



The differing effects of Beijing's station network on the rental housing market

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Urban rail transit in Beijing affects rental housing prices and the optimal allocation of rental housing stock in relation to the demand of different types of renters. This brief describes how rail transit affects rental prices of shared tenancies and non-shared tenancies differently, and explores the reasons behind this, suggesting recommendations to help policymakers improve tenants' options and achieve an effective job-housing balance.

Key findings

1. Proximity to rail stations in Beijing affects the price of shared and unshared rental housing differently. Tenants of unshared housing can afford higher rents and live near employment centres to avoid long commutes. They also avoid the negative impacts of stations, such as noise or congestion, living 500 to 1,500 metres from a station.
2. Tenants of shared housing have lower incomes and live further from employment centres, in less expensive areas. They prefer to shorten their commute rather than avoid the negative impacts of nearby stations, living within 500 metres of stations.
3. The density of stations has little effect on tenants of shared housing, but increases the price of unshared rental housing, whose more affluent tenants travel around the city for reasons beyond the commute, so value access to different stations.

Policy implications

1. Given these housing preferences, urban planning should address the supply of rental housing in key areas, around subway stations, industrial parks and other employment centres.
2. Policy should increase the supply of residential land – for example, re-purposing old factories and converting office space – and provide subsidies, such as tax rebates, to enhance shared tenants' financial ability to choose where they live.
3. Policymakers should also accelerate construction of the rail network in peripheral areas, improving network density, transfer options between lines and links to employment opportunities, to improve job-housing balance.

As China's population concentrates in cities, the demand for rental housing places pressure on public housing stock. To deliver the popular goal of living in a non-shared residence, policymakers should increase the housing supply, but should also pursue measures to allocate housing optimally to different groups. As convenient transportation is a key factor influencing tenants' choice of housing location, rental housing near subway stations is often in high demand. Knowing how rail transit affects rental prices helps policymakers understand tenants' needs and can result in a more efficient allocation of public housing resources.

In 2017, Beijing had 21.7 million residents, of whom 8.2 million were tenants. However, there were only 3.5 million rental properties, resulting in a significant shortage of rental housing and making efficient allocation of public housing critical. At the same time, Beijing's urban rail transit continued to develop rapidly. By January 2017, it had an operating distance of 574 kilometres, with 345 stations, and carried about 8.2 million passengers per day.

Since the 1980s, trends have gradually emerged towards decentralisation and polycentrism in Beijing's population distribution, but employment initially lagged behind, remaining aggregated concentrically in the early part of this period. Under the guidance and the development of the urban service industry, 15 employment centres such as Zhongguancun and Financial Street have been formed in Beijing in recent years. A polycentric distribution of employment centres has begun to take shape, changing residents' commuting patterns. The creation of new employment centres has also changed the spatial distribution of housing rental prices.

In recent years, both the central state and local governments have demonstrated increased interest in the maintenance and development of the rental housing market. A healthy rental market requires not only reducing housing speculation, but also measures to strengthen the management of the rental market – such as standardising leasing procedures, broadening housing supply channels, and strengthening financial support for low- and middle-income families. Beijing has launched a series of innovations in fiscal policies, management systems and land-use models, aimed at helping meet the housing needs of people at different income levels. The goal is to achieve a balance between the number of jobs and available housing units in the next five years. Understanding the complex impact of rail transit on rental prices can provide useful input to housing and transport policy.

Recognising that each station has different characteristics and meets different demand preferences can enable more targeted rental housing policies, and optimal distribution of affordable rental housing and social housing.

What aspects of subway stations that affect the price of rental housing have not been fully explored?

The value-added effect of rail transit on housing has attracted much attention over time. While many studies show that rail transit can significantly increase the rental price of surrounding houses, little research has been done in China on the diverse effects of different subway stations on prices.

In practice, due to different locations or neighbourhood environments, there may be differences in the access to employment and the transfer efficiency – network connectivity shapes the number of alternative travel routes in a certain area – offered by different subway stations. These factors can directly affect tenants' rental housing choices. Access to employment refers to the number of job opportunities tenants can reach within a certain travel time using rail transit from where they live. More job opportunities mean higher access to employment, increasing the demand for rental housing, and the price. Transfer efficiency can be measured by the number of subway stations in the area, their connectivity and the number of transfer lines in adjacent stations. Generally, areas with a dense distribution of subway stations or which are close to stations offering transfers between lines are more attractive to tenants.

How does the availability of rail transit affect the prices of different types of tenancy?

The availability of rail transit affects the price of shared and unshared rental housing differently.

The access to employment offered by rail transit adds value to rental housing properties of both types. Tenants of shared and unshared housing are willing to pay a premium on rental housing with better access to employment. However, tenants of shared rental housing accept longer commuting times than those who live in unshared rental housing. Tenants of shared rental housing prefer more affordable properties in the suburbs, but located close to subway stations, than expensive rental housing around employment centres.

The density of subway stations increases the price of unshared rental housing, but has no significant effect on tenants of shared housing. The number of lines they can transfer between at the nearest subway station also has no significant effect. However, the effect of rail transit on the rental price of different housing types varies as the distance from rail stations increases. The effect on the rental price of shared rental housing decreases consistently with the increase of distance by road, with distance having the greatest impact on rental prices within 500 metres of the station. The rental price within 500 metres by road from the subway station is 4.7 per cent higher than that between 500 and 1500 metres, and 9.2 per cent higher than that between 1,500 and 2,500 metres. Conversely, the price of unshared rental housing exhibits an inverted "U" shape change, with the value-added effect of metro stations greatest – meaning rental prices are highest – within the 500-1,500-metre range from a station.

Why does the availability of rail transit affect rental price of shared and non-shared tenancies differently?

Different housing preferences between shared tenants and unshared tenants are the main reason for the variable effects of rail transit on rental price. Tenants of unshared housing may live with their families and their preferences may reflect the demands of all family members. These groups can afford a higher rental price and choose to live around employment centres to avoid long commutes. This group is also more sensitive to the negative impacts of the subway station, such as noise, congestion and threats to public security. To avoid these adverse effects, tenants not sharing tend to live at an appropriate distance from the subway station, in areas neither too close nor unreachable. In Beijing, this distance is 500 to 1,500 metres. The research findings show that prices of unshared rental housing increased mainly in relation to the proportion of college students in an area, building age, the amount of local green space, and distance to key primary schools.

In contrast, tenants of shared housing have a lower ability to pay for accommodation, and choose areas further away from employment centres, with lower rental costs. Shared tenants are usually less sensitive to the negative impacts of nearby subway stations. When choosing between a comfortable environment and the reduction of extra commuting time, they prefer a shorter commute. The research shows that tenants of shared housing prefer to live within 500 metres of subway stations in Beijing. In addition, as this group rents houses mainly to facilitate employment, they are not sensitive to the density of subway stations in their living area, as they travel round the city for other reasons – such as leisure – less than wealthier, non-sharing tenants.



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What are the policy implications of these findings?

Given the housing preferences of different types of tenant, urban planning should focus on the supply of rental housing in key areas, around subway stations, industrial parks and other employment centres. This requires policymakers to increase the supply of residential land – for example, revitalising areas with potential to become rental housing, by developing housing projects on collective land, re-purposing old factories into rental apartments, and converting office space to rental housing.

Policies should also provide preferential subsidies, to improve the housing options for shared tenants currently choosing to live in peripheral areas with limited subway stations to reduce rental expenses. Subsidies such as tax rebates would enhance such tenants' financial ability to choose where they live. At the same time, policymakers should accelerate construction of the rail transit network in peripheral areas, improving network density, transfer between lines and links to employment opportunities. This will enhance tenants' commuting efficiency, supporting the formation of more communities with a good job-housing balance.

Further reading

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Finally, the **Knowledge** component accounts for the way in which knowledge is exchanged or shared and how it shapes the future of the city.

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