Politics & Economics

PAKISTAN COVID-19 UPDATE: CURRENT TRENDS AND FUTURE PROJECTIONS

October 9, 2020 by Riaz Khokhar

Since July 1st, the infection fatality and positivity rates of COVID-19 have started to decrease gradually in Pakistan, and the positive curve has more or less flattened since August. Data suggests that the number of positive cases depends on several important factors, including a government's uninterrupted intervention, the public's compliance with standard operating procedures (SOPs), and antibodies developed because of the exposure to the infectious diseases (seroprevalence). It is difficult to assess the degree to which these factors have contributed to Pakistan's flattening curve. However, given current preliminary findings, Pakistan's positive cases may rise again as a result of increased interpersonal contact if the public does not follow SOPs, the governments lifts targeted lockdowns, and people potentially become re-infected.

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Data Analysis of the COVID-19 Situation in Pakistan

The important metrics to understand the true picture of the COVID-19 situation in a given country are the positivity rate (the number of positive cases in proportion to the tests conducted) and the level of fatality (the number of deaths occurring as a result of positive cases). R0 (R-naught or reproduction number) is the value that **reflects** the average number of people a positive person would infect and helps determine lockdown requirements: If R0 is greater than one, the disease is expanding and governments need to enforce strict lockdown; if R0 is less than one, the outbreak is contracting, and governments can start to lift restrictions.

As of **October 9**, the number of total positive cases of COVID-19 in Pakistan was slightly over 317,000 and the tally of total deaths crossed 6,500. The period from June 1 to July 15 was the peak of COVID-19 positive cases in Pakistan, when the positivity rate after every two weeks ranged between 16 and 21 percent. New deaths reached a climax at 1,053 during July 1st through 15th (see Figure 1). In the last two weeks of September, the positivity rate came down below 1.9 percent and new deaths dropped to 91.

New Deaths Per Two Week Period in Pakistan

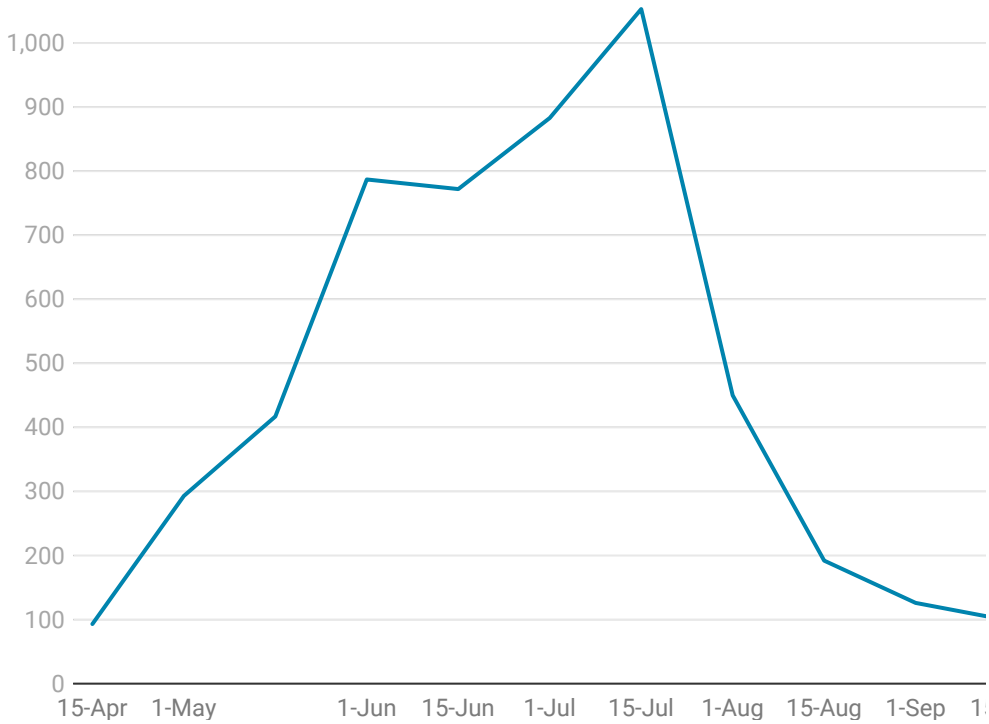

Chart: Riaz Khokhar • Source: National Command Operation Center - Government of Pakistan • Get the data • Created with Datawrapper

Figure 1: Data calculated and presented by the author using Pakistan's government sources.[1]

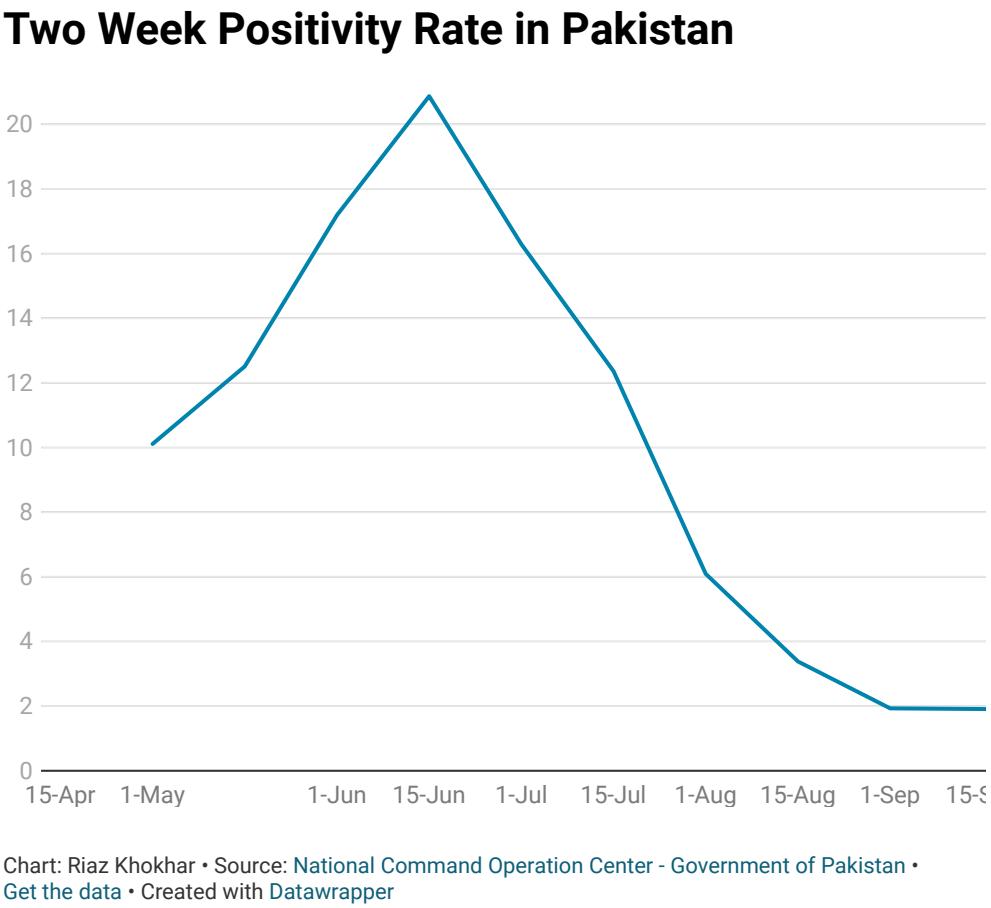

Figure 2: Data calculated and presented by the author using Pakistan's government sources.[2]

COVID-19 at the Provincial Level

While the above section discusses data on COVID-19 at the national level, the below graphs disaggregate this data to the provincial level between April and October 7th.

Total COVID-19 Deaths by Region

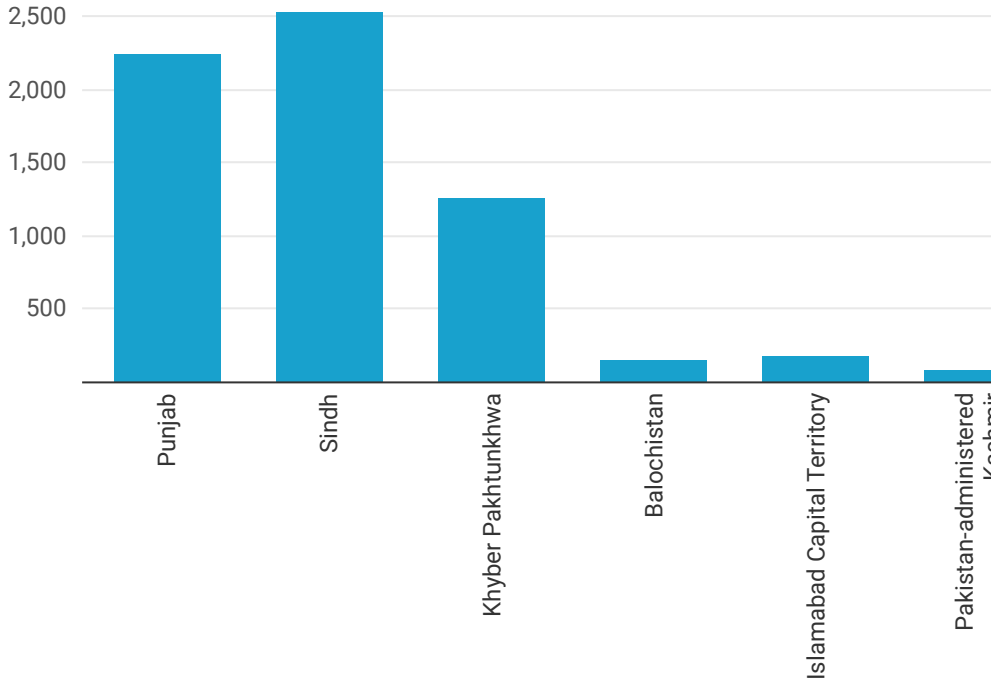

Chart: Riaz Khokhar • Source: National Command Operation Center - Government of Pakistan • Get the data • Created with Datawrapper

Figure 3: Data calculated and presented by the author using Pakistan's government sources as of October 7, 2020.

Aggregate Positivity Rate by Region

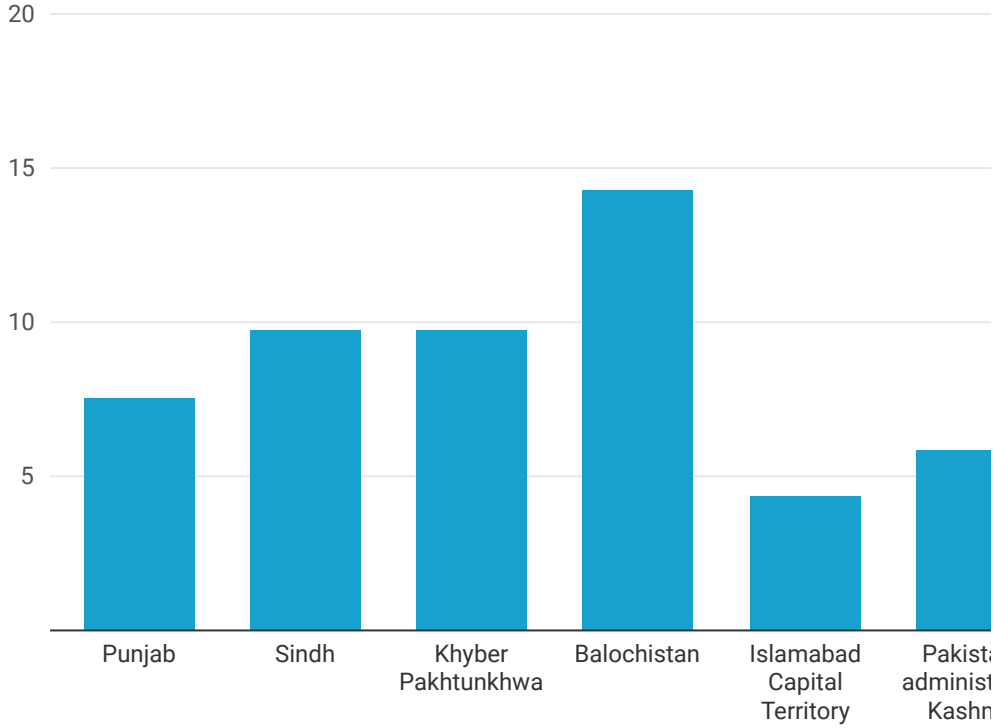

Chart: Riaz Khokhar • Source: National Command Operation Center - Government of Pakistan • Get the data • Created with Datawrapper

Figure 4: Data calculated and presented by the author using Pakistan's government sources as of October 7, 2020.[3]

The data suggests that Balochistan reported the highest individual positivity rate (with respect to its total tests); however, compared to overall positive cases in Pakistan, Balochistan's ratio is only 4.8 percent. Since the positivity rate is a ratio of people reporting infections relative to total tests conducted, it cannot alone determine the severity of disease. The infection fatality level **indicates** that Sindh reported the most fatalities, with 2,531 people dying from COVID-19 as of October 7, followed by Punjab's 2,245 deaths (each with 38.7 and 34.4 percent of total country-wide deaths, respectively).

There are a few possible explanations that may account for discrepancies between provinces. First, Sindh and Punjab **conducted** the largest number of tests, with 38.2 and 35.7 percent of total tests, respectively, and have had the highest percentage of positive cases (43.9 and 31.7 percent). Other provinces have conducted fewer tests (Khyber Pakhtunkhwa 10.48, and Balochistan 2.9 percent, respectively). A second **factor** is business activity and population density and size. For example, Karachi, in Sindh, is the largest city of Pakistan by **population** and **density**. It also has the highest number of deaths (**2,225**). Third is the difficulty of tracing, testing, and quarantining people: it is **difficult** for the provincial government to collect and record data in remote and sparsely populated areas, so many positive cases and deaths go unreported. Finally, less inter-city and **inter-provincial travel** might be another reason of lower positivity and death counts in provinces other than Sindh, Punjab, and Khyber Pakhtunkhwa.[4]

Since August, the federal and provincial governments have **relaxed restrictions** in most places, **including** restaurants, gyms, and academic institutions. This is due to Pakistan's flattening of the **positivity rate curve**, decreasing number of deaths, increasing **rate of recoveries**, and a smaller number of **active cases**, as of this writing.

As COVID-19 cases go up elsewhere, Pakistan's flattening positivity curve begs the question: what was significant about the Pakistani governments approach to the prevention of the spread of COVID-19?

Officials from the National Command and Operations Center (NCOC) pointed to their unified policymaking and implementation approach as critical to flattening the curve. The central idea was that Pakistan, as a developing country with a struggling economy and millions of daily wage

workers, needed to adopt a smart lockdown strategy to save both lives and livelihoods.

Explaining the Mystery

The following discussion examines various perspectives—government claims and scientific studies—around the lowering of the positivity rate and COVID-19 death toll in Pakistan.

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According to the officials, NCOC ensured the implementation of four strands of the anti-COVID-19 strategy: National Awareness efforts (public messages through media advertisement or mobile phones); Disease Prevention and Containment (tracing, testing, and quarantining (TTQ)); management of socio-economic fallout (food provisions, cash payments, and small-scale business packages); healthcare optimization and buildup (including the mobilization of **overseas health professionals**, community healthcare workers, and provision of critical care and protective equipment). NCOC claims that these efforts brought the positivity rate below two percent.

Although smart lockdowns were instituted, provincial governments complained that people **did not follow** SOPs. The R0-value **remained above one** from late March to mid-June largely because of governments' decision to lift restrictions on high-contact areas and public's noncompliance with SOPs. An R0 value above one precipitated the enforcement of **strict lockdowns** to contain the spread of the disease, which much of the public has largely ignored. Surprisingly, after the first week of June, the R-value **decreased** and eventually dropped below one. This suggested that the COVID-19 cases stopped spiking exponentially despite what was being **forecast**. In late July, the R0-value was **0.74**. Since then, it has slowly sloped upwards, and on October 6th, crossed the R0>1 threshold by **reaching 1.06**.

The flattening of the positivity curve shocked many experts. Various hypotheses, ranging from development of antibodies to Pakistan's demographics, were put forward. For example, one study argued that **Pakistan's age demographics**, with 64 percent of 220 million population below the age of 30, may account for the population's decreased

susceptibility to the virus. Others referred to the acquisition of **cross-immunity** from pre-coronavirus infections such as polio or from **antibodies developed** as a result of previous COVID-19 infections (seroprevalence).

Contrary to the seroprevalence argument, a World Health Organization-led "**National Seroprevalence Study**," conducted in July, revealed that only 11 percent of Pakistanis had developed COVID-19 antibodies. It signified that 89 percent of Pakistanis were still susceptible to the coronavirus and that Pakistan was far from developing the kind of seroprevalence projected in other mentioned studies.

In sum, the findings are still inconclusive and it is unclear whether they fully account for the mystery surrounding the flattened positivity curve.

Looking Ahead

Since mid-September, both the number of positive cases and the value of R0 have risen, with the latter crossing the **R0>1 threshold** in early October; therefore, despite the flattening of the curve and declining deaths, there is increased apprehension among doctors and provincial governments regarding the potential resurgence of COVID-19. Given the low number of people who have developed antibodies, if governments do not maintain interventions (random testing and TTQ) and the public continues to disregard SOPs, it is likely that those susceptible to the virus could become infected and spread the disease, accelerating the number of **positive cases** every 3-4 days.

All things considered, Pakistan's positivity rate falling below two percent, declining new deaths, and a **95 percent** recovery rate signify that the country's smart lockdown strategy may have been successful in saving lives and livelihoods. If this is the case, success is likely a function of targeted lockdowns and tracing, testing, and quarantining. Therefore, governments would do well to implement random testing on a sample of people to account for both symptomatic and asymptomatic cases, especially in localities of high close-space contact. Complacency and negligence may set off **the second wave** of COVID-19 as the government officials have already been warning.

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Image 1: **IAEA Imagebank via Flickr**

Footnotes:

1. Data limitations include: 1) This data does not note daily increasing/declining positivity rate and fatalities; 2) official data does not state whether it excludes recoveries; 3) it is unclear how the mentioned studies determine R0's value in Pakistan. Official government sources do not list R0. R0-values are taken from

the cited studies and news websites. It is possible the sources used different formulas to calculate R0.; 2-week death measure = (total deaths week n) – (total deaths week n-2) ↵

2. 2-week positivity rate = {[(total positive cases week n) – (total positive cases week n-2)]/ [(total tests week n) – (total tests week n-2)]} * 100 ↵

3. Aggregate positivity rate = (total positive cases/total tests conducted) * 100 ↵

4. Author thanks Adam Weinstein for raising this possibility. ↵

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