Farming in the City's Shadow

Urbanization of Land and Changes in Farm Output in Standard Metropolitan Statistical Areas, 1960-70

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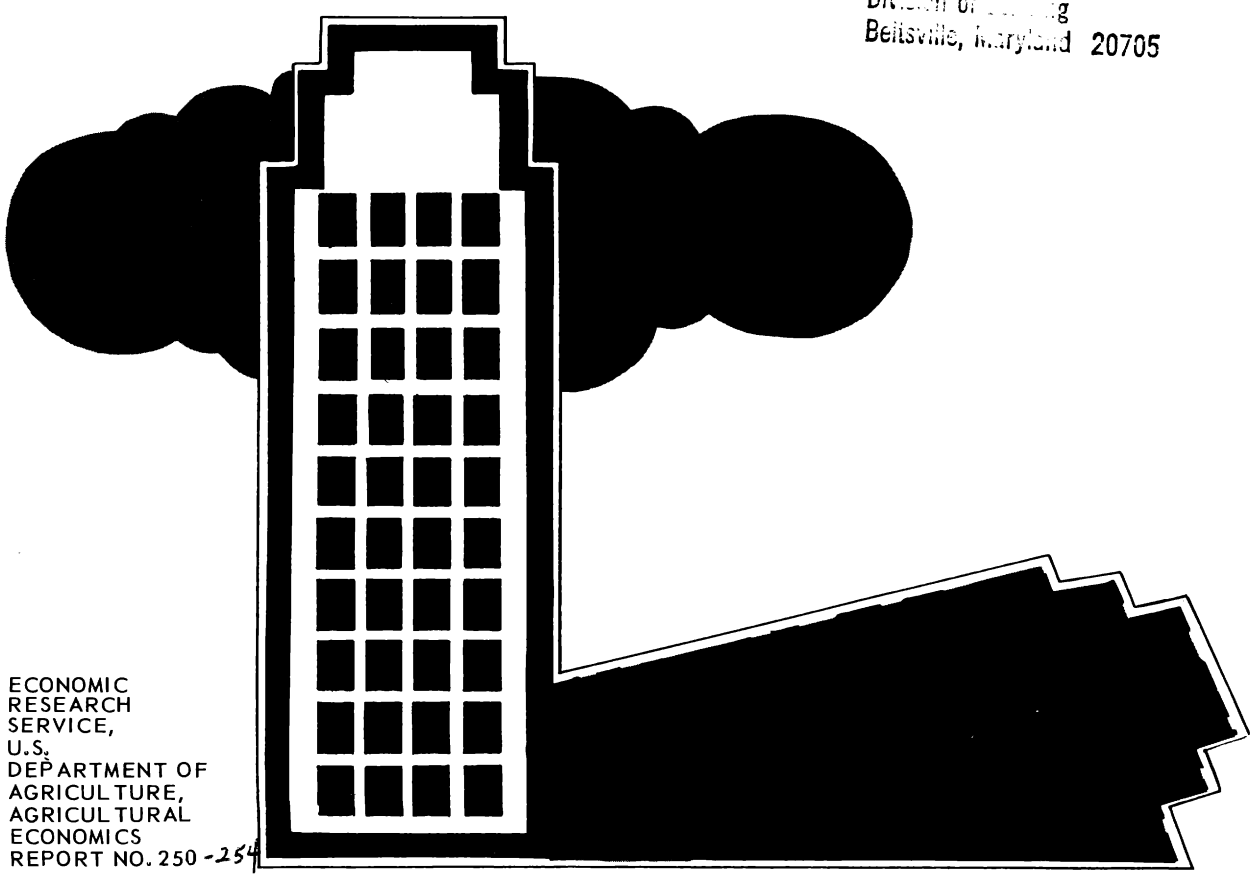

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ABSTRACT

Urbanization is advancing rapidly in many areas of the United States, yet urban areas occupy only about 10 percent of the Standard Metropolitan Statistical Areas, where there is the greatest concentration of population. Moreover, the current rate of urbanization has had little apparent impact on total U.S. agricultural production.

Seventy percent of the U.S. population lives within the Standard Metropolitan Statistical Areas (SMSA's)—counties or groups of counties with urban concentrations of 50,000 or more people. Over 80 percent of the population increase between 1960 and 1970 occurred in SMSA's. About 7 million acres, an average of nearly one-third of an acre per capita population increase, shifted to urban uses within SMSA's during that time. Only 10 percent of the total area of SMSA's was in urban uses in 1970. Twenty-four percent was cropland, 19 percent pasture and range, 32 percent woodland, and 15 percent miscellaneous. SMSA's comprise 13 percent of the land area of the 48 contiguous states; but 17 percent of the farms, 14 percent of cropland harvested, and 21 percent of the value of farm products sold were reported from these areas in 1969. Overall, the proportion of the total value of farm products sold in SMSA's decreased slightly between 1959 and 1969. Of the eight highest valued crops, the proportion produced within SMSA's increased for four crops and decreased for the others during this period.

Key words: SMSA, agriculture, urbanized areas, land use, cropland, population density, crop production.

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SUMMARY

Land in intensive urban uses within Standard Metropolitan Statistical Areas (SMSA's) increased from 18 million acres in 1960 to 25 million acres in 1970. (See p. 3 for SMSA definition.) However, only 10 percent of the total SMSA area has been intensively urbanized. Large acreages of cropland, grassland, and woodland remain fairly close to most central cities.

Significant agricultural production takes place within SMSA's; some crops are concentrated near urban areas. Of the eight most valuable U.S. crops, six were produced on SMSA land in higher proportion than their shares of either total U.S. land area or cropland harvested in 1969. Tobacco and wheat were the exceptions. Vegetable production is especially concentrated near population centers. The same is true for fruit production, but to a lesser degree. Overall, the share of the Nation's agricultural production reported from the SMSA's decreased only slightly between 1959 and 1969.

The amount of agricultural land taken each year for urban uses has had little impact on the total supply of U.S. cropland. In recent years, five or six times the quantity of cropland so taken was shifted to lower intensity agricultural or forestry uses, or was idled simply because cropping was not profitable. Irrigation, drainage, and clearing add three times as much land annually to the cropland base as urbanization absorbs.

Cropland is being abandoned or shifted to grass or woods on a large scale in the Northeast, Appalachia, and parts of the Southeast. Thus, urbanization there does not compete so much with agriculture for land, and has had little effect on total agricultural activity. New cropland is being developed in Florida, the Lower Mississippi, and the Corn Belt, Mountain, and Pacific regions. Development of new cropland in these areas has tended to obscure losses of land by urbanization. Nevertheless, urbanization probably has a greater impact on agricultural production in these areas than elsewhere.

About one-third of an acre was urbanized per capita population increase in SMSA's in the 1960's. Probably over half of this area was cropland, although the share varied by region and appears to be highest in western irrigated areas. Overall, about one-fifth of an acre of cropland was converted per capita.

Probably the main reason that urbanization of cropland has had so little effect on overall agricultural production has been the continuing increase in yields. If productivity continues to increase, there will likely be adequate land to meet the needs of the country's growing population.

FARMING IN THE CITY'S SHADOW

Urbanization of Land and Changes in Farm Output
in Standard Metropolitan Statistical Areas, 1960-70

by

Robert C. Otte*

INTRODUCTION

Throughout U.S. history the percentage of population living and working in urban areas has been increasing. In recent years, the amount of land used per capita for residential, industrial, commercial, and transportation purposes has also increased. These changes add up to a sizable continuing demand for land for urban use.

This report examines population increases and changes in distribution and the attendant land use changes between publication of the latest two Censuses of Population.[1] It also appraises the nature and extent of agricultural resources and agricultural activity in urbanizing areas and of changes that occurred between 1960 and 1970.

POPULATION DISTRIBUTION

For many years, the U.S. population increasingly became dispersed as new land was settled and brought into production. However, the recent trend has been toward greater population concentration. In 1950, 5 percent of the U.S. counties had nearly 57 percent of the population; by 1970, their share had risen to about 61 percent. The Gini ratio, an index of concentration, increased from .769 to .802 (table 1).

Population increases and decreases from 1960 to 1970, county by county, also indicate increasing population concentration. During that period, population increased in 1,744 counties and decreased in 1,372 counties. The net population increase of the 48 contiguous states was 23.7 million people. But, expanding areas, comprising 56 percent of the counties, had to accommodate more than 26 million additional people (table 2).

Intercounty population shifts were greatest in the Northern Plains (fig. 1). From 1960 to 1970, the population in 77 of the region's counties increased by 347,000; in 242 counties, it decreased 236,000. Some states had particularly dramatic intercounty shifts. North Dakota had a net loss of 10,000 people, but seven of its counties gained a total of 43,000. In Mississippi, 33 counties gained 144,000 people and the other 49 counties lost 105,000—for a net gain of 39,000.

Table 1—Concentration of population in the 48 contiguous states, 1950-70

Item[1]	1950	1960	1970
Proportion of counties:		Percent of population	
Top 1 percent	35.6	35.5	34.9
Top 5 percent	56.8	59.1	60.8
Top 10 percent	67.2	70.2	71.8
Top 25 percent	82.8	84.9	86.3
Top 50 percent	95.3	95.8	96.3
		Gini ratio[2]	
Population concentration	.769	.789	.802
		Millions	
Total population	150.6	178.5	202.1

[1] 3,117, including independent cities.
[2] Zero would mean equal distribution. Unity would be maximum concentration or inequality.

Source: Rural Development. President's Annual Report to the Congress on Government Services to Rural America: p. 9. Apr. 1972.

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[1] Department of Commerce, Bureau of the Census. Censuses of Population, 1960 and 1970.

Table 2–Population changes, by region, 1960-70

Region[1]	Total population		Counties showing population				Net population increase
			Increase		Decrease		
	1970	1960	Counties	Population	Counties	Population	
	1,000		Number	1,000	Number	1,000	1,000
Northeast	54,268	48,988	199	5,790	46	510	5,280
Lake	17,098	15,189	166	1,998	76	89	1,909
Corn Belt	34,461	31,527	284	3,293	212	359	2,934
Northern Plains	5,014	4,903	77	347	242	236	111
Appalachian	18,617	16,988	291	1,977	218	348	1,629
Southeast	17,414	14,545	212	3,007	127	138	2,869
Delta	7,781	7,221	124	770	97	210	560
Southern Plains	13,756	11,908	146	2,118	185	270	1,848
Mountain	8,281	6,855	139	1,578	142	152	1,426
Pacific	25,453	20,339	106	5,169	27	55	5,114
48 contiguous states	202,143	178,463	1,744	26,047	1,372	2,367	23,680

[1] See fig. 1.

Source of data: Department of Commerce, Bureau of the Census. Censuses of Population.

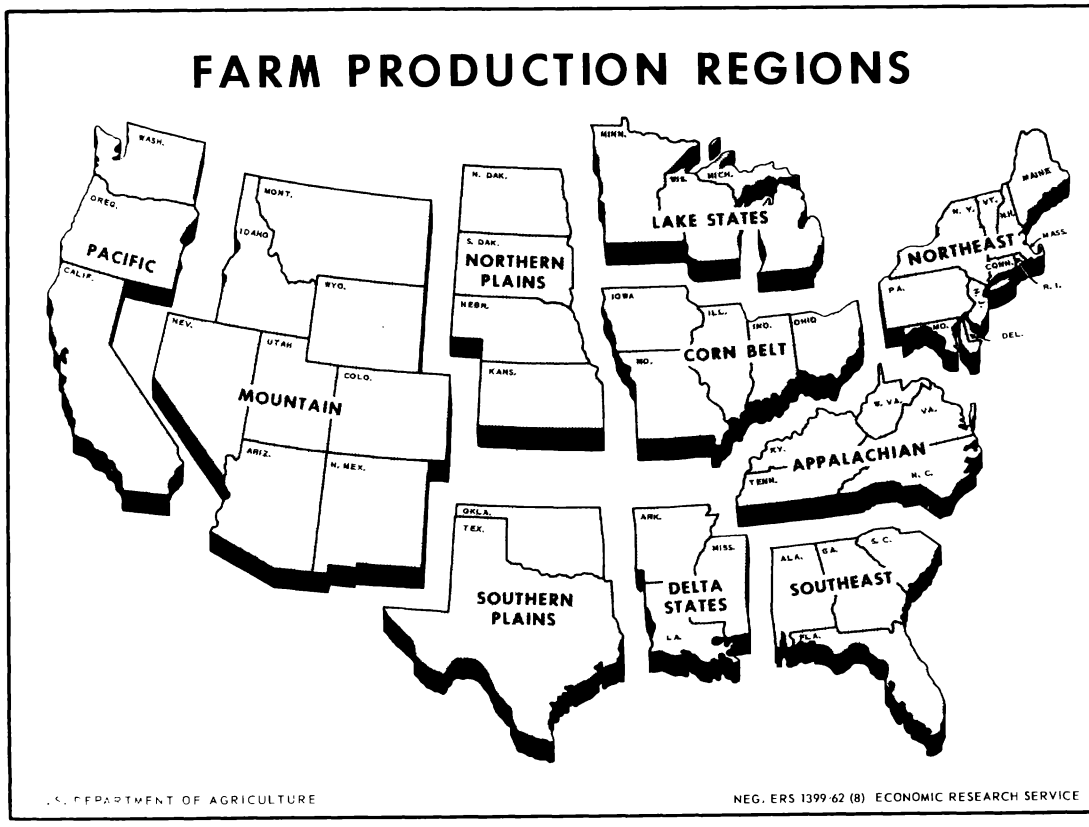


Figure 1.

About 70 percent of the U.S. population resides within the Standard Metropolitan Statistical Areas[2] designated by the Bureau of the Census (fig. 2). These same areas had 67 percent of the population in 1960 (although many of the areas were not designated as SMSA's at that time). This increased share also reflects the movement toward greater concentrations of population (table 3).

Over 80 percent of the U.S. population increase between 1960 and 1970 occurred within the SMSA's. The increase varied among regions. In the Delta region, SMSA's accounted for only a little over 50 percent of the population increase. In the Northern Plains, where many local areas were losing population, the SMSA increase was almost double the net increase for the entire four-state region (table 4).

POPULATION DENSITIES

Overall, average population density for the 48 contiguous states was 67 persons per square mile in 1970—up from 60 in 1960. Practically all of the increase was accounted for by the SMSA's, where density increased from 302 to 355 people per square mile. Density of non-SMSA counties barely increased, from 23 to 24. Densities of SMSA's varied considerably among regions, ranging from 90 people per square mile in the Mountain region to 833 in the Northeast (table 5). This is largely due to the fact that, except in New England, SMSA's are drawn along county lines. In the Mountain and Pacific regions, many SMSA's comprise very large counties and include more rural land than is contained in Eastern SMSA's.

The San Bernardino-Riverside-Ontario SMSA in California contains San Bernardino County, which covers 20,000 square miles. Maricopa County, Arizona

Table 3—Population in SMSA counties

Region	Population in SMSA's[1]	
	1970	1960
	Percent	Percent
Northeast	80.4	80.8
Lake	67.3	67.6
Corn Belt	70.8	69.5
Northern Plains	34.9	31.6
Appalachian	45.6	42.2
Southeast	56.0	52.6
Delta	38.3	37.2
Southern Plains	69.2	65.1
Mountain	56.9	49.2
Pacific	86.6	85.2
48 contiguous states	69.7	66.8

[1] Counties designated SMSA's as of 1970.

Source of data: Department of Commerce, Bureau of the Census. Censuses of Population.

Table 4—Distribution of population increases, 1960-70

Region	Regional distribution		SMSA share of total increase
	Total increase	SMSA increase	
	Percent		
Northeast	22.3	20.6	76.1
Lake	8.1	6.4	64.9
Corn Belt	12.4	12.7	84.5
Northern Plains	.5	1.1	184.7
Appalachian	6.9	6.8	81.0
Southeast	12.1	10.8	73.4
Delta	2.4	1.5	53.2
Southern Plains	7.8	9.0	95.2
Mountain	6.0	6.9	94.0
Pacific	21.5	24.2	92.1
48 contiguous states	100.0	100.0	82.2

Source of data: Department of Commerce, Bureau of the Census. Censuses of Population.

Table 5—Population densities, SMSA and non-SMSA counties, 1970

Region	Population per square mile		
	SMSA counties	Non-SMSA counties	All counties
Northeast	833	86	305
Lake	395	34	88
Corn Belt	515	48	132
Northern Plains	223	11	16
Appalachian	400	59	94
Southeast	293	47	88
Delta	220	36	53
Southern Plains	194	15	41
Mountain	90	4	10
Pacific	247	15	78
48 contiguous states	355	24	67

Source of data: Department of Commerce, Bureau of the Census. Census of Population.

[2] An SMSA is a group of counties defined as an entire area in or around a city or community of at least 50,000 people in which activities form an integrated economic and social system. In 1970, there were 242 SMSA's in the 48 contiguous states and 1 in Hawaii. The mainland SMSA's comprised 459 counties. In this study, data were developed for both 1960 and 1970 for the area (459 counties) that was within SMSA's designated in 1970.

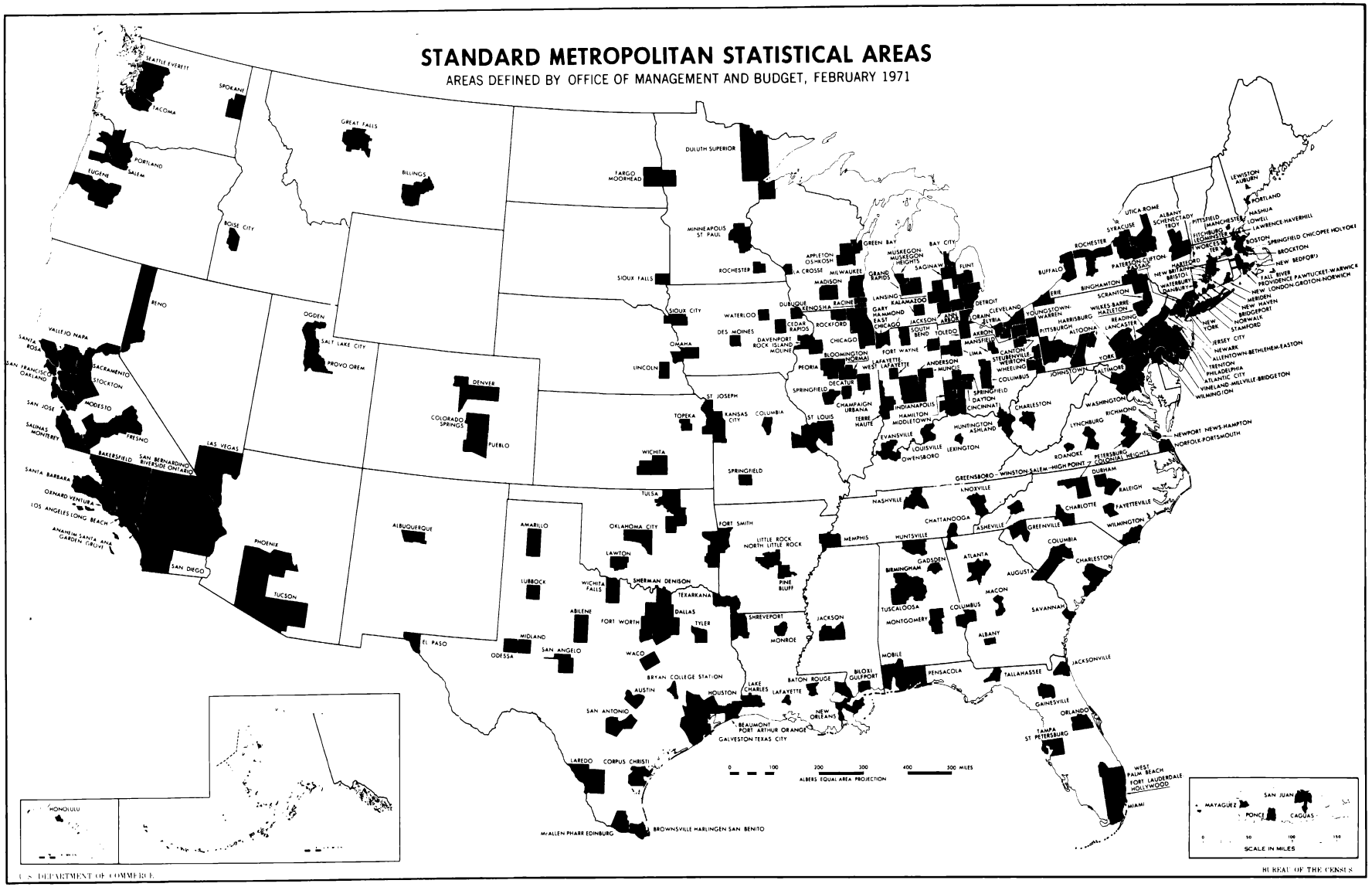

STANDARD METROPOLITAN STATISTICAL AREAS
AREAS DEFINED BY OFFICE OF MANAGEMENT AND BUDGET, FEBRUARY 1971
SEATTLE-EVERETT
TACOMA
SPOKANE
PORTLAND
SALEM
EUGENE
GREAT FALLS
BILLINGS
BOISE CITY
RENO
OGDEN
SALT LAKE CITY
PROVO-OREM
VALLEJO-NAPA
SANTA ROSA
SAN FRANCISCO-OAKLAND
SACRAMENTO
STOCKTON
MODESTO
SAN JOSE
SALINAS-MONTEREY
FRESNO
BAKERSFIELD
SAN BERNARDINO-RIVERSIDE-ONTARIO
LAS VEGAS
SANTA BARBARA
OXNARD-VENTURA
LOS ANGELES-LONG BEACH
ANAHEIM-SANTA ANA-GARDEN GROVE
SAN DIEGO
PHOENIX
TUCSON
DENVER
COLORADO SPRINGS
PUEBLO
ALBUQUERQUE
EL PASO
FARGO-MOORHEAD
DULUTH-SUPERIOR
MINNEAPOLIS-ST. PAUL
ROCHESTER
SIOUX FALLS
SIOUX CITY
OMAHA
LINCOLN
WICHITA
TOPEKA
ST. JOSEPH
KANSAS CITY
COLUMBIA
SPRINGFIELD
TULSA
OKLAHOMA CITY
LAWTON
AMARILLO
LUBBOCK
ABILENE
MIDLAND
ODESSA
SAN ANGELO
WICHITA FALLS
SHERMAN-DENISON
TEXARKANA
DALLAS
FORT WORTH
TYLER
WACO
BRYAN-COLLEGE STATION
AUSTIN
SAN ANTONIO
HOUSTON
LAREDO
CORPUS CHRISTI
McALLEN-PHARR-EDINBURG
BROWNSVILLE-HARLINGEN-SAN BENITO
GALVESTON-TEXAS CITY
BEAUMONT-PORT ARTHUR-ORANGE
LAKE CHARLES
LAFAYETTE
NEW ORLEANS
BATON ROUGE
BILOXI-GULFPORT
MOBILE
PENSACOLA
TALLAHASSEE
JACKSONVILLE
GAINESVILLE
ORLANDO
TAMPA-ST. PETERSBURG
WEST PALM BEACH-FORT LAUDERDALE-HOLLYWOOD
MIAMI
SHREVEPORT
MONROE
JACKSON
LITTLE ROCK-NORTH LITTLE ROCK
PINE BLUFF
FORT SMITH
MEMPHIS
NASHVILLE
CHATTANOOGA
KNOXVILLE
HUNTSVILLE
BIRMINGHAM
GADSDEN
TUSCALOOSA
MONTGOMERY
ATLANTA
COLUMBUS
MACON
ALBANY
AUGUSTA
SAVANNAH
CHARLESTON
COLUMBIA
GREENVILLE
ASHEVILLE
CHARLOTTE
GREENSBORO-WINSTON-SALEM-HIGH POINT
RALEIGH-DURHAM
FAYETTEVILLE
WILMINGTON
ROANOKE
LYNCHBURG
RICHMOND
PETERSBURG-COLONIAL HEIGHTS
NORFOLK-PORTSMOUTH
NEWPORT NEWS-HAMPTON
WASHINGTON
BALTIMORE
YORK
JOHNSTOWN
CHARLESTON
HUNTINGTON-ASHLAND
LEXINGTON
LOUISVILLE
OWENSBORO
EVANSVILLE
HAMILTON-MIDDLETOWN
TERRE HAUTE
INDIANAPOLIS
ANDERSON
MUNCIE
COLUMBUS
SPRINGFIELD
DAYTON
CINCINNATI
ST. LOUIS
CHAMPAIGN-URBANA
DECATUR
SPRINGFIELD
PEORIA
BLOOMINGTON-NORMAL
LAFAYETTE-WEST LAFAYETTE
FORT WAYNE
SOUTH BEND
CHICAGO
ROCKFORD
CEDAR RAPIDS
DES MOINES
DAVENPORT-ROCK ISLAND-MOLINE
WATERLOO
DUBUQUE
KENOSHA
RACINE
MADISON
LA CROSSE
MILWAUKEE
APPLETON-OSHKOSH
GREEN BAY
GRAND RAPIDS
MUSKEGON-MUSKEGON HEIGHTS
SAGINAW
BAY CITY
FLINT
LANSING
KALAMAZOO
JACKSON
ANN ARBOR
TOLEDO
DETROIT
LORAIN-ELYRIA
CLEVELAND
AKRON
MANSFIELD
LIMA
CANTON
STEUBENVILLE-WEIRTON-WHEELING
YOUNGSTOWN-WARREN
PITTSBURGH
HARRISBURG
ALTOONA
WILKES-BARRE-HAZLETON
READING
LANCASTER
ERIE
BUFFALO
ROCHESTER
SYRACUSE
UTICA-ROME
ALBANY-SCHENECTADY-TROY
BINGHAMTON
SCRANTON
PATERSON-CLIFTON-PASSAIC
NEW YORK
JERSEY CITY
NEWARK
ALLENTOWN-BETHLEHEM-EASTON
TRENTON
PHILADELPHIA
ATLANTIC CITY
VINELAND-MILLVILLE-BRIDGETON
WILMINGTON
HARTFORD
NEW BRITAIN-BRISTOL-WATERBURY-DANBURY
PITTSFIELD
SPRINGFIELD-CHICOPEE-HOLYOKE
FALL RIVER
PROVIDENCE-PAWTUCKET-WARWICK
NEW LONDON-GROTON-NORWICH
NEW HAVEN-MERIDEN-BRIDGEPORT-NORWALK-STAMFORD
BOSTON
BROCKTON
NEW BEDFORD
LOWELL
LAWRENCE-HAVERHILL
NASHUA
PORTLAND
LEWISTON-AUBURN
HONOLULU
MAYAGUEZ
PONCE
SAN JUAN
CAGUAS
SCALE IN MILES
0 50 100 150
0 100 200 300 400 500 MILES
ALBERS EQUAL AREA PROJECTION
U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

Figure 2.

(Phoenix), covers over 9,000 square miles. Many Eastern counties are less than 500 square miles in size.

There is less variation in density among the urban parts of SMSA's.[3] These urban areas, which comprise an average of only 10 percent of the SMSA's, had an average density of 3,100 persons per square mile, varying from 4,100 in the Northeast to 2,000 in the Southern Plains (table 6).

Population densities in the urban parts of SMSA's decreased appreciably between 1960 and 1970 for several reasons. First, populations of most of the central cities decreased. For example, San Francisco, Washington, Minneapolis, and New Orleans lost population. Second, the land taken into urban areas since 1960 is less densely populated than the older areas. There are more single-family houses and fewer high-rise apartments. And, there is a higher percentage of underdeveloped land. Third, the census apparently was more liberal in delineating urbanized areas and urban places in 1970.

Table 6—Population densities, urban and rural parts of SMSA's 1960-70

Region	SMSA counties				Non-SMSA counties	
	Urban part		Rural part			
	1960	1970	1960	1970	1960	1970
	Population per square mile					
Northeast	4,389	4,101	114	67	76	86
Lake	3,125	2,994	68	43	30	34
Corn Belt	4,014	3,240	77	89	46	48
No. Plains	3,911	2,990	28	26	11	11
Appalachian	3,162	2,496	87	74	58	59
Southeast	2,876	2,362	50	44	43	47
Delta	2,897	2,564	54	41	34	36
So. Plains	2,242	2,024	21	43	15	15
Mountain	2,902	2,529	7	8	4	4
Pacific	3,652	3,491	26	19	13	15
48 contiguous states	3,572	3,137	49	42	23	24

Source of data: Department of Commerce, Bureau of the Census. Censuses of Population.

The latter point also explains the seemingly anomalous finding that population density has increased in the SMSA's as a whole, while it has declined in both the urban and nonurban parts. The size of the urban part has increased more rapidly than population, thus reducing its density. In the process, the higher density portions of the 1960 nonurban part had been incorporated into the urban part by 1970, thus slightly reducing the average density.

LAND USE IN SMSA's

The Census of Population provides the only nationwide statistics on the area of land in urban use. The census identifies "urbanized areas" and "places," and quantifies population and area. The Census Bureau's major objective in delineating urbanized areas is to enable separation of urban and rural populations near the larger cities. An urbanized area consists of a central city or contiguous cities with a population of 50,000 or more, plus surrounding, closely settled territory. Urbanized areas are generally within SMSA's.[4] Also, the Census Bureau identifies and compiles data by places, both incorporated and unincorporated. Incorporated places are usually cities, boroughs, towns, and villages. Unincorporated places are closely settled population centers without corporate limits. The census provides area data for all places with 2,500 or more population.[5]

For this report, land in urban use is identified as the urbanized area within an SMSA, plus any place of 2,500 or more population lying within the SMSA but outside the designated urbanized area. This designation omits settlements with less than 2,500 population, as well as some scattered factories, businesses, and residences. However, rural and even agricultural land lies within the boundaries of urbanized areas and places. These discrepancies tend to offset each other.

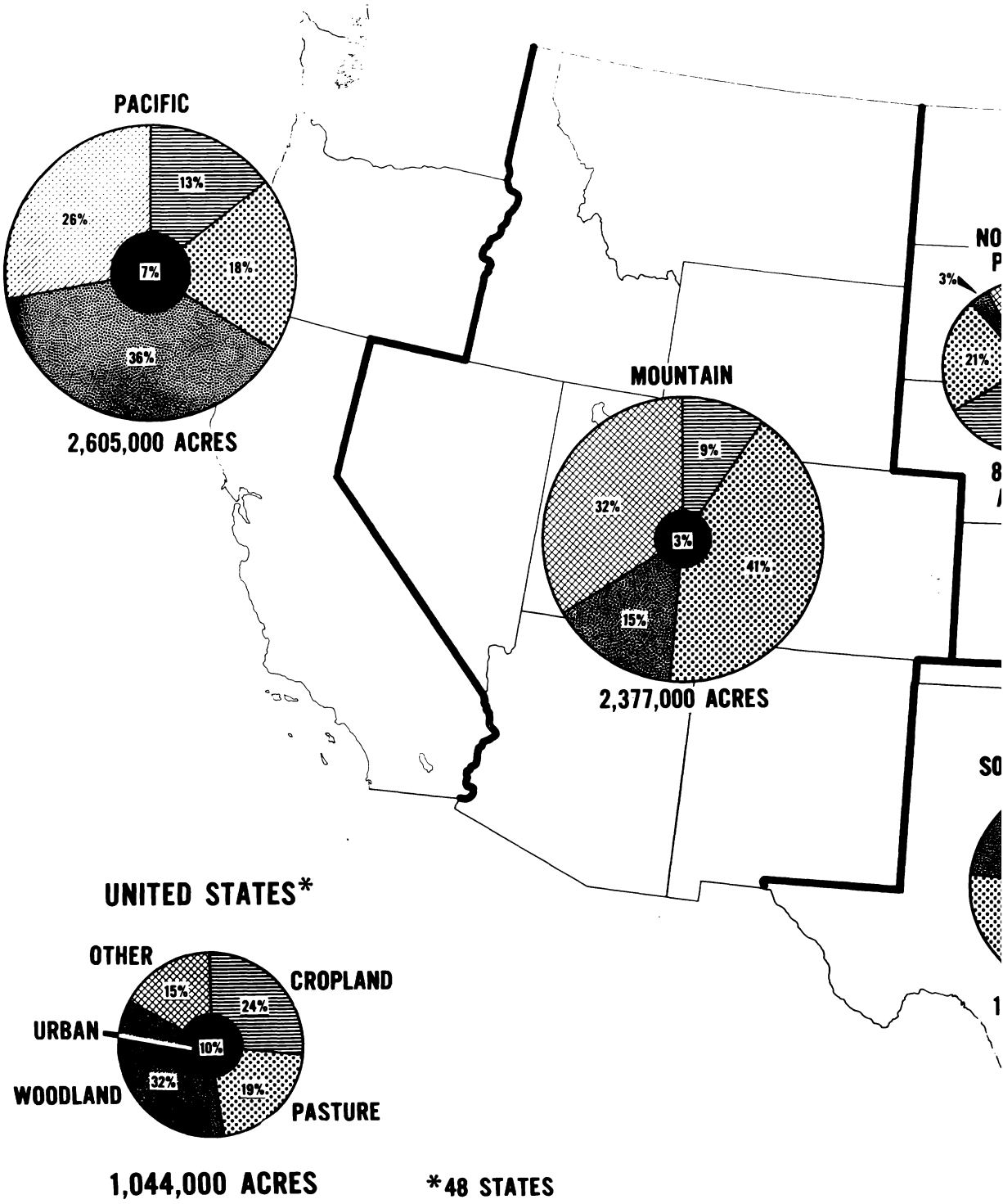
By the above definition of land in urban use, 10 percent of the total land area in SMSA's was urban in 1970. This percent varied regionally, from almost 20 percent in the Northeast to a little over 3 percent in the Mountain region. The total urban area within SMSA's increased from 18 million acres in 1960 to 25 million acres in 1970. Nearly one-third of an acre was added to the urban area for each person added to the population in the 242 SMSA's in the 48 contiguous states, as designated in 1970. Per capita acreage rates were lowest in the Northeast and Pacific regions—about one-fifth of an acre per capita—and were highest in the Northern Plains—over half an acre per capita (table 7).

Probably over half of this urbanized land was previously cropland, although the share varies by region. One study reports that 76 percent of land urbanized in

[3] Comprised of "Urbanized area" as delineated by the Census, plus additional "urban places" of over 2,500 population (see under next section).

[4] Department of Commerce, Bureau of the Census. Census of Population: Number of Inhabitants—U.S. Summary PC(1)-A1: pp. XII-XIII. Dec. 1971.

[5] Ibid. p. XI.


PACIFIC
13%
18%
36%
26%
7%
2,605,000 ACRES
MOUNTAIN
9%
41%
15%
32%
3%
2,377,000 ACRES
NO
P
3%
21%
8
SO
1
UNITED STATES*
OTHER
CROPLAND
URBAN
WOODLAND
PASTURE
15%
24%
10%
32%
19%
1,044,000 ACRES
*48 STATES

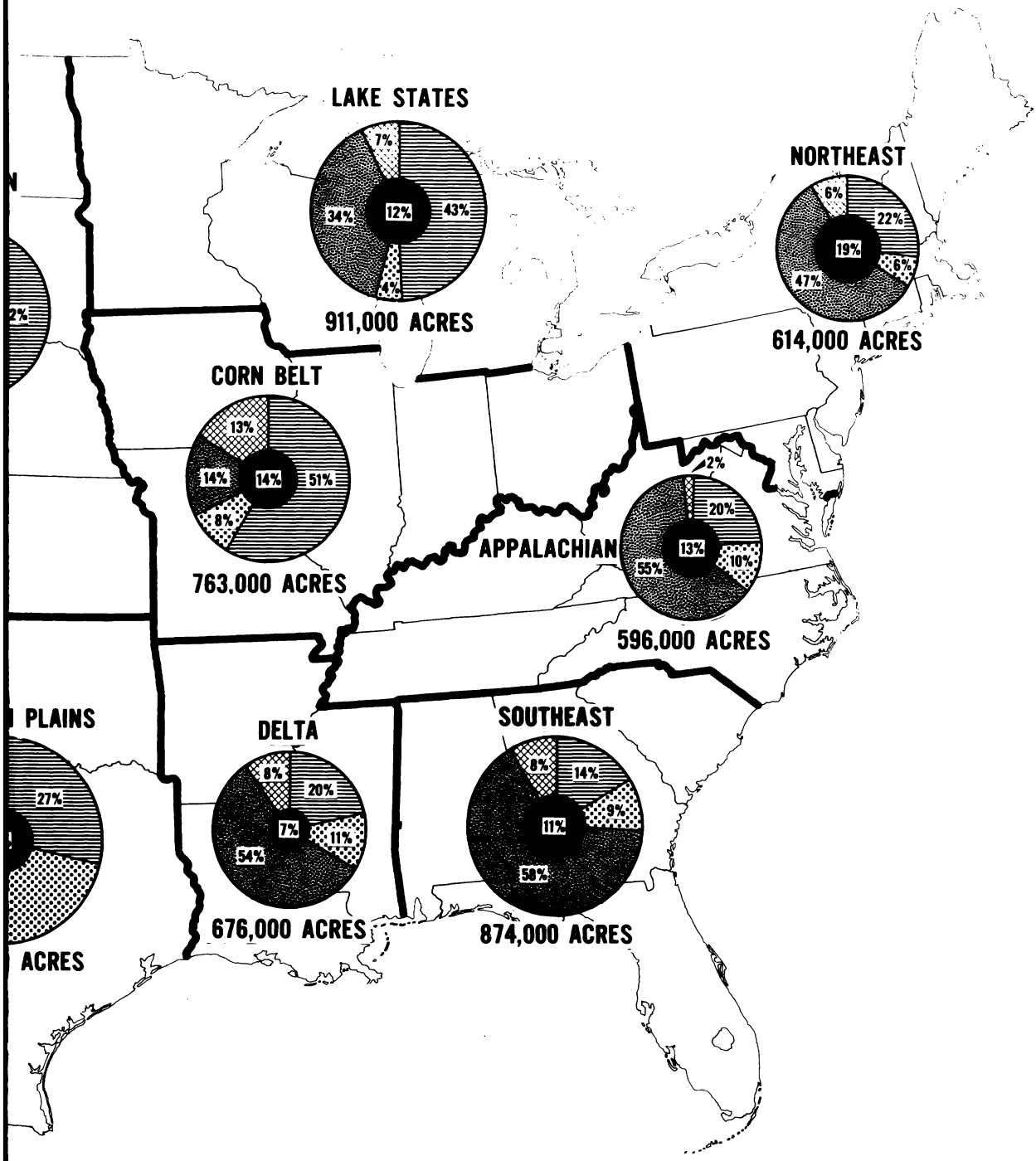


Figure 3. Average size SMSA, by region; Distribution of land uses, 1970.

the West had been cropland.[6] In the Northeast the figure was 49 percent,[7] and, in the Delta region, it was 54 percent.[8] Thus within SMSA's during the 1960's, about one-fifth of an acre of cropland per capita was converted to urban use (table 7).

Table 7—Increase in urban land within SMSA's, and area added per capita, 1960-70

Region	Area increase	
	Total[1]	Per capita
	1,000 acres	Acres
Northeast	1,127	.21
Lake	571	.36
Corn Belt	1,248	.46
No. Plains	115	.52
Appalachian	683	.45
Southeast	894	.41
Delta	166	.38
So. Plains	769	.43
Mountain	430	.33
Pacific	1,092	.21
48 States	7,096	.32

[1] Includes "urbanized areas," plus any additional area in "places" over 2,500 population.

Source of Data: Department of Commerce, Bureau of the Census. Censuses of Population.

The average SMSA comprised slightly over 1 million acres in 1970: 10 percent was in urban uses, 24 percent cropland, 19 percent pasture and range, 32 percent woodland, and 15 percent was used for miscellaneous purposes (table 8).

In 1970, the average size of SMSA's ranged from 614,000 acres in the Northeast to 2.6 million acres in the Pacific region, reflecting generally the size of counties.[9] Size of SMSA's increased as one moves westward. Average size of the urban part varied less and was largest in regions with the larger cities. SMSA's were smallest in the Northern Plains, where cities are generally smaller (table 9).

Land use in the nonurban parts of SMSA's varies by region (table 8). SMSA's in the Appalachian, Southeast, and Delta regions were more than half woodland in 1970. The Lake and Pacific regions were each over one-third woodland. The Northeast approached 50 percent. This region—the most populous in the country, with 80 percent of its population within SMSA's—had over 15 million acres of woodland in these areas.

SMSA's in the Northern Plains and the Corn Belt were over half cropland. In the Lake region, the share was two-fifths. Pasture plus other open land (including mountains, deserts, and wastelands) occupied about three-fourths of the Southern Plains and Pacific regions. Figure 3 shows graphically the relative size and distribution of land use within average SMSA's in each of the 10 farm production regions.

Though large acreages of cropland, grassland, and woodland remain fairly close to most central cities, many urban residents do not have ready access to these areas. In many situations, small acreages could help break up unrelieved concentrations of buildings, provide buffers between different land uses, and improve air and water quality. The problem is not an overall lack of open space, but its lack in specific locations where it is badly needed.

LAND RESOURCES

Overall, about 13 percent of the land area of the 48 contiguous states is within SMSA's. The share in the Northeast region is 30 percent and in the Pacific region, 27 percent. In the Northern Plains, less than 3 percent of the land area is within SMSA's. Generally, the percentage of farm units in SMSA's is higher and the percentage of land in farms is lower than the percentage of land area, reflecting a small average size of farm in these more urban counties.

Cropland harvested in SMSA's is about proportional to the share of total U.S. land area—that is, 14 percent. SMSA's had a fairly large share of each region's irrigated cropland, particularly in the Northeast, Southeast, and Pacific regions. In the Northeast, this situation probably reflects the concentration of irrigated fruit and vegetable crops in or near population areas. Also, the large counties in the Pacific region encompass more agricultural land than do those in other regions.

Between 1959 and 1969, the SMSA share of U.S. farms and irrigated land decreased slightly, while the share of cropland harvested increased slightly. The SMSA share of irrigated land decreased considerably in the Northeast, Lake, and Corn Belt regions—particularly in the latter. This was not due to decreases in irrigated acreage within SMSA's, but rather to increases outside SMSA's. On the other hand, the percentage of SMSA irrigated land increased in the Pacific region, where most of the urban development was at the expense of this

[6] Dill, Henry W., Jr., and Otte, Robert C. Urbanization of Land in the Western States. USDA, ERS-428: p. 6. 1970.

[7] Dill, Henry W., Jr., and Otte, Robert C. Urbanization of Land in the Northeastern United States. USDA, ERS-485: p. 4. 1971.

[8] Frey, H. Thomas. Land Use Change in the Southern Mississippi Alluvial Valley, 1950-69. USDA, AER-215: p. 6. 1971.

[9] Size is, to a degree, arbitrary. Some SMSA's abut and could be merged.

Table 8—Land use within SMSA's, 1970 [1]

Region	Total SMSA area		Urban part[2]		Rural part: Total rural		Rural part: Cropland		Rural part: Pasture-range		Rural part: Forest woodland		Rural part: Other	
	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent
Northeast	33,004	100.0	6,238	18.9	26,766	81.1	7,213	21.9	1,877	5.7	15,457	46.8	2,219	6.7
Lake	18,669	100.0	2,308	12.4	16,361	87.6	8,065	43.2	753	4.0	6,307	33.8	1,236	6.6
Corn Belt	30,916	100.0	4,207	13.6	26,709	86.4	15,683	50.7	2,494	8.1	4,228	13.7	4,304	13.9
No. Plains	5,031	100.0	334	6.6	4,697	93.4	3,121	62.2	1,037	20.6	175	3.5	364	7.2
Appalachian	13,935	100.0	1,782	12.7	12,152	87.3	2,798	20.1	1,367	9.8	7,713	55.4	274	2.0
Southeast	21,070	100.0	2,257	10.7	18,813	89.3	2,993	14.2	1,816	8.6	12,301	58.4	1,703	8.1
Delta	8,415	100.0	612	7.3	7,803	92.7	1,696	20.2	908	10.8	4,513	53.6	686	8.2
So. Plains	31,003	100.0	2,717	8.8	28,286	91.2	8,339	26.9	13,535	43.7	5,093	16.4	1,319	4.2
Mountain	33,279	100.0	1,088	3.3	32,191	96.7	3,031	9.1	13,631	41.0	4,797	14.4	10,732	[3] 32.2
Pacific	57,320	100.0	3,738	6.5	53,582	93.5	7,467	13.0	10,434	18.2	20,679	36.1	15,002	26.2
48 contiguous states	252,642	100.0	25,282	10.0	227,360	90.0	60,406	23.9	47,852	18.9	81,263	32.2	37,839	15.0

[1] 242 SMSA's.
[2] Includes "urbanized area" plus additional land in "urban places over 2,500 population."
[3] Includes some Federal land used as range.

Source of data: Department of Commerce, 1970 Census of Population, and 1967 Conservation Needs Inventory.

Table 9—Land use within an average SMSA, 1970

Region	Average size SMSA[1]	Urban part[2]	Rural part: Total rural	Rural part: Cropland	Rural part: Pasture-range[3]	Rural part: Forest woodland	Rural part: Other
	1,000 acres						
Northeast	614	116	498	134	35	288	41
Lake	911	113	798	393	37	308	60
Corn Belt	763	104	659	387	62	104	106
No. Plains	868	58	810	538	179	30	63
Appalachian	596	76	520	120	58	330	12
Southeast	874	94	780	124	75	510	71
Delta	679	50	629	137	73	364	55
So. Plains	1,211	106	1,105	326	529	199	51
Mountain	2,377	78	2,299	216	974	343	[3] 766
Pacific	2,605	170	2,435	339	474	940	682
48 contiguous states	1,044	104	940	250	198	336	156

[1] 242 SMSA's.
[2] Includes "urbanized area," plus additional land in "places over 2,500 population."
[3] Includes some Federal land used as range.

Source of Data: Department of Commerce, 1970 Census of Population and 1967 Conservation Needs Inventory.

land (table 10). Apparently, newly irrigated land offset the loss to urbanization. Irrigated land in Pacific region SMSA's increased from 3.8 million acres in 1959 to 4.0 million acres in 1969.

Table 10—Farmland and farms in SMSA's, 1959 and 1969

Region	Total land area	Number of farms 1959	Number of farms 1969	Land in farms 1959	Land in farms 1969	Cropland harvested 1959	Cropland harvested 1969	Irrigated land in farms 1959	Irrigated land in farms 1969
	Percent								
Northeast	30.3	41.5	41.7	33.1	33.7	38.0	37.9	71.0	64.6
Lake	13.2	15.9	17.6	12.0	13.2	12.6	14.2	21.9	16.2
Corn Belt	18.1	19.4	19.4	16.2	16.1	17.9	18.9	25.7	12.0
No. Plains	2.6	5.1	4.9	2.5	2.4	3.7	3.6	.5	.5
Appalachian	10.5	9.8	10.2	9.1	9.4	9.7	10.7	15.1	14.5
Southeast	16.7	15.0	14.4	13.0	12.1	13.4	15.6	35.1	32.9
Delta	9.2	7.7	7.4	8.2	8.2	8.0	7.2	10.8	8.4
So. Plains	14.5	20.3	19.9	14.7	13.3	18.9	18.7	22.9	18.8
Mountain	6.1	12.5	11.8	7.1	6.0	7.8	7.2	9.9	8.5
Pacific	27.1	43.5	47.7	25.7	29.2	32.9	34.0	39.5	40.3
48 contiguous states	13.0	17.6	17.2	11.6	11.1	14.0	14.4	21.0	18.9

Source of data: Department of Commerce, Bureau of the Census. Censuses of Agriculture.

Even though it appears drastic when viewed in specific local situations, the overall taking of land each year for urban uses has had minimal effect on the supply of cropland. Four or five times the quantity of cropland taken for urban uses is shifted to lower intensity agricultural or forestry uses or is idled each year because it has become uneconomic to continue cropping it. About three times the quantity of land urbanized each year is added to the cropland base through irrigation, drainage, and clearing.[10]

[10] Krause, Orville E. Cropland Trends since World War II. USDA, AER-177: p. 6. 1970.

The SMSA's overall, and in each region, have slightly more than their proportionate share of the better agricultural land—that is, land in land capability classes I, II, and III.[11] Fifteen percent of this land is in the 13 percent of the total land area comprising the SMSA's (table 11). This could be expected, of course, since many cities owe their location to accessibility to water and rail transportation. Also, many originated as trade centers serving agricultural communities. Such places generally have more land with even terrain. Also, much of the land in classes VI to VIII lies in rough areas whose terrain is unsuitable for urban development.

Table 11—Quality of land resources within SMSA's

Region	Acreage within SMSA's	
	Total land area	Land capability classes I-III[1]
	Percent	
Northeast	30.3	33.7
Lake	13.2	14.3
Corn Belt	18.0	19.1
Northern Plains	2.6	3.3
Appalachian	10.5	11.9
Southeast	16.7	19.0
Delta	9.2	9.3
Southern Plains	14.5	16.9
Mountain	6.1	7.5
Pacific	27.1	32.7
48 contiguous states	13.0	15.0

[1] Department of Agriculture. 1967 Conservation Needs Inventory.

The Federal Government—principally the Bureau of Land Management, the Forest Service, and the National Park Service—holds approximately 400 million acres in the 48 contiguous states (table 12). Most of this land is in the West—268 million acres in the Mountain region and 90 million in the Pacific region. Overall, about 10 percent of the Federal land is within SMSA's. SMSA's of the Pacific region have almost 23 million acres of Federal land; those in the Mountain region have 13 million acres; the Southeast has almost 2 million acres; and the Southern Plains and Lake States have less than 1 million acres each.

[11] The Soil Conservation Service, U.S. Department of Agriculture, classifies soils into 8 land capability classes that indicate the degree of soil limitation for growing field crops. Under this system, soils in classes I, II, and III are suitable for regular cultivation of most field crops and for a wide range of other uses. See Klingebiel, A. A., and Montgomery, P.H., Land-Capability Classification. Soil Conservation Service, USDA, AH-210. 1970.

AGRICULTURAL PRODUCTION IN SMSA'S

Overall, the SMSA share of U.S. agricultural production appears to have decreased slightly during the 1960's. In 1959, SMSA's provided 22.6 percent of the total value of farm products sold in the 48 contiguous states (table 13). In 1969, the share dropped to 21.5 percent. This pattern held generally for the country, and most of the individual regions also showed small decreases. The greatest change was in the Pacific region, where production increased. That region's SMSA share of production increased from 50.1 to 55.8 percent. This is consistent with the Pacific region's increases in the SMSA share of farms, land in farms, cropland harvested, and irrigated land in farms (see table 10). Expansion of

Table 12—Federally owned land in SMSA's[1]

Region	SMSA counties	Total region
	1,000 acres	
Northeast	306	2,269
Lake	837	7,548
Corn Belt	220	2,782
Northern	20	6,187
Appalachian	447	7,350
Southeast	1,811	6,625
Delta	356	5,339
Southern Plains	910	3,481
Mountain	13,215	267,625
Pacific	22,935	89,919
48 contiguous states	41,057	399,125

Source of data for Federal non-cropland, Department of Agriculture. 1967 Conservation Needs Inventory.

Table 13.—SMSA share of total value of U.S. farm products sold, 1959, 1964, and 1969

Region	SMSA share of U.S. production, by value		
	1959	1964	1969
	Percent		
Northeast	45.3	43.5	43.5
Lake	15.0	15.0	16.7
Corn Belt	19.3	19.2	18.3
Northern Plains	5.8	6.0	5.7
Appalachian	10.8	10.6	11.8
Southeast	21.3	21.4	19.0
Delta	8.6	7.8	7.5
Southern Plains	22.7	22.1	18.9
Mountain	17.0	18.2	15.2
Pacific	50.1	51.6	55.8
48 contiguous states	22.6	22.8	21.5

Table 14.—SMSA share of production of eight most valuable U.S. crops, 1959 and 1969

Crop and year	SMSA share of U. S. production, by quantity										
	Northeast	Lake	Corn Belt	Northern Plains	Appalachian	Southeast	Delta	Southern Plains	Mountain	Pacific	48 contiguous states
	Percent										
Corn:											
1959	47.4	12.3	18.3	6.4	7.3	10.4	5.4	22.0	7.2	42.8	15.8
1969	43.5	13.1	19.6	5.0	10.6	8.1	4.4	11.5	5.6	56.7	16.8
Hay:											
1959	35.8	13.3	17.2	3.9	10.5	19.5	10.2	23.0	9.8	35.5	17.0
1969	34.6	15.5	15.9	3.3	10.0	16.9	11.2	19.1	8.6	36.0	16.2
Soybeans:											
1959	10.0	11.0	19.3	11.4	11.2	30.2	7.5	19.9	–	–	16.2
1969	18.3	10.3	18.7	9.4	12.5	21.2	6.1	19.8	3.8	43.5	15.4
Fruits and nuts:											
1959	62.6	16.6	28.5	19.9	6.7	26.9	9.3	65.5	32.4	54.5	43.2
1964[1]	63.8	17.9	30.0	15.4	7.0	27.8	9.6	40.4	37.0	52.9	43.4
Wheat:											
1959	51.0	27.3	23.2	3.5	12.6	16.8	10.4	9.9	8.2	9.5	11.2
1969	50.7	23.1	23.4	2.8	15.8	24.5	12.5	9.4	6.0	11.9	9.1
Vegetables:											
1959	67.7	32.4	42.4	42.1	14.6	61.2	17.9	50.7	42.7	68.9	58.3
1964[1]	65.2	34.1	40.5	47.1	12.8	66.5	19.4	46.8	44.1	70.7	59.6
Tobacco:											
1959	76.1	33.0	29.0	–	8.0	.8	–	–	–	–	11.7
1969	71.8	41.6	27.1	–	9.0	1.1	–	–	–	–	10.9
Cotton:											
1959	–	–	–	–	7.0	12.4	8.9	25.1	31.5	56.4	21.9
1969	–	–	–	–	6.2	15.3	8.1	25.8	35.1	58.0	22.3

[1] No comparable data available for 1969.

Source of data: Department of Commerce, Bureau of the Census. Censuses of Agriculture.

irrigation in rural areas of Pacific SMSA counties appears to be the cause.

Eight U.S. crops have an annual value of more than $1.5 million each. These are corn, hay, soybeans, fruits and nuts, wheat, commercial vegetables, tobacco, and cotton[12]. In 1972 the value of these commodities totaled over $27 billion, accounting for more than 80 percent of the value of the major crops for which the Statistical Reporting Service compiles estimates[13].

The SMSA share of production of six of these crops was higher than the SMSA share of total land area or of total cropland harvested. For the United States as a whole, SMSA's accounted for about 14 percent of all cropland harvested in 1969. The SMSA share of output, compared to its land area or cropland share, was lower for only tobacco and wheat. Vegetable production, especially, was concentrated near population centers. About 60 percent of all vegetables sold in 1969 came from SMSA's, as did 43 percent of the fruits and nuts.

From 1959 to 1969, SMSA's increased their share of four major crops—corn, fruits and nuts, vegetables, and cotton. They experienced a decrease in their share of the other four major crops—hay, soybeans, wheat, and tobacco. All told, increasing population and urbanization seem to have had only minimal impact on total agricultural production in the SMSA's.

Agricultural and nonagricultural uses of land on the rural-urban fringe sometimes complement and sometimes compete with one another. Some types of agricultural production tend to be carried out near centers of population. This is particularly true of bulky or perishable products that have few climatic or soil constraints, such as temperate climate fruits and

[12] The categories fruits and nuts and vegetables each consist of a number of individual crops.

[13] Statistical Reporting Service, USDA. Crop Values: 1970, 1971, and 1972. Cr. Pr. 2-1-1 (73): pp. 3-6. Jan. 1973.

vegetables. When fruit and vegetable farms are sold for nonagricultural uses, the operator often moves just a little farther out and resumes production. Thus, fruit and vegetable production tends to remain concentrated in urban areas even as cities expand.

Corn, soybeans, wheat, cotton, tobacco, other field crops, and subtropical fruits are produced in specific areas because soils and climate give them an economic advantage. Proximity of population concentrations to provide a market is not a factor. When land producing one of these crops is urbanized, production moves to other land adapted to that crop. Nevertheless, census statistics show an increase in the percentage of corn and cotton produced in SMSA's from 1959 to 1969.

The steadily increasing yield per acre is probably the main reason that loss of cropland to urban uses has had so little apparent effect on agricultural production. In the early 1950's, almost 2 acres of cropland were used per capita to supply domestic needs. By the 1970's this had dropped to less than 1¼ acres per capita[14]. As long as such gains in agricultural productivity continue, land needed for living, working, and recreation for an increasing population, even at higher per capita rates of use, can probably be provided with minimum total impact on U.S. agricultural production and consumption.

[14] Economic Research Service. Changes in Farm Production Efficiency. USDA, SB-233: p. 7. 1972.

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