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## Opportunities, race, and urban location: the influence of John Kain <sup>☆</sup>

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### Abstract

No economist studying the spatial economy of urban areas today would ignore the effects of race on housing markets and labor market opportunities, but this was not always the case. John Kain developed much of urban economics but, more importantly, legitimized and encouraged scholarly consideration of the geography of racial opportunities. His provocative study of the linkage between housing segregation and the labor market opportunities of Blacks arose from his work on employment decentralization and constraints on Black residential choice. His later research program on school outcomes was similarly focused in how the economic opportunities of minority households vary with location. John Kain's scientific work forms a legacy linked by the study of the urban disadvantaged. © 2004 Elsevier Inc. All rights reserved.

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### 1. Introduction

Today, economists routinely analyze the impact of place-based externalities on behavior and outcomes. Few studies of central cities, regardless of focus, can ignore the overlay

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<sup>☆</sup> John F. Kain died in Dallas, Texas on August 4, 2003 at the age of 67. A previous version of this paper was discussed at a special session honoring his memory at the annual meetings of the Association for Public Policy and Management, November 6, 2003.

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of race and the effects of race on economic outcomes. Few doubt that race powerfully influences private markets in cities, such as real estate, as well as urban politics, policy and education. Yet economists have not always understood the importance of race, and particularly racial location patterns. In many ways, John Kain is the scholar who taught economists about the central role of race in America's cities.

This paper sketches how Kain's varied writings have helped provide the dominant framework for urban analysis. His early residential location and transportation studies offer an essential background. But Kain's early innovation was recognizing that the simple theoretical models, such as the Alonso–Muth model, and the rudimentary empirical analyses of the 1960s failed to capture essential features of the urban landscape, such as increasing decentralization of employment. This recognition spawned two research programs. Kain moved beyond simple models with direct analytical solutions to simulation models that emphasized market heterogeneity in many dimensions. Kain also delved into the unique aspects of racial location and market outcomes, introducing analysis of the clearest form of heterogeneity that is observed in cities.

These developments underscore Kain's most significant impact—understanding how race, location and their interaction affect economic opportunities. This understanding is at the heart of the spatial mismatch hypothesis, and it remains at the heart of his most recent research into educational opportunities. The genesis of the Texas Schools Project at the University of Texas at Dallas was an interest in understanding whether the suburbanization of the Black population in Texas expanded the educational opportunities for Black students. The analytical aspects that most interested Kain dealt directly with race, schooling and location.

To frame the discussion (in a way that would appeal to John Kain's empirical focus), Table 1 lists his ten most cited works. The way in which these works developed and fit together is remarkable.

## **2. Housing, transportation, residential location**

In the early 1960s, John Kain's Berkeley dissertation, along with the roughly contemporaneous dissertations of William Alonso (at Harvard, published in book form in 1964) and Richard Muth (at Chicago, ultimately published in book form in 1968), identified the essential urban tradeoff between short commutes and big houses and lots. Kain's work on residential location [7], published in 1962, was both more practically relevant and less elegantly general than the Alonso–Muth models. Kain's model of residential location explicitly recognized the reality of noncentral work places in urban areas and the differing commuting costs of households of varying demographic characteristics. Kain's model made a large number of predictions—centrally employed workers commute longer distances than workers employed at noncentral locations; higher income workers commute longer distances; multiple worker households locate closer to workplaces; larger-sized households choose longer commutes, etc. These predictions organized a series of empirical applications—tests and extensions of the theory that occupied Kain and his associates throughout the decade of the 1960s and beyond.

Table 1  
The most cited works of John Kain

Title	Publication in	Year	Approximate citations
Housing segregation, Negro employment and metropolitan decentralization	<i>Quarterly Journal of Economics</i>	1968	350
The urban transportation problem	Harvard University Press	1965	230
Housing markets and racial discrimination	Columbia University Press for NBER	1975	200
Measuring value of housing quality	<i>Journal of the American Statistical Association</i>	1970	180
The spatial mismatch hypothesis: thirty years later	<i>Housing Policy Debate</i>	1992	130
The journey to work as a determinant of residential location	<i>Papers of the Regional Science Association</i>	1962	105
Housing market discrimination, homeownership and savings behavior	<i>American Economic Review</i>	1972	90
The distribution and movement of jobs and industry	Chapter in <i>The Metropolitan Enigma</i> , Harvard University Press	1968	85
Cumulative urban growth and urban density functions	<i>Journal of Urban Economics</i>	1974	60
Alternatives to the gilded ghetto	<i>Public Interest</i>	1969	55

*Notes.* Citations estimates are from the Social Science Citation Index as of October 30, 2003. This index measures only citations in a limited number of journals and as a result significantly underestimates the full impact of these works. Bibliographic information on these works appears in the references. A complete listing of Kain's publications appears at <http://utdallas.edu/~jkain>.

By incorporating the realism of polycentric workplaces and durable fixed capital [2], it became impossible to solve for the equilibrium pattern of housing prices using then-standard “back of the envelope” calculations. This led to early work in numerical simulation. The simulation model ultimately developed by Gregory Ingram, Royce Ginn, and John Kain [1] (in collaboration with a large number of others) contained several highly creative features which gave the model more realism and which permitted its application to policy analysis in a transparent way. The principal innovation in the volume concerned the demand side of the housing market and the time path of housing prices. The demand side of this disaggregated housing model was based on the choices by households of given incomes and worksites about the type of housing to consume and its location in space. For a metropolitan area, space was represented by a series of residential zones. Households chose a type of housing and a zone. The attractiveness of each zone to any household depended upon housing prices in that zone and the commuting costs from that zone to the household's workplace. For a given set of demand parameters, housing prices and transport costs, it was possible to allocate households to their preferred residential zones. Excess demand in any zone provided a signal to raise housing prices in that zone, and the pattern of excess demand provided a signal to housing suppliers and developers to build new dwellings and to convert among housing types at different locations.

The economic model solved iteratively for a spatial pattern of housing prices and housing supplier activity in response to a demand shock—the opening of new businesses in one of the workplace zones, for example. The iterations were given a temporal

interpretation, and the time pattern of price and quantity adjustment over space was simulated. The innovations in this model stimulated a large volume of subsequent research on housing demand, the substitutability of housing components in consumer demand, and the role of economic geography in housing choices.

Kain's long-term interest in practical policy (see Table 1) meant that these models of the housing market would ultimately illuminate important policy issues. Kain and others used these models to analyze factors such as the spatial implications of housing subsidy programs and shelter allowances, the abandonment of housing and the decline of central city neighborhoods, and urban gentrification.

Kain's research on the polycentric nature of US metropolitan areas led to a line of inquiry documenting the extent of worksite dispersion and employment decentralization in metropolitan America. In the most widely cited of these papers, "The distribution and movement of jobs and industry" [9], Kain documented that the postwar decentralization of employment was actually in full force, though somewhat disguised, during World War II, and was evident in data as early as the 1920s. In *The Urban Transportation Problem* [11], Kain and his collaborators documented the dispersion of employment within the borders of central cities, from the CBD to the periphery of the city.

This preoccupation with workplace and residence location led quite naturally to the study of transportation systems linking these origins and destinations. Kain's first book, *The Urban Transportation Problem* [11], written with John Meyer and Martin Wohl was a tour de force, analyzing the difficult choices faced by transit agencies and highway authorities, and the regulation of the automobile. Somewhat controversially, the authors stressed the limitations on publicly provided transport which were imposed by the increased incomes of consumers and their resulting demands for low density living conditions. The Meyer–Kain–Wohl analysis (Kain's second most cited work) provided sobering reading for advocates of large investments in fixed-rail transit systems. The heterogeneity of origins and destinations and the value of commuters' time meant that these large scale investments could almost never be an efficient use of public resources.<sup>1</sup>

### 3. Economic opportunity and race

Table 1 also quantifies the central fact of John Kain's legacy—he is the father of modern economic research on minorities in American cities. To a remarkable degree, Kain ultimately used his urban research to illuminate the problems of race in American cities.

John Kain is responsible for two big ideas in the economics of race. First, he is the father of the spatial mismatch hypothesis, which argues that housing market discrimination leads to segregation which hurts Black labor market outcomes—simply because segregation

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<sup>1</sup> The clear cut analytical case for lower cost, flexible transit systems and the preferences of planners and politicians for expensive, inflexible systems stimulated a series of policy-oriented papers by Kain arguing the economic case in its particulars. For example, the provocatively titled paper, "How to improve urban transportation at practically no cost," analyzed the economic potential for reversible lanes on urban arterials, priority bus lanes on limited access freeways, congestion pricing, and the substitution of smaller transit vehicles for large busses.

increases the distance between Black workers and available jobs. Second, Kain began the empirical literature on economic discrimination against minorities in housing markets.

The antecedents of preoccupation with race and economic opportunity have already been discussed. The natural corollary of the central theme of Kain's thesis—job location influences housing choice—is that, if housing market discrimination fixes housing choice, job choice will be influenced by the costs of commuting. This will push some people to work near to home and others to avoid employment altogether. In “The distribution of jobs and industry,” Kain showed that jobs were suburbanizing. This fact later pushed him to realize that Black inner-city residences would be increasingly far from jobs.

Kain's pioneering work on housing price hedonics, first published in the 1970 by *Journal of the American Statistical Association* (JASA), broke new ground in combining individual level data with a broad range of home-level and community-level attributes [5]. It represented a significant leap forward in the degree to which housing quality could be measured. This ultimately played a crucial role in helping Kain to establish that Blacks paid more for housing—a crucial test of housing market discrimination fully explicated in his subsequent book, *Housing Markets and Racial Discrimination: A Micro Economic Analysis* [4].

Stripped to its essentials, the Kain view of race in cities was that housing segregation hurts Black outcomes in the labor market as well as the housing market. The Kain model—the beginning of economic analysis in the area—contains four essential elements. First, the housing choices of Blacks are constrained by discrimination; as a result, Blacks pay more for and consume less housing. Second, the constraints on Black housing choices lead Blacks to live far from White neighbors and more importantly, White employers. Third, because proximity matters, the distance between Black employees and White employers hurts Black labor market outcomes. Fourth, the decentralization of employment makes the problem worse over time. This view is detailed in his 1968 *Quarterly Journal of Economics* (QJE) paper [3], the most important single work in Kain's career, but it is the research that was published in the 1970 JASA article, the 1972 *American Economic Review* (AER) article [8], and *Housing Markets and Racial Discrimination* [4] that enabled Kain to make the empirical case that Black housing choices are constrained.<sup>2</sup>

Kain's QJE article built upon sociological studies that had conclusively shown that Blacks and Whites were segregated far beyond the level predicted by income differences. His pioneering use of disaggregated locational data focused on Chicago and Detroit and showed that these places were then (as now) among the most racially segregated cities in the country. But segregation does not prove discrimination or constraints on Black choices. Segregation also occurs if Whites have a taste for living with other Whites, and as a result Whites are willing to pay more to live in White communities than Blacks are willing to pay to live in White communities. David Cutler, Edward Glaeser and Jacob Vigdor have called these two opposing views centralized racism (racist Whites get together to restrict Black choices) and decentralized racism (racist Whites separately decide to pay more to live in White communities).

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<sup>2</sup> The 1969 *Public Interest* paper [10], the last article on the “top ten” list, should be seen as detailing the appropriate public policy response to these research conclusions.

Kain's QJE paper does not present sufficient evidence to distinguish between the two theories, but he does point to the clear historical fact that Blacks have often faced explicit barriers to moving into White neighborhoods:

The means by which racial segregation in housing has been maintained are amply documented. They are both legal and extra-legal; for example: racial covenants; racial zoning; violence or threats of violence; preemptive purchase; various petty harassments; implicit or explicit collusion by realtors, banks, mortgage lenders, and other lending agencies; and, in the not-so-distant past, the Federal Housing Administration (FHA) and other Federal agencies (Kain [3]).

No one can doubt that all of these things occurred, but Kain's intellectual opponents have argued that these forces (centralized racism) were less important in creating segregation than the White taste for White communities (decentralized racism). Luckily, economic theory provides a clean test. If segregation were driven by White racist tastes, these tastes would effectively constrain White choices and imply that Whites should end up paying more for housing. Conversely, if segregation arose from constraints on Black housing, Blacks would end up paying more for housing.

The extensive work based upon data collected by Kain and his collaborators in St. Louis directly addresses whether Blacks or Whites pay more. The 1970 JASA paper [5], using a large data set with better controls than previously available, documented that renters in Black neighborhoods of St. Louis paid more than renters in White neighborhoods of St. Louis. The *AER* article [8] took a slightly different tack and established that Blacks are much less likely to be homeowners than Whites, and since homeownership is often associated with lower housing costs (in part because of the privileged tax treatment of homeownership), Blacks paid more for housing than Whites. The long book on *housing markets and racial discrimination* [4] put these pieces of evidence together and made a strong case for the view that the costs of housing are indeed higher for Blacks than for Whites. This is still, perhaps, the best statistical (as opposed to historical) evidence to date that segregation stemmed from barriers to Black mobility rather than White preferences.

The subsequent literature on this question has been extensive and conclusions are varied, largely reflecting changes in the world since the 1960s: In the 1950s and still in the 1960s, the Kain emphasis on explicit housing market discrimination was appropriate; by the 1980s and 1990s, the traditional barriers to Black mobility had fallen. Empirically, housing prices in Black areas have been plummeting over time and, even if race were positively associated with price in the immediate postwar period, today this is no longer true. As such, the Kain emphasis on housing market discrimination as the source of segregation may have been startling in its day, but carries less force in the 21st century. See Kain [6] for his own reflections, written in the early 1990s.

The second element of the spatial mismatch hypothesis is that segregation increased the distance between Blacks and Whites, and especially between Black workers and White employers. This claim appears to be contradicted by earlier analyses in Meyer, Kain and Wohl [11] and by subsequent work that has tended to show that, while Blacks live in segregated communities, these segregated communities are not particularly far from historical employment centers. The crucial point in Kain's argument is that the

decentralization of employment will increase that distance over time, particularly the distance to newly developed job opportunities.

The influential article on spatial mismatch, however, never directly addresses the view that discrimination increases physical distance between Blacks and jobs. Instead, the claim is shown indirectly as a result of Kain's work on the third aspect of the mismatch hypothesis: that distance between jobs and workers reduces employment. The empirical heart of the paper is Kain's simulation showing that Black employment would rise with integration. This simulation involves first regressing Black employment on distance to the ghetto and showing that employment falls with distance from the ghetto. Kain then assumes that in an integrated world distance from the ghetto would be zero, and uses the estimated regression to simulate the counterfactual. He finds that Black employment would rise after integration. Of course, if Kain had instead regressed Black employment on proximity to the ghetto and assumed that proximity would equal zero after integration, then he would have found exactly the opposite result—segregation helps minority employment.

The final element in the Kain model of race is that suburbanization will hurt employment prospects for African-Americans. Here Kain is on solid ground. Jobs are clearly decentralizing. His own data are convincing, and subsequent trends have reinforced this insight. Kain was also right that Black workers were centralized, and they have remained so. As the distance between the median Black resident and the median job has risen since 1968, Kain's analysis looks quite prescient.

Kain's work on race began three large academic literatures. First, he started the large and growing literature on the economic effects of segregation on minorities. Early results, prone to variety of analytical complications, found varying effects. The "moving to opportunity" experiment presented an important breakthrough in dealing with this problem because it features random assignment, enabling researchers to estimate real economic benefits for minorities who leave the ghetto. Moreover, while the correlation between segregation and minority outcomes was nonexistent in 1970, it became enormously strong by the 1990s. Whatever the cause, Kain's emphasis on the costs of segregation looks prescient today as detrimental outcomes in segregated communities have mushroomed.

A second, somewhat smaller body of research has focused on the specifics of the spatial mismatch hypothesis; in particular, the idea that commuting distance deters employment. Evidence has varied across study and location, and much of the current research on this topic seeks to exploit natural experiments which have changed the accessibility of specific urban neighborhoods.

The third subsequent literature evaluates the impact of discrimination towards minorities in the housing market. The focus of this literature has gradually evolved. In the early 1970s, much of this literature was focused on barriers to Black renters wanting to live in White areas. By the 1980s and 1990s, the literature focused much more on barriers to Black homeownership and barriers to Blacks owning homes in White areas. The literature has generally found that it is easier for a White to get a mortgage than a comparable Black.

After 35 years, it is clear that Kain was right that segregation harms minorities and that there is substantial discrimination against Blacks in the housing market. He was probably less right about the reason that segregation harms Blacks. It is not generally true that Blacks live further from jobs than Whites do, and it is hard to believe that the physical costs of getting to jobs are really responsible for the pathologies of the ghetto. But while



Kain's emphasis on the distance between people and jobs may have been an inadequate explanation for the problems of the ghetto, it was absolutely the right theory for starting an *economic* literature on Black urban America. Few empirical economists in 1969 would have been comfortable studying "social distance," the formation of "norms" in an urban neighborhood or "human capital spillovers," but economists would study transport cost problems. And, by focusing on transport costs, Kain made it respectable—indeed, quite exciting—for empirical mainstream economists to work on the problems of urban Black America. By doing so, he gained his critical place in the economics of race.

John Kain's work on race was pioneering; in many ways time has only served to emphasize the accuracy of Kain's vision. Modern research has increasingly shown support for a connection between housing market segregation and labor market outcomes. Discrimination in housing markets, even if it is primarily statistical in origin, is real and continues to impose real costs on minorities. Employment has continued to suburbanize and this has created an increasing spatial mismatch between inner city minorities and suburban jobs. To the extent that there is still dispute about Kain's work, this dispute centers on whether central city segregation really increased the distance between Black workers and jobs and the extent to which this distance really deters employment. These controversies remain, but they are minor relative to the more important things that John Kain clearly got right.

#### 4. Education and opportunity

Table 1 chronicles the immense influence of John Kain in modeling spatial issues and particularly the influence of race. Kain's involvement in educational policy debates does not appear in this table, although this involvement may have a greater long run payoff.

Kain's earliest attention to education analysis and policy grew out of the massive government report *Equality of educational opportunity* (the "Coleman Report"), which appeared in 1966. The Coleman Report was mandated by the Civil Rights Act of 1964 to examine the extent of racial discrimination and inequality of opportunity in US public schools. Two aspects of the report created both attention and controversy. First, the report took the position that the central focus of attention should be equality of student outcomes, not equality of government inputs to schools. Second, the report was widely interpreted to imply that "schools are not important."

Kain heavily criticized the Coleman Report on methodological grounds. The most serious issue was the use of an analysis of variance procedure that biased the findings against the importance of school inputs and towards the importance of family factors. More significantly, however, this study also confused the difficulty in measuring school inputs with the importance of teachers and schools in affecting performance.

For two decades after his original involvement in evaluating the Coleman Report, Kain's research concentrated on the issues noted in Table 1. However, in the early 1990s, he began to see how educational research could take a quantum leap forward.

The specific innovation lay in formulating a plan for conducting research on factors affecting student outcomes using the administrative records normally maintained by schools. More specifically, while visiting Texas, he became aware of the state's accountability sys-

tem that required annual testing in core subjects of all public school students in the state. He began a series of discussions with the Texas Education Agency to use the data for research purposes while simultaneously ensuring confidentiality and protecting the privacy of the individuals involved. The result today is a functioning prototype of ways to further our knowledge about schools and their influence. It seems quite possible that this line of activity will have the largest impact on future research and policy of any of his work.

Kain's Texas Schools Project has established a database about school performance that is unequaled in the world. The central element is information on state tests in core subjects for *each of the four million students in Texas public schools*. Second, students can be followed over time. This aspect of the data immediately catapults the research potential of the database far beyond any other existing database. Third, students can be linked to other aspects of the environment and of their outcomes. As students leave the K-12 public schools they can be traced into college, into work, or into jail.

The immediate motivation for developing this research structure is completely consistent with Kain's other intellectual interests. The project that launched the Texas Schools Project merged the life-long interests of Kain in understanding place and race. Specifically, building on the observation that Blacks were rapidly moving into a wide variety of suburban school districts, Kain and Daniel O'Brien pursued issues of the changed opportunities of Blacks and the impact of that on Black achievement. This work concentrated on characterizing the quality of schools in different locations.

A different focus for the same analytical perspective is contained in Kain's work on the "ten percent plan." With court limitations on any affirmative action in higher education, the State of Texas developed a plan of automatic admission at the University of Texas for any student in the top ten percent of his or her high school graduation class. The probabilities of accepting Black students under the plan are thus related to the level of school and residential segregation—highlighting the importance of race and location. But this research also demonstrates Kain's interest in the ultimate effects of local schools by assessing the college and work experiences of different racial and ethnic groups in Texas.

In a series of other papers, Kain delved into such issues as teacher quality and special education. Nonetheless, the topics that held his largest personal interest were the ones related to race: the racial composition of schools, the mobility of students, and the mobility of teachers.

The topics that his investment in an analytical database have opened up for other researchers is much larger. As Federal law expands the range of administrative data collected in all states, the Kain vision is likely to have broad ramifications for research on education throughout the country.

## 5. Conclusion

The impact of John Kain on the intellectual development of urban economics is unmistakable. The model provided by his choice of research topics and the legitimacy he provided to price theorists studying issues of race and opportunity has perhaps even larger ramifications. While we have yet to see the full impact of his visionary foray into

educational analysis, the motion started in his analysis of Texas school performance will continue despite his untimely death.

### **Acknowledgment**

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