Implications Of Occupational And Geographic Mobility Among College-Trained Workers For Southern Manpower Supply-Demand Balances#

RICHARD A. ENGELS*

National studies of manpower supply and demand can exclude consideration of migration streams without grave consequences for their findings. The balances of immigration and emigration may be significant for a few selected occupations, but in general the impact is trivial relative to the labor force as a whole and to other sources of trained workers.

Movement between occupations is recognized as a more serious concern to be dealt with regardless of the area covered by the research (U.S. Bureau of Labor Statistics, 1974). The burgeoning interest and activity in regional and state-level manpower studies call attention to both geographic and occupational movements of trained manpower. The intent of this paper is to evaluate the degree to which these two factors modify the manpower supply-demand picture for the Southern region, and to gauge the potential threat to the employment outlook of new Southern college graduates during the 1970's.

Although recent evidence indicates that the earlier U-shaped relationship of migration and occupational status may have shifted to a more nearly continuous linear function (Long and Boertlein, 1975), the fact remains that the high rates of migration for professional workers during the past thirty years continue. For some professional occupations at a regional or state level, it is easily conceivable that migration is a significant force in restructuring the stock of college and university-trained human capital. The report of an Oregon study recognizes the potential of migration to disrupt the straightforward comparison of supply and demand in college-level manpower analysis, but it was felt that adequate data were lacking for adjustment (Siler, n.d.). A dynamic labor supply-demand model for Colorado was able to be modified to account for the interstate migration disturbance to worker supplies (Rake, n.d.). Resident labor force entrants were derived independently and were combined with an assumed volume of inmigration to determine the total worker supply. Occupational detail is not available from the study to obtain a thorough assessment of impact, however.

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*U.S. Bureau of the Census.

An Alabama project concerned itself at length with a suspected influence from both occupational and geographic mobility, but concluded that the lack of required detail for both variables precluded their use at the time the research was conducted (Alabama Commission on Higher Education, 1972). A later and more complex modeling project for Georgia college-level workers during the 1970's, however, deals with "retained manpower" moved forward from the base date and incorporates adjustments for both occupational shifts and geographic movement of trained manpower (White and Drummond, n.d.).

For perhaps the first time on a comprehensive scale, mobility data from the 1970 Census of Population afford a detailed look at both types of movement and at levels of geography below the Nation as a whole. The possible magnitude of the adjustments and their effects upon the relationship of supply and demand for college-level workers are documented in a recent preliminary pilot analysis for Georgia (Engels, 1975). Background data for the test refer to the 1965-70 period and were taken from special tabulations of the Public Use Sample (PUS) file of 1970 Census returns (U.S. Bureau of the Census, 1972). The analysis covers only bachelor's level degrees and indicates that migration alone, were it to continue at its 1965-70 level, would satisfy 18 percent of the demand for bachelor's level workers. The impact of both mobility factors is felt more strongly in individual occupations and can be illustrated more clearly at that level of detail. In a typical year during the 1965-70 period, Georgia experienced a net gain of approximately 440 accountants, 80 architects, and 40 civil engineers through the combined influences of in and out migration and in and out occupational shifts by workers. At the projected 1975 levels of educational attainment, and if the migration of the 1965-70 period can be assumed to continue into the 1970's, this would mean that approximately 35 percent of the projected demand for accountants in Georgia would be satisfied by net worker migration and occupational movement. Similarly, the demand for architects would be totally consumed by migration and occupational shifts, and the demand for civil engineers would be 20 percent fulfilled. These kinds of supply supplements relative to demand imply a considerable amount of competition for new local college graduates seeking positions in those occupations, and also represent a substantial constraint and/or resource element to be contended with in higher education planning at the regional and state levels.

A regional rather than a state perspective is desirable from two standpoints, however. The first is a concern for maximum confidence in the basic data series. Table 1 contains comparative occupational and geographic mobility figures from tabulations of the PUS file for illustrative professional occupations in Georgia and in the 14 state region.[1] Even though the total number of inmigrants for Georgia is 150,700 workers

[1]Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

(total regardless of educational background), there are several entries of 100-500 persons. Since the sample rate used in constructing the basic PUS file used here is one percent, many of the figures for individual Georgia occupations are based on only one to five persons being caught in the sampling process. Although the *structure* or occupational profile obtained appears reasonable and may be used without extreme risk, applications involving findings for individual occupations are hazardous. The corresponding data for the region are not as subject to this criticism and may be utilized without many of the small-number caveats that must be attached to the state findings.

Second, the phenomenal turn-around in net migration during the 1970-75 period is not necessarily shared proportionately by all of the states. In an effort to minimize the influence of local factors on the changing volume and character of migrants, it is advisable to examine the states in the aggregate for any clues that the 1965-70 period might be able to provide for the 1970's.

TABLE 1

Illustrative Comparative Tabulations of Inmigrants and In-Transfers from the Public Use Sample File (Expanded from sample data) for Georgia and the 14-State Southern Region: 1965-70

1970 Occupation	Inmigrants		Transfers into Occupations	
	Georgia	Region	Georgia	Region
Accountants	3,000	13,300	2,900	40,300
Architects	300	1,200	100	2,300
Computer Programmers	400	6,200	1,100	13,900
Systems Analysts	400	2,900	400	6,600
Civil Engineers	300	3,900	800	11,300
Industrial Engineers	1,300	5,300	900	14,600
Lawyers	300	4,500	700	7,500
Pharmacists	100	700	300	2,200
Physicians	1,200	8,200	100	4,900
Registered Nurses	2,800	19,000	1,200	20,000
Clergymen	1,400	7,200	1,300	12,300
Economists	100	2,700	500	4,300
Social Workers	700	3,100	900	13,300
Elementary Teachers	4,600	30,600	1,700	37,100
Airline Pilots	1,200	2,200	0	3,800
Editors and Reporters	600	4,100	300	5,700
Photographers	200	1,100	300	2,900
Bank Managers	1,300	5,400	1,700	21,400
College Administrators	300	800	300	5,100
Stock and Bond Salesmen	200	1,800	700	6,100
Bank Tellers	400	3,900	900	12,300
Bookkeepers	2,300	18,100	9,900	115,600
Computer Operators	300	2,300	0	9,200
Secretaries	7,500	47,500	10,300	123,600

Definitions and Methods

The intent of this investigation is to present the 1965-70 findings on migration and occupational shifts for the region and to assess their general importance as worker supply variables by contrasting the net effect of in and out movement in both factors with the demand for college educated workers in selected occupations during the 1970-80 decade.

Migration

The basic data source for both nonmigrant transfers and inter-regional labor mobility was the 1/100 PUS files for states from the 1970 Census of Population. A special subfile was created selecting all employed nonmilitary 1965 residents of the region who lived outside the region in 1970 (outmigrants), and 1970 residents of the region living in another region in 1965 (inmigrants). Tabulations were prepared identifying the 1965 occupation of outmigrants, which may be viewed as additional demand; i.e., potential positions in occupations left vacant by the outmigrant. Inmigrants were tabulated by their 1970 occupations and may be considered as part of the occupational supply due to migration to the region, or due to simultaneous migration and occupational change. These tabulations are illustrated by the results for selected occupations shown in Table 1. The network of destinations for outmigrants and the geographic origins of inmigrants were unimportant to the present analysis and were not retained.

To conform to the definition and usage of the occupational demand concept, it was necessary to express the PUS results in average annual terms. The conversion from raw PUS tabulations was accomplished by expanding the tabulation results to "full count" levels from the sample findings. This represents an estimated 1965-70 value, which was simply divided by five to approximate an average annual level for the period.

Occupational Movement

Similar files were constructed and treatment given to employed nonmilitary nonmigrant residents of the region who had changed occupations between 1965 and 1970. Positions left by those moving out of a 1965 occupation may be considered part of the demand for that occupation, and workers shifting into a 1970 occupation are defined as additional supply for that occupation.

Both in the case of occupational change and for geographic migration, independent tabulations were developed for the region rather than aggregating results for the composite 14 states. This procedure recognizes that interstate migrants should not necessarily be identified to appear in the same classification at the regional level. For instance, an accountant moving from Georgia to the same occupation in Florida would not be included in the regional tables at all, yet he would appear as an entry

in both the Georgia and Florida migration tables if states were the unit of analysis. Moreover, if he were to move from an accounting position in Georgia to become a business manager in Florida he would be tabulated as an occupational transfer for the region but he would not be included in the regional migration figures since he had not entered or departed from the region.

Occupational Demand

Openings in occupations include demand resulting from expansion of employment as industries grow and from retirement, death, and other separations from the labor force. The resulting demand represents average annual opportunities for the 1970-80 period.

The procedures followed in projecting the demand for graduates began with the steps and data used in the Bureau of Labor Statistics (BLS) state cooperative program for manpower projections (U.S. Department of Labor, n.d.). The method moves occupational levels forward from 1970 to the projected date by accounting for industrial growth, disaggregating total industrial employment levels through shifting occupational shares, and providing for worker attrition through occupation-specific separation rates. The only significant departures from the BLS procedures were the elimination of the occupation not reported category and the use of employment growth rates by industry from the National Planning Association rather than from individual state analysts (Lee and Hong, 1973).

Proportion of Demand to be Filled by College Graduates

All openings projected as demand for each occupation are not treated as opportunities for college graduates. Instead educational attainment levels were projected asymptotically to 1980 for each occupation from the 1960-70 experience. This provides for continuation of the long-term trend of change but not necessarily by the same amount. Table 2 presents the projected 1980 levels and their percentage change from levels observed in 1970 for selected professional occupations.

From the projected 1980 levels, it was then possible to solve the demand equation taking into account both (1) the changing levels of educational attainment, and (2) the correspondingly altered proportion of *new* workers who must be college educated relative to all workers in the occupation in order to reach the projected 1980 levels. Educational attainment levels of migrants and occupational transfers were not tabulated directly from the PUS files of census responses. Attainment levels for 1975 were imputed to both migrants and occupational transfers as a part of the 1970 to 1980 projection process.

This differential in date of reference may appear inappropriate since the base mobility data refer to the 1965-70 period. The purpose of the analysis, however, is to obtain a preliminary evaluation of the magnitude

TABLE 2

Projected Proportion of Workers in Occupations who are College Trained by Number of College Years Completed
Projected 1980 Proportions and Percentage Change 1970-80
Selected Occupations for the United States

Occupation	Projected 1980		Percentage Change from 1970	
	4	5+	4	5+
Accountants	.360	.107	7.9	12.3
Architects	.178	.581	—18.6	10.7
Computer Programmers	.327	.146	11.3	18.1
Systems Analysts	.345	.227	11.0	16.6
Civil Engineers	.383	.289	0.3	30.9
Industrial Engineers	.309	.207	1.0	23.5
Lawyers	.039	.878	—42.1	1.6
Pharmacists	.373	.532	— 8.7	59.8
Physicians	.020	.926	—42.2	0.1
Registered Nurses	.137	.048	20.7	3.9
Clergymen	.128	.602	— 2.1	1.9
Economists	.361	.388	7.6	— 0.8
Social Workers	.441	.265	15.8	—11.8
Elementary Teachers	.594	.344	8.4	16.0
Airline Pilots	.314	.086	46.6	38.6
Editors and Reporters	.378	.194	6.1	14.4
Photographers	.093	.023	11.7	—22.7
Bank Managers	.287	.167	18.8	45.2
Stock and Bond Salesmen	.431	.290	20.6	66.8
College Administrators	.230	.498	45.0	—17.8
Bank Tellers	.022	.003	—19.0	—35.9
Bookkeepers	.057	.017	33.6	58.3
Computer Operators	.037	.022	5.6	52.3
Secretaries	.039	.007	—12.9	—14.9

of additional net worker supply provided by geographic and occupational mobility should the experience of the late 1960's extend into the 1970's. Reduced to its simplest form, the analysis seeks a preliminary answer to the question of whether or not these two types of mobility are worth worrying about as supply sources for college educated workers in projections of higher education manpower supply-demand balances.

Net Supply Adjustments Relative to Demand

The net shifts in and out of detailed occupations shown in Table 3 and the effects of net migration to and from the region result in an addition of approximately 61,300 annually to the supply of college educated workers (bachelor's degree or higher). Occupations with particularly large supply adjustments resulting from the two forms of mobility are accountants, computer programmers, electrical engineers, lawyers, personnel workers, physicians, social workers, elementary and secondary teachers, vocational counselors, and general managers and administrators.

TABLE 3

Estimated Average Annual Migration and Occupational Mobility
for Workers with College Degrees, Selected Occupations
for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Total	61,327	42,392	17,647	145,840	109,257	294,230	20.8
Professional, technical	34,623	30,065	11,944	65,926	49,425	151,778	22.8
Accountants	1,836	1,155	457	3,386	2,248	6,696	27.4
Architects	270	180	90	361	180	945	28.6
Computer Programmers	1,193	543	98	1,122	374	1,579	75.6
Computer Systems Analysts	613	323	183	667	194	1,480	41.4
Computer Specialists, Other	10	40	60	100	70	133	7.5
Aeronautical & Astronautical Engineers	92	251	264	528	423	544	16.9
Chemical Engineers	141	474	281	439	492	409	34.5
Civil Engineers	790	510	153	1,351	918	1,925	41.0
Electrical and Electronic Engineers	1,736	1,236	462	1,936	974	2,815	61.7
Industrial Engineers	970	515	168	1,326	702	1,691	57.4
Mechanical Engineers	859	472	254	1,162	520	1,191	72.1
Metallurgical and Materials Engineers	72	14	14	143	72	127	56.7
Mining Engineers	0	12	0	62	75	16	0.0
Petroleum Engineers	—62	94	47	187	296	132	—
Sales Engineers	305	200	74	389	210	296	103.0
Other Engineers	389	698	378	1,511	1,442	2,211	17.6

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility for Workers with College Degrees, Selected Occupations for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Farm Management Advisors	37	19	0	93	74	93	39.8
Foresters and Conservationists	108	66	41	373	290	736	14.7
Home Management Advisors	109	31	0	140	62	202	54.0
Judges	221	0	0	309	88	216	102.3
Lawyers	1,220	850	203	1,349	776	4,766	25.6
Librarians	604	255	107	913	457	2,637	22.9
Archivists and Curators	63	63	10	21	10	93	67.7
Actuaries	—98	0	33	0	65	54	—
Mathematicians	0	70	52	87	105	260	0.0
Statisticians	114	103	23	103	69	778	14.7
Agricultural Scientists	134	34	11	157	45	134	100.0
Atmospheric and Space Scientists	—11	23	34	23	23	106	—
Biological Scientists	312	197	33	230	82	660	47.3
Chemists	503	384	148	872	606	1,172	42.9
Geologists	—72	144	198	162	180	346	—
Marine Scientists	76	30	0	76	30	106	71.7
Physicists and Astronomers	342	270	0	162	90	266	128.6
Other Life & Physical Scientists	18	36	0	18	36	57	31.6
Operations and Systems Researchers	292	186	81	422	235	1,210	24.1
Personnel and Labor Relations Workers	2,268	519	168	2,406	489	3,023	75.0
Chiropractors	—35	35	35	35	69	254	—

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility
for Workers with College Degrees, Selected Occupations
for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Dentists	206	150	0	225	168	1,548	13.3
Optometrists	190	35	17	173	0	237	80.2
Pharmacists	99	99	99	345	247	1,808	5.5
Physicians, Medical & Osteopathic	1,466	1,599	533	895	495	5,474	26.8
Podiatrists	49	33	0	33	16	72	68.1
Veterinarians	112	56	0	112	56	965	11.6
Other Health Practitioners	—23	0	0	0	23	21	—
Dietitians	145	61	30	267	152	580	25.0
Registered Nurses	199	576	247	683	813	5,293	3.8
Therapists	233	156	67	311	167	2,031	11.5
Clinical Laboratory Technologists	239	193	69	308	193	2,465	9.7
Dental Hygienists	22	22	5	27	22	258	8.5
Health Record Technologists	41	14	7	48	14	292	14.0
Radiologic Technologists	7	8	7	23	17	132	5.3
Therapy Assistants	0	0	0	4	4	42	0.0
Other Health Technologists	139	98	21	232	170	827	16.8
Clergymen	566	1,045	624	1,553	1,407	3,432	16.5
Other Religious Workers	52	125	73	177	177	499	10.4
Economists	620	413	59	561	295	1,183	52.4
Political Scientists	0	0	0	16	16	41	0.0
Psychologists	243	262	37	150	131	756	32.1
Sociologists	0	17	0	0	17	39	0.0

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility for Workers with College Degrees, Selected Occupations for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Urban and Regional Planners	46	31	15	61	31	299	15.4
Other Social Scientists	42	57	42	28	0	230	18.3
Social Workers	1,262	402	153	1,776	763	4,879	25.9
Recreation Workers	36	42	18	137	125	339	10.6
Agriculture Teachers	95	19	0	95	19	68	139.7
Atmospheric, Earth, and Marine Teachers	53	35	0	35	18	85	62.4
Biology Teachers	364	172	57	306	57	553	65.8
Chemistry Teachers	211	96	58	230	58	174	121.3
Physics Teachers	161	71	18	143	36	60	268.3
Engineering Teachers	213	160	35	142	53	175	121.7
Mathematics Teachers	512	220	55	384	37	559	91.6
Health Specialties Teachers	522	87	0	470	35	1,034	50.5
Psychology Teachers	176	98	20	137	39	370	47.6
Business and Commerce Teachers	246	38	38	322	76	446	55.2
Economics Teachers	176	59	0	118	0	184	95.7
History Teachers	232	77	19	174	0	186	124.7
Sociology Teachers	191	76	19	153	19	274	69.7
Other Social Science Teachers	95	57	19	95	38	307	30.9
Art, Drama, and Music Teachers	580	281	53	422	70	683	84.9
Coaches and Physical Education Teachers	259	104	17	293	121	237	109.3

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility for Workers with College Degrees, Selected Occupations for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Education Teachers	211	115	0	153	57	127	166.1
English Teachers	641	189	94	622	75	688	93.2
Foreign Language Teachers	376	215	90	287	36	525	71.6
Home Economics Teachers	105	35	0	70	0	147	71.4
Law Teachers	39	0	0	39	0	95	41.1
Theology Teachers	75	19	0	75	19	128	58.6
Trade, Indust., & Technical Teachers	46	23	0	23	0	72	63.9
Misc. Teachers, College & Univ.	334	148	37	260	37	491	68.0
Teachers, Coll. Univ., Subj. Not Spec.	—494	1,020	510	1,497	2,501	3,290	—
Adult Education Teachers	500	265	41	531	255	1,030	48.5
Elementary School Teachers	—8,011	4,924	2,409	6,619	17,145	34,350	—
Prekindergarten & Kinder. Teachers	1,034	388	86	1,148	416	4,628	22.3
Secondary School Teachers	10,831	2,839	733	13,502	4,776	14,110	76.8
Other Teachers, Except Coll. & Univ.	328	146	64	504	258	1,102	29.8
Agric. and Biological Technicians	18	15	3	67	61	117	15.4
Chemical Technicians	101	72	25	249	194	227	44.5
Draftsmen	64	77	41	241	214	308	20.8
Elec. and Electronic Engin. Teachers	78	53	17	101	59	243	32.1
Industrial Engin. Technicians	—4	4	2	26	31	11	—
Mechanical Engin. Technicians	—14	4	14	11	14	27	—
Mathematical Technicians	—6	0	0	0	6	6	—

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility
for Workers with College Degrees, Selected Occupations
for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Surveyors	—9	20	11	83	101	90	—
Other Engin. & Science Technicians	83	64	32	345	294	679	12.2
Airline Pilots	223	149	68	223	81	486	45.9
Air Traffic Controllers	22	15	4	22	11	37	59.5
Embalmers	—9	0	5	33	37	15	—
Flight Engineers	—13	13	13	7	20	60	—
Radio Operators	14	2	0	21	9	16	87.5
Tool Programmers, Numerical Control	—11	0	0	6	17	15	—
Other Technicians	—4	14	8	68	77	165	—
Vocational and Educational Counselors	1,511	386	80	1,624	418	3,138	48.2
Actors	6	12	12	31	25	29	20.7
Athletes and Kindred Workers	21	47	21	131	135	401	5.2
Authors	43	43	22	151	129	252	17.1
Dancers	—3	2	2	3	7	12	—
Designers	108	133	63	298	260	514	21.0
Editors and Reporters	384	427	110	592	526	1,505	25.5
Musicians and Composers	—7	37	37	128	135	12	—
Painters and Sculptors	109	45	35	219	119	354	30.8
Photographers	44	23	5	62	37	98	44.9

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility
for Workers with College Degrees, Selected Occupations
for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Public Rel. Men & Publicity Writers	456	143	63	617	242	733	62.2
Radio and Television Announcers	—27	27	15	23	61	57	—
Other Writers, Artists, & Entertainers	177	122	67	330	208	532	33.3
Research Workers, Subj. Not Specified	—257	614	414	599	1,056	2,360	—
Managers and Administrators	19,813	6,810	3,126	38,810	22,682	83,891	23.6
Misc. Public Officials & Admin.	1,441	532	170	2,165	1,086	2,912	49.5
Sales Managers, Nonretail Trade	1,684	640	394	2,609	1,172	3,712	45.4
School Admin., Elem. & Secondary	2,279	129	165	3,492	1,176	3,561	64.0
Others Managers and Administrators	14,409	5,509	2,397	30,544	19,248	73,706	19.5
Sales	2,696	2,389	995	20,652	19,349	18,908	14.3
Insurance Agents, Brokers & Underwriters	663	397	146	2,119	1,707	2,242	29.6
Real Estate Agents and Brokers	531	185	32	882	503	2,352	22.6
Sales Representatives, Manufacturing	338	550	263	4,745	4,695	2,529	13.4
Sales Representatives, Wholesale	275	421	203	5,121	5,064	2,484	11.1
Other Sales	889	836	351	7,785	7,380	9,301	9.6
Clerical	3,283	1,853	757	9,575	7,389	22,233	24.5

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

TABLE 3—Continued

Estimated Average Annual Migration and Occupational Mobility for Workers with College Degrees, Selected Occupations for the Southern Region 1965-1970*

Occupation	Total Net Adjustment	Migration		Occupational Change		Unadjusted Demand	Percent of Unadjusted Demand Provided by Net Adjustment
		In	Out	In	Out		
Bookkeepers	878	205	74	1,455	708	3,215	27.3
Secretaries	786	416	158	1,250	723	4,345	18.1
Misc. and Not Specified Clerical	1,619	1,232	525	6,870	5,958	14,673	25.8
Other Occupations	912	1,275	825	10,877	10,412	17,420	5.2
Miscellaneous Foremen	1,662	227	93	2,747	1,219	2,433	68.3
Farm Owners and Tenants	—540	34	53	486	1,008	1,437	—
Other	—210	1,014	679	7,644	8,185	13,550	—

*Bachelor's degree or higher

Note: Figures in the body of the table may not add precisely to the total net adjustment due to computer rounding of numbers.

Under the assumption that the 1965-70 experience will extend into the 1970's this level of movement would fulfill 20 percent of the average annual demand for college educated workers projected for the 1970-80 decade. This finding alone suggests that occupational and geographic mobility are serious supply components to be dealt with in regional higher education manpower supply and demand studies. This conclusion is strengthened in the findings for individual occupations. Table 4 summarizes the extent to which projected demand in the 138 predominantly professional and managerial occupations may be fulfilled by migration and occupational change. At least half of the demand would be satisfied by the two types of mobility in 43 occupations and the net additional supply from mobility could consume 0-50 percent of the annual demand in 73 other occupations. Only in 22 occupations would the adjustment for job and geographic mobility enhance the demand picture rather than detract from it, with many of these occupations falling in the general category of skilled technicians.

TABLE 4

Summary Tally of Occupations by Percentage of Demand Fulfilled by Net Adjustment

Percentage of Demand Fulfilled	Number of Occupations
Total	138
100 and over	11
80 — 99	6
50 — 79	26
0 — 50	73
Negative	22

A second general pattern that may be observed in Table 3 is the tendency for occupational change to account for slightly more of the total net adjustment than does migration. There is substantial variation among occupations, with the range extending from well over 100 percent (i.e., occupational change more than overcomes the migration adjustment in the opposite direction) to the reverse situation in which the adjustment is totally dictated by the migration factor. In large part the occupational change adjustment results in an additional net supply (that is the number of in-tranfers is greater than out-transfers). In 28 occupations, however, out-transfers exceed in-tranfers, creating potentially open positions rather than fostering additional supplies of workers. The most noteworthy cases, due to the volume of workers involved, are registered nurses, university instructors of unspecified disciplines, elementary school teachers, general research workers, farm owners and tenants, and the miscellaneous "other" category. It is also a general finding that where a negative total net adjustment is observed, occupational change, rather than migration, is responsible.

A concentration on net adjustments masks perhaps the most significant trend in Table 3, however; the extreme amount of interoccupational movement, throughout the job spectrum, relative to the levels of gross activity in geographic migration approximately 255,000 in and out shifts of jobs occurred annually; over four times the gross migration of 60,000 persons.

Comparisons of gross levels (ins plus outs) may misrepresent the situation somewhat, in that occupational transfers are double counted. That is, a job transfer by one person is tabulated as both an out-transfer from his previous occupation and an in-transfer to his new position. Nonetheless, even reducing the 255,000 job changes by one-half, the level of activity is still double that of migration. This ratio may shift substantially, however, with the adverse economic conditions of the early 1970's tending to retard occupational movement, and with 1970-75 Southern migration reaching well above historical levels. Nonetheless, it is evident that in the long run interoccupational movement is one of the more dynamic and effective forces in labor market supply-demand interaction.

Finally, it may be noted also from Table 3 that the occupations indicating net outmigration of workers rarely show a similar net outflow of workers from occupational transfers. This lack of correspondence in occupations with similar occupational mad migration loss patterns suggests that the two factors may serve as differing types of market adjustment mechanisms.

Reservations and Limitations

None of the general findings may be totally dismissed on the grounds of technical difficulty or may be explained away as mere data aberrations. Nonetheless, there are some accompanying limitations that must be considered. First is the inference that the positions vacated by outmigrants and out-transfers of workers will be filled. Within the context of short-term difficult economic circumstances, this practice may not be followed, but it is a comfortable provision in long-run projections extending over a 10-year period. Second, it is also implied in defining worker supplies that workers transferring into jobs and migrants to the Southern region and states have positions waiting for them. There is no difficulty in accepting the transfer provision, since by definition the worker would not be transferring if the open position were not available. While the assumption on in-migrants may not seem entirely justified, this analysis deals only with college graduates with the much greater likelihood that the assumption would hold than for workers in general.

Third, some attention must be given to the basic data source for the two supply adjustment factors. Although the Public Use Sample files were found to be a valuable resource for the adjustment variables, the sampling error in the original census migration and transfer returns is sufficient that it should be taken into account when encountering as

few cases as are often shown in Table 1. The use of the PUS files for the migration and occupational transfer responses also constitutes a sample of a sample, i.e., a one percent sample of respondents to what was originally a sample question.

A related issue is raised in a Census Bureau working paper concerning the basic adequacy of response and coding of the census occupational movement question (Walsh and Buckholt, 1970). Their conclusion is that the primary shortcoming of the data is an intolerably imprecise recall of occupational activities five years earlier by respondents, particularly for occupationally mobile individuals. Their contention is that retrospective questions such as used in their evaluation study substantially understate mobility, but matching studies (i.e., actual measurement of occupation at two discrete points in time) tend to over-estimate movement. The "true" mobility rate is anticipated to fall somewhere between the two.

There is some comfort in the finding that 1970 PUS rates for the Southern region do, in large part, lie between the two rates developed in the Walsh and Buckholt study of U.S. patterns. Table 5 indicates that the PUS rates generally more closely approximate what would be expected from a retrospective data collection procedure, but it may also be seen that the rates for only three of the twelve occupations (including total) violate the range of rates set by the retrospective and matched results.

Further support may be found in the nature of the results themselves. It must be kept in mind that the focus here is on general magnitude and occupational *structure* of the net adjustments rather than individual numbers for isolated detailed occupations. Within this objective, the profile of adjustments appears reasonable. For example, an informed observer might expect a large influence from occupational and geographic mobility for elementary and secondary teachers, the business community (managers and administrators, personnel workers), computer fields, some engineering occupations, physicians, and social workers. Large adjustments are found for these occupations in the 1970 PUS data. Similarly, the percentage of adjustment due to occupational mobility fits with common knowledge. For example, job changes are high for managers and administrators and clerical but are lower for the professional category. Among the professional group, job movement is high for computer specialists, nurses, and teachers. In addition the negative (i.e., out-transfers exceed in-transfers) categories fall in occupations where they might be expected. In short, there are too many pieces of supporting evidence to totally dismiss the structure of the findings as error-ridden and capricious.

Finally, the retention of 1965-1970 migration and occupational change levels is appropriate for testing purposes but is not likely to anticipate accurately the events of the 1970-1980 decade. The conditions responsible for such a departure from recent experience and the indications that

TABLE 5

Comparison of Occupational Mobility Rates; Matched Data for the U.S., Retrospective Current Population Survey Study for the U.S., and 1970 Census Public Use Sample Data for the South

	Occupational Mobility Rates*		
Occupation	1963-68 Matched Data	1963-68 Retrospective Data	1965-70 Census PUS Data
Total	31.5	15.9	17.8
Professionals	16.4	6.9	10.7
Farmers	26.0	18.3	19.9
Managers	32.8	12.9	19.1
Clerical Workers	26.5	12.4	13.3
Sales Workers	42.9	28.6	23.9
Craftsmen	26.8	13.6	15.1
Operatives	28.7	16.5	20.7
Private Household	34.8	18.2	13.8
Service Workers	35.2	20.9	17.1
Farm Laborers	46.6	22.0	24.0
Nonfarm Laborers	61.3	32.1	33.8

*Rates for matched and CPS retrospective data refer to workers age 19 and over from Walsh and Buckholt, 1970. Census PUS rates are for workers age 21 and over.

the break has in fact occurred for the migration component have been discussed at some length earlier. It remains that due to a number of considerations, we may not identify precisely the migration and occupational change that will be experienced but can establish their potential impact within some approximate bounds.

Summary and Conclusions

The purpose of this analysis has been (1) to gauge the potential importance of occupational mobility and geographic migration as "noise" variables in the comparison of the projected supply and demand for college graduates in the South, and (2) to establish a preliminary expectation as to the occupational profile of the adjustments that might follow.

Even recognizing potential hazards in the underlying assumptions that are necessary, and granting some shortcomings with the nature of the basic occupational movement data, it is clear that these two mobility factors must be contended with as disruptive variables in the seemingly straightforward evaluation of the professionally trained worker supply and demand. The two mobility factors combined constitute a supply component capable of satisfying significant amounts of the demand projected for most occupations. An extreme amount of interjob movement was found, far overshadowing the gross levels of in and out migration. Although increased attention must be given to migration due to the escalated migratory activity during the early 1970's, the analysis verifies that occupational mobility may not be ignored as a major factor to be dealt with in Southern supply and demand studies.

The findings also identified a differential importance of the two mobility factors for many occupations, suggesting varying roles for them in the supply-demand market adjustment process, and pinpointing the occupations needing special attention in adjusting worker supplies.

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