

# PROJECT TITLE : COVID-19 CASE ANALYSIS

## COVID-19 DESIGN THINKING :

Design thinking is a methodology that provides a solution-based approach to solving problems. It combines what's desirable from a human point of view with what is technologically feasible and economically viable. It's useful in tackling loosely defined, complex problems by understanding human needs.

A global pandemic puts enormous stress on governments and healthcare services. Suddenly, there is a scramble to circulate the correct information and roll out products and services to deal with the crisis. These challenges bring together a blend of product design, experience design, and service design problems that are desperate for a solution, and design thinking can help.

We are coming to grips with COVID-19, but it has caught us off guard. As most of the world's population is under some form of lockdown, we find ourselves in the middle of an unprecedented social experiment with many people working remotely and entire families staying home.



## **Information Clarity, Consistency, and Distribution :**

The flow of information is essential to curbing a pandemic. While the virus responsible for the COVID-19 pandemic was spreading, it took authorities several weeks to consolidate their messaging and make it consistent. With advanced technology, the distribution of information isn't the problem. It's transmitting the right information to the right people at the right time.

In times of crisis, there is an acute need for standardized, consistent, and effective information design. Principle four from the Nielsen Norman Group's 10 Usability Heuristics for User Interface Design states: "Users should not have to wonder whether different words, situations, or actions mean the same thing."

To contain the outbreak, the UK government quickly moved to design clear, consistent messaging, taking advantage of the rule of three: "Stay at home. Protect the NHS. Save lives." It was widely distributed via the internet and media. People received texts, got emails, and saw posters on the street, all of which has proved to be very effective.





## **Product and Service Design in the Age of COVID-19 :**

Effective solutions are desperately needed to a myriad of problems foisted on the world by COVID-19. As a result, the pandemic is powering innovation on an atypical scale and pace not normally considered. Apart from PPEs (personal protective equipment), hospital beds, and face shields, ventilators are in short supply, which has sparked an astounding number of design breakthroughs. And that's just one area where necessity has proved itself to be the mother of invention.

### **Design Thinking in Healthcare: Test, Trace, and Treat :**

In the battle to contain the contagion, employing the test, trace, and treat approach is unavoidable. Widespread testing and contact tracing are needed to identify and alert people who have come into contact with a person infected with the coronavirus.

Under empathizing and defining, we can understand the problem; with ideation and prototyping, we can explore the most cost-effective way to make them; and with testing and implementation, we can refine and deliver an effective solution. In this way, millions of home test kits could be designed, prototyped, and tested.

### **Data Visualization and Analysis :**

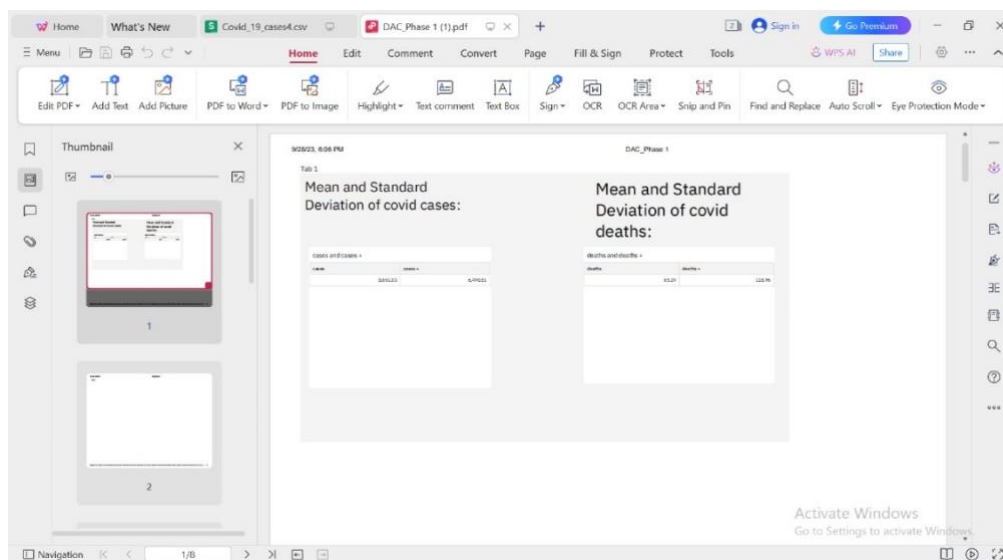
Putting cities under lockdown is not enough. Testing, contact tracing, home isolation, and rapid treatment are vital—all of which generate a lot of unstructured data. A sea of data coming in is good, but

data alone doesn't speak and doesn't help make informed decisions. It's tantamount to drinking from a firehose.

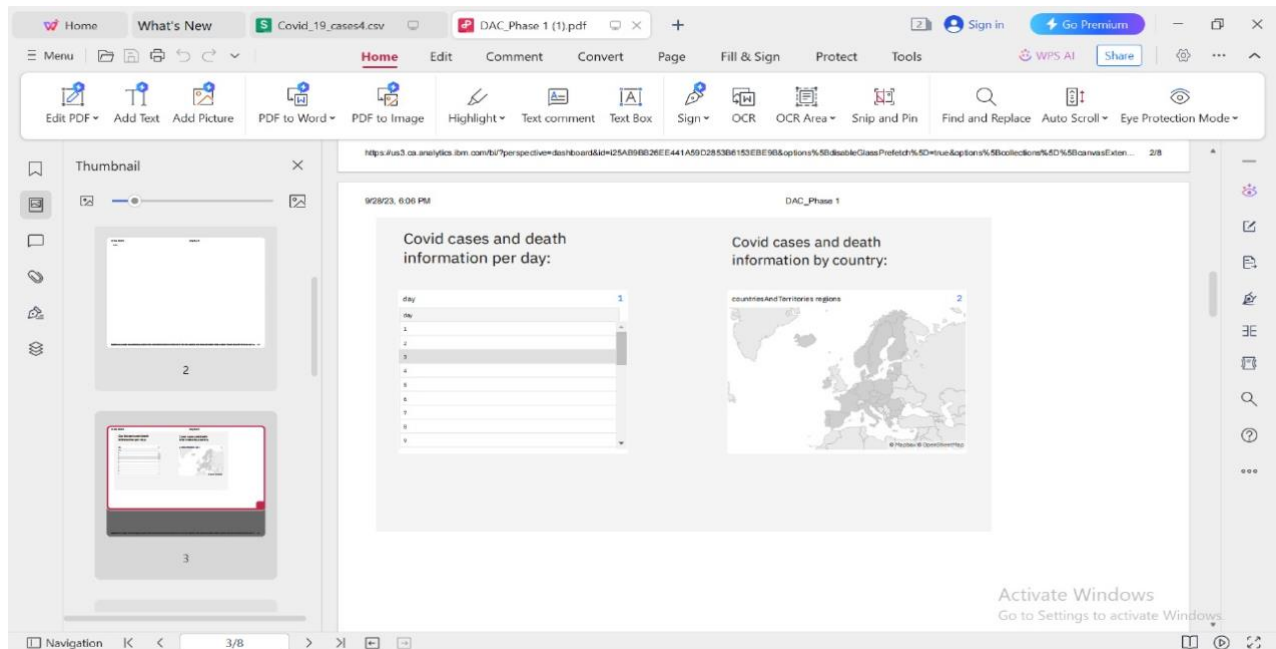
Policymakers and hospital leaders need to make informed decisions based on facts backed by data. For systems to function well, we not only need data but more importantly, robust data analysis and data visualization tools. Again, "visibility of system status" takes on vital importance. Patterns need to be identified, the spread of the virus visualized, and disease conditions monitored 24/7.

## **ANALYSING CASES AND DEATH IN WORLD :**

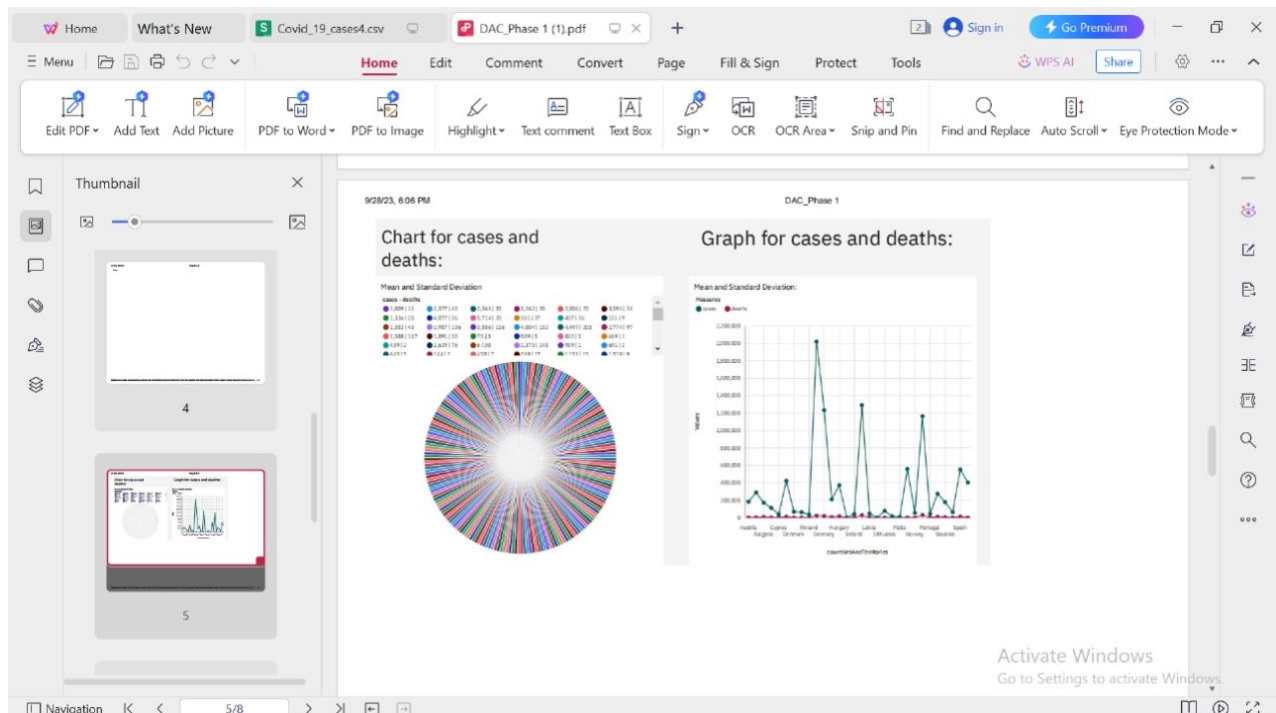
### **Analysis of cases and death in values :**



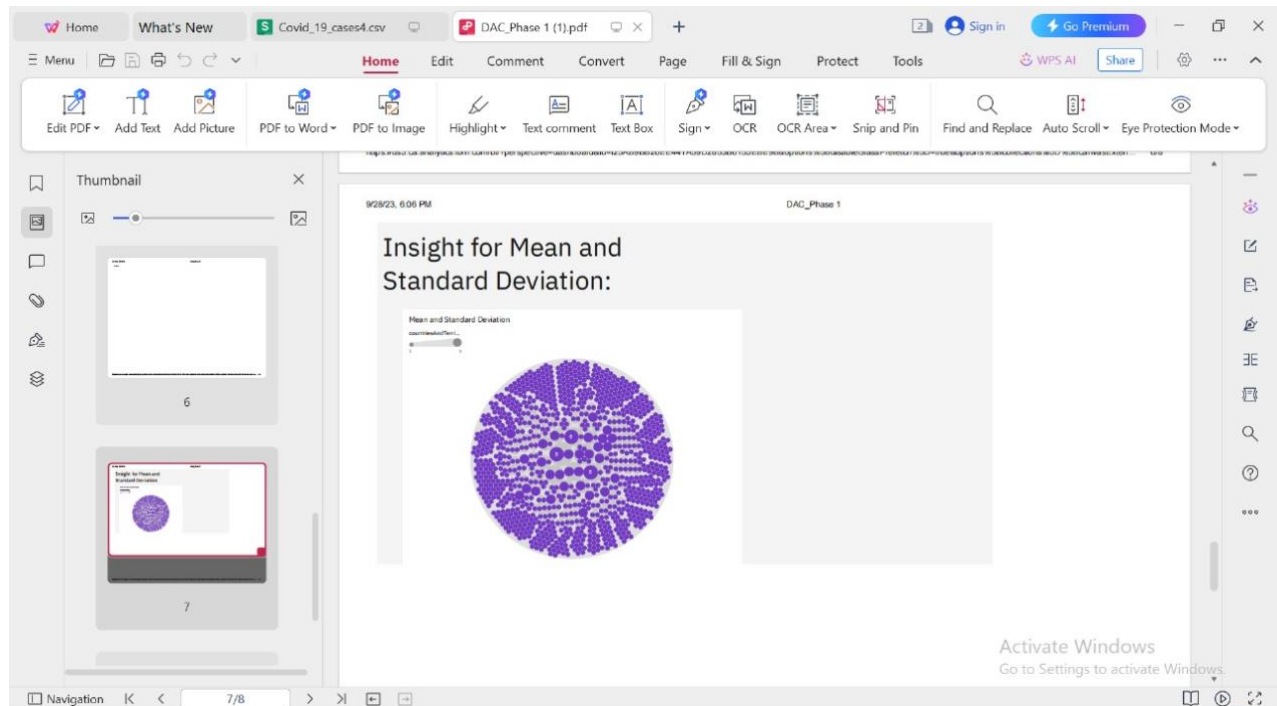
## Analysis of cases and death by monitoring 24/7 :



## Analysis of cases and death in graphical view :




## Insights for Covid-19 cases and death :



## Problem solving method for covid-19 case analysis :

We can take steps from the design thinking process and approach problems from the user's perspective: **empathize** with sufferers and **ideate** solutions. Healthcare services could support the availability of high-quality, remote counseling by therapists, psychiatric nurses, and doctors. However, the ease of use (usability) of these digital services is crucial, as well as the simplicity of making an appointment.

AI system that can detect if a person is suffering from depression by analyzing their speech patterns. Such an AI system can power a mobile app that monitors a person's speaking patterns, detects mental distress, and sends an alert to doctors. It could prove especially useful for those



who can't get to a doctor for an initial diagnosis due to distance, cost, or a lack of awareness that something may be wrong.

### **Designing Better Personal Protective Equipment (PPE) :**

When stepping out of home isolation, protection is on everyone's mind. During lockdowns, people still need to get essential supplies, pick up medication, and get some exercise wear.

### **Proposed new innovation through our project :**

As designers approach the new norms and apply design thinking to personal protection, a window of opportunity opens up for design innovation. We can **empathize, define, ideate, prototype, test, and implement**. For example, designers could envision washable gloves made of comfortable material that offer sufficient protection and would become part of our daily protective wear.

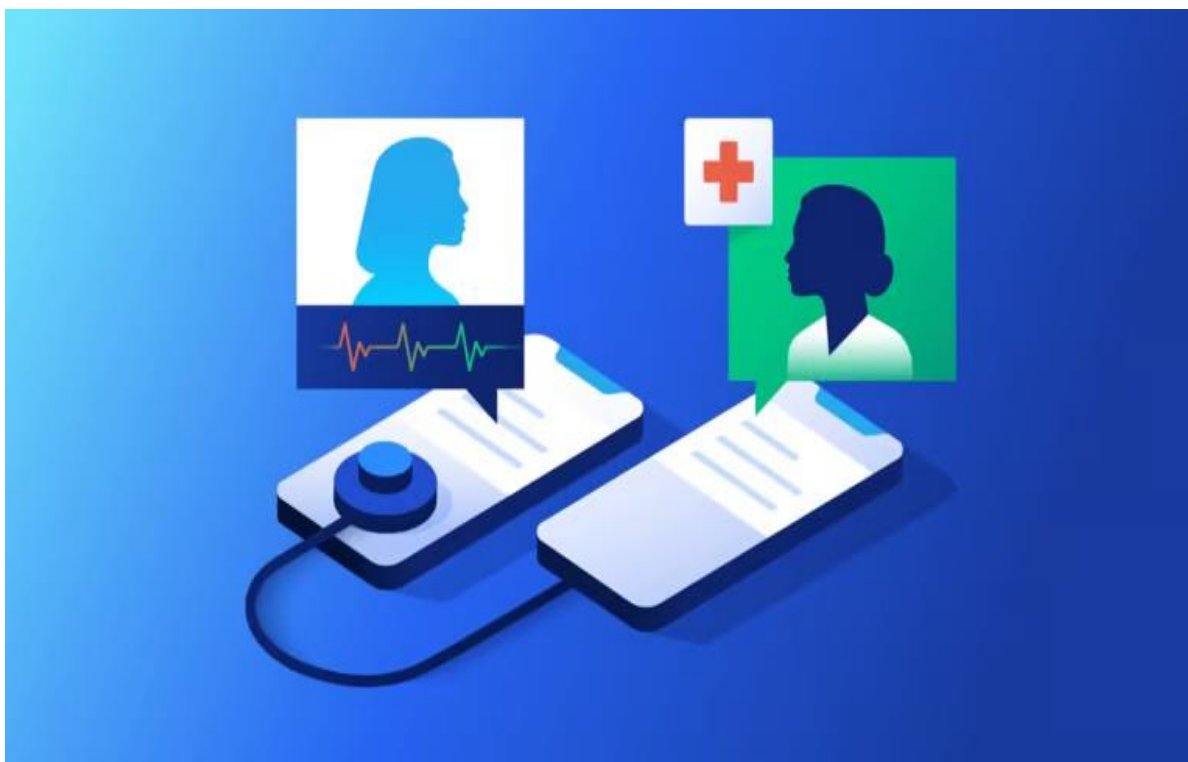
For those with a smartwatch, using [haptic vibration](#), apps could sound an alert as the wearer is about to touch their face. Fashionable face masks that are easy to manage yet block airborne viruses could be designed.

### **Haptics in Healthcare :**

Touch is a critical component of medical care, from diagnosis to treatment. But it's taken a backseat since the COVID-19 pandemic spurred a shift to telemedicine. The remote delivery of health-related

services and information is about 40 times higher than it was pre-pandemic, according to a July 2021 [report](#) from McKinsey & Company.

Telemedicine connects doctors and patients through high-resolution photos and video, but it's not able to provide physicians the ability to touch. Haptic technology, which creates the sensation of touch through pressure, vibration, sound, and motion graphics, is poised to change that. This market, estimated to grow at a compound annual rate of [12% by 2026](#), opens up huge opportunities for [designers](#) with haptic skills and experience.



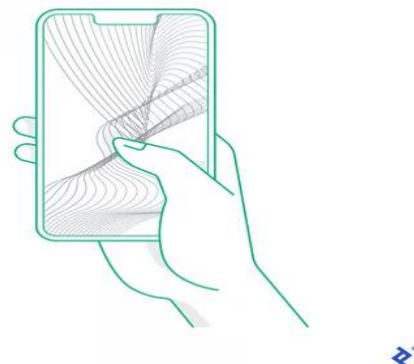



Haptics are part of extended reality, which also includes [augmented reality](#), mixed reality, and [virtual reality \(VR\)](#). When you type a message on your cellphone and the alphabet keys vibrate slightly with each stroke—giving the sense that you’re pressing them as if on a keyboard—that’s haptics. Another example is in video games, when the controller rumbles as you knock into an obstacle.

That haptic technology in medicine has huge potential for improving care—provided that the applications are intuitive and user-friendly, so healthcare providers can quickly and easily adopt and use them. That’s where [designers](#) come in: By prioritizing the [user experience](#), they can help ensure both the success of haptics in medicine, and better health for patients.

Graspable devices can also be beneficial for training dentists, points out [Roman Vlasov](#), a California-based software developer in the Toptal network who has experience building advanced medical imaging products. “Many off-the-shelf haptic devices are like a stylus attached to a robotic arm, so it naturally feels like a drill,” he explains. Indeed, some universities began using a [haptic and VR dental simulator](#) to train students remotely during the pandemic.

**Touchable**  
Smart screens that give users the sensation  
of textures when touched





There are other challenges, too. At this point most haptic-enabled equipment is large, unwieldy, nontransportable, and expensive. Vlasov notes that there is also the hurdle of network delays, which aren't a big deal when you're playing a video game or engaged in a simulation, but can be the difference between life and death in a real surgical situation.

The [COVID-19 pandemic](#) has fundamentally altered our attitudes toward and comfort with doing things virtually. It's safe to assume that [telemedicine](#) will continue to grow, and with it, the interest in and need for designers with haptics skills. Fostering excellent haptic UX design means placing the experiences and needs of medical professionals and patients first when considering strategic, system, and [process design](#) decisions. This approach helps ensure that any medical services that use haptic technology are practical, efficient, and effective.

### **Dataset :**

<https://www.kaggle.com/datasets/chakradharmattapalli/covid-19-cases>

### **Conclusion :**

The coronavirus disease continues to spread across the world following a trajectory that is difficult to predict. The health, humanitarian and socio-economic policies adopted by countries will determine the speed and strength of the recovery.