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THE CAUSES OF RACIAL DISTURBANCES:
TESTS OF A THEORY

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ABSTRACT

This paper is concerned with evaluating the adequacy of a proposed explanation for the location of racial disorders during the 1960's. Two approaches to evaluation are used: (1) The proportion of variation accounted for by the component variables is compared with the "maximum explainable proportion of variation," and (2) the results from an analysis of the 1961-67 disorders are used to predict the locations of the 1968 disturbances. The conclusions from these investigations support the proposed explanation with regard to the non-South, and indicate that the distribution of racial disorders among southern cities has been converging, over time, to the pattern prevalent in the non-South.

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1. INTRODUCTION

In a recent analysis of racial disturbnaces which occurred during the 1960's (Spilerman, 1970b), it was argued that the inter-city distribution of disorders is not consistent with an explanation which locates the causes of rioting in community conditions. Communities do differ in the rate at which they have incurred racial violence during this period, yet it was shown that these differences cannot be accounted for by any of the most common explanations which attribute disorder-proneness to aspects of community organization.[1]

Using data on the demographic and organizational characteristics of all 673 cities in the contiguous United States with populations exceeding 25,000 in 1960, in conjunction with information on the location of racial disorders during 1961-68,[2] a number of explanations were examined. Specifically, it was considered whether disorders are more likely events in communities characterized by high levels of social disorganization; whether rioting tends to occur where absolute deprivation is high and, hence, can be explained in terms of the material conditions of Negro life; alternatively, whether relative deprivation appears to produce the most intense frustration with the result that disturbances are likely where the Negro fares poorly in comparison to white residents; whether rioting may have its genesis in the gap between expectations and reality; and whether the turmoil of this period

can be construed as a response of the frustrated when the sanctioned institutional channels for securing redress and articulating group interests are closed or unresponsive. Several objective measures relating to each thesis were examined in order to ascertain the respective abilities of these competing explanations to account for the location of the disorders. All were found to be inadequate, however.

Only two variables--the numerical size of the Negro population, and a dummy term for South--proved to be related in a substantial manner to the location of the disorders. Together, these variables explained 46.8 percent of the variation in the dependent variable, the number of disorders in a city during the eight-year interval. The addition of 16 community characteristics, indicators of all the above explanations, to a regression equation containing these two variables accounted for only 4.5 additional percentage points of the total variation.

This result was attributed to the emergence, in recent years, of a number of factors which promote geographic uniformity in the impact of stimuli that are frustrating to Negroes. Among these are the role of the federal government in race relations, the development of racial solidarity among Negroes, and the widespread availability of television. First, activities of the federal government on behalf of Negro rights during the preceding decades are salient to the residents of every ghetto and may have also sensitized them to this level of government. As a consequence, federal actions which are vacillatory or otherwise

insensitive to Negro concerns are likely to provoke frustrations in Negroes, irrespective of residence. Second, the development of a black consciousness and identity which transcends community boundaries has served to make the fate of Negroes in distant cities a matter of concern in all ghettos. Finally, in addition to reinforcing the above tendencies through the provision of information relevant to these matters, the medium of television induces geographic uniformity by virtue of its own organizational structure. Through network news programming, the more graphic instances of discrimination and maltreatment of Negroes are transmitted to all sections of the country.

If, as a result of these considerations, a Negro is, in fact, equally likely to participate in a disorder irrespective of where he resides, then the location of racial turmoil should reflect the numerical size of the Negro population in different communities.[3] Moreover, since individuals would be responding primarily to frustrations produced outside the community, no additional community characteristic should be related to the location of disorders. Thus, although local conditions undoubtedly vary for the Negro, the results of the earlier study suggest that, during the 1960's, he has been responding primarily to frustrations which are felt by black persons in all communities, such as the slight attending the defeat of a rat control bill by Congress or the sight of Negro demonstrators elsewhere being beaten or arrested.

The significance of the additive regional term was attributed to the different traditions in race relations in the South and non-South.

In the former region, past experiences of Negroes probably operate to reduce their expectations regarding the likelihood of rapid improvement in racial or economic matters, while the remembrance of past repression may lower the rate at which they permit their frustration to be translated into hostile outbursts. However, there is evidence that, apart from the constant term, the relationship between number of disorders and Negro population size is similar in the two regions. The partial correlation between these variables, controlling for region (.668), is greater than the zero-order correlation between them (.568), suggesting that a covariance model (which assumes parallel lines) considerably improves the relationship.

The above results derive from an analysis of the components of variance that are explained by different clusters of variables (which were selected to provide a test among the alternative explanations of disorders). The intent of the present paper is to consider several additional topics which were not raised in the earlier report as they require a fundamentally different methodological strategy. In subsequent sections, these specific questions will be considered:

(1) There is the question of specifying the form of the relation between Negro population and the number of disorders in a city. This is necessary in order to measure the disorder-proneness of particular communities, and to ascertain how this value will vary for a city with a change in Negro population.

(2) If the analysis summarized in the preceding paragraphs is correct, and Negro population plus a contextual variable for region are the

only community characteristics which are related to the location of disorders, there arises the question of accounting for the unexplained variation (which amounted to 53.2 percent of the total variation in the previous analysis). Does the magnitude of this value not mean that important variables have been neglected? This question is investigated in section 4 by means of a computer simulation study.

(3) There is the problem of using these results to predict the location of future disorders. The prediciton of racial disorders has received some preliminary attention (Maloney, 1968), however a procedure which derives from empirically grounded theory is yet to be devised. However, if Negro population size and region are, in fact, the only variables necessitating consideration (and assuming that the causes of racial violence do not undergo essential change) an efficient predictive scheme can be constructed.

These three topics, considered together, will permit an assessment to be made concerning the adequacy of the explanation which was proposed in the previous report.

2. COMMUNITY DISORDER-PRONENESS AND NEGRO POPULATION SIZE

In the previous analysis (Spilerman 1970b) my concern was primarily with ascertaining the relative importance of a number of community characteristics in accounting for the distribution of disorders among cities. Because of the large number of variables that were considered, only the possibility of linear relationships--the simplest of interdependencies--was investigated. Now, having demonstrated the importance

of Negro population size for disorder-proneness (and the apparent insignificance of other community characteristics), a more detailed investigation into the shape of the relation is undertaken.

There are compelling reasons for expecting a distinctly non-linear form to characterize the dependence of disorder-proneness upon Negro population. At the low end of the Negro population continuum, given the Negro protest character to racial turmoil during the 1960's, the human resources necessary to produce a racial incident of sufficient magnitude to qualify as a disorder would seem to be lacking. Consequently, one expects to notice a threshhold effect in the data, a critical Negro population size below which racial disorders fail to develop.

At the upper end of the Negro population continuum, other considerations suggest that a ceiling effect may operate to limit the number of disorders that can occur in a community. In part, a ceiling effect would be an artifact of definitional difficulties with the concept of disorder. When several disturbances occur in a city within a short time period, they may be recorded as a single incident of long duration or high severity.[4] Aside from this definitional problem, however, there are substantive considerations which argue for the presence of a ceiling effect.

First, in the days subsequent to a disturbance, the police and other agencies of social control are probably sensitized to the possibility of further violence. As a result, they may avoid activities which antagonize ghetto residents and, at the same time, remain prepared

to respond in force to incipient riot situations. "Keeping the lid on," in this way serves to limit the number of outbreaks which can occur in a specified time interval. A second reason for expecting fewer disorders in large ghettos than a linear relation with Negro population would predict derives from the conceptual model introduced earlier, namely that Negroes were responding primarily to stimuli which are geographically diffuse in their impact. On first impression this would appear to support a linear relation between Negro population size and racial turmoil; however, introduction of the additional consideration of disorder severity alters that inference. There is some evidence that severe disturbances, which involve many individuals, have occurred to a disproportionate extent in large ghettos (Spilerman, 1970a). This implies that, if an individual Negro has the same probability of participating in a disorder irrespective of his residence, in large communities he is more likely to discharge this predilection in severe disorders, and these communities, in turn, would witness fewer disturbances than expected from a linear relation, though of a more serious nature. Consequently, at the upper end of the population scale, either because of a saturation effect to the number of disorders which a city can sustain[5] or because disorders in large ghettos tend to encompass many individuals, the marginal increase in community disorder-proneness, per additional Negro individual, should decrease.

Support for these contentions is found in Table 1. Row (4) of this Table shows the average number of disorders which occurred in a

city during 1961-68, by Negro population size. As the positive correlation reported between the two variables (.586) suggests, disorder-proneness exhibits a consistent tendency to increase with Negro population size, varying from zero disturbances per city for communities with fewer than 1,000 Negroes, to an average of 4.95 disorders per city for the 19 communities with more than 100,000 Negroes. Row (5) presents the racial disturbance rate per 1,000 Negroes in a category. These values were computed by dividing the total number of disorders in a category (row 1) by the aggregate Negro population for the cities (row 3). The results provide evidence for both the necessity of a minimum critical size before racial incidents of sufficient magnitude to be labeled as disorders can occur, and for the contention that the disorder rate is constrained by a ceiling effect: Disorders per individual increase with Negro population size until the category 2,500-5,000 and thereafter decrease.

Table 1 about here

The above discussion, together with the evidence from Table 1, suggest that the relationship between number of disorders in a city (D) and Negro population size (N) should be S-shaped. With a curve of this form, the rate of increase of disorder-proneness as a function of Negro population would be low among cities with small Negro populations, high among cities with intermediate size Negro populations, and low again among large ghettos. The most common S-shaped curve is the logistic (Lotka, 1956:68-70, Coleman, 1964:43)

TABLE 1

Disorder Rate for Cities with 25,000 or More Inhabitants, by Negro Population Size, 1961-1968

		Negro population							
		Less than 1000	1-2.5 thou-sand	2.5-5 thou-sand	5-15 thou-sand	15-25 thou-sand	25-50 thou-sand	50-100 thou-sand	Greater than 100 thou-sand
(1)	Number of disorders[a]	0	11	31	85	37	49	34	94
(2)	Number of cities	261	93	80	118	44	37	21	19
(3)	Negro population[b] (in thousands)	92	151	300	107	846	1,289	1,490	6,212
(4)	Disorders per city	0	.118	.388	.720	.841	1.324	1.619	4.947
(5)	Disorders per 1,000 Negroes	0	.073	.103	.079	.044	.038	.023	.015

a. Sources of the disorder data are The New York Times Index, Congressional Quarterly's Civil Disorder Chronology) (1967), and the Lemberg Center's Riot Data Review (1968).

b. 1960 Census of Population

however the properties of this curve are too restrictive for use with the disorder data.[6] A more general S-shaped function,

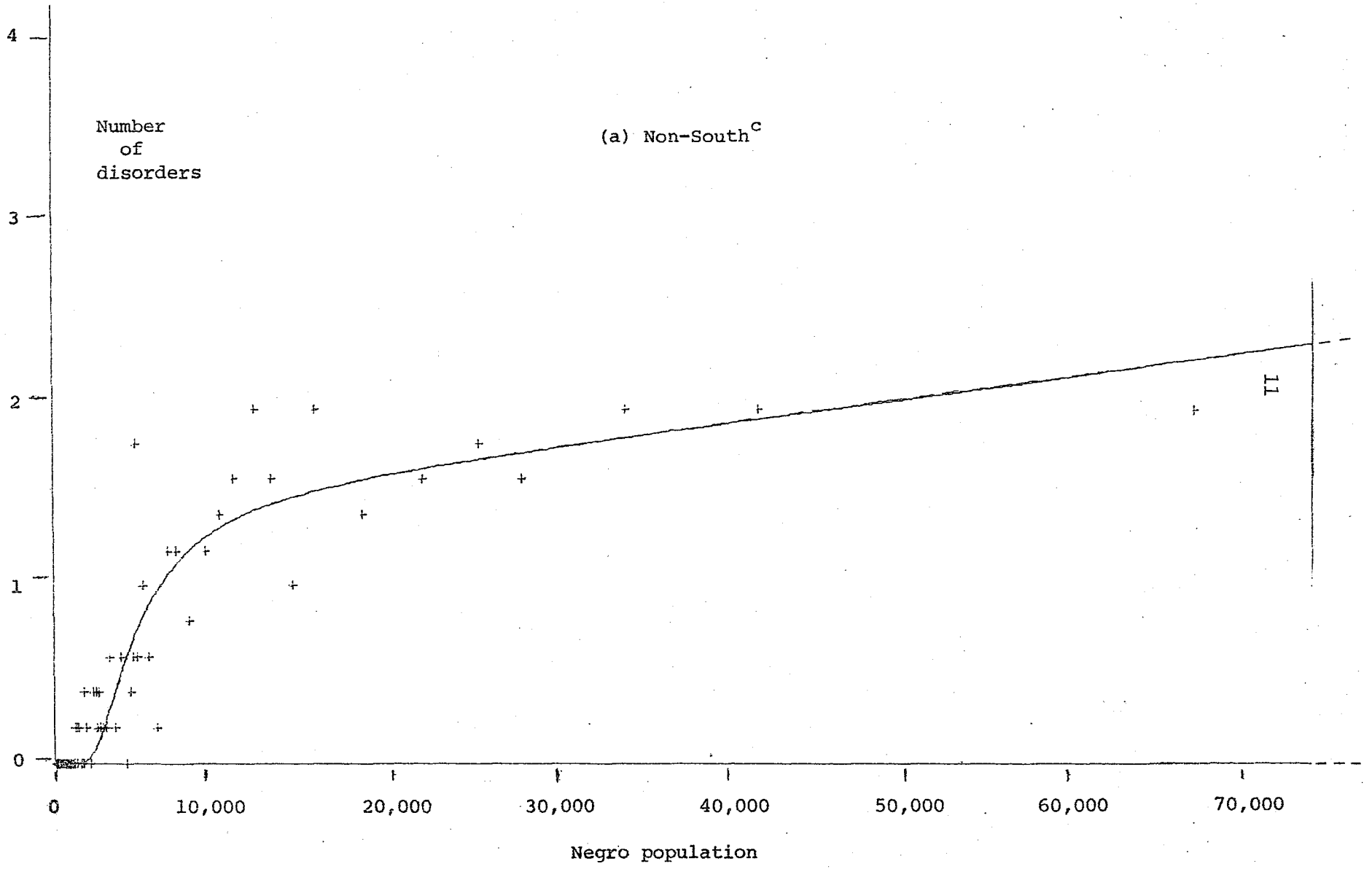
$$D = e^{[\alpha - \frac{\beta}{N^2}(e^{-ZN}) - \frac{\delta}{N}(1 - e^{-ZN})]} \qquad (1)$$

where α, β, δ and Z are parameters, was therefore employed. Fitting this function to the disorder data from each region separately resulted in the curves presented in Figure 1.[7] To measure the explanatory power of the Negro population variable, the proportion of variation in number of disorders accounted for by these curves was calculated. In the non-South, 73 percent of the variation is explained by the non-linear regression; among southern cities 34 percent of the variation can be attributed to Negro population size. The curves also indicate that the assumption of a covariance model, which was used in the previous study, was a reasonable choice: Beyond a Negro population equal to 10,000 the curves are nearly parallel. What the covariance model obscured, however, are the very different R^2 values for the two regions.

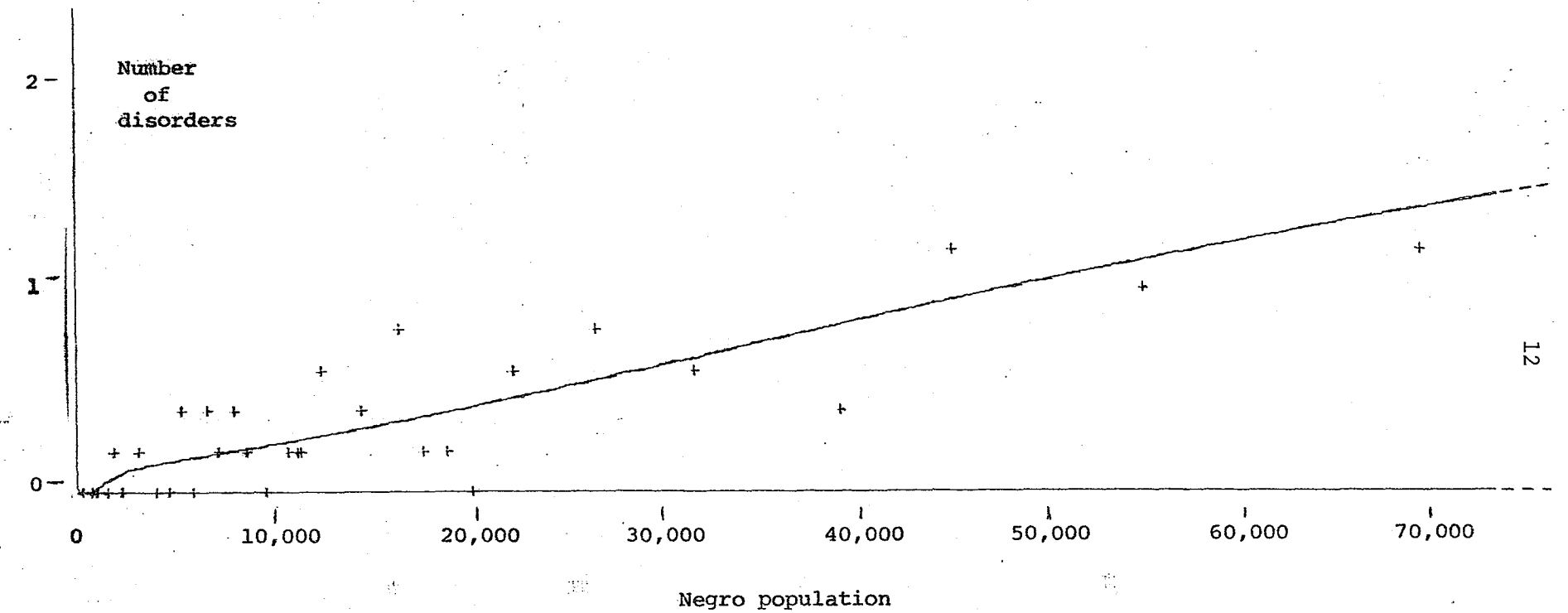
Figure 1 about here

According to these curves, community disorder-proneness increases most rapidly with Negro population size for cities with approximately 3,500 Negroes in the non-South,[8] and 1,000 Negroes in the South. No special meaning should be attributed to these precise values, however, since by fitting different S-shaped functions minor variations will

FIGURE 1. Relationship Between Racial Disturbances During 1961-68 And Negro Population Size[a,b]



(b) South[d]



a. Each point represents five cities that are adjacent in Negro population size. The group value for Negro population is the mean of the logged figures. The group value for number of disorders is the mean of the unadjusted values.

b. The non-linear function, $D = e^{[\alpha - \frac{\beta}{N^2}(e^{-ZN}) - \frac{\delta}{N}(1 - e^{-ZN})]}$ was fit to the data from each region by means of a non-linear estimation procedure (see footnote 7).

c. Parameter values for non-South are, $\alpha = 2.649$, $\beta = 1.708 \times 10^{7}$, $\delta = 3.271 \times 10^{5}$, $z = 6.95 \times 10^{-6}$

d. Parameter values for South are, $\alpha = 1.27$, $\beta = 2.103 \times 10^{6}$, $\delta = 6.615 \times 10^{4}$, $z = 5.23 \times 10^{-5}$

result in the points of maximum increase. What is important, and is evident from the plotted points, is the S-shaped character of the relation.

3. WHAT ABOUT THE UNEXPLAINED VARIATION?

The R^2 values associated with the S-shaped curves indicate that the single variable, Negro population size, explains 73 percent of the variation in number of disorders in the non-South, and 34 percent in the South. These are substantial proportions, nevertheless there is still a question of accounting for the residual variation. Is it the case that by considering additional community characteristics the proportion of explained variation can be increased? Or, alternatively, is it possible that the total proportion of variation which can theoretically be explained is actually less than one?

The commonly employed measure of the inadequacy of an explanation, $1-R^2$, is predicated upon an underlying explanatory model which is fundamentally deterministic. The concept of randomness is employed in that formulation to compensate for errors resulting from inadequate measurement and neglected effects. Presumably, by improving data quality and incorporating additional variables into an explanation, the proportion of explained variation can be increased and, theoretically, made to approach the value one.

In contrast to this view of randomness as disturbance, a process may be conceptualized as inherently stochastic, and this type of explanatory model is consistent with a complete explanation (in the

sense that all relevant knowledge has been incorporated) in which the R^2 value is less than one. As an illustration of inherent randomness, Ernest Nagel (1961:332) writes, many physicists "maintain that subatomic processes . . . are characterized by absolute chance, so that, for example, the emission of particles by radioactive substances is regarded as 'a process due to the spontaneous decomposition of its atoms' (Plank, 1936:52)." In this view, knowing the mass of a radioactive substance is tantamount to having complete knowledge about the number of disintegrations which will occur in a specified time interval since no other variables are relevant to the process of radioactive decay. Nevertheless, if, after the fact, the number of disintegrations is regressed against mass (the observations being different size pieces of the same radioactive substance), the resulting value of R^2 will be less than one. It is neither possible to predict the exact number of disintegrations which will occur, nor which particles will decay, although the process is completely specified by the mass variable.

The phenomena of hostile outbursts has frequently been cast in an analogous framework (Smelser, 1963; Lieberson and Silverman, 1965). In this view, the structural conditions which create a conducive context for racial disorder are to be distinguished from the precipitating incidents. The structural conditions are amenable to analysis in terms of community level variables; for example, disorder-proneness may be consequent upon economic structure, political organization, or

demographic characteristics. However, disorder-proneness is a measure of the expected number of outbreaks. The actual number is dependent upon the occurrence of precipitating incidents which are treated as random events. Assuming this conceptualization, the $1-R^2$ values for the regions probably overestimate the true proportions of residual variation which can be explained by the inclusion of additional community characteristics. Just what values of R^2 are consistent with a complete explanation of disorder outbreaks is the subject of the present section.

We approach this question by means of a simulation methodology. Our strategy will be first, to ascertain what R^2 value is associated with a complete explanation of the location of disorders assuming that disorder-proneness is a function only of Negro population. Afterwards, the proportion of variation explained by Negro population size in the actual disorder data will be compared with the maximum attainable values in the regions.

For the purpose of simulation it was therefore assumed that the disorder-proneness value for a city (λ_i) depends only upon its Negro population, and, moreover, is specified in terms of that variable by equation (1). Using this equation, an expected number of disturbances for the eight-year period was calculated for each city.[9] A hypothetical distribution of disturbances was then generated from these expected values under the assumption that hostile outbursts follow a Poisson process, with parameter value λ_i for city i.[10] Considering the manner by which this hypothetical distribution was generated, it

is evident that only Negro population size is related to the number of disorders in a city since no other variable was involved in the simulation. However, because the individual outbreaks are random events, the proportion of variance in this hypothetical distribution explained by Negro population size will necessarily be less than one.

To ascertain what value of R^2 is consistent with an explanation in which Negro population size is the sole determinant of disorder-proneness, the above simulation was carried out ten times for the non-southern and southern cities. For each resulting distribution, the number of disorders in a city was regressed against Negro population, with the S-shaped function (equation 1) fit by means of the non-linear estimation program. Consequently, the R^2 values associated with these regressions provide separate estimates of the maximum proportion of variation which can be explained by Negro population size, assuming that this variable alone determines community disorder-proneness and that precipitating incidents are random events.

The mean and variance of the R^2 values generated by the simulation are presented in columns (2) and (3) of Table 2. Referring to the mean values, we conclude that, on the average, the maximum proportion of variation which can be explained by Negro population size is .75 in the non-South and .48 in the South, <u>although all information about the process is contained in that variable</u>. As a percentage of these estimates of the maximum explainable proportions of variation, 98 percent of the variation in the actual data is accounted for by Negro population size in the non-South, and 72 percent in the South (column 4).

Consequently, this single variable produces an even more satisfactory explanation of the distribution of disorders than was apparent from the unadjusted R^2 values (column 1). The explanation appears to be complete with respect to the non-South, although the operation of additional factors is suggested for the South.[11]

Table 2 about here

To pursue these questions further, the explanatory contribution from 16 additional community characteristics was considered. These variables have been justified elsewhere (Spilerman, 1970b) as being indicators of social disorganization, absolute Negro deprivation, relative Negro deprivation, and political responsiveness by the municipality.[12] Since 1960 census data on Negro population characteristics are not available for cities with less than 1,000 Negroes, the present analysis was restricted to the 413 communities (from among the original 673) with Negro populations in excess of this figure. Also, since non-linear estimation is cumbersome with many independent variables, a linear approximation to the S-shaped curve, in the form of an additive function in log N and $(\log N)^2$, was used. This approximating function reproduces the shape of the S-curve (Figure 1), except for the lower bend. However, because of the deletion of communitites with small Negro populations, the discrepancy between the curves was expected to be negligible.

TABLE 2

Actual R^2 Values and Results from Simulation Analysis, by Region[a]

Region	(1) R^2 value from empirical data	(2) Mean of R^2 values from simulation	(3) Standard Deviation of R^2 values from simulation	(4) (1) / (2)	(5) N[b]
Non-South	73.0	74.7	4.1	.98	501
South	34.4	47.8	11.1	.72	172

a. Ten simulation runs were made for each region. See text for description of the procedure.

b. N equals all 637 cities in the contiguous United States with total populations greater than 25,000 in 1960.

Columns (1) and (2) of Table 3 present results from fitting the S-curve and the polynomial in log N to disorder data from the 413 communities. In column (1), R^2 values are shown for the S-curve, which was estimated by the non-linear method; while in column (2) the corresponding values for the approximating polynomial,[13] estimated by least squares, are presented. It is evident from these entries that the polynomial in log N provides an adequate approximation in each region. Column (3) contains the R^2 values for a linear regression in which the 16 community characteristics have been added to the log N terms. Inclusion of the 16 variables is seen to explain only 3.9 additional percentage points of the variation in the non-South, but 9.2 percentage points in the South. Consequently, the results in Table 3 present further evidence for the contention that different processes were operating in the two regions. The hypothesis that Negro population size is the sole community characteristic relevant to explaining the number of disorders in a city appears to be correct only for the non-South. In the South, Negro population size is also a variable of immense importance, but it apparently is not the only determinant of disorder-proneness.

Table 3 about here

Which community characteristics are related to the distribution of racial disorders in the South? To investigate this question separate regressions were run with the variables in each indicator cluster.

TABLE 3

Percent of Variance in Number of Disorders Explained by Negro Population Size and by Subsequent Addition of 16 Community Characteristics, by Region

Region	R^2 value (1) S-shaped Curve	(2) $D = a + b_1 \log N + b_2 (\log N)^2$	(3) $D = a + b_1 \log N + b_2 (\log N)^2$ + 16 Community Characteristics[a]	(4) (3)-(2)	N^b
Non-South	68.1	64.5	68.4	3.9	258
South	32.7	31.6	40.8	9.2	155

a. See Table 4 for listing of the 16 community characteristics.

b. N equals all 413 cities in the contiguous U.S. with total populations greater than 25,000 and Negro populations greater than 1,000 in 1960.

The results are reported in Table 4. Column (1) of this table contains the proportion of variation in number of disorders accounted for by each cluster acting separately. In columns (2) and (3) the unique components of variation explained by a cluster, controlling for the variables in another, are shown. In column (2) the unique contribution to R^2 made by the two Negro population variables is presented; while in column (3) the unique contribution of each cluster, controlling for the Negro population variables, is shown.

Table 4 about here

The large magnitude of the entries in column (2) is not surprising since the previous material has already underscored the paramount importance of the Negro population variables. The relevant findings for assessing the role played by different community characteristics are presented in column (3). From these entries it is apparent that the indicators of political responsiveness substantially account for the additional variation explained by the community characteristics in the South.

The significance of this cluster is entirely attributable to two of its four variables--non-partisan vs. partisan elections, and mayor-council vs. other administrative structure. It was hypothesized (Spilerman, 1970b) that partisan elections and a mayor-council structure form a consistant pair, in that each arrangement should promote political responsiveness to minority group interests. With this

TABLE 4

Percent of Variance in Number of Disorders Explained by Different Variable Clusters, for South

Variable cluster[a]	(1) Percent of variance explained by cluster acting alone	(2) Percent of total variance explained by non-white population variables when entered after cluster	(3) Percent of total variance explained by cluster when entered after non-white population variables
Non-white population[b]	31.6	---	---
Social disorganization[c]	0.7	32.2	1.3
Absolute deprivation[d]	5.9	26.9	1.2
Relative deprivation[e]	13.9	20.0	2.3
Political structure[f]	20.1	17.5	6.0
All clusters except non-white population	32.3	8.5	9.2
All clusters	40.8	---	---

a. All variables are from the 1960 Census of Population unless otherwise indicated in notes b-f.

b. Non-white population variables are: Log (non-white population), [Log (non-white population)]^2

c. Indicators of social disorganization are: Percent change in total population; Percent change in non-white population; Percent of housing units dilapidated in 1950 (1950 Census of Population).

d. Indicators of absolute deprivation are: Percent of Non-white males employed in traditionally Negro occupations (service workers, household workers, laborers); Non-white male unemployment rate; Non-white median family income; Non-white median education.

e. Indicators of relative deprivation are: Percent of non-white males employed in traditionally Negro occupations divided by white figure; Non-white median family income divided by white income; Non-white unemployment rate divided by white rate; Non-white median education divided by white education; Percent non-white ($\sqrt{x}$).

f. Indicators of political responsiveness are: Population per councilman; Percent of city council elected at large; Presence of non-partisan elections; Presence of mayor-council government (all variables in this cluster are from the Municipal Yearbook, 1967).

interpretation of the indicators, the results are contradictory: Controlling on the Negro population variables, number of disorders is positively correlated with both the presence of non-partisan elections (r = .190), and with a mayor-council structure (r = .103).

Robert L. Crain, Elihu Katz and Donald B. Rosenthal have suggested an alternative interpretation for these two indicators.[14] In an investigation of the relevance of community political structure to the flouridation decision, they conclude that an elected official in a non-partisan town is highly vulnerable to public opinion and therefore likely to refrain from taking controversial actions. "When elections are partisan, the office holder can rely on a party endorsement to guarantee a certain stability in his support . . . . In contrast, in a non-partisan system any group of citizens can agree to find a candidate for office and support him . . ." (Crain, et al., 1969: 191-92). As a consequence, "the lack of a strong executive [in a non-partisan/mayor-council town] might mean an effort to shirk responsibility for action in an area of controversy . . . ." (Crain, et al., 1969: 203).

Much of the racial turmoil in the South has been related to civil rights protests--to demands by Negroes for integration, municipal jobs, and higher wages--in short, to issues requiring political negotiation. According to the Crain, Katz and Rosenthal thesis, the communities which would be least capable of compromising with Negro protestors would be the non-partisan/mayor-council cities. This argument therefore suggests an interaction effect between the two dimensions of political organization--a mayor-council arrangement should have very

different meaning for the prospects of resolving community conflict in a party system, than where elections are non-partisan. Examination of the data provides support for their contention: Controlling on the Negro population variables, presence of a mayor-council/non-partisan structure shows a moderate positive correlation with number of disorders ($r = .223$, significant at the .01 level), while the presence of a mayor-council/partisan arrangement is uncorrelated with number of disorders ($r = -.087$).

4. PREDICTING DISORDERS FROM NEGRO POPULATION SIZE

The above findings, particularly for the non-South, suggest an efficient procedure for predicting the location of future disorders. Assuming that racial disturbances will continue to be responses to the same type of stimuli which caused the spate of disorders during 1961-68 (namely, frustrations which are uniformly felt by Negroes in all sections of the country), then predictions based upon Negro population size alone should provide an accurate estimate of the distribution of future disorders.

To evaluate the utility of this approach, disturbance data for 1961-67 were used to predict the location of the 1968 disorders. Separate S-shaped curves were estimated for each region from the earlier data; then, using these curves, a disorder-proneness value was calculated for each community. The resulting values therefore define the relation between Negro population and outbreaks of racial violence which existed during 1961-67. In order to predict the

location of the 1968 disturbances these values were standardized to sum to the actual number of disorders in 1968. This is necessary because the explanations considered here are concerned with the distribution of disorders among cities, not with the absolute number which occurred in the nation.

How good are the estimates from these calculations? Since the prediction for a city is usually a fraction, expressing an expected number of incidents in 1968, while the actual data are integers (the number of disorders which occurred in a city), only aggregate figures for groups of cities can be meaningfully compared. Table 5 presents the predicted and empirical distributions of disorders for 1968, by region. In each panel of this table the cities have been grouped into six categories, ranging from the most disorder-prone communities (those with largest Negro populations) to the least disorder-prone (cities with smallest Negro populations). The divisions were selected to place an equal number of predicted disorders in each cell, except for the most disorder-prone category. It was arbitrarily decided to place 15 cities in that category in the non-South, and 5 in the South. Otherwise, too few cities would lie in this cell to permit stable estimates.

Table 5 about here

Once again very different results characterize the two regions. In the non-South, the empirical distribution of disorders (column 2)

TABLE 5

Predicted and Actual Disorders for 1968, by Negro Population Size and Region

(a) Non-South[a]

Negro population category	(1) Predicted number of disorders in 1968[c]	(2) Actual number of disorders in 1968	(3) Number of cities
1 - largest	32.4	28	15
2	12.8	15	17
3	13.3	14	23
4	13.3	15	27
5	13.1	11	34
6 - smallest	13.0	15	385
N	97.9	98	501

(b) South[b]

Negro population category	(1) Predicted number of disorders in 1968[c]	(2) Actual number of disorders in 1968	(3) Number of cities
1 - largest	12.2	3	5
2	6.6	5	5
3	6.1	5	8
4	6.0	6	14
5	5.7	11	33
6 - smallest	5.3	12	107
N	41.9	42	172

a. Parameter values of S-curve fit to 1961-67 disorder data from non-South are: $\alpha = 1.662$, $\beta = 1.309 \times 10^{7}$, $\delta = 2.898 \times 10^{5}$, $z = 8.344 \times 10^{-6}$

b. Parameter values of 1961-67 S-curve for South are : $\alpha = 1.471$, $\beta = 2.260 \times 10^{6}$, $\delta = 1.120 \times 10^{5}$, $z = 4.420 \times 10^{-5}$

c. Total predicted disorders was standardized to sum to empirical total for the region in 1968.

appears quite similar to the predicted distribution (column 1) ($\chi^2_5 = 1.85$, insignificant at the .10 level) and, moreover, the departures from the predicted values do not show a systematic trend. By contrast, in the South, the predictions from the 1961-67 distribution result in a poor match with the actual events ($\chi^2_5 = 20.8$, significant at the .001 level). It is also noteworthy that the deviations are clearly systematic here: There was a tendency in 1968 for small Negro population communities to become increasingly disorder-prone, relative to large ghettos in this region.

These findings further underline the results of section 3, namely that, while Negro population size substantially accounts for the explainable variation in number of disorders in the non-South, the etiology of disturbances in the South is not so simply dealt with. One possibility, regarding the shift in disorder-proneness in the South to small Negro population communities, is that more accurate data are available for 1968 than for earlier years. Indeed, the Lemberg Center's Riot Data Review was first published for 1968 and this source is far more comprehensive than the compilations of earlier disorders. However, deficiencies in the data are unlikely to be responsible for the noted shift because of the regional difference in results. Presumably, any bias toward underrepresenting disturbances in small communities which is present in compilations of the earlier disorders would also hold for the non-South.

A more likely possibility concerns the particular experiences of Negroes in small southern communities. Small communities in this region are notorious for their extensive control over Negro residents through the use of economic intimidation and repressive police practices (Vander Zanden, 1966: 232-34). The adaptation by Negroes to this circumstance has commonly been one of passivity and servility (Matthews and Prothro, 1966: 262). For example the "folk Negro" stereotype is associated principally with small towns and rural places in the South, not with metropolitan areas. For this reason, Negroes in small southern communities have probably lagged behind those living elsewhere in the development of black pride and solidarity, and in expressing outrage at instances of brutal treatment of black persons. However, 1968 may have been a watershed year for these communities because of the assassination of Martin Luther King. His special importance to southern Negroes is well known, and his death may have stunned previously passive persons into participating in the black consciousness which has been developing elsewhere in the country. These comments provide one argument which is consistent with the noted increase in disorder-proneness among small Negro population communities in the South, relative to large ghettos.

An alternate possibility, though one not inconsistent with the preceding explanation, involves the dual-phase history of Negro protest in the South during the 1960's. In the early years of this decade, the focus of militant civil rights activity--boycotts, freedom

rides, sit-ins, and other actions by SCLC, SNCC, and CORE--was upon segregation and discrimination in southern settings. In a number of instances, racial violence followed in the wake of tensions generated in a community by these protests.[15] Since the location of civil rights activity was, to a disproportionate extent, in communities with sizable Negro populations (Birmingham, Montgomery, Jacksonville, and Savannah are some cities which witnessed demonstrations and experienced disorders in subsequent days), the noted decrease in disorder-proneness among large Negro population centers, relative to small communities, could reflect the contraction of traditional civil rights activity in the South in recent years.

Both of these arguments suggest that the distribution of Negro uprisings in the South should be converging to the pre-existing northern pattern. If this assertion is correct then the 1968 southern disorders may conform more closely to the relationship between Negro population and outbreaks of racial violence which has been characteristic of the non-South, than to the earlier relation between these variables in the South. To investigate this possibility, the 1961-67 curve for the non-South was used together with Negro population figures for the southern cities to compute an expected number of disorders for each city, contingent upon the non-South relation.

The results are reported in Table 6. In column (1) the same grouping of disorders which was used in panel B of Table 5 is again presented. In column (2) the number of disorders predicted for each

category from the 1961-67 curve for the non-South is shown. It is evident from a comparison of these two distributions that the non-South relation is eminently more successful in predicting the 1968 disturbances in the South than is the curve constructed from the earlier disorders in this region. Consequently, the contention that the distribution of disorders in the South has been converging over time to the pre-existing pattern in the non-South is supported by this analysis. Whether for the reasons suggested above, or for others, Negroes in the South have begun to respond to the frustrations associated with being black in the same manner that northern Negroes have through much of this decade.

Table 6 about here

5. CONCLUSIONS AND COMMENTS

This investigation has been concerned with evaluating the adequacy of an earlier contention (Spilerman, 1970b), namely that the racial disorders of the 1960's were primarily responses to frustrations which were uniformly felt by Negroes, irrespective of their residence. It was suggested in the conclusion to that study that the confluence of a number of factors has operated to override the impact of community variations in the situation of Negroes as a source of unrest. Foremost among these are probably the reliance by Negroes upon the federal government to promote racial equality, the emergence of a racial identity which transcends community boundaries, and the wide availability

TABLE 6

Predicted and Actual Disorders for South in 1968, from Non-South Curve for 1961-67, by Negro Population Size

Negro population category	(1) Actual number of disorders in 1968[a]	(2) Predicted number of disorders in 1968[b]	(3) Number of cities
1 - largest	3	4.4	5
2	5	2.7	5
3	5	3.5	8
4	6	5.2	14
5	11	10.2	33
6 - smallest	12	15.9	107
N	42	41.9	172

a. Total predicted disorders was standardized to sum to empirical total for South in 1968.

b. Predictions are from S-curve for non-South, 1961-67. See footnote (a) in Table 5 for parameter values.

of television. Each of the above--a potential source of frustrating stimuli to Negroes in all cities, a common cognitive structure for interpreting events in racial terms, and a news medium characterized by network programming--has served to promote geographic uniformity in the impact of frustrating stimuli.

The findings reported in this paper both qualify and strengthen the above contention. The explanation is qualified in that, while originally proposed as applicable to disorders in all sections of the country, upon closer inspection it has been found to apply more strongly in the non-South. With respect to this region, however, the contention is bolstered by the evidence that essentially all explainable variation in number of disorders is accounted for by Negro population size. In the non-South, then, Negroes appear to have been responding as a cohesive ethnic unit, not as residents of 501 distinct communities provoked by their parochial frustrations. It would therefore appear futile to inquire why disorders were more frequent in one city than in another, apart from enumerating the number of Negro residents.

For the South, the results are less straightforward. Two political structure variables were found to be related to racial turmoil in this region and, by one interpretation, they suggest that disorders were more likely where municipal officials lacked the structural support to make unpopular decisions (such as, perhaps, to compromise with civil rights protestors). Over time, however, the distribution of disorders among southern cities has been converging to the pattern prevalent in the

non-South, suggesting that black consciousness is beginning to pervade even small southern communities.

Several additional points warrant comment in order to place these findings in proper perspective. First, this investigation has been restricted to ascertaining the causes of the location of disorders. It is not possible to explain the over-time variation in number of outbreaks from these results or to account for their sudden upsurge in the mid-1960's. Hypotheses have been advanced on this matter, the most common being that the gap between expectations and reality increased for the Negro during the Kennedy and Johnson presidencies (National Advisory Commission, 1968: 106-10; Fogelson, 1968: 38-39). The findings reported in this study, however, neither support nor contradict this or any other explanation of the over-time change.

A second qualification concerns our ability to generalize from these conclusions to future disorders. It is not necessarily the case that the location of racial violence in subsequent years, if it should occur, will follow the relationships reported in this study. In fact, trends are at work which may make these results idiosyncratic of the 1960's. Negro mayors have recently been elected in several cities and more are likely to follow. Militant nationalist groups, possibly prepared to employ violent means,[16] have become established in others. At the same time, accompanying the election of Richard Nixon, the federal government has receded into the background as a proponent of Negro rights. In combination, these trends may mean that explanations of the

location of future disorders will require a consideration of community characteristics. Correspondingly, there is evidence that community conditions were related to the location of racial violence in the first half of this century (Lieberson and Silverman, 1965). This is not at all surprising since the factors enumerated in the preceding paragraphs as having induced geographic uniformity into Negro frustrations during the 1960's were hardly present before World War II.

In addition to these qualifications on generalizing from the findings, a final comment on the concept of randomness seems necessary. What is intended by the claim that no additional variable can reduce the unexplained variation on the non-South? After all, at least theoretically, variables could be introduced to account for the probability of a car accident at a particular street corner in a ghetto, and even for the strolling behavior of every individual in the city.

As used in this study, the notion of randomness is related to the level of observation and to the length of the time interval under consideration. If the community is the unit of analysis and observations are taken over the eight-year period considered here, we conclude that no community characteristic (after controlling for the number of Negroes) is related to the location of disorders. With respect to observations at a different conceptual level, such as using the individual person as the unit of analysis, this result implies that any variable at this level which is found to correlate with racial turmoil is itself uncorrelated with community characteristics.[17] Likewise, it is

conceivable that community characteristics are related to the location of disorders when a briefer time interval is considered. For example, the presence of an elected mayor may have enabled some cities to escape racial turmoil immediately following the assassination of Martin Luther King. As a political leader, a mayor would have been better situated than a city manager to respond to the grief of Negro residents in expressive terms, and to signify the participation of the entire community in the tragedy. Over the eight-year period, however, mayor-council cities have proved to be no more immune to racial disturbance than communities with different political structures.

Footnotes

[1]Studies which have sought to attribute the location of racial turmoil during the 1960's to political and economic characteristics of communities include Downes (1968), White (1968), and Maloney (1968).

[2]Political and economic characteristics of the communities were obtained from the Alford-Aiken data file at Wisconsin. Sources of the disorder data were: Lemberg Center's Riot Data Review (1968), Congressional Quarterly's Civil Disorder Chronology (1967), and The New York Times Index. In order to reduce heterogeneity in the type of disturbance (which may reflect a particular set of underlying conditions), only instances of "spontaneous outbreaks" which were also characterized primarily by Negro aggression were included in the analysis. This was the most common type of racial disorder in the 1960's and the most severe disturbances were of this character. For additional detail on the coding of disorders see Spilerman (1970b). These same materials are also used in the present investigation.

[3]The numerical size variable has frequently been used as an indicator of organizational complexity (c.f. Blau and Scott, 1962: 227; Aiken and Alford, forthcoming). In this analysis, however, it is a measure of the availability of participants.

[4]Although the riots in Watts, Detroit, and Newark each lasted for several days, they are recorded in most compilations as single events.

Other disturbances, which consisted of a sequence of incidents of brief duration over more than one day, are sometimes listed as multiple disorders. For coding purposes it was arbitrarily decided that reports of multiple disturbances in a city separated by less than five days would be recorded as a single event. The only other consideration given to disorder severity was the requirement of a minimum level of turmoil for inclusion in the study. All incidents which appeared to involve at least 50 individuals and resulted in some violence or destruction were classified as disorders.

[5]Since the disturbances were compiled primarily from news accounts, there is also a possibility that the incremental news value of an additional disturbance in a city decreases as a function of the number which have already occurred. It is unlikely, however, that this consideration can account for the noted saturation effect since even the most disorder-prone cities (Chicago, New York) have averaged fewer than three disorders per year over the eight-year interval.

[6]The logistic curve requires the inflection point to be midway between zero disorders and the upper asymptote (the predicted maximum number of disorders). Furthermore, the two limbs of the curve are constrained to be symmetric about the inflection point. Since there is no reason to expect the disorder data to satisfy these restrictions, a more general S-curve was constructed.

[7]A non-linear regression program (Gaushaus) was used to minimize the residual sum of squares by the method of steepest descent. For

details on the program, consult the University of Wisconsin Computing Center's Users' Manual (1966).

[8]The rate of increase of a curve at a particular point can be determined from its first derivative. Evaluating the derivative of equation (1) for the non-South at N = 3,500 and at N = 100,000 yields the following result: Disorder-proneness changed by .310 expected disorders per city (for the eight-year interval) with an increase of 1,000 Negroes at the first population value, and by .014 disorders per city with an identical size increase in Negro population at the second value.

[9]Under the assumption that disorders are random (Poisson) events, with disorder-proneness value for city i equal to λ_i for 1961-68, the expected number of disorders for this period would also equal λ_i (See Feller, 1957: 209).

[10]The simulation was performed as follows: Using the Poisson formula, $P_k = \frac{\lambda_i^k e^{-\lambda_i}}{k!}$, the probability of k = 1, 2, . . . , 20 events was calculated for each city. These values were combined to provide a cumulation distribution:

$f_0 = P_0$; $f_1 = f_0 + P_1$; $f_2 = f_1 + P_2$; . . . ; $f_{19} = f_{18} + P_{19}$; $f_{20} = 1$.

The resulting sequence is therefore non-decreasing, and f_k measures the probability of $\underline{k}$ or fewer events. A random number $\underline{r}$ was then generated by the computer program, and a hypothetical number of disorders equal to $\underline{j}$ was selected, where $f_{j-1} < r \leq f_j$. This procedure was repeated for

each of the 673 cities, with the respective λ_i values determined by the S-curves,

[11]This conclusion must be cautiously stated since it is based upon the mean of the R^2 values from the simulation. As indicated by the standard deviations in column 3, quite different individual values of R^2 can result from the same assumptions.

[12]The following variables were used. Indicators of social disorganization: Percent change in total population; Percent change in non-white population; Percent of housing units dilapidated in 1950 (1950 Census of Population). Indicators of absolute deprivation: Percent of non-white males employed in traditionally Negro occupations (service workers, household workers, laborers); Non-white male unemployment rate; Non-white median family income; Non-white median education. Indicators of relative deprivation: Percent of non-white males employed in traditionally Negro occupations divided by white figure; Non-white median family income divided by white income; Non-white unemployment rate divided by white rate; Non-white median education divided by white education; Percent non-white ($\sqrt{x}$). Indicators of political responsiveness: Population per councilman; Percent of city council elected at large; Presence of non-partisan elections; Presence of mayor-council government (all variables in this cluster are from The Municipal Yearbook, 1967).

Percent non-white was included with the indicators of relative deprivation because an alternative explanation, which emphasizes inter-racial competition, can also be associated with these variables. See Spilerman (1970b).

[13]In the previous study (Spilerman 1970b), the dependent variable was transformed according to $\sqrt{\tilde{D} + \frac{1}{2}}$, where $\tilde{D} = D$ (the number of disorders in a city) for $D \leq 6$, and $\tilde{D} = 6$ for $D > 6$. The square root transform is recommended for a Poisson variate to reduce its discrepancy from normality (Goulden, 1952: 98). In this study, since the shape of the curve is being emphasized, the untransformed variable D is used. Results with the two versions of the dependent variable are virtually identical.

[14]I am indebted to Robert Alford for bringing the Crain, Katz and Rosenthal discussion to my attention.

[15]Disorders which could be directly linked to civil rights protests or to other organized activities were deleted from the analysis. In many instances, however, the decision as to whether a disturbance was "spontaneous" or derivative of some protest was arbitrary.

[16]At this writing, December, 1969, the Chicago and Los Angeles police have just raided the Black Panther's headquarters in the two cities. The location of militant black groups may also be related to the distribution of future disturbances if police instigated actions against them tend to provoke disorders.

[17]Ernest Nagel (1961: 331-33) distinguishes between <u>absolute</u> and <u>relative</u> chance. Under absolute chance, random behavior is held to be "uncaused." Under relative chance, the random behavior observed at one level of observation may have deterministic antecedents at a different conceptual level. For the purpose of sociological theorizing, however, reductionist explanations of collective events are usually uninteresting.

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