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PUBLIC JUNIOR COLLEGES AND THE SUBSTITUTION EFFECT IN HIGHER EDUCATION

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Results of multivariate cross-tabular analysis of the college destinations of over 8,000 Illinois high school graduates of different sex, ability, and social status backgrounds living in communities with and without a local public junior college question the assumption that the local availability of such institutions will enhance the probability that persons of lower social status will complete a four-year degree. Rather than increase local attendance rates, the public junior college appears to substitute attendance locally for attendance elsewhere in a manner inversely related to social status. Among persons of lower social status backgrounds, in particular, the substitution effect is such as to replace attendance at non-local four-year institutions with attendance at the local public junior college. It is suggested therefore, that public junior colleges may function latently to divert lower status persons from going on to the four-year institutions and, in the process, "cool-out" social group demands for entry into the more prestigeous four-year institutions of higher education. Public junior colleges may act then, to reinforce prevailing social inequality rather than to diminish it.

"PUBLIC JUNIOR COLLEGES AND THE SUBSTITUTION EFFECT IN HIGHER EDUCATION" *

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Recent plans to expand higher education have placed particular emphasis on the geographical distribution of higher educational places in the belief that such expansion can serve increased numbers of students while also providing for greater equality of opportunity in the allocation of available college places. Such beliefs have been especially evident in the planned multiplication of public junior colleges, institutions which have been envisioned as providing local access to higher education that would particularly enhance opportunities for persons from lower social class backgrounds.

Implicit in these beliefs are two basic assumptions as to the functioning of junior colleges in the wider social structure. First, a generalized assumption exists that there is a direct relationship between the geographic accessibility of given types of college opportunities and attendance at college. Presumably, the nearer a college, the lower are the costs of attendance, the greater the "visibility" of college, and therefore the more likely are individuals, of a given locality, to attend college (Carnegie Commission, 1970).

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Given the public junior college's low cost and virtually "open-admission" policy, it is further assumed that locating such an institution in a community, where no institution had existed before, would particularly enhance the likelihood that able persons from lower social status backgrounds would go on to college.

A second major assumption concerns the still wide-spread belief that the development of public junior colleges can help decrease inequality of opportunity in higher education by promoting able individuals from lower status backgrounds, via transfer programs, to the four-year colleges. Presumably, the less-demanding junior college programs would permit able individuals, with less than adequate high school training, to better prepare themselves for the more competitive four-year colleges and thereby enhance the likelihood that they would complete a four-year degree program.

A number of recent studies have suggested, however, that these assumptions are overly simplistic, if not largely incorrect. With regard to the latter assumption, a number of authors (Clark, 1960; Jencks,1968; Karabel, 1972; Spady , 1970; and Tinto, 1971) have argued that junior colleges are, for a variety of reasons, unable to promote able persons from lower status backgrounds as efficiently as four-year colleges and universities. Karabel (1972), for instance, cites a wide array of sources to support Eckland's (1964) "diversity" hypothesis which argues that an institution's ability to promote its students is directly related to the social status of its student body. The higher the average social status the higher are institutional rates of persistence to degree completion.

Given the lower social status composition of junior college student bodies (relative to four-year institutions) it is not surprising then, argues Karabel, that two-year colleges tend to exhibit higher dropout rates than four-year colleges. Astin(1972) goes even further to point out, through the use of multivariate regression equations, that the higher rates of dropout observed among junior colleges are at least partially independent of the fact that its students are less able and of lower status backgrounds than students in the four-year colleges. In this respect, Clark(1960) argues that such differences in dropout rates may arise from the fact that junior colleges function, in a latent manner, to "cool-out" individuals from continuing their education in the senior colleges and thereby encourage dropout among their students.

In a similar fashion, recent evidence from Anderson, Bowman, and Tinto (1971) and Tinto(1973) also cast doubt upon the validity of the "proximity" hypothesis; namely, the nearer a college, other things being equal, the greater the likelihood that individuals will go on to college. Specifically, these very detailed studies suggest that the proximity of a college, irrespective of type, does not appear of itself to be a major factor in college attendance after ability, socio-economic status, and size of high school community have been taken into account. With regard to the proximity effect of public junior colleges, in this instance in Illinois and North Carolina, Tinto(1973) finds that they have little, if any, effect on college-going. Only persons of lower ability appear to gain in attendance when living in a community with a public junior college. And though this is not true of lower status persons living in communities with a public junior college, these institutions continue

to attract persons in a manner inversely related to social status (Tinto, forthcoming).

But what then are the implications to be drawn from these two different areas of research? Given the increasing evidence that public junior colleges do not significantly enhance, indeed may even decrease, the probability that enrollees will complete a four-year degree program, what are the social consequences of their functioning in a socio-geographic space? If the local presence of a public junior college in a community does not result in a significant increase in the proportion of local high school graduates going on to college, especially those from lower status backgrounds, what conclusions can be drawn from the fact that these institutions continue to attract largely lower status student bodies? Is it possible that its presence in a community may serve largely to alter the distribution of college-bound individuals of differing characteristics among differing types of post-secondary institutions? And in so doing, substitute for college attendance elsewhere? And if this is the case, what are the social ramifications of the fact that some persons, rather than others, of the graduating high school cohort, use the local junior college as a local substitute for attendance elsewhere?

The present paper seeks to answer these questions by first ascertaining whether public junior colleges do, in fact, substitute attendance locally for attendance elsewhere. And, if this is the case, for which types of institutions the substitution occur most frequently and for which types of individuals, classified by measures of ability and

social status the "substitution effect" is most noticeable. Having sought the answers to these questions, the paper then considers the possible social consequences of such distributive effects of public junior colleges. Specifically, by drawing upon data from other studies of junior colleges, the paper seeks to determine whether the local availability of a public junior college in a community affects the probability that differing types of high school graduates (classified by ability and social status) from that community will, upon entering college, complete a four-year degree program.

Intervening Opportunities and College Attendance

Fortunately, the present attempt to answer these questions is not without some theoretical support in the literature. Specifically, there exists a body of theory with regard to the effect of intervening opportunities upon patterns of migration which can be gainfully employed in the present analysis.

Simply stated, the theory of intervening opportunities argues that the number of people moving a certain distance is inversely proportional to the number of opportunities 'intervening' within that distance (Stouffer, 1940; Olsson, 1965). When applied to the movement of persons between high school and college, the theory of intervening opportunities suggests that the number of college-bound persons travelling to a college, of a given type and over a given distance, decreases as intervening college oppor-

tunities are located within that distance (Gorman, 1966; McConnell, 1965). Since the presence of a local college does not appear to increase the proportion of high school graduates going on to college, this theory further suggests that the local college acts as an intervening opportunity in altering the pattern of high school to college migration for those students residing within the locality of the college.

To specify what constitutes an 'intervening' educational opportunity for any given individual is, however, an extremely complex matter. Such specification requires that we unravel a complex set of interactive relationships between personal characteristics, attitudes and values, and preferences of the prospective student which result in a decision about attending a particular college (Radner and Miller, 1969). Though such a task is, as yet, beyond our reach, we can, by collating data from several studies, make some estimates as to the effect of broad categories of college characteristics upon the patterns of college attendance of individuals classified by ability and socio-economic status.

In a study of student migration patterns, for instance, Groat (1964) finds that the percentage of all college students travelling between states to attend college has remained rather stable over the last fifty years; a period of marked overall improvement in the number and quality of states higher educational facilities. Since student migrants tend to be of higher ability and higher social status than the average college student, such findings suggest that the density of intervening college

opportunities may have, for certain persons, little to do with decisions regarding college attendance.

On a local level, this implies that the mere presence of a college in a community may have little to do with the types and locations of colleges attended by persons in that community of higher ability and social class backgrounds. For persons of lower ability and social class, this is most likely not the case. For these persons, one would expect considerations of cost and travel-time, if not important in decisions of whether to attend college, to be more important in decisions about the type and location of college to attend. More important, certainly, than they would be for persons of higher ability and social class. The very notion that a college, of a given type, might serve as an intervening opportunity to alter college migration patterns is itself a function of individual ability and social class.

But, clearly, it is also a function of the type of college locally available. With regard to the public junior college, which tends to be both 'open' in admission and low in cost, the theory of intervening opportunities then suggests that the availability of such an institution in a community should most noticeably affect the migration patterns of college-bound individuals of that community who are of lower ability and social status backgrounds.[1] Since the local availability of a public

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1. On the other hand, it is probable that the local availability of a high-quality private four-year college would affect the patterns of college attendance of only those persons of the community of higher ability and higher social status for whom admission is a distinct possibility.

junior college, in this case in Illinois and North Carolina, does not appear to significantly increase the proportion of local high school graduates going on to college, this argument implies that local public junior colleges, in those states, tend to substitute attendance locally for attendance elsewhere in a manner inversely related to ability and social status.

For the purposes of the present investigation, the important question is not simply whether the hypothesized "substitution effect" of a local public junior college is greater for certain types of individuals than for others. It is also one which seeks to determine for which types of alternative college destinations does the local public junior college serve as a substitute. The social consequences, for instance, of having the junior college serve merely as a local substitute for other, non-local, two-year colleges would be very different from those one might infer from having the local public junior college substitute for non-local four-year college attendance in a manner inversely related to ability and social status. It is to the determination of this possibility that the paper now turns.

METHOD

Data

Data for the present study were drawn from the SCOPE project (School to College: Opportunities for Postsecondary Education) on the senior-year and postsecondary activities of 3,988 male and 4,150 female 1966 high school seniors attending 31 high schools in 25 communities in the

state of Illinois. Of the communities sampled, six had only one institution, a public junior college, located within its boundaries, while the remaining 19 communities were without any local institution of higher education.[2]

The SCOPE data provided information as to individual characteristics (sex, ability, and socioeconomic background), the location and characteristics of the high school community, and the type and location of college attended, if any. These data, together with information as to the geographic proximity of collegiate opportunities to the sampled high school communities, formed the basis for the analysis.[3]

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2. Of the total of 25 communities sampled which did not contain a local institution of higher education, over 87 percent were also beyond easy commuting distance (taken here as twenty miles) to the nearest higher educational institution of any type. Of these, only one was within commuting distance of a public junior college.

3. Because of significant biases in the data samples taken for Chicago and its surrounding areas, these data were excluded from the analyses (see Anderson, Bowman, and Tinto, 1972, pp. 15-16).

Statistical Analysis

Multivariate cross-tabular analyses were employed to determine to what degree the presence of a local public junior college had altered patterns of college attendance of local high school graduates. Individuals of different ability and father's occupational levels living in communities without a local college of any type and in communities with a local public junior college were compared as to the type and locations of colleges attended.[4] Destinations were classified as follows; attending college out-of-state (of all types); attending a local college; attending a within state public four-year college (including university); attending a within state public junior college; and attending other types of within state institutions (private two-year, technical and vocational institutes, etc).

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4. Ability here refers to the standardized results of the Cooperative Academic Test administered for SCOPE by the Educational Testing Service of Princeton, New Jersey.

Father's Occupational Level was a three-level measure (High, Middle, and Low) based upon the occupational prestige of individual occupations. The categories used were constructed in the following manner:

Low: Workman, Service Worker, Machine Operator.

Middle: Skilled craftsman or foreman, Salesman or agent, Office worker, Farm owner or manager, and Technician.

High: Owner of a business, Artists, Entertainers, Athletes, Elected or appointed officials, Manager or Executive, and Professionals.

Calculations of proportions attending different types of institutional destinations were based upon the cohort of high school graduates going on to college from the community and not upon the entire cohort of high school graduates from the community. The resulting proportions then represent the distribution, among institutions of higher education, of college-bound individuals from the sampled communities. Comparison of patterns of attendance among college-bound high school graduates focusing attention, in turn, upon the effect of local college opportunities upon decisions as to where to attend college, not upon decisions as to attendance per se. As noted in other contexts (Jencks, 1968; Karabel, 1972), as college attendance becomes more widespread among a population, attendance per se becomes less important and attendance at certain types of institutions more important in allocating persons to important positions within society.

First, the proportion of college-bound individuals, of each sex, in each of the ability-father's occupational level categories, attending colleges in different locations (local and out-of-state) and of different types (public four-year, private four-year, public junior college, etc.) were calculated (Tables I & II). The resulting proportions for persons from communities without a local college (of any type) and with a local junior college were then compared and percentage differences calculated which measured differences in patterns of college attendance between the two categories of college-bound individuals (Table III). These percentage differences, referred to here as indices of substitution, were taken to be an indicator of the degree to which the presence of a

public junior college in a community had altered the pattern of college attendance of college-bound individuals of that community, relative to the pattern of attendance of comparable college-bound individuals in communities without a local college. Chi-square tests for dependent proportions were used to determine whether the calculated indices were significantly related to the presence of a local public junior college and to individual characteristics such as sex, ability, and social status.[5]

RESULTS

Patterns of College Attendance

Turning first to the patterns of college attendance of persons living in communities without a local college (Tables I and II), the proportions of college-bound individuals of both sexes attending public and private four-year colleges (rows III and IV) were, as expected, related to each other, to ability and social status, and to the proportions attending out-of-state institutions.[6] Generally, the higher one's ability and social status, the more likely it was that one would attend a four-year rather than two- year college, and would travel out-of-state to attend college rather than remain within the state.

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5. For a discussion of the use of chi-square tests for dependent samples see Bresnahan and Shapiro (1966); and Goodman (1970,1971).

6. The specific manner in which persons selected private as compared to public four-year colleges and elected to travel out-of-state to these institutions rather than remain within the state was not easily discernable

TABLES I & II

For both sexes, particularly females, attendance at public four-year institutions was clearly the more frequent choice. Only among males of lower ability levels was this not true, with public junior college attendance equalling or even exceeding attendance at the public four-year colleges. For both sexes, however, it was clear that the proportions attending public four-year institutions were more directly and clearly related to ability than to considerations of social status; such attendance being most frequent among persons of highest ability and lower and middle social status backgrounds.

The expectation that attendance at a public junior college would be an inverse function of both ability and social status tended not to be true, however, for the persons living in sampled communities without a local college. For these individuals, the proportion of college-bound persons attending public junior colleges tended to be inversely related to ability only among males, and not related in any clear manner, among either sex, to social status background.

Analysis of similar proportions among college-bound individuals living in communities with a local public junior college suggests that such persons had very different patterns of attendance. The obvious tendency to remain at home for college and therefore attend

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from these calculations. Given problems of cell sizes and the possible intervening effects of college quality, it did appear as if persons of higher ability and social status, especially females, were more likely to attend a private college out-of-state than they were to attend a public two or four-year out-of-state institutions.

a public junior college was, as anticipated, an inverse function of both ability and social status. The converse tended to hold with regard to attendance at public four-year institutions. As in the case of college-bound persons from non-college communities, the tendency to travel away from home to a public four-year college appeared to be more clearly a direct function of ability than it was of social status background. Nevertheless, for persons from communities with a public junior college, attendance at public four-year colleges was not the most frequent choice. Relative to persons from non-college communities, attendance at both public and private four-year colleges was noticeably less frequent and attendance at public junior colleges noticeably more frequent. Indeed, for all groups living in communities with a public junior college, except those of higher ability and highest social status, public junior college attendance was clearly the predominant choice.

Intervening Opportunities and Patterns of College Attendance

The above proportions were then compared and translated into indices of substitution (Tables III and IV). As noted earlier, these indices, expressed as percentage differences, indicate differences in the types of colleges attended by college-bound persons living in communities with and without a local public junior college. Roughly speaking, these indices can be taken as indicators of the degree to which the presence of an intervening collegiate opportunity, of the public junior college type, had altered patterns of college attendance

of local individuals relative to those of persons from communities without a local college. With some modification, comparison of indices for different types of colleges and differing categories of individuals classified by ability and social status, express then both the degree to which the local public junior college had substituted attendance locally for attendance at other types of non-local institutions, and the manner in which the "substitution effect" varied according to individual characteristics.[7]

TABLE III

TABLE IV

Turning first to the indices of locational substitution (S_L) it is clear that local public junior colleges tended to substitute for attendance elsewhere for virtually every ability-occupational level category. Analysis of size of effect parameters suggest, however, that such locational substitution was, for both sexes, inversely related to social status background for all but the very lowest ability quarter (where, due to sample size, calculations were the least reliable) but only weakly related to measured ability. For both sexes, ability appeared to be inversely related to locational substitution only for highest status persons.

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7. Indices for out-of-state attendance and attendance at other types of two-year colleges, though calculated, were not included in the tables. Being quite small, their addition rather than improve the tables would tend to confuse their visual interpretation.

The important question is not, however, whether the presence of a local public junior college induces people to stay at home for college (as indicated by S_L). Rather, it is one which seeks to determine the types of non-local colleges for which the substitution occurs. Of equal importance is the question of the variation of such substitution among persons of differing social and ability characteristics. The social implications, for instance, of having attendance at the local public junior college substitute largely for non-local two-year institutions are quite different from those one might draw from finding that the substitution is largely for four-year college places.

From an analysis of indices of destinational substitution (S_{tl}) it is apparent that some substitution of local attendance for public four-year college attendance occurred for almost every category of college-bound individual of either sex. But the degree to which such substitutions occurred, for both males and females, tended to be inverse function of social status and not one of measured ability; significant substitutions appearing only for persons of lower and middle status categories. For persons of the two highest ability quarters, in particular, the lower the social status background the lower the likelihood that individuals living in a community with a local public junior college would attend non-local public four-year institutions.

Comparison of destinational indices S_{t1} and S_{t2} indicates that the local availability of a public junior college tended to have differential impact upon attendance at public and private four-year colleges. From the size of the indices alone, it was clear that local public junior colleges tended to substitute for attendance at non-local public four-year colleges (S_{t1}) more than for private four-year colleges (S_{t2}). For private four-year institutions, there did not appear to be any clear-cut pattern of substitution. Where significant substitution did occur, they did so only for brighter persons of lowest status backgrounds. Highest status persons, with the one possible exception among males, were virtually unaffected in their choice of a private four-year college.

As one would expect from the above discussion of indices of locational substitution (S_L), differences in the proportions of persons attending public junior colleges (S_{t3}) were also associated with social status background and not measured ability. In this instance, though significant differences in attendance occurred only for persons of lower and middle status categories, size of effect parameters did not suggest any clear-cut pattern of relationships with social status.

But these differences are, by themselves, insufficient to determine the degree to which the local public junior college had directly resulted in additional junior college attendance. This is so because some of the junior college attendance of persons living in junior college

communities takes place away from home. Assuming that such non-local attendance is not directly associated with the presence of the local public junior college, it was necessary to separate out non-local junior college attendance from that which occurs locally. This was accomplished by taking the difference between the proportion of junior college community persons attending the local public junior college (S_L) and the proportion of persons from non-college communities attending public junior colleges (Tables I and II). These differences, referred to in Tables III and IV as $\triangle S_{t3}$, suggest that the degree to which a local public junior college results in additional or new junior college attendance was, for both sexes, inversely related to social status and again not related in any obvious manner to measured ability. Conversely, these figures (together with the indices of locational substitution) suggest a very different type of substitution for persons of highest social status. For these individuals, though some additional junior college attendance was evident, attendance at the local public junior college appeared to substitute largely for attendance at non-local public junior colleges.

Given then the observed pattern of public and private four-year college attendance among persons from non-college and public junior college communities, a comparison of indices S_{t1}, S_{t2}, and $\triangle S_{t3}$ suggest the following conclusions. First, that local public junior colleges tended to substitute attendance locally for attendance at non-local four-year institutions in a manner inversely related to social status even after controlling for measured ability. Second,

where substitution did occur for persons of highest social status, it did so disproportionately for attendance at other non-local two-year institutions.[8] And finally, where one might have expected ability considerations to play an important part in this process, this was generally not the case. For both sexes, no significant patterns of associations with measured ability were observed.

Implications for Four-Year College Completion

These findings have important implications for social policy because the probability of graduating from two and four-year colleges are quite different. A number of studies have indicated that the probability of completing a four-year college degree program is substantially lower for persons entering a public junior college than it is for comparable persons entering a four-year college (Berls, 1969; Jencks, 1968; and Karabel, 1972). Specifically, when ability and social status are taken into account, individuals who enter two-year colleges are less than half as likely to obtain a bachelor's degree as are comparable individuals entering four-year colleges (Karabel, 1972, p. 535).

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8. These conclusions are not affected by the inclusion of indices of substitution for other two-year colleges and for attendance to out-of-state institutions.

If the effect of a local public junior college is to substitute, at least partially, attendance at the local two-year institution for attendance at four-year institutions, it is entirely possible that persons living in a junior college community may be less likely to complete a four-year degree program than are similar persons living in communities without a local college. More importantly, as the "substitution effect" of a local public junior college in Illinois has been shown to be inversely related to social status, it may then follow that college-bound persons of lower status in such communities would be the least likely to complete a four-year degree program.

The testing of these posited effects require data which, unfortunately, are unavailable at the present. When available, such data would have to contain longitudinal information on the educational activities of a cohort of high school graduates living in a variety of community types, with and without a local public junior college. Ideally, the sample of communities should include a number of communities which, during the period of observation, have had a public junior college established within their locality. Such information thereby permitting the observer to identify and trace out any time-dependent effects of local junior college availability (see Discussion).

Again, such data are presently unavailable. Nevertheless, if one is willing to make some assumptions as to the stability of social environments over time, it is possible to make use of data from other studies of college attendance and develop some speculative estimates as to the long-range effects of local public junior college availability in Illinois

upon four-year degree completion. In this instance, data were taken from Project Talent files and estimates calculated of the proportions of four and two-year college entrants of differing abilities and social status backgrounds completing a four-year college degree. These proportions, based upon actual completion rates of individuals within the Project Talent data files, are shown in Appendix A.

Given the observed patterns of college-going among 1966 Illinois high school graduates(Tables I & II), these proportions allowed us to calculate, through direct multiplication, estimates of the predicted rates of four-year college degree completion of college-bound individuals of different ability quarters and father's occupational levels living in communities with a local public junior college and in communities without any local institution of higher education (Tabel V).[9,10]

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9. There are several assumptions involved here. First, that these proportions are not significantly affected by location; that is, that completion behavior is relatively stable over geographical space. There is, for instance, little evidence to suggest that persons entering a two-year college away from home are any less likely to complete a four-year degree program than are similar persons entering a two-year college located in their home community. Second, it is assumed that these proportions, drawn from national statistics, do not differ from those in Illinois. While this latter assumption may be unsupportable for such states as Alabama, Alaska, and Massachusetts, there is little evidence to suggest that Illinois data would look substantially different from those for the nation as a whole. And though there may be some differences in the absolute size of these proportions, it is assumed that the

These proportions were then multiplied by the actual proportions of the sampled high school graduates of differing ability-status-locality categories attending post-secondary institutions (see Appendix B). Measured in an earlier study (Tinto, 1973) these proportions indicate little direct increase in college-going rates attributable to the local presence of a junior college, once ability, social status, and size of community are taken into account. The resulting proportions (Table VI), representing, then, estimates of the proportions of high school graduates of different abilities and social status backgrounds from differing localities (with and without a local junior college) who will, upon graduation, complete a four-year college program. The estimates taking account of the countervailing possibilities that the local public junior college may, both increase the likelihood of B.A. obtainment through its "proximity effects" while also decrease it through its "substitution effects".

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relative size of the varying proportions of completion for differing ability-social status-location-categories would apply, in substantially the same manner, in Illinois.

10. For the purposes of this calculation, persons entering teachers colleges were taken to have entered a four-year institution, while persons entering technic or vocational institutes were taken to have entered two-year colleges.

Turning first to the predicted rates of completion of college-bound persons (Table V), results suggest that college-bound youth, of both sexes, from public junior college communities are less likely to complete four-year degree programs than were similar persons from communities without a local institution of higher education. As determined

TABLE V

by one-tailed Z-tests, significant differences in predicted rates of completion occurred mostly for college-bound persons of higher ability and of lower and middle social status backgrounds. Size of association measures suggested, in turn, that such differences were inversely related to father's occupational status for all ability groups but the lowest ability quarter, but unrelated either to sex or measured ability. That significant negative differences occurred mostly for higher ability quarters is interesting if only because one might have assumed public junior colleges to screen out less able youth from senior college attendance.

When overall rates of college attendance are taken into account (Table VI) and possible increases in attendance attributable to the local presence of junior college included in the analysis, findings are very much the same as those for college-bound individuals. The only gains in predicted completion rates were those recorded among high school graduates of the lowest ability quarter; that group for whom the local presence of the junior college was associated with higher rates of college-going. Excluding these very small gains, estimates of completion rates suggest that high school graduates from

communities with a local public junior college are somewhat less likely to complete a four-year degree program than are similar persons from non-college communities. Again, significant negative differences in

TABLE VI

predicted rates of completion (now among Illinois high school graduates) were limited to the higher quarters of ability and to persons of lower and middle social status backgrounds. In these rough calculations, persons of higher ability from middle status families, though estimated to be more likely to complete a four-year degree than were lower status persons of similar ability and locality, were as affected by the local presence of a public junior college as were the latter; differences in predicted completion between comparable persons in non-college and junior college communities being as large among middle status groups of higher ability as they were among persons of lower status origins. And, as before, no significant relationships appeared between estimates of rates of completion for persons from non-college and junior college localities and either sex and measured ability. In these estimates, at least, there is little to support the notion that local public junior colleges will increase the likelihood of completing a four-year degree program. If anything, some decrease is suggested for lower and middle status persons of higher ability.

DISCUSSION

Before discussing the implications of these findings, a number of cautionary comments are called for. First, with regard to findings on the substitution effect of local junior college availability, it may be

argued that the use of the college-going cohort rather than the high school graduate cohort as the data base for the analysis may have been largely responsible for the observed differences in proportions of persons attending different types of institutions (Tables I & II). If communities with a local public junior college had substantially higher proportions of their high school graduates going on to college, comparison between college and non-college communities would be inappropriate. For instance, if the increased proportions of high school graduates going on to college from such communities had attended the local public junior college, then proportions attending other types of institutions would appear lower despite there not having been any noticeable substitution effect. Such however, is not the case. As noted earlier and as seen in Appendix B, prior analysis of the same data base (Tinto, 1973) indicated that there was no such consistent "proximity effect" attributable to the local availability of a public junior college in Illinois. And in those few instances where small increases in attendance were observed, they were limited largely to students of lowest ability and did not occur in any manner consistently related to social status. In the present study, significant substitution effects occurred in a manner inversely related only to social status and not in any manner related to ability.

It can also be argued that the failure, in the present study, to control for community characteristics other than the simple location of a public junior college may have hidden other factors possibly responsible for differences in patterns of college attendance. If, for instance, the sampled public junior college communities were substantially larger in size or were significantly further away from the nearest public four-year college than were the sampled non-college communities, differences

in the proportions attending such institutions could be understandable independent of the local presence of a public junior college. But though it was recognized that the "ideal" analysis would have involved longitudinal analyses of matched samples of communities, sample size considerations effectively prevented such analyses. Nevertheless, a careful comparison of the varying characteristics (demographic, ecological,etc.) of the sampled communities was made in order to check for such potential biases. Except for a slight tendency for junior college communities to be somewhat larger than the average non-college community, no significant difference in the regional distribution of postsecondary school opportunities were found which might have explained away the observed results.

Of course, the correct way to study the effect of local public junior colleges upon patterns of college attendance is to observe the patterns of attendance of high school graduates prior to and following the establishment of a local institution of that type. Indeed, it would be necessary to also observe patterns of attendance for some time following such an establishment in order to check for any time dependent changes in attendance patterns. But though it is recognized that such a longitudinal study is indeed the proper method for such a study (as it has been in the study of market locations) this has not been possible here. Nevertheless, it has been argued elsewhere by this author (1973, pp. 291-292), that it would be unlikely for such analyses to account either for the magnitude of the observed substitution effects or for the pattern in which the substitution occurred, that is, in a manner inversely related to social status.

In a similar vein, it is clear that the only proper way to determine the effect of local junior college availability upon rates of four-year college completion is to follow-up individuals beyond college entry to final completion or permanent dropout. And to include in such analyses, data as to motivations, expectations etc., which will permit an observer to isolate out motivational factors which lead persons to enter the local junior college (rather than go elsewhere) and which may underlie low rates of completion.

In this respect, it is clear (as noted earlier) that the calculated estimates of four-year college completion are, at best, highly speculative. The analyses involved in Tables V and VI were meant to be suggestive rather than definitive. Nevertheless, the meshing of these findings with results of other studies of the social functioning of the public junior college invites comment.

First, assuming that public policy is aimed at more than simple extension of years of schooling, to the provision of equity in the distribution of opportunity for a full four years of college, these analyses imply that the establishment of public two-year colleges in hithertofore non-college localities acts in opposition to that goal. In a manner somewhat analogous to the argument of Burton Clark (1960) concerning the effects of junior college attendance upon individual educational expectations, it can be argued here that a system of public junior colleges may function latently so as to keep within reasonable bounds, or 'cool-out', group demands for admission to state colleges and universities. Indeed, given the absence of ability-related variations in indices of substitution, it seems as if junior colleges act so

as to preserve four-year institutions as places largely of the upper-class rather than of the more able only. While the latter might be expected, even desired in a meritocracy, the former, in a society aspiring to equality of educational opportunity among social classes, is hardly to be considered a desirable outcome of our large investment in public junior colleges. That recent demonstrations by minority group students for equity in the provision of college places have been aimed directly at the major state and private universities rather than at the two-year institutions, speaks well of their astuteness in perceiving the differential functions of different types of colleges, both with regard to educational attainment and occupational placement. Unfortunately higher educational policy has had all too little such insight.

Finally, it must be pointed out that the real issue behind the controversy over equality in opportunity in higher education is no longer who gets in, but who gets in where. In this respect, present findings suggest that the actions of planners, in extending junior college opportunities over the map, have been dysfunctional in their social outcomes. In this instance, given the societal goal of equalizing educational opportunity through the expansion of the junior college system, the present calculations suggest that public junior colleges function, within a socio-geographic space, so as to reinforce inequalities in the likelihood that persons of comparable abilities but different social status origins will complete a four-year college program.

Of course, it could be contended that junior colleges were never intended to equalize opportunity. But while that may be true, and one

suspects that it is, sufficient public information has given the impression to many that such was not the case; specifically that attending junior colleges would provide real opportunities for individuals' continued higher education. It seems redundant, though necessary, to point out that any educational institution, in this case public junior colleges, have a range of things they do and do well. This paper is not to deny that. Rather it is to say that the equalitization of educational opportunity is clearly not one of those things. As pointed out in other areas (Jencks, 1972 ; Karabel, 1972) to expect schools to be, of themselves, significant factors in altering prevailing inequality in the wider social system, is to expect the unrealistic. To expect junior colleges, as they are now structured, to equalize educational opportunities, appears to be equally unfounded.

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TABLE I

PROPORTIONS OF COLLEGE-BOUND MALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES WITH AND WITHOUT A LOCAL PUBLIC JUNIOR COLLEGE ATTENDING HIGHER EDUCATIONAL INSTITUTIONS OF DIFFERENT TYPES AND LOCATIONS BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES

	Ability 1 (low)			Ability 2			Ability 3			Ability 4 (high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
College Accessibility												
No Local College (Sample Size)	(4)	(8)	(3)	(22)	(33)	(22)	(32)	(71)	(35)	(47)	(106)	(70)
I.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
II.	0.0	37.5	33.3	9.1	12.1	13.6	15.6	8.5	42.9	0.0	15.1	37.1
III.	50.0	12.5	33.3	36.3	33.3	22.7	40.7	45.1	31.4	59.5	63.2	35.8
IV.	0.0	0.0	0.0	0.0	6.0	9.1	21.9	15.5	5.8	27.7	10.4	17.0
V.	50.0	50.0	0.0	40.9	39.4	45.4	21.9	25.4	17.2	6.4	5.7	8.6
VI.	0.0	0.0	33.3	13.6	9.1	9.1	0.0	5.5	2.6	6.4	5.7	3.4
Public Junior College (Sample Size)	(11)	(12)	(5)	(29)	(30)	(17)	(34)	(44)	(37)	(51)	(77)	(89)
I.	72.8	25.0	60.0	62.1	60.0	47.0	61.8	50.0	34.1	53.0	32.5	19.0
II.	9.1	16.6	20.0	13.8	16.6	29.4	14.7	9.1	35.1	9.8	19.5	37.1
III.	9.1	8.3	20.0	10.3	3.3	11.8	17.7	22.7	22.7	29.4	33.8	33.7
IV.	0.0	0.0	0.0	3.5	0.0	5.8	0.0	8.9	5.4	5.9	9.1	6.7
V.	72.8	75.0	60.0	69.0	76.7	47.0	67.6	61.4	34.1	53.0	32.5	19.1
VI.	9.1	0.0	0.0	3.1	3.3	5.8	0.0	0.0	2.7	2.0	5.1	3.4

Where:
I = Proportion attending college locally.
II = Proportion attending college out-of-state.
III = Proportion attending public four-year colleges.
IV = Proportion attending private four-year colleges.
V = Proportion attending public junior colleges.
VI = Proportion attending other two-year institutions.

TABLE II

PROPORTIONS OF COLLEGE-BOUND FEMALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES *WITH AND WITHOUT A LOCAL PUBLIC JUNIOR COLLEGE* ATTENDING HIGHER EDUCATIONAL INSTITUTIONS OF DIFFERENT TYPES AND LOCATIONS BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES

	Ability 1(low)			Ability 2			Ability 3			Ability 4 (high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
College Accessibility												
No Local College (Sample Size)	(5)	(15)	(6)	(28)	(48)	(24)	(27)	(50)	(38)	(26)	(63)	(42)
I.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
II.	20.0	40.0	0.0	3.6	18.8	20.8	7.4	24.0	21.1	19.2	14.3	26.0
III.	20.0	20.0	16.6	50.0	29.2	37.5	37.1	42.0	39.5	65.3	61.9	45.2
IV.	0.0	0.0	0.0	7.2	6.2	4.2	22.2	10.0	10.5	3.9	14.3	19.1
V.	0.0	13.3	16.6	14.3	27.1	16.6	14.8	6.0	18.4	7.6	4.8	4.8
VI.	60.0	26.6	66.6	25.0	18.8	20.8	18.6	18.0	10.5	3.8	4.8	4.8
Public Junior College (Sample Size)	(7)	(13)	(12)	(29)	(32)	(27)	(31)	(52)	(44)	(20)	(63)	(50)
I.	57.2	84.6	41.7	65.6	50.0	37.1	70.9	34.6	22.7	40.0	36.5	16.0
II.	14.3	0.0	0.0	6.9	12.5	14.8	6.1	13.5	38.8	20.0	7.9	32.0
III.	0.0	7.7	25.0	10.3	15.6	25.9	13.0	23.1	22.7	35.0	36.5	26.0
IV.	0.0	0.0	0.0	3.5	0.0	7.4	3.2	7.7	11.4	5.0	12.7	24.0
V.	57.2	84.6	66.6	65.6	50.0	40.8	70.9	34.6	22.7	40.0	36.5	18.0
VI.	28.6	7.7	8.3	13.8	21.9	3.7	6.5	21.2	4.6	0.0	4.8	0.0

Where: I = Proportion attending college locally.
II = Proportion attending college out-of-state.
III = Proportion attending public four-year colleges.
IV = Proportion attending private four-year colleges.
V = Proportion attending public junior colleges.
VI = Proportion attending other two-year institutions.

TABLE III

INDICES OF SUBSTITUTION FOR COLLEGE-BOUND MALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES WITH A LOCAL PUBLIC JUNIOR COLLEGE BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES [a]

	Ability 1(low)			Ability 2			Ability 3			Ability 4(high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Indices of Substitution												
S_{L1} Location Substitution[b]	79.2	25.0	60.0	62.1	60.0	47.0	61.8	50.0	34.1	53.0	32.5	19.1
S_{L2} Location Substitution[c]	9.1	-20.9'	-13.3	4.7	4.5	15.8	1.1	0.6	-7.8	9.8	4.4	0.0
S_{t1} Destination Substitution[d]	-40.1	- 4.2	-13.3	-26.0'	-30.0"	-10.9	-23.0'	-22.4'	- 8.7	-30.5"	-29.4"	- 2.1
S_{t2} Destination Substitution[e]	0.0	0.0	0.0	3.5	- 6.1	- 3.3	-21.9'	- 6.6	-0.4	-21.8'	- 1.3	-10.3
S_{t3} Destination Substitution[f]	22.8	25.0'	60.0	28.1'	37.3"	2.4	45.7"	36.0"	26.9'	46.6"	26.8"	10.5
ΔS_{t3} Destination Substitution[g]	22.8	-25.0	60.0	21.1	20.6	1.6	39.9"	24.6"	26.9'	46.6"	26.8"	10.5

a. ' Chi-square $p<.05$; " Chi-square $p<.01$ (size of effect parameters not shown).

b. S_{L1} indicates the degree to which a local college substitutes attendance locally for attendance elsewhere.

c. S_{L2} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending out-of-state institutions.

d. S_{t1} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending public four-year institutions (colleges and universities).

e. S_{t2} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending private four-year institutions (colleges and universities).

f. S_{t3} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending public junior colleges.

g. ΔS_{t3} indicates the difference between the proportion of persons in non-college communities attending public junior colleges and the proportion of persons in public junior college communities staying at home for college.

TABLE IV

INDICES OF SUBSTITUTION FOR COLLEGE-BOUND FEMALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES WITH A LOCAL PUBLIC JUNIOR COLLEGE BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES [a]

	Ability 1(low)			Ability 2			Ability 3			Ability 4(high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Indices of Substitution												
S_{L1} Location Substitution[b]	57.2	84.6	41.7	65.6	50.0	37.1	70.9	34.6	22.7	40.0	36.3	16.0
S_{L2} Location Substitution[c]	-5.7	40.0	0.0	3.3	- 6.3	- 6.0	- 4.2	-10.5	17.7	0.8	- 6.4	6.0
S_{t1} Destination Substitution[d]	-20.0	-12.3	8.4	-39.7"	-13.5	-11.6	-24.1"	-18.9'	-16.8	-30.3"	-25.4'	-19.2'
S_{t2} Destination Substitution[e]	0.0	0.0	0.0	- 3.7	- 6.3	3.2	-19.0'	2.3	0.9	1.1	- 1.6	4.9
S_{t3} Destination Substitution[f]	57.2'	71.3'	50.0'	51.3"	22.9'	24.2'	56.1"	28.6"	4.3	32.4"	30.7"	13.2
ΔS_{t3} Destination Substitution[g]	57.2'	71.3'	25.1	51.3"	22.9'	20.5	56.1"	28.6"	4.3	32.4"	30.7"	11.2

a. ' Chi-square $p<.05$; " Chi-square $p<.01$ (size of effect parameters not shown).

b. S_{L1} indicates the degree to which a local college substitutes attendance locally for attendance elsewhere.

c. S_{L2} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending out-of-state colleges.

d. S_{t1} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending public four-year institutions(colleges and universities).

e. S_{t2} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending private four-year institutions(colleges and universities).

f. S_{t3} indicates the difference, relative to persons in non-college communities, in the proportion of persons attending public junior colleges.

g. ΔS_{t3} indicates the difference between the proportion of persons in non-college communities attending public junior colleges and the proportion of persons in public junior college communities staying at home for college.

TABLE V

PREDICTED PROPORTIONS OF COLLEGE-BOUND MALE AND FEMALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES WITH AND WITHOUT A LOCAL PUBLIC JUNIOR COLLEGE OBTAINING A FOUR-YEAR COLLEGE DEGREE BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES [a]

	Ability 1(low)			Ability 2			Ability 3			Ability 4(high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Male Graduates												
College Accessibility												
No Local College:	21.7[c]	24.1[c]	41.6[c]	27.8	28.3	42.2	51.6	52.5	60.1	65.5	71.5	77.7
Public Junior College:	17.0[b]	20.0[b]	36.0[c]	23.0	24.0	42.7	38.4	43.1	55.6	50.7	61.7	69.9
Female Graduates												
College Accessibility												
No Local College:	18.1[c]	25.6[b]	29.7[c]	32.1	38.5	55.5	43.4	49.0	71.0	67.3	83.3	94.2
Public Junior College:	14.9	18.4	23.5	20.0	34.5	52.6	33.5	43.8	69.1	56.6	69.7	88.7

a. Underlined percentages indicate significant negative differences in rates of completion as determined by a one-tailed Z-test at the .95 level.

b. Contains 10-19 cases in the denominator.

c. Contains 5- 9 cases in the denominator.

TABLE VI

PREDICTED PROPORTIONS OF MALE AND FEMALE 1966 ILLINOIS HIGH SCHOOL GRADUATES FROM COMMUNITIES WITH AND WITHOUT A LOCAL PUBLIC JUNIOR COLLEGE OBTAINING A FOUR-YEAR COLLEGE DEGREE BY ABILITY-FATHER'S OCCUPATIONAL LEVEL CATEGORIES [a]

Father's Occupational Level	Ability 1 (low)			Ability 2			Ability 3			Ability 4 (high)		
	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Male Graduates												
College Accessibility												
No Local College:	1.3[c]	2.9[c]	6.6[c]	5.7	8.2	21.6	22.9	35.6	47.9	48.9	59.2	66.2
Public Junior College:	2.1[b]	2.8[b]	8.2[c]	5.7	7.4	23.6	11.7	23.1	42.3	37.3	48.8	64.6
Female Graduates												
College Accessibility												
No Local College:	0.9	4.8	6.9	7.7	13.6	29.0	19.5	23.8	51.8	54.6	71.8	82.2
Public Junior College:	2.2	4.5	8.0	4.8	12.6	30.2	15.4	22.1	55.4	42.0	56.6	76.4

a. Underlined percentages indicate significant negative differences in rates of completion as determined by a one-tailed Z-test at the .95 level.

b. Contains 10-19 cases in the denominator.

c. Contains 5- 9 cases in the denominator.

APPENDIX A

PROPORTIONS OF MALE AND FEMALE COLLEGE-ENTRANTS COMPLETING A FOUR-YEAR DEGREE PROGRAM BY ABILITY QUARTERS AND SOCIAL STATUS BACKGROUND[a]

Male College Entrants				
Social Status	Ability 1(low)	Ability 2	Ability 3	Ability 4(high)
Low:	.29	.36	.58	.70
Middle:	.32	.40	.62	.76
High:	.50	.58	.66	.82

Female College Entrants				
Social Status	Ability 1(low)	Ability 2	Ability 3	Ability 4(high)
Low:	.26	.40	.52	.71
Middle:	.32	.48	.56	.85
High:	.37	.66	.78	.96

a. Proportions shown represent transformations of original data given in the source.

Source: Joseph Froomkin and Murray Pfeferman, "A Computer Model to Measure the Requirements for Student Aid in Higher Education," A report prepared for the U.S. Office of Education, Office of Program Planning and Evaluation, Washington D.C..

APPENDIX B

PERCENTAGE OF MALE AND FEMALE 1966 ILLINOIS HIGH SCHOOL GRADUATES ATTENDING COLLEGE FROM COMMUNITIES WITH AND WITHOUT A LOCAL PUBLIC JUNIOR COLLEGE BY ABILITY QUARTERS AND FATHER'S OCCUPATIONAL LEVEL ADJUSTED FOR COMMUNITY POPULATION SIZE DIFFERENCES[a]

	Ability 1(low)			Ability 2			Ability 3			Ability 4 (high)		
Father's Occupational Level	Low	Middle	High	Low	Middle	High	Low	Middle	High	Low	Middle	High
Male Graduates												
College Accessibility												
No Local College:	5.2	11.2	15.8	20.4	29.0	51.2	44.5	67.7	79.6	74.7	82.2	85.4
Public Junior College:	12.2	14.1	22.8	24.8	30.7	55.3	30.5	53.6	74.5	73.5	79.2	91.6
Female Graduates												
College Accessibility												
No Local College:	4.9	18.6	23.1	24.0	35.3	52.2	45.0	48.6	73.1	81.3	87.5	87.5
Public Junior College:	14.8	24.3	34.1	24.2	36.5	57.9	46.0	50.4	80.2	74.4	81.4	86.7

a. Proportions shown represent transformations of original data given in the source.

Source: Vincent Tinto, "Accessibility of Colleges as a Factor in the Rates and Selectivity of College Attendance," Unpublished doctoral dissertation, The University of Chicago, 1971.