Desegregation and urban change: Evidence from city boundaries

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Abstract: A series of legal opinions in the early 1970s mandated that urban school districts outside the South undergo desegregation while exempting most of their suburban counterparts. I show that desegregation reduced the demand for urban residence by increasing the exposure of white students to black peers and reducing the availability of neighborhood schools. I compare city districts facing varying degrees of court-ordered desegregation to neighboring suburban districts over the 1970s, narrowing my analysis to adjacent blocks on either side of the school district boundary. The average desegregation plan decreased housing prices – and therefore property tax revenue – by four percent, heightened vacancy rates, and reduced the share of school-aged children in the population. Residents of both white and black neighborhoods appear to have disliked desegregation. This historical episode provides an opportunity to measure the willingness to pay to avoid racially diverse schools, a parameter of continued policy interest.

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I. Introduction

The desegregation of large public school districts in the 1970s fundamentally changed the nature of urban public goods in the United States. Before this period, all school districts – whether in cities, suburbs or rural areas – had the authority to decide when and how to build schools, hire and pay teachers, and establish school attendance areas. Because cities were highly segregated by neighborhood and because school attendance areas usually corresponded with local neighborhoods, the typical urban white student attended a local school with predominately white peers.

In the early 1970s, a series of legal opinions mandated that several large urban school districts outside the South undergo desegregation while exempting many of their suburban counterparts.[1] In *Keyes v. Denver* (1973), the Supreme Court ruled that districts were responsible not only for ending their official policies of segregation (*de jure*) but also for reversing any segregation that may have arisen from underlying residential patterns (*de facto*). A few months later, the Court declared in *Miliken v. Bradley* (1974) that desegregation remedies could not extend across district lines – for instance, to include a city's suburbs – unless there was evidence that the districts had colluded in a policy of segregation. Because suburbs had few, if any, black residents, their schools were not considered to be segregated.

Taken together, the *Keyes* and *Miliken* decisions changed the nature of public education in central cities, increasing the exposure of white students to black peers and reducing the availability of neighborhood schools, while leaving most suburban districts unaffected. This

[1] Most southern school districts underwent desegregation in the late 1960s. Many small southern districts desegregated following the 1965 Elementary and Secondary Education Act, which included financial incentives (Cascio, et al., 2008). Furthermore, early case law focused on *de jure* segregation in the South. 50 percent of large southern districts that desegregated through the courts received their court order in 1970 or before, compared to only 18 percent of northern and western districts (Guryan, 2004).

paper shows that school desegregation reduced the demand for residence in central cities relative to their neighboring suburbs. I compare 92 non-southern city-suburban pairs in 1970 and 1980. In 36 of these pairs, the city alone underwent desegregation while the suburb did not. In the remaining pairs, either the city and the suburb both avoided desegregation court-orders (44 pairs) or both the city and the suburb underwent court-supervised desegregation (12 pairs).

Housing quality in cities under court order to desegregate may have deteriorated over the 1970s relative to their suburban neighbors for other reasons (for example, due to urban riots; see Collins and Margo, 2007). To control for these differences, I restrict my comparison to housing prices on adjacent Census blocks that fall on opposite sides of city-suburban school district boundaries. This method was pioneered by Black (1999), who studied the willingness to pay for school quality across school catchment area boundaries.[2] By exploiting a differential change in school policy across these borders, I mitigate the concern that measuring price discontinuities across borders disregards the possibility of household sorting (Bayer, Ferreira and McMillan, 2007). While households may sort themselves in response to long-standing differences in school quality, there was less time for such sorting to occur by 1980 in response to desegregation plans implemented in the mid- to late-1970s.

I find that the typical desegregation plan reduced housing prices and rents in white neighborhoods by two to four percent. In black areas, desegregation reduced rents but increased housing prices. Desegregation had no effect on the size or composition of the housing stock, implying that this price decline represents an unambiguous fall in demand. Furthermore, desegregation increased vacancy rates and reduced the presence of school-aged children in the population, two additional indicators of falling demand for urban areas.

[2] See also Kane, Staiger and Samms (2003) and Figlio and Lucas (2004). Boustan (2008) compares housing prices across city-suburban boundaries to study the willingness to pay to live in a suburb with wealthy co-residents.

This paper contributes to the growing literature quantifying the demand for racially homogenous schools. I use the presence of a desegregation plan as an instrument for an increase in the exposure of white students to black peers. I find that a ten percentage point increase in the black share of the average white student's school reduces housing prices in a city district by 14 percent. This value is substantially higher than estimates deriving from changes in the black share of a neighborhood school (compare a 5 percent decline in housing prices in Atlanta and a 2.5 percent decline in Charlotte, NC for a similar change in the black student share in Clotfelter, (1975) and Kane, Riegg and Staiger (2006) respectively). The disparity in these estimates may be due to the fact that desegregation plans were also associated with the loss of neighborhood schools. Bogart and Cromwell (2000) estimate that the loss of a neighborhood school reduces the housing values by 7.5 percent, which would account for the remainder of the difference.

My estimate of the willingness to pay for racially homogeneous schools in northern and western cities also complements recent work by Cascio, et al. (2009) who study the desegregation response among small districts in the South to financial incentives embedded in Title I in the 1965 Elementary and Secondary Education Act. Cascio, et al. find that the average southern district required $1000 per pupil ($2007) to engage in some token desegregation (roughly a 4 percentage point change in black enrollment share). Converting my price estimate into dollars per pupil generates the equivalent of a $6300 lump sum payment, which is the equivalent to six years of federal payments in the South. Despite the differences in these approaches, this comparison creates a useful metric to compare regional differences in resistance to desegregation and allows us to move beyond case studies that overemphasize the most vocal and organized members of society.

A credible estimate of the level of compensation that would be needed to induce white households to remain in (or return to) integrated school districts may also be of interest to policy makers. Traditional desegregation techniques have become increasingly outmoded due to legal and demographic change.[3] First, the student body in many large districts is now overwhelmingly black and Hispanic, thereby limiting the efficacy of within-district desegregation efforts. In addition, over the past twenty years, courts have declared many individual school districts to be "unitary" (as opposed to dual or segregated), thereby freeing them from the obligation to maintain current desegregation programs or to prevent future re-segregation (Lutz, 2005). In June 2007, the Supreme Court went further, systematically ruling that school districts could no longer use race as a criterion in assigning students to schools (*Meredith v. Jefferson County, Parents Involved in Community Schools v. Seattle*). Given these constraints, some policy makers have suggested that districts should explore the idea of providing incentives for white families to send their children to integrated schools. These incentives may include property tax rebates for individual households or payments across districts to allow cross-registration in neighboring schools.

II. Estimation Strategy

The goal of this paper is to estimate the effect of court-ordered school desegregation – and the associated change in the exposure of white students to black peers – on housing prices. The empirical approach can best be understood as a triple difference. The first set of differences occurs in metropolitan areas whose central city engaged in desegregation. In 1970 (the pre-

[3] For example, at a recent policy conference, Richard Kahlenberg of the Century Foundation called compulsory busing and other traditional desegregation strategies "a dead letter," arguing that "right now, we are talking about efforts to create incentives that will get middle-class families to agree to integration."

period), neither the city nor the suburb in these areas were under court order to desegregate their schools. By 1980, the city underwent a desegregation treatment while the suburb's school system remained unchanged. I add a third difference with metropolitan areas in which neither the city nor the suburb underwent desegregation to adjust for other differences in urban areas over the 1970s (for example, suburbanization related to highway construction or the relocation of employment opportunities).

While this design controls for general changes in cities relative to suburbs over the 1970s, it is possible that cities that were targeted by the courts for desegregation faced a different *trajectory* over this decade than other urban areas. For example, these cities likely had a higher black population share and, as a result, were more likely to experience a riot in the late 1960s. Such confounding factors could affect the average price of city housing relative to suburban housing in these metropolitan areas. I address this source of bias by narrowing the comparison of city-suburban housing prices to the edges of city school districts just adjacent to the neighboring suburban district. Exploiting the fact that school districts change discretely at city-suburban borders, the necessary identifying assumption is that correlated changes to the city over the 1970s affect housing values in a more continuous fashion, which seems plausible. Consider the case of an urban riot, the epicenter of which is one mile from the city border. The effect of the riot will decay with distance from the epicenter and should not discontinuously change at the border.

I begin by estimating the direct effect of the presence of a desegregation plan on housing prices. Prices are collected at the block level and the sample is restricted to blocks that are adjacent to the district border in either the city or its neighboring suburb. The data is described in more detail in Section III. I pool block-level data from 1970 and 1980 and estimate:

$$PRICE_{ibdt} = \alpha_1 + \beta_1(PLAN)_{dt} + X_{dt}\Gamma_1 + D + T + B + (B \cdot T) + (B \cdot D) + \varepsilon_{ibdt} \quad \textbf{(1)}$$

where *PRICE* measures the mean value of housing units on block *i* in school district *d* at time *t*. Pairs of adjacent city and suburban school districts are grouped into border areas, which are indexed by *b*.

The model is nearly saturated by a full set of geography and time fixed effects. School district dummy variables (D) capture long-standing differences in school quality. Border area fixed effects (B) absorb neighborhood attributes that are shared by houses on both sides of the border – for example, the presence of a nearby park, a bus line, or a commercial strip. The interaction term (B · T) allows border area effects to change over time if, say, the neighborhood gentrifies or deteriorates over the 1970s. Some school districts belong to two or more border areas. For example, the north side of Chicago adjacent to Evanston, IL is part of one border area, while the west side of Chicago next to Oak Park, IL forms another border. The interaction term (B · D) permits variation in the school district fixed effect accounting for local differences in school quality.

The effect of a desegregation plan on housing prices is identified by the triple interaction (D · B · T), the specific price trajectories for each of the school districts in a border area over the 1970s.[4] A negative value of β_1 indicates that housing prices fell over time in cities that experienced desegregation over the 1970s relative to their suburban neighbors (compared to other city-suburban pairs that did not undergo desegregation). I also control for the black

[4] In theory, I could also control for the interaction between school district and time (D · T), identifying β from districts that fall into multiple border areas. However, few sample districts meet this criteria.

population share and median income in the school district, two time-varying characteristics that may be correlated with the implementation of desegregation.

Desegregation increases the exposure of the average white student in the district to black peers in the classroom. The introduction of a desegregation plan can be used as an instrument for changes in white exposure to black peers. Equations (2a) and (2b) present the first and second stage regressions in this exercise:

$$EXPOSURE_{bdt} = \alpha_2 + \beta_2(PLAN)_{dt} + X_{dt}\Gamma_2 + D + T + B + (B \cdot T) + (B \cdot D) + \varepsilon_{bdt} \quad \textbf{(2a)}$$

$$PRICE_{ibdt} = \alpha_3 + \beta_3(EXPOSURE)_{dt} + X_{dt}\Gamma_3 + D + T + B + (B \cdot T) + (B \cdot D) + \varepsilon_{ibdt} \quad \textbf{(2b)}$$

The first stage regression estimates the effect of the presence of a desegregation plan in the school district on the average exposure of white students to black peers. β_2 will be positive if desegregation policy is effective in reducing segregation. The instrument will be valid if desegregation policy only affects housing prices by increasing cross-race exposure in the classroom. However, desegregation plans typically involved other changes to school policy, including the elimination of neighborhood-based school attendance areas. In this case, the instrument will overstate the marginal willingness to pay to avoid exposure to black peers. However, it is still worthwhile to estimate the response to realized school desegregation, rather than simply assuming that the typical desegregation plan was well-implemented and enforced.

III. Data

I combine data from multiple sources to estimate the effect of desegregation on housing prices and other neighborhood characteristics. I begin by using Census maps to identify pairs of

neighboring city and suburban school districts for which block level data is available in 1970 and 1980. I find the school district border and focus on Census blocks that are adjacent to the border on either side, a process that requires coding blocks by hand. Finally, I merge this sample with block-level Census of Housing data on housing prices, rents, and other aspects of the housing stock as well as detailed school district-level information on the presence of court-ordered desegregation.

The dataset contains 92 city-suburban boundaries in 30 northern and western metropolitan areas. I focus on the non-South for two reasons. First, southern districts began the process of desegregation in the 1960s and so I cannot reliably observe pre-desegregation outcomes along southern borders. In addition, many southern school districts are county-based, including both a central city and many of its suburban neighbors. The edge of such county districts often reach the agricultural periphery of a metropolitan area, which the Census Bureau did not reliably subdivide into Census blocks in 1970.

In the North and West, both members of school district pairs that enter the sample must have 10,000 or more residents to ensure the availability of demographic and socio-economic data. Furthermore, the border must not be obstructed by a body of water, industrial land, or 4-lane highway to improve the plausibility of the identifying assumption that neighborhood characteristics change in a continuous fashion across district borders.[5] Table 1 lists the metropolitan areas in the dataset and the number of borders that each area contributes to the sample. The sample is evenly divided between the Northeast, the Midwest and the West. Large,

[5] The number of borders in the sample may seem small relative to the total number of divisions in urban areas. For the 15 metropolitan areas in the sample anchored by a large city (that is, one of the 50 largest cities in 1970), the average number of city-suburban borders is 10.5, 6.7 of which had 10,000 or more residents and 4.9 of which were clear of any obvious obstruction. Because this sample also includes 15 metropolitan areas anchored by smaller cities, the average number of borders for each city is 3.1 (median = 2.0).

fragmented cities with populous suburbs are slightly over-represented. Los Angeles-Orange County and New York-Northern New Jersey account for 30 percent of the sample while they contained only 24 percent of the non-southern metropolitan population in 1970.

The unit of observation in the main analysis is a Census block. In particular, the estimation relies on comparing neighboring blocks that fall on opposite sides of city-suburban school district boundaries. Census blocks were not digitally mapped in 1970 or 1980. Instead, I code blocks by hand according to their distance from the border. I define blocks that are themselves adjacent to the boundary as being the first block "tier." I match blocks in the first tier with other block-level variables from the Census of Housing, including housing prices and measures of housing quality.[6]

For a fixed housing stock, the prices of owner-occupied units and market rents of rental units are good indicators of the demand for local residence. Due to confidentiality concerns, housing prices (rents) are only available for blocks containing at least five owner-occupied (rental) units. Because desegregation may also affect the tenure decision, I also create a measure of the average "user cost" of housing on the block. The user cost is calculated as a weighted average of the annual rent paid by renters and the borrowing cost paid by homeowners (home value · interest rate).[7]

I measure other aspects of the housing stock, including the total number of units on the block, the number of vacant units, the share of units that are owner-occupied versus rented, and the average number of rooms per owner-occupied unit. The vacancy rate provides another

[6] Many Ohio counties are unaccountably missing from the 1970 electronic block data. I limit coverage of Ohio to borders in the panel sample or borders for which electronic data is available in 1970 and 1980.

[7] I assume an interest rate of 6 percent, which is slightly lower than the average interest rate over the 1970s. Housing values are based on owner self-reports. Kain and Quigley (1972) argue that owner reports are reliable. However, self-reports may vary across jurisdictional borders if some towns assess properties more regularly, thus providing owners with updated information.

indicator of demand for a fixed housing stock. The majority of vacant units are either for rent or for sale. A higher vacancy rate either indicates a higher turnover rate or a longer average time on the market per rental or sale.

Prices, rents and vacancy rates serve as indicators of demand for a fixed housing stock. However, the housing stock itself could change with the construction of new units, the conversion of units from owner-occupied to rental (or vice versa) or, less commonly, through the destruction of existing units. Understanding the effect of desegregation on the housing stock are interesting in their own right. However, if I find large changes in the size of the housing stock in response to the implementation of a desegregation plan, it calls into question the interpretation of price effects as only reflecting changes in demand.

Even without changing the size of the housing stock, desegregation may have influenced the composition of a block's residents. White households with children may be more likely than young adults or the elderly to leave school districts under desegregation court-order, while black households with children may move into such districts. While I cannot observe household structure directly, I measure the age distribution of residents on the block in five age groups (0-4 years, 5-9 years, 10-14 years, 14-17 years, and 18 plus). I also investigate the effect of desegregation on the racial composition of local residents. Unfortunately, the Census Bureau did not publish data at the block level on other characteristics of the residents.

Information on the presence of desegregation court-orders by school district is taken from the *State of Public School Integration* website maintained by John Logan at Brown University. I code the desegregation plan as a continuous measure equal to the number of required actions that the school district must undertake to counteract desegregation (*PLAN*). Actions include steps like redistricting school attendance areas, mandatory busing of students between schools, and the

creation of magnet schools. The number of required steps ranges from a minimum of zero for districts that did not face litigation or for which no remedial steps were required by the court to a maximum of ten. 36 of the borders in the sample divide a district that faced a desegregation court-order from one that did not, while 44 borders divide districts that did not experience desegregation and 12 contain two districts that both underwent desegregation. Borders in which both districts faced desegregation include Los Angeles-Pasadena, CA; New York City-Yonkers, NY; and St. Louis-University City, MO.

Desegregation plans were intended to increase interracial contact in public schools. One measure of the efficacy of this plans is the exposure index, which measures the share of the student body at the average white student's school who are black.[8] The exposure index for district *d* is defined as:

$$E_d = 1/W_d \, \Sigma_{i=1\ldots n} \, w_{id} \cdot b_{id}/t_{id} \qquad \textbf{(3)}$$

where *n* indexes schools in the district. b/t measures the share of students at a given school who are black (the number of black students divided by the total number of students enrolled at that school).[9] E_d calculates a weighted average of these black enrollment shares. School-level data on racial composition of student body was collected by the Office of Civil Rights in 1970 and 1980.

IV. Results

This section estimates the effect of court-ordered school desegregation on housing prices and rents in affected school districts. We can interpret changes in housing prices as an indicator

[8] I thank Sarah Reber for generously providing access to the digitized Office of Civil Rights data.
[9] The dissimilarity index, another common measure of racial integration, is not well-suited for this context because it requires the existence of many sub-units (schools) within the larger entity (districts). Many suburban districts only have a single high school and would thus appear to be perfectly integrated by the dissimilarity index.

of demand to live in a particular school district as long as there are no associated changes in housing supply or in the composition of the local neighborhood (either in terms of the characteristics of the residents or the quality of the housing stock). Because the central cities and inner-ring suburbs in the sample were already "built up" by the 1970s, it is unlikely that desegregation lead to large scale changes in the housing stock. Nevertheless, I begin this section by testing for differential changes in the housing stock across borders, either due to new construction or the conversion of existing single-family units into multi-family dwellings. I also consider changes in the size of the existing units (a crude indicator of housing quality) and in the racial composition of neighboring blocks.

Because black and white households may have different preferences for school desegregation, I estimate separate effects of desegregation in white and black areas. Desegregation changed the nature of public education in a number of ways. Parents of any race may have objected to the possibility of their children being assigned to schools across town and the opportunity for cross-race socializing in desegregated classrooms. However, desegregation may have very different effects on the average quality of peers in school for white and black children. While white parents may have been concerned about a decline in average peer quality, black parents may have welcomed desegregation as an opportunity to improve the average level of preparation of their child's peers (Hoxby and Weingarth, 2005). Indeed, Guryan (2004) shows that cohorts of black students who attended high school after the implementation of desegregation plans were more likely to graduate. Therefore, it seems reasonable to allow separate effects in black and white neighborhoods.

While it is not obvious *a priori* where to draw the line between a "white" and a "black" area, it turns out that blocks with any black residents tend to be plurality or majority black. In

what follows, I divide the dataset into blocks that are more or less than two percent black.[10] According to this categorization, 18 percent of the sample is composed of black blocks in 1970; the average white block is 0.05 percent black while the average black block is 39 percent black in that year. I have a tried a series of different cut-offs but, given the degree of polarization exhibited in this data, it is not surprising that the results do not qualitatively differ from those presented here.

A. The effect of desegregation on the housing stock and local racial composition

The first and third columns of Table 2 present summary statistics for the housing stock on white and black blocks in 1970 prior to the implementation of desegregation plans. The typical black block has five more units than its white counterpart, in large part because black blocks have fewer detached single family units. The average owner-occupied unit on black blocks is also somewhat smaller (0.3 fewer rooms).

Desegregation had no effect on the size of the housing stock in either white or black areas. The second and fourth columns of Table 2 regress these housing stock characteristics on the number of steps in a district's desegregation plan for the two sub-samples. At most, desegregation may have led to the construction of one additional housing unit per block (on a base of 45 to 50 units), but this effect is imprecisely estimated.[11] While desegregation did not

[10] Ideally, I would define the two sub-samples according to their black population share in 1970 to avoid any confounding change in the composition of black and white areas. However, because of changes in tract and block codes over time, it is difficult to track single blocks over the decade. Instead, I introduce a vector of block number dummy variables in the main regressions, estimating changes over time on blocks in the same school district and border area with same indicator number ('101', '102', etc.). There are between one and six blocks with the same indicator number in district-border area pairs in the sample. Many blocks maintain the same indicator number even if the tract in which they are located changes codes over time.

[11] In the discussion that follows, I refer to the effect of the median desegregation plan, which required two remedial steps.

change the *size* of the housing stock, it may have affected the *quality* of the housing stock. Data on the number of rooms in the average unit provides some evidence that owners in districts undergoing desegregation were less likely to add onto (and perhaps also to renovate) their homes. The average owner-occupied home in a white area had 5.8 rooms at the beginning of the period. Over the 1970s, blocks in districts undergoing desegregation added 0.1 fewer rooms that blocks in the neighboring district. In black areas, blocks in desegregating districts added 0.3 fewer rooms than their cross-border counterparts. In other words, if three houses on black blocks added an extra room over the 1970s, only two houses on blocks facing desegregation would have done so. Because the number of rooms affects home values, I will present price regressions that control for the average number of rooms in units on the block.

A further concern is that desegregation may affect the composition of the local residents. If white households have a stronger distaste for desegregation, blocks in desegregating districts may become more black over time. This change in racial composition may have an independent (negative) effect on local housing prices if white households dislike black neighbors. While desegregation has been shown to reduce the aggregate number of white households in affected districts (Reber, 2005; Baum-Snow and Lutz, 2008), I find no association between desegregation and local racial composition when comparing blocks in such close proximity. In contrast, I find that white blocks, which start out with an extremely low black population share in 1970, become slightly *less* black over time – though this effect is small.

Taken together, there is no evidence of changes in housing supply or in the composition of the local population following desegregation. Therefore, we have no reason to expect that desegregation will lead to a decline in housing prices unless this policy change reduces the demand to live in the school district in question.

B. The vacancy rate and the share of the population under 18 years of age

Before turning to the effect of desegregation on housing prices, I consider two revealing indicators of demand: the vacancy rate and the share of children in the population. If desegregation encouraged some households to move away from the area, owner-occupied units would have been placed on the market for sale and rented units would have advertised for new tenants. In a climate of falling demand, these units may have stayed on the market for a longer period, increasing the vacancy rate on the block at any one point in time. The vacancy rate on the average white (black) block was 2.3 (3.2) percent at the beginning of the period. In desegregating districts, the vacancy rate increased by 0.4 percentage points in white areas and by 0.8 percentage points in black areas relative to blocks in neighboring districts – an increase of 18 to 25 percent relative to the mean.

Desegregation particularly affected households with school-aged children, whose members likely experienced a change in classroom peers or a change in school assignment as a result of the policy. Therefore, we might expect a disproportionate share of the outflow from desegregated areas to be made up of households with children. In 1970, 28-30 percent of residents on the typical block in the sample were under 18 years of age. Blocks in desegregated districts had 1.2 percentage points fewer children among their residents by 1980 in both white and black areas, a 15 percent decline relative to the mean.

As households with children leave areas undergoing school desegregation, they are eventually replaced with young adults or elderly residents. In the meantime, the vacancy rate increases as houses and rental units stay on the market for longer periods. In order to induce households to move into or stay in the area, prices must fall.

C. Housing prices, rents and the user cost of housing

Table 3 explores the effect of desegregation on the price of owner-occupied housing and the rental rates in white and black neighborhoods. At the beginning of the period, an owner-occupied housing unit on the typical white block was worth $109,000 (in 2000 dollars) and annual rent for the average rental unit was $6700. Following desegregation, the value of owner-occupied units fell by four percent while rents declined by two percent. Average values and rents on black blocks were slightly lower in 1970. In black areas, desegregation leads to a seven percent reduction in rents but actually appears to increase the value of owner-occupied units by four percent (though the latter effect is only marginally significant).

The positive effect of desegregation on the price of owner occupied units in black areas is the only indication that some black residents may have valued desegregation. Perhaps black home owners were those who more strongly valued the increase in peer quality associated with desegregation. Beyond its positive effect on home values, desegregation leads to lower rents, an increase in vacancies, and a decline in the number of households with children in black areas. Many black households may have had a distaste for living in a desegregated school district because of the associated loss of neighborhood schools.

Interpreting the relationship between desegregation and prices/rents is complicated by the fact that desegregation may also influence the owner-occupancy rate – and therefore the composition of units that are rented rather than owned. At the beginning of the period, residents of white blocks were much more likely to own their housing unit; the owner-occupancy rate on white blocks was 66 percent, compared to only 50 percent in black areas. After desegregation, the owner occupancy rate in white areas fell by 2.6 percentage points with no comparable change in black areas. We would expect mean housing prices to fall if the highest valued houses were

systematically converted from owner-occupied dwellings to rental units (though, of course, this pattern could not explain why rents also fell in white areas). I create a measure of the average user cost of housing on a block by taking a weighted average of annual rents for rental units and annual borrowing costs for owner-occupied units. This measure is not sensitive to the owner-occupancy rate. Annual user costs of housing decline by two percent in white areas and by six percent in black areas.

Falling housing prices would have had an immediate effect on the school districts in question through a reduction in their residential tax base. For the median non-southern city, 16 percent of whose housing stock by this definition was located in black neighborhoods, the value of the residential tax base would have fallen by 4.3 percent.[12] While school districts vary in their composition of revenues, the typical district relies heavily on taxing residential property. For a district that relies on residential property for 75 percent of its budget, this decline would translate into $134 less revenue per pupil (in 2000 dollars). If desegregation also required new expenses such as new buses or higher teacher salaries, this value would be an underestimate of the declining resources associated with desegregation. Essentially, court-ordered desegregation operated as an unfunded mandate that disproportionately applied to central city districts.

D. Willingness to pay to avoid exposure to black peers

Thus far, I have explored the response to a series of court-ordered desegregation plans implemented in urban school districts in the 1970s. To the extent that these orders were enforced, it is likely that the typical white student in these districts was exposed to a greater number of

[12] This figure uses the estimates for the user cost of housing in black and white areas for the typical desegregation plan requiring two affirmative steps. For the median city, the average decline in the value of housing stock would be $0.16 \cdot 0.066 + 0.84 \cdot 0.040 = 0.043$.

black peers, and vice versa. This section estimates the housing market response to this realized desegregation, measured as an increase in white exposure to black peers, using the presence of a desegregation plan as an instrument. The resulting estimates of willingness to pay to avoid cross-race peers is a parameter of broader policy interest and can be more easily compared to the literature on the willingness to pay to avoid racially diverse schools.

Table 4 shows the first stage relationship between the number of steps in a district's desegregation plan and the change in average white exposure to black peers over the 1970s. Because white and black blocks are not evenly distributed across districts, I find that the median plan would have increased the black enrollment share at the typical white school by 2.8 percent among white blocks and by 4.8 percent among black blocks. The presence of a desegregation plan is a strong instrument for realized changes in exposure to cross-race peers over the 1970s, with an F-statistic in both cases of over 45.

Estimates from the second stage equation, which relates characteristics of the housing stock and the local area to exposure to cross-race peers, are presented in Table 5. Columns 1 and 3 contain the OLS estimates, while columns 2 and 4 offer the corresponding IV coefficients. The OLS estimates are always weaker than their IV counterparts. At the beginning of the period, white exposure to black peers was minimal in suburban districts. Over the 1970s, middle-class black households began the process of suburbanization in earnest. Therefore, white exposure to black peers was increasing fastest in districts with otherwise strong and rising housing demand. This confounding pattern attenuates the coefficients in OLS.

After instrumenting, it becomes clear that reducing the effective level of school segregation in a district reduces housing prices, increases vacancy rates, and reduces the school-aged share of the population in both black and white neighborhoods. The coefficients in Table 5

indicate the change in the dependent variable when the black enrollment share at the average white student's school increases from 0 to 100 percent. Consider instead a 10 percentage point increase in the black enrollment share (which is large relative to the 3-5 percentage point change associated with the typical desegregation plan). Such a change in the black enrollment share leads to a 13-15 percent decline in the user cost of housing, a 1.0-1.6 percentage point increase in vacancy rates and a 2.8-3.7 percentage point decline in the share of the population under 18 years of age. As before, reducing the effective level of school segregation has no effect on the size of the housing stock or the black population share on affected blocks but is associated with lower owner-occupancy rates in white neighborhoods and a reduction in size of owner-occupied units.

V. Interpretation

A. Exposure to cross-race peers versus preference for neighborhood schools

The previous section uses the presence of a desegregation order as an instrument for changes in exposure to cross-race peers. I estimate that a ten percentage point increase in exposure is associated with a 14 percent decline in average user costs of housing. This IV estimate can be compared with the existing literature on the willingness to pay to avoid black classmates, though it is important to remember that, in many cases, court-ordered desegregation not only increased school diversity but was also associated with the loss of neighborhood schools for a large portion of the district.

Understanding the marginal household's willingness to pay to avoid racially diverse schools is of policy interest. In 2007, the Supreme Court ruled that school districts could not take race into account when assigning students to schools. Therefore, districts that want to increase or

maintain current levels of desegregation may need to use incentive payments to encourage parents to send their children to mixed-race schools.

The existing literature on the effect of the racial composition of enrollment on housing prices is limited to case studies of individual southern school districts. Clotfelter (1975) compares housing prices across high school attendance areas in Atlanta following desegregation. According to his estimates, a 10 percentage point increase in black enrollment share is associated with a imply five percent decline in average housing values. Kane, Riegg and Staiger (2006) study the prices of houses on either side of elementary school attendance area boundaries in Charlotte-Mecklenberg, NC, a district whose boundaries intentionally cut across neighborhoods in an attempt to reduce segregation. They find that a 10 percentage point increase in black enrollment share leads to a 2.5 percent decline in average housing values.

The differences between these two estimates may be due to location, time period (1970s versus 1990s), or the varying importance of peers in elementary school and high school. More importantly, though, it is clear that both of these estimates are substantially smaller than the magnitudes found here. This discrepancy is likely due to the fact that, when comparing across school attendance areas in a single district, local black enrollment share is not correlated with the likelihood that households is required to send their children to a non-neighborhood school. Rather, in principle, all households in the district face the same probability of being assigned to schools outside of their local area in order to accomplish desegregation goals. In contrast, in the cross-district variation used here, the presence of a desegregation plan is associated with both an increase in exposure to black peers and a heightened probability of being assigned to a distant school.

Bogart and Cromwell (2000) use a school redistricting plan in Shaker Heights, Ohio to study the value of a neighborhood school. They find that the loss of a neighborhood school reduces housing prices by 7.5 percent. Taken together, these estimates suggest that the aggregate effect of a desegregation court-order on housing prices likely includes a response to both the loss of neighborhood schools and an increase in the exposure to cross-race peers.

I find that the marginal resident of a white neighborhood was willing to pay four percent more for a comparable housing unit to avoid living in a school district under desegregation court-order. The typical desegregation plan was associated with a three percentage point increase in the black enrollment share at the typical white student's school; according to Clotfelter's estimate, this change in peer composition would reduce housing prices by 1.5 percent. Taking Bogart and Cromwell's estimates seriously, the remaining 2.5 percent decline in housing prices suggests that the average household in a district undergoing desegregation faced a one-third chance of being reassigned to a non-neighborhood school. In other words, my aggregate estimate of willingness to pay to avoid desegregation is due in roughly equal measure to concerns about exposure to cross-race peers and to a preference for neighborhood schools.

B. Comparing attitudes towards desegregation across regions

[This section is incomplete. Here are some notes.]

- Sample is entirely non-southern. To date, most work on desegregation has focused on the South. Interesting opportunity to compare across regions. If rely on historical case studies of particular cities, biased towards the most outspoken members of society on either side of the issue. The images of riots during the Boston busing crisis, for example, might not be representative of the average resident. Better to use data from the housing market.
- Can compare to new work by Cascio, et al. (2008) who study desegregation in response to Title I in the South. Many small districts in the South did not desegregate under court order; instead, they were encouraged to desegregate (or at least begin the process of desegregation) in response to federal incentives. The 1964 Civil Rights Act banned discrimination on the basis of race in public schools. Title I of the Elementary and

Secondary Education Act, passed in the next year, withheld federal funding for local schools from districts not in violation of the Civil Rights Act.

- Cascio, et al. estimate that the average southern district required $1000 per pupil ($2007) to engage in token desegregation (moving from 0 to 4 percent black at average white student's school – a 4 percentage point change).
- According to my estimates, a 4 percentage point change in black enrollment share is associated with a 5.6% decline in housing prices or $6100 decline in value for the typical house. To compare with Cascio, et al. need to convert into dollars per child. The median home value in the sample is $110,000 ($2000). The median block had 28 housing units and 26 children. So, this value translates into a payment of $6600 per child, which is equivalent to around 6 years of the federal payments. But, around half may be due to neighborhood schools.
- Gives a point of comparison between North/West and South. If average household stays in house for 10 years, then would have needed to pay one-third to one-half as much in North to induce family to stay in district undergoing desegregation. By this measure, South was more resistant, but not by an overwhelming amount.

VI. Conclusion

[To come…]

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Table 1: School district borders with available block-level data by metropolitan area

Region	Metropolitan area	Full sample
Northeast	Allentown-Bethlehem, PA	2
	Boston, MA	3
	Hartford, CT	3
	New York, NY-NJ†	10
	Pittsburgh, PA	2
	Providence, RI	3
	Scranton, PA	1
	Springfield-Chicopee, MA	1
Midwest	Akron, OH	2
	Canton, OH	1
	Chicago, IL†	6
	Cleveland, OH	2
	Dayton, OH	1
	Des Moines, IA	2
	Detroit, MI	5
	Grand Rapids, MI	4
	Indianapolis, IN	1
	Kansas City, KS-MO	4
	Minneapolis/St. Paul, MN	2
	Moline-Davenport, IL-IA	2
	South Bend, IN	1
	St. Louis, MO	1
West	Denver, CO	3
	Las Vegas, NV	1
	Los Angeles, CA†	19
	Phoenix, AZ	1
	Portland, OR	1
	San Bernard.-Riverside, CA	1
	San Francisco, CA†	3
	San Jose, CA	4
	TOTAL:	**92**

Notes: Metropolitan areas marked with † contained secondary central cities in 1960 that are now considered by the Census Bureau to anchor their own, independent metropolitan areas. These are: Newark, NJ; Jersey City, NJ; and Clifton, NJ (New York); Gary, IN (Chicago); Anaheim, CA (Los Angeles); and Oakland, CA (San Francisco).

Table 2: The effect of school desegregation on neighborhood characteristics

	Percent black <= 2.0		Percent black > 2.0	
Dependent variables	Mean/SD	Coefficient	Mean/SD	Coefficient
Housing characteristics				
# housing units	45.279	0.757	50.693	1.251
	(54.188)	(0.615)	(60.509)	(2.515)
Av. # rooms, owner occ	5.804	-0.052	5.543	-0.156
	(0.894)	(0.014)	(0.778)	(0.015)
Share vacant	0.023	0.0018	0.032	0.0044
	(0.042)	(0.0006)	(0.052)	(0.0007)
Resident characteristics				
# residents	126.299	0.977	141.307	5.477
	(144.173)	(1.420)	(155.763)	(3.724)
Percent black	0.055	-0.018	39.173	0.185
	(0.271)	(0.004)	(33.328)	(0.347)
Share under 18	0.282	-0.006	0.295	-0.006
	(0.117)	(0.002)	(0.116)	(0.002)
N	2153	4109	483	1583

Notes: The sample includes Census blocks adjacent to 92 city-suburban school district borders in 1970 and 1980 and is subdivided into blocks on which more (less) than two percent of the residents are black. The first and third column contain means and standard deviations of housing and resident characteristics from the Censuses of Housing and Population in 1970. The second and fourth columns present coefficients from a regression of a block characteristic on the number of steps in the court-ordered desegregation plan (if any) in the relevant school district. The regression also includes the black population share and median income of residents of the district as well as vectors of district, time and border area fixed effects and their interactions and a set of dummy variables for block number. See Section II for more details on the estimating equation. Standard errors are reported in parentheses and are clustered by school district.

Table 3: The effect of school desegregation on housing prices and rents

	Percent black <= 2.0		Percent black > 2.0	
Dependent variables	Mean/SD	Coefficient	Mean/SD	Coefficient
Share owner occupied	0.659	-0.013	0.506	-0.003
N = 4109; 1583	(0.301)	(0.004)	(0.305)	(0.006)
ln(value)	109,074	-0.021	99,012	0.018
N = 3585; 1270	(43,087)	(0.005)	(26,296)	(0.011)
ln(rent)	560.13	-0.010	520.57	-0.038
N = 2211; 1169	(178.71)	(0.003)	(130.99)	(0.006)
ln(user cost)	6668.75	-0.020	6131.29	-0.033
N = 4000; 1543	(2434.02)	(0.005)	(1429.18)	(0.005)

Notes: The sample includes Census blocks adjacent to 92 city-suburban school district borders in 1970 and 1980 and is subdivided into blocks on which more (less) than two percent of the residents are black. The first and third column contain means and standard deviations of housing characteristics from the Censuses of Housing in 1970. The second and fourth columns present coefficients from a regression of a block characteristic on the number of steps in the court-ordered desegregation plan (if any) in the relevant school district. The regression also includes the black population share and median income of residents of the district as well as vectors of district, time and border area fixed effects and their interactions and a set of dummy variables for block number. See Section II for more details on the estimating equation. Standard errors are reported in parentheses and are clustered by school district. Data on housing values (rents) are only available for blocks containing at least five owner-occupied (rental) units. The number of observations underlying each regression is reported below the name of the dependent variable for blocks with less than and greater than two percent black population share respectively.

Table 4: Desegregation court-orders and white exposure to black peers

Dependent variable	% black <= .02	% black > .02
Exposure	0.014	0.024
	(0.002)	(0.004)
F-test	61.60	49.06

Notes: The sample includes Census blocks adjacent to 92 city-suburban school district borders in 1970 and 1980 and is subdivided into blocks on which more (less) than two percent of the residents are black. Each cell contains coefficients from a regression of white exposure to black peers in the relevant school district on the number of steps in a court-ordered desegregation plan (if any). The regression also includes the black population share and median income of residents of the district as well as vectors of district, time and border area fixed effects and their interactions and a set of dummy variables for block number. Standard errors are reported in parentheses and are clustered by border area.

Table 5: The effect of white exposure to black peers on neighborhood characteristics and housing prices

	% black <= .02		% black > .02	
Dependent variables	OLS	IV	OLS	IV
ln(user cost)	-0.886	-1.563	-0.584	-1.321
	(0.273)	(0.216)	(0.412)	(0.267)
Share units vacant	-0.059	0.106	0.040	0.169
	(0.067)	(0.068)	(0.077)	(0.031)
Share residents under 18	-0.003	-0.368	0.011	-0.283
	(0.145)	(0.149)	(0.112)	(0.120)
# housing units	38.447	59.385	89.672	21.718
	(50.112)	(43.509)	(52.378)	(111.623)
Av. # rooms, owner occupied	-1.924	-4.237	-2.812	-5.845
	(0.931)	(0.887)	(1.158)	(1.302)
Share black	-0.008	-0.013	0.163	0.093
	(0.003)	(0.002)	(0.231)	(0.141)
Share owner occupied	-0.543	-1.102	-0.399	-0.169
	(0.224)	(0.247)	(0.145)	(0.252)
N	3903	3406	1444	1317

Notes: The sample includes Census blocks adjacent to 92 city-suburban school district borders in 1970 and 1980 and is subdivided into blocks on which more (less) than two percent of the residents are black. Odd columns contain OLS coefficients and IV coefficients from regressions of a block characteristic on white exposure to black peers in the relevant school district. The regression also includes the black population share and median income of residents of the district as well as vectors of district, time and border area fixed effects and their interactions and a set of dummy variables for block number. See Section II for more details on the estimating equation. Standard errors are reported in parentheses and are clustered by border area. The number of steps in a court-ordered desegregation plan (if any) is used to instrument for changes in white exposure to black peers. Coefficients from first stage regressions are presented in Table 4.