COVID-19 both temporarily due to absenteeism from work and permanently resulting from premature mortality in Italy using the Human Capital Approach. The analysis highlights that the total permanent productivity loss resulting from premature mortality hovered around EUR 300 million while the temporary productivity loss was approximately EUR 100 million, which can be considered as a lower bound for the real productivity loss as the analysis does not consider other aspects related to lockdown, quarantine of contacts, among other economic costs. Adopting the years of potential productive life lost (YPPLL) and the cost of productivity loss as indicators that capture the economic burden of an event, John *et al.* (2021) found that the considerable costs due to productivity loss were the highest for the individuals aged 40-49 years old.

These estimates of productivity losses only capture a part of the economic effect of the pandemic. The pandemic has negatively altered the employment statuses, the impoverishment rates and wages of the working-age population who are considered the main contributors to the health insurance schemes (Tandon *et al.*, 2020). Labor markets were severely impacted in developing countries where high-frequency phone survey data for 39 countries show that on average 34 percent of respondents stopped working, 20 percent of workers reported not receiving full payment and 62 percent mentioned that loss in their household income (Khamis *et al.*, 2021). These changes in the labor market outcomes and the implied changes in

incomes have direct implications for both Social and Private Health Insurance.

For Social Health Insurance (SHI) Systems, increased unemployment entails fewer members paying into the SHI schemes, which is further complicated by the fact that decreased wages mean lower contribution rates. For private health insurance, the literature shows that income is one of the main determinants of demand for health insurance and that national income also contributes to the degree of health insurance penetration (Cameron *et al.*, 1988; Chen & Liu, 2002; Kirigia *et al.*, 2005; Makoka *et al.*, 2007; Propper 1989, 1993; Ssempala, 2018). This means that the income hit from COVID-19 is expected to lower demand for health insurance. Another channel by which COVID-19-induced labor market disruptions affect health insurance is through the Employer-Sponsored Insurance. In many settings, losing one's job is associated with losing ESI. For example, estimates from the United States show that the massive jobs losses accompanying the COVID-19 were associated with 3-27 million Americans losing their ESI in the first months of the pandemic (Fox *et al.*, 2022).

2.2.COVID-19 and altered healthcare service utilization

Despite the pandemic impact on the demand of health insurance services due to the previous presented factors, such health financing scheme continues to be used. Many insurers have faced a high request from their clients for COVID-19 treatment program which comes at a high cost (Almal news, 2021). Some insurers expanded their provisions, for instance, through fewer exclusions from plan coverage, easier plan participation requirements, covering new procedures, telehealth services and mental health support either directly or through third party providers (AON, 2021). This came with the fact that the utilization of the employer-sponsored medical plans and the claims levels had witnessed a decline in 2020/2021 than before the pandemic during 2019; due to the direct effect of the global slowdown of the economic activity accompanied by COVID-19 pandemic and lockdown measures (AON, 2021 and Tandon *et al.*, 2020). The utilization of Outpatient, Preventive Care, Dental, Hospitalization and Vision care services witnessed a decline, whereas globally Mental Health and Telehealth services witnessed an increase in utilization in 2020/2021 (AON, 2021). These observations are according to AON annual survey which is conducted

mainly to estimate the average Medical Trend Rates and its drivers from a sample of countries around the world based on employer-sponsored medical plans.

Consequently, with the decline in medical plans utilization, the pandemic contributed to the decrease of the global Medical Trend Rate¹ in 2021. However, for 2022 and following the expected global increase in general inflation, the average global nominal Medical Trend Rate is projected to raise reaching 7.4 percent in comparison with 7.2 percent in 2021 at the global level. The Middle East & Africa will remain the region with the highest average rate despite its expected decrease from 12 percent in 2021 to 11.1 percent in 2022. The projected global Medical Trend Rates continue to grow over general inflation, with average Net Medical Trend Rate of 5.0 percent in 2022, as it was in 2021, while it is expected to reach 6.1percent for the Middle East & Africa.

According to AON survey, the factors leading to such increase in the Medical Trend Rate in the Middle East & Africa include the high general inflation; local currency devaluation which affects the high cost of medicines and medical equipment; the higher demand on more expensive highly qualified medical providers that their supply is limited which was the case for example in Saudi Arabia. Globally, the factors contributing to the Medical Trend rate encompass the population ageing; the acceleration in technology and digital health usage; lifestyle diseases and increased prevalence of chronic conditions. The burden of lifestyle and chronic diseases may further worsen with the potential long-term impact of the deferred treatments and routine checks due to pandemic lockdown, closure of medical services and perceived health and safety issues, resulting probably in higher related medical costs in the future. This expected increased disease burden is considered as an indirect effect of the COVID-19 on the medical profile of the population. However, there is still an uncertainty on the magnitude of this problem, as health insurers are incorporating assumptions related to this issue into premium pricing (Fitch Ratings, 2021 and AON, 2021).

¹ Medical Trend Rate is defined as the percentage of change in the cost of health care prior to any cost containment measure undertaken by plan sponsors (AON, 2021).

For instance, initial assessment shows that three quarters of the countries surveyed reported a ‘considerable degree of disruption’ to NCD services. Additionally, low-and lower-middle income countries were among the less likely to have NCDs included in their COVID-19 response plans (World Health Organization, 2020). This threatens to increase the burden of NCDs in countries where NCDs are already prevalent as a result of such disruptions. NCDs are proven to cause both short and long-term disability which can in turn lead to a decrease in working-age population participation and decrease productivity and eventually reduce GDP per capita. NCDs further affects the country’s ability to benefit from its demographic dividend to invest for the phase where aged population dominates the overall population structure, thus causing a pressure on both current and future healthcare systems and cost of healthcare service and insurance (Engelgau *et al.*, 2011). This comes in light of evidence that NCDs rank among the top leading reasons for claims in various insurance programs as well as resulting in higher average length of stay, which in turn is a determinant of the cost of claims (Hotls, Hoffarth & Desai, 2015).

The COVID-19 is also expected to impact directly the medical profile of the population. Although the burden of post COVID-19 health issues is not very well documented, preliminary estimates from a nationally representative survey in the United Kingdom show that 1 in 10 respondents who tested positive for COVID-19 may show symptoms for a period of 12 weeks or longer. Similar evidence of post COVID-19 health complications was found in the United States and Switzerland. It is important to note that long-term complications such as inflammation of the heart muscle, lung function abnormalities, among others have also been reported. This prolonged state of ill health is known as ‘post COVID condition’ (World Health Organization, 2021).

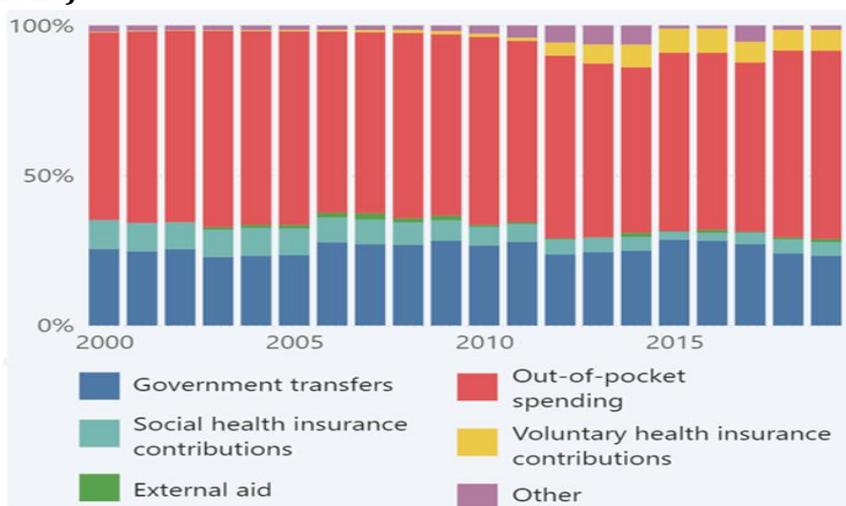
Tandon *et al.* (2020) state that the net effect of all factors related to COVID-19 on the health insurance finances is difficult to predict with certainty. However, this highlights the need to understand and take into consideration the additional factors caused by COVID-19 or any other pandemic affecting positively or negatively the financial status of the health insurer and the benefit package design and find methods that mitigate the risks and the increase in costs.

3. Covid-19 and health insurance in Egypt

3.1. Overview of Health Financing

As shown in figure (1) below, the Out-of-pocket (OOP) expenditures represent the major source of current health expenditure (CHE) in Egypt. Over the past two decades, the share of OOP of current health spending stayed above 60 percent, reaching around 63 percent in 2019. Government transfers come as the second source of CHE, hovering around 25-30 percent over the past 20 years. In 2019, health insurance contributions constituted 12 percent of CHE, with around 5 percent coming from SHI contributions and approximately 7 percent from voluntary health insurance.¹

Figure (1): Current Health Spending by Funding Sources, Egypt (2000-2019)



Source: Global Health Expenditure Database

Looking at the health insurance coverage in Egypt, the Health Insurance Organization (HIO) is currently the main public insurer. 59% of the population are covered under the HIO, which has fund pools for varying population groups. These population groups include civil servants, retired civil servants, pre-school and school children, widowers of insured, and

¹ Pooled government spending, obtained by combining both government transfers and social health insurance contributions, constituted around 28 percent of CHE in 2019. Pooled private health expenditure through OOP and voluntary health insurance represented 69.7 percent of CHE in 2019.

female-headed households (Mathauer, Khalifa & Mataria, 2018). Less than 10% of the population have private health insurance coverage but it is not yet clear how many have double insurance (Fasseeh *et al.*, 2019). These coverage rates are expected to change in the future with the gradual rollout of the Universal Health Insurance System (UHIS), recently introduced by the Government through the issuance of the Universal Health Insurance Law in 2018. This new system, as one of the reform measures, aims to accelerate the progress towards the achievement of Universal Health Coverage and tackling the challenges faced by the health system. As of the end of 2021, the UHIS was rolled out in Port Said and Luxor.

3.2. Health Insurance and COVID-19 measures

Even though the insurance policies under the Universal Health Insurance System do not directly cover pandemics, the General Authority for Healthcare (GAHC), a subsidiary of the newly launched UHIS in Egypt and is considered the state's main tool in controlling and regulating the provision of health insurance services and is subject to the supervision of the Minister of Health and Population, has dedicated 5 of its total 17 affiliated hospitals in Luxor and Port Said to receive and treat covid-19 cases, as well as designating isolation departments in other functioning hospitals to guarantee the spread of its treatment services within the governorates. Since the start of the pandemic till April 2022, GAHC has provided healthcare services for a total of 8,085 patients in Luxor and Port Said, split into 4,547 cases in internal departments, 3,538 cases in the intensive care.

On the private insurance side, three months into the pandemic, the Financial Regulatory Authority (FRA) assembled the heads of Egypt's private insurance companies to assess their medical coverage schemes in an attempt to reduce the discrepancies between different insurance companies in response to the emerging threat. It was found that insurance companies, serving 71 percent of medical insurance clients in the market, are committed to providing full treatment coverage for the insured clients infected with COVID-19, according to their contracts with hospitals. As for the insurance companies that account for the remaining 29 percent of medical insurance clients whose coverage schemes do not include epidemics, they have agreed to cover the costs of the diagnostic process identifying whether a patient is

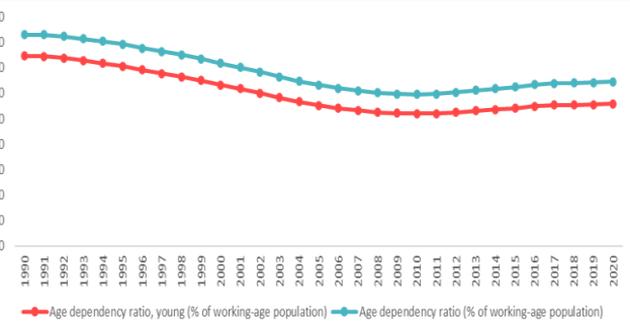
positively or negatively infected with the virus, while offering the insured clients who wish to complete treatment at their expense to utilize the company's prices with the contracted hospitals (FRA, 2020).

3.3.COVID-19, demographics and healthcare utilization

As established in the overview section on the impact of COVID-19 on demographics and healthcare utilization and their possible effects on health insurance, this section investigates the potential impact of COVID-19 on these two main factors in Egypt.

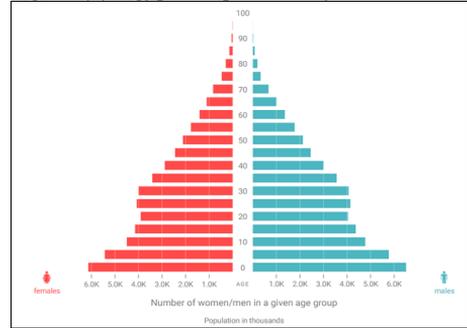
The effect of the pandemic on the years of life lost and disability-adjusted life years is yet to be estimated. However, people who are older than 60 years old have the higher probability of not surviving the COVID-19 (AbdelGhaffar *et al.*, 2021). To capture the effect of the pandemic on the working-age population, more disaggregated data for COVID-19 infections by age groups need to be compiled and analyzed. Nevertheless, it is expected that the pandemic would have led to an increase in both YLLs and DALYs although maybe at lower rates compared to what has been observed in the literature. As for the effect of the pandemic on the fertility, more in depth analysis is still required to gauge the effect of disrupted family planning healthcare services provision, especially during the first waves of the pandemic. This is key in light of Egypt's population growth problem and the Government of Egypt's programs to tackle the increased population problem. Egypt's wide-based population pyramid and the accompanying change in the dependency ratio, especially the young one shown in figures (2) and (3), highlights that any periods of baby booms will further delay Egypt from reaching its demographic dividend stage and will put extra pressure on Egypt's healthcare system along with diluting any achieved economic growth (El-Saharty *et al.*, 2021).

Figure (2): Dependency Ratio in Egypt (1990 - 2020)



Source: World Development Indicators

Figure (3): Egypt's Population Pyramid - 2022



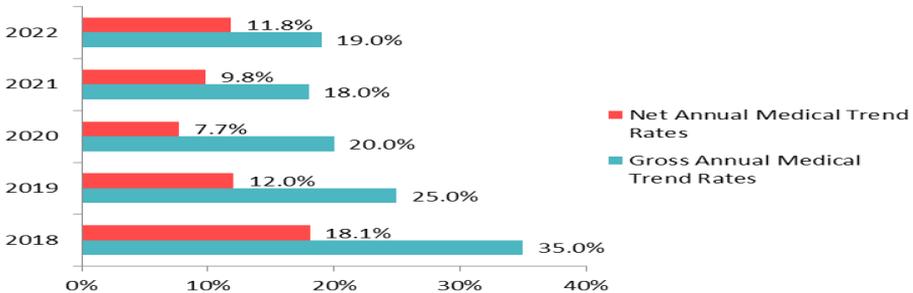
Source: United Nations Population Fund

Looking at the economic effect of the pandemic on labor market outcomes and incomes reveal that Egyptian households witnessed initial hit to their employment status and their income. For instance, estimates from a nationally representative sample survey in conducted in May 2020 show that 61.9% reported a change in their employment status, among whom 26% left their jobs. Relatedly, 73.5% indicated that their incomes decreased as a result of the pandemic (CAPMAS, 2020a). According to a labor force survey, 21% of the formally employed wage workers reported suffering wage losses in 2020 (ILO & Baseera, 2021). These estimates, especially those related to the hit to the formally employed, are of specific importance in the Egyptian case where informal employment represented 55.3% of total employment in 2020 (MPED, 2021). This means that hit to the formally employed and to the incomes would affect the revenues to health insurance through both fewer payers and decreased contributions. Although the subsequent months to the pandemic have exhibited improvement in labor market outcomes, where for example unemployment rate returning to its downward trajectory in Q4 of 2020, recent surveys highlight that employment outcomes and incomes have not yet returned to the pre-pandemic levels (Krafft, Assaad & Marouani, 2021).

On the health service side as a cost for the insurer, and as noticed from figure (4), Egypt has seen a decline of medical inflation levels, which was expected to be continued till 2020; supported by the reforms implemented by the Government and their results in 2018 (AON, 2018). However, such a decrease of the projected average Net Medical Trend Rate in 2020 was

slower than it was in 2019. And since the pandemic, this estimated Net Medical Trend rate is witnessing a continued increase reaching 11.8% in 2022.

Figure (4): Projections of Medical Trend Rate in Egypt (2018 - 2022)



Source: AON, Global Medical Trend Rates Report: Global Benefits 2021; 2020; 2019; 2018

While the local currency depreciation is one of the main factors leading to the increase of the Medical Trend Rate in Egypt; since most medical equipment and drugs needed are imported (AON, 2021), the unhealthy lifestyle and chronic NCDs are expected to be one of the drivers of the cost increase for the insurer compounded by COVID-19 pandemic.

Egypt suffers from the increasing burden of NCDs where there is 28-percent probability of facing premature mortality, between the ages of 30 and 70 years, as a result of one of the four NCDs, namely cardiovascular disease, chronic obstructive pulmonary disease, diabetes, and cancer (Global Health Observatory, 2019). This means that the possible disruptions to the healthcare system and provision of NCDs services during the pandemic might be of critical importance in determining the future burden of the already NCDs burden in Egypt. This comes in light of numbers that show that utilization of NCD services is low, leading to poor NCD management outcomes and higher expected burden on health systems. For example, estimates from Egypt Health Issues Survey (2015) and the Egypt STEPS NCD Risk Factors Surveillance Survey (2017) show that 88 percent of diabetic cases and 68 percent of hypertensive ones start treatment, of whom only 30 percent for diabetes and 48 percent for hypertension are considered to be well managed. The burden of NCDs has important implications as

estimates show that Egypt suffers productivity losses of 12 percent of GDP due to chronic conditions, which are expected to double by 2030 by population ageing. Moreover, the new UHIS in Egypt covers NCDs treatment and exempts the beneficiary from its co-payments. This implies that increased NCDs will put pressure on the system's resources, especially with the expected NCDs service utilization attributed to the expected high coverage under the UHIS. (El-Saadani, Saleh & Ibrahim, 2021).

4. Conclusion

The COVID-19 pandemic represented a shock for different sectors globally. With the support of the existing, yet limited, literature, it is found that the pandemic has impacted the health insurance industry by inducing different behavioral changes for both the insurers and the insured. This paper presents this potential effect through focusing mainly on the demographic characteristics change and the utilization of healthcare services with the population's altered medical profile. These factors can affect the revenues and costs of the health insurance systems and their sustainability. These factors were further examined in Egypt as a case study along with a brief overview on the measures undertaken by the health insurance sector during the pandemic. The net impact on the health insurance, while still being difficult to predict, remains inconclusive.

Further analysis and studies with more disaggregated data need to be conducted to monitor, estimate and project the impact of COVID-19 on the health insurance industry. This should provide guidance for the insurers and the Government towards supporting the policies' implementation for the health system reform, taking into consideration its performance and resilience with better management of the pandemic for the current situation and any future events.

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