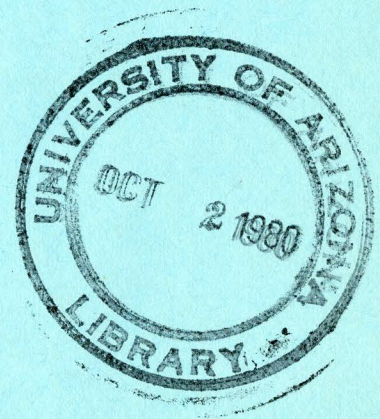


The Importance of Agricultural Production
In Maricopa County, Arizona, Economy
Research Report 278
January 1980

This is a report of research performed with financial assistance from the Four Corners Regional Commission and the Soil Conservation Service. The HoHoKam Resource Conservation and Development Project provided general direction for research.

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FOREWORD

This is the report of the research performed with the assistance of the Soil Conservation Service; The Four Corners Regional Commission and the HoHoKam Resource Conservation and Development Project. The authors wish to express their appreciation for the help of these organizations.

We also wish to express our gratitude to Mrs. Claire Lindberg and Mrs. Suzanne Chesney for their help with the data collection and analysis.

DISCLAIMER

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THE IMPORTANCE OF AGRICULTURAL PRODUCTION IN MARICOPA COUNTY, ARIZONA, ECONOMY

Thomas M. Stubblefield, Charles E. Robertson*

SUMMARY

Agriculture is vitally important to the economy of Maricopa County. Commercial farmers in 1977 pumped more than 286 million dollars into the economy of the area in the form of direct production costs. This does not include interest on indebtedness or interest in investment nor does it include those dollars spent to maintain and operate some of the 14,000 one-horse ranches and mini-farms that exist in the county.¹

Total cash market receipts from agricultural commodities produced in Maricopa County in 1977 amounted to about 498 million dollars.² Again, this does not include part of the dollars received for commodities produced on mini-farms.

Costs incurred in the marketing of agricultural commodities appear in the agribusiness section rather than the agricultural production section of this study. Wages and salaries paid to provide materials, furnish services or to process agricultural commodities produced in Maricopa County in 1977 exceeded 80 million dollars. This does not include the handling and transporting of processed commodities, not produced in the county, nor does it include the wages and salaries paid by the many regulatory agencies and other government organizations located in Maricopa County but which were involved in services affecting other counties in the state.

When all people employed in agribusiness in Maricopa County are included, the total wages and salaries exceeded 123 million dollars. It is estimated that 25 million was paid in wages for the production of crops and another 20 million was paid in wages for the production of animal products. An additional 25 million must be added to cover the cost of those consumer goods and services required by farmers and their families.

Thus, at the very minimum at least 150 million dollars was spent for consumer goods and services by people directly employed in agricultural production or in the furnishing of materials and services used in the production of agricultural commodities in Maricopa County. The figure probably should be estimated at about 195 million, if all the people employed in agriculture and agribusiness in Maricopa County were included.

It was estimated that 48 cents was required to service each dollar spent for consumer goods in 1977. Using this figure, the minimum contribution of agriculture to the economy of Maricopa County would be somewhere between 222 million and 285 million.

The money which agricultural workers spend for goods and services helps to pay the wages of many people employed in the non-farm sector of the county's economy. This includes those employed in transportation, public utilities, wholesale trade, retail trade, finance, insurance, real estate, professional services and government. While it is almost impossible to arrive at a concrete figure, for the purpose of this study the impact of agriculture and agribusiness on the non-farm sector has been conservatively estimated at over 90 million dollars annually.

¹These are not included in the statistics reported by the Arizona Crop and Livestock Reporting Service if their sales were less than \$250 per year.

²*Arizona Agricultural Statistics, 1978*; Arizona Crop and Livestock Reporting Service; Economics, Statistics, and Cooperative Service; U.S. Department of Agriculture and the University of Arizona; Phoenix, AZ; 1979; p.3.

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INTRODUCTION

Maricopa County is a remarkable piece of real estate. With almost 6 million acres of land area, it is equal in size to the State of New Hampshire. Within its boundaries you will find some of the Nation's most desolate wasteland and some of the Nation's most fertile cropland. It is regarded as a mecca for retired senior citizens and the land of opportunity for young families.

It contains one of the Nation's fastest growing metropolitan areas and one of the Nation's most important agricultural areas. It has a National Forest without trees, while its climate attracts thousands in winter and drives away an equal number in summer.

Phoenix, a mushrooming city made up largely of people who came from somewhere else, serves as the county seat, also the State Capital and center of commerce for Arizona. Together with its suburbs it boasts of having more than half of the state's population, or about 1½ million people.

At the same time, Maricopa County, thanks to one of the world's most successful reclamation projects, contains nearly half of Arizona's irrigated cropland, much of it situated almost within sight of the high-rise buildings of Phoenix.

Maricopa County generally is listed among the top half-dozen agricultural counties in the Nation. It is regarded as a major fresh vegetable producing area. It has about 90% of the state's dairy cows, half of the state's citrus acreage, a third of the state's cotton acreage and a fourth of the state's feedlot capacity.

In 1978, its income from agricultural products exceeded that of the State of Utah, and in 1979 it ranked as the Number One cotton producing county in the Nation. It is estimated that Arizona's farms and ranches grossed nearly 1¼ billion dollars in 1977, and Maricopa County farmers and ranchers accounted for nearly half of those receipts.

Throughout the land in recent years there has been increasing concern over what is happening to the Nation's natural resources. While agricultural cropland hasn't been accorded as high a priority on the list of concerns as petroleum, minerals, rivers and forests, it is every bit as important.

For one thing, fertile cropland represents a renewable natural resource. Properly managed and wisely husbanded, it can yield benefits to society year after year without becoming exhausted.

Agriculture has been termed the only essential industry, and on a worldwide basis there is a shortage of good cropland. While this Nation at present has more than enough cropland, as the population of the Nation and the world continues to increase, the need to preserve and conserve this renewable natural resource will take on greater importance.

In Maricopa County, where urbanization of highly productive cropland has taken place at a rapid rate for nearly two decades, there already is concern. Thoughtful persons are afraid that if the present trend continues, two things could happen.

In time, the area could lose much of its attractiveness either as a place of residence or as a place to visit. Tourism is an important industry, and it is green fields and fragrant citrus groves not asphalt parking lots and high-rise buildings that bring the tourists.

Even more important, the continued diversion of productive cropland to urban use could adversely affect the economy of the area and to some extent the Nation in the long run.

Indeed, some adverse effect on the economy already has been noted. Urban pressure occasioned by the growth of Phoenix and its suburbs has forced many farmers to either re-locate or go out of business. In some instances land value increased to the point where they could not afford not to sell. In others, restrictive regulations made it difficult if not impossible to continue operation.

Some operators moved to outlying parts of the county where they resumed operation on marginal land with water that was expensive and uncertain as to quality and quantity. Others simply ceased operation. Still others moved completely out of the area.

At one time, nearly two-thirds of the state's cattle feedlot capacity was located in Maricopa County. Court orders and complaints have forced all but a few outlying feedlots out of the area.

Faced with the prospect of having to produce their crops on marginal land with costly water, some vegetable growers have either curtailed operations or moved elsewhere, even to Mexico.

Cotton is the Number One cash crop in Arizona. The bulk of it along with most of the citrus, wheat, fresh vegetables, and certain other specialty crops is exported to other states or to overseas markets. That which goes overseas helps bring back into this country those American dollars used to buy foreign crude oil, autos, television sets and similar items.

The March 1979, Maricopa County Labor Review, published by the Arizona Department of Economic Security, had this to say about agriculture under the heading, *Decisions Face the Cattle Rancher*. . .

Agriculture in Maricopa County plays a vital role in the economic well-being of the county despite the low profile it maintains. Some of the products are consumed by local production but the majority is exported to other states and nations. The importance of agriculture in Maricopa County should not be understated. All sectors of the economy depend upon the direct or indirect performance of agriculture to some extent.

Urban development must take place. The growing population of the Nation and Maricopa County must have someplace to live. But it makes no more sense to plant houses on good farmland than it does to plant them in our best forests or on top of our richest oil fields.

It isn't even good business in the long run. The development of urban residential areas has a tremendous positive effect on the economy of an area temporarily.

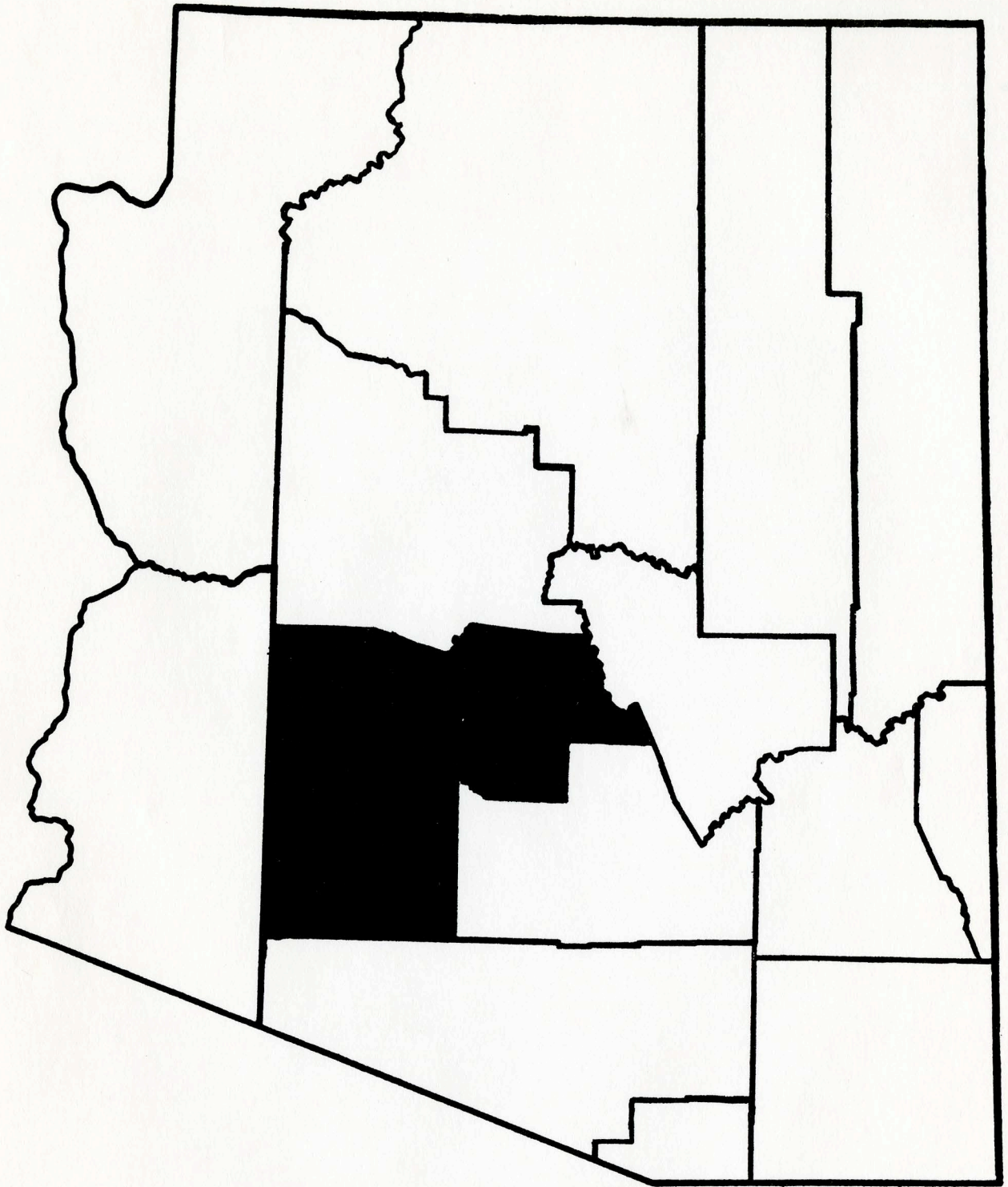


FIGURE 1. Map of Arizona showing Maricopa County in black.

ANALYSIS

Jobs are provided for many, and a great quantity of material is required. However, after they are developed, their impact on the economy is indirect at best.

People contribute to the Gross National Product through the work they perform in mines, businesses, schools, manufacturing plants or on the farm, not by virtue of the fact that they live in a house and consume goods.

At present time, Phoenix and its suburbs, indeed much of Maricopa County, seems to be populated with people who have come to build houses for people who are coming to build houses. Some of the state's and the Nation's most productive farmland is disappearing under asphalt and concrete.

Is this wise use of an important and even essential natural resource? What will the area look like forty years from now in 2020? Can Maricopa County afford to dismantle its agriculture as it now seems to be doing?

This study will not answer all of these questions. In fact, it may not answer any of them. But it may provide a clearer picture of where agriculture fits into the scheme of things and why concern is justified if only from an economic standpoint.

SCOPE OF STUDY

In rural areas, school districts are formed so as to provide public schooling. The district has authority to tax private property within its boundaries to finance educational activities of its school system. (In Arizona, this authority is limited by state statutes.)

Local school districts will be focused upon in this study. Statistics show the value of property in the school districts. Information as to the amount of agricultural land in each was obtained from the Maricopa County ASCS office. Information that the Maricopa County ASCS office has obtained from farmers, the data on the number of acres in each farm and that taken from rural photo-maps were used to estimate the number of acres of land farmed under irrigation in each of the school districts in 1977. This information was then combined and adjusted to be consistent with the total for Maricopa County shown in the estimates of the Arizona Crop and Livestock Reporting Service.

The number of agribusiness firms was not separated by school districts. These data were for the entire county. Thus, agricultural production and costs were determined by school districts while agribusiness information is based on the entire county.

There is a total of 48 school districts in Maricopa County. Of these, 11 had no land in cultivated field crops or tree cropland. There are 37 school districts included in Figure 2 plus the unorganized portion of the county that has irrigated agricultural land. Most of this land was planted to field crops. There were an estimated 7,119 acres of irrigated cropland in areas not organized into school districts.

Figure 2 shows the number of school districts that have from 49,999 to 40,000 acres; 39,999 to 30,000 acres; 29,999 to 20,000 acres; 19,999 to 10,000 and less than 10,000 acres of irrigated cropland. Only two school districts had more than 30,000 acres. Five school districts had from 29,999 to 20,000 acres, ten school districts had irrigated acres of between 19,999 and 10,000 acres. Twenty school districts had less than 10,000 acres.

Appendix Table 1 gives estimated irrigation acreage by school districts. The information shown in this table was taken from the ASCS records and reconciled with data published by the Arizona Crop and Livestock Reporting Service of the U.S. Department of Agriculture.

Appendix Table 1 also gives the number of acres in the different fruit crops, such as vineyards, deciduous fruits and citrus. Arlington School District has the largest number of irrigated acres, but only approximately 150 acres were in fruit crops. The second largest number of irrigated acres was in the Chandler School District with approximately 2,150 acres in vineyards and citrus. Mesa had the largest acreage in tree fruit crops of any of the school districts. Dysart, Roosevelt, Deer Valley and Chandler were next, in that order.

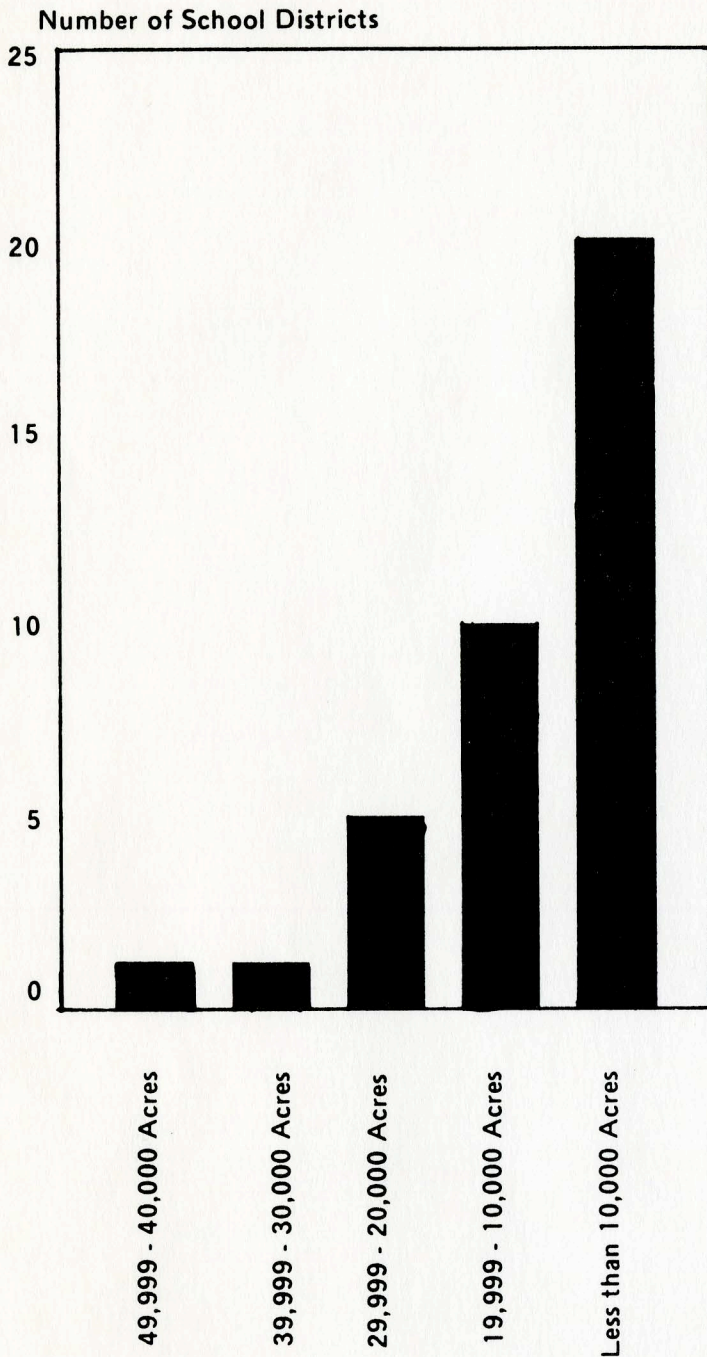
There are over 9,000 acres of citrus in the Mesa School District. This makes up 42% of the total irrigated acres in the District. Many of the school districts have had the number of irrigated acres reduced because of subdivision developments in the districts.

One measure of the economic importance of agriculture in a school district is the cost of producing agricultural products. These costs are distributed among the suppliers of the resources used in agriculture — water, fuel, fertilizers, labor, machinery, land costs and many other items.

Appendix Table 2 lists by school districts the total estimated cost of producing crops and livestock on irrigated land in 1977. It also gives the percent each contributed to the total of the estimated 286 million dollars spent. Figure 3 shows how much each of these districts contributed to the accumulated total. Fifteen of the 37 school districts contributed almost 80% of the estimated total cost - 229 million dollars.

Those school districts contributing less than 2% of the total production cost for the county usually have a small number of irrigated acres. However, some that have fewer irrigated acres have greater total production costs because of a concentration of high cost enterprises. For

FIGURE 2. Number of school districts having from 49,999 to 40,000 acres, 39,999 - 30,000 acres, 29,999 - 20,000 acres, 19,999 - 10,000 acres and less than 10,000 acres of irrigated land.



example, Roosevelt School District has only 4,537 irrigated acres, but since almost 2,500 acres are in citrus, production costs were greater than might be expected. Mesa has a similar cost situation. Mesa has the fifth largest production cost of any of the school districts.

Major contributors to Chandler's cost of producing agricultural products were the number of beef cattle in feedlots and the amount of dairy products resulting from confined production operations. About 35 million dollars out of 45 million of this was accounted for by these enterprises. Laveen had 19.4 million dollars in total

production costs and approximately 16.8 million was estimated to be the costs of producing livestock and livestock products.

Figure 4 gives a cost of production breakdown by different crops, and livestock and livestock products. In some school districts, there is only one dairy or feedlot so the 16.2 million dollars of production costs for dairy and feedlots in the unorganized areas also include those that are in organized school districts but which have only one such enterprise.

Figure 4 shows that 49% of the total cost was incurred by the feedlot and dairy producers. Cotton production accounted for 31% of the total cost, and all other agricultural production costs made up the remaining 20%.

Cattle ranching, which includes cattle on irrigated pastures as well as native forage, was the one agricultural enterprise which we were not able to divide among the school districts. There were approximately 50,000 head of cattle on ranges and pastures in Maricopa County in 1977. The total production cost of these was 3.9 million dollars.

Often the value of property is used as a proxy as to the importance of the different enterprises. There are seven legal classes of property in Arizona. The following is a description of a legal class and the definition of all classes of property!

Legal Class: All property, both real and personal, in the State of Arizona is assigned a classification to determine assessed valuation for taxation purposes. Each legal class is defined by property use and is associated with a percentage factor which is multiplied by the full cash value of the property to obtain assessed valuation. Legal classes appearing in Section One abstracts are defined in general as follows:

Class One: Property assessed at 60% of its full cash value. Class One includes railroad operating property, producing mine claim property, and standing timber.

Class Two: Property assessed at 50% of its full cash value. Class Two includes telephone and telegraph operating property, gas, water and electric utility company property, and pipeline company property.

Class Three: Property assessed at 27% of its full cash value. Class Three consists of commercial and industrial property not included in other classes.

Class Four: Property assessed at 18% of its full cash value. Class Four consists mainly of agricultural properties.

Class Five: Property assessed at 15% of its full cash value. Class Five is composed of residential property not used for profit.

Class Six: Property assessed at 27% of its full cash value (included in abstract totals for Class Three). Class Six contains leased or rented residential property.

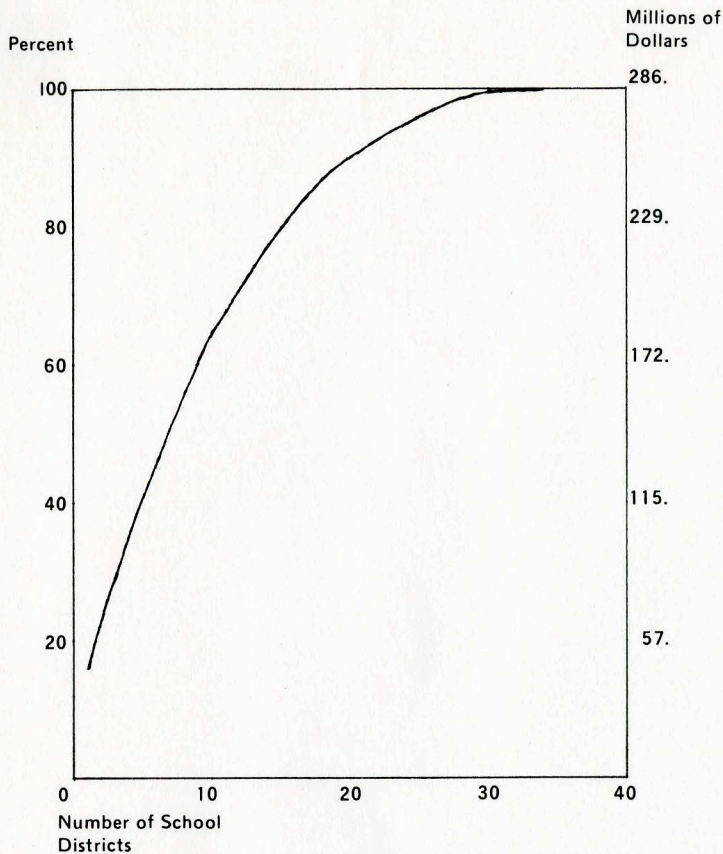


FIGURE 3. The sum of the percentages, and cost, high to low, each school district contributed to the total cost of production of agricultural products in Maricopa County, Arizona, 1977.

Class C: Property assessed at 100% of its full cash value. Class C is comprised of producing oil and gas company property.

Many parcels within the state have multiple legal classes. An example is a farm consisting of a house occupied by the owner (Legal Class Five) and surrounded by agricultural property (Legal Class Four). Agricultural includes most of the vacant. (That is the reason why some school districts show agricultural property although no crops are grown.)

Figure 5 illustrates the extreme differences in the fair market values of property in 36 of the 37 school districts containing irrigated land in Maricopa County. In order to illustrate these differences, fair market values were grouped by four school districts ranging from high to low (i.e., first four with the highest fair market value were added, then the second four highest market values were added). The first four had a fair market value greater than 7 billion dollars while the ninth four had a fair market value of less than 100 million dollars.

Figure 6 shows the percent of the total fair market value for each of these nine groupings of school districts that is made up by five property groupings. Property classes three and six are combined and designated as the third grouping. Property classes one, two, four and five make up the four other groupings, of one, two, four and five respectively. The same was true of the second four while most of the fair market value of the eighth and ninth groups was made up of agricultural property. There are only five classes of property included in this table. Class six property leased or rented residential property, is included with class three. Most of the fair market value in the first four highest school districts was made up of class five property.

Appendix Table 4 shows these in order by school district from high to low by production cost for agriculture. It is interesting to note that even in Chandler, which has the highest production cost for agriculture, agricultural property made up 32% of the total cash value of the property in the school district. Theba has the highest percentage of agricultural property in the school district with 83%. In this instance, the full cash value of all the property was less than 10 million dollars.

The following is full market value for the five groups of property in Maricopa County:³

	Full Market Value	Percent
Railroads & Mines	\$ 30,000,000.00 -	.01%
Tel, Tel, Utilities	1,324,000,000.00 -	7.6%
Commercial ¹	4,789,000,000.00 -	27.7% ⁴
Agriculture	2,250,000,000.00 -	13.0%
Residential	8,920,000,000.00 -	51.5%
TOTAL	\$ 17,313,000,000.00	

Over half of the full cash value of the property in Maricopa County is residential property. This property does not generate any cash income directly. Income is generated from the construction of the residences. Since residential construction is more or less a continuing process in an expanding economy the housing industry is very important. If the population were to become stable or to decline, this industry would cease to be as important as it is today and would be primarily one of maintenance.

Some revenues are being created by people who maintain these residential properties. However, much of this is done by the owners. A large portion of the private property in Maricopa County functions primarily to furnish shelter for the people who live in the county and own the residences.

Commercial property is a little over twice the value of the agricultural property, with Telephone, Telegraph & Utilities and Railroads and Mines not quite a third of the commercial property and a little more than half of agricultural property.

³State and County Abstract of the Assessment Roll, 1977, Division of Property and Special Taxes Center of Information Services Section, State of Arizona, Department of Revenue, Phoenix, Arizona, p. 30.

⁴Includes class six property.

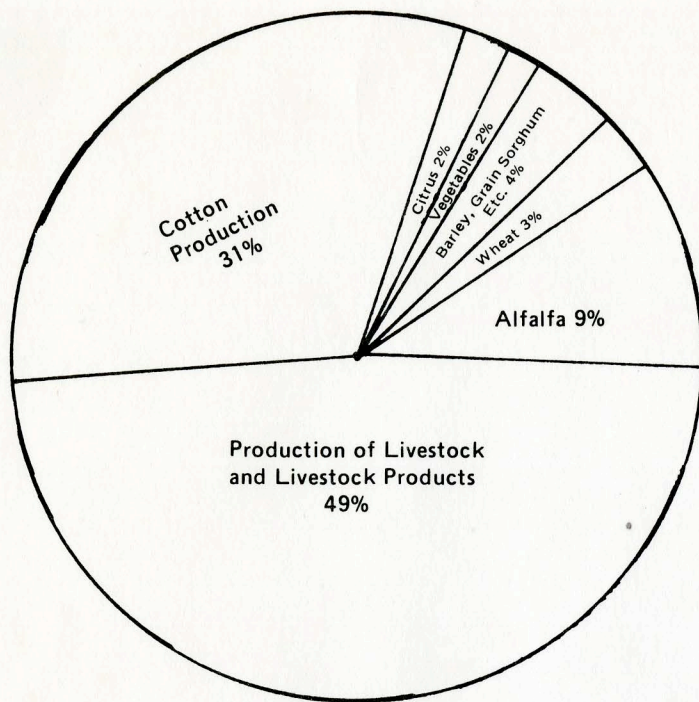


FIGURE 4. Percent of the total cost of production accounted for by each crop and the production of livestock and livestock products.

In order to ascertain the economic impact of agriculture on Maricopa County, it is necessary to examine the agribusiness sector. This sector services agriculture. Most of the time it is a matter of selling goods of some form to agricultural producers. However, it also involves services such as insecticide companies applying insecticides. Table 1 shows the number of people employed in different types of agribusinesses and the estimated salaries and wages paid.

These are divided into two groups: (1) those dependent on Maricopa County agriculture and (2) those who are dependent on Phoenix as a center of operation. This latter group sells to agricultural producers in other Arizona counties or other states, processes agricultural products produced in counties other than Maricopa or all three.

It is interesting to note that food processing and citrus packing have approximately the same total salary and wages, although there are considerably more people employed in citrus packing that depend on Maricopa County agriculture than there are in food processing groups.

Food processing includes the milling of wheat for flour, producing dairy foods, refining of sugar, making of pickles and other foods. It does not include meat packing. There are approximately 7,500 people employed in these agribusiness enterprises that depend upon Maricopa County agriculture and an additional 3,600 employees are employed in those businesses serving areas outside Maricopa County.

There was a little over 80 million dollars paid to the people employed in these agribusiness enterprises which were dependent upon Maricopa County agriculture, and an additional 43 million dollars was brought in by businesses which were in Phoenix but depended on areas outside of Maricopa County for their business.

It was estimated that a total of a little more than 11,000 people were employed in agribusiness in Maricopa County in 1977. This included both those businesses that served Maricopa County agriculture and those that served areas outside of Maricopa County. The estimated income for these people was 123.1 million dollars.

In order to determine the effects of one industry on the local economy, one needs to know how much such incomes mean to the local economy. There are different ways to examine this. We used a direct method in which we estimated the effect of an additional dollar of income on the local businesses. (The Appendix has a report on this method showing how it was determined.)

The results of the study to determine the effect of an additional dollar indicated that for every dollar spent by the wage earner, including the owner and managers as well as those people employed in agribusiness, another 48¢ was needed to service this dollar. This means that the people who were buying consumer goods and services in the local market required 48¢ to be spent in the local labor market in order to have the goods and services purchased by the original dollar available to the purchaser.

It is estimated that 25 million dollars was paid in wages to agricultural workers for irrigated crops. An additional 20 million dollars was paid to the people involved in production of livestock and livestock products.

The value of agricultural production in Maricopa County indicates that there is approximately 150 million dollars returned to the producers of livestock and livestock products and crop producers, after direct costs were paid. It is estimated that at least 25 million dollars was spent for consumer goods. Another 48¢ would be needed to service every dollar spent by proprietors and their families. There is a considerable amount of family labor used in production of agricultural products which does not show up as wages. These costs show up as charges against returns to the proprietor and for family labor.

With 45 million dollars for labor being directly paid in agriculture, another 25 million income spent for consumer goods by the owners and their families and 80 million dollars being paid to people in agribusinesses, a total of 150 million was estimated to have been spent by people employed in agriculture and agribusiness.

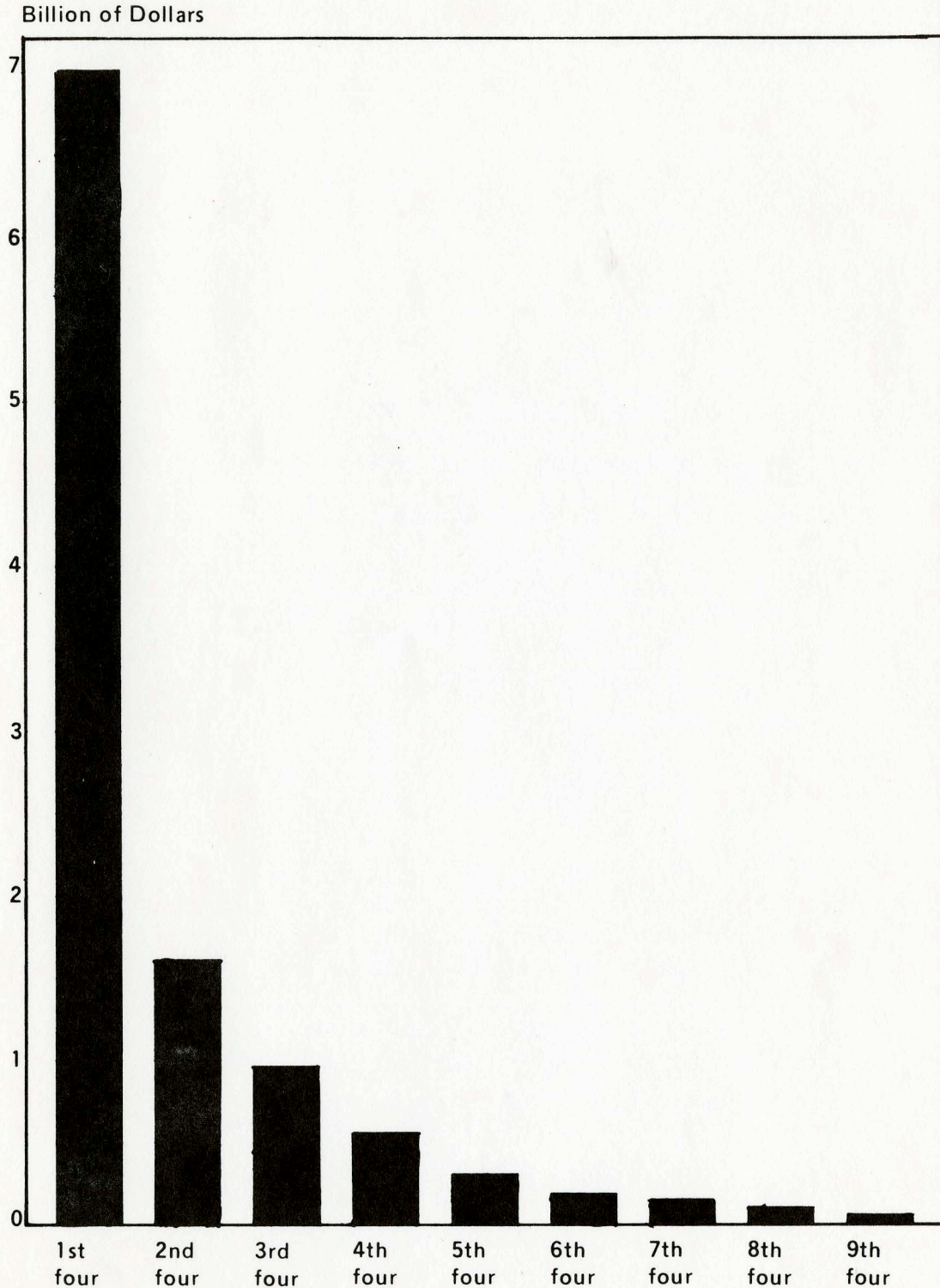
With an additional 48¢ for every dollar received in wages induced into the economy in order to serve the people who wish to buy goods with their dollars, an estimated 222 million dollars was plowed into the economy of Maricopa County. If the effect of Maricopa County as a trade center was included, there was approximately 285 million dollars contributed to the economy from agriculture and its support industries.

Thus one can look at the agricultural industry in so many different ways. The cost of producing crops,

livestock and livestock products was estimated to be 286 million dollars. The cost of harvesting fresh vegetables, packing fruit and grapes are not included in these estimates. The value of crops marketed in Maricopa County in 1977 was estimated to be 286.5 million dollars

and the value of livestock and livestock products sold was estimated at 211.1 million.⁷ The estimated cost of finishing beef in the feedlots, and dairy products is shown to be 139.7 million dollars, while the cost of producing crops in Maricopa County in 1977 was estimated to be approxi-

FIGURE 5. Total fair market value for each four school districts.



⁷Arizona Agricultural Statistics, 1978; Arizona Crop and Livestock Reporting Service; Economics, Statistics, and Coopera-

tive Service; U.S. Department of Agriculture and the University of Arizona, Phoenix, Arizona; 1979; p. 3.

mately 147.4 million dollars. One should remember that in the case of the value of livestock and livestock products, the value of the animal that has been produced on the range is not deducted from the cash receipts of agricultural marketings. Also, the receipts are valued at the processed price for citrus and fresh vegetables. The costs in Appendix Table 4 do not include the packing costs for fresh fruits and vegetables.

Most economic reports indicating the importance of industry, report the sales of the industry. The major effort

of this report has been to reduce the economic effects to the ones that directly affect the economy (i.e., wages and salaries). Part of the proprietor's income is used to support the farmer or rancher and his family, and part is used to pay indebtedness. This will not affect the economy in the same way as consumer expenditures. In fact the impact of paying indebtedness has already been estimated by estimating the salary and wages paid to people in agricultural financing industry.

FIGURE 6. The percent of the total fair market value for each of the nine groupings of four school districts that was made up by five property groupings.

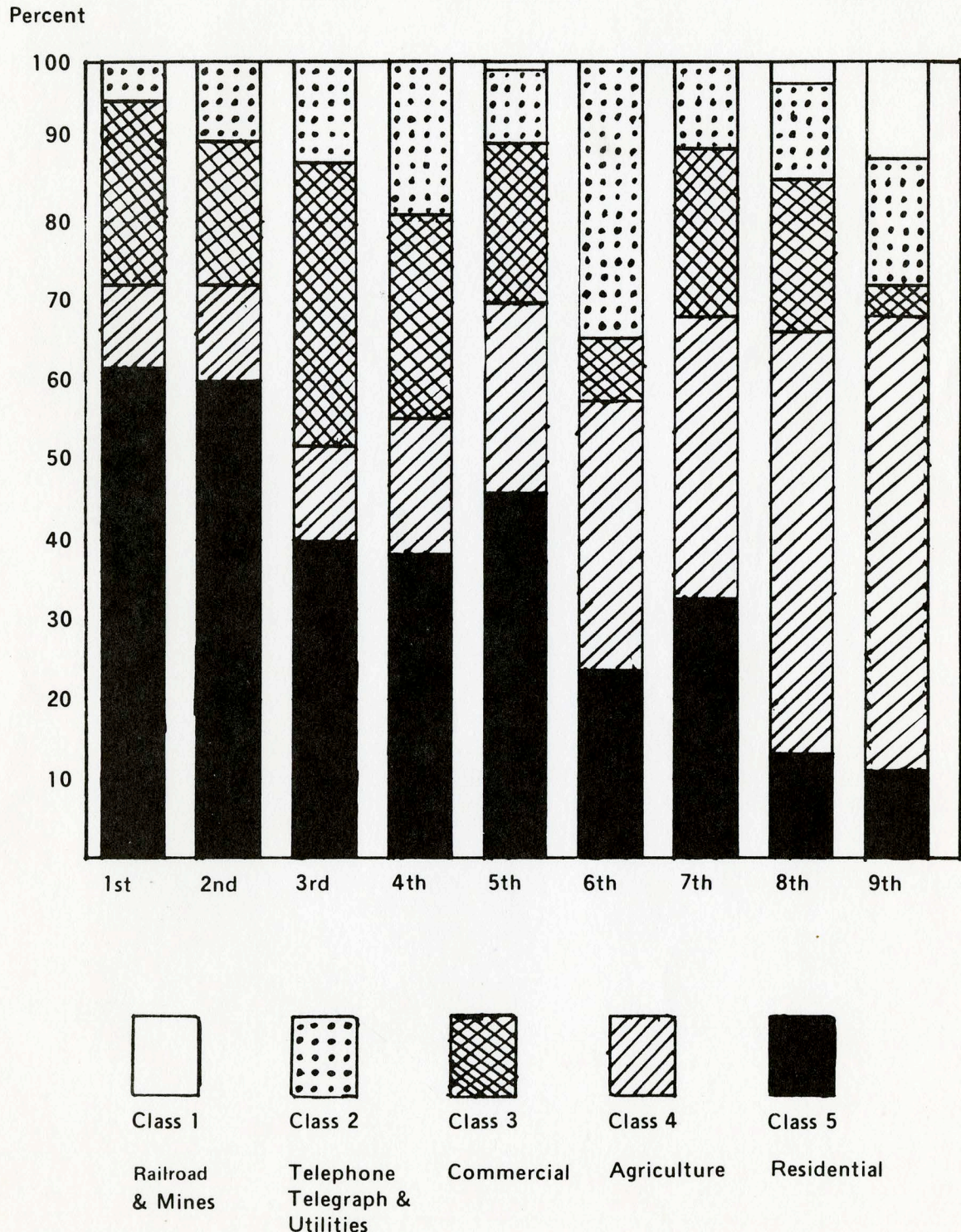


Table 1. Estimated income to people employed in agribusiness in Maricopa County, Arizona; and number of those dependent on agriculture in the county and on Phoenix as a trade center.

Types of Agribusiness	Dependent on Maricopa County Agriculture		Dependent on Phoenix as a Trade Center ^{5/}	
	No. of Employees	Salary & Wages (1000 dollars)	No. of Employees	Salary & Wages (1000 dollars)
Agri. Chemicals	172	2,412	336	4,708
Cotton	922	4,859	1,009	5,318
Food Processing ^{6/}	1,460	18,568	1,773	21,331
Poultry & Eggs	34	728	60	1,278
Animal Feed	110	952	110	951
Agricultural Machinery Manufacturing	142	1,824	273	3,507
Meat Packing	199	2,126	988	10,553
Agricultural Service	31	391	124	1,564
Machinery Sales	305	3,148	709	7,322
Farm Supplies	286	2,632	437	4,022
Vegetable Packing	893	9,095	893	9,095
Citrus Packing	1,845	18,043	1,845	18,043
Government	607	7,811	1,411	18,165
Veterinarian	9	225	9	225
Transportation	209	4,354	675	10,125
Financial & Insurance	120	2,047	280	4,760
RE, Advertising & Publicity	93	939	216	2,184
TOTAL	7,518	80,153	11,148	123,151

^{5/} Includes those employed to support Maricopa County's Agriculture, plus those employed because of Phoenix being a Trade Center.

^{6/} Includes dairy, sugar, flour, pickles and other food products.

APPENDIX

Appendix Table 1. Estimated number of irrigated acres in field crops, vineyards, deciduous fruit and citrus in the respective school district in Maricopa County in 1977.

School District	Field Crops ^{8/}	Vineyards	Deciduous Fruit	Citrus	Total
Riverside #2	2,343		56		2,399
Tempe #3	1,085			24	1,109
Mesa #4	12,639			9,198	21,837
Isaac #5	534				534
Washington #6	1,985				1,985
Wickenburg #9	4,718				4,718
Peoria #11	14,677	286	18	1,536	16,517
Tolleson #17	3,023				3,023
Murphy #21	339				339
Gila Bend #24	14,432				14,432
Liberty #25	28,053			431	28,484
Kyrene #28	21,058			426	21,484
Buckeye #33	19,735				19,735
Glendale #40	2,549				2,549
Gilbert #41	20,678		82	269	21,029
Avondale #44	10,790				10,790
Fowler #45	5,981				5,981
Arlington #47	49,792	152			49,944
Scottsdale #48	148				148
Palo Verde #49	15,784				15,784
Laveen #59	7,340			391	7,731
Higley #60	9,983	203	599	431	11,216
Union #62	4,070				4,070
Aguila #63	11,018				11,018
Littletown #65	9,524				9,524
Roosevelt #66	2,103			2,434	4,537
Sentinel #71	7,314	106		111	7,531
Litchfield #79	17,674	89		916	18,679
Chandler #80	30,404	460		1,701	32,565
Nadaburg #81	30				30
Cartwright #83	1,847				1,847
Dysart #89	24,925	599		2,245	27,769
Ruth Fisher #90	8,459				8,459
Pendergast #92	7,732				7,732
Theba #94	17,247				17,247
Queen Creek #95	12,020	278	775	238	13,311
Deer Valley #97	1,291			2,409	3,700
Unorganized	7,119				7,119
TOTAL	410,443	2,173	1,530	22,760	436,906

^{8/} This includes cotton, wheat, barley, grain sorghum, alfalfa, sugarbeets, safflower and vegetables.

Appendix Table 2. Estimated total cost of producing crops and livestock for each school district, and the percent each school district's cost is of the total cost for Maricopa County in 1977.

School District	Total Cost	Percent of Total for Maricopa County
Chandler	45,746,105	16.0
Laveen	19,338,836	6.8
Unorganized ^{9/}	19,017,389	6.6
Arlington	16,800,614	5.9
Gilbert	15,108,312	5.3
Liberty	14,986,145	5.2
Mesa	14,777,586	5.2
Higley	13,981,554	4.9
Litchfield	12,481,014	4.4
Kyrene	11,815,179	4.1
Dysart	9,888,470	3.5
Peoria	9,055,871	3.2
Roosevelt	8,488,148	3.0
Buckeye	8,477,791	3.0
Littleton	8,361,059	2.9
Pendergast	7,410,325	2.6
Palo Verde	6,089,392	2.1
Theba	5,587,230	2.0
Gila Bend	4,900,615	1.7
Queen Creek	4,400,883	1.5
Fowler	4,037,193	1.4
Aguila	3,741,381	1.3
Union	3,576,155	1.2
Avondale	3,561,450	1.2
Ruth Fisher	2,872,349	1.0
Glendale	2,733,812	1.0
Sentinel	2,509,185	0.9
Wickenburg	1,602,448	0.6
Tolleson	984,584	0.3
Deer Valley	970,746	0.3
Riverside	795,796	0.3
Washington	655,043	0.2
Cartwright	627,230	0.2
Tempe	390,592	0.1
Isaac	181,206	<u>10/</u>
Murphy	115,281	<u>10/</u>
Scottsdale	49,659	<u>10/</u>
Nadaburg	10,183	<u>10/</u>

^{9/} "Unorganized" includes all properties that are not in organized school districts and livestock enterprises for those school districts.

^{10/} Less than .1 of a percent.

Appendix Table 3. Total cost of production by school district in Maricopa County in 1977.

District	Upland		Wheat	Barley	Grain		Alfalfa	Sugar Beets	Safflower	Citrus	Vegetables	Livestock & Livestock Products		Total
	Cotton	#			Sorghum	#						Products	Total	
Riverside	518,017	#2	48,989	22,323	22,979	155,409	11,929	12,150	0	0	0	0	0	795,796
Tempe	233,658	#3	12,288	6,674	5,763	69,165	5,434	3,244	5,384	48,982	0	0	0	390,592
Mesa	2,761,586	#4	131,858	70,743	61,462	823,511	63,339	32,703	2,027,002	709,902	8,095,480	14,777,586	0	181,206
Isaac	118,111	#5	11,242	5,952	5,195	35,371	2,605	2,730	0	0	0	0	0	655,043
Washington	428,108	#6	40,103	21,556	18,626	126,786	9,805	10,059	0	0	0	0	0	1,602,448
Wickenburg	1,043,455	#9	98,753	52,928	46,202	312,941	23,863	24,306	0	0	0	0	0	9,055,871
Peoria	3,200,935	#11	300,894	161,384	140,104	953,652	73,511	74,870	344,265	0	0	0	3,806,256	984,584
Tolleson	644,831	#17	59,983	32,271	27,748	189,849	14,706	15,196	0	0	0	0	0	115,281
Murphy	75,160	#21	7,081	3,734	3,260	22,369	1,858	1,819	0	0	0	0	0	4,900,615
Gila Bend	3,191,104	#24	301,819	161,707	141,164	956,979	73,092	74,750	0	0	0	0	0	14,986,145
Liberty	6,107,025	#25	574,208	308,027	267,532	1,820,287	139,836	143,020	86,150	0	0	0	5,540,060	11,815,179
Kyrene	4,628,506	#28	436,658	234,061	203,843	1,384,122	105,988	168,406	95,573	0	0	0	4,558,022	8,477,791
Buckeye	4,339,681	#33	409,390	219,468	191,161	1,297,918	99,359	106,505	0	0	0	0	1,814,309	2,733,812
Glendale	544,049	#40	50,584	27,175	23,379	160,346	12,571	12,580	0	0	0	0	1,903,128	15,108,312
Gilbert	4,467,838	#41	418,070	224,522	194,157	1,324,826	102,260	104,366	60,350	0	0	0	8,211,923	3,561,450
Avondale	2,328,092	#44	217,625	116,910	101,035	689,915	53,406	54,467	0	0	0	0	2,092,732	4,037,193
Fowler	1,273,926	#45	118,313	63,657	54,710	375,050	29,027	29,778	0	0	0	0	0	16,800,614
Arlington	10,949,193	#47	1,033,038	553,766	482,347	3,274,792	251,000	256,478	0	0	0	0	0	49,659
Scottsdale	32,179	#48	3,022	1,629	1,414	9,791	729	895	0	0	0	0	0	6,089,392
Palo Verde	3,438,865	#49	323,001	173,352	150,425	1,023,933	78,927	80,459	0	0	0	0	820,430	19,338,836
Laveen	1,622,948	#59	153,603	82,306	71,848	486,801	37,293	37,983	87,720	0	0	0	16,758,334	13,981,554
Higley	2,138,146	#60	101,105	54,356	46,832	631,170	49,036	25,258	96,694	668,971	0	0	2,206,140	3,576,155
Union	893,153	#62	84,271	45,119	39,270	267,058	20,346	20,798	0	0	0	0	0	3,741,381
Aguila	2,436,091	#63	230,486	123,461	107,775	730,507	55,939	57,122	0	0	0	0	0	8,361,059
Littleton	2,075,545	#65	194,993	104,577	90,762	618,190	47,740	48,474	0	0	0	0	5,180,778	8,488,148
Roosevelt	465,071	#66	44,059	23,551	20,560	139,385	10,807	10,934	546,067	0	0	0	7,227,714	2,509,185
Sentinel	1,617,395	#71	152,988	82,029	71,606	484,989	37,293	37,983	24,902	0	0	0	0	12,481,014
Litchfield	3,824,478	#79	181,747	97,632	84,481	1,134,865	87,481	45,434	194,511	1,672,093	0	0	5,158,292	45,746,105
Chandler	6,499,995	#80	476,416	256,131	220,503	1,917,143	148,619	119,615	359,520	668,971	0	0	35,079,192	10,183
Nadaburg	6,657	#81	610	271	236	2,111	0	298	0	0	0	0	0	627,230
Cartwright	408,417	#83	38,665	20,642	18,017	122,452	9,318	9,719	0	0	0	0	0	9,888,470
Dysart	5,417,918	#89	258,081	138,439	120,014	1,611,528	124,155	64,451	481,791	1,672,093	0	0	0	2,872,349
Ruth Fisher	1,870,297	#90	177,022	94,777	82,736	560,881	42,883	43,753	0	0	0	0	0	7,410,325
Pendergast	1,649,766	#92	153,430	82,425	70,897	486,219	37,705	38,617	0	0	0	0	4,891,266	5,857,230
Theba	3,813,549	#94	360,826	193,300	168,745	1,143,839	87,636	89,335	0	0	0	0	0	4,440,883
Queen Creek	2,610,897	#95	124,242	66,643	57,756	776,150	60,014	31,004	45,206	668,971	0	0	0	970,746
Deer Valley	285,480	#97	26,957	14,405	12,575	85,562	6,706	6,679	532,382	0	0	0	0	19,017,389
Unorganized	1,574,069		75,643	40,458	35,316	471,985	36,168	18,837	0	0	578,389	16,186,524	0	0
TOTAL	89,534,191		7,432,063	3,986,361	3,462,435	26,677,847	2,052,384	1,915,075	4,987,517	6,688,372	139,700,566	286,436,811	0	0

Appendix Table 4. Full cash value and percent of each of the classes of property of the total for 37 school districts in Maricopa County in 1977.

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Chandler Unified #80	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	81.00	6
	Commercial ^{12/}	95.00	33
	Agricultural ^{13/}	57.00	20
	Residential	117.00	41
	TOTAL	286.00	100
Laveen Elm. #59	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	3.00	7
	Commercial ^{12/}	1.00	3
	Agricultural ^{13/}	14.00	32
	Residential	25.00	58
	TOTAL	43.00	100
Arlington Elm. #47	Railroads & Mines	1.10	3
	Tel. & Tel., Utilities	16.30	40
	Commercial ^{12/}	1.50	4
	Agricultural ^{13/}	20.50	50
	Residential	1.30	3
	TOTAL	40.00	100
Gilbert Elm. #41	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	47.00	33
	Commercial ^{12/}	12.00	8
	Agricultural ^{13/}	35.00	24
	Residential	50.00	
	TOTAL	144.00	
Liberty Elm. #25	Railroads & Mines	.30	1
	Tel. & Tel., Utilities	6.60	18
	Commercial ^{12/}	1.70	5
	Agricultural ^{13/}	20.30	56
	Residential	7.10	20
	TOTAL	36.20	100
Mesa Elm. #4	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	96.00	6
	Commercial ^{12/}	398.00	24
	Agricultural ^{13/}	232.00	14
	Residential	919.00	56
	TOTAL	1,647.00	100
Higley Elm. #60	Railroads & Mines	.30	2
	Tel. & Tel., Utilities	2.50	16
	Commercial ^{12/}	.70	4
	Agricultural ^{13/}	11.40	70
	Residential	1.40	9
	TOTAL	16.00	100

Appendix Table 4. (Continued)

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Litchfield Elm. #79	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	8.00	9
	Commercial ^{12/}	14.00	14
	Agricultural ^{13/}	21.00	22
	Residential	53.00	55
	TOTAL	96.00	100
Kyrene Elm. #28	Railroads & Mines	.24	— ^{14/}
	Tel. & Tel., Utilities	37.00	24
	Commercial ^{12/}	17.00	11
	Agricultural ^{13/}	24.00	16
	Residential	77.00	49
	TOTAL	156.00	100
Dysart Elm. #89	Railroads & Mines	1.20	2
	Tel. & Tel., Utilities	8.80	13
	Commercial ^{12/}	11.40	17
	Agricultural ^{13/}	28.00	43
	Residential	16.50	25
	TOTAL	65.00	100
Buckeye Elm. #33	Railroads & Mines	.40	1
	Tel. & Tel., Utilities	7.50	14
	Commercial ^{12/}	11.30	21
	Agricultural ^{13/}	17.20	32
	Residential	16.90	32
	TOTAL	53.00	100
Peoria Unified #11	Railroads & Mines	.30	
	Tel. & Tel., Utilities	93.40	29
	Commercial ^{12/}	27.80	9
	Agricultural ^{13/}	48.50	15
	Residential	150.80	47
	TOTAL	320.80	100
Roosevelt #66	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	20.30	6
	Commercial ^{12/}	78.05	24
	Agricultural ^{13/}	50.05	15
	Residential	179.00	55
	TOTAL	327.40	100
Littleton Elm. #65	Railroads & Mines	.30	1
	Tel. & Tel., Utilities	4.00	11
	Commercial ^{12/}	2.80	8
	Agricultural ^{13/}	11.90	33
	Residential	16.60	47
	TOTAL	35.00	100

Appendix Table 4. (Continued)

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Pendergast Elm. #92	Railroads & Mines	.00	0
	Tel. & Tel., Utilities	47.00	6
	Commercial ^{12/}	1.80	2
	Agricultural ^{13/}	12.90	17
	Residential	56.30	74
	TOTAL	75.70	100
Palo Verde Elm. #49	Railroads & Mines	.30	2
	Tel. & Tel., Utilities	1.70	12
	Commercial ^{12/}	1.00	7
	Agricultural ^{13/}	9.70	68
	Residential	1.50	11
	TOTAL	14.00	100
Theba Elm. #94	Railroads & Mines	.76	8
	Tel. & Tel., Utilities	.71	7
	Commercial ^{12/}	.15	1
	Agricultural ^{13/}	7.93	83
	Residential	—	— ^{14/}
	TOTAL	9.60	100
Gila Bend Unified #24	Railroads & Mines	1.40	7
	Tel. & Tel., Utilities	3.00	14
	Commercial ^{12/}	4.60	22
	Agricultural ^{13/}	8.50	40
	Residential	3.70	17
	TOTAL	21.20	100
Queen Creek #95	Railroads & Mines	.32	1
	Tel. & Tel., Utilities	2.23	9
	Commercial ^{12/}	6.72	26
	Agricultural ^{13/}	13.42	51
	Residential	3.57	14
	TOTAL	26.30	100
Fowler Elm. #45	Railroads & Mines	.20	1
	Tel. & Tel., Utilities	2.90	8
	Commercial ^{12/}	16.40	45
	Agricultural ^{13/}	8.00	22
	Residential	9.00	25
	TOTAL	36.00	100
Aguila Elm. #63	Railroads & Mines	.80	11
	Tel. & Tel., Utilities	1.40	19
	Commercial ^{12/}	.70	9
	Agricultural ^{13/}	3.40	47
	Residential	1.00	13
	TOTAL	7.20	100

Appendix Table 4. (Continued)

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Union Elm. #62	Railroads & Mines	.00	0
	Tel. & Tel., Utilities	1.00	19
	Commercial ^{12/}	.08	2
	Agricultural ^{13/}	3.41	66
	Residential	.67	13
	TOTAL	5.20	100
Avondale Elm. #44	Railroads & Mines	.50	1
	Tel. & Tel., Utilities	7.00	9
	Commercial ^{12/}	26.00	32
	Agricultural ^{13/}	18.00	23
	Residential	28.00	35
	TOTAL	80.00	100
Ruth Fisher Elm. #90	Railroads & Mines	.00	0
	Tel. & Tel., Utilities	39.00	74
	Commercial ^{12/}	.80	1
	Agricultural ^{13/}	12.00	23
	Residential	.90	2
	TOTAL	53.00	100
Glendale Elm. #40	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	27.00	6
	Commercial ^{12/}	139.00	30
	Agricultural ^{13/}	45.00	10
	Residential	244.00	54
	TOTAL	455.00	
Sentinel Elm. #71	Railroads & Mines	2.00	24
	Tel. & Tel., Utilities	2.50	29
	Commercial ^{12/}	.30	3
	Agricultural ^{13/}	3.70	42
	Residential	.08	1
	TOTAL	9.00	100
Wickenburg Union #9	Railroads & Mines	1.70	3
	Tel. & Tel., Utilities	4.20	8
	Commercial ^{12/}	12.30	22
	Agricultural ^{13/}	11.40	20
	Residential	26.40	47
	TOTAL	56.00	100
Tolleson Elm. #17	Railroads & Mines	.23	1
	Tel. & Tel., Utilities	2.60	8
	Commercial ^{12/}	8.49	25
	Agricultural ^{13/}	10.63	31
	Residential	11.99	35
	TOTAL	33.94	100

Appendix Table 4. (Continued)

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Deer Valley Elm. #97	Railroads & Mines	.00	0
	Tel. & Tel., Utilities	17.00	7
	Commercial ^{12/}	33.00	14
	Agricultural ^{13/}	39.00	17
	Residential	148.00	62
	TOTAL	237.00	100
Riverside Elm. #2	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	76.00	44
	Commercial ^{12/}	85.00	48
	Agricultural ^{13/}	12.00	7
	Residential	2.00	1
	TOTAL	176.00	100
Washington Elm. #6	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	88.00	5
	Commercial ^{12/}	393.00	22
	Agricultural ^{13/}	128.00	7
	Residential	1,180.00	60
	TOTAL	1,789.00	100
Cartwright Elm. #83	Railroads & Mines	.00	0
	Tel. & Tel., Utilities	20.00	4
	Commercial ^{12/}	38.00	8
	Agricultural ^{13/}	42.00	9
	Residential	387.00	79
	TOTAL	487.00	100
Tempe Elm. #3	Railroads & Mines	1.00	— ^{14/}
	Tel. & Tel., Utilities	109.00	8
	Commercial ^{12/}	400.00	30
	Agricultural ^{13/}	194.00	15
	Residential	611.00	46
	TOTAL	1,316.00	100
Isaac Elm. #5	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	12.00	5
	Commercial ^{12/}	122.00	46
	Agricultural ^{13/}	20.00	7
	Residential	112.00	42
	TOTAL	266.00	100
Murphy Elm. #21	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	7.00	5
	Commercial ^{12/}	88.00	66
	Agricultural ^{13/}	18.00	14
	Residential	19.00	14
	TOTAL	132.00	100

Appendix Table 4. (Continued)

School District	Kind of Property	Full Cash Value ^{11/} Million Dollars	Percent of Total For School Dist.
Scottsdale Unified #48	Railroads & Mines	—	— ^{14/}
	Tel. & Tel., Utilities	81.00	4
	Commercial ^{12/}	438.00	19
	Agricultural ^{13/}	194.00	9
	Residential	1,540.00	68
	TOTAL	2,253.00	100
Nadaburg Elm. #81	Railroads & Mines	.40	6
	Tel. & Tel., Utilities	.80	12
	Commercial ^{12/}	.30	4
	Agricultural ^{13/}	3.50	51
	Residential	1.00	27
	TOTAL	6.80	100

^{11/}Full cash value is the value of the property as prescribed by law.

^{12/}Includes residential properties leased and rented.

^{13/}Agricultural property includes vacant land.

^{14/}Less than 1%.

Estimation of an Income Multiplier To Be Used with the Income Generated in Maricopa County by Agriculture and Agribusiness.

The following difficulties in making a direct estimate of a multiplier for Maricopa County included:

1. Indirect methods of estimation (Location Quotient and Minimum Requirements) were rejected. These techniques result in an **employment** (not income) multiplier. This approach was inappropriate for the present study (The Impact of Agriculture on the Economy of Maricopa County) for two reasons:

a. It would have been extremely difficult to break down each sector of farming and agribusiness into base/residential employment. The close linkages between Maricopa farmers and certain segments of the support industries surrounding agriculture make such clear cut distinctions unlikely.

b. It is intended that the study be written so that it can be understood by interested members of the general public. The need to explain base export/residential theory would be inadvisable in such a format.

2. In Maricopa County there is a population of 5 million households and 9,585 retail firms. The resources available did not permit an adequate survey of households and businesses in the county in order to acquire the data necessary to estimate a Keynesian-type income multiplier.

For the above reasons an income multiplier estimated for the economy of Safford, Arizona, was used as a proxy for a Maricopa County multiplier. The multiplier was estimated in the following manner:

1. E. Layton in 1973 conducted a study in partial completion of a Master's thesis which determined the average family budget for a factory worker in the Safford area. The study also identified what portions of that budget were spent locally and what portions were spent on imports. That information was the raw data used to estimate an average propensity to consume and consumer "leakage" for the town of Safford.

2. There are 215 retail firms in Safford. A random survey of 85 of the retail merchants was conducted to determine business "leakage." Of these 85, ultimately 31 firms were willing to give the interviewer the budget information requested. With the exception of the public sector, resistance to giving any information to the University of Arizona was quite strong. The reasons for refusal fell into several different categories:

a. Managers of stores affiliated with large chains do not have the authority to release information (and in some cases have been enjoined by top management for doing so).

b. Some chains conduct their business in such a centralized manner that it is very difficult to break down accounts into dollars exported from or returned to the local communities. Bills for local services such as property taxes and utilities are sent directly to some central regional or national accounting office. Some local managers do not even have control of their payroll.

c. Some people with a small staff do not want to take the time.

d. Because it is difficult for Safford merchants to see that this study could be in their self-interest, they simply don't want to bother with it.

e. There are those who equate the University with government regulatory agencies and take out their hostility to regulators by refusing to cooperate in this study.

With the information we did receive, we came up with the following:

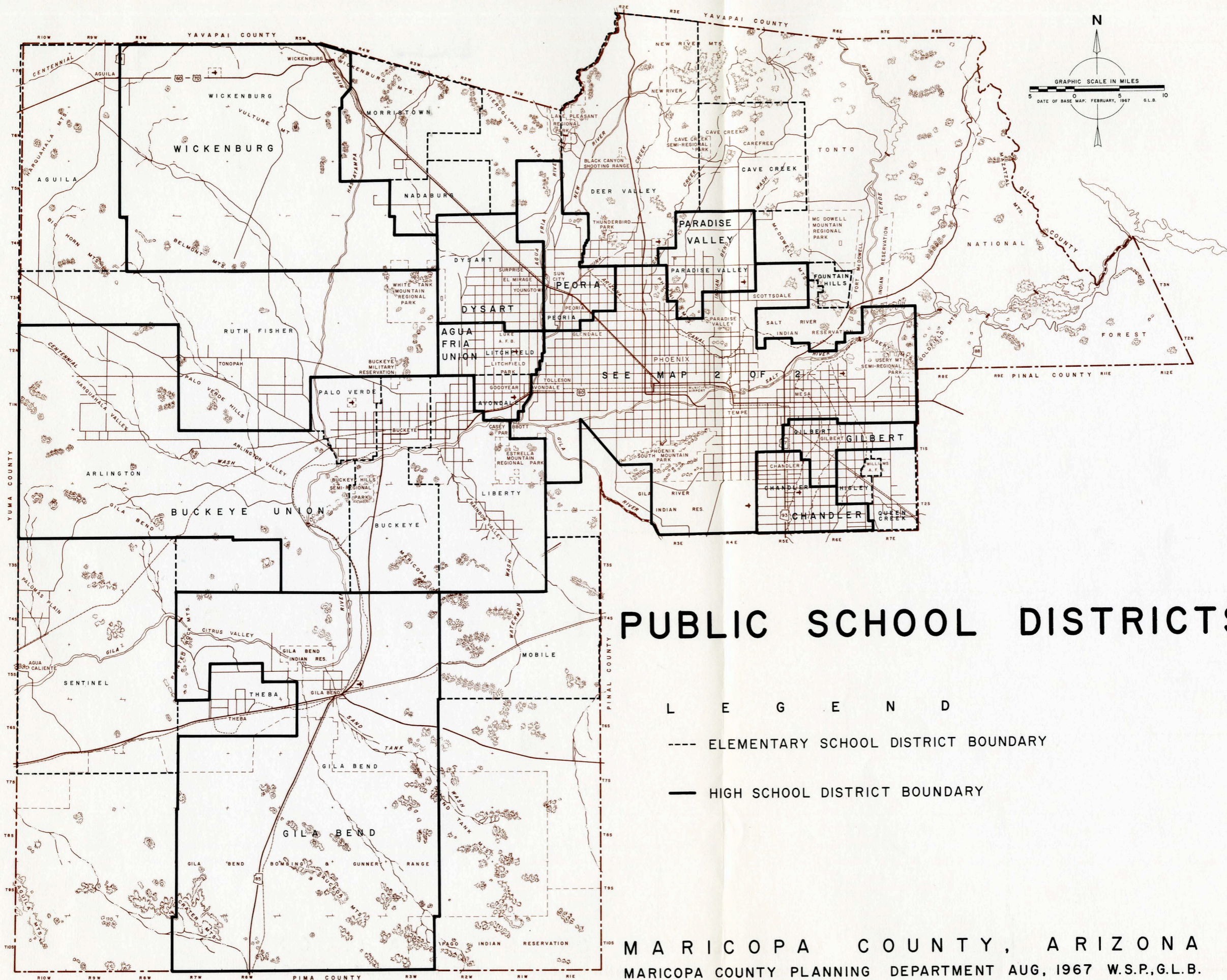
Average propensity to consume	.89
Business leakage ¹⁵	.5972
Consumer leakage ¹⁵	.093
Multiplier + $\frac{1}{1 - .892 (.403) (.907)}$ + 1.48	

Although these data are not as complete as they might be nor are they from Maricopa County, the results can be better defended than the results from other models. For this reason, this multiplier has been applied to income from farming and agribusiness in Maricopa County.

¹⁵Appendix Table 5 shows Consumer and Business Leakage for the different expenditures.

Appendix Table 5. Safford, Arizona. — Consumption income budget and import expenditure.

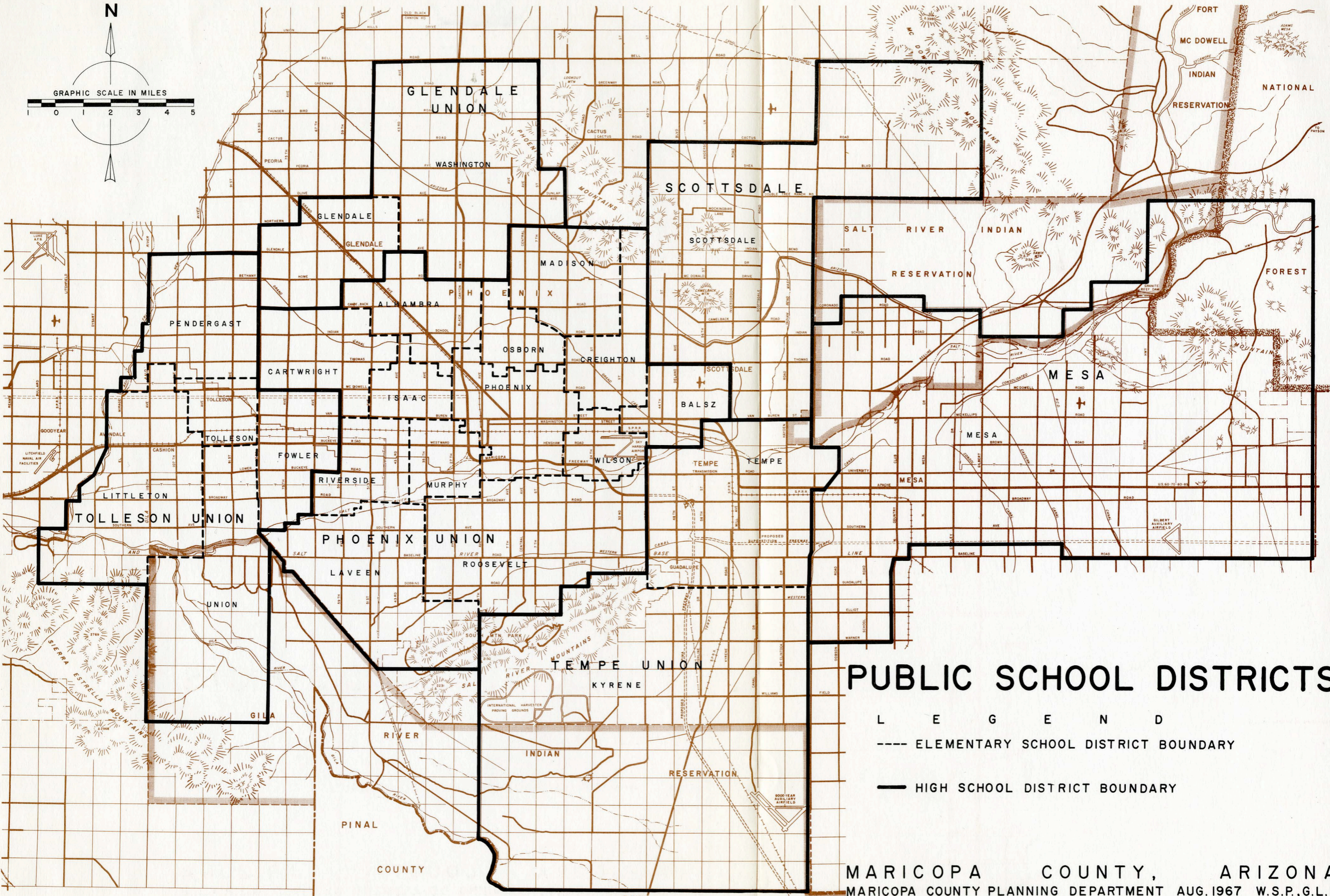
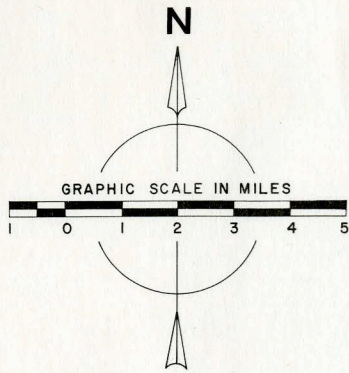
Average Factory Worker's Household Budget	Consumer Leakage	Business Leakage
Food	.234	.132
Transportation		
Purchase	.110	.072
Maintenance	.015	.006
Fuel	.058	.044
Housing	.111	.071
Clothing	.079	.053
Recreation	.074	.030
Utilities	.071	.034
Health		
Medical	.037	.014
Dental	.008	
Drugs	.014	.007
Insurance	.052	.003
Household	.029	.019
Av. Prop. to Consume	.892	
Savings	.108	
	1.000	



PUBLIC SCHOOL DISTRICTS

- L E G E N D
- ELEMENTARY SCHOOL DISTRICT BOUNDARY
 - HIGH SCHOOL DISTRICT BOUNDARY

MARICOPA COUNTY, ARIZONA
 MARICOPA COUNTY PLANNING DEPARTMENT AUG, 1967 W.S.P.G.L.B.
 REVISED FEB, 1972
 MAP I



MARICOPA COUNTY, ARIZONA
 MARICOPA COUNTY PLANNING DEPARTMENT AUG. 1967 W.S.P., G.L.B.
 REVISED FEB. 1972
 MAP 2