In this month's posting/technology topic, we examine how mobile communication is being used and could be used to control communicable disease.

The use of smart phones and phone data to support test track and trace is proving to be a significant life saver. South Korea led initial adoption but most countries already have or will soon have similar schemes in place but preventing the initial outbreak of any disease is always preferable to managing its subsequent spread and phones can help there as well.

The list of contagious and infectious diseases is long. Contagious diseases are transmitted by physical contact; measles and chicken pox are two examples. Infectious diseases are spread by micro-organisms in air or water, for instance, polio and TB. All contagious diseases are infectious, not all infectious diseases are contagious. All diseases would disappear if we never moved around or had physical contact with anyone or anything but then the human race would disappear as well.

Life is therefore a trade-off between infection and contagion risk and social and economic survival. Mobility is directly coupled to the health and wealth of the human race. By inference, the measurement and management of mobility facilitates social and economic progress. It is also a good idea not to eat bats which provides a link between a wet market in Wuhan and the (positive) role of mobile phone networks and smart phones in fighting the present pandemic.

For a number of reasons, China (along with South Korea) has been in the vanguard of using telecoms and IT technology to fight the Corona virus. Mobile phone networks have always been efficient and effective at tracking where people are or have been. In first and second generation networks, location could be tracked on a site by site basis with triangulation of signal strength providing the ability to pinpoint position. Over time, as networks became denser, triangulation became increasingly accurate and useful, for example in crime investigation.

In subsequent cellular phone generations, the integration of GPS into smart phone apps combined with credit and debit card information has produced a tsunami of information on what we do every day. The ability of governments to access this data is dependent on regulatory and political constraints, industry structure and local resources. Conveniently, the Chinese government owns all cellular sites in the country via the China Tower Company and has the ability to combine telecom data with video surveillance and IOT feeds.

So while Chinese telecom vendors make a genuine case for being independent when operating internationally, their local market is coupled to the Chinese operator community who in turn are required to do what the Chinese government tells them to do. For better or worse this has made it easier to deploy the smart phone apps that have helped the Chinese authorities to police the lockdown process and now to monitor and manage the relaxation of that process.

Whatever the libertarian reservations, governments have a duty of care to limit whether and/or how we kill each other. In practice it will be hard to replicate Chinese levels of command and control in most Western democracies though South Korea seems to manage well enough and even managed to have an election during the pandemic.

But there are other options. One great asset of the smart phone is that it can change social behaviour. In the running community, air quality measurements are integrated with running apps

such as Strava so that routes can be planned that minimise exposure to urban pollution, effectively an urban health risk index. It is relatively easy to add infection risk to these platforms, either coupled directly to smart phone based self-reporting or at a less granular level to hospital admissions.

It is also relatively easy to add social density information. The infection and contagion risk for any disease will be highest during the daily commute on crowded public transport. If this was expressed as a social density/infection/contagion risk index, more people would be more likely to walk, run or cycle to work. This would minimise surface contact and cross contamination. Phones could also monitor proximity to other phones. If you get closer than two metres your phone coughs (politely of course, this is England). Closer than one metre, a loud sneeze would work nicely. A smart phone enabled cordon sanitaire.

The positive impact of implementing social distancing to mitigate corona virus is that infection and contagion rates of other diseases will go down, saving lives and saving money which also saves lives. Telecoms technology facilitates that process. Smart phones can play an important role is maintaining social distance and minimising social density. Six feet apart is better than six foot under.

The Nearness of Flu
With apologies to Hoagy Carmichael, Tommy Emmanuel and Martin Taylor.

There Will Never Be Another Flu
With apologies to Harry Warren and Arturo Sandoval

 A Strava trace

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