Original Research Article

How government housing policies contribute to educational inequality - A perspective based on the differences between beijing, China and New York, US

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Abstract: Educational equity is one of the hot and focal issues of concern to all sectors of society. Research has shown that government housing policies have an impact on educational equality. By analyzing specific cases and combining qualitative and quantitative methods, this study compared the current housing policies in Beijing and New York school districts, analyzed the reasons for educational inequality, and compared the advantages and disadvantages of policies.In Beijing, the proximity-based enrollment policy ties school admission directly to residential locations.The multi-school zoning policy aims to distribute educational resources more evenly by assigning multiple schools to a single residential area. New York's magnet school program policy allows students to choose schools based on specialised curricula. Both cities grapple with balancing educational equity and housing affordability. In comparison, the effect of the New York school district housing policy in the United States is more significant . This study has a positive impact on optimizing housing policies and balancing educational resources.

Keywords: housing policy; educational equity; school district

1. Introduction

Education is taken as a universal human right, as outlined in the United Nations Sustainable Development Goals[1] . Education means higher income, social status, and greater participation in civic health[2] . Education is increasingly recognised as critical in promoting regional prosperity [3]. Educational inequality is analysed primarily in conjunction with social inequality, which involves socioeconomic background, class status, and inequality between ethnic and racial groups[4] . According to the literature, blacks aged 25 and over are twice as likely as whites to have not completed high school, and nearly 60% of high school dropouts come from families with the lowest 20% of incomes. This shows that education resources are still very unequal in the United States[5] . China's educational resources show a gap between urban and rural education,There are also significant differences in educational resources between regions, quality educational resources are mainly concentrated in critical schools.

China and the United States have formulated corresponding policies. The policy of school-zoned housing, which is intended to promote equity in education, has led to soaring prices of school-zoned housing, a greater concentration of quality education resources, and greater inequality in the distribution of education resources[6] . Policymakers in the United States have taken an approach similar to school boarding policies to expand educational opportunities for disadvantaged groups . New York uses a magnet school program policy[7] . Beijing has introduced a new policy to curb the prices of school-zone housing and promote equality in education. The policy is a multi-school lottery policy whereby students previously ineligible for admission are randomly assigned to essential schools by lottery. Therefore, it is significant to study how government housing policies contribute to educational inequality.

2. Housing policy and existing problems in Beijing New York school district

2.1. Overview and existing problems of housing policies in Beijing school districts

In China, the context of the compulsory education system and high population density have led to a shortage

of educational resources and marked differences in spatial distribution[8]. China has a large population. However, educational resources are limited, resulting in several people competing for a certain amount of educational resources, and good educational resources are often concentrated in the city, highlighting the lack of educational resources in the countryside and the gap between the two areas of educational resources is pronounced. In terms of China's national policy, the first broad policy context for school districts in China is proximity-based enrollment, and the layout of primary and secondary schools in China is directly related to housing[9] . The policy allows students to choose to enrol in a school in their neighbourhood based on the location of the family's house[8] .

Since 2000, the Beijing municipal government has stopped ranking local primary schools, but historically, local primary schools continue to be divided into crucial schools and regular schools[8]. Beijing's school districts are reviewed and adjusted on a regular basis. Moreover, shortly before the start of each school year, each primary school's admissions office would indicate which school district it belongs to. there are 12 school districts in Beijing[8]. Students are not only required to have a home address in a particular school district but also to have their ID cards verified for enrolment. If the ID correspond to the property, the student will have a way to enrol. This adds a vetting process for students to have access to quality school district resources[10].with the rapid development of real estate in China, parents are increasingly focused on the quality of surrounding public goods, which includes the quality of neighbouring schools[11]. Good school districts add much value to the neighbourhood, and the proximity and easier access to educational resources in quality school districts are highly sought after by most Chinese parents[12]. As a result, school districts have become a popular resource in China's property market in the eyes of parents.

As property prices in quality school districts continue to rise, affluent families can gain easier access to these districts and enjoy quality education resources. In contrast, children from low-income families are confined to districts with poorer education resources. The proximity-based enrollment policy restricts the freedom of students and parents to choose schools near their homes[9].

In order to alleviate the rising prices in school districts brought about by school-zone housing and the mad rush for school-zone housing by too many families, Beijing has introduced a new policy to curb the prices of school-zone housing and promote equality in education. The policy is a multi-school lottery policy whereby students previously ineligible for admission are randomly assigned to essential schools by lottery. Beijing has introduced a policy of ‘multi-school zoning' in response to the chaos of school districts. The policy breaks explicitly the direct correspondence between school districts and one school, and purchasing a property in a school district will no longer guarantee enrolment in a critical primary school [13]. It has been found that the policy has effectively achieved disincentives to school districts and price increases by reducing enrolment and promoting equality in education[13].

2.2. Overview of New York school district policies and existing issues

American school district housing has a specific historical background. The establishment of school districts in the United States dates back to the late 1800s and early 1900s, when significant demographic changes took place in American metropolitan areas, with immigrants moving into the cities and the wealthy moving into the suburbs, after which zoning laws began to be enacted in the 1920s [14]. In New York City, there are 32 community education districts, and within each district, there are multiple primary school districts, one for each of at least one public primary school[15]. Typically, students are enrolled in elementary schools based on the school district in which their home address is located. Most elementary schools prioritise students within the district according to New York City policy, with particular policies such as magnet school program policy used outside the district. Particular policies can be applied across districts. The Magnet school program policy was established in 1984. The act's purpose was the voluntary desegregation of segregated neighbourhoods, such as redistricting and cross-town busing.New York initiated a new housing policy innovation in 1986, establishing a programme for affordable housing, which included an affordable housing policy[15]. New York's affordable housing policy provides living conditions for people with low incomes, the elderly, and people with disabilities. These public housing units have public schools in the corresponding school districts. Students in social housing can then attend the corresponding school district.

School districts are created because of local policies and are directly linked to local schools' teaching qual-

ity. The quality of education tends to improve as the proportion of students from higher-income families increases [16]. School districts in the United States are based on the consideration of neighbourhoods[17], and there is a racial element should be taken into consideration[18]. As stated in the literature, blacks have made significant economic progress, but they are still unable to leave the ghettos on a large scale; in other words, a part of the black population can only benefit from the educational resources of the ghettos, which directly leads to inequality in education[19].

The magnet school program policy significantly benefits both parents and educational equity. The distinctive curricula and additional resources magnet schools provide can be particularly appealing,However, the number of students who can be enrolled in the magnet school program policy is limited. This has resulted in some students needing more resources and information not benefiting.

The struggle over zoning and social housing, such as school districts, continues in some parts of the United States[20].Many local measures have been taken in the United States regarding school district delineation. In North Carolina, for example, the district drew school boundaries between 1971 and 2001 when the courts enforced racial segregation opportunities[18]. Since 1971, a variety of local measures have been taken to ensure racial balance in school districts, such as the district's use of satellite districts, which is done by bussing students from neighbourhoods with high proportions of students of a particular race to neighbourhoods with students of another race[21]. This is in addition to the magnet school program policy, which is designed to attract parents to voluntarily send their children to integrated schools[21].

3. Comparison of school housing policies between China and the united states

3.1. Analysis of case

The first is a case from New York city in the United States, with hundreds of elementary schools, uniform property tax rates across school districts, and a diverse student population, which is ideal for studying school quality and school district housing policies. According to the literature, a dataset includes data from public elementary schools in New York City between 1988 and 2003.

The effectiveness of New York's affordable housing policy[7], which coincided with its implementation in 1998-2007, is better illustrated by this data. According to the data statistics, comparing the maths and reading scores of the selected schools to schools in the nearest sub-district showed that the sample schools started the semester with passing rates that were 3% higher than those of the other sub-district schools[7]. However, the gap between the elite schools and those in the nearest sub-district remains significant. The sample schools are selected according to specific criteria to represent the elite schools. Here, it shows the inequality of educational resources, and elite schools remain ahead of other schools in terms of teachers and government investment.

In the study (Table 1), it can be observed that the gap between the sample schools and the schools close to the sub-districts narrowed, even to the extent that at the end of the day, the sample schools performed 2% points lower than the schools close to the sub-districts, which is more than expected[7]. This shows that through the affordable housing policy, the education standards of elite schools and district schools are almost equal, indicating that the policy has favourably promoted equality in education to a certain extent and broken the phenomenon that elite schools have high education

Table 1. Characteristics of residential properties sold [7].

	Percentage of all property sales[a]	Percentage of property sales within 3000 ft of one choice school	Percentage of property sales within 3000 ft of two or more choice schools
Price per unit[b]	$253,579	$319,163	$241,016
Borough			
Manhattan	10.1%	29.5%	34.4%
Bronx	9.5%	14%	36.4%
Brooklyn	30.9%	32.5%	28.3%
Queens	37.1%	19.6%	0.9%
Staten Island	12.5%	4.5%	0%
Building class[c]			
Single-family detached	25.9%	12.9%	4.3%
Single-family attached	15.2%	8.8%	5.6%
Two-family	29.9%	28.2%	25.9%
Walk-up apartments	13%	19%	31.4%
Elevator apartments	0.4%	1%	2%
Loft buildings	0%	0.1%	0%
Condominiums	12.4%	26.1%	25.3%
Mixed-use, primarily residential (includes store or office plus residential units)	3.2%	4%	5.8%
Other structural characteristics			
Building age	61.6	69.3	78.6
Square feet per unit	1262	1191	1105
Garage	37.4%	20.4%	7.6%
Corner location	8.5%	6.5%	7.1%
Major alteration prior to sale	1.6%	3.5%	6.8%
Odd shape	11.7%	11.8%	11.1%
N = 352,291			

quality and take up more education resources.

In that data study (**Table 2**), the school quality of the zoned schools was first capitalised into house prices, which were calculated as the logarithm of the sales price per unit of property. In the data, the average passing rates in mathematics and English language arts were also used to calculate the performance of the zoned schools and were capitalised into local property values. It was finally concluded that the high-performing zoned school communities are the very ones where families pay the highest additional costs. This suggests that there is a wide disparity in schooling resources between school districts and districts and that good school districts are still places where families need to pay high housing prices. The gap between rich and low-income families then leads to inequality in education, and only wealthy families can afford to pay high home prices.

Table 2. School characteristics [7].

	All schools			Zoned schools			Choice schools		
	1988	2003	Change 1988–2003[a]	1988	2003	Change 1988–2003[a]	1988	2003	Change 1988–2003[a]
Mean % students passing Math	62.8	56.4	−6.4	63.4	56.8	−6.6	53.4	52.7	−0.7
Mean % students passing Reading	44.5	53.7	9.2	45.2	53.9	8.7	34.2	51.9	17.7
Mean % teachers with more than 5 years experience	80.4	52.7	−27.7	80.8	53.5	−27.3	75	45.3	−29.6
Mean % teachers with masters	66.9	78.2	11.3	67.5	78.4	10.9	57.2	76.4	19.3
Mean % teachers with less than 2 years in this school	11.6	35.7	24	11.3	34.5	23.2	16.3	46.4	30.1
Mean teacher–pupil ratio[b]	5.6	6.9	1.2	5.6	6.7	1.1	6	8.1	2.1
Mean school enrollment	753.3	749	−0.6	759.9	772.3	1.6	656	529.4	−19.3
Mean % of students who are:									
Free lunch eligible	62.6	74	11.4	61.4	74.2	12.8	79.8	72.2	−7.6
White	23.4	16	−7.5	24.5	16.1	−8.4	7.6	14.6	7
Black	36	33.6	−2.4	35.9	33.3	−2.6	37.7	35.9	−1.8
Hispanic	33.9	38.3	4.4	32.7	37.9	5.2	51.2	41.7	−9.4
Asian	6.8	12.2	5.5	7	12.7	5.7	3.5	7.7	4.2
LEP	10.5	11.4	0.9	10.3	11.6	1.2	13	10	−3
N	615	700	85	576	633	57	39	67	28

[a] For enrollment, this figure represents the percentage change in mean between the two years; for the other characteristics, this figure represents the change in mean between the two years.

[b] Teacher–pupil ratio is expressed as teachers per 100 pupils.

Based on real estate data from 1988 to 2003 (**Table 2**), it is known from the above study that opening a selective school weakens the relationship between housing values and zoned schools. Data show that opening such a school reduces the capital price of zoned schools by about one-third. School choice is an initiative of the City of New York under the affordable housing policy and the magnet school program policy. School choice reduces the price of district schools, meaning that relatively less affluent families can move into the district and access its resources, directly contributing to some degree of educational equity.

The second case is from Beijing, China. Data (**Figure 1**) collected from three sources were used in this case. It used data on real estate transactions in Beijing from 2013-2016 and found the response of residential prices to policy changes aimed at equalising access to high-quality public primary schools. The study used a correlation model to estimate the response of the quality of public education resources to house prices in Beijing. The results show that the average house price in school districts is 6% higher than average after controlling for property characteristics, neighbourhood ties, and geographic location[22]. This house price variation takes place in the context of the Chinese government's 'proximity-based enrollment policy' and the Beijing Municipal Government's 'multi-school zoning' policy. This shows that the policy of proximity to schools has not regulated school district property prices better but has instead made school district property prices higher than ordinary property prices. Families with poor financial conditions cannot afford high school district property prices. They cannot provide students with quality school district education resources, thus leading to inequality in education resources.

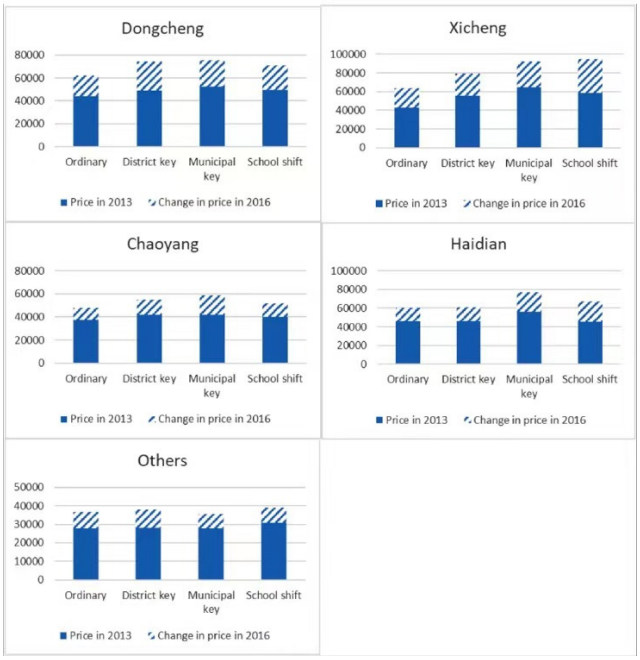

Figure 1. Beijing's post-partition house price rises between 2013-2016 [22].

The data (**Figure 1**) for this case was collected from the transaction data of second-hand houses between

2013-2016 on the websites of two Chinese property companies, Fangxun.com and Chain Home[22]. Secondly, the number of independent schools in a 10-public radius of the central business district, metro, and famous hospitals was also constructed using Google Maps. Finally, the local school admission brochures and the education department's web pages were also consulted. These are the three sources of data.

Figure 1 also shows the average accurate house prices in the 2013 base year and the increase in house prices by district and policy transition type over the 2013-2016 periodc[22]. It displays that house prices in Beijing's four central districts are much higher than in the outer districts and that even shopping malls near prestigious primary schools have significant house price premiums. Notably, the highest house price increases in this sample are in those regional centres where the status of schools has been elevated. In China, the elevated status of a school means that the government will invest more education resources in the school, and even the government's education policy will be more favourable to the high-status school. Such high-status schools mean higher education resources and the highest house price increase in the surrounding school districts as a sign of quality education resources. This shows that Beijing still maintains the phenomenon of high-priced school districts with high-quality education resources under the implementation of the proximity-based enrollment policy and multi-school zoning policy, and these policies still do not regulate housing prices and realise education fairness very well.

3.2. Analysis of differences and regulatory results between two zones

Magnet school program policies in the United States are designed to break down traditional school district boundaries by providing diverse educational options. The strength of the policy lies in its promotion of educational equity and racial integration. By allowing students to choose schools across geographic boundaries, the magnet school program policy provides disadvantaged families, especially students from poor and minority backgrounds, access to quality schools. This mechanism of free choice helps to alleviate the inequalities associated with traditional school district boundaries and reduces educational disparities based on economic or racial background.

However, the disadvantage of the magnet school program policy is that despite the provision of choice, the resources for quality magnet schools still need to be improved, and competition for admission is exceptionally keen[21]. Affluent families, with more information, resources, and support, are often more successful in gaining access to these schools and thus continue to dominate educational resources. Despite the original intent of magnet school program policy to promote equity, it is often difficult to avoid the reality that resources are skewed in favour of wealthier families in their implementation.

China's proximity-based enrollment policy takes a different path. This policy in China ensures a relatively balanced distribution of educational resources by directly linking students' eligibility for schooling to their home addresses. Through this policy, the government intends to reduce unfair competition for school choice, standardise the enrolment process, and enable each family to rely on its place of residence to ensure its children's right to enrol in school[8] .

The advantage of the proximity-based enrollment policy lies in its simplicity and transparency of operation. Parents can choose a school based on their residence, avoiding a complicated application and competition process[23]. In this way, the policy effectively reduces the pressure on parents to enrol their children in school and enhances community stability. The geographical linkage between families and schools also helps promote community interaction and the harmonious development of social relations.

In addition, the government has attempted to balance the distribution of education resources further and alleviate the excessive demand for housing in quality school districts through policies such as the Multi-School Zoning Policy[24]. The multi-school zoning policy implemented in some districts assigns a residential address to multiple schools and randomly assigns specific schools for enrolment, a mechanism that reduces the pressure on housing prices in high-quality school districts and alleviates the problem of overheated housing in school districts.

However, the disadvantages of the proximity-based enrollment policy are also very obvious. Firstly, as quality schools are geographically concentrated in specific districts, this has led to a sharp rise in property prices, making school district housing an essential way for families to compete for quality education resources[8]. This

phenomenon has aggravated social inequality, making it possible for only affluent families to afford these high-priced school-zone flats and thus enjoy quality education resources, while families of lesser means are excluded, further aggravating the imbalance in education resources.

New York's affordable housing policy and Beijing's multi-school zoning policy reflect different approaches to addressing educational equity within the context of housing.

New York's affordable housing policy is designed to provide affordable housing options to low-income families in or near neighbourhoods with varied school quality. The primary benefit of this policy is that it enables economically disadvantaged families to live in areas where they might otherwise be unable to afford housing[15]. As a result, children from these families may have access to better educational opportunities if their housing is situated within desirable school districts. However, the effectiveness of this system is often limited by the overall quality of schools in low-income neighbourhoods, where many social welfare housing units are concentrated. Furthermore, the competition for spots in better schools remains high, and the quality of education can vary significantly even within the same district.

On the other hand, Beijing's multi-school zoning policy aims to mitigate the intense pressure on single, high-demand schools by assigning multiple schools to a single residential area. Under this policy, students are randomly assigned to one of the schools in their zone, reducing the direct correlation between housing location and access to specific, elite schools[24]. This approach is intended to distribute educational resources more evenly across a broader range of schools, thereby alleviating the "school district fever". However, this policy can lead to uncertainty for parents who cannot predict which school their child will attend, potentially reducing the incentive to purchase property solely based on school zoning. Additionally, the quality of education among the assigned schools can still vary, which may perpetuate some degree of inequality.

While New York's affordable housing policy attempts to integrate low-income families into better school districts, it faces challenges related to the uneven distribution of school quality. Beijing's multi-school zoning policy seeks to balance educational opportunities by diluting the impact of housing on school access, but it introduces uncertainty and may not entirely eliminate educational disparities [24]. Both approaches highlight the complex interplay between housing policy and educational equity, each offering unique solutions to the challenge of providing fair access to quality education.

4. Conclusion

This comparative study of school district housing policies in Beijing and New York highlights the complex relationship between housing and educational access in two different cultural and educational environments. Among the specific policies are New York's affordable housing policy, the magnet school program policy, and Beijing's proximity-based enrollment policy and multi-school zoning policy; they are both government-led policies to govern school districts, and both aim to promote equity in education. While Beijing's two policies have caused school district housing prices to soar and educational resources to become unequal, New York's two policies have promoted educational equity to a certain extent.

The data analysed earlier show that the New York magnet school program policy and affordable housing policy have had a small moderating effect on the performance of New York's high-quality education resources. However, such a small effect is already astonishing. This is a sign that the gap between elite school districts and ordinary school districts is gradually narrowing under the effect of the policies. Moreover, under the New York magnet school program policy, more students of different races can enjoy the same educational resources, which promotes educational equality between races. However, under Beijing's policies of proximity-based enrollment policy and multi-school zoning policy, the prices in high-quality school districts are 6% higher than the prices in other districts[7]. These two policies in Beijing have not helped to promote equality in education resources but have instead driven up the prices in high-quality school districts, creating new inequalities in education resources.

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