DOCUMENT RESUME

ED 076 700 TM 002 709

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TITLE Predicting Mobility Using Personal and Geographic Characteristics and Its Use in the Needs Assessment for Vocational Programs.
PUB DATE 26 Feb 73
NOTE 25p.; Paper presented at annual meeting of American Educational Research Association (New Orleans, Louisiana, February 25-March 1, 1973)

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Age; Educational Background; *Mobility; Occupational Information; *Prediction; Predictor Variables; Program Planning; *Surveys; Tables (Data); Technical Reports; *Vocational Education

ABSTRACT

Three hundred randomly selected subjects were interviewed concerning their personal characteristics and the geographic area of residence. These factors, including occupation, age, education level, and measures of mobility, were analyzed using stepwise multiple regression to isolate predictors of personal mobility. Multiple correlation coefficients above .85 were obtained when eight independent variables were used. The most useful predictors of mobility were occupation, age, and education level. Results of this study will provide the planners of occupational education programs with knowledge about personal mobility which can be used in conjunction with labor supply and demand when planning for additional vocational programs. (Author)

PREDICTING MOBILITY USING PERSONAL AND GEOGRAPHIC CHARACTERISTICS

AND

ITS USE IN THE NEEDS ASSESSMENT FOR VOCATIONAL PROGRAMS

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A paper presented to the Annual Meeting of the American Educational Research Association, New Orleans, Louisiana

February 26, 1973

Background and Purpose

Since the passage of the Vocational Education Act of 1963, vocational education managers have been required to submit state and local plans for their programs. Amendments to the Act in 1968, coupled with legislation related to Manpower Training Programs have now placed comprehensive planning requirements on all state and local agencies involved in occupational education.

The justification of ~~current and~~ proposed program offerings represents a large component of these required plans. By statute local programs must be justified in terms of local labor demands, although state, regional and national trends are usually cited. Local and state plans have traditionally considered four variables in the planning of new programs. They are:

1) The manpower demand for the specific occupational program in question.

2) Existing program efforts by the applicant or neighboring institutions in the occupation in question.

3) Interest (voter and student) in the proposed occupational program.

4) The cost.

However, as states began to construct a network of occupational training facilities, and more and more federal programs were funded to provide training, it became clear that duplication of effort and other factors of influence needed consideration. One factor of concern was the geographic mobility of target population groups.

Fairchild (1970), Lansing (1967), and Marsh (1967; 14-55) have conducted studies which document the relatively high geographic mobility of the American people. Buzzell (1967) documented geographic mobility among electronic technicians in the middle atlantic states. Coe (1964), in a ten year follow up study of vocational technical high school graduates, found wide ranging mobility in that time period. Lee (1966) found similar results in his study. Shea (1970) noted that women were also geographically mobile.

While the debate continues over whether one should plan occupational education programs that reflect local versus regional or national manpower needs, the essential point of contention centers on whether or not graduates are geographically mobile. To the extent that the labor force (or subsets of it) are mobile, planning should reflect the needs of a larger geographic or labor market area. In-depth studies to answer the mobility question have not been conducted.

The purpose of this study was to begin the examination of the geographic mobility of labor in New England. The study was designed to determine those personal and geographic characteristics which were useful in predicting geographic mobility. If predictors were identified, they would be examined in terms of their utility in the planning of occupational training programs.

Procedures

Four existing data sets were examined to determine if geographic mobility varied as a function of sex, age, education, marital status, family size, income and occupation.

Mobility was defined as one or more moves during the period 1969 - 1970.

Cross tabulations from the four data sets were analyzed in an effort to identify trends which held across more than one data set.

If particular characteristics seemed to be useful as predictors; the building of regression models would follow.

The four data sets analyzed were:

1) U. S. Department of Commerce; Bureau of the Census - 1970 total population tapes (4th count) for the six New England states

2) Regional Medical Programs, University of Vermont, Survey of Southern Connecticut Valley - a wide ranging health and economic survey of a rural area (N=656)

3) Rhode Island Health Services Research, Inc., Health Services Utilization Survey - a state wide (N=2252) study in Rhode Island - primarily sub-urban data

4) Survey Research Program, Joint Center for Urban Studies (Massachusetts Institute of Technology; Harvard University); Boston Area Study - an in-depth study of over 600 Boston residents

Analyses

The Census Data

Table 1 shows the total geographic mobility of the population in each of the six New England states between 1965 - 1970. There was generally greater mobility among rural non-farm populations than either rural farm or urban sub-groups. It was also noted that the more rural states of Vermont, New Hampshire and Maine had a higher (43.32%) mobility rate than the southern New England states (40.89%). The overall mobility rate for the region was 40.91%. The national rate approaches 47%.

While Table 1 documents total mobility, the percentage of New Englanders who moved during the last five years, it fails to reveal the starting point of those moves. Were the people moving from town to town, county to county, or across state lines?

Table 2 indicates that more than half of the moves which New Englanders made were relatively short, within the same county. When Table 3 is considered, we found that nearly 70% of the moves were within state.

Table 4 shows that 9.09% of the moves were across state lines, but to other states in New England. Thus, fully 92.7% of the moves in New England were to other localities in the region.

Tables 5 and 6 further illustrate that people in New England tend to move, but within the region, and that the vast majority of the population was born in the state where they resided in 1970.

Localized Surveys

Mobility by Sex: Table 7 shows that generally females are more mobile than males. The urban area of Boston experiences more mobility than the suburban areas of Rhode Island. The rural Connecticut Valley was the least mobile of the three.

Mobility by Age: Table 8 illustrates the unusually high mobility rates for the 18 - 24 and 25 - 34 age groups. In Boston the 18 - 24 mobility rate was 85.07%. As other studies have documented, mobility decreases with age.

Mobility by Education: Table 9 shows that geographic mobility increases as the head of household acquires additional years of education. Again, this fact had been documented in prior studies.

Mobility by Marital Status: Mobility by marital status did not reveal the across study congruence evidenced in other characteristics. Table 10 shows the results of these analyses. Generally, single people are more mobile than married people. This trend was not found in the rural sample from the Connecticut Valley. In that case, widowed and married people were more mobile than single or divorced members of the population.

Mobility by Family Size: Table 11 documents mobility as a function of family size. No clear trends either across studies or by family size was found. Generally, very small families were more mobile, although families of six and seven were more mobile than those of two or four. Again, urban populations showed higher percentages of mobility.

Mobility by Income: Mobility by income (Table 12) was most difficult to interpret. One consistent fact was noted: across all studies the lowest income group (less than $3000) was the most mobile. The average was nearly 50%. Wide variations by income level and across studies were documented for all other categories.

Mobility by Occupation: One difficulty encountered in this study was the different occupational classifications employed. The Boston and Connecticut Valley studies utilized the Michigan Occupation Code, a listing of approximately 100 categories. The Rhode Island study used the Bureau of Census coding for nearly 700 occupations. While there are some general similarities between the two coding systems, it is difficult to make detailed comparisons.

Tables 13, 14 and 15 show the mobility by occupation for the Boston, Rhode Island and Connecticut studies respectively. As indicated by the above tables, the order of mobility ranged from Boston (30.38% for all occupations), to Rhode Island (25.8% for all occupations), to Connecticut (14.01% for all occupations). Without citing each occupation, it was generally found that those in professional and technical occupations were more mobile than those in less skilled and unskilled occupations.

Conclusions

The results of this study have identified the following major conclusions concerning mobility in New England.

* GEOGRAPHIC MOBILITY IN NEW ENGLAND (40.9%) IS LESS THAN FOR THE NATION (47%).

* NEARLY 93% OF ALL MOVES IN NEW ENGLAND WERE MADE TO OTHER STATES IN THE REGION DURING THE 1965 - 1970 PERIOD.

* THE VAST MAJORITY OF NEW ENGLANDERS (76%) LIVE IN THE STATE OF THEIR BIRTH. FULLY 93% OF NEW ENGLAND'S RESIDENTS WERE BORN HERE.

* THE URBAN AND SUBURBAN RESIDENTS WERE MORE MOBILE THAN THE RURAL FARM RESIDENTS.

* GENERALLY FEMALES ARE MORE MOBILE THAN MALES.

* THE AGE GROUPS 18 - 24 AND 25 - 34 HAVE THE HIGHEST RATES (UP TO 85%) OF MOBILITY.

* PEOPLE WITH MORE YEARS OF FORMAL EDUCATION ARE MORE MOBILE THAN THOSE HAVING LESS FORMAL EDUCATION.

* PEOPLE WITH VERY LOW INCOMES (LESS THAN $3000) ARE QUITE MOBILE (NEARLY 50%). THE TREND BETWEEN GREATER MOBILITY AND HIGHER INCOME WAS NOT CLEARLY DOCUMENTED ABOVE THE LOWEST INCOME LEVELS.

* GENERALLY, PEOPLE IN THE PROFESSIONAL AND TECHNICAL OCCUPATIONS WERE MORE MOBILE THAN THOSE IN SEMI-SKILLED OR UNSKILLED OCCUPATIONS.

Educational Implications

Personal mobility as a function of personal and geographic characteristics has been identified. This study was the first step in the building of a model of population mobility in New England. While certain relationships examined were not easily categorized, there are clues which should provide occupational education planners with better data for program planning.

It appears that the following considerations are in order:

* When planning for occupational education programs - primary consideration should be given to state manpower needs. Some consideration should also be given to regional needs. With 93% of New England's residents being natives and 93% of their moves being within the region, national trends become less relevant.

* When designing programs for certain population sub-groups (men, women, low income, educational background, age, occupation) the geographic area of concern for manpower demand can be more closely defined as a result of this study.

Additional Study

As with most research, this study poses nearly as many questions as it has answered. We have not examined reasons for mobility, local economic factors, nor how the studied characteristics may act in combination.

Two additional efforts are currently underway to assist in empirically defining mobility in more detail.

First, using the Boston study data base, regression models are being built with the characteristics identified in this study along with other possible predictors.

Secondly, in the near future additional census data will become available which will enable us to examine mobility by occupation for the entire New England region. This data, based on the 1% sample count, should provide extensive, recent data upon which to expand our preliminary conclusions.

TABLE 1

TOTAL GEOGRAPHICAL MOBILITY RATES PERCENTAGE OF NEW ENGLAND POPULATION - 1965-1970

POPULATION TYPE

	TOTAL	URBAN	RURAL NON FARM	RURAL FARM
Connecticut	41.41	40.97	43.72	32.65
Maine	41.11	44.09	38.92	28.79
Massachusetts	39.80	39.62	41.77	28.89
New Hampshire	44.29	44.28	45.62	27.77
Rhode Island	41.48	40.46	49.48	28.68
Vermont	44.56	44.21	47.29	25.96
New England	40.91	40.58	43.12	29.13

(Source: 1970 Census of Population, Fourth Count Summary Data, Table 28)

TABLE 2

PERCENTAGE OF POPULATION WHO MOVED, BUT WITHIN COUNTY LINES

POPULATION TYPE

	TOTAL	URBAN	RURAL NON FARM	RURAL FARM
Connecticut	23.56	24.42	21.00	16.51
Maine	23.92	25.75	22.48	17.49
Massachusetts	22.75	23.62	20.27	16.31
New Hampshire	20.97	22.82	19.31	12.50
Rhode Island	22.51	22.78	20.90	18.09
Vermont	22.82	22.54	23.90	16.09
New England	22.93	23.63	21.13	16.21

(Source: 1970 Census of Population and Housing, Fourth Count Summary Data, Table 28)

TABLE 3

PERCENTAGE OF POPULATION WHO STAYED WITHIN THE SAME STATE

BUT MOVED ACROSS COUNTY LINE

POPULATION TYPE

	TOTAL	URBAN	RURAL NON FARM	RURAL FARM
Connecticut	4.14	3.34	6.86	5.85
Maine	6.61	6.79	6.62	4.49
Massachusetts	6.64	6.20	9.31	5.55
New Hampshire	4.84	4.74	5.08	3.59
Rhode Island	3.86	3.68	5.20	3.06
Vermont	5.95	6.01	6.32	3.11
New England	5.64	5.20	7.26	4.73

(Source: 1970 Census of Population and Housing, Fourth Count Summary Data, Table 28)

TABLE 4

PERCENTAGE OF NEW ENGLAND POPULATION FIVE YEARS OLD AND OVER WHO MOVED ACROSS STATE LINES WITHIN THE NORTHEAST REGION BETWEEN 1965-1970 BY STATE OF 1970 RESIDENCE

STATES OF RESIDENCE 1970	PERCENTAGE MOVERS ACROSS STATE LINES
Connecticut	10.00
Manne	8.45
Massachusetts	7.22
New Hampshire	15.54
Rhode Island	10.97
Vermont	13.66
New England	9.09

(Source: 1970 Census of Population and Housing, Fourth Count Summary Data, Table 28)

TABLE 5

PERCENTAGE OF MOVERS FIVE YEARS OLD AND OVER WHO HAD MOVED BETWEEN 1965-1970 ACROSS STATE LINES BY NATIONAL REGION OF RESIDENCE IN 1965

STATE OF RESIDENCE, 1970	TOTAL NUMBER OF MOVERS ACROSS STATE LINES	REGION OF RESIDENCE, 1965			
		NORTH-EAST	NORTH-CENTRAL	SOUTH	WEST
Connecituct	256,437	60.21	12.24	18.67	8.88
Maine	73,407	62.29	9.36	17.57	10.78
Massachusetts	351,194	55.36	14.30	20.10	10.24
New Hampshire	98,045	74.56	7.08	11.12	7.24
Rhode Island	87,801	51.52	13.56	23.81	11.11
Vermont	52,765	75.74	7.04	10.63	6.59
New England	919,649	60.09	12.08	18.36	9.47

(Source: 1970 Census of Population and Housing, Fourth Count Summary Data, Table 28)

TABLE 6

PERCENT OF NATIVE PERSONS BY STATE AND REGION OF BIRTH

REGION OF BIRTH

STATE OF RESIDENCY 1970	BORN IN STATE	NORTHEAST	NORTHCENTRAL	SOUTH	WEST
Connecticut	67.52	22.98	3.27	5.08	1.15
Maine	82.95	12.39	1.62	2.15	0.89
Massachusetts	82.39	11.25	2.35	3.08	0.93
New Hampshire	61.87	31.88	2.42	2.62	1.21
Rhode Island	74.54	17.23	2.89	4.06	1.28
Vermont	72.66	22.41	2.05	1.93	0.93
New England	76.39	16.53	2.55	3.50	1.03

(Source: 1970 Census of Population and Housing, Fourth County Summary Data, Table 27)

TABLE 7

MOBILITY BY SEX

	BOSTON	RHODE ISLAND	SOUTHERN CONNECTICUT VALLEY
Male	30.31	26.49	18.45
Female	36.56	26.83	30.77

TABLE 8

MOBILITY BY AGE OF HEAD OF HOUSEHOLD

AGE IN YEARS	BOSTON	RHODE ISLAND	SOUTHERN CONNECTICUT VALLEY
18-24	85.07	64.88	33.33
25-34	55.84	48.02	45.16
35-44	33.17	25.21	18.18
45-54	13.20	13.03	14.71
55-64	16.46	8.31	6.02
65 +	11.21	6.50	6.67

TABLE 9

MOBILITY BY YEARS OF EDUCATION COMPLETED BY HEAD OF HOUSEHOLD

YEARS COMPLETED	BOSTON	RHODE ISLAND	SOUTHERN CONNECTICUT VALLEY
9	16.95	16.38	17.39
9-11	25.62	19.22	17.65
12	23.89	23.96	15.62
13-15	38.81	37.08	15.79
16	44.58	43.14	50.00
16 +	43.80		75.00

TABLE 10

MOBILITY OF MARITAL STATUS OF HEAD OF HOUSEHOLD

	BOSTON	RHODE ISLAND	SOUTHERN CONNECTICUT VALLEY
Married	29.30	25.25	19.16
Single	48.98	42.16	16.67
Widowed	23.19	9.35	26.67
Divorced or Separated	38.64	26.83	14.29

TABLE 11

MOBILITY PERCENTAGE BY TOTAL FAMILY SIZE

NUMBER IN FAMILY	BOSTON	RHODE ISLAND	SOUTHERN CONNECTICUT VALLEY
ONE	49.58	35.82	28.57
TWO	26.06	21.73	17.71
THREE	46.11	27.83	23.08
FOUR	23.08	27.66	27.54
FIVE	21.74	24.46	14.29
SIX	35.85	17.52	8.33
SEVEN	35.14	15.87	20.00
EIGHT OR MORE	6.67	24.56	17.39

TABLE 12

MOBILITY BY INCOME

HEAD'S INCOME 1970 ($)	BOSTON	FAMILY INCOME 1970 ($)	RHODE ISLAND	FAMILY INCOME 1969 ($)	SO. CONN. VALLEY
less than 3,000	56.00	less than 3,000	32.53	less than 3,000	60.00
3,000-4,999	45.45	3,000-4,999	30.77	3,000-4,999	zero cell
5,000-6,999	26.58	5,000-6,999	32.86	5,000-7,499	11.36
7,000-9,999	33.82	7,000-9,999	26.37	7,500-9,999	22.22
10,000-14,999	17.42	10,000-14,999	26.03	10,000-14,999	43.04
1,500 +	34.89	1,500 +	22.14	1,500 +	6.25

TABLE 13

MOBILITY BY OCCUPATIONS - BOSTON STUDY

OCCUPATIONS	RATE CATEGORY
Teachers (elementary, secondary, college) Engineers Technicians (airline pilots, navigators, draftsmen, conservationists) Architetcs Professional and Semi-Professional with college degree Managers and Officials Sales - higher status traveling skilled operatives	Over 30%
Lawyers and judges Self-employed businessmen earning more than $10,000 Stenographers, typists, secretaries Clerical Sales - lower status Foremen - skilled Craftsmen and skilled workers Protective service workers (Fire, Police) Other service workers	20-30%
Bookkeeper Unskilled laborers Private household workers General Sales Salesman, clerk	less than 20%

TABLE 14

MOBILITY BY OCCUPATIONS - RHODE ISLAND STUDY

OCCUPATIONS	RATE CATEGORY
Accountants Engineers, Scientists, Technicians Physicians Teachers (all levels) Management - Administrators Secretaries Electricians Autobody repairmen and mechanics Heavy equipment operators Filers, polishers, press operators Machine operators Armed Forces	Over 25%
Bookkeepers Mail carriers Clerks Carpenters Foremen Mechanics (except auto/heavy equipment) Painters Plumbers, pipefitters Railroad, bus .orkers Truck drivers Food services Health services Protective services	14-24%
Dispatcher Machinists Personal services Janitorial services Textile operations Checkers, examiners & inspectors; manufacturing Miscellaneous mechanics and repairmen	less than 14%

TABLE 15

MOBILITY BY OCCUPATIONS - SOUTHERN CONNECTICUT VALLEY

OCCUPATIONS	RATE CATEGORY
Teachers (all levels) Physicians and Surgeons Technicians (airline pilots, navigators Medical, dental, draftsmen, conservationists) Clerical Sales - higher status Craftsmen and kindred workers Bookkeepers	more than 14%
Managers, officials, proprietors Service workers (not protective, fire, health) Foreman - skilled workers	7-14%
Self-employed business Social & welfare workers Stenographers, typist, secretaries Sales - inside, clerks Protective service workers (Fire, Police) Farm laborers	less than 5%

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