

Residential Choices and Their Impacts in a Developing Coal Resource Area

NANCY R. BAIN
JOHN N. STITZLEIN

OHIO AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER
U. S. 250 and Ohio 83 South
Wooster, Ohio

CONTENTS

* * * * *

Summary.....	3
Introduction.....	3
The Projections.....	3
What Happened?.....	4
Methodology.....	6
Residential Mobility.....	6
Life Cycle.....	6
Place Utility.....	7
Background Information.....	7
Attitudes Toward Alternatives.....	7
Cost of Living.....	8
Residential Satisfaction.....	9
Public Services.....	9
Choice of Residential Location.....	9
The "Trigger".....	10
The Extended Family.....	12
Future Intentions.....	12
Conclusions.....	12
Literature Cited.....	12
Appendix—Survey Questionnaire.....	14

ACKNOWLEDGMENTS

The authors wish to acknowledge the assistance of John Reece and John McGraw, formerly of the Southern Ohio Coal Company, in the early phases of this project; Dave Baker, Southern Ohio Coal Company, for his support in the latter stages of the project; and Donald Nunley, District Officer, United Mine Workers of America, for providing essential information.

ON THE COVER: American Electric Power Company's General James M. Gavin plant located at Cheshire, Gallia County, Ohio.

Photo by John N. Stitzlein

Residential Choices and Their Impacts in a Developing Coal Resource Area¹

NANCY R. BAIN and JOHN N. STITZLEIN²

SUMMARY

The objective of this study is to assess the probability of Southern Ohio Coal Company miners moving into the *growth centers* of a six-county impact area. The area surrounds the company's mines and affiliate power plant and is considered to be economically depressed. With the opening of the complex, the area was expected to experience major impacts: 3,000 new mining and power plant jobs and secondary development of equal magnitude. Central to the projections was the expectation that the mining jobs would be filled principally by in-migrants choosing to live in the growth centers. It soon became evident as the miners were hired, however, that they were not in-migrants but rather local residents living outside the growth centers. Some of the growth impacts originally projected and sought would be produced if these miners were to move into the growth centers.

To determine the likelihood that the miners would move, 100 miners representing a random sample were interviewed. Emphasis was placed on identifying the miners' 1) knowledge and attitudes about their residential alternatives; 2) satisfaction with their present living environment (neighborhoods, community services, etc.); and 3) desired living environment characteristics.

The results indicate that the probability of the miners moving to the growth centers is very low. They are quite satisfied with their present location and see no advantage in moving. The miners know the alternatives and choose to remain in their prized rural environment.

INTRODUCTION

Investments producing a large number of long-term jobs in an economically depressed area are typically believed to have the potential for producing a multiplied impact. However, this impact may fre-

quently be overestimated and may be more elusive than often believed. Existing life styles, cultural habits, and preferences, along with shortages or absences of certain community facilities and services, act as stabilizers in an area. This is a study of such a development in southern Ohio, the General James M. Gavin Plant and associated deep mines.

The Projections

In the early 1970's, the American Electric Power Company and its subsidiaries developed several mines and built the power station. Initial projections were for 3,000 new jobs, mostly in mining, by 1980. Secondary development was expected to be of about equal magnitude.

The development occurred in an area generally considered to be economically depressed. County per capita incomes were about two-thirds of the state averages. The area had been losing population since around 1900. And the reported unemployment was typically 25% to 50% or more above average. The development of the mines and power plant was seen as an opportunity to increase incomes, to reverse the population trends, and to reduce unemployment and underemployment.

Six counties, five in Ohio and one in West Virginia, were designated as the impact area. The effects of the development were to be strongest in three Ohio counties—Gallia containing the power plant, and Meigs and Vinton having the existing and projected coal mines (Fig. 1). These three were designated immediate impact counties and were given special planning attention to aid them in meeting the new demands on their infrastructures. The three other impact counties, Athens and Jackson in Ohio and Mason in West Virginia, would also provide services and residential locations for the new employees.

According to the planners' assessments and projections, the population in the immediate impact counties was expected to increase by approximately one-third and employment by nearly 50% (3, pp. 9-19). If these projections became fact, this would be a considerable impact. The basic assumptions were that workers trained in modern deep mining technology would move in from outside the six-county area and that the area residents would secure newly created service and support jobs.

¹This report summarizes a project supported by Title V Research Funds of the U. S. Department of Agriculture, pursuant to the Rural Development Act of 1972, as a part of the GROW (Generating Rural Ohio Wealth) effort in southern Ohio, administered by the Ohio Agricultural Research and Development Center, Wooster.

²Assistant Professor of Geography, Ohio University, Athens, and Associate State Leader, Community and Natural Resource Development, Ohio Cooperative Extension Service, respectively. Dr. Stitzlein was formerly Area Extension Agent, Community Resource Development, GROW Project, Jackson, Ohio.

The expansion projected was to be concentrated in designated growth areas or centers (Fig. 1).³ According to the planning consultants, Hammer, Greene, Siler Associates, "Because of the wide range of facilities and services available in the existing population centers, the locational preference of the vast majority of the new population is expected to be these (designated growth) centers." (3, p. 21) This was a reasonable assumption since the centers could generally ac-

³In this report, the terms growth areas and growth centers are used interchangeably. Growth centers are the cities and small towns that offer the best facilities and services and the best return on investments. Growth areas are the growth centers and surrounding territory that could be served by new infrastructure developments plus the corridors connecting the growth areas. Most federal grants require the growth center strategy. The theoretical basis for such programs is growth pole theory.

commodate additional people without major investments.

Deficient water or sewer systems in some of the existing centers could also be upgraded at a lower cost than starting in an area with nothing. Developmental grant funding sources also require concentrated investments instead of equal dispersal of funds. Concentrated investments compound themselves, whereas equalized investments have reduced potency. These were the assumptions of the growth center strategy outlined for the region.

What Happened?

The planning consultants revised their forecasts by the time the second (action) portion of the plan

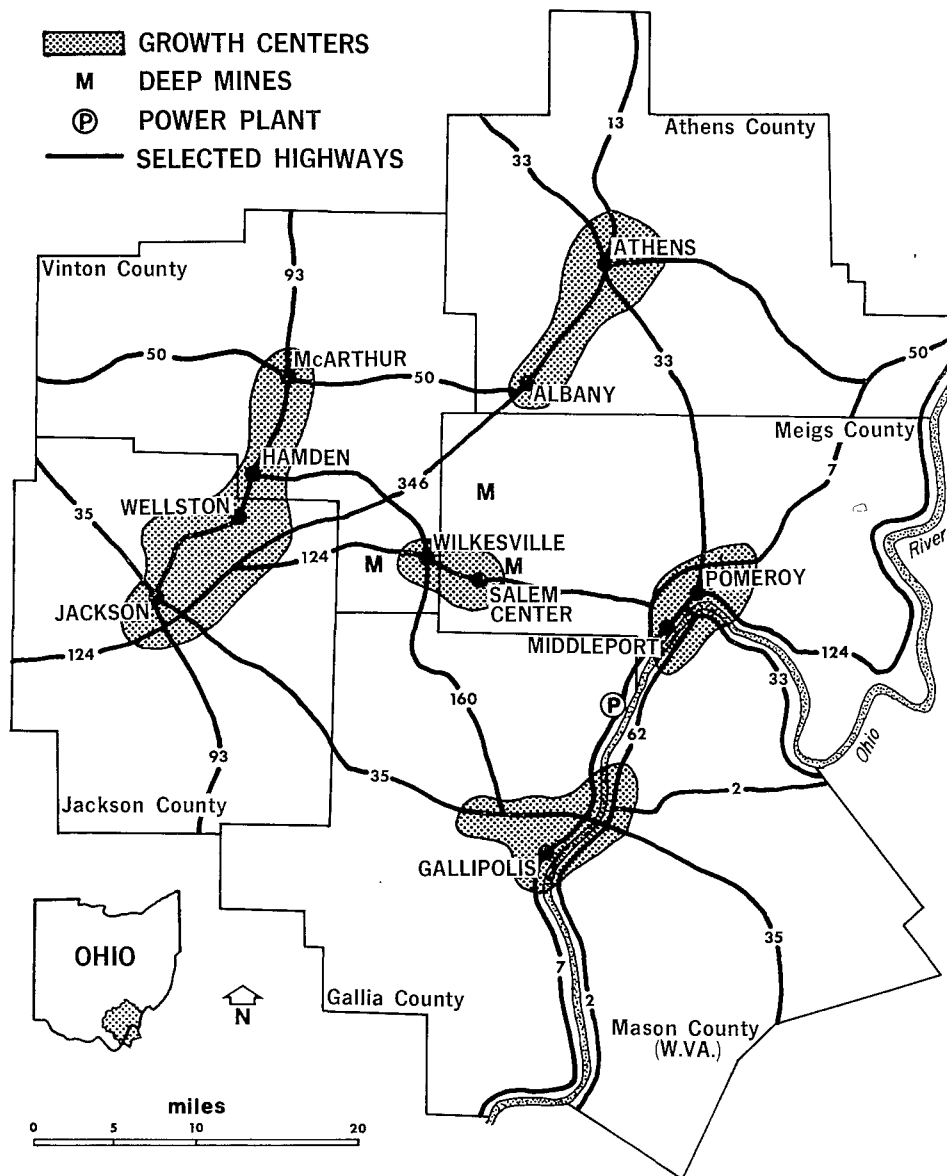


FIG. 1.—The impact area.

TABLE 1.—A Comparison of Projected and Actual Distributions of Residential Impact*, (percentages).

Growth Areas	Projected		Actual		
	Original† N = 3457	Revised‡ N = 2800	June 1973** N = 170	August 1974†† N = 836	February 1976‡‡ N = 1270
Pomeroy-Middleport	9.4	3.6	17.9	10.6	5.7
Gallipolis	12.6	3.6	13.5	7.1	4.2
Athens-Albany	18.8	10.7	15.2	9.0	4.9
McArthur-Hamden- Jackson-Wellston	21.8	14.3	5.4	6.4	5.5
Wilkesville-Salem Center	21.8	32.1		1.1	0.2
Remainder (Rural locations and other towns)	15.5	35.7	48.0	65.7	79.5
Total	100.0	100.0	100.0	100.0	100.0

*Data on actual residential locations in 1973 and 1974 were provided by the Southern Ohio Coal Company and included both miners and salaried employees. The 1976 information came from the United Mine Workers of America and gave only UMWA contract employee locations.

†Hammer, Greene, Siler Associates, 1973, p. 6.

‡Hammer, Siler, George Associates, 1973, p. 2.

**Southern Ohio Coal Company personnel records, June 1973.

††Southern Ohio Coal Company personnel records, August 1974.

‡‡United Mine Workers records, February 1976. (Miners only)

was published (4). The two projections compared with actual distribution figures appear in Table 1. The revision was projected because road and other infrastructural developments were not being made at the expected rate. What the consulting planners did not know at the time (because only a small portion of the work force was hired) was that few people were moving into the area to take the jobs. Instead, local people were being hired for the mining jobs after having special training in modern deep mining methods.

Since people did not move into the impact area in large numbers as expected, the major impact was not created. Instead of being *substantial*, in-migrants accounted for less than 10% of the work force. This employment of local people and commuters rather than in-migrants as assumed in the growth strategy eliminated much of the projected impact. This study is a result of that discovery.

The major purpose of this study is to assess the probability of miners relocating within the impact area. Moving into the growth centers would produce some of the growth impacts projected in the earlier

plan. Additionally, more miners will be hired and workers often move when they take a job, especially the first job. Another aspect of the study is to provide updated information for development and planning organizations.

The concentrations in the growth centers varied from the initial projections and, as seen in Table 1, declined from 1973 through 1974 to 1976. Instead of the revised projection of one-third living outside the growth centers, two-thirds of the employees in 1974 and 80% of the miners in 1976 lived outside the areas with the greatest potential impact.⁴ The employees are, however, concentrated in the impact counties. Less than 10% of the miners reside outside of the designated impact area (Table 2).

The population is almost equally divided between immediate and later impact counties. One county from each category dominates, and Athens and Meigs together contain half of the Southern Ohio Coal Company miners. Another one-fifth is found in Gallia County and the remaining 29% is divided among the other three counties. This situation also deviates from the projected pattern because the miners are actually dispersed throughout the impact counties rather than concentrated in the growth centers.

The divergence noted between what was projected and what is actually happening may not be unique to this instance. Although many impact statements have been written, unfortunately few fol-

TABLE 2.—Distribution of Southern Ohio Coal Miners, 1976, (percentages), N = 1270.

Immediate Impact Counties	46.6
Meigs	23.8
Gallia	17.8
Vinton	5.0
Later Impact Counties	47.1
Athens	23.2
Mason (W. Va.)	13.6
Jackson	10.3
Outside	6.3

Source: United Mine Workers.

⁴Data on actual residential locations in 1973 and 1974 were provided by the Southern Ohio Coal Company and included both miners and salaried employees. The 1976 information came from the United Mine Workers of America and gave only UMWA contract employee locations.

lowup studies have been made. A recent exception is the monitoring study of the Susquehanna Steam Electric Station constructed by the Pennsylvania Power and Light Company in Luzerne County, Pennsylvania. This followup found little significant community impact, including less influx than had been expected, more commuting than had been expected, and even a stabilization in the housing market after the initial rush (11). The possibility of reduced impact as found in the Luzerne County and the Southern Ohio development under study here should be addressed in future impact planning efforts.

METHODOLOGY

A survey was devised to assess the probability that miners would move to the growth centers. The survey instrument was constructed to reveal the knowledge and attitudes of the Southern Ohio Coal Company miners on their residential alternatives. The instrument was pretested, modified, and put into its final form (Appendix).

Using information on the labor force provided by the company and the United Mine Workers district office, a stratified (by mine local) random sample was taken. Letters explaining the purpose of the survey were sent to the sample, appointments were made, and interviews were completed with 100 miners (8% of the work force) in their homes. More than 95% of those phoned agreed to do the survey. The sample group of miners was tested and found not to differ significantly ($X^2 < .05$) from the total work force by age group or residential county.⁵

It should be noted that the population of this study did not match some of the poorly educated ones found in earlier surveys of miners (6). The interviewers reported that the respondents were intellectually aware of their alternatives. Only one interview could not be completed because the respondent was a functional illiterate.

⁵The chi-square test, X^2 , tests whether an observed data count differs significantly from an expected data count. If observed frequencies do not differ from the expected $X^2 < .05$, the researcher assumes that similar conditions prevailed in the observed and in the expected counts. If $X^2 > .05$, the researcher assumes that the distributions diverged, that differing conditions were operative in each case. The number .05 is the significance level used in this project.

TABLE 3.—A Comparison of Actual and Expected Moves; Sample Population by Age Groups, N = 100.

	Actual	Expected
Annual Rate	16	34
Less than 30	9	28
More than 30	7	6
Five-Year Rate	56	70
Less than 30	40	53
More than 30	16	17

RESIDENTIAL MOBILITY

American society is noted for the mobility of its members. Data on residential mobility, the movement of people from one residence to another, reveals that 20% of Americans move annually. Individual moves involve a complex of factors, but for the total population, life cycle and place utility judgments are quite important.

Life Cycle

Life cycle explanations employ the well-known fact that young people are more migratory than older persons. Overall, one citizen in five moves annually and these moves are concentrated in the younger age groups (10, p. 3). Characteristic of industrialized nations, life cycle-induced geographic mobility is concentrated in the 18-25 age group when children leave their parents' home and take a first job, go to school, or join the military. Many of these migrations are directed toward urban centers and away from rural areas. This youthful mobility should vary little by social class or occupational group. Variations by social class appear among the more than 30 age group.

A recent population report gives annual mobility rates of 44% for ages 20-24 years, 35% for the 25-29 year old group, and lower rates for the more than 30 age group (10, p. 9). Because more than 60% of the mining work force are less than 30 years of age, the coal miners in the study would be expected to move at a rate in excess of the national average. The fact that the mining jobs were created in the recent past would be expected to inflate the mobility rate even more. However, in the 3 years following the opening of the mines, only 47% of the sample group moved—a rate much lower than expected.

If those less than 30 are separated from those more than 30, an expected mobility can be calculated and compared to the actual number moving in 1 year and also during the last 5-year period. Comparing the two distributions with the chi-square (X^2) test, one finds that for both 1 and 5-year moves, the expected rate exceeds the actual moving rate ($X^2 > .05$)—the miners are not moving at the expected rate (Table 3).

The residential backgrounds of the miners and the labor mobility characteristics of blue collar workers are believed to explain the lower mobility of the miners. It was noted earlier that the new work force was local. Most were long-term residents of the impact area. Table 4 shows that 62% were born in the impact area and 76% were graduated from local high schools. For comparison, the results of national interviews conducted by Lansing and Barth showed that only 35% of the workers were employed in the area of their birth (7). The conditions in this south-

ern Ohio study area differed significantly from the pattern found by Lansing and Barth ($X^2 > .05$).

For variation by occupational groups, it is generally true that blue collar workers are less migratory than white collar workers. This fact should have dampening effects on the expected mobility levels. However, the exact amount of reduction is unknown. Researchers have found that because blue collar workers tolerate longer work journeys in exchange for some other benefits, blue collar workers are much less residentially mobile than those in white collar groups (5, p. 95).

Place Utility

In addition to mobility associated with changes in life cycle or caused by new job situations, moves are also made on the basis of comparison of the existing residence and the alternative residential locations. Limited by perception and available information, the potential mover evaluates the existing location in relationship to the known alternatives (9). When the present location can no longer be judged best and when a stress triggers the response, a move is decided upon. The move is made to a *better* place. Each of the aspects described above has its own literature.

Significant to this report is the generalized view that area miners have of the growth center alternatives and how each miner compares the alternatives to the present location. Attitudes are subjective, influenced by experience, social class, and education. The influence of the mining subculture as well as the age and residential backgrounds of the miners should also be apparent.

Background Information

To assess the information possessed by the miners, a survey question asked the miners about their direct experiences with the designated growth center alternatives. The amount of direct experience was measured by reported visitations. With two exceptions, a majority of the respondents had visited the nodes in the designated growth centers *many* (more than five) times. The exceptions were Mason, West Virginia,

TABLE 4.—Miner Backgrounds: Birthplaces and High Schools, Sample Population, N = 100.

	Birthplaces	High School
Impact Area*	62	76
Ohio Impact Counties	55	69
Athens	13	18
Gallia	16	12
Jackson	9	10
Meigs	14	25
Vinton	3	4
Other Ohio Counties	13	6
Mason County (W. Va.)	7	7
Other West Virginia Counties	16	9
Other States	9	4
No High School		5

*Designated by impact studies.

with 45% listing many and McArthur with 44% listing many. From best to least known, the nodes are Wilkesville, Gallipolis, Athens, Pomeroy-Middleport, Jackson-Wellston, Albany, Point Pleasant, Mason, and McArthur.

Attitudes Toward Alternatives

Each individual develops impressions about alternative locations through visits and other experiences. These impressions can be tested by checking one's attitudes toward the alternatives. In this study, the miners were asked to rank the places as potential locations for their residence. The choice was made by arranging them in order from best choice (equal to 1) to worst choice (equal to 9). If there had been perfect agreement on the alternatives, the numbers would be clearly stated: 1 equals the best choice, 4 or 5 a middling choice, and 9 the worst choice.

The order by mean ranking was: Albany, Gallipolis, Jackson-Wellston, Pomeroy-Middleport, Wilkesville, McArthur, Athens, Point Pleasant, and Mason (Table 5). Looking over these rankings, one finds unusual distributions for Athens with approximately

TABLE 5.—Attitudes Toward Alternative Locations for Residence, Rankings by Numbers*, N = 100.

Place	Mean	1	2	3	4	5	6	7	8	9	No Response
Albany	3.36	20	18	20	15	5	6	6	6	1	3
Athens	4.93	11	11	12	13	10	8	9	5	19	2
Gallipolis	3.56	20	8	20	19	14	6	3	6	1	3
Jackson-Wellston	4.11	13	15	13	13	13	13	13	2	3	2
Mason (W. Va.)	6.50	2	6	5	9	6	5	14	23	27	3
McArthur	4.90	4	12	12	12	15	14	11	9	8	3
Point Pleasant	6.08	5	4	5	7	12	7	14	26	16	4
Pomeroy-Middleport	4.41	15	7	12	14	11	16	12	5	5	3
Wilkesville	4.87	9	19	10	9	5	13	6	5	21	3

*Modal ranking(s) in bold face type. Lower numbers are preferred locations.

TABLE 6.—Attitudes Toward Alternative Locations for Residence, Rankings by Descriptive Categories, (percentages), N = 100.

Place	Top Three 1-3	Middle Three 4-6	Bottom Three 7-9
Albany	59.8	26.8	13.4
Athens	34.6	31.6	33.7
Gallipolis	49.5	40.2	10.3
Jackson-Wellston	41.8	39.8	18.4
Mason (W. Va.)	13.4	20.6	66.0
McArthur	28.9	42.3	28.9
Point Pleasant	14.6	27.1	58.3
Pomeroy-Middleport	35.1	42.3	22.7
Wilkesville	39.2	27.8	33.0

one-third of the respondents in each of the descriptive categories: best (1-3), middle (4-6), and worst (7-9) (Table 6). Otherwise, the pattern tended to be quite uniform with agreement over the alternatives.

A different question, yet one that sought an evaluative response, asked the respondents to rank com-

munities overall in comparison with the present location. Additional names of places were added to the list to include places not included in the growth centers (Table 7). The modal comparisons were *same* for all except Cheshire, Gloucester, Mason, Nelsonville, Racine, Rutland, Syracuse, and Vinton, which were judged as *worse*. No modal score was better.

Whether the question asked to evaluate places for the existing house or the overall judgment on locations, the responses tended to be neutral to negative. No single place, town, stood out as an ideal location. No place, including even the smaller villages and hamlets, was ranked as better than the existing rural or non-growth center location.

Cost of Living

Since relative cost of living in alternative locations influences residential choice, the miners were asked to compare the expenses in the present location to the expenses in the growth centers (Table 8). In this instance, the only node judged to be less expensive

TABLE 7.—Comparisons of Alternative Locations with Present Residence. Ranking by Worse, Same, or Better, N = 100.

	Modal Score	Worse	Same	Better	No Response
Albany	Same	30	56	7	7
Athens	Same	28	39	29	4
Cheshire	Worse	41	39	8	12
Gallipolis	Same	16	44	35	5
Gloucester	Worse	55	26	5	13
Jackson-Wellston	Same	19	53	23	5
Mason (W. Va.)	Worse	44	41	2	13
McArthur	Same- Worse	41	41	5	13
Nelsonville	Worse	47	32	7	14
Point Pleasant	Same	26	45	17	12
Pomeroy-Middleport	Same	37	43	14	6
Racine	Worse	41	40	4	15
Rio Grande	Same	25	46	15	14
Rutland	Worse	53	32	6	9
Syracuse	Worse	45	29	3	23
Vinton	Worse	44	40	6	10

TABLE 8.—Comparisons of Expenses of Alternative Locations with Present Residence, N = 100.

	Modal Score	More	Same	Less	Don't Know
Albany	Same	34	39	29	6
Athens	More	73	18	6	3
Gallipolis	More	55	32	8	5
Jackson-Wellston	Same	37	42	12	9
Mason (W. Va.)	Same	37	38	10	15
McArthur	Same	25	44	14	17
Pomeroy-Middleport	Same	27	50	16	7
Wilkesville	Less	26	29	40	5
Point Pleasant	More	49	32	8	11

was Wilkesville, a town that lies close to the mines where travel costs would be low. However, it did not excel on any other basis and was not ranked a better place to live.

Residential Satisfaction

The previous sections suggested that the miners were satisfied with their present location. Further substantiating this was a question asking for an overall neighborhood rating. The summary responses were: 25% excellent, 55% good, 15% fair, and only 2% poor. By county, the modal response was good in each county with these percentages ranking excellent: Athens, 33%; Gallia, 27%; Jackson, 25%; Meigs, 28%; Vinton, 20%; and Mason (W. Va.), 29%. This is consistent with recent opinion surveys which regularly find either the farm, open country, or the small town to be the preferred residential environment. Similar to the rest of the nation in stating a preference for open space living places yet different in their ability to live in the desired *country* environment, these miners live in the preferred location of many citizens.

Public Services

An open-ended question on the most important local public services was asked by the interviewer to determine which services would be considered most important. The order in frequency of mention was schools, roads, medical, water-sewer, police-fire, shopping, and recreation. The top two are larger, regional services; water-sewer and police-fire are usually municipal-local services requiring concentrated population. Medical plus shopping and recreation usually vary with the population size of the area. The initial items on the list do not diverge from the items which appeared on the primary reasons for choice of a neighborhood noted around Columbus, Ohio, by Bracey (1). Part of the issue is in determining what is a *good* road or school. Another point would be how important these services are in relationship to country living. If numbers of people are needed to support an impor-

TABLE 9.—Coal Miners' Rankings of Variables on Their Overall Importance in Residential Selection, N = 100.

1—Good schools
2—Open space
3—Accessibility (easy to get to by road)
4—Quiet
5—Low rent or price
6—Near to school
7—Near to work
8—Good neighbors
9—Near to family and friends
10—Near to church
11—Near to parks and playgrounds

tant service, the choice is between concentration into centers or satisfaction with a lower level of service.

In a later portion of the survey, the miners were asked to rate the center's services as inadequate, average, or better than average for the area. The results show that the miners consider all offerings to be about the same except that Athens was better than average in schools, shopping, and police-fire. Gallipolis had a better rating on medical care. All of the rest were average or below average for the area. Although another observer might rank one town's service array as superior to that in another, the miners seemed to care very little about these differences.

For the most important service, *schools*, only Athens (unpopular for other reasons) stood out. No place was judged better on roads. Overall one growth center was about the same as another, with no particular advantage associated with any one of them.

Choice of Residential Location

Choosing among a list of variables that gives alternative reasons for selecting a residential location, the miners ranked *good schools* at the top (Table 9).^a

^aNote that the open-ended question on important services discussed above preceded this item in the interview.

TABLE 10.—Percentages of Coal Miners Who Considered Variables as Important in Their Residential Selection, N = 100.

	All	Athens	Gallia	Jackson	Meigs	Vinton	Mason (W. Va.)
Low Rent or Price	84	75	81	100	88	60	86
Near to Church	40	38	42	25	44	40	57
Neighbors	81	67	92	75	84	100	71
Near to Family and Friends	59	54	58	67	56	40	86
Easy to Get to by Road	97	92	100	100	76	100	100
Near to Work	78	71	85	83	88	60	43
Near to Schools	78	71	85	83	64	100	100
Near to Parks and Playgrounds	33	46	38	17	16	46	57
Good Schools	93	86	96	100	88	100	100
Open Space	92	96	88	92	88	100	100
Quiet	88	86	81	83	92	100	100

Open space placed second and accessibility, *easy to get to by road*, was third in the ordering. *Quiet* and housing costs, *low rent or price*, were next, and the proximity variables appeared on the bottom half of the listing. Elements in this list resemble the points made earlier on the Columbus, Ohio, study.

Table 10 shows the overall and single county percentages of coal miners who evaluated the various variables as important. This table varies from the preceding ones in that it tallies only the *important* and *very important* responses and ignores the *neutral*, *unimportant*, or *very unimportant* responses.

When the responses of each county's miners are inspected for a higher percentage than overall, the following results appear. Athens County miners emphasized parks and open space; Gallia County miners noted neighbors, access, proximity to schools, and proximity to playgrounds. For Jackson County

miners, price or rental, proximity to family and friends, proximity to school and work, and the quality of school were important. Meigs County miners emphasized price or rental, proximity to church, neighbors, quiet, and proximity to work. Vinton County miners noted neighbors, proximity to schools and parks, school quality, open space, and quiet. The Mason County miners emphasized proximity to church, family and friends, schools, and parks; they also noted school quality, open space, and quiet.

The above sections are blunt attempts to gauge the miners' attitudes toward the designated growth areas or centers. The evaluation sections showed that: 1) no growth center was really a competitor for the existing location, and 2) no place has a higher value (is better) than the present one. In some sections, the magnitude (the degree of feeling) was established.

The "Trigger"

A crucial factor in mobility is the *trigger*—usually defined as deprivation, predisposition, or stresses—which causes the strain that may result in a move. The effect of such strain varies with the individual and also by cultural group. The amount of acceptable strain will also be influenced by the size and the facilities of the present house and its surrounding social environment. Accessibility is also a factor.

One way of estimating potential strain is to study the work journeys undertaken on a daily basis. According to Lapin, the 30-minute work journey is the norm. Time-distance work journeys in Philadelphia ranged from 20 minutes or slightly more for proprietors to 35-minute journeys for blue collar workers. Although remoter places might be expected to foster longer work journeys, even in places with populations from 5,000 to 25,000, the 20-mile limit was the rule for all except 3.4% of the workers (8). In a more recent work, Johnson, Salt, and Wood argued that the normal travel area of the individual household is clearly related to the work journey distances accept-

TABLE 11.—Distances from Residences to Mines, (percentages).

	Less than 15 miles	15-29 miles	More than 29 miles
1973			
N = 170	32.5	39.5	28.0
1976			
N = 1270	31.7	52.1	16.1

TABLE 12.—Percentage of Miners Using Carpools, N = 100.

Athens County	71.1
Gallia County	53.8
Jackson County	75.0
Meigs County	64.0
Vinton County	80.0
Other Ohio	100.0
Mason County (W. Va.)	85.7

TABLE 13.—Miners' Estimates of Distance Between the Closest Edge of the Node and the Mines, (percentages), N = 100.

	Estimate Within 10 Miles	Under Estimated by 10 Miles	Over Estimated by 10 Miles	No Response
Athens	66	15	8	11
Albany	56	17	20	7
Gallipolis	56	1	36	7
Jackson-Wellston	52	2	35	11
Mason (W. Va.)	47	6	31	16
McArthur	28	1	41	30
Point Pleasant	48	1	35	16
Pomeroy-Middleport	59	1	30	10
Wilkesville	92	0	4	4

able to the working members of the family (5, p. 80). Labor markets must, therefore, vary with the behavior of various occupational groups. Here the 30-minute range/20-mile limit is used to test the potential for strain among the coal miners.

Table 11 displays the relative concentration of work journeys for two time periods. The first includes salaried employees as well as miners. For both time periods, the largest portions reside in the 15-29 mile ring. If the 20-mile rule applies in this context, this group must experience some stress from the journeys over township and county roads at reduced speeds and also through towns and cities with their reduced speed zones. Travel times for most people in the middle group, therefore, will exceed the 30-minute norm and may also surpass the 20-mile distance. Under these conditions, the average citizen, according to Lapin's findings, might have a propensity to move. This condition is certainly the case in the group that lives at distances in excess of 29 miles.

The conditions noted above, however, may cause less stress than might be expected because blue collar

workers accept longer work journeys in place of the other alternatives, especially moving away from nearby family and friends. Overall, the majority (two out of three) of the miners use a carpool. By county (Table 12), a majority in each uses a carpool, with slightly fewer carpools in Meigs and Gallia counties. One suspects that the carpool, which permits time to be shared with family or friends or neighbors, might make the extended journeys less tedious than under those conditions which usually characterize the work journey.

To test whether the distance relationships between the growth areas or centers and the mines are accurately known, the miners gave individual estimates of the distance between the mine and each growth area node. A majority could estimate the correct distance for all centers except Mason, McArthur, and Point Pleasant. Those estimates deviating from the correct ones were overestimates of the distance (Table 13). Most centers were perceived as more distant from the mines than they actually are. Athens, Albany, and Wilkesville were exceptions.



FIG. 2.—The Southern Ohio Coal Company miners interviewed in this study prize their rural living environment. It is unlikely that they will move to the growth centers which would produce the greatest economic impact from the development of the mine-power plant complex.

Photo by Gary Haynes, Extension program assistant, GROW project

The reaction of the individual to his dwelling was not specifically addressed in the survey. The general characteristics of the dwelling were noted by the interviewer, however. The overwhelming majority lived in single family units. One in four of these units was a house trailer, and the rate of trailer occupation was several times the area rate which is high compared to the state. One in ten lived with parents, and almost the same portion had never moved (although they do not now live with their parents).

The limited discussion of potential *trigger* mechanisms showed no indication of future large scale mobility. The longer work journeys featured carpools and housing problems had been solved by house trailers.

The Extended Family

Additionally, the extended family may well act as a deterrent to mobility in this area.⁷ Studies of working class relocation efforts in East London allow contrasts with the middle class emphasis on the house as structure. Those studies found that the residence expanded from the dwelling to include an area, a milieu. The manual laborers identified with the place as home; Fried uses the term spatial identity. Satisfaction with places results from the set of vast and interlocking social networks in the area (2). Young and Willmot gave information evidence of such a network in their measures of stability in an East London relocation area. More than half were born in the area, half lived in the same district as their parents, and some still lived with their parents (13). These working class people also reported high levels of residential satisfaction. Their roots created place identity.

In the British mining subculture with its general anti-urban bias, Taylor developed a four-way typology of moving potential including aspirations and dislocation which was based on propinquity of relatives. The migrant was found to be less indigenous than the non-migrant. Taylor also noticed a motivational stage in migration from the cumulative effects of perceived strain, aspirations, dislocation, a generalized belief that conditions are better elsewhere, the feasibility of the move, and the *trigger* (12).

Both the relocation literature and Taylor's work suggest that the conditions in the impact area are not at all unique. In this instance involving miners in southern Ohio, longer work journeys and mobile homes allow the newly hired miner to remain in a valued home environment near family and friends.

⁷Although the concept, extended family, defies easy definition, in this paper it is the network of social relationships typical of a place where the family lives. The house as structure is less important than the home area.

The *country* aspect of the home environment makes it that much more desirable.

Future Intentions

When actually asked about their moving intentions, 77% said they intended to stay in their present location, 14% said they planned to make *local moves*, and 7% were more specific, saying they planned to move out into the country near their present residence. The remaining 2% said they planned to move out of the area and find a different job.

CONCLUSIONS

The results of this study indicate that the probability of movement into the designated growth areas or centers is very low. This resistance comes from the duration of residence, high satisfaction levels in the rural location, and probably the strength of proximate social relationships. No real advantage in moving can be seen and the loss of a prized environment would certainly follow. These miners know the alternatives and choose to remain in their rural setting.

Such results might have been anticipated since the Appalachian section of Ohio has a fairly dense rural population with ties to past mining ventures, relatively high rates of reported unemployment, and typically low labor force participation rates. A trainable mining labor force was available and those hired were not *new* to the area at all. The residence choices were based on much more than the existing service array.

In another mining area which did not have such a potential work force, the growth center strategy might have been more successful. Areas without the Appalachian custom of rural nonfarm residences might likewise have had a more concentrated growth pattern.

LITERATURE CITED

1. Bracey, Howard E. 1964. *Neighbors; Subdivision Life in England and the U. S.* Louisiana State University Press, Baton Rouge, p. 29.
2. Fried, Marc. 1963. *Grieving for a Lost Home. In The Urban Condition; People and Policy in the Metropolis*, edited by Leonard J. Duhl. Basic Books, New York.
3. Hammer, Greene, Siler Associates. 1973. *High Priority Recommendations for Immediate Action Programs—Southeast Ohio Impact Area.* 1140 Connecticut Ave., N. W., Washington, D. C.
4. Hammer, Siler, George Associates. 1973. *Final Recommendation for Immediate Action Programs—Southeast Ohio Impact Area.* 1140 Connecticut Ave., Washington, D. C.
5. Johnson, J. H., J. Salt, and P. A. Wood. 1975. *Housing and the Geographical Mobility of Labour in England and Wales: Some Theoretical Considerations.* *In People on the Move*, edited

- by Leszek Kosinski and R. Mansell Prothero. Methuen and Co., Ltd., London.
6. Knipe, Edward E. and Helen M. Lewis. 1968. Toward a Methodology of Studying Coal Miners' Attitudes. National Technical Information Service, PB 184665, p. 12.
 7. Lansing, J. and N. Barth. 1964. The Geographic Mobility of Labor. U. S. Dept. of Commerce, Area Redevelopment Administration, Economic Development Research, pp. 7-9. (Government Printing Office, Washington, D. C.)
 8. Lapin, Howard S. 1964. Structuring the Journey to Work. Regional Science Association, Philadelphia, p. 80.
 9. Levin, Kurt. 1951. Field Theory in Social Science; Selected Theoretical Papers. Edited by Dorwin Cartwright. Harper and Row, New York, pp. 196-289.
 10. Long, Larry H. and Celia G. Boertlein. 1977. The Geographical Mobility of Americans; An International Comparison. U. S. Dept. of Commerce, Bureau of the Census, Current Population Reports, Special Studies Series: P-23, No. 64. (Government Printing Office, Washington, D. C.)
 11. Pennsylvania Power and Light Co. 1976. A Monitoring Study of Community Impacts for the Susquehanna Steam Electric Station. p. 406.
 12. Taylor, R. C. 1969. Migration and Motivation, A Study of Determinants and Types. *In* Migration, edited by J. A. Jackson. University Press, Cambridge, p. 132.
 13. Young, Michael and Peter Willmott. 1963. Family and Kinship in East London. Penguin Books, Baltimore, revised edition, pp. 34-37.

APPENDIX

Survey Questionnaire

In general how would you rate the neighborhood right around your home as a place to live?
 _____excellent _____good _____fair _____poor

How long have you lived in your present location? _____(years)

Think of your present neighborhood and tell me, what are the advantages of living here?

What are the disadvantages of living here?

Have you ever been to: (Mark X under the best response)

	Never	Once	Several Times (2-5)	Many Times (More than 5)	Have Lived There
Athens	_____	_____	_____	_____	_____
Albany	_____	_____	_____	_____	_____
Gallipolis	_____	_____	_____	_____	_____
Jackson-Wellston	_____	_____	_____	_____	_____
Mason, W. Va.	_____	_____	_____	_____	_____
McArthur	_____	_____	_____	_____	_____
Point Pleasant, W. Va.	_____	_____	_____	_____	_____
Pomeroy-Middleport	_____	_____	_____	_____	_____
Wilkesville	_____	_____	_____	_____	_____

In your judgment, how far are each of these places from the mine where you work? (Use miles)

_____ Albany	_____ Jackson-Wellston	_____ Point Pleasant, W. Va.
_____ Athens	_____ Mason, W. Va.	_____ Pomeroy-Middleport
_____ Gallipolis	_____ McArthur	_____ Wilkesville

In your opinion, what are the most important public services in any place?

For each of the following items, decide which are important in the choice of a home.

	Very Important	Important	Neutral	Unimportant	Very Unimportant
Low rent or price	_____	_____	_____	_____	_____
Near to church	_____	_____	_____	_____	_____
Neighbors	_____	_____	_____	_____	_____
Near to friends and family	_____	_____	_____	_____	_____
Easy to get to by road	_____	_____	_____	_____	_____
Near to work	_____	_____	_____	_____	_____
Near to schools	_____	_____	_____	_____	_____
Near to parks and playgrounds	_____	_____	_____	_____	_____
Good schools	_____	_____	_____	_____	_____
Open space	_____	_____	_____	_____	_____
Quiet	_____	_____	_____	_____	_____

Overall, how would you rank these communities compared to your own?

	Better	Same	Worse
Albany	_____	_____	_____
Athens-The Plains-Chauncey	_____	_____	_____
Cheshire	_____	_____	_____
Gallipolis	_____	_____	_____
Glouster-Trimble-Jacksonville	_____	_____	_____
Jackson-Wellston	_____	_____	_____
Mason, W. Va.	_____	_____	_____
McArthur	_____	_____	_____
Nelsonville	_____	_____	_____
Point Pleasant, W. Va.	_____	_____	_____
Pomeroy-Middleport	_____	_____	_____
Racine	_____	_____	_____
Rio Grande	_____	_____	_____
Rutland	_____	_____	_____
Syracuse	_____	_____	_____
Vinton	_____	_____	_____

Most miners moving into this area probably have to find mortgage money or credit if they want to buy a home. Do you think that they will have an easy time of it? _____ Yes _____ No Why? _____

Do you intend to move within the next year? _____ Yes _____ No

If yes, why? _____

If yes, where? _____

If yes, in choosing a place to live, which relatives would you choose to live by? _____

Where were you born? _____

Where did you go to high school? _____

Age group: _____ Less than 30 _____ 30-45 _____ More than 45

How did you learn about this job?

_____ union _____ newspaper _____ employment agency _____ other

How do you get to work?

Do you have a carpool?

Compared to expenses in your present location, do you think these places would be more, less, or about the same in expenses compared to your present home?

	More	Same	Less
Albany	_____	_____	_____
Athens	_____	_____	_____
Gallipolis	_____	_____	_____
Jackson-Wellston	_____	_____	_____
Mason, W. Va.	_____	_____	_____
McArthur	_____	_____	_____
Pomeroy-Middleport	_____	_____	_____
Wilkesville	_____	_____	_____
Point Pleasant, W. Va.	_____	_____	_____

In general, why did you check **more** in those listed above?

If you had your same home and it could be located in any of the communities we have been considering, how would you rank these places? Arrange them in order from best choice (1) to worst choice (9).

_____ Albany	_____ Jackson-Wellston	_____ Point Pleasant, W. Va.
_____ Athens	_____ Mason, W. Va.	_____ Pomeroy-Middleport
_____ Gallipolis	_____ McArthur	_____ Wilkesville

Perhaps you would prefer to live in a place other than a small-sized town. Would you prefer to live in the country (outside the city limits) as opposed to one of the towns we have been discussing?

_____ Yes _____ No _____ Uncertain

What are the advantages of living in the country in your opinion? _____

Would a change in your shift assignment cause a re-evaluation of the importance of the factors that we mentioned in the earlier question? _____ Yes _____ No

Would gasoline rationing cause you to rethink your reasons for choosing a home location?

_____ Yes _____ No

Would gasoline at 75¢ per gallon? _____ Yes _____ No

Would gasoline at \$1.00 per gallon? _____ Yes _____ No

Can you think of any other factor that would?

This page intentionally blank.

BETTER LIVING IS THE PRODUCT

of research at the Ohio Agricultural Research and Development Center. All Ohioans benefit from this product.

Ohio's farm families benefit from the results of agricultural research translated into increased earnings and improved living conditions. So do the families of the thousands of workers employed in the firms making up the state's agribusiness complex.

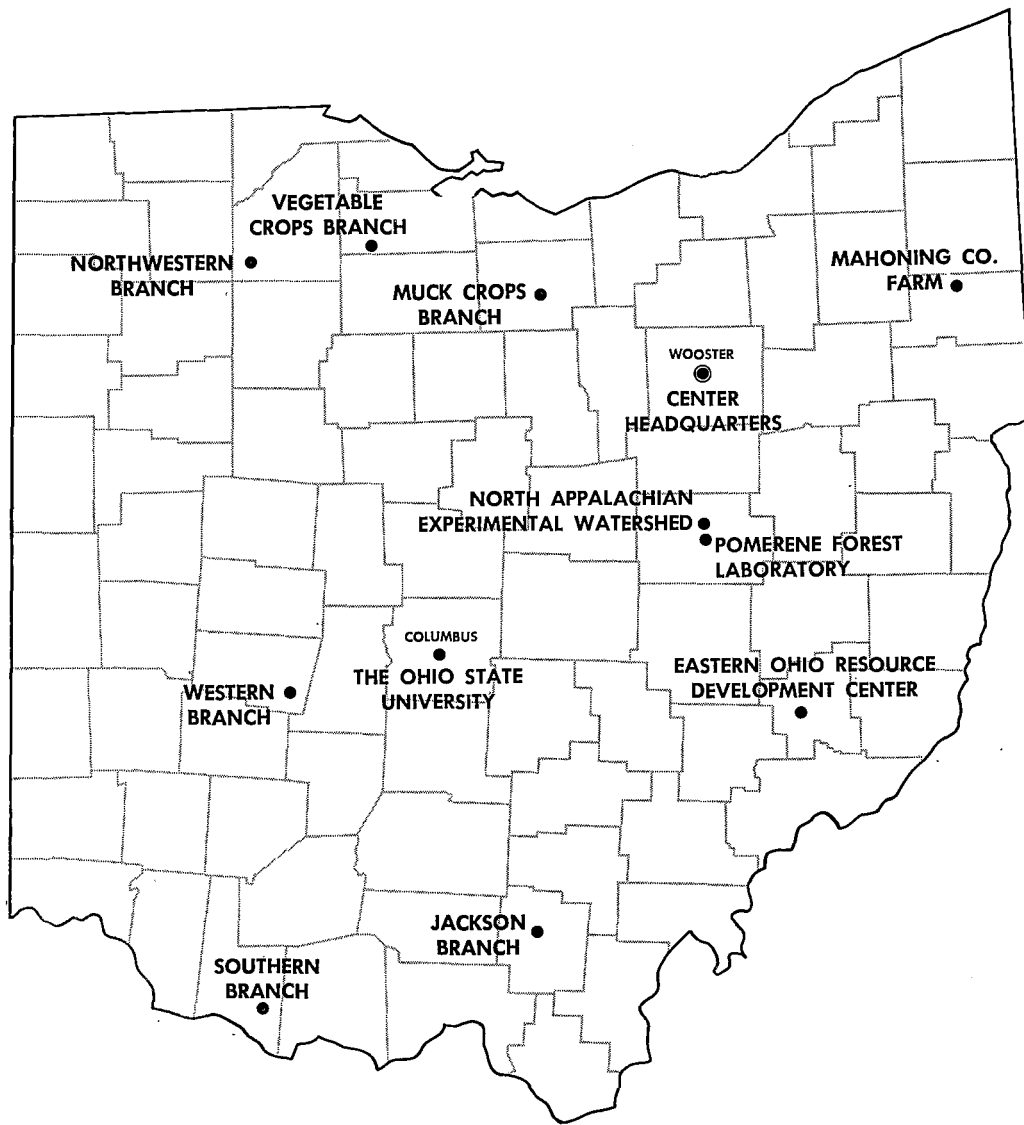
But the greatest benefits of agricultural research flow to the millions of Ohio consumers. They enjoy the end products of agricultural science—the world's most wholesome and nutritious food, attractive lawns, beautiful ornamental plants, and hundreds of consumer products containing ingredients originating on the farm, in the greenhouse and nursery, or in the forest.

The Ohio Agricultural Experiment Station, as the Center was called for 83 years, was established at The Ohio State University, Columbus, in 1882. Ten years later, the Station was moved to its present location in Wayne County. In 1965, the Ohio General Assembly passed legislation changing the name to Ohio Agricultural Research and Development Center—a name which more accurately reflects the nature and scope of the Center's research program today.

Research at OARDC deals with the improvement of all agricultural production and marketing practices. It is concerned with the development of an agricultural product from germination of a seed or development of an embryo through to the consumer's dinner table. It is directed at improved human nutrition, family and child development, home management, and all other aspects of family life. It is geared to enhancing and preserving the quality of our environment.

Individuals and groups are welcome to visit the OARDC, to enjoy the attractive buildings, grounds, and arboretum, and to observe first hand research aimed at the goal of Better Living for All Ohioans!

The State Is the Campus for Agricultural Research and Development



Ohio's major soil types and climatic conditions are represented at the Research Center's 12 locations.

Research is conducted by 15 departments on more than 7000 acres at Center headquarters in Wooster, eight branches, Pomerene Forest Laboratory, North Appalachian Experimental Watershed, and The Ohio State University.

Center Headquarters, Wooster, Wayne County: 1953 acres

Eastern Ohio Resource Development Center, Caldwell, Noble County: 2053 acres

Jackson Branch, Jackson, Jackson County: 502 acres

Mahoning County Farm, Canfield: 275 acres

Muck Crops Branch, Willard, Huron County: 15 acres

North Appalachian Experimental Watershed, Coshocton, Coshocton County: 1047 acres (Cooperative with Science and Education Administration/Agricultural Research, U. S. Dept. of Agriculture)

Northwestern Branch, Hoytville, Wood County: 247 acres

Pomerene Forest Laboratory, Coshocton County: 227 acres

Southern Branch, Ripley, Brown County: 275 acres

Vegetable Crops Branch, Fremont, Sandusky County: 105 acres

Western Branch, South Charleston, Clark County: 428 acres