

City Talk



There seems to be a recent belief that, to avoid a Covid infection, passengers should stay away from areas close to the return of the recirculating air system, namely at the joints of adjacent railway coaches or at the back end of a bus.

Let us reexamine the likelihood of virus transmission.

It is known that virus transmission is most likely when someone sneezes or coughs as droplets may shoot to those who are nearby.

But the case with regards to airborne transmissions has still not been fully established, hence a social distance of a meter is generally regarded as safe.

For a railway coach of over 20 meters long, the distance of air recirculation is about 10 meters, and for a bus we can assume half of that distance.

One simple way to illustrate whether the virus can be transmitted airborne is to imagine detecting someone's sweaty odor or perfume from a distance.

Generally, a person not wearing a mask can detect an odor within one meter of them. With a mask effectively covering one's nose, it would become a lot shorter.

To imagine a person standing between two coaches catching a virus originating from someone's breath near the center of a coach, is to assert that he can smell the perfume of a lady from that distance. This is most unlikely.

If we all subscribe to that theory that advocates one not to stay at the end of a coach, we would be encouraging crowding at the center of a coach and at the front end of a bus.

This overcrowding will pose a much higher risk than standing at the end of a coach.

I would rather believe that spreading the crowd evenly along the coach would be a safer bet. Also, if a train is crowded, the chance of the virus traveling all the way to the return air area will be small, as



Nuts and bolts

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most dust particles, including those that might carry viruses, will be deposited on the body of a nearby passenger or on the floor, rather than staying airborne for that long distance.

To determine accurately whether this is the case, professional ventilation engineers can apply smoke tests to observe air-travel patterns, but empirical estimates based on experience should be good enough as the train coach body is of a simple rectangular shape.

Applying the same theory of odor detection as an empirical check for the probability of virus transmission in residential buildings, we are aware that cooking smells do sometimes find their way to other flats.

But as cooking produces a much higher volume and concentration of odors than breathing, probably a hundred times larger, it should not be used as the same criterion for estimating the probability of virus transmission.

This brings us to the issue of how strong a concentration of viruses in the air would cause infection.

I am no medical professional, but I would guess it will need a certain level of concentration before it can cause an infection, and that varies with virus type.

But even when viruses are passed on, the natural immunity of a healthy person, if properly vaccinated, should adequately prevent him or her from an infection.

There may be no 100 percent resistance to a virus contagion, but wearing masks properly, minimizing contact between one's hands and surfaces in public areas, as well as never rubbing eyes and nose with one's hands, should provide enough protection for commuters.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over Hong Kong's iconic infrastructure