STATISTICS AND MODELING IN URBAN SOCIAL PROBLEMS: DISCUSSION

Frances M. Lerner, University of Baltimore

The traditional definition of a social problem is: "....a condition affecting a significant number of people in ways considered undesirable, about which it is felt that something can be done through collective social action". */ Social problems emerge from changes in values and behavior. Thus a change in values "creates" social problems when conditions once considered either good or bad but inevitable, part of the natural order of things, later are considered bad and changeable. Thus discrimination against minorities in this country, even though long existing, was suddenly defined as bad and not inevitable in the 1960s by significant segments of the electorate. Segregation, the consequence of discrimination, was defined as bad, integration as good. The ramifications were felt in education, housing, employment, public accomodations, voting, and other fields.

Changes in behavior may also "create" social problems, for example when they cause structures to be thrown out of balance. Thus outmigration of a significant number of residents, either from a particular neighborhood or from a city itself to suburbs or elsewhere, creates pockets of social disorganization, leaves cities underfinanced, and breaks up communities.

In American life today urban social problems are highly salient, targets for immediate attack by "collective social action". The papers in this session illuminate a wide range of these problems: busing and school integration, discrimination, white-nonwhite housing differentials, white flight and central city population loss, neighborhood transition, and impact of highway construction on urban neighborhoods. Each paper applies sophisticated techniques to develop statistical measures and/or models of various aspects of these problems.

Casterline**/

This analysis of the demographic correlates of attitudes toward school busing and "integration uses data from the 1976 Detroit Area Study, a probability sample of the entire Detroit SMSA, with overall response rate 75.4 percent. An unusually large sample of Blacks—400 of 1134 respondents—permitted separate analyses for each race, a unique feature of studies of this type. The analysis focusses on race, education, age, and having children in the public schools in relation to two questions, one whether the respondent approved or disapproved of busing to integrate Detroit schools, the second (essentially a school integration question) whether the respondent would object to sending his or her children to a school where more than one-half the children are of the opposite race. The log-linear analysis used in the paper required that all variables, except the busing question, be dichotomized; that question was trichotomized into "approve", "disapprove" and "strongly disapprove". Log-linear analysis permits explicit testing of interactions among variables, as well as of the direct effects of independent variables on the dependent variable. The log-linear models were fitted to the multivariate tables by an iterative proportional fitting procedure as implemented by the ECTA computer program. Only about 7 percent of the Whites approved of busing, in contrast to 50 percent of Blacks, while only 33 percent of Whites and 84 percent of Blacks had no objection to sending their children to schools where more than one-half are of the opposite race. The opposition to busing is thus extreme among Whites, while race differences in responses are large.

The commonly observed relationships of demographic variables with racial attitudes appeared in the analysis of integration but not busing. In the former, both age and race directly affected responses, while the following interactions were also significant: education and race, education and age, and age and race. Age was inversely related to not objecting to sending children to a school with more than half of the children of the opposite race.

Opposition to busing, however, does not follow usual demographic patterns. Race is the primary variable here; among Whites, opposition to busing is spread throughout. The implication, according to the author, is that the career of attitudes on busing may follow a different pattern than previously observed on other racial matters. That is, in the latter gradual public acceptance of more liberal policy has followed initial opposition, especially because usually the vanguard groups have been upper socio-economic strata, especially the better educated. This is not the case here; no vanguard groups exist among Detroit Whites.

A major contribution here is the "new" variable, having children in the public schools. These persons are closest to direct involvement in the busing process; they should be most affected by it, most opposed to busing, but this is not true. They are not more opposed to busing than others, and race is still the basic variable.

The author's expectation (based on surveys), was that there was an overall value change, from acceptance of segregated schooling to integration, and the study tested it. But we really had no adequate explanation of this process of turning desegregation into integration, involving only passive acceptance of "unfair" legislation permitting segregation into active involvement in achieving integration, and it was perhaps too much to expect this. Perceptive observers realized that simply eliminating that form of busing which moved children of both races to segregated schools would not integrate schools where housing patterns, especially in northern cities, had created elementary and junior high schools at least as segregated as the Jim Crow schools of the Deep South.

Relatively few Northern schools were legally segregated (they were de facto), and the only quick

*/ Paul B. Horton and Gerald R. Leslie, The Sociology of Social Problems. Englewood Cliffs, N.J.: Prentice-Hall, 1974. Fifth Edition, p. 4.

**/ John B. Casterline, Demographic Correlates of Attitudes Toward Busing and School Integration.

way to integrate was, in the short run to re-draw boundaries of school districts across neighborhoods and perhaps legal jurisdictions, and in the long run to build new schools in neighborhoods to offset housing segregation. The difficulty here was that busing would be introduced into areas without it previously. This contrasts with rural and Southern areas, where almost all schools required some busing, but with destinations to segregated schools. What is required here, to include the above in the analysis, is comparison of attitudes toward busing in relation to geography (at least Northern vs. Southern, metropolitan versus non-metropolitan residence) age, and previous experience with busing, etc. In addition, degree of satisfaction with school bureaucracy might be included on the basis that some anti-busing attitudes might be explained as really anti-authority; this could be tested by including other questions on busing.

During the first Nixon administration (1968-72), "busing" became the new code word, or symbol, to express sentiment against integration among those not prepared to accept it. This was buttressed by national policy expressed by the White House and Congress (not the Courts), and it raises the question about whether basic underlying values (rather than attitudes toward a specific procedure or mechanism) ever really changed. It highlights the need to study the process and mechanisms of value shifts under the impact of contrary legislation and other symbolic expression from those in power.

This excellent study should be replicated elsewhere in settings where busing met with better or worse fates. Why is it that some areas desegrated with minimum difficulty, others with continued violence?

Frey */

This paper analyzes white flight and central city loss. It uses an "analytic migration framework" to assess the aggregate impact of selected community-level factors on white population losses in central cities of large metropolitan areas. More specifically, it measures the influence of the size of a city's Black population on aggregate white population loss due to the suburban relocation of intra-metropolitan movers and in-migrants to the metropolitan area. The framework separates analytically distinct components of local and long-distance migration streams contributing directly to central city population change. Data were from the 1970 Census, relating to 1965 and 1970 residence.

The community-level factors (racial and non-racial attributes which were the most important determinants of white city-to-suburb movement in an earlier study by the same author) include: percent city Black; city share of SMSA population; suburb-city educational expenditures per capita; suburb-city tax revenues per capita; city crime rate; postwar suburban development; percent of city workers commuting to a suburb; age of central city (interval between city reaching 50,000 and the year 1970); location of city in the Southern Region (as defined by Census Bureau); and an interaction term for percent city Black and location in Southern Region. The last attribute was included because the previous study had suggested that the "white flight" impact of a city's racial composition was most pronounced in non-Southern SMSAs.

The data indicate that percent city Black increases the suburb propensity of city movers, decreases the city propensity of suburb movers and SMSA in-migrants. But none of these effects was great and each was greatly moderated in Southern cities.

The aggregate impact on white city loss attributable to each city's Black population size was assessed in greater detail in three SMSAs: Cleveland, Dayton, and Dallas. Here also increase in percent city Black was associated with net decrease in white population, yet the impact from large differences in number of city Blacks was not substantial anywhere, extremely small in Dallas. In terms of stream-specific components of white city loss, in Cleveland and Dayton racial influences on the destination choices of white SMSA in-migrants contributed to greater city losses than they did on white intrametropolitan movers. This was not true in Dallas, where the impact of race was small on all stream-specific components of population change. Also, in all three cities racial influences had small impact on the destination-choices of suburb-origin movers.

If the finding is correct that percent city Black has only minimal effects on white city flight, clearly we need to seek explanations elsewhere. The "flight" began in the 1930s, preceding the current perception of the problem, i.e., flight from Blacks, school desegregation, crime, etc.. We should return the study of migration to focus on the changing nature of the city in modern life. By 1930 the older in-migrant flow (rural Americans and, Europeans) to older American cities was to some degree matched by a steady flow of urban dwellers to the suburbs. After World War II the process exploded due to a whole series of technological and administrative changes (cars and highways, FHA and Veteran mortgages, etc.).

Thus improvements in transportation and communication permitted decentralization, not only of residence, but also of business and financial, artistic, and creative activities formerly monopolized in the city. Megalopolis, a term coined years ago, became a sociological reality desipte its political unacceptability. Frey's study, and additional studies along these lines, should redirect analysis of urban problems beyond the themes of White flight from the Blacks and the common bewailing of the disintegration of city life.

El-Attar, Rubin, and Al-Maryati*/

The third paper investigates White non-White housing quality differentials in 1970, holding

*/William H. Frey, White Flight and Central City Loss: Application of an Analytic Migration Framework.

*/M.E. El-Attar, R.M. Rubin, and M.S. Al-Marayati, White-Nonwhite Housing Quality Differentials in the United States: 1970.

income constant. Data were from the U.S. 1970 Census of Housing. The data showed a direct relationship between income level and housing quality for both owners and renters, Blacks and Whites. Also, on average Blacks occupied poorer housing units than Whites.

A two-way analysis of variance tested the null hypothesis of no difference in quality of units rented or owned by Blacks and Whites at the same income. The hypothesis was rejected in three cases (good quality, owner; good quality, renter; and poor quality, owner), and accepted for poor quality, renter.

To assess the source of variation (and explain the above relationships) an analysis of variance for contrasts indicated significant differences in housing quality between Blacks and Whites for plumbing in rented units where incomes were under $7,000 and for plumbing and room density in owner-occupied units at $7,000 and over.

Students of social change are unlikely to be surprised by these conclusions. It is another example of the lag between policy (pro-integration during the 1960s) and social patterns.

But simply to say that objectives were not completely achieved by 1970 is inadequate; we need to know how much change did occur, so that the analysis should also have been done on 1960 data. However, there are some difficulties here; the one table of changes between 1950 and 1970 indicates that the definition of "sound quality" may no longer apply since plumbing is now ubiquitous in urban areas, almost doubling even in rural areas.

Continuous monitoring of housing differentials is indicated to measure effects of changes in values and laws over time. We have no measure of how quickly these changes can be translated into social patterns in a non-totalitarian society.

Cole and Baldus */

The fourth paper deals with statistical modelling to support a claim of covert intentional discrimination against minorities. Conclusions drawn from statistical analyses often form an important and accepted component of the evidence in these cases, but the procedures themselves leave many methodological questions unresolved in a still emerging legal field. The substantive areas involved are employment selection, promotion, school admission, some instances of criminal sentencing, and jury selection. Recently the Supreme Court has ruled that such challenges, on constitutional grounds, require proof of two facts: 1) The existence of discriminatory impact, relative disadvantage accruing to the plaintiff as a result of the suspect practice, and 2) The existence of an intent to discriminate underlying the practice.

Selection processes are classified by the authors in accordance with the amount of discretion left to the decision-maker: a "guided" discretionary process where the decision-maker's choices are influenced in part by qualifications openly stated and measurable, a "purely" discretionary process where no such qualifications are cited. In purely discretionary, five simple measures of the treatment accorded the minority are discussed: 1) The selection or pass rate; 2) The rejection or fail rate; 3) The inverse of the selection rate; 4) The minority representation rate in the post-selection pool; or 5) The actual number of minority candidates chosen.

These measures are examined in measuring discriminatory impact and inferring discriminatory motive. Guided discretionary selection processes are examined more closely, and the overall approach is applied to recent issues.

Statistical procedures can clearly establish the probability of discriminatory behavioral patterns in aggregate behavior, i.e., when representation in a "selection group" of members of a specified population sub-group differs significantly from expected by chance alone with random selection, a discriminatory behavioral pattern can be inferred. However, the danger lies in the imputation of bias in a legal sense, by statistics alone in cases involving single or small numbers of events, i.e., hiring one individual, selection of a single jury, etc.. This crosses levels of conceptualization, from behavioral patterns based on numbers of cases to imputation of discriminatory motive in a single case.

By providing statistical procedures, the authors in effect develop an operational definition of discrimination. The hidden booby trap here is that operational definitions in public life tend to become fixed, rigid, and in the end may confuse rather than clarify. Social science measurements themselves may become social data. This is what happened with the definition of poverty; once fixed, it was no longer responsive to changing social patterns. Sixty-five as retirement age is another example. We run the danger here of operationally defining a concept, and then permitting its operational definition to set norms and often subvert the very process it was initially intended to promote. In discrimination, statistical probability readily translates into quota systems.

Sanathanan, O'Neill, and McDonald */

This paper discusses the fitting of epidemiologic models to panic selling in urban neighborhoods using time-series data on real estate sale prices. Panic selling is seen to resemble an epidemic, peaking at 100 days and then subsiding. The policy implications of this model are discussed, especially with regard to allocation of community development funds among neighborhoods according to future prospects and to identification of neighborhoods needing assistance.

*/James W.L. Cole and David D. Baldus, Statistical Modeling to Support a Claim of Intentional Discrimination.

*/Lalitha Sanathanan, William O'Neill, and John McDonald, Dynamic Modeling of Neighborhood Transition. (This discussion was written on the basis of abstract and oral presentation only.)

Liu */

The final paper evaluated four "impact models" (really measures) of the effect of highway construction on an urban neighborhood. These were applied to 1960 and 1970 Census data for six study neighborhood areas (each a census tract) and almost the same number of control areas in each of four major metropolitan areas: Indianapolis, Kansas City, Omaha, and St. Louis. In addition to being similar to the study areas, each control area was selected because no freeway passed it and it was somewhat remote from the new highway. Application of the first three models gave relatively unsatisfactory values.

The fourth model (the transport-variant quality of life production model) has four components: economic, educational, social and environmental, and mobility and accessibility. More than 30 factors were originally selected to represent these components, but only 21 were used in the model. Net effects were reflected through comparisons of changes 1960 to 1970 for study and control neighborhoods. In the four metropolitan areas, highways improved the quality of life in all major components by 3 to 6 percentage points, except for the economic component in Omaha.

If this paper illustrates anything, it is that indicators of qualitative concepts (quality of life) need constant re-definition simply because social patterns are constantly changing, and that the unanticipated consequences of purposive social action today become the social problems of tomorrow. Highways were originally constructed to improve the quality of life; many feel that they do just the opposite. Next year's session will deal with the impact of subways on some aspect of quality of life, even these are now promoted as panacea for current problems.

*/Ben-Chieh Liu, Impact Models of Highway Construction on Urban Neighborhoods.