Migrant Farm Workers on Virginia's Eastern Shore: An Analysis of Economic Impacts

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Abstract

The economic impact of migrant farmworkers on an agriculture-dependent region is investigated. The direct effects of inflows of state and federal dollars for migrant services, and production of high-valued commodities are computed. Indirect and induced effects are modelled through the use of the IMPLAN input output model. Various alternatives to migrant labor are investigated, including production of less labor-intensive crops, acreage retirement, and contract H2A workers. Migrants are found to create substantial economic activity on the Eastern Shore of Virginia.

Keywords: economic impact, input-output, migrant labor

Introduction

Farmers on Virginia's Eastern Shore[1] have depended on migrant workers to plant and harvest their crops since the 1950s. Both the agricultural sector and the migrant labor force have undergone numerous changes in recent years. Migrant labor is now used primarily in the production of vegetables and fruits, the Eastern Shore's most valuable crops.

Although most farmers perceive migrants as hard workers who are essential for agricultural production, other segments of Eastern Shore society have a less positive view of the migrant population. The migrants generally speak little English and do not commingle with permanent residents. For historical reasons and due to their poverty, migrants are often the beneficiaries of government assistance programs. They are therefore easily stereotyped as impoverished foreigners who take advantage of the welfare system. Others see the migrants' poverty as evidence of the failure of that welfare system but still believe that they are a burden on local government and society.

Local policy makers must sort through these varied opinions about migrant labor when deciding whether and how to regulate it. Their decisions on how to treat the migrant labor force affect the entire agricultural sector and local economy. Regulation and zoning of migrant labor camps is one example; there has been a reluctance to allow properties to be zoned for housing migrants on the Eastern Shore. Other local decisions include support for migrant-service grants, priorities at local clinics, and local support for externally-funded translator services. A careful analysis of the migrants' impact on the Eastern Shore economy could assist government officials in making such decisions.

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Migrant farm workers can have a significant impact on rural communities. Their labor facilitates the production of high-valued commodities such as fruits, vegetables, and ornamental products. Local workers are not generally willing to weed and hand-harvest these products. The withdrawal of migrant workers would force local producers to seek alternative labor-contracting methods, to produce lower-valued crops, or to retire significant acreage. These changes would lead to fewer purchases of agricultural inputs and lower consumer spending because of decreased wage payments and farm profits. Reduced economic activity on the farms would mean fewer purchases of inputs necessary for intensive farming operations. Multiplier effects are such that the migrant-dependent sectors have economic impacts that are greater than the sum of the value of migrant-dependent agricultural production and the direct infusions of social service dollars.

Migrant farm workers attract significant infusions of state, federal, and charitable dollars to the region. A large number of organizations provide services to migrants; two examples are Migrant Education Programs (funded by the state and federal governments) and Delmarva Rural Ministries (a federally- and private grant-funded migrant health center). Much of the funding for these services comes from outside the region. Withdrawal of the migrant population would lead to termination of these funds.

This study quantifies these direct and indirect impacts of migrant farm workers on the Eastern Shore economy. Such a study of the economic impact of migrant farm workers has never been published. Adams and Severson (1986) examined the economic impacts of migrant farm workers in rural Wisconsin. Their study is the only known study of economic impact of migrant farm workers, and it fails to consider how the value of crops produced by the migrants affects economic activity in the region. Heppel (1982), and Griffith and Landau (1992) examined the migrant industry on the Eastern Shore but failed to provide an accounting of its economic impacts. Our study, by carefully considering the impacts of migrant workers on local economic activity and on the leakages outside the region, provides important information for policymakers.

An impact study by its very nature does not include non-market costs and benefits associated with an economic activity. Many of the costs associated with the migrant presence are thus not investigated. These costs include increased burden on local services such as the police force, and failure of the migrants to pay medical bills. This study does examine the changes in local economic activity that would occur under alternatives to migrant labor such as land idling, switching to less labor intensive crops, and employing contract H2A workers.[2]

Study Design

Economic impact analysis is a way to quantify changes in economic activity that result from some initial "shock" to the economy. That shock could be, for example, a plant closure, industry expansion, or budget cuts in a major institution. As in the case of this study, impact analysis is also used to measure the "significance" of an institution or of an activity (employment of migrant labor, for example) in a local economy. Examples of impact analysis applied to agriculture include Martin, et al. (1988), and Broomhall and Johnson (1991).

The definitions of the area and population of interest are crucial to impact analysis. In this study, the counties of Accomack and Northampton are the area of interest and the permanent, year-round residents of those counties are considered to be the population of interest. Thus, wage payments to and employment of migrant workers are not considered direct local impacts;[3] however, when these wages are spent locally, indirect and induced effects arise.

There are three basic components of economic impact. The *direct* effects include changed output, employee compensation, and value added. *Indirect* effects result from changed input purchases from the affected sectors following the direct effect. *Induced* effects arise from changes in expenditures by households resulting from changes in income due to the direct and indirect effects.

This study quantifies all direct, indirect, and induced effects on *local* firms and permanent full-time residents.

In order to calculate impact, the changes in the production of the directly affected sectors or in the payrolls and other expenditures of those sectors must first be estimated. These direct effects must be organized as final demand changes for each economic sector. The impact on the economy is then calculated by multiplying the change in demand for each sector's production by the appropriate employment, personal income, and value added multipliers for that sector. Because of the complexity of these calculations, we use the IMPLAN input-output model. The IMPLAN modelling system, developed by the USDA Forest Service, has been widely used to measure economic impacts (Bergstrom, et al., 1990; Broomhall and Johnson, 1991; Martin, et al., 1988). The model, and its advantages and disadvantages are discussed in detail in a number of references (Alward and Lofting, 1983; Alward et al., 1985; Palmer and Siverts, 1985).

IMPLAN contains a county-level data base including expenditure patterns of different industries and of households with different income levels. A plant closure could be modeled by simply reducing the final demand for the sector to which that plant belongs by an amount equivalent to the value of the plant's production. IMPLAN then calculates the direct, indirect, and induced effects. The accuracy of impact analyses can be improved by supplying the model with more detailed information.[4] Returning to the example of the plant closure, the plant is not likely to purchase inputs and pay employees in exactly the same proportions as the sector to which it is assigned by the model. If payroll and other expenditure information (i.e., value of input purchases from other sectors) were available from the plant, then these could be supplied to the model, resulting in a more accurate calculation of induced effects. Collection of these data is described below.

Because many of the migrant service organizations also serve local residents, the proportion of their funding, and consequently of their expenditures, that can be considered a direct result of the migrant presence had to be defined. This study includes only expenditures from funds that come from outside of the Eastern Shore and that are motivated by the migrant presence (i.e., funds provided to Eastern Shore individuals and institutions specifically due to the local use of migrant labor). An example of these funds is the Migrant Health grant to Delmarva Rural Ministries that comes from the federal government and is solely motivated by the migrant presence.

Data Collection

Detailed information was required on all sectors and on linkages in the economy, and on spending of the migrants, of the farms that employ them, and of the organizations and agencies that assist them. The primary source for information on the Eastern Shore economy was the IMPLAN database. Where appropriate, refinements to IMPLAN were based on publications such as the *Survey of Current Business*, and interviews with industry representatives, local officials, and other sources. All employers of migrant farm workers were surveyed to determine labor requirements per acre of each crop, payrolls, and other information related to migrant employment (Survey of Employers, 1992). A survey of 91 migrant workers on the Eastern Shore was undertaken in May 1992 to determine their earnings, and expenditures and savings patterns (Survey of Migrants, 1992). Finally, migrant service organizations were asked directly about their payrolls and the distribution of their expenditures.

Description of the Study Area

The Eastern Shore covers 702 square miles on the southern Delmarva peninsula, and had a population of 44,764 in 1990 (U.S. Department of Commerce, 1991a). In 1991, the civilian labor force was 20,956, and the unemployment rate was 8.1 percent. (Virginia Employment Commission, 1992). Estimates of migrant farm workers who visit the Eastern Shore to work vary widely, ranging from 3,500 to 5,500. The region's economy has generally lagged behind that of the rest of the state, with a persistently higher unemployment rate and lower per capita income. In 1989, per capita income was $13,740, as opposed to $18,979 for the state as a whole (U.S. Department of Commerce, 1991a).[5]

The structure of employment in the two counties is presented in table 1. The sectors that employed the most people in 1988, in rank order, were manufacturing, services, retail trade, and state and local government. The value of all agricultural production in 1987 was $83.3 million (in 1991 dollars). Total value added by manufacturing was $107.3 million. Total sales were $115.2 million for the wholesale sector and $180.3 million for the retail sector. Service industry receipts totaled $64.3 million (U.S. Department of Commerce, 1989a - f).

The Eastern Shore economy is far more dependent on agriculture than is the state as a whole. Agriculture and agricultural services in 1985 accounted for 0.89 percent of total state value added and 2.8 percent of total measured employment in the state. In contrast, for the Eastern Shore, agriculture's share of value added was 5.82 percent and its share of total employment was 14.6 percent.[6]

Agriculture on the Eastern Shore

Because nearly all migrant workers on the Eastern Shore are employed in the agricultural sector, that sector's outputs and inputs are crucial factors in the impact analysis. In 1987, there were 503 farms occupying 140,305 acres, or 32 percent of the land area of the two counties (U.S. Department of Commerce, 1989a). Of that total, 103,450 acres were harvested cropland, which includes land in orchards, vineyards, and nurseries as well as land from which crops are harvested or hay is cut. Soybeans occupied the largest percentage of harvested croplands, followed by grains and vegetables (table 2). The acreage and number of farms producing specific vegetable crops are listed in table 3.

In 1987, the total value of crops harvested was $58.1 million, and the value of all agricultural production, including livestock, was $83.3 million (U.S. Department of Commerce, 1989a). The composite sector of vegetables and melons had the highest value of production (table 2). Most vegetables are sold through brokers and shipped by truck to points up and down the east coast.

The agricultural sector's demand for labor is one determinant of migrant labor's impact on the local economy. The crops on the shore requiring high amounts of labor are, in order of increasing cost of labor per acre, Irish potatoes, cucumbers, peppers, and fresh tomatoes (Diem, 1986). The estimates of per acre labor costs derived from the survey range from $2,900 for tomatoes to $180 for potatoes (table 3).

Migrant Labor on the Eastern Shore

Most migrant workers who come to the Eastern Shore are employed by produce farms, although some work in other sectors of the economy. The impact of only those migrants who work in agriculture was considered in this study. These workers provide an estimated 67 percent of the value of labor used to produce the vegetable crops described in the previous section. The remaining 33 percent of the labor requirements is filled by local seasonal and full-time farm workers (Survey of Employers, 1992).

The migrant support structure includes all government agencies and non-governmental organizations that provide services and assistance to migrant farm workers or that enforce government regulations pertaining to migrants on the Eastern Shore. The support structure thus includes migrant education programs, federal, state, and local government agencies, non-profit groups that depend on public funds, and private religious organizations, all of which are referred to as "service organizations." The service organizations can be divided into educational, governmental, non-governmental, and religious groups. Expenditures, provided by the organizations themselves, are divided into these four categories and into personnel costs and operating expenses in table 4. The budget categories are aggregated to maintain the confidentiality of expenditures by individual organizations. Personnel costs are divided into payrolls for low and high income positions.[7]

The total of the local payroll and operating expenditures for the service organizations is approximately $2.4 million. Calculations from payrolls and average salaries reveal that there are approximately 98 *full-time equivalent* employees who serve migrants on the shore. These employees are considered to be local residents.

Table 1. Description of Virginia Eastern Shore Employment, 1988

Employment by Place of Work	Number Employed in 1988	Percent of Total Employment
Total Employment	23,931	100.00
By type:		
Wage & Salary	19,620	82.0
Proprietors	4,311	18.0
By industry:		
Farm	1,557	6.5
Agricultural Services, Forestry, Fishing	1,932	8.1
Construction	1,054	4.4
Manufacturing	5,697	23.8
Transport & Utilities	527	2.2
Wholesale Trade	813	3.4
Retail Trade	3,402	14.2
Finance, Insurance & Real Estate	676	2.8
Services	4,620	19.3
Government:		
Federal, Civilian	816	3.4
Military	468	2.0
State & Local	2,364	9.9

Sources: U.S. Department of Commerce, 1990; and Holliday and Barnes, 1990.

Table 2. Acreage Harvested and Values of Major Crops, Virginia Eastern Shore, 1987

	Crops Planted on at Least 1000 Acres		Crops with at Least $1,000,000 Harvest Value	
	Acres Harvested	Percent of Total Acreage	Value in $1,000	Percent of Total Value
Total	121,720	100.0	33,854	100.0
Barley	7,197	5.9	--.--	--.--
Corn (grain & seed)	8,099	6.7	1,513	4.5
Nursery/Greenhouse	1,596	1.3	6,645	19.6
Potatoes (Irish)	11,288	9.3	--.--	--.--
Soybeans	60,192	49.5	5,759	17.0
Vegetables & Melons	14,264	11.7	17,664	52.2
Wheat (grain)	19,084	15.7	2,273	6.7

Source: U. S. Department of Commerce, 1989(a).

Table 3. Vegetable Acreage Harvested and Number of Farms, Virginia Eastern Shore, 1987

Crop	Acres Harvested[a]	No. Farms	Labor Cost Per Acre ($ 1991)[b]
Cucumbers	4,951	61	$670
Green Peas	159	18	NA
Irish Potatoes	11,288	141	180
Snap Beans	4,420	72	NA
Squash	138	12	1,000
Sweet Corn	118	10	NA
Sweet Peppers	545	19	2,800
Tomatoes	1,602	17	2,900
Watermelons	163	22	NA
Total	23,384	372	

[a]Source: U. S. Department of Commerce, 1989(a).
[b]Source: Survey of Employers, 1992; Diem, 1986.

Table 4. Migrant Service Organizations: Expenditures on the Eastern Shore in 1991

	Category of Organization				
Expenditures by Category[a]	Education	Government	NGO	Religion	Total
Payroll:					
Low income	$582,500	$44,400	$37,800	$17,200	$682,000
High income	35,000	172,800	342,500	15,000	565,300
Total	617,500	217,200	380,300	32,200	1,247,300
Overhead:					
Food[b]	29,200	620,000	9,000	2,000	660,200
Travel	48,800	18,900	55,100	12,200	135,100
Supplies	58,100	12,000	48,200	5,130	123,400
Rent & Utilities	40,300	8,000	25,800	6,500	80,600
Contractuals	2,000	23,600	46,200	0	71,700
Maint. & Repair	33,800	2,800	17,200	0	53,800
Miscellaneous	6,300	4,900	13,100	0	24,300
Rest. & Hotels	0	4,400	500	0	4,900
Total	218,500	694,600	215,000	25,800	1,154,000
Totals	$836,000	$911,900	$595,400	$58,000	$2,401,200

The four categories include the following organizations:

Education: Migrant Education, Migrant Headstart, Eastern Shore Community College;
Government: Dept. of Health, Dept. of Labor, Dept. of Rehabilitative Services, Dept. of Social Services, VA Employment Commission;
NGO: Area Health Education Council, Christopher Newport College, Delmarva Rural Ministries, East Coast Migrant Health Project, Farmworker's Radio, Peninsula Legal Aid, Telamon;
Religion: Baptist Migrant Ministry, Catholic Migrant Ministry, Rock Church, Virginia Council of Churches.

[a] Low Income Payroll is that paid to employees who earn less than $15,000 annually. High Income Payroll includes payments to all other employees.
[b] Food includes food stamp and WIC payments, in addition to directly purchased food.
[c] Contractuals include in-service.

Components of the Impact Analysis

A series of steps was required for the impact analysis. The IMPLAN model of the Eastern Shore economy includes the economic activities of migrants, migrant service organizations, and agriculture. The direct impacts of the loss of migrant labor, such as loss of output in the agricultural sector and loss of employment in the service sector, can be calculated directly from the information reported above and entered as changes in final demands. In order to calculate the total impact (direct plus indirect plus induced effects), the three groups' expenditures were organized into "components" that list the changes in demand that would result from a group's removal from the economy (in the case of migrants and service providers), or a change in output (in the case of reduction in output from labor-intensive agriculture). These final demand changes were combined with economic multipliers and estimates of leakages from the local economy produced by IMPLAN to calculate the total impact of migrant labor. Two alternative impact analyses based on modified scenarios and an impact analysis of a state-supported migrant housing program were considered.

The five components of the impact analysis are representative of the changes in final demand that would result from the elimination of the migrant labor force on the Eastern Shore. The five components correspond to: 1) the loss of migrant and crewleader[8] expenditures; 2) the loss of expenditures (including employee compensation) by the migrant service organizations; 3) the reduced production of the agricultural sectors that employ migrants; 4) the loss of expenditures by employers on construction and maintenance of migrant housing, and finally; 5) the potential gain in production of crops that do not require migrant labor.[9] A detailed description of each of these components is provided in the appendix.

The component modelling the elimination of migrant and crewleader payrolls (hereafter referred to migrant.com) is constructed based on a gross payroll of $8.98 million for migrant workers and $2.5 million for crewleaders. Migrant expenditure patterns used in this component were derived from the survey of migrants and are described in table 5. The second component of total impact (service.com) is based on the service budget of $2.4 million (table 4). The third component (migcrop.com) results from an assumed 65 percent reduction in production of fruits and vegetables following loss of the migrant workers (see appendix), representing a decline of $22.2 million in the total value of production. The fourth component (mlcamp.com) is based on an estimate, derived from the survey of employers, of $36,000 in average annual expenditures for maintenance of migrant housing (see appendix for more details). The fifth component (subcrop.com) represents the conversion of land no longer used for intensive production into less labor-intensive grain production.

These five components were used for the primary migrant impact analysis and were then modified for two alternative analyses. First, the migrant.com was modified to reflect an alternative assumption that migrants save 50 percent (rather than 25 percent) of their pay, and this revised scenario (migrant2.com) was combined with the other four components into the migrant2 impact analysis. Second, the possibility of replacing migrant workers with H2A labor was considered. The mlcamp.com used in the above analyses did not include the cost of migrant labor camps built or renovated with funding from the Virginia Department of Housing's 1990-1991 migrant housing program. A separate analysis (ccprog.com) calculated the impact of the nine construction and renovation projects which were partially funded by the state Department of Housing. The total cost of these projects was $804,100, of which 60 percent was covered by grants and subsidized loans from the government.

The impact analysis was carried out using IMPLAN's 1985 database, which includes a national technology matrix and estimates of 1985 economic activity in Accomack and Northampton counties drawn from "County & Business Patterns," Dunn & Bradstreet data, the Bureau of Economic Analysis REIS, the 1980 Census of Population, and the census of governments, housing, manufacturing, and agriculture. Adjustments were made to make the 1985 technology matrix consistent with current conditions.

Three sectors were modified: the output of the canned fruit & vegetable sector and the apparel sector were reduced due to plant closings that

occurred since 1987, while the size of the food grains sector was increased in accordance with table 2, discussed above. The basic data of the resulting model are given in table 6.

Results

The results of the IMPLAN analysis are shown in table 7. The elimination of the migrant labor force from the Eastern Shore would result in a $42.9 million (1991 dollars) fall in annual total local economic output if the reduced vegetable acreage is converted into grain production. Such a decline represents a 3.2 percent decrease (compare tables 6 and 7) in regional economic output. Without assuming conversion of the land into grain production, the annual fall in output would be even greater ($45.8 million). Of the $42.9 million loss, $35.6 million is the net change in the value of agricultural production that results from the conversion to crops that do not require migrant labor. The remaining $7.3 million includes decreased local expenditures by migrants, by migrant service organizations, and for migrant labor camps, and $2.5 million in indirect and induced effects (see table 7 for the exact figures).

The migrant labor force on the Eastern Shore is responsible directly and indirectly for $6.44 million of annual local employee income. If the switch to a less labor-intensive agriculture (modeled in subcrop.com) occurs, then annual local employee income would increase by $0.4 million as workers are hired on grain farms and the increased activity from grain production is multiplied through the economy. Thus the net total decrease in local employee income would be $6.0 million.[10]

When the migrants, migrant service organizations, and migrant-dependent agriculture are removed from the economy, there are net losses of $840,000 in the payroll of the aggregate service sector, $677,000 in the payroll of the wholesale and retail trade sector, and $391,000 in the payroll of the agricultural, forestry, and fishery service sector. The conversion to crops not requiring migrant labor has the largest impact on local employee income creating a net loss of $3.3 million. The removal of migrant service organizations from the economy has a direct effect of $1.5 million and total effect of $1.8 million on local payrolls. The loss of local migrant expenditures reduces local payrolls by $942,000. The migrant2.com portion of the analysis shows that even if migrants save half of their income while on the Eastern Shore, they still have a very significant impact on the local economy.

The declines in total economic output and in local employee income are moderated by the effects of leakages from the economy. The IMPLAN model of the Eastern Shore only contains 110 of the 525 sectors in the national economy, and thus purchases from any of the other 415 sectors have little impact on the Eastern Shore, affecting only the wholesale and retail sectors. For example, many of the local expenditures by migrant service organizations listed in table 4 are actually purchases of non-local goods from local retailers. The leakages from the local economy are less significant in the service sector, because most services are locally supplied. Nevertheless, the tendency to purchase goods that are not locally produced results in the rapid dissipation of the effects from reduced expenditures. The fact that the economy is small, however, also means that the impact of eliminating the migrant labor force would be significant *in comparison* to the total size of the economy. The migrant labor force is clearly important to the agricultural sector, which is in turn an important element of the local economy.

Migrant-dependent agricultural production also has an important impact on resident employment. Loss of migrant workers would lead to 349 fewer resident jobs on the Eastern Shore.[11] This reduction represents approximately 1.5 percent of the existing workforce. Without conversion of crop lands to alternative uses, 398 local jobs would be lost.

The replacement of migrant workers with H2A workers is investigated in the H2A scenario. Even though H2A workers would spend less of their income on the Eastern Shore and attract significantly less state and federal funding for service programs, the negative impact of eliminating the migrant labor force would be much lower in this case than if there were no alternative labor supply. This outcome is primarily a result of the assumption that there would be no change in the composition of the agricultural sector as a result of the conversion to H2A labor. The switch to H2A workers would

Table 5. Distribution of Migrant Expenditures on Virginia Eastern Shore

Category	Percent of Local Expenditures	$ Spent Locally[a]
Housing	7.2	$ 412,410
Groceries[b]	38.4	2,199,520
Eating Out	4.4	252,030
Transportation	6.4	366,590
Phone & Postage	4.5	257,760
Drinks & Tobacco	6.8	389,500
Other Goods	20.4	1,168,490
Medical	5.3	303,580
Laundry	5.3	303,580
Childcare	1.0	57,280
Other Services	0.3	17,180
Total	100.0	$5,727,930

[a] using a 25 percent savings rate.
[b] groceries include both food and other household items purchased at supermarkets.

Source: Survey of Migrants, 1992.

Table 6. Base Year Information for the Virginia Eastern Shore used in the IMPLAN model (1985 prices)[a]

	Industry	Base Year Final Demand (Million $)	Base Year TIO[b] (Million $)	Employee Income (Million $)	Property Income (Million $)	Total PoW Income (Million $)	Total Value Added (Million $)
1	LIVESTOCK	3.4442	25.1950	.9545	3.7506	4.7053	5.0603
11	FOOD GRAINS	2.7933	2.8374	.1296	.5886	.7182	.8111
16	FRUITS	.4815	.5871	.0585	.2260	.2845	.2925
18	VEGETABLES	4.8803	5.4567	.3096	1.5295	1.8391	1.9338
21	OIL BEARING CROPS	6.6986	7.0489	.2802	1.4257	1.7060	2.0380
22	FOREST(RY)	9.6645	9.7490	.4413	3.9466	4.3879	4.7530
23	GREENHOUSE/NURSERY PROD.	1.1958	3.5567	.1218	.7078	.8296	.9151
25	COMMERCIAL FISHING	.2191	12.0380	.8990	1.7784	2.6774	2.7949
26	AGRIC & FORESTRY SERVICES	9.8504	15.2778	5.1220	1.8438	6.9658	7.1856
27	LANDSCAPE & HORTICULTURE	6.4820	8.2313	3.8080	1.3522	5.1602	5.3051
66	Construction	49.1020	55.7736	14.4120	7.9031	22.3151	22.5162
84	Manufacturing	536.2081	550.0760	68.8390	26.7327	95.5716	98.1407
446	Transport., Comm. & Util.	26.4079	52.2699	14.5260	13.2865	27.8126	30.5565
461	Wholesale & Retail Trade	77.1972	107.1310	43.7950	16.9175	60.7125	70.3310
464	Finance, Ins. & Real Est.	59.0703	80.2611	10.3740	41.2299	51.6038	58.7150
471	Services	103.9154	129.5800	57.1680	18.0807	75.2487	79.1452
516	Govt. Enterprise	146.7289	149.4136	81.8800	63.9348	145.8149	145.8149
Total		1044.3390	1214.4830	303.1185	205.2344	508.3531	536.3094

[a] To make these values consistent with the values used in the rest of the studies, they should be divided by the CPI deflator (.78998).
[b] TIO is total industrial output.

Table 7. Results of Impact Analysis

Component of Analysis	First Round Impacts[a] (Million $ 1991)	Total Economic (Million $ 1991)	Total Employee Income[b] (Million $ 1991)	Employment[c] (number)
Migrant[d]	$-41.9180	$-42.9289	$-6.0362	-349
Migrant.com	-2.5199	-2.9327	-.9415	-60
Service.com	-3.7844	-3.9501	-1.8170	-116
Migcrop.com	-37.8001	-38.8934	-3.6663	-221
Mlcamp.com	-.0442	-.0505	-.0172	-1
Subcrop.com	2.2306	2.8973	.4058	49
Migrant2[e]	-41.2837	-42.1909	-5.7996	-334
Migrant2.com	-1.8856	-2.1940	-.7050	-45
H2A[f]	-4.4106	-4.6790	-2.0502	-131
H2A.com	-.6262	-.7289	-.2332	-15
Ccprog	-1.0346	-1.1866	-4.158	-16

[a] first round impacts include changes in final demands plus direct effects of reduction in economic activity.

[b] changes in employee incomes do not include wages and salaries paid to migrants and crewleaders who are not considered residents.

[c] employment refers to changes in employment of Eastern Shore residents.

[d] migrant contains the summation of its five subcomponents (migrant.com, service.com, migcrop.com, mlcamp.com, subcrop.com). It represents the impacts following the switch to less labor-intensive agriculture. The total impact of migrants (i.e., without including alternative land uses) would be derived by not including subcrop.com in this summation.

[e] migrant2 contains the summation of service.com, migcrop.com, mlcamp.com, subcrop.com and migrant2.com. It thus represents the total effects of removal of the migrant sector under the assumption that migrants save 50 percent of their earnings. It may be considered to be the lower limit of migrant impacts.

[f] H2A is derived by summing the service.com and the H2A.com. It represents the impact of replacing migrant workers with H2A workers.

nevertheless create a significant economic impact on the local economy. Total annual output would fall by $4.7 million, annual Eastern Shore resident employee income would fall by $2.0 million, and 131 local jobs would be lost as a result of the switch. Most of these losses result from the elimination of the migrant service organizations.

The ccprog.com analysis examining the impact of the 1990-1991 migrant labor camp construction program funded by the state government reveals that the program did have a significant positive impact on the local economy. The direct effects of the program were to increase the gross output of the local construction sector by $840,000, its payroll by $301,900, and its value added by $352,700. The total effects on the local economy, as listed in table 7, were to increase gross economic output by $1,186,600, local payrolls by $415,800, and value added by $571,500. These results must be interpreted with caution because of the temporary nature of the program.

Conclusions

Migrant labor-dependent agriculture is a major component of the Virginia Eastern Shore economy. Withdrawal of migrants as a source of agricultural labor would reduce local full-time employment by between 131 and 398 people, or between 0.6 and 1.9 percent of the total local labor force. If migrant-dependent acreage were not converted into grain production, then total output following the loss of migrant workers would fall by $44 million annually. Alternative land uses or sources of labor would dampen this loss somewhat, but vegetable, fruit, and ornamental production that depends on migrant workers is probably the best use of agricultural land on the Eastern Shore.

In addition to the economic contributions of migrant agriculture, fiscal benefits arise since retail sales and property taxes are increased by the boost in economic activities. Although the migrants themselves are generally low income, many of the

service providers receive incomes well above the county mean and thus make important contributions to local prosperity. At the same time, the profitability of local agriculture depends critically on these laborers. Vegetable and fruit producers' farm earnings per acre are well above those of grain producers and other farm producers in Virginia. Virginia fruit and vegetable producers earn on average a net farm income of $602 per acre, while grain producers and all farms earn $150 and $390 per acre, respectively (Stallmann and Pease, 1989). Thus, earnings for the farmers and total income for the region's residents are enhanced by the presence of migrant workers. In addition, local employment is dramatically increased by the migrant presence.

The study did not consider the non-market costs imposed by the migrants. Although the migrant presence led to significant infusion of state and federal dollars, it is not known if local expenditures on services, such as education and medical care, are significantly increased by this presence. It is unlikely, however, that an alternative use of these migrant-related local expenditures would generate the kind of economic impact that the migrants themselves generate. The cost of the programs provided for migrants, because they are incurred by the federal and state governments, are not considered local costs. These costs represent a transfer from taxpayers and donors to the migrants and to the residents of the Eastern Shore.

Given that the migrants have a strong positive impact on the Eastern Shore economy, the question becomes whether the migrant presence is inhibiting local economic development efforts. Anecdotal evidence points to the contrary conclusion. The economy of Winchester, Virginia, for example, has traditionally been based, to a large extent, on migrant-dependent fruit production. Recently, a combination of aggressive economic development efforts along with Winchester's advantageous location have allowed the area to undergo a major economic expansion while continuing and sustaining its migrant-dependent agricultural production. Other areas as well--for example the Hudson River Valley in New York--have experienced economic development while maintaining a robust migrant agriculture. Such examples indicate that migrant workers do not represent a fundamental brake on economic development.

A sensible development strategy would be to target efforts toward reducing some of the leakages from the economy. Increased purchases of locally produced inputs and consumer goods would create a greater multiplier for existing activities. By reducing leakages, the region would benefit from the presence of profitable migrant-dependent agriculture by more than it does now.

A second development alternative would be to combine the traditional agriculture base with the potential of the Eastern Shore's other natural resource-based amenities. Vegetable, fruit, and ornamentals agriculture can comfortably coexist with "eco-tourism," historical tourism, and the seafood industry to form a more sustainable base of development. Increased direct sales of the Eastern Shore's current primary crops to consumers, which would lead to higher incomes for the region's agricultural producers, could be easily integrated into a tourism-based development scheme. In contrast, less labor-intensive crops, such as soybeans, would be more difficult to integrate into such a scheme since they are land intensive and cannot be marketed locally.

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Appendix A

Components of the Impact analysis

The first component of the impact analysis (called migrant.com) is the loss of migrant and crewleader expenditures. The elimination of migrant and crewleader payrolls is not considered to be a direct impact on local employee compensation or employment, since the loss is not suffered by local residents. The total migrant and crewleader payroll was extrapolated based on calculations from the survey of employers which provided crop-specific labor expenses by acre (table 3) and the estimates of crop acreage. The total gross migrant and crewleader payrolls in 1991 were estimated to be $8.98 million and $2.5 million, respectively.[12] It was determined that approximately 40 percent of what crewleaders are paid is for production expenses related to the transport of irrigation equipment, plastic, stakes, and crops to and from the fields. Since this is included in IMPLAN's agricultural production function and hence is part of the third component (migcrop.com) these expenditures were subtracted from the estimated crewleader payroll. The impact analysis was therefore based on a crewleader payroll of $1,515,370 and a migrant payroll of $8,984,990.[13] Direct assistance payments to the migrants were also added to the migrant payroll. The survey revealed, on average, that migrants save 25 percent and crewleaders save 20 percent of their earnings.

The second component of total impact (called service.com) is the loss of the migrant service organizations and programs (see table 4). This loss has direct impacts on the service sector in the form of reduced output and employment. The loss of household expenditures resulting from the reduction of the service sector was calculated by multiplying the migrant service organizations' payroll by IMPLAN's expenditure pattern for households. Operating expenses were divided into purchases from the various IMPLAN sectors, using budget information provided by the organizations and the distribution of inputs to the service industries in the IMPLAN model. Migrant food stamps, as well as purchases of "food" by the organizations, were disaggregated in the same manner as food purchased by the migrants with their paychecks. WIC payments to migrants were applied to a slightly different expenditure distribution to reflect the restrictions on items that can be purchased with WIC checks.

The third component (migcrop.com) is the predicted reduction in the production of fruits and vegetables, and to a lesser degree, of greenhouse and nursery products, that would result if migrants no longer worked on the Eastern Shore. It was assumed that the loss of all migrant labor would result in a 65 percent decrease in the production of crops which currently use migrant workers.[14] The value of all crops produced on the Virginia Eastern Shore that require migrant labor was estimated at $34,236,000 for 1991. The 65 percent decrease of $22,253,500 includes a 50 percent decrease in the local labor payroll

($1,597,200) and a 100 percent decrease in migrant and crewleader payrolls ($10,500,360).

The decrease in production was distributed among three IMPLAN sectors in proportion to the current value of their output and their dependence on migrant labor. Thus, vegetable production fell by $21,586,350, fruit production by $556,350, and greenhouse and nursery production by $111,250. The 46 percent of this decrease in the value of production which is reflected in reduced purchases of inputs and reduced value added (other than payroll) was converted to a vector of final demand changes by applying it to the production function for the three sectors. Induced effects were modeled by entering a vector of final demand changes equivalent to the net deflated payroll multiplied by IMPLAN's household expenditure patterns. The payroll was allocated to high income (16 percent), medium income (34 percent), and low income (50 percent) based on the distribution reported in the Survey of Employers.

The decrease in expenditures for renovation and expansion of the migrant labor camps was considered separately in the fourth component of total impact (mlcamp.com) due to IMPLAN's accounting procedures for renovation and construction of buildings. The annualized average expenditure on renovation and expansion of migrant labor camps was estimated to be $36,000. After deflating, this figure was entered into IMPLAN as a final demand change for the farm structures sector.

Finally, the fifth component (subcrop.com) represents the conversion of land no longer used for fruits, vegetables, and nurseries to less labor intensive agricultural production. It was assumed that the land removed from production of migrant crops will be used for production of soybeans and grains, in roughly the same proportions as they are currently produced. The reduced production in the three migrant crop sectors would free 10,750 acres for other uses. The value of soybean and grain production per acre was taken from the 1987 Census of Agriculture, multiplied by the appropriate number of acres, and then added to the IMPLAN model as an increase in final demand for those products.

Endnotes

1. The Virginia Eastern Shore, consisting of Northampton and Accomack counties on the lower Delmarva peninsula, is hereafter referred to as the Eastern Shore.

2. The H2A program permits agricultural employers who cannot find domestic labor to contract with foreign nationals to perform specific tasks.

3. It is this fundamental leakage created by the employment of workers who are not residents that makes the migrant industry unattractive to many people. It is argued that local welfare can be enhanced only by directly increasing employment prospects for local residents.

4. See Bergstrom (1990) for a discussion of techniques for using survey or other data sources with IMPLAN.

5. Throughout study, values are reported in 1991 dollars.

6. The figures are drawn from IMPLAN's 1985 data base.

7. Low income personnel are those who earn less than $15,000 annually. Temporary personnel are allocated to either the low or high income category by calculating full-time equivalent pay rates.

8. Crewleaders are agents who organize, contract, and transport groups, or crews, of migrant workers.

9. Most impact analyses do not consider possible alternative uses of resources, such as land or vacant factory shells, left idle as a result of a shock to the economy. Here, two alternatives are examined: a switch to gain production, and the use of H2A workers.

10. Of course, withdrawal of the migrant workforce would result in an inward shift in labor supply; agricultural wages would likely increase, and thus, earnings of local farm workers would be greater than those implied here. The model cannot capture these shifts because prices are treated as fixed. The withdrawal of migrants would have such a dramatic effect on agricultural labor markets, however, that it becomes nearly impossible to predict the wage changes that would result following their withdrawal.

11. Of these, 146 would be from the indirect and induced effects of the components of total income, 98 would result from direct loss of migrant service jobs, and 105 would result from direct reduction in employment following the elimination of vegetable production on migrant-dependent acreage.

12. The authors believe these estimates to be conservative; the migrant payroll may well exceed $10 million.

13. Taxes and Social Security (FICA) were deducted, and they were deflated to 1985 dollars.

14. This estimate is based on interviews with the farmers and others familiar with Eastern Shore agriculture.