

The impact of crowdedness on housing prices

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Q *Do apartments in more crowded projects sell at a lower price?*

A As urban populations grow, households live in denser buildings and residential projects. Shared facilities and common spaces are more crowded; people may wait longer for lifts; and there is less privacy.

Experimental crowding studies on people have shown that crowding acts as a stressor, causing increased blood pressure and heart rate and lower tolerance for frustration.

Surprisingly, while economists have studied a diverse range of topics related to urban density, there are no studies that estimate the effect of crowdedness on how much people are willing to pay for housing.

In our recent research, we explored this topic, estimating the economic effect of density in Singapore. We did so by carefully measuring how prices for private resale apartments differed across residential projects of different densities.

In our study, we used the common definition of a project: a collection of adjacent buildings that share a land parcel, a name and facilities. Our measure of project density was the number of apartments in a project per acre (about 4,047 sq m) of land since more apartments per acre of land indicates a more crowded project.

How much less did apartments in dense projects sell for, due to their high density?

The statistical method we used, called regression analysis, allowed us to isolate the price differences due to differences in density by accounting for other characteristics that also drive price differences.

We included a wide range of characteristics in the regression analysis, such as apartment size, floor number, lease years remaining and project facilities, in order to eliminate any bias in our estimate. Additionally, we controlled for differences in neighbourhood amenities by analysing apartments in close proximity.

In all, we studied 11,913 transactions from 337 projects from 2002 to 2016.

We found that an increase in localised density negatively affected prices: a 10 per cent increase in density caused a decrease in price per square foot by about 2 per cent.

Let us consider an example. Holland Residences and Parvis are two adjacent projects near Holland Village. Holland Residences contains 83 apartments on 1.7 acres of land, for a density of 48.8 apartments per acre. Parvis contains 248 apartments on 5.6 acres of land, for a density of 44.3 apartments per acre.

In other words, Holland Residences has 10.2 per cent more apartments per acre than Parvis and is thus relatively more crowded.

Our findings suggested that an apartment in the denser Holland Residences sold for approximately 2 per cent less per square foot than a similar apartment in Parvis. Since people were paying less for a similar apartment in the denser Holland Residences, the feeling of greater crowdedness in Holland Residences must decrease welfare.

It is informative to consider what these numbers mean in total dollars for a typical apartment. The average price per square foot of a resale apartment in Holland Residences was \$1,558. A decrease in density to the level of Parvis would increase price by \$31 per square foot.

Since the average size of an apartment in Holland Residences is 1,356 sq ft, the total effect of density means that the overall price of an apartment in Holland Residences would be \$42,000 higher if Holland Residences had a density similar to Parvis'.

Our conclusion that crowdedness negatively impacts welfare carries important policy implications since almost all cities regulate density using measures such as plot ratio in Singapore. Moreover, many cities impose land-use restrictions to prevent suburban sprawl, which tends to increase urban density as a by-product.

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