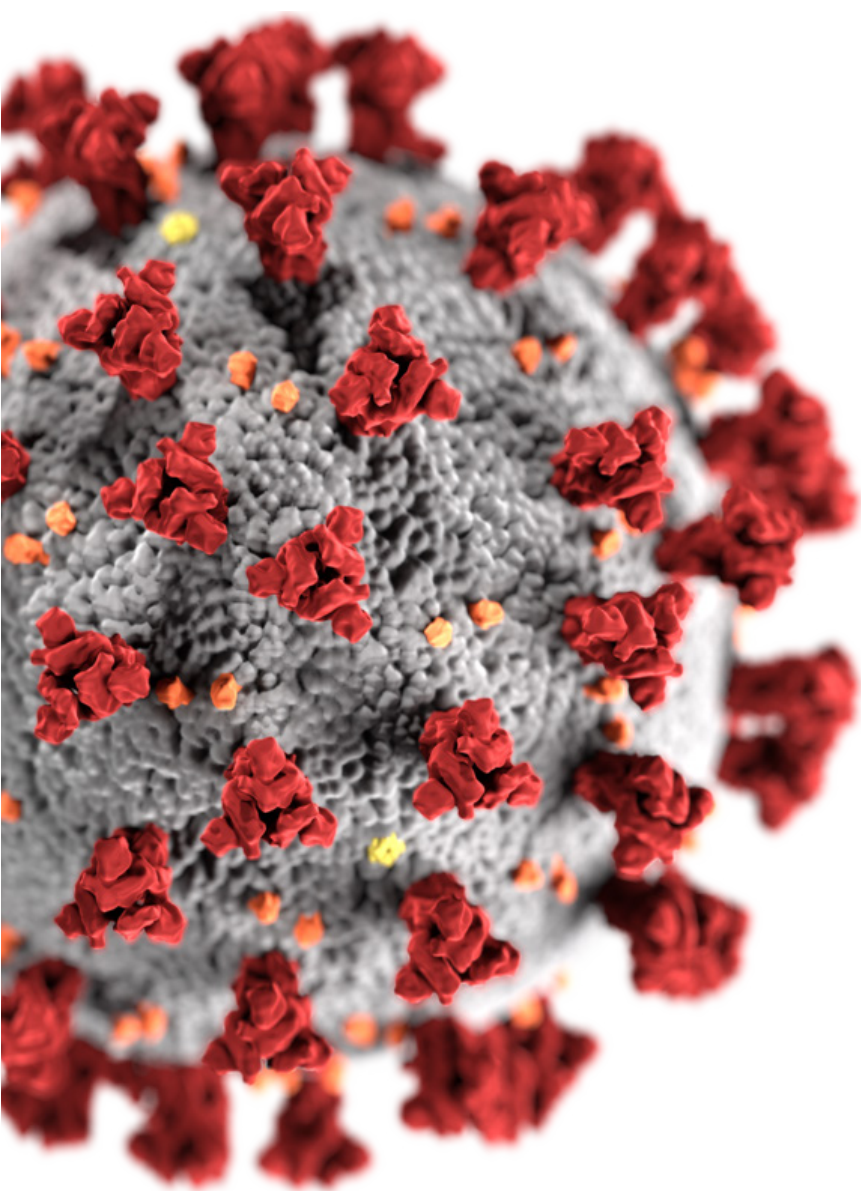


PIDE
COVID-19
E-BOOK



**PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS
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FOREWORD

The Pakistan Institute of Development Economics (PIDE) is a think tank that has led many debates over the course of Pakistan's history, like those on the 22 families, privatization, effective protection, industrial policy, inequality and poverty. It has had its ups and downs but has always been at the forefront of research and policy debates in Pakistan.

When the COVID-19 pandemic reached Pakistan, the PIDE went on a war footing to understand the impact of the outbreak, and daily prepared research-based Bulletins, Blogs and Newsletters and updated a Dashboard for informing audiences at every level with analysis, ideas, news and statistics.

We also created an online forum that met daily, bringing in a broad set of experts, business community and members of the civil society to understand the Corona crisis and develop an action plan in the light of the evolving situation.

My thanks to Dr. Durre Nayab for diligently ensuring that the quality of the Bulletins and Blogs remained high. I am also grateful to Dr. Zulfiqar and his team for keeping a steady stream of newsletters flowing to the people of Pakistan. Our associate Aqeel Chaudhry developed a widely used Dashboard, that is giving us updated information twice a day.

I am proud of the PIDE researchers who rose to the task and conducted research daily to keep us abreast on the many dimensions of the crisis. This eBook highlights their work!

Many among us have been making video interviews on the Corona situation for digging up more useful information on what we at PIDE are referring to as the Corona War. The videos can be viewed at the PIDE's YouTube channel.

We certainly hope that you, our audience, found what we did useful. Any suggestions and/or criticisms you have are more than welcome.

So please remain engaged with PIDE—*your think tank!*

Nadeem Ul Haque

Vice Chancellor, PIDE

Section 1

PIDE ACTION PLAN

MANAGING THE COVID-19 WAR

The following is based on 3 weeks of regular online-meetings held by PIDE and a diverse group of professionals (names and affiliations in Appendix). The forum has experts from all fields linked to the management of the issue such as public policy, medicine and health, businesses, disaster management, media, IT and technology, philanthropy, public sector departments, and military.

PIDE also publishes **PIDE COVID-19 Bulletin**, **PIDE COVID-19 Newsletter**, and **PIDE COVID-19 Blogs** on daily basis. We also have a continuously updating the **PIDE COVID-19 Dashboard** giving statistical information about the pandemic.

The following is a condensed bullet point summary for ease of the policymaker for whom this is intended.

I. THIS IS A WAR: MOBILIZE AND ORGANIZE FOR IT

- This is a war even though with an invisible enemy. The government must plan and manage it as a major national security threat on a war-footing. There must be centralized control with clear lines of command, information and citizen involvement.
- The experience of the earthquake was cited as an important example in the consultative meetings and there is a lot we have learnt from it.
- All segments of society need to be mobilized for action.
 - *Local Production*: By executive order, ask the local industry to start producing things urgently needed. For example, the automotive industry to produce ventilators, the textile industry to produce Personal Protective Equipment (PPEs), gloves and masks.
 - *Local Universities*: Some have stepped forward to make tests. Fast track testing is also the need of the hour which has been tapped by some universities.
 - *Local Distribution*: Use local delivery networks – couriers, Food Panda delivery persons, restaurant delivery vehicles, etc., - to distribute ration, the food at the doorsteps of the needy. These strategies will help in:
 - identifying and meeting public needs, and
 - mobilizing communities yet maintaining social distance which is critical in the wake of COVID-19 pandemic.
 - Reduce regulation and bureaucracy to let things happen. With people dying and getting infected, there should be no holdup of supplies, production and documentation.
- Educating citizens on many levels, ranging from hygiene to logistics.
- Generating a public debate for ownership of strategic plan and feedback.

II. CREATION OF A SITUATION ROOM (SR) FOR A COORDINATED PLAN AND STRATEGY

- The public must see the management of the crisis being done on a war-footing.
 - Set up a small and powerful ***Situation Room (SR)***¹ for quick discussion and decisions.
 - ***Configuration:*** The Prime Minister, four Chief Ministers, and the Army Chief.
- The SR must be supported by:
 - High-level committees at the federal and provincial levels with possible counterparts at the local level, having the support of the following five committees:
 - ***Health:*** Must prepare a real-time COVID-19 spread picture, medical supplies and logistics information, state of the health system, quality of care and the state of testing.
 - ***Social Support:*** To determine where help is required and how it will be disseminated. Local administration down to the level of Union Councils and political representatives should help in identifying the community needs. Various social safety net agencies, like BISP, Pakistan Bait-ul-Mal, NRSP and PPAF, should help in this effort.
 - ***Law and Order:*** Police and the army will maintain law and order and identify the needs and plans to move forward.
 - ***Economic:*** Real-time resource availability and utilization of information, and required changes in expenditures based on health and social support requirements on daily basis is critical.
 - ***Logistics:*** There must be a regular review of the logistics situation in the country.

III. COMMUNICATION AND INFORMATION

- ***Where is the Plan?*** *It is imperative that national, provincial as well as local plans be seen and debated widely.* Experts of various Disciplines should be involved in planning and critiquing. This is what would happen in any war.
- ***Need for Guidelines, Protocols and Policies:*** Properly designed guidelines, protocols and policies for following services must be widely available across the country
 - Testing,
 - HEC must mandate research institutions to cost-effective testing kits. In this regard, Senegal model in which the medical experts have started validation trials on a COVID-19 diagnostic test at home producing results in 10 minutes for \$1 can be looked at. If found relevant, it can be indigenized for Pakistan.
 - Isolation,
 - Quarantine,
 - Treatment,
 - Essential Services,

¹ Very recently NDMA has announced the establishment of Command and Control Center to ensure coordination between provincial and federal governments to control COVID-19 pandemic. The one as proposed in this plan of action has been explained with details of SR's configuration, committees and responsibilities.

- Identification of those needing help and where they should go,
- Key local places to reach, and
- A telephone number for help which should be one national 4- or 5-digit number.
- Daily updating and changes on the website (see below).
- ***Decentralization will be a very important part of the implementation of the war effort.*** It is important that ***decentralization*** should be recognized upfront and plans for each locality are ensured to be shared and strategically reviewed to fit in the overall strategy.

IV. MANAGING THE HEALTH SYSTEM

- ***Decentralization:*** Like all public health crises, the delivery of health care is local and individual specific. It is therefore important to have plans not only at the National and Provincial level but also at the local level. The objectives of these plans should be:
 - To prevent people from coming to big cities for care; care and testing must be decentralized to the extent budgets allow.
 - To ascertain that local testing, isolation and quarantine plans with identified facilities must be prepared and made public.
 - To ensure that all cities and local areas must be prepared to report accurate tests on their page on the national website.
 - To make sure that even in lockdowns, localities must prepare guidelines as conditions vary with respect to geographical area. For example, densely populated areas may not be able to lockdown effectively owing to lack of regulation. It should be reviewed what a lock down means in each area. Perhaps lockdown could be ‘smart’ following geo-locations of disease.
- ***Supply of Health Professionals and their Safety:*** Safety of health professionals is paramount. Protective gear and masks should be manufactured locally. The national and local plans must do the needful on urgent basis. The specifications standards should be national, but production can be local.
 - At every level, plans must keep an eye on the supply and needs of health care professionals. We have a fair supply of doctors, but right now advanced countries are looking to wean them away. We should be prepared to train even our advanced medical graduates to become paramedics if required.
- ***Medical equipment*** and its use must be carefully reviewed and tallied regularly.
 - People are coming up with innovation such as for testing and making ventilators. A process for quick but safe approvals must be set up at the national level or there will be people who will take advantage of the urgency.
 - ***Masks*** must be made mandatory to use. The most recent scholarship supports this point as well. To ensure public consumption and usage of masks, ministers appearing on TV must wear masks.

V. LOGISTICS AND ESSENTIAL SERVICES

- Since inland logistics rely mainly on on-road sector services, road transport and logistics followed by air and rail will have to continue as essential services.
- For continued cross-border movement of essential inputs – both finished and unfinished – our ports need

to be operational, concentrating mainly on port Qasim and Karachi.

- Air services will continue to play their appropriate role.
- Ensuring continuity and acceleration of customs and related clearance services, the clearance times need to be minimized.
- It is important to prioritize on who avails the continued essential transportation and logistics services:
 - Priority must be given to goods transportation followed by security and medical.
 - Many transportation and logistics services serving transportation of people need to rethink the business model on how they can stay relevant.
 - Transportation of people is secondary given the nature of this pandemic.
- **Cost of Services:** Pakistan exports less than it imports, which results in a directional imbalance in the availability of transport which impacts costs. In times such as now, these costs become further unpredictable. ‘Fair price’ must be established, otherwise, the continuity of services will be jeopardized.
- Focus on the continuity of inland goods transport, with truckers providing essential support.
- Revise the established government ‘rates’ at local, provincial and federal levels to above pre-COVID-19 levels.
- Develop and decree revised SOPs for ‘contained’ movement of people through air and rail.
- Focus on improving COVID-19 awareness amongst the truckers in Pakistan.

VI. MAKING USE OF TECHNOLOGY

A. *Official COVID-19 Portal:*

- It should be the trusted source of all information linked to COVID-19.
- It must show all updated information and all real-time data on the portal, such as:
 - *The geographic spread of the virus:* Number of cases in each province, districts; projections of cases and mortalities must be highlighted.
 - *Testing:* How many tests are being performed each day; availability and procurement of testing kits; locations where tests are being performed; private laboratories from where testing can be done.
 - *Quarantine and treatment:* Quarantine locations must be outlined, costs if someone wants to pay for it, such as in hotels must be specified.
 - *Deaths:* Number of deaths and geographical location of the deceased must also be highlighted.
- **Make the website attractive:** Education through songs and media personalities will be helpful in dissemination of message.
- **Link website with PTV and other channels.**
- **Most important of all websites must be regularly updated with local material especially any important decision, especially guidelines.** Important is to have provincial and local pages on the website so people have access to local information.

B. *Geo-tracking and Tagging of those Infected:*

Geo-Tracking App: Using an application, developed in consultation with telecommunication companies (Telco), once the person who has contracted the virus is identified, the messages will be sent to those who are in the vicinity for awareness and safety. This must be done on a priority basis as it would help the government in tracking down those who are infected and can potentially infect others in the area around them. Ministry of National Health Services, Regulations and Coordination (MoNHSRC) in collaboration with PTA has most recently devised SMS alerts system to track COVID-19 affected individuals, but in order to actualize a widespread impact, more such collaborations need to be built.

C. *Online Services:*

- A few online services are available; one quotable example is TeleMedicine Center at Nishtar Medical University located in Multan. There is still a lack of COVID-19 specific online services.
 - A specialized App/webpage, which can be made part of the official portal for self-assessment.
- *E-consultancy Services:* For regular patients, who have no COVID-19 symptoms, generate E-prescriptions that can be downloaded and printable so hospitals take less patient intake in OPD which will effectively reduce chances of contracting the coronavirus.

D. *Facilitate the IT & Communications Sector:*

- *Ease of Mobile Account Recharge:* Charging pre-paid phones is an issue because of the lockdown.
 - Steps must be taken, in coordination with the local authorities and law enforcement agencies, to let the prepaid recharging outlets/vendors remain open.
 - The recharging riders should be allowed to move, with proper protective equipment, such as gloves, masks, and sanitizers.

VII. TESTING

An alternative to a complete lockdown would be to scale up testing. Separating the ill from the well and isolating them is imperative to contain the spread of the infection.

- *Testing using Geo-Tracking:* Cellular companies, through data on geo-locations, can help identify candidates for testing. With any positive tests, they can quickly locate the contact network of the positive test. Extensive use of geo-tracking, via cellular data, can guide testing and isolation policy.
- *Widespread and Dispersed Testing:* It is important to disperse testing and treatment widely so that pressure on large cities is alleviated.
- *Doorstep Testing:* Testing needs to be taken to the doorsteps of people via their reported phone numbers and geo-tracking.
- *Encourage Indigenous Testing Techniques:* DRAP and NIH should encourage and expedite any local efforts being made to design local testing methods.

VIII. QUARANTINE AND ISOLATION POLICY

- Isolating those infected should be a priority.
- Quarantines with the appropriate hygienic environment, with complete provision of washrooms, meal boxes, nurses and paramedical staff, and hygienic sanitation.
 - However, isolation and quarantine does not have to be imprisonment involving police and

state resource. In cases where people are not crowded and there is private space, the identified cases must be quarantined with their specified geo-locations. In situations where they leave their quarantined locations posing threat for others, the police and state resources should be sanctioned to charge fines from them.

- The mass quarantine facilities should be appropriately managed to minimize contagion exposure because of herding.
 - These can be of the following types.
 - Home quarantine where possible.
 - Hotels can be used as quarantines, as the Chinese did if the patient can afford it.
 - Use of educational institutions, stadiums and similar public facilities with minimal resource base.

i. Quarantine Costs:

- Initially, the government can bear the associated cost (rent of a place, meal, nurses, paramedical staff, and sanitation charges), later transferring it to those quarantined if they can afford it.
- Let people, who can and have resources, self-quarantine. But self-quarantine should be adequately regulated, monitored and sanctioned.
- Costs can be contained by involving private contractors and owners, with the government bearing the cost of monitoring.
- Block budget can be used for financing the quarantines if public places coming under different ministries are utilized, e.g. educational institutions or a sports stadium.

IX. IMPACT ON THE VULNERABLY EMPLOYED

COVID-19 will substantially increase the poverty levels across the country, affecting especially those who are ‘vulnerably employed’, which account for 56% of the total employment.

The table below shows the expected number of layoffs by employment status, and stages of restrictions. The three stages are defined as:

Stage I: Limited Restrictions (which probably happened)

Stage II: Moderate Restrictions (we have probably also seen stage 2)

Stage III: Complete Restriction (most likely, we are now close to stage 3)

Table 1: Expected Layoffs in Different Stages

Employment Status	Employed (Million)	Stage 1	Stage 2	Stage 3
Daily wage workers	20.27	2.03	10.14	12.16
Paid worker by piece rate or work performed	9.33	0.93	4.67	5.60
Paid non-family apprentice	0.49	0.05	0.25	0.30
Street Vendors	1.00	0.10	0.49	0.59
Total Layoffs		3.11	15.54	18.65

Source: PIDE COVID-19 Bulletin No. 4

Vulnerably employed can be provided protection by categorizing them in the following three bands:

- **Big Businesses:** Big businesses should be compelled by law to continue paying their workers. No layoffs allowed during the shutdown by law.
- **Borderline Formal:** Large and growing businesses such as retail, education, and leisure businesses can be instructed to bear some of the burden. In both cases, there can be negotiated positions like future tax credits, and other similar advantages
- **Informal Sector:** Apart from cash transfers and food distribution, there could be targeted utility subsidies. For utility subsidies, use the BISP registry accompanied by information on baseline users of utilities, which can be easily gauged from the already computerized billing system. SMEs should also be facilitated in this regard.

A package for SMEs: The bailout package announced by the government is geared towards the large-scale industry. About 90% of the businesses in Pakistan are SMEs, categorized into 3 categories:

1. SMEs that file tax returns and are registered with EOBI and Social Security.
2. SMEs that file annual tax returns but are not registered with EOBI and Social Security.
3. SMEs that neither file tax returns nor are registered with EOBI and Social Security

Most of the SMEs employ daily wagers and contract employees. According to an estimate, there are 3.5 to 4.5 million SMEs in Pakistan, which employ up to 250 employees.

Following measures may be adopted:

1. Ask those SMEs who do not file tax returns to register and also register with EOBI and Social Security. An added advantage is documentation.
2. A package worth 100 billion alone for SMEs, which translates to Rs. 3,125 per SME worker.

Some other steps that can help are:

- **Reduction in Restaurants' GST:** A reduction in the GST to restaurants is suggested on takeaway orders. This will help them in the keeping of about 50% of their usual business and major layoffs can be averted. Same goes for other types of businesses/transactions which can use technology platform and provide social distance as well.
- **Credit at Lower Cost:** Credit at a lower cost to those businesses which employee daily/low wage worker to compensate for the output loss and still keep employing a certain number of workers.

X. IMPACT ON POVERTY

The current COVID-19 outbreak is bound to hurt the population's economic condition resulting in an increase in poverty. Table 2 presents the estimations resulting at three levels of impact on the economy. In the worst-case scenario, poverty is feared to rise to 125 million people.

Table 2: Estimated Impact on Poverty

Level of Impact	Poverty Rate (%) <i>Baseline: 23.4</i>	Number (million) <i>Baseline: 54</i>	Increase from Base-line (million)
Low	33.7%	75	21
Medium	44.2%	99	45
High	58.6%	125	71

Source: PIDE COVID-19 Bulletin No. 1

Suggested Response to Tackle the Situation:

- **Strengthen the safety net:** Safety nets, especially cash transfers, paid leaves, and health insurance, can provide quick financial support to overcome the basic needs of vulnerable and poor segments of the society.
- **Scale up the BISP:**
 - Double the cash transfer rate for the next three months.
 - Increased enrollment by raising the cutoff score from 16.17 to 25.
 - There are already Rs. 180 billion rupees parked in BISP for this year with low utilization. Thus, the additional burden will be adjusted there.
 - Various digital sources, including NADRA, banks and the NSER data, can be used to verify beneficiaries and avoid duplication.

Cost Implications:

- Costs are estimated using two scenarios for adding 10 million families to the safety net, that is, cover an additional 65 million people approximately (taking an average family size of 6.5 persons):

Scenario 1: Rs. 5500 per quarter; add 5.5 million families; additional cost for one quarter: Rs. 30.25 billion.

Scenario 2: Raise cash assistance to Rs. 8000; add 5.5 million families; additional for one quarter: Rs. 55.25 billion.

- The additional cost of Rs. 55.25 billion can be managed from the existing BISP budget. BISP has excluded around one million families from the existing net which provides enough space for BISP to expand its coverage.

Implementation:

- **Local government structures**, which go down to the Union Council level, can be used. They can better identify the poor in their communities. For monitoring, strong district-level bureaucracy can be utilized. They can also distribute food and necessities to the most vulnerable to minimize mobility.
- **Use schools for distribution, not mosques.** The latter could lead to sectarian and other political issues. Besides we need to prevent mosque congregations especially with Ramzan coming up. Schools could be used to identify the poor and distribute rations and cash. Besides, it will put schools at the centre of communities which is good for the future.
- **BISP Tehsil offices:** To allow people who were missed in the NSER 2010-11 to register for financial support. This helps to minimize the exclusion error. BISP may launch an online portal for self-registration to minimize the risk of epidemic spread.

XI. A COVID-19 FUND FOR THE COVID-19 WAR

It is time to initiate a COVID-19 Fund for Pakistan (CSP)² by the Government of Pakistan. This can be a place where all Pakistanis including the expatriates can contribute. International foundations too can be approached for this fund.

To go about the fund of the *COVID-19 War* systematically, we need to do the following:

2 The fund as proposed in the current plan of action is different from Coronavirus Relief Fund which is framed by the Government of Pakistan. The difference is defined along the axis of four important functional points as detailed under this section.

- Resource availability check. It is the end of the current fiscal year, so available funds should be known at all levels.
- Additional resources need to be mobilized from donors. Talks underway with the IMF to obtain an additional USD 1.6 billion.
- PSDP plans that are not urgent need to be postponed and funds diverted to fight the COVID-19 war.
- Budget preparation should be done for the crisis. Expenditure planning should be such that it fits the resource availability.

XII. LOCKDOWN?

- The PM has been hesitant on lockdown. At some stage we must study the costs and benefits of a lockdown.
 - PIDE and others have been emphasizing for a decade or more that our cities are extremely badly designed with zoning being totally anti-poor. With poor clustered into overcrowded houses and dense neighborhoods, would the impact of a lockdown be the same as advanced countries where city planners have included the poor?
 - In such dense overcrowded neighborhoods or *katchi abadis*, would the poor be better off and achieve more social distancing at work? This option has to be considered.
 - Can work and production happen in places with guidelines of social distancing? This will require a less than capacity work but that would suit the poor.
 - Some employers are willing to take the risk of staying open while obeying guidelines.

XIII. OTHER IMPORTANT THINGS TO CONSIDER

A. Economic Impacts:

- Analyses needed for sector-wise impacts.
- Industry-wide priority index developed for all sectors of primary, secondary and tertiary importance to be addressed accordingly.
- Estimation of direct as well as indirect effects.
- How the COVID-19 economic impacts combine with the effects of crashing markets, such as the stock market, and falling oil prices.
- Impact on tariffs, taxes, and revenues.

B. Impact on Agriculture:

- Revisit our natural endowments especially in the agriculture sector as harvesting season is right around the corner (April 2020) in Punjab.
- How would the lockdown affect the wheat harvesting season in Sindh and Punjab.
- In the case people cannot partake in harvesting or threshing, the effect on the yield needs to be estimated.

- It has an impact on whether Pakistan would be able to meet the minimum estimated production per year for wheat (27 MMT for 2019-2020).

C. Ensuring Food Security:

- To ensure food security and the impact of the lockdown, we need to:
 - Review food balance look at past import and export trends, storage facilities and capacity, price control.
 - Analyze how market forces will respond to the imbalanced supply and demand.
 - Collection and transportation of yield is essentially important.
 - Redefine entry and exit points at the district level in a supply chain sector, re-evaluate its resilience and dependencies.
 - Taking NARC and PARC on board in collaboration with the Ministry of National Food Security and Research (MNFSR) for future projection in terms of the food supply in the coming year?
 - Measures to control demand (food); actual demand vs.
 - Panic-driven demand.
 - Training for deployment is also essential.

For details on all that is discussed in this document, please refer to PIDE COVID-19 Bulletin No. 1 to 10.

APPENDIX

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS

PIDE COVID-19 ONLINE FORUM

DAILY ONLINE CONSULTATIVE MEETING ON COVID-19

Sr. #	Name	Designation/Affiliation
1	Dr. Nadeem Ul Haque	Vice-Chancellor, PIDE
2	Dr. Durr-e-Nayab	Joint Director, PIDE
3	Dr. Shahid H. Kardar	VC, Beacon House University
4	Mr. Ali Naseer	CEO Jazz
5	Gen (R) Farooq Khan	Former Chairman, NDMA
6	Mr. Rami Haffar	IT expert, Dubai
7	Mr. Moqem ul Haque	Chief Commercial/ Strategy Officer at PTCL

8	Mr. Shahid Malik	Former Ambassador
9	Mr. Amer Zafar Durrani	President, Reenergiza
10	Mr. Imtiaz Gul	Executive Director, CRSS Pakistan
11	Mr. Mohamad Ahmed Zubair	Principal Economist at Islamic Development Bank, Saudi Arabia
12	Mr. Haroon Sharif	Former Chairman, BoI
13	Mr. Almas Hyder	Chairman of Engineering Development Board
14	Ms. Rabia Zia	Secretary of Governor Punjab
15	Mr. Zafar Ul Hassan	Planning Commission, Government of Pakistan
16	Mr. Khalid Sherdil	Chief Executive Officer, Urban Unit, Lahore
17	Mr. Taimur Malik	Director, Digital Transformation, SAP
18	Dr. Samia Waheed Altaf	Public Health Expert
19	Mr. Yusuf Hussain	Former CEP Ignite
20	Mr. Omar Saeed Malik	Former Chairman, NFML and CEO, National Fertilizer Corporation
21	Dr. Nasir Iqbal	Associate Professor, PIDE
22	Mr. Hasaan Khawar	Public Policy Professional
23	Mr. Ali Khizar	Journalist, Economist and Consultant
24	Mr. Asad Ali Khan	SAP, Pakistan
25	Dr. Naseem Faraz	Research Economist, PIDE
26	Dr. Zulfiqar Ali	Assistant Professor, PIDE
27	Brig. Muhammad Ashraf	Brigadier (Retired)
28	Dr. Vaqar Ahmed	Deputy Executive Director, SDPI
29	Mr. Hassan Naqvi	Journalist
30	Dr. Muhammad Nasir	Senior Research Economist, PIDE
31	Dr. Farida Faisal	Associate Professor, UAAR
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33	Raja Rafi Ullah	Fellow, PIDE
34	Mr. Fahd Khan	CEO - Humanetek
35	Mr. Omer Siddique	Senior Research Economist, PIDE
36	Dr. Mahmood Khalid	Senior Research Economist, PIDE
37	Dr. Rashid Aziz	Fellow, CDPR
38	Mian Daheem Hayat	Reenergias
39	Mr. Sohaib Jamali	Research Editor – Business Recorder
40	Mr. Fahd Zulfiqar	Lecturer, PIDE
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49	Ms. Nabeela Arshad	Chief ICT, PIDE
50	Mr. Hamza Khan	
51	Mr. Khurram Iqbal	Web Manager, PIDE
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53	Mr. Hunain Ijaz	Urban Unit
54	Mr. Asim Saeed	Urban Unit
	Mr. Khurram Afzal Malik	Urban Unit
56	Mr. Ghulam Moheyuddin	Urban Unit

57	Ms. Mishele Ijaz	Urban Unit
58	Mr. Abdul Moiz Sohail	Urban Unit
59	Mr. Balaaj Ahmed	Urban Unit
60	Mr. Asif Iqbal	Urban Unit
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Section 2

PIDE BULLETINS

COVID-19 IN PAKISTAN: CARING FOR THE POOR AND VULNERABLE

NASIR IQBAL

The COVID-19 pandemic, which by March 20, 2020, had infected almost 0.24 million people in more than 165 countries, resulting in over 10000 deaths, has the potential to infect 40-70 percent of the world's population. By this date, more than 447 people have been confirmed infected in Pakistan, resulting in three deaths

. The country is at its initial stage of this epidemic and the number of expected infections is feared to increase manifolds in the coming days.

Anyone can be exposed to the virus, but the poor are most vulnerable because they do not have the means to cope on their own. The recession, which is most probable to follow this outbreak, is expected to affect the economically vulnerable group the most. Poor workers, especially those dependent on a daily wage with no reserves, would not be able to cope with any possible lockdown as a response to the pandemic.

We have to evaluate the economic cost of this pandemic from the vulnerable group's perspective and propose policy options to minimize its impact.

The official statistics show that:

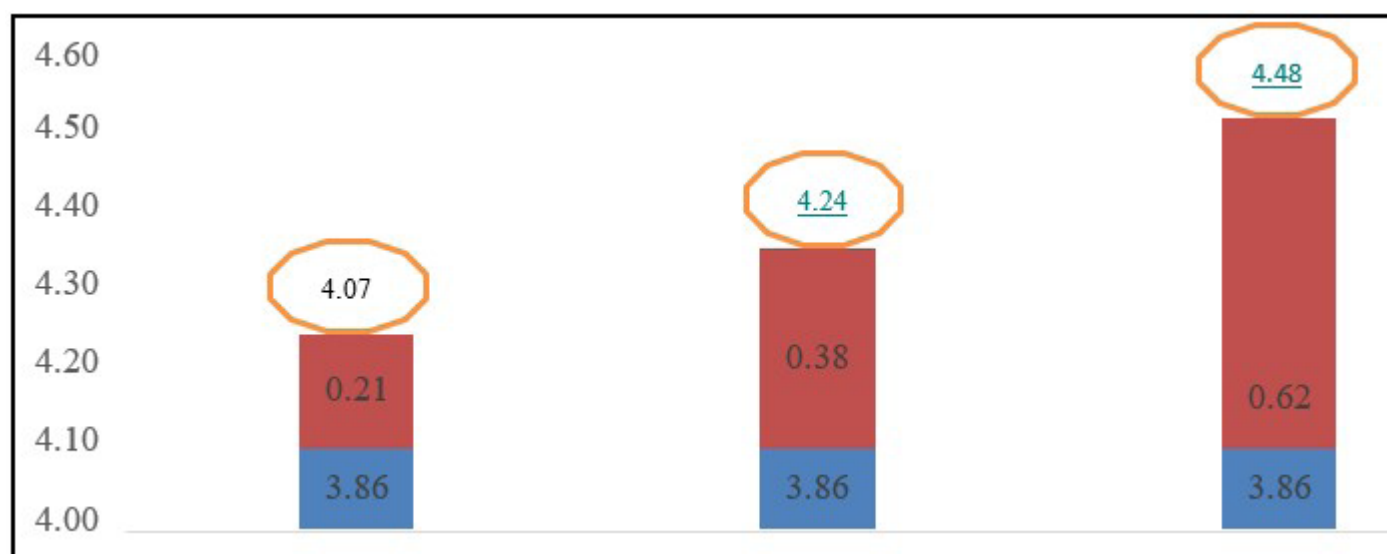
1. The share of vulnerable employment is around 56% (52% among male and 71% among female). Vulnerable employment is measured as the proportion of own-account workers (also including the daily wage earners) and unpaid family workers in total employment.
2. As for sectoral share of vulnerable employment, it is more than 80% in agriculture; about three-fourths in wholesale and retail trade; near to 50% in hotel and restaurants; more than three-fifths in real estate and business; and approximately two-fifths in transport and communication sector

In the given scenario, COVID-19 poses huge implications for the poor and vulnerable segments of the society. It will substantially increase the poverty levels across the country. To make things worse, our health system is not designed to deal with such outbreaks and that too at this severity level.

Impact of Economic Recession on Poverty and Unemployment

Due to the likely economic recession and vulnerability of the employed in the country, the COVID-19 may lead to significant increase in poverty and unemployment. We consider three GDP growth scenarios to map poverty and unemployment. These being: 1. High impact [0 to 1.5 % GDP growth – massive economic recession]; 2. Medium impact [from 1.5 to 2.5 % GDP growth – almost half of the projected GDP growth]; 3. Low impact [from 2.5 % to 3.5 GDP growth – mild recession in the economy]. Figure 1 shows that unemployment will increase by 0.21 million (low impact scenario) to 0.62 million (high impact scenario) from a base of 3.86 million in 2019. Total unemployment ranges from 4.07 million (low impact scenario) to 4.48 million (high impact scenario).

Figure 1: Unemployment (in million)

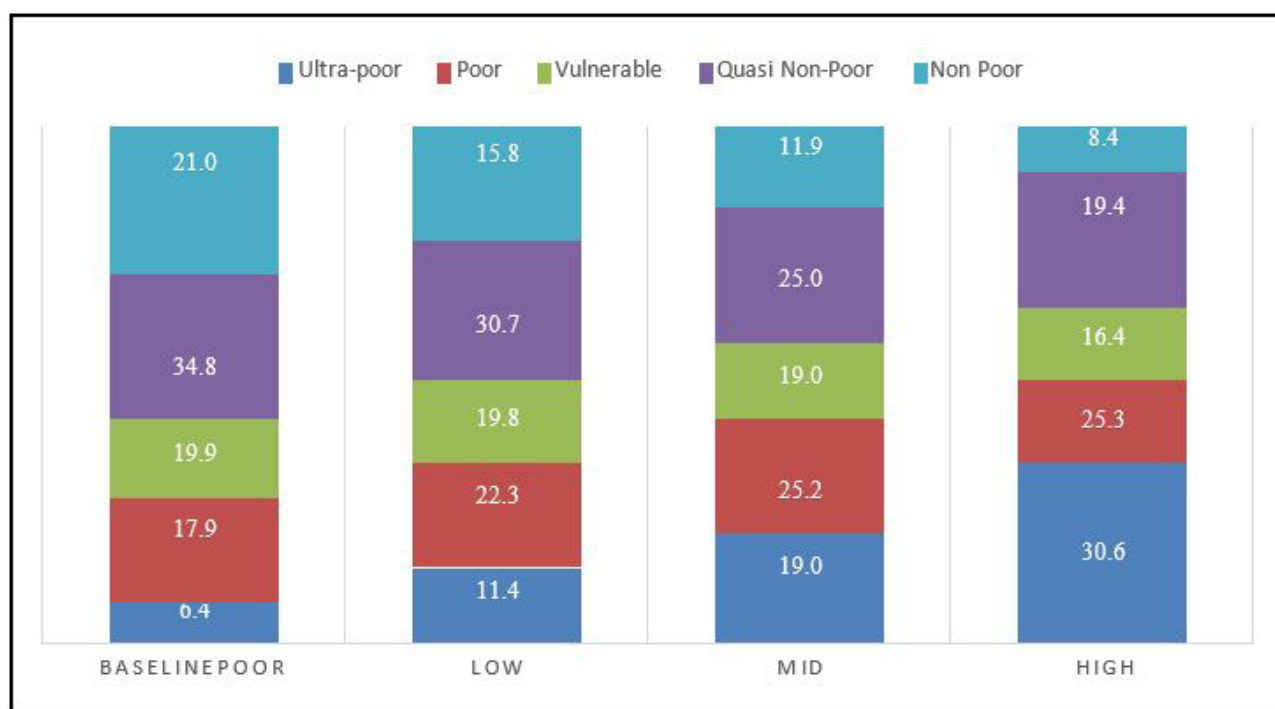


Source: Author's estimations based on Labor Force Survey (LFS) -2018.

Note: The blue part in figure shows the baseline unemployment in Pakistan while the red part presents the additional unemployment for all categories due to COVID-19. Circle above each bar represents the total numbers unemployed, in millions.

Due to COVID-19, it is projected that poverty rate will increase from 23.4% (baseline poverty) to 33.7% (in case of low impact scenario) followed by 44.2% (in case of medium impact scenario) and 58.6% (in case of high impact scenario) (Figure 2). Apart from poor, a bulk of population share (around 19%) fall in the category of vulnerable groups – income just above the poverty line (Figure 2). Longer economic recession would push these people into the poverty.

Figure 2: Band-wise Poverty Rates (% share)

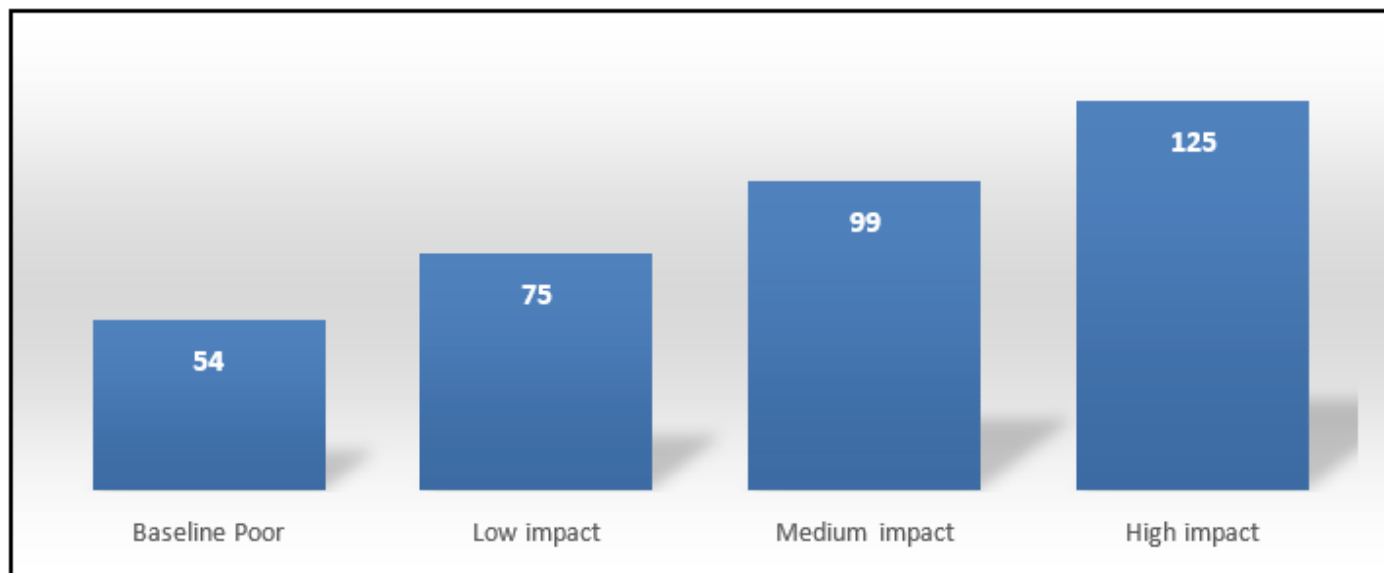


Source: Author's own projections based on HICS 2015-16 data

Note: Poverty band are defined using per capita household income as defined by Planning Commission in National Poverty Report 2015-16. Ultra-poor (<75% of Poverty Line) Poor (> 75% and < 100% of Poverty Line); Vulnerable (> 100% and < 125% of Poverty Line); Quasi Non-Poor (> 125% and < 200% of Poverty Line) and Non-Poor (> 200% of Poverty Line).

Based on these poverty rates, it is projected that poverty will increase by 20 million people (low impact scenario) to 70 million people (high impact scenario) from a base of 54 million people (Figure 2)³. The number of poor could, thus, increase from 75 million people to 125 million people, depending on the depth of the economic recession due to COVID-19 (Figure 3).

Figure 3: Poverty (in millions)



Source: Author's own projections based on HICS 2015-16 data

Suggested Response:

Strengthen the safety net: Vulnerable workers are most likely to lose their jobs if they miss work. In the current scenario, their nature of job makes them least able to work remotely to avoid contracting the virus. They are also least likely to have savings to survive an economic downturn. Under such circumstances, safety nets, especially cash transfers, paid leaves, and health insurance, can provide quick financial support to overcome basic needs of vulnerable and poor segments of the society.

Scale up the BISP: Double the cash transfer rate for the next three months with increased enrollment by raising the cutoff score from 16.17 to 25. There are already Rs. 180 billion rupees parked in BISP for this year with low utilization. So, the additional burden will be adjusted there. Some specific recommendations:

- i. Increase the cash assistance to 8000 (half of the basic income) for next three quarters for the already enrolled BISP beneficiaries.
- ii. Include an additional 5.5 million families along with existing 4.5 million families. Additional beneficiaries could be included using National Socio-Economic Registry (NSER 2011-12), the census data used by BISP for targeting purpose, by increasing the PMT up to 25 score. Apart from these families, BISP with the help of NADRA using mobile contacts may also allow poor families to get cash assistance even if they are not included in the NSER. Global think-tanks also propose similar approaches to provide urgent support to the vulnerable and poor segments of the society. With the help of mobile companies and NADRA, BISP can target these families very quickly and disburse mobile money. BISP can use BISP Beneficiary Committees (BBCs) to spread information about new enrollment and precautionary measures to minimize the spread of COVID-19.

3 We assume that income decline by 10% due to low economic recession (low impact), 20% decline due to medium recession (medium impact) and 30% decline due to high recession (high impact). For baseline poverty see [https://www.pc.gov.pk/uploads/report/National_Poverty_Report_2015-16_12-07-18\(Formatted_by_JACC\)1.pdf](https://www.pc.gov.pk/uploads/report/National_Poverty_Report_2015-16_12-07-18(Formatted_by_JACC)1.pdf).

iii.

Cost implications: We calculated the expected cost using two scenarios for adding 10 million families to the safety net, that is, cover an additional 65 million people approximately (taking an average family size of 6.5 persons):

- i. **Scenario 1:** An additional enrollment of 5.5 million families with the ongoing stipend amount of Rs. 5500 per quarter.

The additional cost for one quarter under this scenario would be Rs. 30.25 billion.

- ii. **Scenario 2:** Increase the cash assistance to 8000 with an additional enrollment of 5.5 million families:

The additional cost for one quarter under this scenario would be Rs. 55.25 billion

We believe that the additional cost of Rs. 55.25 billion could be managed from the existing BISP budget. BISP has excluded around one million families from the existing net which provides enough space for BISP to expand its coverage.

SLOWDOWN OR SHUTDOWN: PAKISTAN'S DILEMMA

DURR-E-NAYAB AND NADEEM UL HAQUE

Pakistan is now facing what has come to be known as the 'Lockdown Paradox' - the paradox to save economy by shutting it down fast. The relation between the pandemic and the measures meant to mitigate it present this painful paradox. A prolonged period of fighting the outbreak would delay an economic rebound in the long run, with an increased health cost as well.

The Dilemma

Quicker the normal life shuts down, the faster the health crisis could be resolved.

but

How would the poor and the vulnerable cope with a complete shutdown?

PIDE COVID-19 Bulletin (PIDE CB) No. 1 has already noted the likely unemployment in various given scenarios. Layoffs are inevitable, especially in industries like travel, retail stores, food outlets and the informal sector.

For when we try to learn from international experiences, then the most effective example that comes out is of China. The quarantine experiment in China that is now being termed as a lockdown/shutdown, seemed very hard at the start and a compromise on individual rights. But it has paid off and now is being widely appreciated and also replicated. Countries which had initially followed a policy of only closing borders are now moving to the position of shutdown, for example UK, Australia and New Zealand.

So, what are the options for Pakistan in this context?

Social Distance and Limiting Mobility

Yes, restricting mobility and minimising human to human contact is extremely crucial to control an epidemic. This is what China did by limiting human interaction within its affected Wuhan Province; they effectively

broke the transmission process of the Covid-19 virus and hence were able to reduce both death toll and decrease its spread.

Further, the policy path adopted by China also had historical grounds. If we analyse the case of the 1918 Spanish flu or the 1884 cholera, or the 1347-48 plague even before that, the most effective way has been through isolation of the affected patients. Hence, the success of quarantine policy followed within China validates that the relevance of such ancient practice even today, especially since there is no vaccine for the current Covid-19 outbreak.

Finally, looking into the transmission mechanism of this deadly disease, one finds, as, in the case of measles, it also spreads through droplets that fall out of infected persons when they sneeze or cough. Further, as per research, just like measles, the respiratory transmission for COVID-19 also requires close contact and a large population size. Hence, restricting the mobility of everyone can serve as an effective way to control its spread.

The Complex Challenge for Pakistan

First, poverty levels are high, and in case of a shutdown, the government will have to find means to support the poor. As the PM has noted, the real issue with the complete lockdown is the plight of the daily-wage earners and other informal sector workers.

Second, there are concerns regarding the ability of the people to abide by an imposed shutdown. Therefore, strategizing for a shutdown, which may be avoided for now but would eventually be required, in case of the spread of an epidemic needs to be seriously thought through.

Let us quickly look into the various factors, of both economic and healthcare nature, that influence this very important decision.

Factors Affecting the Shutdown Decision	
Economic	Health
1. Providing livelihood, especially food, to the daily-wagers and the vulnerably employed people	1. Exponential increase in the number of infected people
2. Impact on the national economy	2. Increased probability of mortality
	3. Poor healthcare provisions, for instance:
	<i>i. Approximately 1700 ventilators, with unknown efficiency, for a population of 220 million people</i>
	<i>ii. Non-availability of N-95 masks even for the health professionals</i>
	<i>iii. Non-availability of protective gear, including clothing and goggles</i>
	<i>iv. Hardly any private sector hospital having a proper ICU facility needed in such circumstance</i>
	<i>v. An average expenditure of Rs. 0.8 million for a 14 days stay in the ICU</i>

Keeping all the factors into account, including the state of the economy, both in the short and long run; employment structure of the country; prevailing poverty levels; and the state of healthcare delivery and available expertise, **we believe that a complete shutdown would be more effective than a slowdown.**

A slowdown would not be able to contain the spread of the disease and our health system does not have the ability to cope with any nation level health disaster (as can be seen from the factors given above). Its consequences on the economy would also be unbearable in the long run. Containment is the key here!

“We must protect the vulnerable”- PM Imran Khan

What to Do

The biggest issue that has to be faced in this regard is how the poor especially the informal workers, that also the PM talks, about can be protected. We are reviewing the situation in this regard and will have further ideas in the coming bulletins. Here are some of our initial thoughts.

- Making use of the Benazir Income Support Program (BISP), as elaborated in the PIDE CB No.1. That is a good base to start with by expanding the cut-off line of the BISP sample and targeting a wider set with a higher stipend. As noted there, BISP has adequate unutilized funds to not require additional funding. This could be the foundation of the government effort in a lockdown.
- Beyond BISP, local government structures, which go down to the Union Council level, can be used. They work at the grassroots levels and can identify the poor in their communities. This may, invariably, result in some leakages, so monitoring mechanisms through our strong district level bureaucracy can be utilised.
- In some cases, especially to the most vulnerable and also to minimize mobility, food and basic necessities may need to be distributed through the local government system.
- To manage this well it would be wise to maintain full transparency and disclosure as well as high level monitoring. In such times, it is vital to maintain trust. This is all the more important, given the past erosion of trust in government and society.

Providing at least a minimum level of protection to the vulnerably employed is not an easy, but an unavoidable, task. PIDE CB No. 1 showed that 56% of the employed in Pakistan are vulnerable. These are huge numbers to cater to, so there is a need to categorise them into bands.

- Big businesses, of any nature falling in this category, should be compelled by law to continue paying their workers. They should be explained that the shorter this outbreak is the better it is for their businesses, so they need to pitch in at this time. No lay-offs allowed during the shutdown by law.
- Even those at the borderline of formality such as large and growing businesses such as retail, education, and leisure businesses can be instructed to bear some of the burden.
- In both cases, there can be negotiated positions like future tax credits, and other similar advantages.

Those employed in the informal sector, fall in the most vulnerable band, and probably have no resources to manage a shutdown. They must be taken care of by the government. Apart from food and other distributions, there could be targeted utility subsidies. The BISP registry accompanied by information on baseline users of utilities, which can be easily gauged from the already computerised billing system, can be provided relief by the government. It would have a huge fiscal impact⁴, but the impact would only become bigger if the epidemic lasts longer. We will look into the fiscal dimension in coming days but for the time being finances could be found through redirection from some projects that can be delayed.

Short Pain or Prolonged Suffering?

4 Due to sketchy data on many COVID-19 related issues in the country, and the evolving nature of the extent of the outbreak, we are not giving any numbers right now, but PIDE is working on estimating the health and economic/fiscal cost of the epidemic in Pakistan.

For the effects on the national economy in case of a shutdown, we need to understand that the longer this outbreak lasts the more adverse and long-lasting impact it would have on the economy. We can gain comfort from the words of Gregory Daco, chief U.S. economist at the Oxford Economics, when he says,

“The more rapidly you want to contain the virus, then the more severe the lockdown has to be and the more severe the disruption to economic activity is....”, and that, “The hope is, the more severe the lockdown, the sharper the rebound will be.”

It is like a trade-off between the immediate and the long-term economic and health costs. We premise that both the costs would multiply in the long run if we try to keep the normal life going. These are not normal times, and as they say, desperate times need desperate measures.

PAKISTAN’S STRUGGLE WITH COVID-19 QUARANTINE

GHULAM SAMAD, NADEEM UL HAQUE,

DURR-E-NAYAB AND RABBIA MIR

COVID-19 has virtually shut down the world.

Pakistan has been slow in response but seems to be catching up as Coronavirus spreads in the country. At the beginning, officials were somewhat casual about people entering Pakistan from overseas. In particular, lack of proper quarantine facilities and inappropriate screening procedures resulted in several infected people reaching the community from various international borders.

Yesterday we recommended that we should immediately consider a phased lockdown (i.e., curfew without movement) in cities and localities across Pakistan (PIDE COVID-19 Bulletin No. 2). Today we are going to focus on quarantines.

The Chinese Approach

How did China manage quarantines? The Chinese moved in the following phases:

Phase 1: Complete lockdown of businesses, and no human interaction at all levels in a *phased* way across the country. Authorities considering the spread of the virus, shut down cities and localities for a period of a week to 15 days strictly imposing no movement. During this period administrative arrangements were made for logistics and support for the needy. The idea was to maintain distance among people as well as populations for a stretch of time to prevent the virus from spreading.

Phase 2: Intra-city movement remain strictly controlled even after the lockdown as determined by the spread of the virus. If someone desired to travel to another city, he/she was supposed to stay in a quarantine for 14 days. Initially, the cost of quarantine was paid by Chinese government but later by the traveller himself/herself. If someone could afford it, there was an option to quarantine in a hotel.

Phase 3: Even when the intra-city travel ban was lifted, quarantine for 14 days continued for those who were travelling from abroad, and were placed in a quarantine facility or hotel, depending on his/her affordability.

Quarantine also followed certain methods and rules to both make it convenient for the sick as well as contain the cost of running the quarantine. These were:

- Self-quarantine, where health officials saw that facilities were adequate, and enforcement was possible. Enforcement meant use of monitoring mechanisms (locks and devices to see if doors had been opened) and strict (fines and possible sentences).

- Quarantine at own expense for those who could pay.
- Forced quarantine with 3-4 hour monitoring by trained nurses with adequate protective gear.
- Ensuing adequate testing and medication to minimize quarantine time and cost.

On the supply side, the strategy included the following measures:

- They were quickly able to assess all spare capacity for housing people with the seizure of economic activity. They found spaces like university dormitories, sports stadiums, community centres, hotels and several other spaces that with quick effort they could convert to a quarantine space. These were seen as overnight hospitals developed by China.
- These places were converted to a reasonable level of sanitation and living standards before people were moved in.
 - Hygienic sanitation was guaranteed so that the toilet water was not contaminated.
 - Clean water and food provisioning was prepared for.
- Provision of lunch and dinner boxes in a hygienic environment to all those quarantined.
- Nurses were deployed in these quarantine facilities to have regular temperature check of patients 3-5 times a day.

An Approach to Develop Pakistan's Quarantine Policy

It is imperative that the government develops a quarantine policy that is cost effective and efficient. Certain principles need to be followed.

- 1. Ensure that the infected are separated and properly taken care of while minimizing costs. Let those who can buy their own quarantine:**
 - a. Do not stress the system with people who can afford to pay. Let people who can and have resources self-quarantine. But self-quarantine should be adequately regulated, monitored and sanctioned.
 - b. Hotels and private hospitals should be encouraged to set up quarantine centres for those who can pay. This has the added advantage of keeping some business going
- 2. Mass quarantine:** Mass quarantine with appropriate hygienic environment, with complete provision of washrooms, meal boxes, nurses and paramedical staff, and hygienic sanitation. The mass quarantine facilities should be appropriately managed to minimise contagion exposure because of herding. (see Table 1 to 4 for the total number of people who can be accommodated in stadiums and educational institutions in Pakistan). These can be of the following types.
 - a. **Using hotels:** Hotels can be used as quarantines, just like China, if the patient can afford it.
 - b. **Use of educational institutions and similar public facilities:** Utilise educational institutions, national sports stadiums, forts and expo-centres as quarantines across the country with minimal resource base.
- 3. Gender sensitivity:** Maintain cultural sensitivity in managing quarantines, especially those linked to females by providing female staff and honouring their desire for segregation.

Other guidelines include:

- **Costs can be contained by involving private contractors and owners:** However, this will mean the government will bear the cost of monitoring and for success this will have to be good monitoring.

- **Quarantine policy must be effectively costed:** Quarantine facilitation will reduce the cost by concentrating resources to specified quarantine places. Initially the government can bear the associated cost (rent of a place, meal, nurses, paramedical staff, and sanitation charges), later transferring it to those quarantined if he/she can afford it.
- **Coordination:** It is no secret that coordination remains a huge problem everywhere in Pakistan. Managing the pandemic including the quarantine will be a huge effort. If poorly managed it will neither be cost-effective nor contain the epidemic. Decision makers and those implementing it are required to cooperate to cope with this pandemic.
- **Monitoring and sharing of information and developing regular reports to some situation room which coordinates and pushed effective implementation will be critical.**
- **Budgeting the quarantines:** If a quarantine facility is shifted to educational institutions, or to a national sports stadiums, the allocated budget transfer across the line institutions should not be a problem. Block budget can be allocated for this purpose to deal with pandemic.
- **Involvement of LIAs:** Involve law-enforcing agencies in maintaining the protocol of the quarantines and strict monitoring.
- **Coordinated Awareness:** Awareness mechanisms and stakeholder engagement (businesses, politicians, and the public) at all levels is necessary.

Table 1: Number of Stadiums Across the country

	Province	No. of Stadiums
	Punjab	23
	Sindh	10
	KPK	2
	Balochistan	3
	Islamabad	3
	Total	42

Table 2: Stadium Capacity for Quarantine

Average area ^a	Average Area (sq.ft)	Total No.	Average Total Area (sq.ft)	Carrying Capacity for Quarantine (if 20 sq. ft per person is required)
Football Stadium	57,600	16	921,600	46,080
Cricket Stadium	1,350	20	27,000	1,350
Hockey Stadium	16,327	6	97,962	4,898
Total Capacity				52,328

Table 3: Number of Educational Institutes in Pakistan

	Educational Institutes	Total No.
	Primary	172,200
	Middle Education	46,800
	Secondary/ High School Education	30,900
	Higher Secondary / Inter Colleges	5,200
	Technical & Vocational Institutes	3,700
	Degree Colleges	1,657
	Universities	186

Table 4: Educational Institutes' Capacity for Quarantine

Educational Institutes	Total No.	Average Classrooms	Classrooms × total no.	Average Area (if average class-room is of 900 sq. ft.)	Carrying Capacity for Quarantine (if 20 sq. ft per person is required)
Primary	172,200	5	861,000	4,305,000	215,250
Middle Education	46,800	10	468,000	4,680,000	234,000
Secondary/ High School Education	30,900	15	463,500	6,952,500	347,625
Higher Secondary / Inter Colleges	5,200	20	104,000	2,080,000	104,000
Technical & Vocational Institutes	3,700	20	74,000	1,480,000	74,000
Degree Colleges	1,657	40	66,280	2651,200	132,560
Universities	186	60	11,160	669,600	33,480
Total Capacity					1,140,915

Data sources:

1. <http://www.worldstadiums.com/asia/countries/pakistan.shtml>

2. Pakistan Economic Survey 2018-19

SECTORAL ANALYSIS OF THE VULNERABLY EMPLOYED : COVID-19 AND THE PAKISTAN'S LABOUR MARKET

MUHAMMAD NASIR, NASEEM FARAZ & MAHMOOD KHALID

All the provinces in Pakistan are now experiencing lockdowns, though of different intensities, to 'flatten the curve' of the spread of pandemic COVID-19. These lockdowns would have economic effects which could emerge through several channels including, but not limited to, sharp declines in domestic demand, decreased tourism and business travel, export-imports and production linkages, supply disruptions, and health effects. The issue of immediate concern, however, is the effect on the employment situation in the country resulting in major layoffs, especially of those that fall in the vulnerable employment group. This Bulletin would, therefore, focus on the vulnerable employed⁵.

It is important to understand that the various stages of social distancing have differential effects on different economic sectors, and consequently on the layoffs among the vulnerably employed. Similarly, sectoral effects also vary under each stage of social distancing. This is important because the government protection policies must take these differences into account.

To assess the impact of different stages of the social distancing strategy, we first quantify the impact of each stage on different sectors based on the matrix presented in **Table A**. These stages are:

Stage I: Limited Restrictions (which probably happened)

Stage II: Moderate Restrictions (We have probably also seen stage 2)

Stage III: Complete Restriction (Most likely, we are now close to stage 3)

Sectoral Impact of Different Stages of Social Distancing Strategies

Stage I does not have a strong impact on layoffs generally, however, education, hospitality, and wholesale and retail trade sectors are strongly affected. These sectors are also very vulnerable across stages. The vulnerable employment gets severely hit in **Stage II**. The intensity of severity worsens in **Stage III** for obvious reasons (see Table 1).

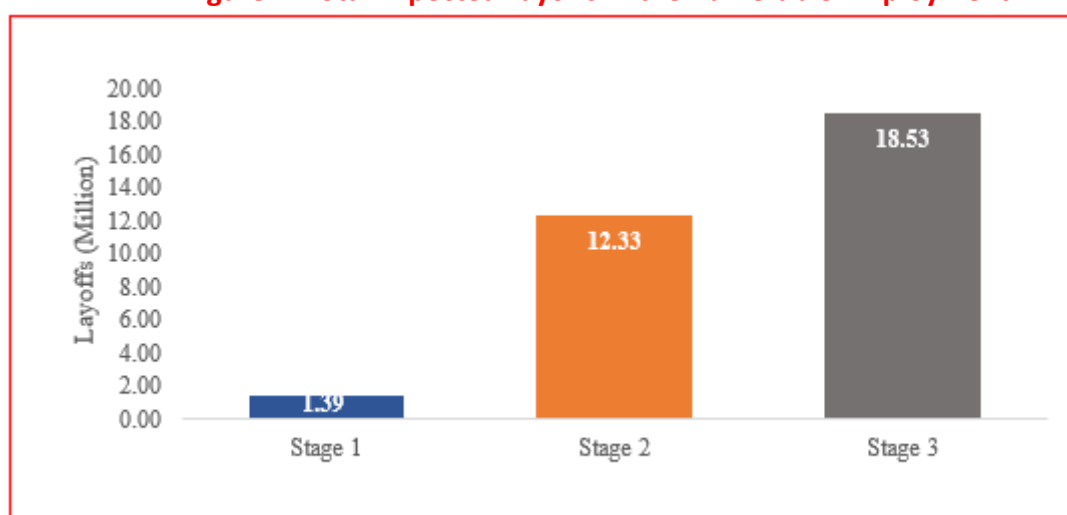
⁵ To see who is considered to be vulnerably employed, see PIDE COVID-19 Bulletin No. 1.

Table 1: Sectoral Impact of Stages of Social Distancing Strategies

Sector	Stages		
	I	II	III
	Layoffs (%) of the total employment		
Agriculture	0	20	50
Fishing	15	50	90
Manufacturing	10	70	90
Electricity, gas and water	0	10	10
Construction	0	90	100
Wholesale and retail trade	10	70	90
Hotels and restaurants	20	90	100
Transport and communication	10	90	90
Real estate and business	0	50	70
Public administration	0	50	70
Education	50	70	90
Health and social work	0	0	10
Other community, social activities	10	90	100
Street Vendors	15	60	90

Source: Authors' calculation based on Table A.

Pakistan is somewhere between **Stages I and II** at the moment. It will, however, quickly find itself between **Stage II and III** if the number of confirmed cases continue to grow exponentially. Since the vulnerable job loss has already started in different sectors, a scenario analysis of the three stages may give us some idea of the potential layoffs in the economy for designing an adequate relief package. This is shown in Figure 1.

Figure 1: Total Expected Layoffs in the Vulnerable Employment

Source: Authors' analysis based on the Labor Force Survey, PBS 2017-18

It is evident that moving from **Stage I to II** would result in more than ten times increase in the layoffs in vulnerable employment. Going into a complete lockdown (**Stage III**) would push this number to above 18 million.

For an adequate policy response, we must explore the number of sectoral layoffs for these stages. Table 2 provide this information. Interestingly, the impact on agriculture sector would not be experienced in **Stage I**. In **Stage II and III**, however, layoffs may result from reduced domestic and foreign demand for textiles and other agriculture products. The most hit sectors in **Stage II** are wholesale and retail trade, agriculture, manufacturing, and transport and communication. The vulnerable employment is high in these sectors and they are

also more sensitive to lockdown.

Table 2: Sectoral-wise Expected Layoffs (in millions)

Sector	Vulnerable Employment	Stage 1	Stage 2	Stage 3
Agriculture	12.82	0.00	2.56	6.41
Fishing	0.05	0.01	0.03	0.05
Manufacturing	2.16	0.22	1.51	1.95
Electricity, gas and water	0.14	0.00	0.01	0.01
Construction	0.25	0.00	0.22	0.22
Wholesale and retail trade	6.49	0.65	4.55	5.85
Hotels and restaurants	0.60	0.12	0.54	0.54
Transport and communication	1.95	0.20	1.76	1.95
Real estate and business	0.20	0.00	0.10	0.14
Public administration	0.25	0.00	0.13	0.18
Education	0.09	0.04	0.06	0.08
Health and social work	0.19	0.00	0.00	0.02
Other community, social	0.43	0.04	0.38	0.43
Vendors	0.79	0.12	0.47	0.71
Total		1.39	12.33	18.53

Source: Authors' analysis based on the Labor Force Survey, PBS 2017-18

Based on the estimates presented in Table 1, we assume the proportions of layoffs for **Stages I, II and III** would be 10% 50% and 60%, respectively. Using these proportions, we look into the expected layoffs by employment status (Table 3). We see that for **Stages I, II, and III**, the majority of layoffs would be of the daily-wage workers and paid workers by piece rate simply because they constitute the bigger proportion.

Table 3: Expected Layoffs by Employment Status

Employment Status	Employed (Million)	Stage 1	Stage 2	Stage 3
Daily wage workers	20.27	2.03	10.14	12.16
Paid worker by piece rate or work performed	9.33	0.93	4.67	5.60
Paid non-family apprentice	0.49	0.05	0.25	0.30
Street Vendors	1.00	0.10	0.49	0.59
Total Layoffs		3.11	15.54	18.65

Source: Authors' analysis based on the Labor Force Survey, PBS 2017-18

The estimated monetary value of the layoffs of vulnerable employment in each sector has been shown in Table 4. Since Pakistan has already passed **Stage I** in most of its regions, the government should be looking at the cost of **Stages II and III** while thinking about the possible mechanisms to reach out the laid-off workers. It is worth mentioning here that this is the monthly cost only. As the period of lockdown would extend, the cost would also increase proportionally.

Table 4: Average Monthly Wage Loss (billion rupees)

Sectors	Average Wage	Stage I	Stage II	Stage III
Agriculture, forestry, hunting and fishing	9645	0.10	24.98	62.31
Manufacturing	16890	3.72	25.50	32.94
Electricity, gas and water	27600	0.00	0.39	0.39
Construction	16402	0.00	3.63	3.63
Wholesale & retail trade and restaurants & hotels 14541		11.19	73.97	92.86
Transport, storage and communication	21338	4.17	37.52	41.69
Financing, insurance, real estate and business	40178	0.00	3.94	5.51
Community, social and personal services	25530	1.09	9.80	10.89
Street Vendors	15000	1.78	7.12	10.68
Total		22.04	186.86	260.90

Source: Authors' analysis based on the Labor Force Survey, PBS 2017-18

To the extent possible that the spread can be tracked, and lockdown of clusters or cities can be phased out, the monthly cost can be mitigated. It is imperative that the government use all its administrative and other resources to track the virus and track the spread to create firewalls through selective lockdowns and hold the cost down. We will have more on this later!

However, if a coordinated and informed policy does not selectively slow down the spread of the virus, our estimates indicate the cost could be roughly what is shown here.

Suggested Policy Response

Although Table 4 gives benchmark estimates for the monetary value of job loss (economic impact), the requirement of fiscal space for coping with the economic and medical cost is yet to be determined. This would require an income protection level to be decided. The possible ways to address this crisis are provided below:

1. Out of the box solutions for doing business are needed. For example, it is estimated that in Stage I restaurants are going to face up to 20% reduced sales. This will further go down to about 90% when situation moves to Stage II. Government should reduce the GST on the sales of restaurants' takeaways. This will help them in keeping of about 50% of their usual business. This way major layoffs can be averted. Same goes for other type of businesses/transactions which can use technology platform and provide social distance as well.
2. Livelihood payments be made mandatory. PIDE COVID-19 Bulletin No. 1 discusses the available options.
3. Directed credits at lower cost can be provided to those businesses which employee daily/low wage worker to compensate for the output loss and still keep employing a certain number of workers.
4. Such pandemics have short and long-run economic costs related to it. Considering the low to zero real growth scenario, significant tax collection shortage will happen both this year and in the next fiscal year. The current tax collection target will need to be revised downward to prevent FBR from unnecessary revenue pursuit.
5. In order to provide relief to businesses which engage the most vulnerable workers (especially daily wage workers) GST on their product should be waived.
6. For exporters whose containers are stranded in the sea or importers asked to wait for 6 months, government should give them relief for six months to convert their LC on zero rate on the condition that they will not lay off their workers.

Table A

Stages of Social Distancing Strategies and Policy Responses

Source: Authors' observations and interactions as well as information from global experiences.

Domestic Policy Measures	Vulnerable employed impact	Backward supply related channels	Possible adjustment policy to protect the vulnerable	Cost and financing
Stage 1: Limited				
Limited warnings and advisories	-fear factor in public; reduced public gathering and shopping.	-producers stop developing inventories	-No action by the government for compensation	Not required
Public gatherings ban				
Social Distancing	-border line impact on workers' employment, especially to those who are employed seasonally	-no overtime and lay off for helpers		
Schools, colleges, universities closures	-Not all sectors are affected	-overall supply chain is intact		
	- those sectors affected reduce employment by 10-15%			
Stage II: Moderate				

MANAGING THE COVID-19 CRISIS AN ORGANIZATIONAL PLAN

NADEEM UL HAQUE

PIDE has been holding regular virtual meetings with a number of people from diverse backgrounds every day to crowd source information and analysis on the Covid-19 crisis. One important theme that has emerged during these discussions is that the public must clearly see the management of the crisis being done on a war-footing.

With that discussion in mind, I thought we should begin to conceptualize how we can be better organized to manage this crisis. While the exact configuration for management can differ, several principles are clear.

Central Strategy Making

1. This a war and the country must be mobilized to fight it.
2. Wars are planned by centrally mobilizing all the available resources, but they are fought locally. So, to begin with, a **Situation Room** (SR) with PM, CMs and Army Chief must be set up. It must be small enough for quick discussion and decisions. This will only happen if it is supported by very good information and analysis system that emanates from the localities where the virus is spreading and where help is required. The **SR** must be supported by several high-level committees at the federal and provincial levels with possible counterparts at the local level. At the minimum there should be committees for:
 - 2.1. **Health**—Must prepare a real time COVID-19 spread picture, medical supplies and logistics information, state of the health system, quality of care and the state of testing.
 - 2.2. **Social support**—Based on local and other identification, determine where help is required and how it will be disseminated. Local administrations down to the level of union councils and political representatives will help identify the community needs. Various social safety net agencies, like BISP, Bait ul Mal, NRSP and PPAF, will help in this effort.
 - 2.3. **Law and order**—Police and army will maintain law and order, and identify the needs and plans to move forward.
 - 2.4. **Economy**—Real time resource availability and utilization information, and daily required changes of expenditure based on health and social support requirements.
3. Daily and future needs plan should be maintained by each of the above committees. The **Situation Room** would prioritize and see how all the plans fit together.
4. To maintain calm, daily information must be provided to the people through the spokesman of the **Situation Room**. The principle of more public information should be followed especially in this time of social media and fake news. Yes, some information may need to be withheld but barring that there should be disclosure.
5. Several guidelines/protocols and policies need to be developed and evolved as information from localities is received.
 - 5.1. A testing policy needs to be developed. How widespread will it be? Who gets priority in getting tested?
 - 5.2. A quarantine policy, which is cost effective (letting those who can afford, pay for it) and offers choices.
 - 5.3. Testing and tracking people.
 - 5.4. A phased lockdown policy based on testing and tracking.
 - 5.5. Communication and education
6. Logistics to be determined and carefully managed and monitored.
 - 6.1. Projecting and developing a needs plan
 - 6.2. Mobilizing our industry to start production of healthcare items needed to cope with the situation (protective gear, masks, ventilators medical supplies etc.)
 - 6.2.1. Contracting and financing this effort on a fast track
 - 6.3. Medical readiness with necessary training and incentives, and safety of the medical staff

All Wars are Fought Locally

1. Clearly the public health provision and the social support required will be local. The local authorities –political and administrative- must be galvanized and strengthened. As far as possible the effort, especially testing and delivering public health, must be decentralized. Local hospitals (including BHUs and THQs) and administrations must be mobilized. Going to district hospitals or tertiary hospitals must be discouraged.
2. The local levels must send daily reports on:
 - 1.1.1. Their implementation: testing, supplies, health care, quality,
 - 1.1.2. Needs, and identification of the vulnerable
 - 1.1.3. Law and order
 - 1.1.4. Economic activities
 - 1.1.5. Feedback on the strategy and plan, and possible ideas for tweaking the strategy and plan to make them more relevant and efficient
3. Local information will have to be collated and analyzed at various levels very quickly to keep the **SR** in real time. For this perhaps several **SRs** will have to be replicated at the district and provincial level.

Information Flows and a Portal

As argued above, information flows will create confidence as well as galvanize the nation. For this reason, the **SR** should accept that the people must be taken into confidence.

1. Let all plan policies be prepared by teams of technical experts but not necessarily in big unproductive meetings. Let policies and plans be prepared by small groups but debated widely.
2. An **Official COVID Portal** should be the trusted source of all things linked to COVID. Let all information plan and all real time data show up there.
3. Let us have live shows on this portal and in collaboration with PTV to highlight several key issues and themes to educate people and rally and lead them against the virus.
4. Real time information after clearance from the **SR** should be shown on the Portal and discussed by experts on the show. In particular, the following must be shown to all:
 - 4.1. Geographic spread of virus
 - 4.2. Testing and what follows after
 - 4.3. Quarantine and treatment
 - 4.4. Networks of people tested and how they are moving
5. Government can also think of getting public celebrities to be ambassadors for combatting COVID and help push key messages daily on the portal.

Evolving the Plan and Strategy

As this system begins to gel on a war footing, information flows will naturally evolve the strategy to emerging needs. As we learn more strategies, plans can be changed. Local implementation teams as they feel empowered can send practical ideas to make procedures better.

This is a fluid situation requiring a fluid response. The organizational plan suggested here is an evolving plan which will allow learning and evolution.

A TEMPLATE TO MONITOR THE IMPACT OF COVID-19 ON PAKISTAN'S ECONOMY

MUHAMMAD NASIR AND NASEEM FARAZ

The corona pandemic has brought us close to a global recession. Government of Pakistan should start to seriously assess the economic situation.

We have compiled a template for monitoring this impact over the coming days, weeks and months, till this crisis is over. The template identifies the sectors/industry that could potentially be affected. In addition, we also provide the mechanisms involved in the process, and the indicators that can be used to monitor and gauge the impact. We may add here that it is not an exhaustive list and we will keep updating it as the situation evolves.

Two Things Need to be Done Periodically for Each Sector/Industry

Actual Loss: Calculate the loss that has already been borne by using data obtained from the affected sectors.

Scenario Analysis: Since the country is just beginning to experience major losses in different sectors, scenario analysis may give us some idea of the potential loss to the economy. For instance, identify the share of each sector in the economy and then using elasticities and other parameters, we can estimate the loss for different scenarios in each sector.

The Template

The given template identifies the sectors/industry that could potentially be affected. In addition, the mechanisms through which they would be affected are also provided. The third column gives the indicators needed to gauge this impact.

Sector/Industry	Mechanisms	Indicators
Health and economic cost	<ul style="list-style-type: none"> • Testing huge number of people for COVID-19 • Treatment cost including medicines, doctors and para medical staff, establishing and expanding health infrastructure • Mortality: morbidity and low worker productivity resulting to fall in production 	<ul style="list-style-type: none"> • Total number of hospitals (DHQ, THQ etc.) with in each district • Number of beds in each hospital • Number of ICU beds in each hospital • Number of doctors and paramedical staff in each hospital • Number of outpatients and inpatients treated in each hospital • Average cost of testing a patient for COVID-19 • Average cost of treating a patient for COVID-19
Manufacturing	<ul style="list-style-type: none"> • Reduction in supply of inputs which is required to produce goods • Reduction in demand for goods due to lockdown situations • Reduction in export demand in in COVID-19 affected countries as well as non-affected due to potential threat of virus exposure. 	<ul style="list-style-type: none"> • Sector-wise manufacturing output • Sectors contribution in GDP • Export-Imports contribution in Sectors output • Labor and capital and intermediate material inputs

Aviation	<ul style="list-style-type: none"> • Cancellation of flights of national airline to different countries such as China, Saudi Arabia etc. • Revenue lost due to cancellation of flights from foreign airlines 	<ul style="list-style-type: none"> • Total number of flights for each destination per week by national airlines • Number of cancelled flights for each destination due to COVID-19 • Average loss of revenue per flight per destination to national airlines • Number of cancelled flights from each destination by foreign airlines • Average loss of revenue per flight per destination by foreign airlines
Energy Markets	<ul style="list-style-type: none"> • Reduction in oil and diesel prices • Reduction in demand for the oil products 	<ul style="list-style-type: none"> • Crude oil prices (per barrel) • Oil imports volume (barrels) • Diesel prices (per barrel) • Diesel imports volume (barrels)
Ocean/Cargo/ International Road Transport	<ul style="list-style-type: none"> • Reduction in ocean container shipping • Reduction in port traffic 	<ul style="list-style-type: none"> • No of vessels on the port (In-bound and outbound) • Average ship traffic delays (in days) • Loss of revenue per port per vessels due to decrease port traffic
Tourism	<ul style="list-style-type: none"> • Reduction in number of international tourists • Expected drop in domestic tourism at least in the coming summer 	<ul style="list-style-type: none"> • Country-wise total number tourist arrivals in Pakistan • Country-wise average spending per tourist • Volume of domestic tourism in the country
Trade	<ul style="list-style-type: none"> • Reduction in export orders from COVID-19 affected countries as well as non-affected due to potential threat of virus exposure. • Also, reduction in imported items used in export sector would also reduce export (GVC channel) 	<ul style="list-style-type: none"> • No of export & import orders destination and product wise • No of export transactions • No of import transactions • Destination-wise and sector wise export volume • Destination-wise and sector wise import volume • Imports of intermediate (in Rupees/US\$) • Data on GVCs export volume • What are the expectations regarding exports and imports in coming months? • What are the pre-emptive measures?

Domestic Investment and FDI	<ul style="list-style-type: none"> • Lower consumer spending and low confidence in the economy could reduce both domestic and foreign direct investment 	<ul style="list-style-type: none"> • FDI sector wise • New FDI contracts • Loans/credit for private investment, sector-wise • What are the expectations regarding flow of investment (including FDI) in the coming months? • Are you taking any pre-emptive measures? If yes, please list.
Retail	<ul style="list-style-type: none"> • Reduced local demand due to closure of outlets under lockdown • Reduction in demand due to decrease in incomes resulting from job losses 	<ul style="list-style-type: none"> • Sales per district and city
Entertainment and hospitality	<ul style="list-style-type: none"> • Restaurants, festivals, parks, movie theaters, sports etc. 	<ul style="list-style-type: none"> • Total number of restaurants, parks, movie theater (district wise) • Sales of these restaurants, parks, movie theaters
Agriculture	<ul style="list-style-type: none"> • Reduced demand for cotton due to drop in textile sector • Changes in crops pattern due to change in local and international demand 	<ul style="list-style-type: none"> • Data on production of different crops
Stock market	<ul style="list-style-type: none"> • Drop in stock prices • Effect on banking sector 	<ul style="list-style-type: none"> • Bank Deposits • Loans to Private sector • PXS 100 index • Travel companies' shares • Trading in shares of banks • Average Share prices sector wise • Average rate of return sector wise
Donor grants/aid	<ul style="list-style-type: none"> • Negotiation with donor agencies to fight with COVID-19 • Increase in AID to control /minimize the spread 	<ul style="list-style-type: none"> • Negotiation with donors, • Donor wise grants and aid volume (in US\$) • New contracts with donors • What are your expectations regarding grants/Aid in coming months?
Education and other related institutes	<ul style="list-style-type: none"> • Closures of educational institutions and related facilities such as transport 	<ul style="list-style-type: none"> • Number of public and private educational institutes (universities/ colleges/schools) in each district • Number of other government offices in each district

Remittances

- Drop in oil prices due to reduced internal travel and slowing down of Chinese economy will affect the MENA economies. Similarly, economic slowdown will also occur in other developed countries where Pakistani diaspora lives. Consequently, Pakistani workers abroad may become jobless resulting in the fall in the flow of remittances.
- Number of Pakistani workers in major corridors
- Volume of remittances from major corridors

THE CORONA WAR: FUNDING THE AFFECTED AND MECHANISMS TO REACH THEM

NADEEM UL HAQUE AND NASIR IQBAL

Learning about the *Corona War*: Previous PIDE COVID-19 Bulletins

- **Bulletin 1:** Poverty will increase from 55 million people to 125 million people, depending on the depth of the economic recession due to COVID-19.
- **Bulletin 2:** Lockdown is necessary and how to do it. Partial lockdown is happening now and is likely to cause large unemployment, perhaps 20 million plus jobs could be lost in agriculture, fishing, manufacturing, construction, wholesale dealers, transport, education and street vending.
- **Bulletin 3:** Detailed a framework for a cost-effective and quality quarantine policy.
- **Bulletin 4:** Estimated the impact of different lockdown scenarios, disaggregated by the various sectors of the economy. Rising poverty and unemployment, feared to be around 19 million, posing huge implications for the poor and vulnerable segments of the society.
- **Bulletin 5:** The *Corona War* must be taken seriously, and the nation organized and mobilized for it. The Bulletin presented ideas for how to organize for this *war* to allow maximum local action while using information to manage and evolve a strategy centrally. Rallying the troops as well as evolving and tweaking a grand strategy.
- **Bulletin 6:** Developed a template for collecting information from various ministries and levels of government to monitor the impact of the COVID-19 outbreak on economy. This information if systematically collected would allow the *Situation Room* led by the PM to have the information necessary to learn about developments and keep the overall strategy and local battles coherent and integrated.

Earlier (see box) we have provided assessments of the economy, lockdown and many other issues pertaining to the ongoing *Corona War*.

To support the poor segments of society, the government of Pakistan has announced to provide monthly cash stipend of Rs. 3000 to labourers for the next four months by making an allocation of Rs. 200 billion. As recommended in the PIDE COVID-19 Bulletin No.1, this is equivalent to BISP providing 10 million poor families through unconditional cash transfers of Rs. 3000 per month.

This current Bulletin builds on these government announcements to propose key interventions, targeting mechanism, verification protocol and disbursement process.

BISP and the Latest Government Package

Government has announced Rs. 3000 as unconditional cash transfers to ultra-poor. The 4.5 million ultra-poor who are covered by BISP, at this rate would require about 13.5 billion rupees a year. Our estimates suggest we would need to cover about 10-12 million families, that is about 75 million people (our medium scenario). Let us take the case of 10 million families. This is roughly the figure if we increase the poverty scorecard cut-off from the current 16.17 to 25. With a target of 10 million families, we think will include:

1. A large part of the informal labour market and even some of those in the formal that may need help.
2. An additional support to pensioners whose income (pension) is close to the minimum wage. Rs. 3000 per month may be disbursed along with the standard pension for next three months.
3. All health card holders should also be considered for cash assistance other than BISP beneficiaries.
4. Transgenders, who have a registered number of around 15000 individuals.

BISP has spent about 60 billion so far, as noted by the Finance Adviser on TV last night. If 10 million families are to be covered with Rs. 3000 a month in the coming 4 months, BISP already has funds for 4 months, that is till July. It will, therefore, be able to provide funds till the new budget. But the question remains, is Rs. 3000 enough?

Further Needs

Clearly, we must be prepared for additional needs bearing in mind the kind of funds that will be required.

1. Our estimates show that there would be people who will possibly need additional support, say they are around 5.5 million of those who might face a loss of a secure income. For these 5.5 million, if the state thinks of giving some additional stipend, we should note that for each supplementary Rs.1000 per beneficiary that is planned, an additional 5.5 billion rupees will be required per month.
2. In addition, the issue of unpaid bills for these people must be considered. If we take the electricity users below 50 kwh (the lifeline users) a month, the estimate is about 3.5 billion a month. A similar calculation for gas for the lowest users, i.e., a bill of Rs. 300 a month, would amount to roughly about one billion a month. However, this can be narrowed down further by the utility companies by doing some analysis discriminating the really poor. Our estimate should, therefore, be about rupees 0.5 billion for gas. It seems that some 4 billion rupees would be required for this subsidy. If not covered, this will go into the circular debt. To the extent that it can be recovered later, the circular debt can be reduced.
3. Perhaps the most important element going forward will be to keep a good handle on the needs of the health system, as well as family needs, as the virus runs its course. We will develop an analysis of this in a *forthcoming Bulletin*.

Targeting Mechanism

Various targeting options should be used to ensure universal disbursement to all deserving families. The BISP database is old and has coverage flaws. In any case the current situation will render several people who are not currently registered into a situation requiring help. **To provide help, we have to use a heterodox approach.** We cannot wait to update our databases or treat this as a research project. There are several databases that will need to be linked. But information collection at the grassroots will have to be done by the administration.

For the BISP databases, some methods can be suggested.

- i. **National Socio-Economic Registry (NSER):** BISP can include an additional 5.5 million families, along with the existing 4.5 million, for an unconditional cash transfers using NSER data by increasing the PMT up to a score of 25 from the existing cut-off score of 16.17.

- ii. **Desk Based Enrolment:** BISP Tehsil offices should be used to allow people who were missed in the NSER 2010-11 to register for financial support. This helps to minimize the exclusion error. BISP may launch an online portal for self-registration to minimize the risk of epidemic spread. Respondents could be asked to use registered mobile SIMs for data entry as it would provide quick cross verification and ease in cash disbursement. NADRA database should be used to check family trees to avoid duplicate payments.
- iii. **Cash Assistance under Poverty Transition:** The new NSER (conducted in 2017-18) in pilot districts show that around 30% families fell below the poverty line which were previously above the cut-off score. BISP should, therefore, relax the policy of targeting based on PMT (proxy mean test) to allow these people to use self-enrolment or desk base registration to seek cash assistance. New NSER data can be used to identify newly deserving people without excluding the existing families.
- iv. **Enrolment of Pensioners:** Pensioners are already getting payment through the banking channel. Government can easily target these people using pension disbursement data. These people should be reconciled with NADRA and BISP data to avoid duplication.
- v. **Identification of Low Income Informal Employees:** NSER data should also be used to identify the informal and daily-wage earners. BISP should extend benefits to all daily-wage earners without imposing the PMT condition at least for one quarter. Global think-tanks also propose similar approaches to provide urgent support to the vulnerable and poor segments of the society.
- vi. **Health card holder:** BISP can extend the cash assistance to all health card holders by using validated data from provinces.

During floods and other disasters, our administration did a good job of taking care of the vulnerable. The donors' disaster needs assessments have all been made by our administrative system that has a long reach even at the community level. It is time to use this administrative structure to develop the information flow on the needs at the community level.

In addition, our politicians are also fairly well embedded in their constituencies. They can also supplement the administrative data to identify the poor. The data coming out of these diverse sources can be consolidated with NADRA by the PM data office to develop reliable data for assistance provision. Needless to say, this will be a very useful exercise even beyond the current crisis.

Registration and Verification protocol

Telecommunication and our CNIC systems could help in the development of the database of those requiring assistance.

1. A central office could launch a mobile-based application to check the eligibility status of a potential beneficiary using the CNIC and mobile numbers, cross-checked by government databases such BISP and Bait-ul-Maal.
2. Tehsil offices should be mobilized to disseminate information and start the registration process.
3. A message through mobile ringtone may be used to disseminate information for self-enrolment to the eligible people on their registered numbers.
4. Various digital sources, including NADRA, banks and the NSER data, can be used to verify beneficiaries and avoid duplication.

Disbursement Process

BISP should exempt the biometric verification and make payments directly to e-account of the beneficiaries. This helps avoid any spread of COVID-19 due to physical mobility.

A Corona Fund for the Corona War

It is time to initiate a Corona Fund for Pakistan (CSP) by the Government of Pakistan. This can be a place where all Pakistanis especially the expatriates can contribute. International foundations too can be approached for this fund. We will try to work on the parameters of this fund going forward. Our embassies should be mobilized to raise contributions to the CSP.

TIME TO GET THE PHARMACEUTICAL INDUSTRY POLICIES RIGHT

SHAHID MEHMOOD

While the outbreak of the Coronavirus has brought to fore what was already well-known, i.e. a dilapidated health infrastructure, a particularly important aspect of the debate remains lesser discussed— Pakistan’s pharmaceutical industry. Given the lack of masks, ventilators, medicines, and personal protective equipment (PPE) in the current crisis, the deficiencies in the industry are becoming visible. By now, desperate circumstances have produced some measure of response, with a domestic start-up (Ventilate) claiming to produce low-cost ventilators, and another group (PAC-V) using 3D printing to print necessary medical and safety equipment.

But all this should invite an even more important question: why did all this happen in the presence of an industry that has over 700 listed firms?

Magnitude of Pharmaceutical Industry in Pakistan

Pakistan has an estimated population of 220 million, which is projected to cross 300 million by 2050. Its population carries a high Burden of Disease (BoD), affected by hepatitis, tuberculosis, dengue, malaria, polio, and several water-borne diseases. Such a large population with a substantial disease burden should be a gold mine for pharmaceutical firms, especially the large Multinational Companies (MNCs). In the year 2000, there were around 40 pharmaceutical MNCs operating in Pakistan. Now, there are only a few. Even these have invested away from manufacturing medicines to consumer products (like childcare products). Same is true of leading domestic brands.

Despite the presence of all these firms, medicine shortages are common, many of them being lifesaving. Out of the approximately 70,000 registered drugs, Pakistan’s pharmaceutical industry produces hardly 10,000¹. It should, therefore, not come as a surprise if a certain drug is found to be effective against Coronavirus, and it is found to be short in Pakistan. Despite the 700 firms and its infrastructure, why do we still have to wait for supplies from China and other countries?

Counter-intuitive Policies

A large part of the explanation resides with the lack of ‘price incentive’. In a market economy, prices act as signals to producers, and resources are allocated accordingly. Now consider the fact that from the year 2000 to 2013, prices of medicines were not allowed to increase under a ‘price freeze’ policy. Meanwhile, during this time, the cost of production increased multiple times.

Misguided by the notion that prize freezes would be beneficial for the people, especially the poor, this policy ended up driving out the leading MNCs and have resulted in persistent medicine shortages over the years. Even the leading domestic manufacturers have discontinued producing critically required medicines. Although domestic manufacturers have replaced the MNCs, the latter offered more than just drug manufacturing: larger investment base, relative ease in technology transfer from its parent country, quality and extensive capacity upgrades.

The regressive nature of the price freeze policy can be gauged by the fact that it redistributed a substantial portion of profits away from the manufacturers to other parties. For example, importers of drugs made merry, taking advantage of persistent medicine shortages over the years to import and sell drugs at considerably higher prices. Thus, a policy that was supposed to help the poor ended up being a major source of misery for them and the industry, eroding its productive base². Understandably, firms will not produce those drugs having

1 They are registered with the federal Drug Regulatory Authority of Pakistan (DRAP).

2 Pharmaceutical Industry Report, PRIME Institute.

sales that cannot cover their cost of production. In 2017, out of the 100 anti-cancer drugs being manufactured globally, none was being manufactured in Pakistan, and 60 out of that 100 were not available in the country. Similarly, requests for registration of anti-cancer drugs remain unapproved since 2009. It is believed that the drug price freeze policy causes a yearly loss of 112 billion rupees.

Some other policies also defy logic. For example, 95 percent of the raw material for industrial production is imported, mainly from India and China. Last year, without consulting pharmaceutical industry, a complete ban was put on imports from India in the wake of the Pulwama incidence, which was then hurriedly relaxed when a severe shortage of critical medicine took place. At the provincial level, despite overall signs of improvement, some policies make it difficult to support the industry. For example, Punjab's deregulation policy implies that suppliers must negotiate separately with every district's health department in terms of supplying drugs, resulting in drug shortages.

There have been some initiatives taken in the last few years to get the policy on track. For example, reference pricing is now used instead of cost-plus pricing, and provinces have the authority to have their own rules for buying medicines.

Lack of Research and Innovation in the Industry

Pakistan's pharmaceutical industry basically manufactures 'generic' drugs, with none being 'originator' brands³. It is not as if pharmaceutical firms in Pakistan are ill-equipped to do their own research. In fact, top 50 firms possess a very good infrastructure to compete with global brands⁴.

Several government policies militate against such R&D activities. Research into a New Chemical Entity (NCE), i.e., full cost of a single new drug development, can range anywhere between US\$350 million to US\$1,395 million, depending upon the type of drug being developed and its intended coverage. But a market pricing mechanism, or a negotiated price (with government) plus a patent for a certain time helps developers recoup the cost. This kind of mechanism, of course, is completely absent in Pakistan. There is an emphasis on publicly administered pricing, with absolutely no patent protection mechanism. Unlike a machine for example, the formula of a drug is written on the back of the pack containing the drug, thus, can be easily copied by others. For a firm that intends to invest such a large amount in R&D, absence of patents and property rights is a huge disincentive.

Another reason, which sounds quite odd, is that the federal government took it upon themselves to do R&D. The Drug Act of 1976 obligated all pharma companies to deposit one percent of their gross revenues to the government for the purpose of R&D and building complementary infrastructure. Since 1976, billions of rupees have been collected under this head, with not a single FDA or WHO approved laboratory in Pakistan. Government officials acknowledge that billions of rupees were collected under this head but remain tight-lipped about its utilization⁵. Pharmaceutical manufacturers state that since the government has taken upon itself to conduct R&D on the money they are paying, the industry has no reason to do it.

Similarly, some other policies are not conducive to the aim of technological infusion for production purposes. For example, the import of 3D printers is banned in Pakistan, while 3D printers are being increasingly utilized by the pharmaceutical giants to improve drug quality and shorten drug trial duration.

Little Capacity to Enforce Regulation

Even if government were to come up with the right set of policies, a formidable challenge will remain on the implementation side since the enforcers in the form of drug inspectors are few (49 federal drug inspectors in total, with provinces having their own), and there are substantial question marks over their quality and ethical standards. The result of these shortcomings is that practices like selling medicines with fake labels, unregistered medical stores and substandard medicines are common in Pakistan, endangering the lives of the consumers.

3 Generic' brands are basically local copies of drugs, while 'originator' drugs, as the name suggest, constitute the original drug produced by primary producer.

4 Op. cit.

5 Op. cit.

What Needs to Be Done

COVID-19 pandemic only serves to remind us of the urgent need for course correction in terms of finding solutions to pharmaceutical industry's problems. The following are a few suggestions in this regard:

- a) Recognize the price motive/commercial basis of the industry and refrain from administering prices as per populist wishes.
- b) Focus efforts upon expanding the capacity to properly administer laws and regulations at both federal and provincial levels. Revisit regulations that act as disincentives, and concentrate upon improving quality, availability and coverage of drug inspectors.
- c) Sensitize the media about why prices are essential to the survival of the industry, quality and availability of medicines and in bringing investment to Pakistan.
- d) The pharmaceutical industry, the Pharmaceutical Bureau (PB) and the Pakistan Pharmaceutical Manufacturers Association (PPMA), must point out those manufacturers among them who indulge in unethical practices (smuggling, hoarding, manufacturing sub-standard medicines or mislabeling drugs) to the authorities in order to ensure quality.
- e) Put an end to predatory practices, like extracting money equivalent to 1% of the gross sales from pharmaceutical firms in the name of R&D. Let the task of R&D be handled by the firms themselves, while policy-makers simply ensure a fair competition between them which would improve pricing and quality.

The COVID-19 outbreak showed how fractured our whole pharmaceutical system is. It is about time we fix all its aspects, including policies, products, processes, resources and their interactions within the broader health system.

CORONA WAR: HETERODOX SOLUTION BASED ON AGGRESSIVE TESTING¹ *MADEEHA GOHAR QUREISHI*

In the *PIDE COVID-19 Bulletin No. 2*, we supported a policy of lockdown in a phased way as per its geographical intensification. Lockdown was suggested as the most effective policy response for two reasons. Firstly, to break the chain of epidemic spread. And secondly, as per PIDE's analysis, lockdown if successful in stopping epidemic at an early stage was considered to have much less economic cost instead of a policy of slowing down the economy.

We also feel that the Prime Minister's hesitation for a lockdown is understandable for two reasons.

1. The biggest issue is that of logistics. How to get food and daily necessities to people behind the lockdown especially as we know that few in our cities have the means to store food for any reasonable duration.
2. Most cities are zoned and planned for populations that are far below the actual numbers in them². This forces people to either crowd into insanitary old establishments or set themselves up in crowded informal settlements. Given the extent of crowding, thanks to poor planning, social distancing in these areas will mean little.

¹ This Bulletin is based on the discussions held on the Online PIDE COVID-19 Forum having experts from all backgrounds relevant to dealing with the pandemic. We are specifically thankful to Dr. Samia Altaf –a leading preventive medicine and public health specialist, for her inputs. Thanks are also due to Mr. Taimur Malik, Director Digital Transformation, SAP, and Mr Rafi Haffar – a management consultant, who is involved in implementing web-based tools in the Middle East for the management and containment of the pandemic in the region.

² <https://pide.org.pk/pdf/Policy-Viewpoint-12.pdf>

So, let us think of a more heterodox solution to minimise losses.

Decentralise Testing and Treatment

Pakistan has done very little testing: 13,000 to date (*see PIDE COVID-19 Dashboard*). Given the shortage of kits and the resources to get them, it is understandable.

So, an alternative to a complete lockdown would be to scale up testing. For that we must obtain tests and see if more tests can be made locally by our 700 or so pharmaceutical manufacturers (*see PIDE COVID-19 Bulletin No. 8*).

It is important to disperse testing and treatment widely so that pressure on large cities is alleviated. This is crucial for the following reasons:

- As much as possible areas, especially cities, need to be isolated for a while so that the speed of the spread can be slowed.
- Tertiary health care system in Pakistan does not have the depth to handle such a massive inflow of patients, and one which is increasing exponentially.
- Given the shortage of medical resources (human and physical), there will at some point arise an issue of distributive justice for doctors making them the judge of who to treat and who not to.
- With the explosion of the number of patients, it is a possibility that the medical staff will become overwhelmed and shun duty, given they are working with limited resources and also with a minimal protective environment.
- There is a limit to which the tertiary healthcare units can take load of patients. Mobilising sub-national health systems at the district, tehsil and even lower levels, like the BHUs, holds significance.

While of course we need to import equipment such as tests and ventilators, we also need to worry about how and where they are used. Getting the crucial equipment and then placing it in a decentralised fashion is critical, so that no system is overwhelmed and patient movement is minimised.

In passing we might also mention that operating a ventilator is a scarce skill which policymakers must bear in mind. This capacity cannot be created immediately. Estimates suggest that 15% of those infected will need hospitalisation, and of these 5% would be needing ventilators³.

We need these ventilators, and more importantly, the capacity to operate them. But we must also must strategise their placement as our big hospitals could be inundated.

Lack of Social Distancing Stresses the Need for Testing

What worked in China would not necessarily work in Pakistan. Policies of voluntary social distancing have not worked well in the country, while they were instrumental in countering the COVID-19 outbreak in China. Voluntary social distancing would not work in Pakistan, apart from the sociocultural and religious reasons, because of the living conditions as noted above.

Poor to lower-middle income households in Pakistan have:

- i. High average family size living in crowded conditions. In case of exposure, they will not have space to isolate within the housing unit.
- ii. Cultural aspects within poor communities are such that in the face of illness rather than isolation, friends and relatives gather around the patient.

Lack of complete lockdown, for its economic consequences, and the reluctance to observe voluntary social distancing leaves us with no option but to increase testing if we want to have any chance of containing the outbreak.

Testing, Technology and Isolation

3 Via interactions with Dr. Samia Altaf.

In the *PIDE COVID-19 Bulletin No. 3*, we outlined the framework for the quarantine policy in the country. To take that further we suggest:

1. Test. This is primarily how South Korea has contained the spread.
2. Mobile companies that we talked to have data on geo-locations and movements. With any positive tests they can quickly locate the contact network of the positive test. That tracking can identify people for tests as well as locations that may require isolation. Extensive use of geo-tracking, via cellular data, can guide testing and isolation policy.
3. Those testing positive should be isolated, in quarantines or homes, depending on the degree of illness and the resources available at hand. *PIDE COVID-19 Bulletin No. 3* also details how quarantines can be phased out.
4. Testing needs to be taken to the doorsteps of people via their reported phone numbers and geo-tracking.

Identifying people at an early stage of infection and then isolating them is the best way forward. Where Pakistan is now on the outbreak trajectory, even a lockdown without scaling up screening is not going to work. Testing sure needs resources but would save a lot of lives, potential pressure on the healthcare system and stress on the personal and national economy.

WHAT DO CONFIRMED NUMBERS TELL US?

USING AN ADAPTED SEIR MODEL FOR ESTIMATION OF COVID-19 IN PAKISTAN

AMIN HUSSAIN

Bulletin Series Editors' Note: The current Bulletin presents estimates for those affected by the coronavirus pandemic in Pakistan. The estimates are based on a well-established model (SEIR), but given the small number of available data points, these numbers should be treated with caution for now. The model would be updated/revised as more data become available with time.

Since the model involves a lot of technical work, for the sake of transparency, the complete paper is also available on the PIDE website in the PIDE COVID-19 Archives section.

This Bulletin, and the paper, should also help understand the figures presented in the PIDE COVID-19 Dashboard on our website.

While the government publishes daily numbers of confirmed COVID-19 cases, it's understood that these obviously do not reflect the exact total number of people infected by the virus to date. This is primarily because tests are reserved for people who are 'suspected' to be infected by the virus. This means that many people who have been exposed to the virus may not be tested because they have yet to show symptoms.

We know that many carriers of the SARS-CoV-2 virus have a period of time where they are asymptomatic. In the initial stages of this period, they are not yet infectious but later they become asymptomatic carriers. These are the people likely to be missed in the count if testing is targeted only towards symptomatic cases.

We are working on developing a model to try and estimate the actual numbers using the official numbers published every day.

Many countries that have to ration test kits will do so by targeting only people with symptoms (and possibly a travel history). This raises an interesting problem in terms of estimating the actual number of infected people at any time, given that we only know the confirmed cases. We need actual numbers if we are to project the course of this infection and plan accordingly.

Furthermore, individuals who test positive are likely to be quarantined. This will have some impact on the dynamics of the contagion in the population and makes our estimation problem more intriguing.

What is SEIR?

The basic model used for understanding the course of an infection in a population is the SEIR model. The standard *SEIR* assumes all people in the population are in one of four states – (*S*)usceptible, (*E*)xposed, (*I*)nfected or (*R*)emoved.

S= *Susceptible*- Population that is in the susceptible state,

E= *Exposed*- Those who have come into contact with infected. they are carrying the virus, but not yet infecting anyone else.

I=*Infected*- After a period of exposure they get infected and can infect others. They are now actively infecting other people.

R= *Removed*, either cured or dead.

So, a small number of Infected people come into contact with *Susceptible* people who are then moved to *Exposed* and the infection begins to grow. The numbers of *infected* people begin to accelerate initially as more and more infected people are around to infect other susceptible people around them. It slows down later when most infected people are just interacting with other *Infected* people and rarely come into contact with *Susceptible* ones. How quickly *Susceptible* people are transferred to the Exposed stage depends, among other things, on the *transmission rate*, which is the product of the contact rate and the probability of transmission given contact.

From there on, a series of equations tells us what proportion of the population is in each of the four stages, based on how long each individual stays in each stage. So, for example, if the period of time spent Exposed is very short and the duration of infection is long, then more and more people will start to accumulate in the Infected state. If the exposed state was also longer then people would enter the Infectious state more gradually.

Some proportion of the Removed cases will have recovered and presumed to have developed an immunity (at least temporarily) from the infection, while some portion of them will die. Mortality rates can be fed into these equations as some proportion of the Removed cases. This is where it is important to know how fatalities are being calculated in an SEIR models because they will be affected by various factors – for one, the entire population may not end up being infected. Or the model may not take into account the degradation in medical services with high number of infections.

A good explanation of such models can be found at:

<https://www.tandfonline.com/doi/full/10.1080/23737867.2018.1509026>.

It is on this base that further models are developed, with additions for particular cases. We have attempted to do the same in Pakistan to answer the question about the relationship between confirmed cases and actual cases.

SEIR in Pakistan

For a naive estimate of how far along the infection we are and how it is going to progress, we could simply assume that the confirmed cases are the number of infected people. Feeding this into the model should tell us how many people to expect the next day and so on.

However, this misses some important aspects. Firstly, it misses the fact that people are asymptomatic carriers for a considerable period of time. Thus, official numbers are going to be missing infected people and furthermore, are going to miscalculate how many more infected people are going to appear the next day. In fact, not even all people who show symptoms are going to be tested. Thus, there is going to be some probability that an infected person does actually get tested.

Secondly, we seem to have a system where anybody who tests positive is put into quarantine. Thus, this per-

son is infected, but is not causing any more infections until he moves to Removed.

Finally, for several days at the start of the infection, we weren't dealing with a fixed population of people. Individuals at each stage S, E, I and R were entering the country until international flights were banned.

Thus, we made the following modifications to the model. We now assume that people in the Infected stage do not show symptoms for several days. So the Infected individuals who have been identified as infected are now moved to the quarantine. During this time, they are not infecting others. We also allow for E and I individuals entering the country for some days before flights were suspended.

We then try to use this in conjunction with actual numbers to try and estimate the rate of testing in the country, and the rate of transmission. This should tell us how far along we are in the progress of the infection and what we should expect next.

How do Testing and Transmission Rates Affect Confirmed Cases?

As explained earlier, transmission rates basically affects how quickly one infected person infects those around him. A high transmission rate would thus automatically imply a rapid increase of infection in the population.

On the other hand, suppose we see the number of confirmed cases rising quickly, what does that mean?

How we interpret a rapid increase could depend on what proportion of infected people we think are being tested. If a very large proportion of infected people was being tested then a rapid increase may not be such as bad - it would mean that infected people are being rapidly identified and quarantined, potentially slowing down the infection.

On the other hand, if we think that testing is low, then high rates of increase mean that the actual numbers are much larger than being identified and quarantined and we can expect the infection to progress rapidly.

However, we also have one other measure at our disposal that may help identify which of the two scenarios it is – the number of fatalities. After all, given a certain mortality rate, which we know to be around 1% for Covid-19, if we see a small number of fatalities, we may be more inclined to believe that it is the first case and not the second one.

Initial Estimation

Using the adapted SEIR model described above and parameters for the Covid-19 virus that are being shared from different studies, we can estimate what the numbers of people in each of the five states – S,E,I,Q,R – should be at this stage in time, along with how many fatalities we should expect.

Further, from the status of official numbers of reports and fatalities on 27th March (the current number of actual positive cases is 1235, and number of deaths is 9), we vary the values of the testing and transmission to see which ones are most likely to produce the real world situation. Using this technique, we can get some rough idea of what the actual situation might be.

Mortality Numbers

There is an important question on the mortality rates being used by the government in terms of how well hospitals are equipped to identify cases of COVID-19 as cause of death. Thus, we can take two approaches to how we interpret the numbers of people dead:

- A. We can consider them to be the actual total number of people who have died
- B. We can assume that they are the number of people who have died after they were identified and quarantined.

Obviously, this means that, from the options given above, A would be higher than B at all times.

The following diagram shows the estimates for the transmission and testing that are likely/unlikely to have produced the real world numbers.

		Testing								
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Transmission	0.1									
	0.2									
	0.3									
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									

The values in red show all the parameter values we have eliminated as being too unlikely for given the Pakistani numbers as they are coming out. The green values are the ones that seem likely given what is happening (see attached research document). Thus, it appears that the transmission rate is somewhere between 0.4 and 0.7. Apart from one case, we can see that the testing/quarantine rates are fairly high so far ().

This shows that while the transmission rate of Covid-19 is on the high side (as we know), the testing and quarantine rates also seem to be on the high side. This result relies, of course, on the validity of actual government numbers. At high transmission rates, we also see a lower gap between A and B, suggesting that there is reason to believe that official death toll is in accordance with the model.

Obviously, we are dealing with smaller numbers and stochastic processes modelled as deterministic ones, so there is a high chance of error in this model. However, combining confirmed cases to death rates does provide some insight into the underlying picture.

Next, we run simulations using some of these predicted parameters to try and estimate the actual rate of infection and the probable course these figures will take in the coming days. we will be commenting on four of them.

We have estimates for Quarantined/Tested, mortality scenarios A and B, Actual Infected, and Recovered. We have not used the Recovered statistics provided by the government for any estimation, because they only refer to confirmed cases and when the Government actually deems someone “recovered” may be varied. While deaths may also only refer to confirmed cases, they are far less likely to be missed or subjective. Also, for individuals with mild to no symptoms (a vast majority), many will have recovered without anyone knowing.

Forecasts – Two Scenarios

Analysis done at Day 32 from the first confirmed case. Given that the individual had travelled from Iran several days prior, it is difficult to estimate exactly when he got infected or when he switched from being Exposed to Infected.

When looking at forecasts for deaths it is important to understand how mortality in this (and other SEIR models) is calculated. The assumption in an SEIR model is that the entire population is going to eventually be infected. The real questions are on the rate of infection. For the number of deaths, here we simply multiply the number of people who have passed through the infection by a fixed mortality factor. This factor can obviously be tweaked and even endogenized, but for now it is at 1 percent.

We now look at two of the possible scenarios suggested by our results, by looking at projections of the first 100 days of infection. This is a qualitative exercise to understand what our results may be saying about the future progression of CoV-19 in Pakistan.

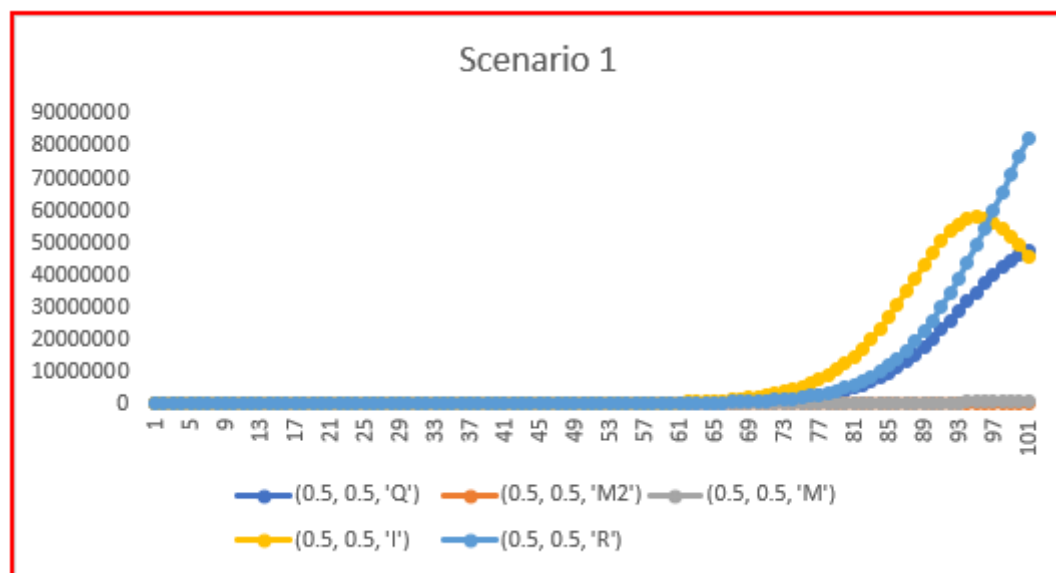
Scenario 1 (mid- level transmission and testing)

The last case we consider is the one where our model leads the real-world data slightly. It could imply that the infection had started a few days before the actual confirmed case. So, on Day 36 and Day 37 of the infection, we see that between 1194 and 1445 positive tests, the undiagnosed infection numbers are approximately in the 3800 to 4600 range.

Day	Quarantine (Tested)	Deaths (B)	Deaths (A)	Actual Infect- ed(I)	Recovered (R)
36	1194.902	7.086651	14.1733	3849.26	1417.33
37	1445.385	8.570228	17.14046	4657.458	1714.046

As seen below, with this transmission rate the cycle will not be completed within 100 days. The fact that transmission is low and there is a reasonable rate of testing, we can see that the spread of infection is delayed. Another important thing to note, is that the official numbers would continue to increase even when the infection had peaked and was on the decline. This is because of the lag in the appearance of symptoms.

Scenario 2 (high transmission and low testing)



We now consider a scenario where the transmission rate is very high and the testing rate is relatively low. This case seems less likely as it implies that real world data is leading the model i.e. the model is predicting the current numbers at a faster rate than they are actually occurring.

Also, it points to a much higher mortality rate than currently exists (if deaths are not going unrecorded).

It is still worthwhile to consider this scenario as well, though keeping in mind that it is an exception. It estimates that when confirmed cases stand at 919 -1597, the actual undiagnosed cases are somewhere between 6923 to 12039.

Since the rate of testing and quarantine is low, the number of undiagnosed cases is significant.

Day	Quarantine (Tested)	Deaths (B)	Deaths (A)	Actual Infect- ed(I)	Recovered (R)
28	919.859923	4.360815	14.53605	6923.39409	1453.604986
29	1211.92022	5.744919	19.14973	9129.694057	1914.972869
30	1597.115498	7.569909	25.23303	12039.03617	2523.303121

Furthermore, if we look at how the disease progresses when testing and quarantine is low, we can see the number of infected people peaks much sooner and at a much higher value. This means that the sudden burden on medical resources would be much higher. Again, we see that official number and quarantining lags the actual peak of infection number.

Without delving into numbers, and simply analysing the mechanism of how disease spreads, we can see a policy of simply testing and quarantining symptomatic cases will inevitably lead to an explosion of the infection. In order to curb spread, the government needs to get ahead of the curve and start testing asymptomatic cases (which it may already be doing through a focus on contact tracing).

Conclusions

This is a first pass at a possible technique to use official numbers to try and estimate actual ones. With more data coming in, and better tuning of the model, we should start getting better results. We have tried to do a very rough technique of parameter estimation with simple rules of the thumb. Given the time sensitivity of the matter, we think this provides a good base to see where things are heading.

We can draw a couple of conclusions about our results.

- Rate of testing and quarantine does not seem to be horrendously bad. This seems to be coming from (and is borne out of) the fact that the death rate is currently not very high for the number of confirmed cases. To counter any underreporting of deaths, we have put in a cushion of them being valid for at least up to a factor of 2 i.e. even if the number of deaths are double than the reported value, these results should hold.
- The other thing it points to is a fairly high rate of transmission. This again, should not be surprising as the defining feature of SAR-CoV-2 is its high transmissibility, with near or more to half the population getting affected till the outbreak hits its peak.
- Depending on which of the two given scenarios might be valid, the model estimates about 2000 to 9000 undetected cases. This might influence how the government decides to deal with the problem.
- If we persist with only testing symptomatic cases, there is no way the actual number of infections will not explode over time. That's exactly why, the *PIDE COVID-19 Bulletin No. 9* advocates the use of mass-testing.

It should be borne in mind that the SEIR model is an aggregated approximation of how infection behaves in one population. At the moment, we have treated Pakistan as one large population. When we break it down to a more granular level, where we inspect data from smaller geographical areas (i.e. cities, villages etc.), we should be able to get better estimates, especially if we can include information of movement between these cities.

Furthermore, it cannot (presently) account for fluidity of the counter-measures against the infection. For now, the focus of this bulletin should be taken as the expounding of a technique which can estimate the actual numbers of infection using official data. Actual numbers are important because they can be used to present more accurate predictions of the course the infection is going to take than confirmed numbers. This technique is constantly being improved and can be used to increasingly better estimates in the future.

If left unchecked the SEIR model shows large and alarming numbers of infections and quarantines. These are important for policy to keep in its purview to develop strategies for checking the pandemic. Such models are the starting point of understanding the pandemic and we will continue to improve them and inform the policymaker and you the reader

ECONOMIC IMPACTS OF COVID-19 THROUGH TRADE DISRUPTIONS IN PAKISTAN

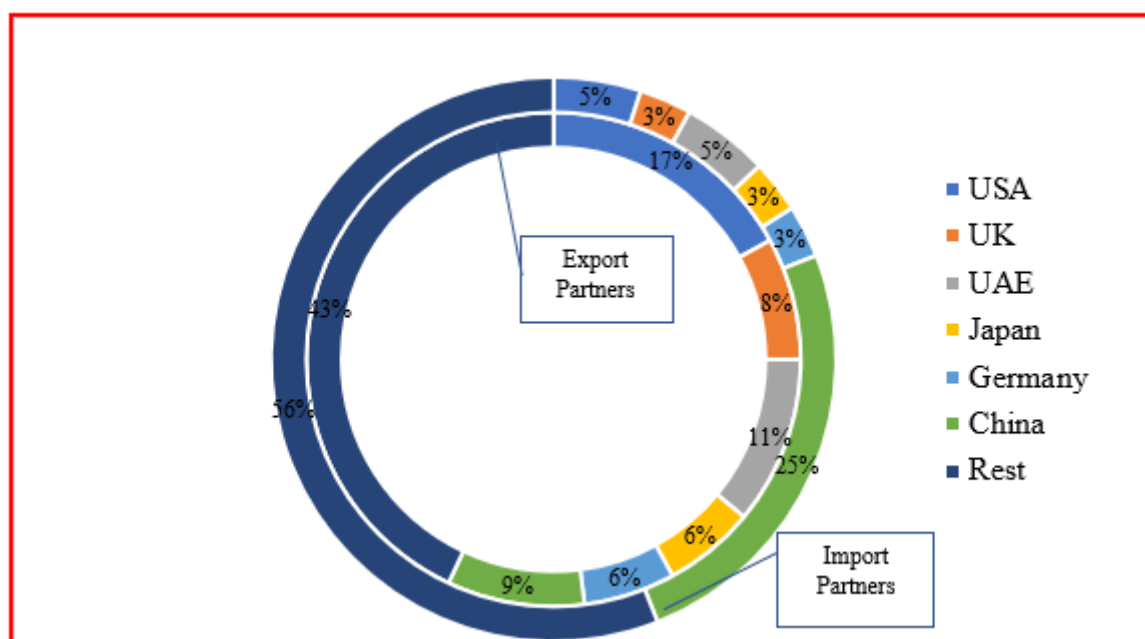
NASEEM FARAZ AND MUHAMMAD NASIR

Countries around the world have started to experience the economic impact of COVID-19. On the domestic front, the social distancing measures, especially the lockdowns, have resulted in restricted mobility and supply shortages. This, combined with the fall in global trade arising from import restrictions and postponements/cancellations of export orders, has considerably slowed the economic activity down. Countries that are part of the global value chain (GVC) would feel the hit even if spread of Coronavirus is contained now and has not disrupted the internal economic functioning of the economy.

Several sectors of the economy have been affected by the ongoing lockdown in Pakistan. This bulletin focuses on the quantification of the potential loss in economic activity for the last quarter of FY 2019-20 resulting from trade disruptions. Although Pakistan may not rank higher on the GVC, the country has enough integration with the global market to feel the impact of international lockdown. The five major trade partner (with more than 50% share in trade) of Pakistan are China, USA, UK, Japan, and Germany. Four of these partners are also the worst hit countries by the COVID-19.

The imports and exports in the last three months (December 2019 – February 2020) for these major trade partners is shown in Figure 1. There have been significant disruptions in the international trade flows of these countries. China and Japan experienced more than 15% reduction in their exports. Rest of the three partners had a reduction of around 5%. Some of them have also experienced reductions in their imports.

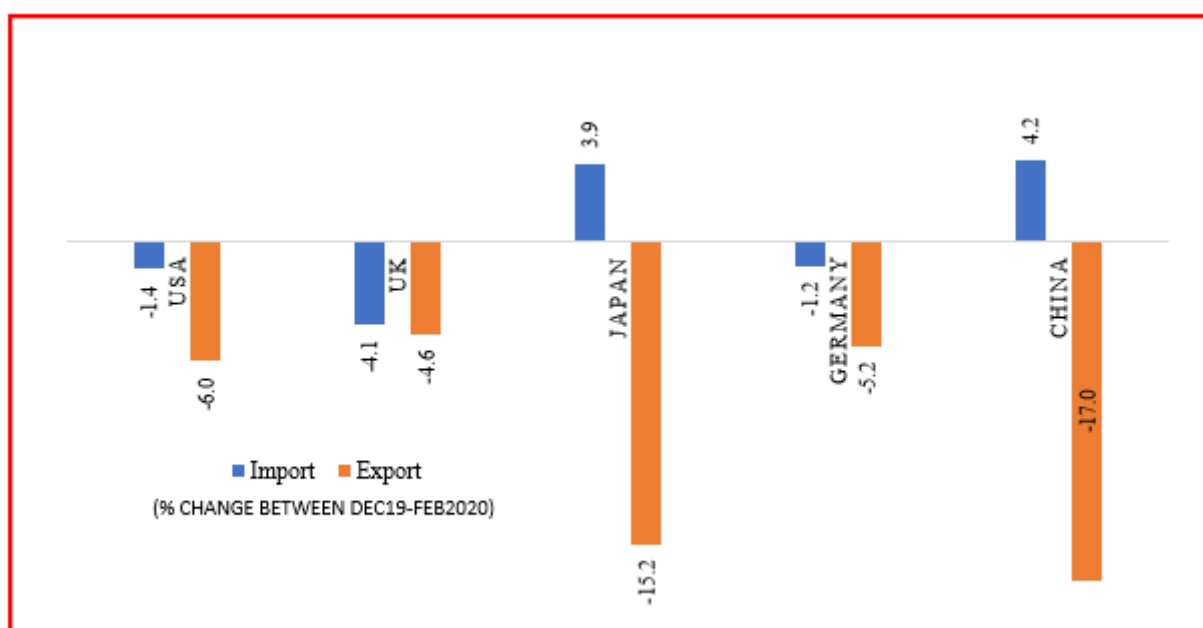
Figure 1: Percentage Change in Exports & Imports for USA, UK, Japan, Germany and China
(Pakistan's Five Major Trading Partners)



Source: Authors calculations based on International Trade Center Trade Statistics

These trade disruptions of our major trade partner is a worrying situation for us. Figure 2 shows Pakistan's import (exterior circle) and export (interior circle) shares with its major trading partners. The USA and China are the major import partners and we rely heavily on them for the import of capital and intermediate goods. These goods are then utilized in the production of final goods for exports and domestic consumption. Similarly, being our major export partner, any economic downturn these economies face would directly affect our exports and therefore our GDP.

Figure 2: Pakistan's Export and Import Shares with Major Trading Partners



Source: Authors calculations based on International Trade Center Trade Statistics

Pre- and Post-COVID -19 Trade Situation of Pakistan with Major Partners

To understand what potential impact the trade disruptions could have on Pakistan's economy, it is important to first examine the pre and post COVID-19 trends in the import and export with major trading partners. This is provided in Figure 3 where trade situation with UK, USA, China and Germany is shown. The vertical lines in these panels shows the breakout of COVID-19 in China. We may add here that at the time of this analysis data was available till February 2020, and does not include any day of March when the situation worsened in most countries. In case of China, it could be accessed only till January 2020. There was trade ban with China after the outbreak and this could be the possible reason for the unavailability of data for the month February.

It is interesting to see that in post-COVID outbreak in China, Pakistan's export to other major partner were on the rise in February. This could possibly be because of trade halt of these countries with China as the later closed its border and stopped trade with rest of the world. The resulting vacuum was filled by Pakistan through exports to these countries. This trajectory, however, may not continue in the coming months because of: (i) disruptions in our imports of intermediate and capital goods; (ii) China recovering from the outbreak; and (iii) reduced demand by the partner countries due deterioration in their economic activity. We can also see a decline in our imports from Germany and UK. If we have data for China for February and March, we would also see decline in imports. All this can have detrimental effects on our economy.

**Figure 3: Pre and Post COVID-19 Trade Trends of Pakistan
for Major Destinations**



Source: Authors calculations based on International Trade Center Trade Statistics

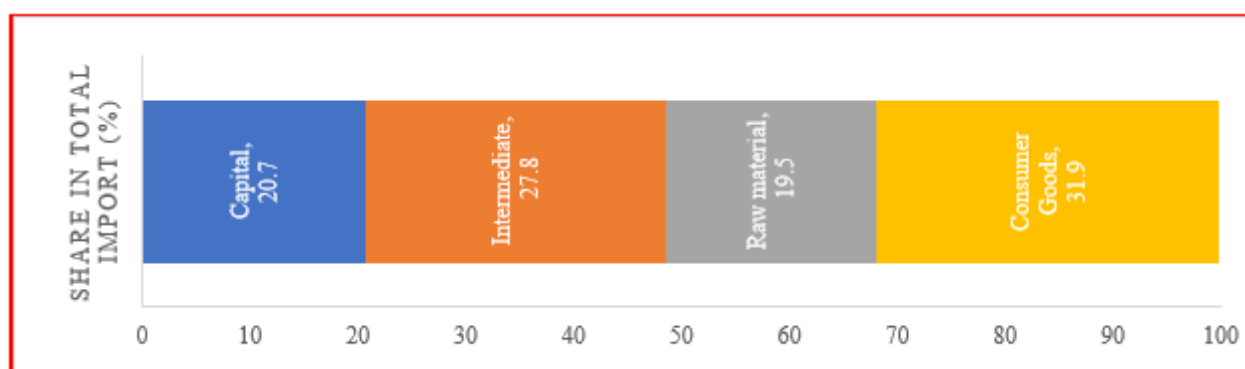
GDP Loss through the Trade Disruptions

Before we calculate the potential loss of GDP for fourth quarter of FY 2019-2020, let us examine the composition of our imports. Figure 4 shows that 32% of our imports are in the form of final goods. Reduction in these would not affect the GDP. However, the rest of 68 percent constitutes the raw material, intermediate goods, and capital goods. These are used to produce final goods which are then consumed domestically or exported to other countries. A decline in these will therefore have a negative effect on investment spending as well as on exports. Consequently, the country will experience in a loss in GDP.^{1,2}

1 Fox, D.R. and McCully, C.P. "Concepts and Methods of the U.S. National Income and Product Accounts." Bureau of Economic Analysis, NIPA Handbook. 2017; <https://www.bea.gov/national/pdf/all-chapters.pdf>.

2 <https://research.stlouisfed.org/publications/page1-econ/2018/09/04/how-do-imports-affect-gdp>

Figure 4: Composition of Pakistan's Import



Source: World Integrated Trade System

We examine the impact of reduction in imports and exports on national output for three scenarios (details given in Table A in appendix). The estimated losses are given in Table 2. In the first scenario, when there is only 2 percent decline in import the overall loss to GDP is negligible. In scenario II, with 10 percent decline in the intermediate and capital goods, that will likely bring a big fall in investment, as well as a similar reduction in exports, would result in a loss of 2.3 percent of GDP in the fourth quarter of FY2020. A 20 percent decline in export and import, as assumed in scenario III, would result in a loss of 4.6 percent of GDP.

It is worth mentioning here that this is the impact entirely related to trade disruptions. We have not considered the impact of internal lockdown, potential decline in FDI and remittances, and disruptions in other sectors such as aviation, tourism and hospitality etc. in this analysis (these will be covered in forthcoming bulletins).

Table 2: Trade Disruption Effects on Pakistan's GDP in the Q4 of FY 2019-2020

		Scenario I	Scenario II	Scenario III
	Share in GDP	2% decline in Import only	10% decline in Import & Export	20% decline in Import & Export
Investments Spending on Imports (F)	13.2	-0.26	-1.30	-2.64
Exports (F)	2.00	-0.04	-0.20	-0.40
Export	8.00	-	-0.80	-1.60
GDP loss (%)		-0.30	-2.3	-4.64

Sources: Authors calculations based on Pakistan Bureau of Statistics (PSB), 2019: Table 3 and Trade Statistics Table Feb 2020 and Appendix Table A

Conclusion

We have presented very preliminary estimates of likely impact of the trade disruptions caused by the emerging Corona economy. It is almost certain that the 4th quarter growth will be negative and could be as high as 4 percent even in these preliminary estimates. More than likely as things emerge there will be a larger negative impact on the economy. After all, the Corona event is a big event where any previous estimates will no longer be valid. We will only learn as we go along. Here at PIDE we will continue to update you with different methodologies and approaches (and without relying on outdated models and estimated parameters) on how the economic impact of the Corona crisis unfolds.

It is worth noting in passing that there has been much policy and business talk on diversification but without real progress on that front. Our dependence on commodity exports with falling commodity prices amid the Covid-19 shock and reliance on intermediate products for export productions with importing countries shutting down their supplies such as China have hurt our exports. Resilience to such shocks could have been built if domestic commerce and supply chains had been built to lead to a diversification of exports (See Haque, 2006).

Reference

Haque, Nadeem Ul, Awake the Sleeper Within: Releasing the Energy of Stifled Domestic Commerce https://pide.org.pk/pdf/Working%20Paper/dom_comrce_paper%5b1%5d.pdf

Table A: Scenarios

Scenario 1: COVID-19 pandemic breakout in China led the country to reduce its imports by more than 17 percent in January 2020. The effect is also experienced in very initial stages of breakout which is 1.5 percent fall in imports of Pakistan in Feb 2020. We take this fall in import into account and calculate the expected loss in GDP of Feb 2020.
Scenario 2: Recently World Bank (WB) have assessed through sample survey that, from March 12 to 18, 2020, export-oriented industries have experience a fall in export orders in the range of 25 - 50 percent. If half of the orders are distributed among the USA, UK, and Germany, a 10 percent decrease in exports from Pakistan can be expected.
Scenario 3: The Ministry of Commerce has estimated that the exports may fall up to \$4 billion as export target might face reduction from \$24 billion to \$20 billion till June 2020. This is because a large number of the export orders have been canceled. Cancellation of 25-50 percent export orders and based on MOC assessment, we expect that exports would fall by up to 20% in the last quarter.

FOOD PRICES POST-COVID-19 OUTBREAK: THE CASE OF PUNJAB BY - ABEDULLAH ANJUM

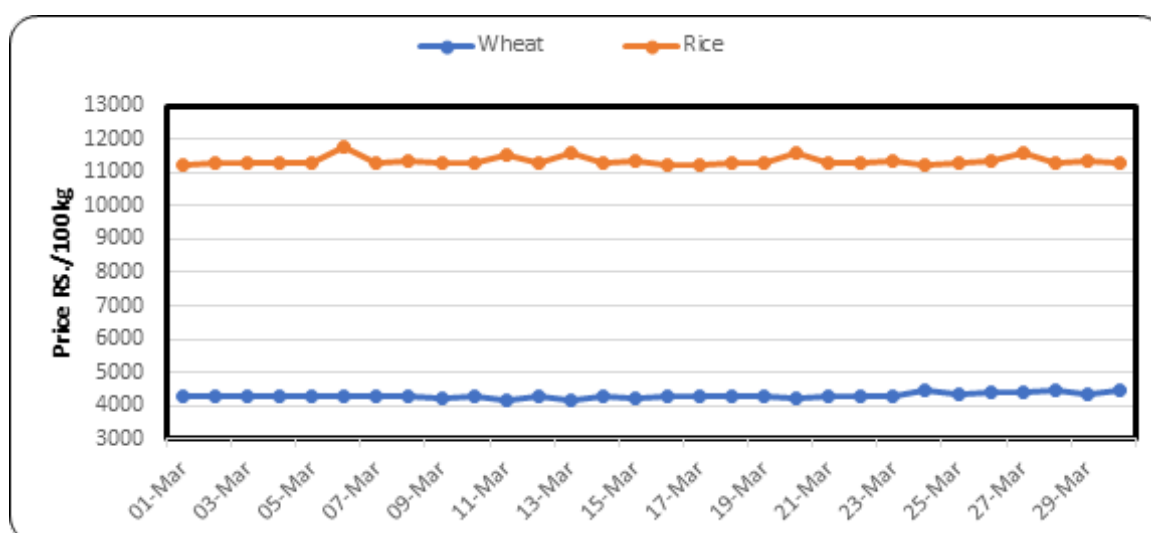
It is vital to keep an eye on the food situation in the country in the middle of this pandemic. There have been reports of some panic-buying and disruptions in logistics. Here we will begin to review the food situation. We present some idea of prices and availability.

For investigating the impact of COVID-19 on food prices, we group different food items into four major categories: grain, fruits, vegetables and pulses. The price trends for these four groups are plotted for the month of March by collecting daily price data from ten major markets of the Punjab province. Since daily price data for all provinces are not available, we are limiting our analysis only to the province of Punjab.

Grains

Prices of rice and wheat remained stable with slight variation over the 31-day period, implying that COVID-19 had not majorly impacted the grain prices yet (Figure 1).

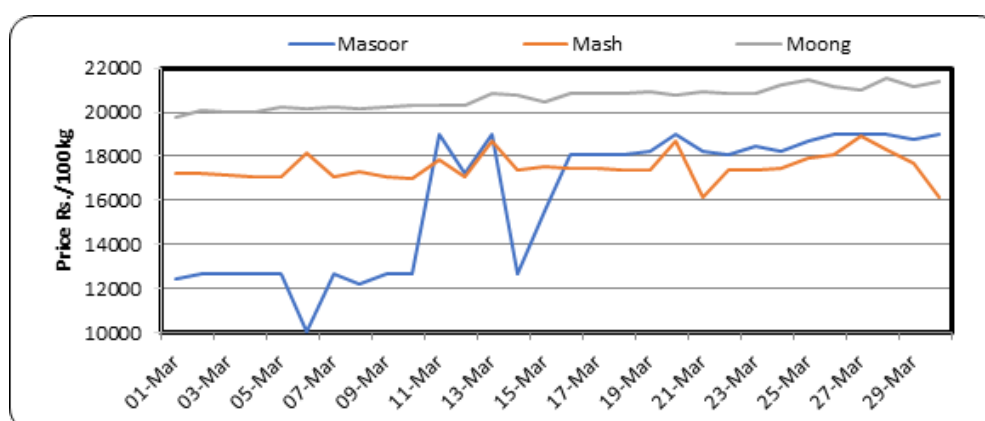
Figure 1: Average Price Trend of Grains in Punjab Markets



Data Source: Agriculture Marketing Information Service (AMIS)

Disaggregating grains, it is interesting to note that among pulses, the prices of *moong* and *masoor* have increased by 8% and 53%, respectively (Figure 2). It is mainly due to the increase in demand as pulses are easy to store for a longer period. The price of *maash* shows a 6% decline, but that has taken place only during the last two days of our study period.

Figure 2: Average Price Trends of Pulses in Punjab Markets

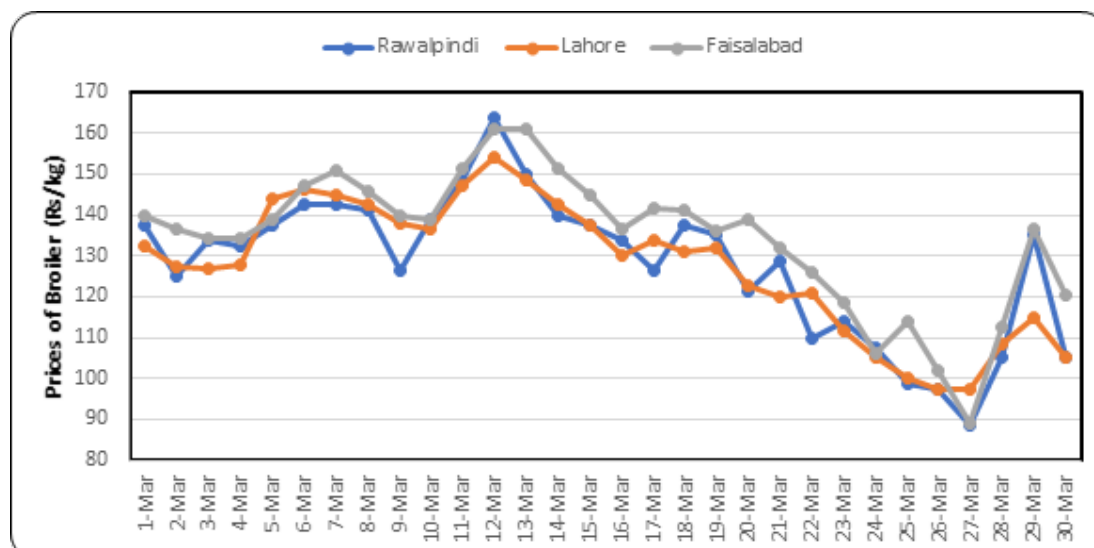


Data Source: Agriculture Marketing Information Service (AMIS)

Broiler Chicken

In contrast to pulses, prices of broiler chicken have declined between 14 to 24 percent in three major markets of Punjab, namely Rawalpindi, Lahore and Faisalabad, mainly due to the dwindling demand (Figure 3). Declining trend started with the start of the Coronavirus pandemic and prior to lockdown. This implies that it was mainly the reduced demand that led to the decline in prices.

Figure 3: Average Price Trends of Broiler Chicken in Punjab Markets

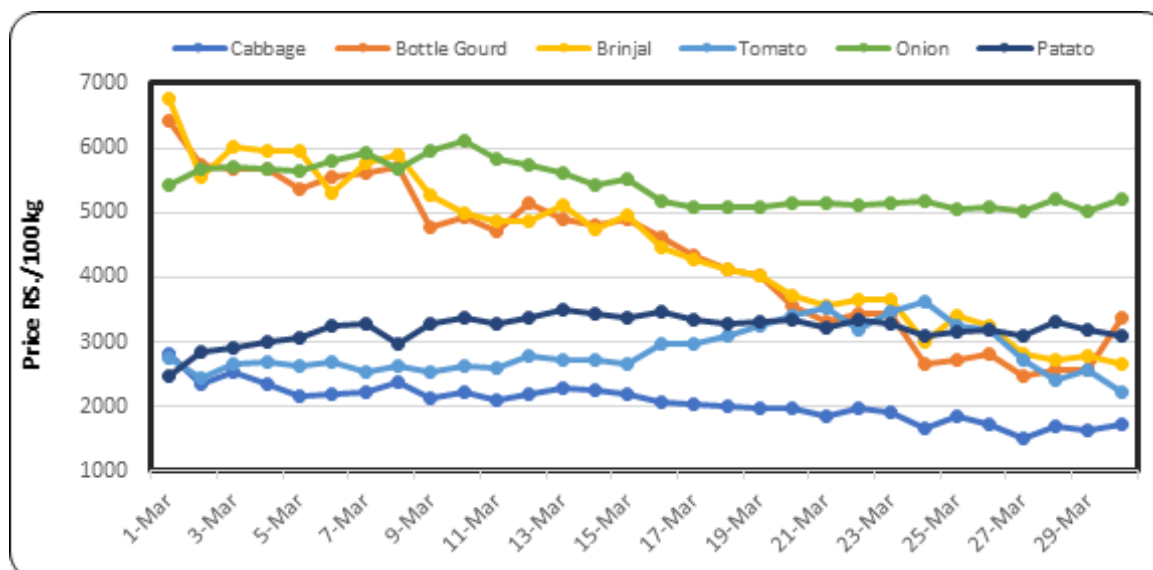


Data Source: Agriculture Marketing Information Service (AMIS)

Vegetables

We also explored prices of six most commonly consumed vegetables: potato, tomato, onion, cabbage, bottle gourd and brinjal (Figure 4). Their price trends clearly depict that most of the vegetable prices (except potato) have declined in the range of 4% to 61%. Major contribution in the price decline is of the production cycle as it can be observed that the declining trend starts prior to the lockdown period. This can also be due to the decline in demand driven by income shocks and more importantly the perishable nature of these food items.

Figure 4: Average Price Trends of Vegetables in Punjab Markets



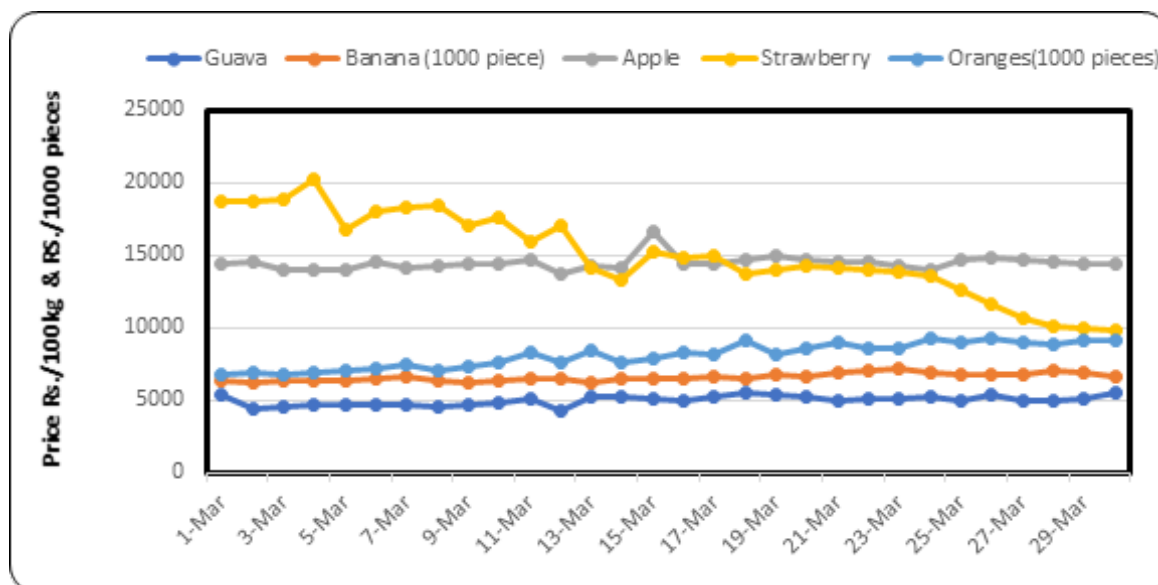
Data Source: Agriculture Marketing Information Service (AMIS)

Fruits

Prices of the chosen fruits, namely strawberry, guava, apples, banana and orange, show a mix trend (Figure 5). Highly increasing and decreasing price trends are observed in orange (34 percent) and strawberry (47 percent), respectively. Along with the effect of the production cycle, promotion of oranges as a means of im-

proving immunity to counter COVID-19 infection can be a factor in increasing demand for the fruit. Prices of banana and guava is just between 3% to 5% which can be attributed to the routine fluctuation.

Figure 5: Average Price Trends of Fruits in Punjab Markets



Data source: Agriculture Marketing Information Service (AMIS)

Available data suggests that the COVID-19 outbreak has not impacted the food prices yet, except for some impact on the prices of pulses. It is, however, too early to make any conclusions. The possible spread of the Coronavirus to the rural areas and widening lockdowns may disrupt distribution channels affecting the food prices.

We can take hope from the fact that Pakistan has good storage facilities of grains and the new wheat crop is about to be harvested. We cannot rely on global reserves in such a situation but there are enough reserves of non-perishable food items, such as wheat and rice, globally to meet any surge in demand.

While there is no need to panic for an imminent risk to food security, there is also no reason to be complacent either. If the COVID-19 pandemic does not last for too long, it is believed that there will have no major shortage of staple foods. If, however, the situation prolongs, then it will impact perishable food items first and then the staple foods. Perishable food items are plucked, packed and shipped on daily basis, which demands continuity of farm labour supply and human-to-human interaction.

Prolonged restrictions will affect every stage of the food supply chain especially inputs (certified seed, pesticide and fertilizer) and distribution. Shortage of labour supply could seriously hurt plantation and harvesting of new vegetables and staple crops. For an uninterrupted food supply, the government must maintain the provision of inputs to farmers, mobility of labour in the agriculture sector, and shipment of food from farm to markets and market to retailers.

LABOUR MARKET AND COVID-19:

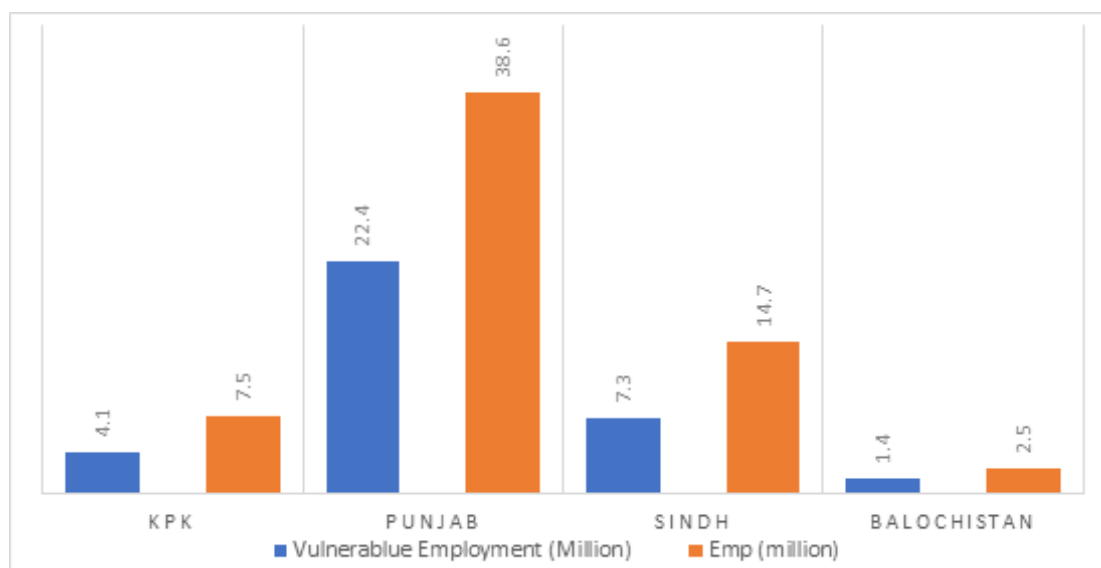
PROVINCIAL-LEVEL ANALYSIS OF VULNERABLE EMPLOYMENT ACROSS SECTORS

NASEEM FARAZ AND MUHAMMAD NASIR

PIDE COVID-19 Bulletin No. 4 identified the vulnerable employment in Pakistan across different sectors at the national level, and estimated the number that is potentially facing being laid off under different scenarios of a shutdown. For the relief packages announced by the federal and provincial governments to be effective, it is important to examine the employment vulnerability across the provinces.

Before we examine the potential layoffs among those who are vulnerably employed across sectors in provinces, it is important to first examine the variations in total and vulnerable employment. This is shown in Figure 1. Punjab has the highest total and vulnerable employment in absolute numbers. Being the most populated province, this is expected but we are concerned about numbers, and not just proportions, here because any relief that is provided should be according to the number of those affected across the provinces.

Figure 1: Number of Total and Vulnerably Employed across Provinces

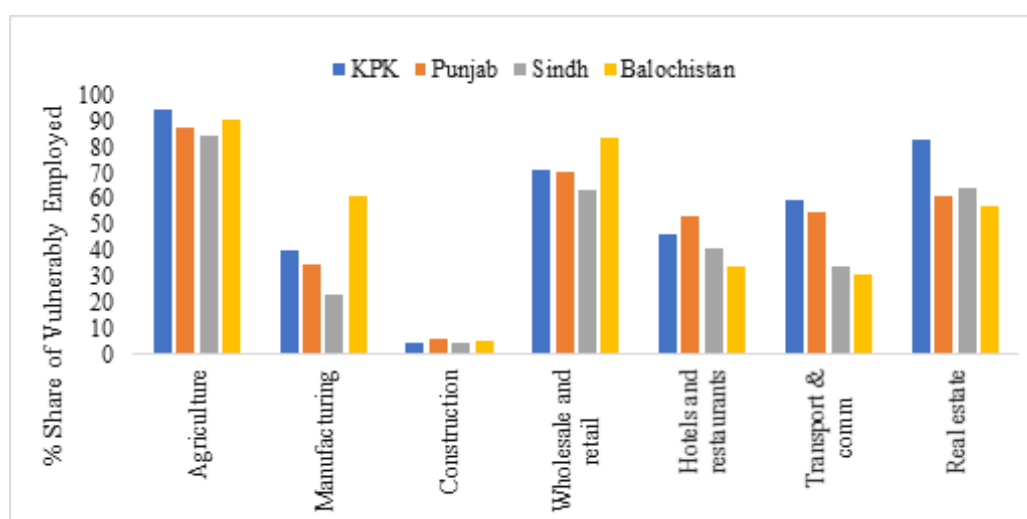


Source: Authors' analysis based on the Labour Force Survey, PBS 2017-18

Note: Employed refers to total employed. Vulnerable employment is a subset of it.

Proportionally, Sindh has the least vulnerability across 4 sectors – agriculture, manufacturing, construction, and wholesale and retail sector (see Figure 2). The vulnerability in hospitality, and transport and communication sectors is also lower in Sindh than in Punjab and KP. Overall the Sindh province is relatively less vulnerable in term of its share in employment. However, when it comes to the number of layoffs, the situation is not encouraging as will be shown in the next section.

Figure 2: Sectoral Vulnerability across Provinces (%)



Source: Authors' analysis based on the Labour Force Survey, PBS 2017-18

Figure 2 further shows that the share of vulnerable employment in different sectors varies across provinces. For instance, agriculture is the most vulnerable sector in the KP province, whereas the share of vulnerable employment in manufacturing and wholesale and retail sectors is highest in Balochistan. Likewise, the share of vulnerable employment in hospitality sector is highest in the Punjab province. Interestingly, the construction sector has the least vulnerable employment among all the sectors in all the provinces. Moreover, the variation in vulnerability across provinces is also small for this sector. Manufacturing and transport and communications sectors have the largest variations in vulnerability across provinces.

Provincial Analysis of Expected Layoffs of the Vulnerably Employed

We have already moved past stage I and 2 of the lockdown and are probably at stage 3¹. Let us estimate the probable layoffs for the last two stages. Table 1 provides the estimates on vulnerable employment and the potential layoffs for these two stages across provinces. Sindh, despite being the least susceptible province in terms of the share of vulnerable employment will have more than four million people losing their jobs. The absolute numbers of course are the highest for the most populated province of Punjab, with 13.5 million people projected to be laid-off. Protecting the affected households in these two provinces is therefore a difficult task and requires more focused interventions.

Table 1: Province-wise Expected Layoffs among the Vulnerably Employed (millions)

	KP	Punjab	Sindh	Balochistan
Provincial Employment	7.5	38.6	14.7	2.5
Vulnerable Employment	4.1	22.4	7.3	1.4
Stage II	2.0	10.1	3.3	0.6
Stage III	2.3	12.1	4.1	0.7

Source: Authors' analysis based on the Labour Force Survey, PBS 2017-18.

Note: Stage II = 50% and Stage III = 60% loss in Vulnerable Employment (Ref: PIDE Bulletin 04)

Sectoral Analysis of Expected Layoffs of the Vulnerably Employed by Province

Table 2 provides the expected layoffs by employment status by sectors across provinces. Except for Punjab, where the agriculture sector employs the majority of those in the labour force, all other provinces are dominated by the service sector. Most layoffs in all the provinces, however, would be in the agriculture sector, fol-

¹ Stage II refers to moderate shutdown and Stage III means complete shutdown.

lowed by service sector. Consequently, the total layoffs across provinces are highest in the agriculture sector.

Table 2: Expected Layoffs among the Vulnerably Employed by Province (million)

	KP	Punjab	Sindh	Balochistan	Sector Layoffs
Provinces Employment	7.5	38.6	14.7	2.5	
Industry (% share)	26.0	25.0	22.2	13.4	
Industry Employment	2.0	9.7	3.3	0.3	
Industry Vulnerably Employed (%)	15.9	10.6	9.2	22.1	
Stage II: Layoffs	0.2	0.5	0.1	0.0	0.8
Stage III: Layoffs	0.2	0.6	0.2	0.0	1.0
Agriculture (% share)	31.7	39.0	35.8	39.0	
Agriculture Employment	2.4	15.1	5.3	1.0	
Agriculture Vulnerably Employed (%)	94.7	87.7	84.6	90.5	
Stage II: Layoffs	1.1	6.6	2.2	0.4	10.4
Stage III: Layoffs	1.3	7.9	2.7	0.5	12.5
Services (% share)	42.4	35.9	42.0	47.6	
Services Employment	3.2	13.9	6.2	1.2	
Services Vulnerably Employed (%)	41.5	43.1	32.8	32.3	
Stage II: Layoffs	0.7	3.0	1.0	0.2	4.8
Stage III: Layoffs	0.8	3.6	1.2	0.2	5.8

Source: Authors' analysis based on the Labor Force Survey, PBS 2017-18.

Note: Figures may not add up due to rounding off.

Now we look at within the vulnerably employed by their status of employment. We see that for Stages II and III, the majority of the layoffs across all provinces would be of the daily-wage workers and the workers paid by piece rate simply because they constitute the bigger proportion in these employment groups. The vulnerability in terms of employment status remains the same in the four provinces as was observed in the national level analysis (see PIDE COVID-19 Bulletin No.4).

Table 3: Expected Layoffs among the Vulnerably Employed by Employment Status and Province (million)

	KP	Punjab	Sindh	Balochistan	Total Layoffs
Stage II: Layoffs					
Daily Wage paid employee	1.4	5.1	3.4	0.3	10.1
Paid worker by piece rate or work performed	0.3	3.9	0.5	0.2	4.9
Paid non-family apprentice	0.1	0.2	0.0	0.0	0.3
Stage III: Layoffs					
Daily Wage paid employee	1.7	6.1	4.1	0.4	12.2
Paid worker by piece rate or work performed	0.4	4.7	0.5	0.3	5.9
Paid non-family apprentice	0.1	0.2	0.0	0.0	0.3

Source: Authors' analysis based on the Labour Force Survey, PBS 2017-18.

Concluding Remarks

This Bulletin first estimates the vulnerable employment across sectors at the provincial level, and then see how many of them can be facing lay-offs under the two scenarios of moderate to complete lockdown. Our analysis shows that in Punjab 10 to 12 million of those who are vulnerably employed can face losing their jobs in Stages II and III, respectively. The same numbers for Sindh are 3.3 to 4.1 million, and around two million for KP and under a million for Balochistan.

In all provinces, the daily wage workers are most vulnerable and hence should be put on priority for any social protection interventions that are being designed at the federal and provincial levels. Service sector, which has the largest number of the vulnerably employed, need special attention. It is a trend found across all provinces. Hence, any relief package for business sector to encourage them to retain their employees must take these factors into account. These packages should vary across provinces to prioritize the most vulnerable sectors in the province accordingly.

HIGHER EDUCATION CHALLENGE FOR PAKISTAN UNDER COVID-19: THE WAY FORWARD

ZAHID ASGHAR

The COVID-19 pandemic has cast doubt on education of the masses at the primary, secondary and tertiary level. All schools, colleges and universities in Pakistan are shutdown. More than 124 countries have closed their educational institutions either at the country level or in some regions. No one knows how long it will take as COVID-19 pandemic challenge is unique, new and global in its nature. We have very limited information what will be the likely path of the pandemic. This has posed serious challenges for the leadership to decide for the future course of action.

COVID-19 has put us in a state when we do not know how to proceed, what resources will be available and what resources to allocate or what type of policies and processes our institutions should implement? According to UNESCO's COVID-19 Educational Disruption and Response, Pakistan has 46.8 million affected learners due to the COVID-19 pandemic, out of which 1.9 million are enrolled at the tertiary level. These pose the most serious challenge because universities have students from the whole country and even from overseas. All those having decision-making powers, including the education ministers at both federal and provincial levels, chairman HEC, vice chancellors and universities' administrators, must act prudently in this uncertain scenario.

COVID-19 Impact on Education	
Level	Numbers Affected
All Affected Learners	46,803,407
Pre-Primary	8,636,383
Primary	22,931,305
Secondary	13,357,618
Tertiary	1,878,107

Major Challenges in Delivering Online Education

Plans and strategies may fail but main test is not to compromise on goals and principles. Our education system must keep moving by taking care of the health and security of all (faculty, students and staff), and ensuring continuity of programmes by being flexible in finding and accepting new solutions. There are number of challenges in this regard where leadership has a key role to play in this time of crisis.

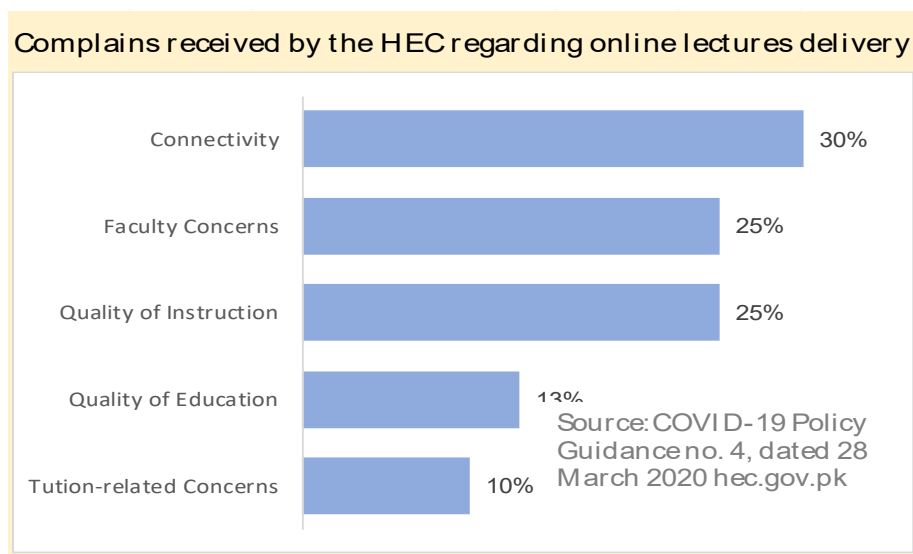
Internet Connectivity: One of the main challenges is of poor internet connectivity which is the main hindrance in online teaching particularly in remote areas. This is a challenge both for private and public sector universities. Public sector universities have a more serious challenge than those of private sector as the former universities admit large number of students who belong mainly to lower middle-income families and remote areas. Most big city universities will have good connectivity but do all students when dispersed to villages have connectivity? Making online education accessible to all is a gigantic task for which national leadership must come forward and play a role.

On connectivity we must also think of network capacity. Mobile companies tell us that there is a huge increase in usage since the lockdown, leading to capacity. They are scrambling to expand network capacity. But this is an issue that we must bear in mind.

Faculty's Reluctance for Online Teaching: Preparing faculty for delivering lectures using these new means of communication is another challenge. It is time where leadership of the universities have a crucial role to play in motivating and encouraging their faculty to overcome all the hurdles in the way of online teaching.

All Subjects being Treated Similarly: There is a need to develop a separate policy for a group of subject(s) and not deal all the disciplines with same yardstick. HEC guidelines still indicate “one size fits all” policy. Four to five main subject categories should be made and dealt separately for teaching online courses. These broader categories are: i) arts and humanities; ii) social sciences; iii) natural sciences; iv) biological sciences; and v) engineering sciences.

The figure below is a good summary of the issues being faced regarding the online lectures being conducted right now. HEC received complaints where: 30% of the students raised issues regarding connectivity; 25% talked about faculty unpreparedness for online teaching; and 13% had a problem with low quality of education.



How to Make Things Work

1. This is the time to push for an increase in self-learning, which has been relatively scarce in our system. The concept on the inverted classroom has been gaining ground this century led by the innovation of the *Khan Academy*. In inverted-class room teaching, all notes and lectures are available to students and they read before joining the class. During online classes, students should have their queries ready for the teacher, with the teacher responding to those queries instead of delivering lectures. This is an ideal time to do this and achieve some distance in this much needed paradigm shift in our system
2. Group of experts for each subject should collaborate and explore all possible resources available freely online. Online resources include [coursera.org](https://www.coursera.org), [edx.org](https://www.edx.org), YouTube lectures, MIT Open courseware, podcasts and many other such sources. Universities and professors should be encouraged to use these available online resources as much as possible for at least 3 reasons:
 - 2.1. It takes time to prepare good online lectures and making presentations over Zoom or Hangouts may not be very efficient.

- 2.2. Connectivity and network capacity issues also require that people use good online resources available.
- 2.3. Students with bad connections can access the available videos at their own convenience and if necessary, review them a number of times.
3. This is a time for collaborating across universities and disciplines as well as innovation. Universities should be encouraged to share notes, references and resources for distributing to students to allow more and more self-learning.
4. Perhaps online discussion with small groups using Microsoft, Zoom, Google Classroom and other forums should be explored for all those where connectivity is not an issue but with a good use of available online videos that can be the basis of learning. These resources should mostly be for online problem solving and discussion not mere reading out lecture notes.
5. Hybrid learning arrangements should be made. Online teaching should be complimented by at least one-month of mandatory condensed face-to-face teaching when the universities open. This hybrid approach will help to maintain a certain level of quality and students will be evaluated the way they have been trained so far. This is especially important for the lab-based disciplines which may suffer more through online teaching only.
6. Online learning companies are at a start-up stage but expanding rapidly. Universities should seek partnerships with them to see how better outcomes can be achieved. By this means innovative approaches could be found and effectiveness could be maximised.
7. There is a need to pool faculty and lab resources at the university level. Bilingual lectures should be recorded for each subject as understanding English through distance learning will be relatively difficult for many students. For example, if some teacher is good and willing to teach Object Oriented Programming, his/her course should be shared across other universities. These recorded lectures may even be posted/distributed through disks/CDs so that connectivity issue will not affect learning. It's a huge exercise and there is a need to make teams for each subject for various levels of programs.
8. Using TV channels for imparting education where it is possible should be explored. Virtual University and AIOU services can be utilized. Likewise, FM radio channels can be used in regions where TV channels cannot be accessed. However, this is a passive way of imparting education as feedback is hard to attain. This should be minimally used in collaboration with other means.

A regular weekly video conferencing among the HEC chairperson with provincial chairpersons of Higher Education Departments and vice Chancellors is a must. It will help to monitor and evaluate the effectiveness of mechanisms universities have adopted or going to adopt and help refine the method of imparting education during this time of crisis.

However as argued above, there is extreme heterogeneity in the pedagogic methods across disciplines. Hence, it may be more important to develop groups consisting of professors for similar disciplines to collaborate on innovating in their areas. The objective is clear. They can innovate on the methods of pedagogy on the lines suggested above. PIDE can be entrusted to lead in the area of public policy, and development and social sciences, while QAU taking the lead in natural sciences.

Collective wisdom and innovation can get us through, and as it is said, “we all can work, but together we win.”

CONSOLIDATING THE EFFORTS OF VARIOUS SOCIAL SAFETY NETS FOR THE COVID-19 RELIEF BY- HAFEEZ UR REHMAN HADI AND RAJA RAFI ULLAH

The coronavirus (COVID 19) pandemic in Pakistan has entered a critical stage with varying degrees of lockdowns being observed in all provinces. The federal government recently announced another 2-week country-wide lockdown that will continue till the 15th of April, 2020. The economic and social effects of these lockdowns particularly on the segment of the population that comprises daily-waged workers have started to materialize and are being hotly debated in the public and policy domains. As the state bears the responsibility to provide the necessary social and economic protection to its citizens, the Pakistani state is under a great test to showcase its commitment to the poor and needy.

Researchers at PIDE estimate that the country has entered into a critical secondary phase of economic shocks and within a few weeks approximately 19 million individuals are at risk of losing their sources of income including daily-waged workers, short-term production dependent employees and street vendors. In the worst-case scenario, the unemployment of 18.53 million workers is a great concern and shall prove to be gravely consequential. The estimates are summarized in detail in *PIDE COVID 19 Bulletin No.4* available on the PIDE website¹.

This loss in employment will push millions of vulnerable segments of population in poverty to join the those already below the poverty line. These segments of population need both short-term and medium-term relief in the coming weeks and months. For this purpose, the government *can* mobilize already existing national safety net programs and their regional branches to reach those who are most vulnerable.

The safety nets are the salient features of social protection, and by virtue of article 38 (d) of Pakistani constitution, the state is obliged to ensure social protection by providing ‘*basic necessities of life including food, clothing ... and medical relief.*’ Steps in this direction have already been taken by the government in the shape of the relief packages and Ehsaas Emergency Cash Program. This is part of the general Ehsaas program that has been in the planning for the past year in Pakistan, a program that intends to bring together various existing social safety nets programs in Pakistan.

To create a more systematic scheme of both short-term and long-term social protection in the wake of the Coronavirus crisis, the government can align both existing government social safety net programs and non-profit civil society ventures (NGOs) under the purview of National Command & Operation Centre (NCOC).

Poverty: Current National Situation

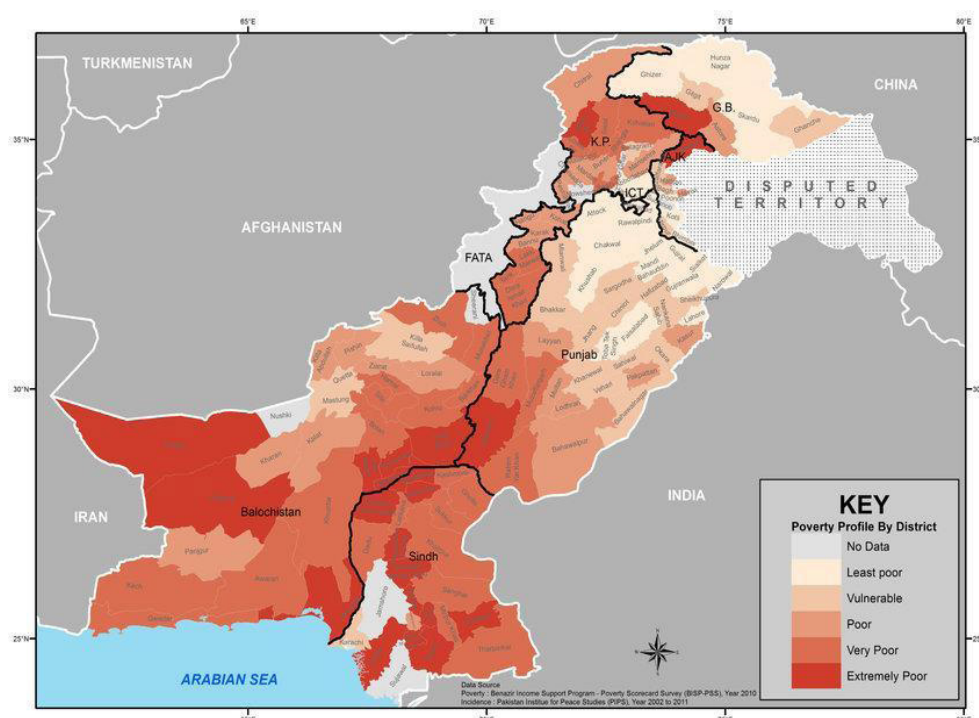
The majority population in the peripheral areas of the country are poor, or prone to be poor. Pakistan has more than 25% of the population living below the poverty line. As per estimates, the poverty shall rise from 75 million to around 130 million in case of prolonged lockdown. The poverty heat map in the figure below² suggests the poor population in peripheral areas; however, even greater concern is the volatile population residing in the cities. The businesses have started laying off the employees, and in the current scenario of restricted lock-down, there is an expectation of 12.55 million people getting unemployed with fears of more employees getting slashed.³ The already poor population coupled with the new numbers of unemployed and out-of-work daily-waged workers put up an alarming picture of the country’s labour force. Therefore, it is essential to survey the state capacity of reaching out to these poor and needful; and assist them through these hard times of the COVID-19 crisis.

1 Under the three scenarios the estimates range from 1.39 million to 18.53 million people facing unemployment. <https://pide.org.pk/pdf/PIDE-COVID-Bulletin.pdf>

2 Heat Map from the works of Hannan Mahmood

3 See the sectoral analysis of COVID impact on unemployment PIDE Bulletin at pide.org.pk

Poverty Heat Map 2017-18



The poor are at the receiving end of suffering and grave economic consequences because of high probability of low working opportunities, high lay-offs and inability to financially protect themselves in times of crisis.

The politics of devolution has a great deal to play in this disaster. The provinces have the authority to establish the lockdown, curfews with particulars; however, in wake of these contingent circumstances, a uniform concerted effort is required to manage the disaster efficiently. The poor vertical communication between the federal and provincial lets the looming threat of poor factions getting hurt further. It is welcoming that provinces have authority, and in case of poor federal decision making they can decide on their own, but more coherent policy is needed for reliance. The efforts of both, provinces and federal, must resonate and sync to provide efficient mechanisms to deal with crises.

State of Social Protection Plans

To understand the current state of the social protection system in Pakistan, we ran a study. The authors reached out to following organisations working within the larger paradigm of social protection. The aim of this study was to evaluate the preparedness of these agencies and organisations. After the consultations and detailed interviews based on initial survey design, the following was concluded:

S r # ⁴	Authority	Initiative	Direct Beneficiaries	Target Population	Amount	Instruments	Database	Pipeline Program
1	NDMA	Yes	Disaster based—Increasing	Affected Population, Regular Ops.	200 Billion and Donations	Assistance Activities, Situation Report	As per disaster/Arbitrary	Yes Relief Activities
2	Punjab Soc. Protection Authority	No	Ehsaas Program Based	Poor	ADP	OAB, Khidmat Card, Insurance	Yes/ Don't know	Wheat, Subsidies, Insurance
3	PDMA Baluchistan	No					Contingent	Yes
4	PDMA Punjab	Yes	Disaster Man. and usual activities	Affected Population	Govt, Donors, Federal.	Awareness, NDMA Efforts, Coordination	As per disaster	Yes, Budget Redirection

4 Table prepared in light of our initial survey design. All above organisations were reached out by the first author, and were asked as per template questionnaire to come up with the answers fed in table cells as per responses.

5	PDMA Sindh	Yes	Affected Areas, Poor	Affected Areas and Poor, BISP Registered	Relief Package by Sind Govt and NDMA	Relief Activities	As per disaster	Yes. Volunteer Registration
6	PDMA KP	Yes.	Affected Areas, Families, Poor	Disaster Stricken		Quarantine Helpline, Relief Activities	As per disaster/Contingent	Yes
7	NRSP	Yes	Poor Population in Rural Areas Largely	Poor Population, PPAF Partner	No exact amount	Cash Grant, Equipment, Investment Fund	BISP, Own, PPAF	Waiting for Funds
8	PESSI	Yes	HR of Punjab Government, Families	Employees	Requested for health facilities	Health Services, Educational Services	Yes. HR Division, 3 Months	Yes. Increased Budget, Jobs for affected families.
9	PPAF	Yes.	.551 Interest free loans 8.4 micro credit loans	Poor, NPGI	Ehsaas directed	Micro-Credit Interest free loans	Yes	Not Yet
10	RSPN	Awareness, Rations Coordination	Daily Poor Wagers,	Poor Pop. 53.5 m out-reach	Collaborations	Cash Transfer Mobile W a l l e t s ,	Last Year-Again To be verified	Subject to fund (Waiting)

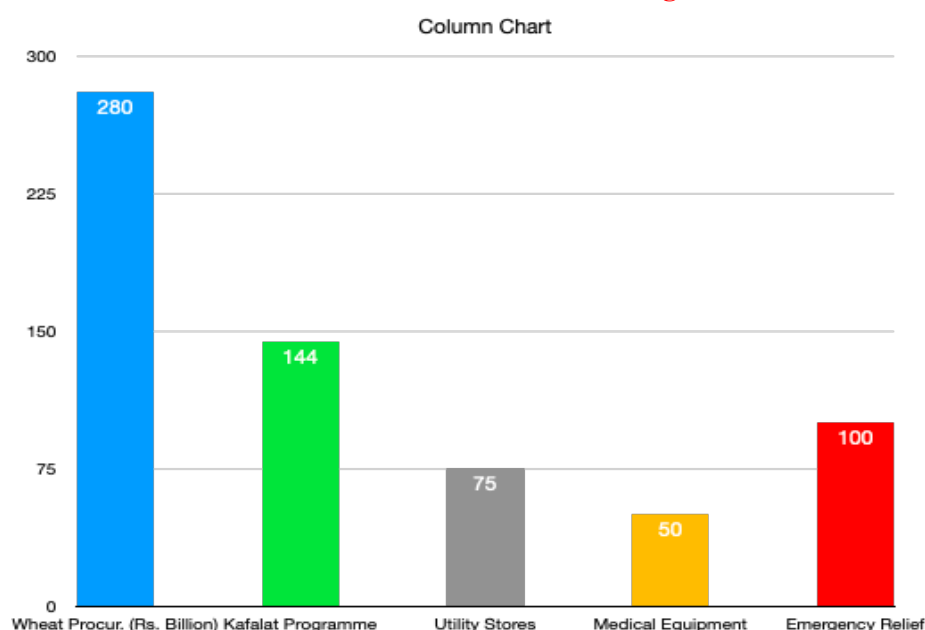
1. There is a lack of central and coordinated approach to cater the marginalised, poor, and most affected population.
2. The NDMA has been tasked with running the relief activities, but by the times of interviews, the provincial and district management authorities were not clearly aware of the line of action.
3. The social protection authorities including NRSP, RSPN, PSPA have further slowed down their operations.
4. The organisations are awaiting the approval from donors and government to allow redirecting of funds from current projects to the corona relief packages.
5. The social protection authorities are at best involved in putting up posters of awareness on websites and sending mass awareness messages to masses.
6. Pakistan has too many safety nets, failing to culminate into a single-stranded chain of institutions working for the same vision; or with the same mechanism.

The real test of governance is how does government cater to the needs of the lowest and marginalised faction of society. That is where the need of safety nets arises.

Relief Packages

More than 70 countries have resorted to the social protection plans including cash transfers, subsidies and immediate relief programs. The Prime Minister of Pakistan has announced a 1.3 trillion Rs. package for the COVID-19 affected economy. The 10 percent of this is specified for social protection, and rest includes the subsidies and other incentives. The politics of subsidy has been long debated, and is likely to act vile with businesses already laying-off their employees.

Prime Minister's Relief Package



The Punjab government also announced the relief package including 10 billion rupees as part of safety nets that shall be disbursed through BISP, District governments and Ehsaas program.

Sindh government was first to announce the lockdown and subsequently a relief package including funds for safety nets. This varying range of commitment adds to the need, as suggested by PIDE in its earlier bulletins, of having one situation room aimed at coordinating efforts of various stakeholders in relieving the sufferings of affected and poor.

Ehsaas Emergency Cash Program-

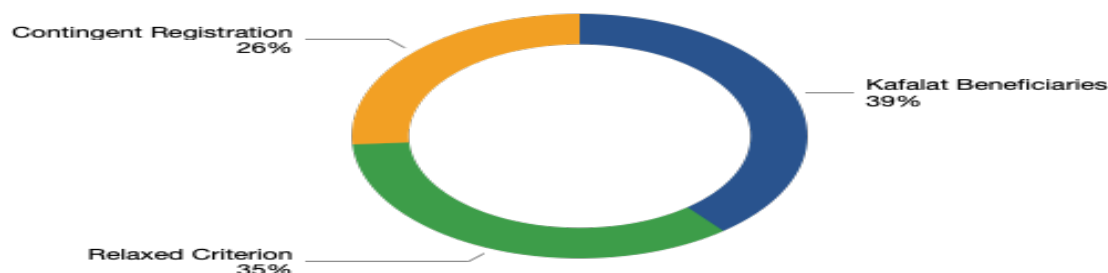
Opportunity to Learn for Immediate Future Interventions

Ehsaas's Kafalat program caters to 4.5 million households, and in wake of this emergency, the suggested paradigm further includes 7.5 million further households merited to receive a one-time amount of 12,000 Rs. This adds up to a total of 12 million household recipients. The announced relief package of 1.2 trillion by the government of Pakistan is aimed at providing the safety net for the people, and assist in case the longer lockdown is needed--which seems imminent.

Amounting to approximate 10% of the total relief package, this EEC program has been allocated 144 billion rupees to cater to a total 12 million households in the country at the verge of hunger.

Kafalat is a newly launched program under the banner of Ehsaas—social protection program for the poor and needy. However, without having a strong record of monitoring and evaluation the program is vulnerable to exploitation and without having evaluated its outreach and effectiveness, it's difficult to predict the success of the program. Furthermore, it has been overloaded with extra burdens of relief disbursement even when the regular disbursement of money has yet to take place. It's good that the data analytics and digital technologies are being used to ensure transparency, but in wake of the crisis it shall be difficult to gather the poor, teach them the procedure to withdraw the money and gather their biometric imprints. The district governments with increased responsibilities will also have to identify the further 3.5 million and scrutinize their needs adding to their work.

New Composition of Ehsaas Kafalat Relief Recipients



Therefore, the research identifies the need that organisations must collaborate together to form the uniform strategy; to reach out to deserving and merited. For now, many of these organisations are awaiting the funds to be redirected and the lower staff is as clueless as to point of indifference. Some of these organisations have put-off their normal operations in wake of lockdown situations. Thus, government can, in this time of awakening, benefit from the human resources of these organisations to reach far and wide, and deserving.

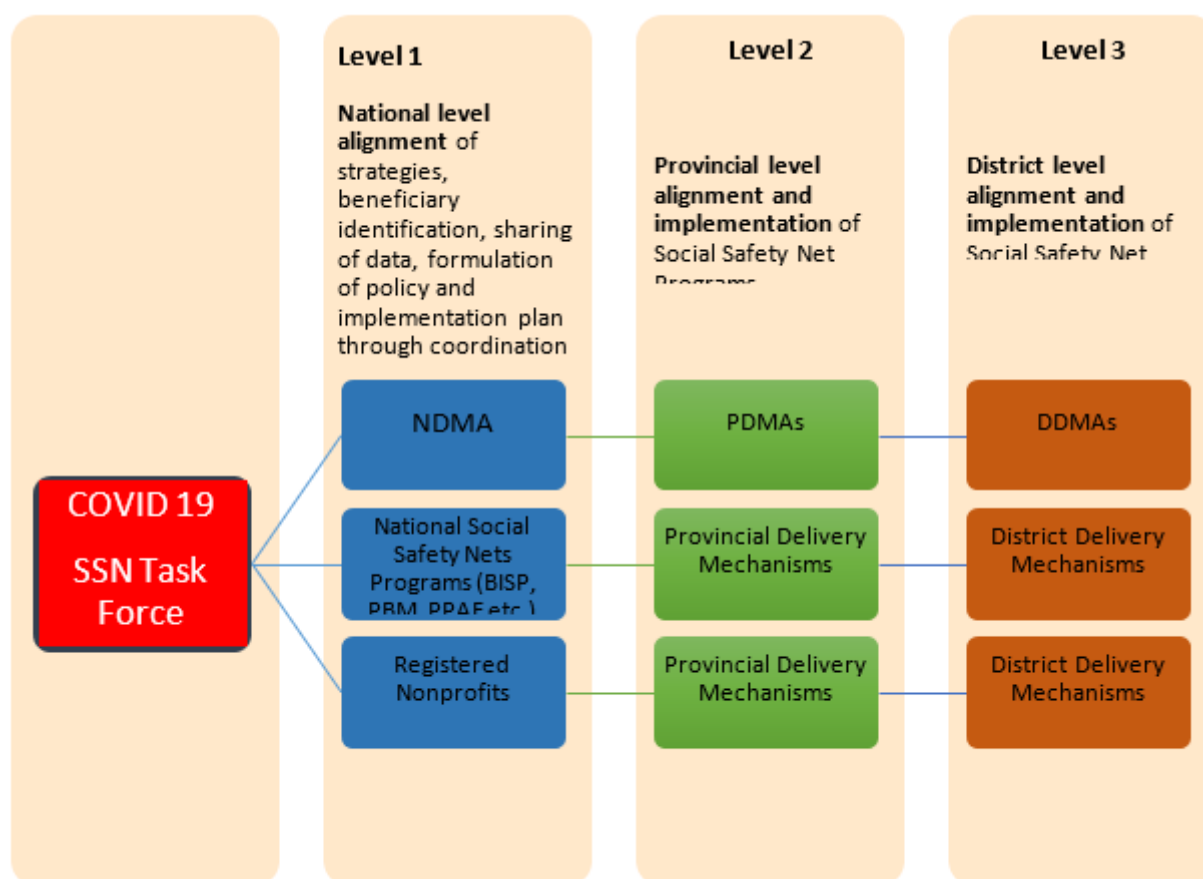
Proposed Coherent Delivery Strategy

A policy and implementation plan at three levels to address short-term and medium-term social safety issues in the wake of coronavirus pandemic:

1. *National* (Level 1)
2. *Provincial* (Level 2)
3. *District* (Level 3)

The figure below presents the mechanism we suggest for a consolidated effort to provide relief to those needing it. We believe it would improve efficiency, cutting on duplication of efforts resulting in wastages/leakages.

Figure 4: Coherent Delivery Strategy in Wake of COVID-19



Policy Recommendations

- The idea put forward by the PIDE team in its earlier bulletins to have a *Situation Room* can be extended to include effective and sustained implementation of the social safety net programmes. The setting up of the National Coordination & Operation Committee (NCOC) is a welcome step forward in this direction, and can take up what we suggest here.
- Logistical services need to be declared 'essential services' during lockdowns to ensure the smooth mobility of perishable goods and other value-chain goods.
- Need for possible governmental collaboration with non-governmental organizations like Akhuwat, Chipa and Edhi through the NCOC can avoid duplication and increase operational capacities.
- Nonprofit & charitable organizations are restricted by their donors and cannot easily divert funds on an emergency basis. The NCOC can play the role of a mediator between charitable organizations and their major donors.
- The medium-term process of unemployment to re-employment must be smooth, and needs good health of businesses in the next 3-4 months. Microfinance Institutions in the country can be used in addition to traditional cash transfers to spur economy activity.

Section 3

PIDE BLOGS

CORONAVIRUS PANDEMIC AND THE PLIGHT OF THE VULNERABLE LABOUR

JUNAID AHMED AND MAZGAR MUGHAL

The cost of on-going Coronavirus pandemic in terms of human life and well-being is mounting by the day with hundreds of thousands of people infected across the globe and thousands already having lost their lives. While the medical dimension of the resulting crisis is of immediate concern, its detrimental effects on the household finances of the vulnerable population cannot be neglected. In his 16 March 2020 address to the nation, Prime Minister Imran Khan expressed his worry about the economic consequences of the pandemic for the common man in these words: “If we close down the country, what will happen to the poor? People will die of hunger here.”

According to the Pakistan Bureau of Statistics (PBS), one in two (56 percent) of Pakistani labour is employed in vulnerable jobs. The share of vulnerable workers is the highest in agriculture (88 percent) but is also significant in sectors such as wholesale and retail trade (70 percent), real estate (63 percent), hotels and restaurants (49 percent) and transport and telecommunication (49 percent). Workers in the agriculture and construction sectors may escape the worst of the crisis, being less affected by the constraints of social distancing or short-run loss in domestic demand. Salaried employees in both the public and private sectors may also be able to weather the storm thanks to the possibility of work from home and paid leave.

The situation of daily-wage and self-employed workers in the cities is, however, more worrisome. Hawkers lose their business when educational institutions and offices are closed and train services are curtailed, waiters do not get paid when restaurants remain closed, labourers remain without work when export orders are cancelled, housemaids are turned away to minimize human contact. These workers are the most vulnerable to a major economic shock such as the one arising due to the coronavirus pandemic. The informal, undocumented nature of their work means that these are precisely the workers who can expect least direct support from the government in times of need. Even a partial closure of the economy can result in this vulnerable section of the population sliding into further depths of poverty.

The government needs to extend its reach to prevent this from happening. While expanding soup kitchens and providing subsidized food and grocery items at the Utility Stores may relieve the immediate pain, an initiative may be required to offer financial assistance to workers in precarious jobs under the Ehsas Programme. The network and knowledge of the local situation of well-respected Non-Governmental Organizations, such as Al Khidmat, Edhi and Akhuwat foundation, may be useful in this regard. Government also needs to ensure that contractual employees of public institutions get their wages.

The crisis also provides an opportunity to take some long-due steps for structural labour reforms. Just as the government is increasing the coverage of health care insurance of the low-income households through Sehat Insaf Card, unemployment insurance for services and trade-sector employees need to be launched. Businesses must be required to register their permanent and temporary employees and contribute towards their unemployment insurance.

The economic challenges that the country faces cannot be solved by the government alone, and demand acts of solidarity at the community level. Businesses that have temporarily

closed their doors can continue paying the salaries of their employees. Likewise, better-off families can increase giving charity. The Council of Islamic Ideology (CII) has asked people to not wait for the month of Ramadhan, and give their Zakat earlier than usual in view of the present situation. People should listen to this advice.

We are going through a crisis of the kind not seen before in the contemporary human history, and which is bound to test the mettle of our nation. The coming days, weeks and months will require our resolve, patience and a spirit of solidarity.

GROWTH OF CORONAVIRUS CASES IN PAKISTAN

DO WE HAVE ENOUGH HOSPITAL BEDS AVAILABLE?

HAFSA HINA

The number of Coronavirus cases grow exponentially, and a crude rule suggests it doubles every six days if we do not avoid regular contact with people and have low natural immunity. The goal of isolation, lockdown, and social distancing is to reduce the transmission of the infection. All depends on how well people follow the protocols. By following the protocols, we can flatten the curve.

In Pakistan all education institutions and many offices were closed on March 13. After six days, (the figures for which came out on March 20), the actual numbers should have been less than double if we were following the protocol. Since all the figures for March 13 are not available, we cannot ascertain the exact trend for an earlier day but following the same six-day rule of the thumb, we have a look at the numbers coming out on March 26.

Table 1 shows that the total active cases on March 26 stand at 1165, as against the 974 predicted on the doubling rule. The Forecast Error shows Sindh and Balochistan to be observing some level of the protocol while the Federal area, Punjab, KPK and Gilgit Baltistan being reluctant to follow the protocols to protect from COVID-19.

Table 1: Applying the 6-days Doubling Rule to Cases in Pakistan

Province	March 20	Predicted	March 26	Forecast Error
Federal	9	18	23	5
Punjab	96	192	402	210
Sindh	249	498	402	-96
KPK	21	42	118	76
Balochistan	81	162	130	-32
AJK	1	2	2	0
GB	30	60	88	28
Total	487	974	1165	191

Source: Author's estimation.

As the number of confirmed Coronavirus cases continue to grow the capability of the hospital system to treat these cases is becoming a concern and will generate stress on the health system of Pakistan. Those provinces are more at risk that have relatively more Corona cases and fewer hospital facilities. Are the current health facilities sufficient to treat corona patients?

Hospitals in Pakistan are ill-equipped to counter Covid-19. How? The current population of Pakistan is about

210 million with one hospital bed available for 1,608 persons. Even in normal situation, the available bed capacity is insufficient to cater to the needs of the huge number of patients, and doctors are treating 2-3 patients on one bed in large cities' public hospitals. In order to assess which province is more vulnerable, let us compare the Corona cases and hospital beds in each province.

From Table 2, we can see Gilgit Baltistan (GB) is most vulnerable, with lowest numbers of beds per patients. After GB, the next vulnerable province is Balochistan, followed by Sindh, the Federal area, Punjab, KP and AJK, in that order. It should be kept in mind that hospital beds are not an accurate measure to fight the Coronavirus outbreak. Not everyone getting infected would need hospitalisation, and in any case hospitals need more resources than beds such as paramedic staff, drugs, ventilators, masks, gowns and gloves. We are using this only as the basic indicator to see how many patients can be accommodated.

Province	Active cases March 26	Beds in all hospitals & dispensaries	Cases per 100000	Beds per 100000	Ratio	Vulnerable
Federal	23	2571	1.146	128.129	0.009	4
Punjab	402	60191	0.365	54.713	0.007	5
Sindh	402	39564	0.839	82.621	0.010	3
KP	118	22154	0.332	62.362	0.005	6
Balochistan	130	7747	1.053	62.757	0.017	2
AJK	2	3752	0.049	92.748	0.001	7
GB	88	986	2.514	28.171	0.089	1

Table 2: Comparing Coronavirus Cases to Available Hospital Beds

Authors own calculations based on data taken from National Institute of Health, Pakistan Economic Survey (2019) and AJK Statistical Year Book (2018)

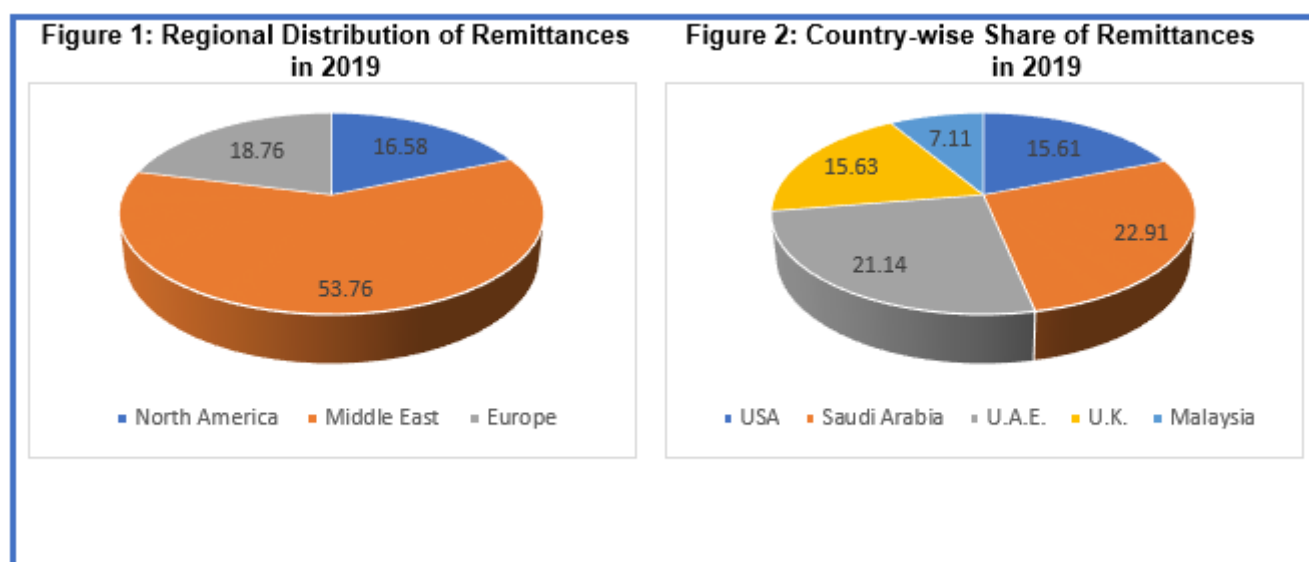
Let us see what the figures look like today- that is six days from March 26. Next two weeks are critical for us. We must take the precautionary measures at the individual and community levels to stop the exponential growth of Coronavirus. Self-isolation is the best strategy to avoid transmission. As a parting note, I will say that we need to take precautions but need not panic. Most people infected by the Coronavirus will have mild symptoms with only 10-15% requiring hospitalisation.

CORONAVIRUS PANDEMIC AND RISKS TO REMITTANCE INFLOWS

MAZHAR MUGHAL AND JUNAID AHMED

The on-going global economic slow-down due to the Covid-19 outbreak has raised concerns of substantial fall in remittance flows to the developing countries. Pakistan is one of the world's top ten recipients of international remittances according to the World Bank. In 2019, the country received US \$21.8 billion in terms of remittances from the over six million Pakistanis living abroad, principally in the countries of Gulf Cooperation Council (GCC), North America and Europe (Figure 1). In addition to these remittances sent through formal channels, an estimated 40 percent amount is transferred every year through hand-carry, hawala and other informal means.

Thanks to a record number of Pakistani workers (about 625,203) who went abroad in 2019 (according to BEOE), remittances to the country were expected to increase further in the coming months. In fact, remittances in the month of February rose by 16 percent year-on-year to US \$1.82 billion. The upswing was wide-ranging, with a substantial increase reported for remittances from all the major sources: Saudi Arabia (14 percent), UAE (15 percent), other GCC countries (17 percent), EU countries (18 percent) and US (38 percent).



Source: State Bank of Pakistan, 2020

The overseas Pakistani community has become more geographically diversified during the past decade, thereby making the remittance flows more resilient. Remittances from Pakistanis based in the GCC countries, which used to constitute more than two-third of remittances to Pakistan, are now down to about 54 percent of the annual flows with Saudi Arabia (23 percent) and United Arab Emirates (21 percent) being the principal remitters (Figure 2). Parallel to this shift is the increase in remittances from Malaysia, Australia and other countries of the Asia - Pacific region while those from North America and Europe have kept pace. This diversification has reduced Pakistan's excessive reliance on oil-exporting economies and has helped keep the economy stable.

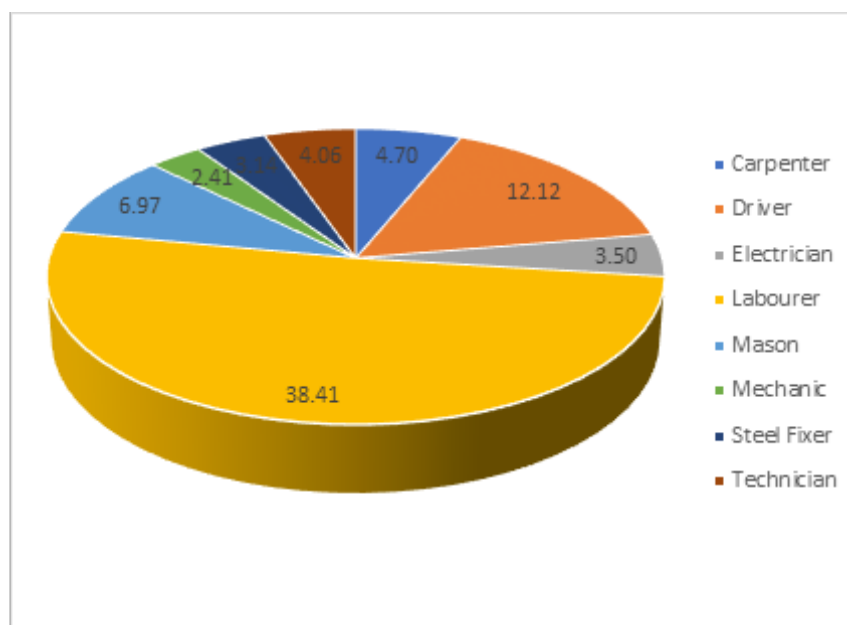
The significance of these inflows for the Pakistani economy can hardly be over-stated. During the first half (July - December) of the current financial year 2019-20, remittances accounted for about half (49.15 percent) of the country's import receipts and covered almost the country's entire trade deficit. Another beneficial characteristic of remittances to Pakistan pertains to their generally counter-cyclical nature. When the Pakistani economy reels from high prices of imported oil, rising remittances keep the damage in check to a certain extent.

The Coronavirus pandemic has put this stabilizing role of remittances in danger. The world economy has come to a halt. Airplanes are standing idle; businesses have been closed; investments have been put on hold; new hiring's have been stopped. The specter of a global recession looms. In addition to losses resulting from

the Covid-19 crisis, the oil-price war between Saudi Arabia and Russia has seen oil prices plummeting to below US \$30 per barrel. This has seriously dented the finances of the GCC countries. The combination of these twin shocks may eventually show up in the volume of remittance inflows to Pakistan. If the global economic slow-down prolongs, Pakistani overseas workers will begin losing jobs.

Pakistani workers, particularly those working in the GCC countries, are often employed in construction and services sectors. According to the BEOE data (that almost entirely comprises placement of overseas Pakistanis in the GCC countries), 38 percent of Pakistani workers abroad work as laborer's, 12 percent as taxi drivers, 7 percent as masons, 5 percent as carpenter and 4 percent work as technician (Figure 3).

Figure 3: Occupation distribution of overseas Pakistanis



(1971 – February 2020)

Source: Bureau of Emigration and Overseas Employment

These professions are some of those that could be seriously affected from a prolonged lock-down. Even a shortfall of a couple of billion dollars of remittances may tip the delicate balance in external payments the country has recently achieved.

However, the fact that hand-carry is not a possibility due to travel restrictions and people are preferring using electronic transfers over currency notes may prove a mitigating factor. This transition to electronic or mobile transfer may be facilitated by the State Bank, and commercial banks can streamline and promote their electronic remittance products. This beneficial measure will however not tackle the financial difficulties that workers may face as a result of loss in income.

In the coming weeks and months, overseas Pakistani workers will need all the help they can get from the authorities to limit their losses. The government may have to discuss with authorities of the GCC and other countries the rights of workers whose visa or job permits expire due to travel restrictions and the payment of pending pays and dues of those who lose their jobs. Efforts on these lines will be necessary to ensure the well-being of the burgeoning overseas Pakistani community which has become one of Pakistan's key assets.

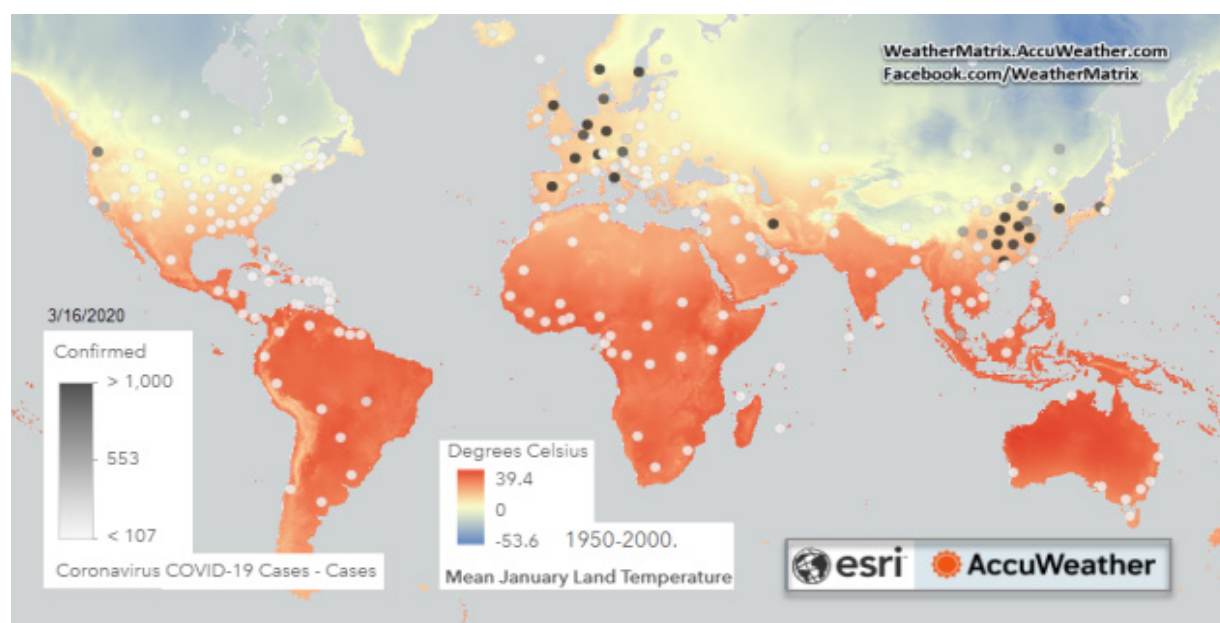
WILL HIGH SUMMER TEMPERATURES STEM CORONAVIRUS' SPREAD IN PAKISTAN?

RAJA RAFIULLAH

Recently Prime Minister Imran Khan in his address emphasized the seriousness of the issue facing the country and urged people to practice social distancing for the next few weeks. By then he hoped that given the hot upcoming summer weather the virus would find it difficult to thrive resulting in lower transmission rates.

To be fair to the Prime Minister, he has a point, one that is backed by an observed inverse correlation between numbers of infections and average temperatures globally. Having said that, experts warn that there is no guarantee that hotter temperature will completely get rid of the virus. Regions such as Brazil and Australia that have higher temperatures in the southern hemisphere, although not being hotspots for the virus have confirmed cases of the virus infections. It is important that we take necessary steps to stop the spread of the virus and not rely entirely on the summer temperatures. Experts warn that even if upcoming summer results in lower transmission rates, the virus will survive and potentially a surge in transmission will ensue once the weather gets milder.

The illustration below¹ depicts the hotspots of infected areas while plotted against mean monthly temperature (January 2020).



Most of the large global outbreaks (depicted by dark circles) are in the temperature the cold temperature range. This includes hotspots in China, South Korea, Iran, Western Europe and United States (Washington & New York States). Above this range of temperature, the inverse correlation between average temperature and number of infections declines.

This observed inverse correlation is now being backed by new research that has come out recently. In a Massachusetts Institute of Technology (MIT) study, researchers concluded that transmission rates are higher in a temperature range of 0 to 13 Degrees Celsius. Furthermore, the number of cases in countries with relatively hotter average Jan-Feb-March temperatures (>18 C) accounts for less than 5% of total global cases of COVID-19.²

1 <https://www.accuweather.com/en/weather-blogs/weathermatrix/deep-dive-coronavirus-vs-population-and-temperatures/701036>

2 https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3556998

In a second study on spread of the SARS-COV-2 virus, researchers studied spread of the virus in its early days within China and observed that high temperature and high humidity significantly reduced the transmission of the virus.³ The researchers in the study had normalized the data by GDP per capita and population density to account for differences in healthcare facilities and population density respectively making their finding all the more relevant. In a nutshell, the researchers concluded that rise in temperature and humidity levels in the northern hemisphere could significantly reduce the rate of transmission. However, the methods and the results of this study are yet to be peer-reviewed.

Despite this observed correlation between higher temperature and low transmission rates, other experts have warned that policymakers should not pin all their hopes on the upcoming summer denting the spread of virus significantly. One such expert is Marc Lipsitch, who is Professor of Epidemiology and Director of Center for Communicable Disease Dynamics at Harvard T.H. Chan School of Public Health. Dr. Lipsitch claims that although we might expect to see a “modest decline in the contagiousness”⁴ of SARS-CoV-2 virus and the disease it causes (COVID-19) in the coming summer months in the northern hemisphere; this alone will not be enough to get rid of the virus.

Having said that, even a modest decline in transmission rates might be enough to buy the government and the healthcare infrastructure in Pakistan the time to mobilize resources and build capacity of the healthcare system. Favorable natural factors such as higher temperatures combined with policies of social distancing and effective quarantining can bring about conditions that can contain the spread of the current coronavirus outbreak in Pakistan.

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WE WOULD NOT DIE!

NADEEM AHMED KHAN

The World Health Organization has estimated that 3.4% of people affected by the novel coronavirus have died. According to a report by WHO carried out with Chinese authorities, the death rate for people over the age of 80 was 21.9 percent.

The elderly, especially those with diabetes, heart disease and lung disease, can be severely affected by the new virus. CoVID-19 is more or less like seasonal flu in some cases. According to the Centers for Disease Control and Prevention (CDC), flu-related deaths are 70 to 85 percent, and up to 50 to 70 percent in flu-related hospitalization occurs among those 65 years and above.

Risk of Dying by Age

AGE	DEATH-RATE all cases
80+ years old	14.8%
70-79 years old	8.0%
60-69 years old	3.6%
50-59 years old	1.3%
40-49 years old	0.4%
30-39 years old	0.2%
20-29 years old	0.2%
10-19 years old	0.2%
0-9 years old	No fatalities

Source: <https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/>

The Iranian news agency reports that a 103-year-old woman in Iran has recovered after being exposed to the new Coronavirus, despite much evidence that the elderly are at high risk for the disease. The woman was hospitalized in the central city of Semnan for about a week and fully recovered. The woman was the second elderly patient in Iran to survive the disease. The other was a 91-year-old man from Kerman, south-east of Iran. After being ill for three days, he recovered despite pre-existing medical conditions, including hypertension and asthma.

In an interview with media, the woman and the man said, *“when we discovered that we were infected with the coronavirus and were at the stage where the patient died, we decided first that we would not die because we were lying in the hospital bed every day thinking that we had to overcome all problems, we survived the world wars and we also suffered all kinds of revolution. This decision also kept us alive and well”*.

As WHO claims that people over 80, the death rate may be as high as 21.9 percent. But that does not mean individuals cannot beat the odds. Iranian 91 years man and 103 years woman are examples of self-belief and positive attitude.

Currently, however, there is no cure for this coronavirus, and treatment is based on care provided for influenza (seasonal flu) and other acute respiratory diseases, according to the Center for Disease Control and Prevention. The only way to avoid coronavirus is social distancing and a strong immune system.

No one really understands how or why a positive attitude helps people recover faster from surgery or cope better with serious diseases — including diseases as serious as cancer, heart diseases and AIDS. Mounting evidence, however, suggests that these effects may have something to do with the mind's power over the immune system.

“Look at the bright side” or to “see the glass as half full.” Chances are good that the people who make these comments are positive thinkers. Researchers are finding more and more evidence pointing to the many benefits of optimism and positive thinking. Such results show that not only are positive thinkers healthy

and less stressed, but their overall well-being is also high. According to Positive Psychology researcher Suzanne Segerstrom, “almost every significant amount of human activity is involved, and numerous studies suggest that optimists are generally psychologically and physically healthy.”

In recent years, researchers have found that our brains can have a powerful effect on our bodies. Immunity is one area where our thoughts and behaviour can have a particularly powerful effect. In one study, researchers found that activation of negative emotion in the brain area led to the weaker immune response to a flu vaccine.

Researchers Segerstrom and Sefton found that people who were optimistic about a specific and important part of their lives showed a stronger force than those who were doing well in school.

As one of the life coaches¹ suggests, following positive attitude practices can help everyone in these trying times:

- Self-Affirmation (Yes I Can, I am a SURVIVOR)
- Imagine that you are Young and keep thinking about every Challenge you come across and Survived in the end.
- Pay GRATITUDE to all those who helped or inspired you throughout your journey (you may use your wonderful imagination if it is not possible to make a small phone call now)
- Be THANKFUL to Allah for everything. (It's better to keep counting His unlimited blessing as we have in Surah-e-Rehman)
- Make a Commitment to Allah that how you are going to become More Useful for mankind.
- Forgive everyone to unload yourself and relax. (Best way to do it to pray for their success in both the worlds).
- Remember all the beautiful, exciting and bright moments when you are seeing yourself with your loved.
- And of course, we may pray to seek forgiveness to Allah and be THANKFUL to Allah again and again for even giving us this opportunity to say Alhamdulillah.

This attitude naturally boosts immune system and one can feel it.

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¹ NLP Trainer, master hypnotist and life coach, Zeeshan Abbasi.

JUMMAH PRAYERS IN PAKISTAN: AN ISLAMIC APPROACH TO COMMUNITY WELFARE DURING THE COVID-19 PANDEMIC

MARIAM MOHSIN

It's Friday. The confusion around *Jumma* congregations stands as relevant as it did last week, except for in Sindh where a ban was imposed late last night. Amidst the exponential spread of the COVID-19 in Pakistan and all around the world, several major Islamic countries cancelled all forms of religious gatherings including Friday prayers as well as pilgrimages¹.

Earlier this month, several countries including Saudi-Arabia, Iraq, Iran, Palestine, Egypt, Turkey, Syria, Jordan, Tunisia, Algeria, and UAE cancelled daily and weekly congregational prayers. Pilgrimages to Makkah and Madinah were also halted until further notice. However, Friday prayers were observed in Pakistan and the rest of South Asia. On March 19, a massive collective prayer reportedly attended by 25,000 people in Rajpur, Bangladesh, generated widespread outcry all over the world². Videos circulating across social media showed large groups of South Asian Muslims observing Friday prayers in congregations. Some media reports showed groups of people in Pakistan and India debating how it is obligatory upon Muslim men to observe prayers in congregations, inside mosques.

Earlier this week, the Council of Islamic Ideology was to connect to Ulema all over the world in order to reach a solution. Yesterday, the Grand Imam of Jamiah Al-Azhar in Egypt issued a *fatwa*, in response to a special request made by the President of Pakistan³. The fatwa clearly states that under the current pandemic situation, the state has the right to cancel congregational prayers. The Fatwa also quotes Abu-Dawood, who quotes Ibn-i-Abbas, who has quoted from The Prophet (PBUH) that the chance of getting sick is enough of an excuse to skip congregational prayers. To further emphasize how this decision was not only for one's own personal safety but also a matter of communal safety, the fatwa quotes the Prophet (PBUH) from Abdur Rahman Ibn-i-Auf, saying that one should avoid praying in public if their odour was to create inconvenience for other people. While religious teachings suggest that congregational prayer should be skipped for as much as the nasal convenience of other people, it would definitely suggest so in a matter of life and death. The fatwa suggests local mosques to alter the *azaan* (call for prayers) and recite "pray from your homes" instead of "come for prayers".

The question underlying the situation is bi-fold. Why is collective prayer important? And why are religious decisions and *fatwas* more sensitive in South Asia, than in the rest of the world. To answer the first part, Fuist (2015)⁴ conducted an in-depth investigation into collective prayers across all religions of the world. Fuist observes that religious gatherings are a form of meaningful religious performance for individuals belonging to almost all religions, historically. Collective performance of religion and religious rituals is therefore a means through which groups form collective history, behavioural expectations, and seek social and cultural identity cues. It hence holds a significant position in the social performance of faith and individuals belonging to different religions have sentimental understandings of religious collectiveness.

Within all factions of Islam, daily congregational prayers, and special collective prayers such as the Friday prayer, Eid prayer, and funeral prayer, hold a significant place. Apart from the religious teachings, Muslims all over the world have sentimental attachments and derive sense of community from their respective mosques which also helps with identity construction in Muslim-minority countries. However, as we move to the second part of the question, it is apparent that Muslims in other parts of the Islamic world followed lead when a call for the ban of congregational prayers was announced. Without passing by with reductionism, I would partly introduce the larger problem of the South Asian Muslims, especially their turbulent sense of identity within the contemporary discourse and leave it to the readers to investigate further.

While Muslims in South Asia comprise almost one-third of the world's overall Muslim population, the understanding that the South Asian Muslim is one monolithic community is far from correct⁵. With diversity within religious and political thought, cultural performance of religion, and linguistic traditions, it is pertinent to observe that the fight for religious identity in South Asia has had a history both within and outside the South Asian Muslim community. The ongoing outcry against the Citizenship Amendment Act (CAA) in India has

but given the identity-based insecurity another spin.

Hence, it is hard to get the South Asian Muslim to follow lead in the presence of a turbulent sense of religious identity, longstanding partialities, and a disturbance within the contemporary discourse. It remains a mystery until afternoon whether there will be an adherence to the *fatwa*.

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SOCIAL SPACES IN THE TIME OF CORONAVIRUS

ZULFIQAR ALI AND FAHD ZULFIQAR

A few pertinent questions sprang up in our minds when we received an email last week about the postponement of a local conference our paper had got accepted for. The conference was supposed to be held in mid-April this year. The reason, without any guess, was the global outbreak of deadly coronavirus. In order to minimize the susceptibility of transmission of the virus, we are inching towards lockdown of different economic, educational and social spaces. Conferences postponed, cinema halls shut down, hostels vacated, eateries closed, public transportation system curtailed; in short social mobility has been restricted in the wake of institutionalizing social distancing.

According to the World Health Organization (WHO), there has to be distance of at least one meter which needs to be maintained between yourself and anyone who is coughing or sneezing. This caution is prescribed in the light of the fact that social contact can increase the susceptibility of catching the virus. Hence, any form of social contact, most critically physical proximity, is being consciously restricted, at different levels, by governments all over the world, without exceptions.

These measures which are being referred to as the ‘need of the hour’ have received flake in political and academic discourses due to their stringent and anti-social stance toward human behavior and interactions. But the fact of the matter is that the relevance of these strict measures cannot be ignored if the susceptibility of the virus is to be minimized. Especially, in a country like Pakistan where the number of identified infected cases has been reported the highest as compared to other South Asian countries, the relevance of such measures become even more important. Adding to this grave situation is the shortage of precautionary masks and hand sanitizers in the medical stores of the country. With such dearth of physical infrastructure in the health care, paucity of knowledge related to the virus and virus-control, and state-apparatus determined to restrict social mobility by curbing social spaces, will human behavior actually change in a country like Pakistan?

We are not able to respond with an absolute ‘Yes’ to this question. There can be many reasons attributable to our ambiguity in finding a deterministic response to this question as explained below.

First of all, huge economic costs are being borne by the most infected regions as a result of shutting down and locking down. People are confining themselves to their spaces of domesticity, the immediate result of which

is the sharp decline in the demand of goods and services. To what extent this global phenomenon is relevant to Pakistan, especially when we consider country's informal economy, is questionable. If a poor person's survival is singularly contingent on per-day labor (for example of a child working in automobile mechanics/shop, a *khokha* owner, a daily-wage worker or a domestic helper), will he/she be caring for coronavirus even when the demand for his/her goods and services is low?

Secondly, the country has culturally and historically been bifurcated into urban and rural domains. Awareness and literacy rates in the former are greater than the latter. Whereas, social ties are stronger in the rural areas of Pakistan due to which maintaining social distancing in the rural areas seems to be a bigger challenge. In the light of this assertion, do we need region-specific policies of social distancing for the rural-urban areas of Pakistan?

Thirdly, our social values and codes of hospitality are so strong that these have become part of our cognitive systems and cultural norms. We still see people shaking hands with each other around us. We still see people hugging each other because they want to respond to the gesture of physical proximity with the same warmth. Also, we still see people being reticent to cover their faces with masks despite catching cold, or not caring much for their mouth or nose droplets dropping over other people's bodies when they cough or sneeze. Why? Because, they simply don't care as we heard one sick man saying "*Allah maalik hai*" (Allah is our caretaker). Putting these realities in place, social distancing seems implausible in Pakistan.

Having said this, we are also observing shrinking of social functioning as a response to which social behavior is altering in the physical spaces around us. It gives a lesser sense of belonging when your colleagues and even close relatives for that matter do not encourage or respond to physical proximity. The recent studies of cognitive anthropology being conducted in the west are also highlighting that social distancing is causing social isolation which can cause depression and other psychological disorders among people. Such studies can be relevant for a country like Pakistan where social groups are closely knit and culturally tied to each other. In a nutshell, Coronavirus and the institutional response to it is necessary but as to what extent it will be efficacious for a complex country like Pakistan is a question to ponder.

YOUNG- THE INADVERTENT AGENTS FOR SPREADING COVID-19

SAIMA BASHIR

So far, the health message has been clear - the older you are, the more at risk you are from coronavirus. But the World Health Organization (WHO) has warned young people not to view themselves as “invincible”.

Special Advisor to the Prime Minister (SAPM), Dr. Zafar Mirza, said on Thursday March 26 that 24 percent of the confirmed corona patients in Pakistan are between the ages of 21-30 years. The statistics reveal that the pattern of COVID-19 is quite different in Pakistan from the other countries, including China and Italy where most of the infected cases are the elderly. Early reports that only the elderly, i.e. 65 and above, are vulnerable are also being controverted by new evidence coming from the United States and Europe. Recent figures show that young adults are catching the virus too. The US Centers for Disease Control and Prevention (CDC) reported that though fatality rate is the highest among older adults i.e. 85 and above, “COVID-19 can result in hospitalization and admission to an intensive care unit for a range of ages”. According to CDC 20% of the people who are hospitalized are between the ages of 20-44 and another 18% are between 45-54 years. Of those admitted to intensive care, 12% were aged 20-44 years.

What does it mean for Pakistan?

Pakistan is a young country with around 65% of our population below the age of 30 and 29% between the ages of 15-29. With the current rate of COVID-19 spread, the number of cases are likely to go up. Number of infections can possibly go much higher in Pakistan than many other countries. However, looking at the fatality statistics (see the table below), death rate would probably be lower in Pakistan because of the young population base.

Pakistan is the 5th most populated country in the world. Most of the major cities of Pakistan have high population density. Housing conditions too are highly crowded. The average number of persons per room is much higher than recommended by UN habitable index. According to Pakistan Demographic and Health Survey 2017-18 the average household size is 6.8 in rural areas and 6.3 in urban centers. The habitation density level is around three persons per room in Pakistan which is significantly higher than the crowding level recommended by the United Nation (1.4 to 2.0 persons per habitable room). The high population density in major cities of Pakistan along with crowded housing conditions and higher average social circle can trigger the spread of virus.

COVID-19 Fatality Rate by Age

AGE	DEATH RATE all cases
80+ years old	14.8%
70-79 years old	8.0%
60-69 years old	3.6%
50-59 years old	1.3%
40-49 years old	0.4%
30-39 years old	0.2%
20-29 years old	0.2%
10-19 years old	0.2%
0-9 years old	No fatality

Source: www.worldometer.info.

Population density seems to have a connection with COVID-19. Ali Raza¹ in his article looked at how the rise of coronavirus cases in Germany and Italy looks as if it occurred because their population densities are similar to that of Wuhan's with similar circumstances. He concluded that after the cases of COVID-19 reaches a certain threshold than it was evident that the higher the population density, faster the spread of virus. Crowding appears to be responsible for the spread in most places. A very high population density in Karachi and Lahore can set in motion the spread of virus in a very short span of time¹.

What do all these statistics imply for the current pandemic and Pakistan's age structure? We have seen, a lot of people are out on the streets despite the government-imposed restrictions, many among them are young people. Taken in by the initial reports that the COVID-19 mainly affects the elderly, young adults feel they will not contract any serious Coronavirus illness. However, what we like to stress here is that while the younger people might be less likely to develop serious illness, as compared to the elderly, *they could easily become the potential carriers of the virus*, even when they have no, or very mild, symptoms. Experts estimate that each coronavirus infected person can pass it on to between two to three other people, on average. Those two or three people can then infect another two or three more, and so on. This is how a small number of infected people turns into hundreds and thousands of infected people so quickly. Therefore, *young people may be inadvertent agents of the spread of COVID-19*.

With 24% of the COVID-19 cases reported in the young people in Pakistan, I am afraid our health infrastructure might collapse as the number of infections goes up. With one of the lowest public health expenditure as % of GDP in the world, Pakistan has only 0.6 beds per 1000 people (China and South Korea have between 4 to 5 beds per 1000). As the required numbers of testing kits are in short supply, there is a possibility of underreported number of cases. In addition, the lack of health facilities as well as of doctors indicates that the reality might already be worse than being reported. Only social distancing breaks the chain of transmission which is hard to implement under our social system. While it is true that younger people are less likely to die from the illness, they could still require the ventilators and ICU beds that are again in short supply. *There is a need to emphasize in all public announcements that the young are part of the problem*.

It is never too late to do the right thing. It is time we start propagating in Pakistan that the young need to take equal precautions and restrict their movement, not just for their own good but also to stop the spread that they may cause. A massive awareness campaign is required to make the population realise what and who is causing the virus to spread, and what they should do to contain the outbreak. More importantly, people need to take their individual and social responsibilities seriously.

¹ Coronavirus: What's at stake for developing countries? Preliminary data analysis for the estimation of risks to Pakistan in the wake of rising number of infections.

WHY PAKISTAN'S INDIGENOUS TESTING IS NOT MATERIALISING?

AQEEL ANWAR CHAUDHRY

Novel Coronavirus Disease caused a national emergency for many countries. It has resulted in overburdening the healthcare sector, increased the vulnerability of the poor, and incurred heavy losses to the economy. Pakistan Institute of Development Economics (PIDE) through its COVID Response Team is trying to analyse the situation and provide necessary policy input. At the time of writing i.e. April 2, the total number of positive tests are 2,291 out of the total 16,777 tests performed in the country¹. That means 13% of the total tests are positive. Out of a total population of 216,565,318, it means every 12,908th person was getting the test. This is extremely low. Studies^{2,3} show that COVID-19 has a reproduction factor of 2-5 that means a single person can infect from 2 to 5 people. This means that there can be 4,582 patients of Coronavirus out there. This calculation is very crude and real calculation is much scarier but let us not get into that discussion for now.

Any disease can only be cured if the diagnostics system is available wide and far with an accuracy of more than 95%. The importance of widespread testing is already discussed in PIDE COVID-19 Bulletin No. 9. Without testing, partial or full lockdown would not help as it is the timely isolation of patients from the healthy is not made possible. Since the outbreak in Pakistan, on average 457 tests have been done every day. There are known delays in the process. First being the tests are expensive; second, the healthcare sector was not ready to react as Pakistan has not seen an epidemic of this type in the past; and third, test kits were not available in the country and had to be imported.

Government has categorised Corona patients into three groups. First, having flu, cough etc., second, those showing more symptoms and considered suspect patient, and third, confirmed patients. Due to lack of testing, for the first two stages the government advises self-isolation. For a country like Pakistan, it is impossible to self-isolate at home because majority of the country's population lives in small houses with 6-7 household members. That leads to the imminent danger of spreading the disease within the house. Various cases of patients from the same household from Punjab confirms this argument.

Aggressive testing can help contain the spread. How can that be done, the answer is to develop indigenous testing methods. Those will be much cheaper as compared to the imported ones that cost around Rs. 8,000 per test. The popular narrative makes us believe that Pakistan is a poor country having no expertise to do any such thing. But in the current Coronavirus outbreak, a local university has claimed to successfully test its indigenously made testing kits. These testing kits, however, have not been given a fair chance to be commercialised.

Logically so, such procedures undergo very strict scrutiny. Every method needs to be reliable. National Institute of Health (NIH) at Islamabad and Drug Regulatory Authority of Pakistan (DRAP) under the Ministry of National Health Services Regulations and Coordination are the two cardinal departments of the government which must approve any local product coming to the market. NIH provides the support by providing positive samples to the researchers and DRAP ensures that the minimum requirements needed for licensing are fulfilled. The cumbersome procedures of DRAP delays the process by, at times, years. There are no minimal testing requirements set to deal with the type of emergency that we are facing right now.

When we look out of Pakistan, we see that countries are taking drastic steps. For instance, the Food and Drug Administration (FDA) in the US announced its Policy for Diagnostic Tests for Coronavirus Disease-2019 during the Public Health Emergency⁴. A clause of Emergency Use Authorization (EUA) can jumpstart testing method with minimal testing required. The minimal testing defined is 10 samples only, with 5 positives and 5 negatives. If a test is successful in achieving more than 95% efficacy, then that test can be licensed.

This type of approach is not present in Pakistan. DRAP is sticking to its routine procedures which deters any local effort to materialise. In an emergency there can be three pathways for us to follow:

1. DRAP like the FDA in the USA reduces the minimum number of tests required, keeping the efficacy rate the same.
2. NIH provides samples to researchers where they can work on the possibility of developing a workable

testing kit.

3. Coordination mechanism between the quarantine facilities and those researching on developing a kit can be formed so that the process can speed up.

In these times of emergency, neither organizational sanctity nor money-making should be the aim. Aggressive testing can assist us in getting the situation under control, and for that indigenous efforts need to be encouraged. It can help us reduce the cost and improve accessibility, both aiding more aggressive testing which is what we need.

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COVID-19 AND WORLD'S FINANCIAL MARKETS

AHMAD FRAZ

Impact of the COVID-19 pandemic on global economy has been widely discussed in recent weeks. As the number of cases increase across the world, people are worried about its impact on almost all sectors of the economy, ranging from aviation, retail industry, tourism, hospitality to the manufacturing sector. Globally, the Coronavirus shock is being considered to be even more severe than the Great Financial Crisis of 2007–08. While it is difficult to estimate when the outbreak will end, most epidemiologists expect the situation to be under control by the end of August 2020, which is still months away.

Stock markets all over have responded to the COVID-19 pandemic with worrying volatility, as traders have panic-sold out of fear. As a result, world-wide circuit-breakers have been triggered many times to prevent panic-trading. Even S&P 500 triggered level-1 market wide circuit breakers on March 9, 12 and 16 and 18th based on the rule, 'drop of 7% from the previous close before 3:25 pm and market pauses for 15 minutes'. Trading also, traditionally, halts on both the Dow and the Nasdaq when a circuit-breaker is triggered on the S&P 500.

The S&P 500 has faced 12% loss and Down almost 30% from its all-time high on March 16th 2020. The same day Dow Jones Industrial Average lost almost 13%, the Russell 2000 lost more than 14%, the MSCI Emerging Market Index declined 6.3%, the MSCI Asia Pacific Index decreased 3.7% and Brent crude dipped below \$30 a barrel for the first time since 2016. The European markets including FTSE (UK), DAX (Germany), CAC (France) and Italian stock markets also tumbled, and all stock markets are in a freefall.

Stock returns of the 10 vulnerable COVID-19 Countries			
Stock markets	Jan 1, 2020 to	Jan 31, 2020 to	16-Mar-2020***
	Jan 31, 2020*	Mar 27, 2020**	
United States (S&P)	-0.52%	-0.14%	-12.77%
Italy (MIB)	-0.81%	-0.12%	-6.30%
China (SSE)	-0.18%	-0.15%	-3.46%
Spain (IBEX)	-0.73%	-0.09%	-8.21%
Germany (DAX)	-0.75%	-0.15%	-5.45%
France (CAC)	-0.72%	-0.13%	-5.92%
UK (FTSE)	-0.70%	-0.16%	-4.09%
Switzerland (SMI)	-0.42%	-0.03%	-1.69%
South Korea (Kospi)	-0.52%	-0.14%	-3.25%
*Average returns of the markets from first public alert issued by china from Jan 01, 2020 for corona till World Health Organization (WHO) traced and named it COVID-19 on Jan 31, 2020.			
** Average returns of the markets from COVID-19 announced by WHO on Jan 31, 2020 till Mar 27, 2020.			
** Average returns on Mar 16, 2020, the day most of the global financial markets crash			
Data is collected from www.investing.com Table constructed by author , The Iranian market data is not available.			

The Covid-19 pandemic has brought volatility in the global markets and has created uncertainty among investors. These shocks to the stock markets are putting doubts on the economic outlook and inducing fear among the investors. The spread of this pandemic, and the resulting lockdowns, would lead to a global slowdown, and depress demand and disrupt supply chains.

The current situation has created an uncertain environment which is quite damaging for the future perception of investments in Pakistan where the economy is already under strain. Stock market has already started reflecting downward trend as panicked investors are pulling out of the stocks.

Pakistan Stock Exchange on 16th March traded in a bearish trend, and the Index dropped by 2375.97 point in a single day. The benchmark KSE-100 Index recorded its biggest fall in a single day since 2009 and closed at 28,109.57 points on 27th March, 2020. The market has faced a six-year low intra-day value by reaching the 27,169.14 level and reduced its value by 28 percent this year. The market halted 8 times only in the month of March and faced a drop of 11,000 points only in this month. All the other Indices including KMI 30 and KSE also faced similar losses. However, as the impact continues to grow in terms of scope and magnitude, attention is now turning to the long-term consequences for the stock market.

The US market after the announcement of the \$ 2 trillion by White House has climbed significantly including S&P, Dow Jones and Nasdaq. Same happened with the Asian markets including Nikkei, Kospi, Hang Seng and Shanghai. European markets also took steps like the US but due to more new Coronavirus cases and related death these markets could not gain momentum. However, the net gains reported by London FTSE, DAX, CAC-40 were positive.

Things are different in Pakistani stock market. 171 companies gained and 141 companies lost their value on March 27, 2020. KSE-100 shares index gained 3.09 percent, or 842.37 points, to close at 28,109.57 points after the SBP announcement. The market is unable to restrain the divestment of investors even after two stimulus decisions taken by SBP and the federal government. First was further reducing the policy rate by 150 bps to 11%, and second the \$7.5 billion economic bailout package equivalent to 2.6% of country's GDP. Other related steps include eliminating the Capital Value Tax (CVT), and introducing restrictions on short selling.

Due to the less than desired reduction in the policy rate and global economic conditions the net investment looks certain to fall in future. As suggested by the former PSX director, Mr. Amin Yousuf, the government should inject ETF at the earliest and the SBP should bring down the interest rate to single digit for the revival of the economy and the capital market of the country.

The higher interest rate is not a solution to attract foreign exchange for stability of the currency at the expense of local businesses in Pakistan. My personal opinion is (not necessarily that of my Institute) that the government must reduce the policy rate for the sake of lowering operating cost of the companies, because most of the companies use loan for their working capital. As the cost of working finance goes down it will reduce their financing cost. That will help to increase their future cash flows and increase the present value of future expected cash flows. Secondly, by lowering the interest rates to single digit the government will be able to reduce debt servicing cost.

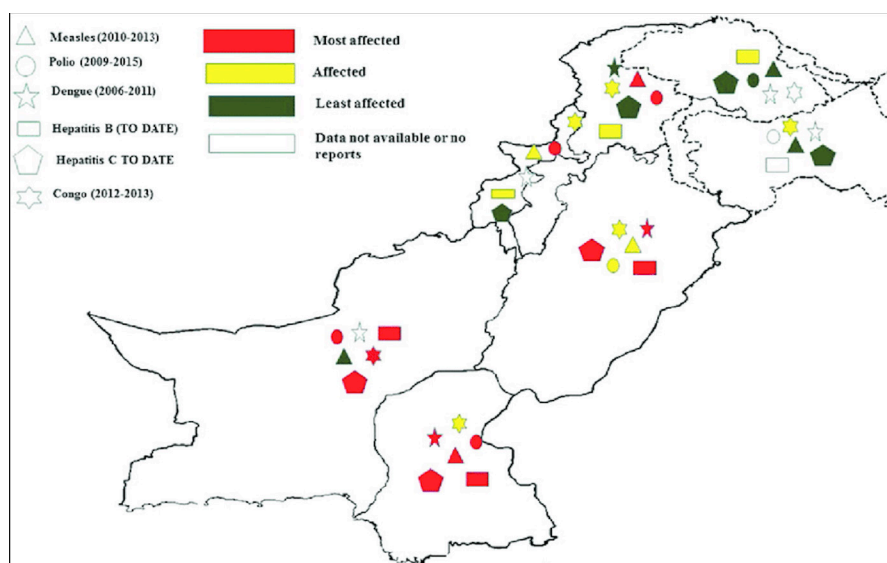
BUILDING A DIFFERENT KIND OF BRIDGE

PUBLIC HEALTH EMERGENCIES' PREPAREDNESS: A POST-COVID-19 AGENDA

SAMAN NAZIR

Reflecting on the devastating effects of the COVID-19 pandemic on Pakistan, we are experiencing weak health infrastructure, lack of disaster preparedness, economic vulnerabilities, and social-behavioral issues. However, this is not the first time we are in such a grave situation. People of Pakistan have suffered from various infectious outbreaks such as dengue, Crimean-Congo flu, hepatitis, measles, HIV/AIDS, and polio, to name a few. Human-made and natural disasters in the past, such as earthquakes, droughts, floods, and terrorism, have also cost millions of lives, livelihoods, and displacements. Considering our history with disease outbreaks and disasters, country's response to COVID-19 could have been better. Figure below shows the intensity of a few viral outbreaks in the last two decades.

Intensity of Different Recent Outbreaks in Pakistan¹



What is our preparedness for public health emergencies? Or better ask, what other nations do when any such disasters hit them? Pharmaceutical Stockpile is one such measure. In the USA, the state of California is provided with 358,381 N95 masks and approximately one million surgical and face shields to fight with COVID-19². Also, the European Commission has decided to create a Rescue EU Stockpile to help European countries to deal with the corona pandemic³. It is important to note that Pharmaceutical Stockpile is not a replacement for the supply chain. It can fill the supply chain gaps and respond to sudden spikes in emergency-induced demands.

What is Pharmaceutical Stockpile?

Pharmaceutical Stockpile can be used to deter, mitigate, or treat adverse health effects from any kind of emergency in public health. These emergencies may be arising from a major earthquake, pandemic flu, other infectious outbreaks, or the chemical, nuclear and explosive terrorist attacks⁴. Pharmaceutical Stockpile (also called Strategic National Stockpile) is defined as 'a repository of potentially life-saving pharmaceuticals and medical supplies for use in a public health emergency in which local supplies have been or may be depleted.'⁵ Stockpile contains a wide variety of medical countermeasures, including both pharmaceutical interventions,

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5 <https://www.hsdl.org/?abstract&did=799144>

and non-pharmaceutical interventions.

Pharmaceutical Interventions	Non- Pharmaceutical Interventions
Vaccines/ Antivirals	Ventilators
Antimicrobials	Personal Protective Equipment
Antidotes	Surgical Supplies
Antitoxins	Foldable Beds

A Brief History of Pharmaceutical Stockpile

In the USA, The National Pharmaceutical Stockpile was first established in 1999 to ensure the country's readiness for a possible natural disaster or bioterrorism. The goal was to procure vast quantities of vital medical supplies that could be shipped to states within 12 hours of the federal decision during an emergency. After its establishment, the stockpile has responded to many emergencies, including the 9/11 attack, flooding, hurricanes, and pandemic influenza. In 2003, the stockpile was renamed as National Strategic Stockpile. It is important to mention that pharmaceutical stockpiling for civilian use is not one that is limited to the US alone. Many other governments around the world built similar antiviral stockpiles. For example, France, Austria, Ireland, Luxemburg, Switzerland, Netherlands, Belgium, Hong Kong, Slovenia, the United Kingdom, Malta, Spain, Portugal, Finland, and Sweden have pharmaceutical stockpiling for the civilian population⁶.

How does Pharmaceutical Stockpile work?⁷

- The stockpile has prepackaged and prepared medicines and supplies for quick delivery anywhere within hours of a government decision.
- From stockpile, drugs can be delivered to a national emergency location where the severity of the emergency might or may have already exceeded the local public health services.
- Most of the stockpile's assets are kept in storage and retained as managed inventories.
- Maintained inventories for drugs and medical supplies allow the stockpile to respond timely during emergencies with the right product. In case the illness or agent is unknown, the first line of help from the stockpile is to provide a wide variety of pharmaceuticals supplies.
- Drugs and supplies in the stockpile are checked for the shelf life/expiry.
- The stockpile is strategically placed in warehouses across the country.

People's welfare requires more than conventional investments. Our country's previous and current record provides no precedent for what we could do to cope with any potential health disasters. Pharmaceutical stockpiles may not satisfy all the demands of a health emergency, but stockpile serves the purpose of a survival bridge. It is time we start planning to build such bridges in Pakistan.

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ASSAYING URBAN GOVERNANCE AMID THE COVID-19 PANDEMIC

NADEEM KHURSHID

Preying pan[epi]demics are as old as the history of human civilizations. Genetic traces of microbes have also been found in Egyptian mummies. Science also confirms that the microbes are even older than human existence on earth and helped evolve the life on the planet. The beginning of the 18th century was marked with massive industrialization and spurred large-scale urbanisation led economic transformation in Europe. This mass scale urbanisation also caused squalor and public health threats across Europe and Asia. Since most of the industrialisation took place within the already congested urban cores and poor living conditions seriously endangered the public health with an eruption of life-threatening pan[epi]demics.

Historically, Flu pandemic in 1890 took one million lives, Cholera in 1910 killed around one million people, Spanish Flu in 1918 took 50 million and Flu continued to hit humankind almost every decade. These days, 7 billion people on the planet are struggling to survive the deadliest COVID-19 outbreak. The pandemic is believed to took-off in Wuhan, China (a well-planned urban-industrial megacity with 11 million population) where patient zero of the disease was found in December 2019. The deadly bug has killed so far 50,000 people while contracting another one million, and the count is still on. COVID-19 has literally paralysed life on the planet. Pandemic is believed erupted in Wuhan's illegal seafood market where wild animals (such as Horseshoe Bats, Snakes and Pangolins containing the deadly virus) were sold as an eating delicacy to satiate unhealthy eating habits of the locals. The virus is believed to be a spill-over zoonotic and a successor to its earlier known variants SARS 2003 and MERS 2013, which also had killed thousands. COVID-19 outbreak certainly intrigues one with a fundamental question- How illegal public health threatening land use activity remained unchecked in a city that has one of the best urban planning and governance models?

Over the past century, contemporary urban planning helped shape our cities the way they appear today. Popular suburban housing surrounded by lofty green pastures, sited miles away from CBDs, without workplaces was the first response of contemporary urban planning to ease the disease ridden congested and unhealthy urban cores. During the same era, port cities of New York, London, Paris, Shanghai, and Rome emerged as global economic, knowledge and cultural hubs owing to modernised air and marine connectivity. Lately, planners realised the economic and social downside of the suburbia and regenerated the deserted cores into high-density mixed use districts to help urban economies grow while leveraging on density, proximity, knowledge clustering, enhanced social and cultural interactions. Both density and suburban sprawl were going fine in parallel despite having many divergences and disparities till the day COVID-19 struck and paralysed both.

Cities are never designed for lockdowns, they are mobility and interaction friendly, and are planned to facilitate the interactive unrestricted flow of people; goods, services, and information. Cities economically thrive on efficient mobility, knowledge clusters, social solace and density, whereas, pandemics are anti-urban, anti-social, anti-density and anti-humanity. Even world wars didn't harm the urban social fabric the way COVID-19 does. Cities exhibit and promote the sense of collectiveness, social interactions and harmony but pandemics appear denting all the social conventions. Currently, 3.5 billion people are locked-down, economies are sinking, and even most developed health systems are failing. Is corona going to kill our cities too?

Only Wuhan is able to restore back to normal life and presumably, they defeated it because of their controlled urban governance structure, smart connectivity, density based urban planning, intelligent use of science & technology and robust decision making by their apt leadership. Credit also goes to their tolerant and law-abiding masses unlike more open and democratic cities such as New York, London, Rome, and Madrid, where governments are struggling hard to contain people. Pakistan is no exception; where educated urban youth is not ready to adapt to any of the social-distancing and lockdown protocols.

During the past decades, nations remained focused to raise giant multinationals, overwhelming bureaucracies,

mega infrastructure projects and militaries to combat ‘Fictional Enemies’- of course the fellow humans- until the real ‘Bio Enemy’ struck them hard. Nations didn’t invest enough in city systems to build on community-based resilience to combat disasters, biological threats, ignorance, functional illiteracy and other public health challenges. Federal Government in Pakistan is also struggling hard to battle the disease but there a clear disconnect between urban masses in the absence of city councils. Previous governments in Pakistan remained obsessed to build infrastructure whereas health, education, science, technology, social capital has always remained a lesser priority. All big cities like Karachi, Lahore, Islamabad, and Faisalabad are being administered by a couple of federal and provincial offices.

Cities must devise contingency plans to mitigate and adapt to the crises as well as restoration/recovery plans to manage post-crisis scenarios. In Pakistan, pandemic laws and crisis management regulations were never in place and are just being made in the wake of the crisis. Of course, the ubiquitous technology is readily available to do geo-fencing, location finding, financial/social aid enablers etc. but how this all will be working well without carpet mapping, realistic data and community engagement. And also, how such mass scale mitigation will be coordinated and executed at a grass-root level without having lynchpin local institutions. Cities must endeavour to have interactive GIS based land use change detection and surveillance systems to help check the health threatening activities and land uses. GIS based parcel level household data repositories and mapping can also help execute mitigation plan effectually during the crises. Engagement of trained certified community leaders is important to combat the crisis without risking the lives of naïve volunteers. Such digital plans can help locking down targeted communities rather than seizing whole cities. Further, enhancing the e-governance, e-commerce and remote work capabilities are equally important to maintain long term physical distancing protocols to escape reoccurrences. Cities will also have to consider urban design retrofits.

Apparently, the pandemic is going to change the way cities are being managed since in practice governance systems have proved them inept of fighting such predicaments. The crisis is also expected to make nations rise to choose their new more capable leadership at global, national and city levels. COVID-19 will not only change the urban governance structures but also repaint the global economic and political power landscape, in post COVID-19 world.

INCOME LOSS DUE TO COVID-19 LOCKDOWN AND THE CHALLENGE OF PAYING SCHOOL FEE

HENNA AHSAN

Over time, due to the low quality education being provided by the public sector schools, enrollment in private schools has significantly increased. According to the Pakistan Social Living Measurement (PSLM) Survey, the share of enrollment in private schools has increased from 28% to 38% over the last decade. The quality of education being imparted at the government schools has compelled parents to shift their children from government to private schools and these are not only children belonging to upper and middle class, but also many people from poor class send their children to these private schools.

There are three types of private schools operating in the country. First, are the low level private schools that usually operate in houses, plazas or small buildings and charge a tuition fee ranging between Rs. 1000 to Rs. 3000 and entertain children from lower middle class. Some parents with little resources at hand also prefer to send their children to these low category private schools by sacrificing their many other needs. Second category is of the middle level schools where fee ranges from Rs. 4000 to Rs. 7000, and these usually entertain the country's middle class. Third category is that of the top private schools having a fee ranging from Rs. 15000 to Rs. 25000 and these schools generally cater to children from families of upper middle and upper class.

Certain reports in the media suggest that these private schools earn a handsome amount of profit every year and rarely face any loss. Some estimates put their profit at even more than 30 to 40 percent

The COVID-19 pandemic has not only affected daily wage earners but also the small businesses which have shut down due to the lockdown. In a developing country like Pakistan, government cannot provide financial relief to its citizens to the extent that is being provided by the developed countries. The Pakistan government has announced Rs. 3000 per month for the under-privileged. This amount is not enough to even keep the stove of these people burning, so no one can expect them to fulfill their other needs including payment of school fee of their children.

On March 13, to contain the spread of the COVID-19, the government announced to close all schools and it is still uncertain whether these will reopen on the expected date of May 31. For most of the schools their only expense during this period of shutdown is that of teachers' salaries and rent of the building while they totally save against energy consumption, transport services and many other miscellaneous charges like events' organisation, printing, photocopying etc. It was being speculated that this year schools may not go on summer vacations at their usual time in order to compensate this educational time lost. Many schools, however, have already started taking online classes indicating that they intend to observe regular summer vacations this year too. I believe that online classes are in no way a substitute of regular school environment and parents do not pay a handsome amount for their children to be taught online only. Going to school is about much more than getting educated only. It is a whole experience, especially at the early ages.

Instead of taking advantage of the situation, the private schools association can come forward and announce a discount of at least 50% in the school fee from March till the time schools resume their normal operations. This step would provide relief to many parents for whom the COVID-19 has brought a huge financial stress. It is a time when everyone in the country must play a role in easing life of the others. This can be the private schools' contribution to mitigating the situation in general and protecting many children from dropping out of schools.

PIDE LIVE DASHBOARD

Prepared By: Aqeel Chaudhry

<https://pide.org.pk/corona>

PAKISTAN COVID 19 DASHBOARD (CURRENT STATE & PROJECTIONS) V4.0

Pakistan Institute of Development Economics (PIDE)

Updated: Apr 07, 15:50PM

Select date range

TOTAL TESTS PERFORMED

39,184 3,309 Tests Performed in Last 24 Hours

TOTAL CASES

4,004 495 in Last 24 Hours

ACTIVE CASES 3,521

1,177 IN HOSPITALS

1,488 IN QUARANTINE

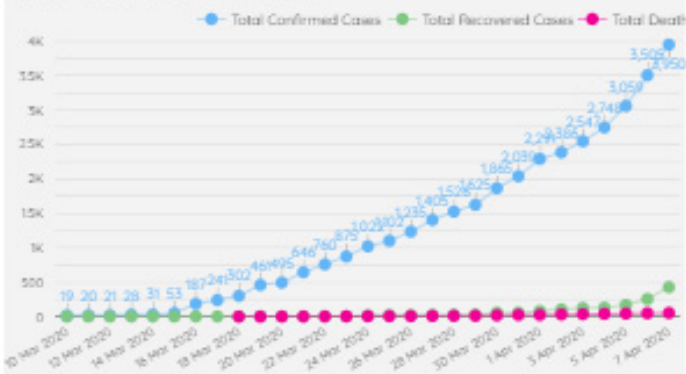
DECEASED

54 1.35 % of total cases

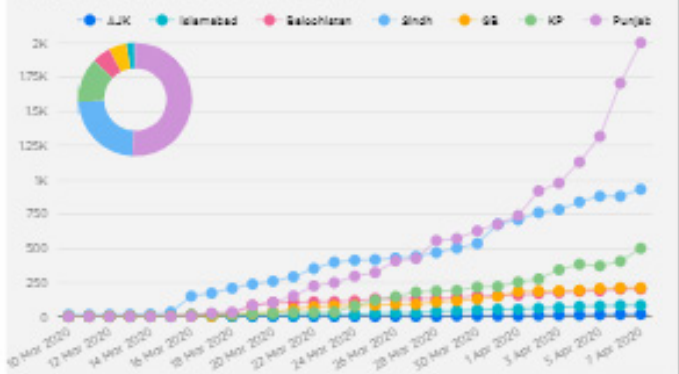
RECOVERED

429 10.71 % of total cases

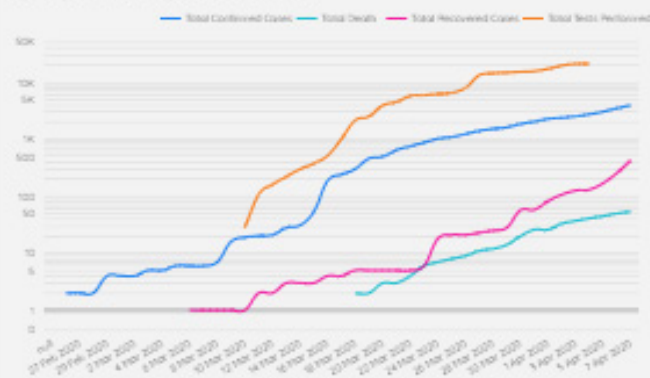
NATIONAL OUTLOOK



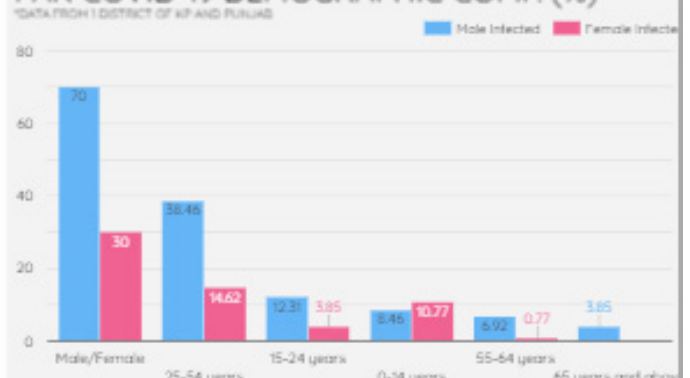
PROVINCIAL OUTLOOK



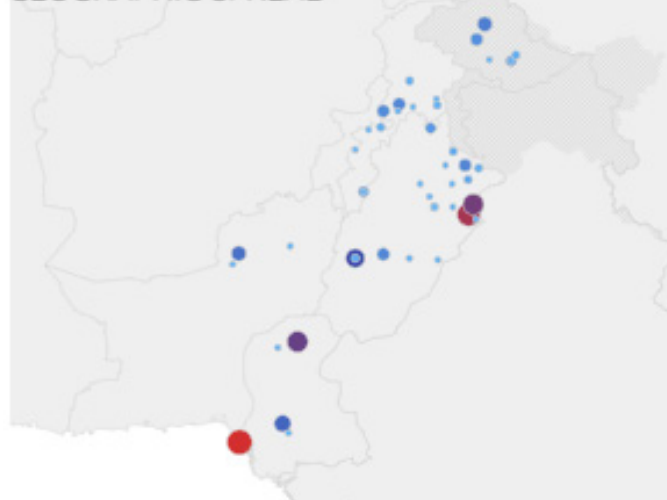
GROWTH OVER TIME



PAK COVID-19 DEMOGRAPHIC COMP. (%)*

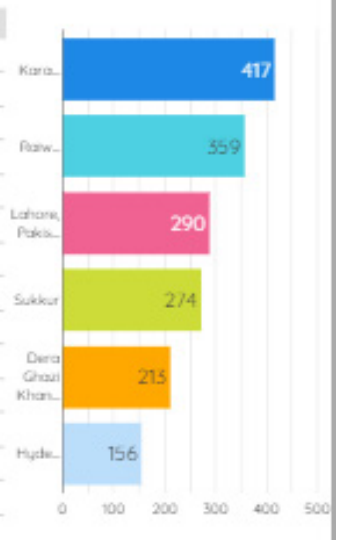


GEOGRAPHIC SPREAD



Vulnerable Cities

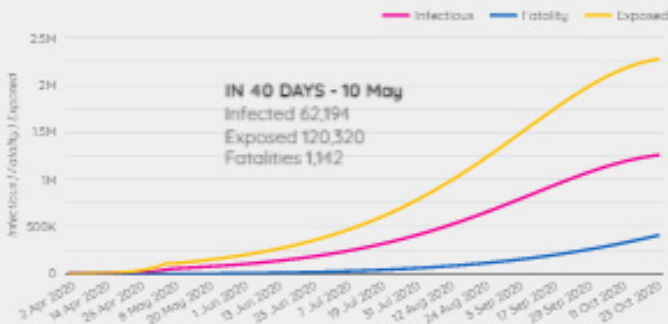
Vulnerable Cities	Cases
Karachi, Sindh	417
Rahwind	359
Lahore, Pakistan	290
Sukkur	274
Dera Ghazi Khan (Q)	213
Hyderabad, Sindh	156
Quetta	135
Nagar, Gilgit Baltistan	108
Gujrat	93
Mardan	91
Multan (Q)	91
Peshawar	81
Gilgit	75
Skardu	69
Dera Ismail Khan (Q)	61



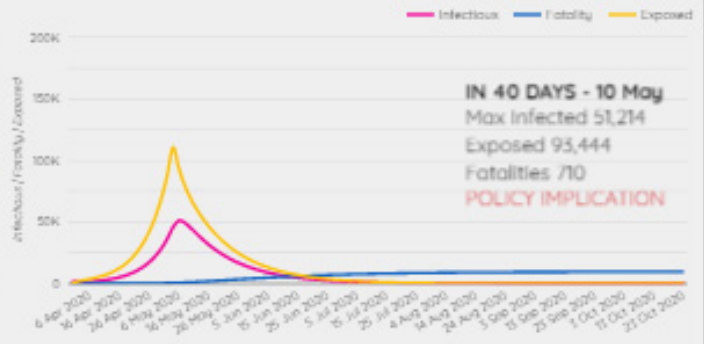
HEALTH PROJECTIONS

Using SEIR Model and employing properties of COVID-19 from various researches done in Wuhan, China, it is found in 40 days from 30 March i.e. 10 May, a partial lockdown of 45% which is almost implemented throughout the country will result in total **1,142 Fatalities** and around **62,194 Infected cases of Coronavirus**. In the figure on the right in 40 days for 75% lockdown maximum numbers will be total **710 fatalities** and **51,214 Infected cases**.

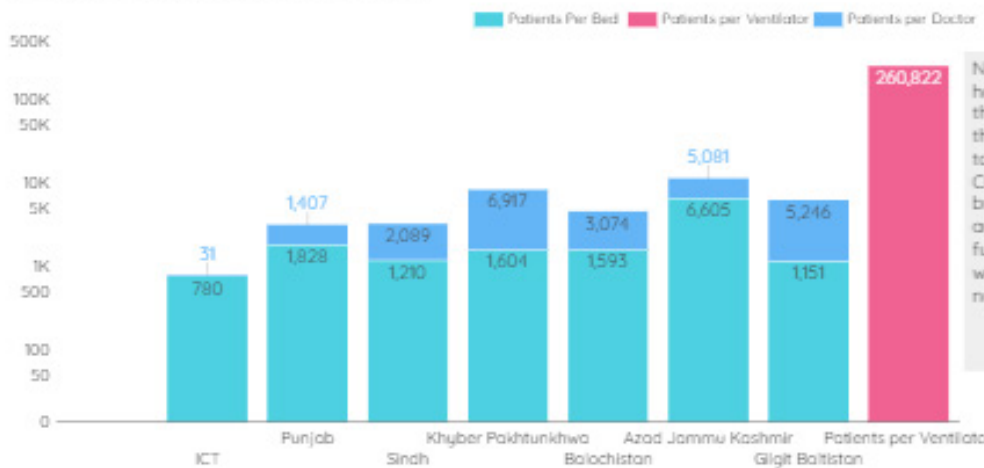
MITIGATION STRATEGY - PARTIAL LOCKDOWN



FULL LOCKDOWN



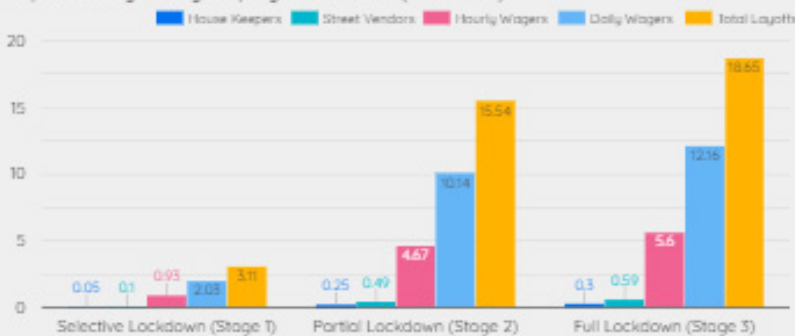
HEALTH SECTOR OVERVIEW



National Statistics show that hospital beds have more 85% Occupancy rate that means the patients coming for COVID 19 will result in the suffering of regular Indoor patients. On top of it, studies show that 2% of patients of COVID require a ventilator due to difficulty in breathing but the low number of ventilators all across Pakistan will make it a challenge to fulfill the demand for ventilators. On the whole, this pandemic will check the limits of national health care to its core.

UNEMPLOYMENT & VULNERABLE POPULATION

Expected Layoffs by Employment Status (in Millions)



Source: [Nasir, Faraz & Khalid \(2020\)](#)

Average Monthly Wage Loss (billion rupees)

