



**TRADE AND AGRICULTURE DIRECTORATE**

**THE ROLE OF AGRICULTURE AND  
FARM HOUSEHOLD DIVERSIFICATION**

**IN THE RURAL ECONOMY OF THE**

**UNITED STATES**

## *Foreword*

This report reviews the role of agriculture and farm household diversification in the rural economy of the United States. It was prepared by consultants Kathleen K. Miller and Thomas G. Johnson. Kathleen Miller is Program Director, Rural Policy Research Institute, University of Missouri and Thomas Johnson is Frank Miller Professor of Agricultural Economics and Professor of Public Affairs, University of Missouri Columbia. Professor Johnson is also the Rural Policy Research Institute's Director of Analytic and Academic Programs.

It is one of 13 country reviews prepared under Output area 3.2.1: Agricultural policy reform (Item 3.2) of the programme of work and budget of the Committee for Agriculture for 2007-08.

Based on material compiled from the available literature, these country reviews address all or most of the topics listed below:

- Definitions and underlying concepts of “rural” as they exist at the national level.
- The availability of data pertaining to the share of agriculture and the agro-food sector in the economies of OECD countries at the national level and in rural areas and trends therein.
- The availability of data relating to the income situation of farm households and in particular the availability of information related to non-farming activities.
- The extent to which non-farming income-earning activities of farm households are farm based (*i.e.* using farm resources as in the case of farm tourism) or rural based (located in rural areas).
- The extent to which the industries upstream and downstream from primary agriculture are located in rural areas.
- The strength of multiplier effects between farm/farm based and up/downstream industries and rural economies.

The information in these country reviews was used as background to the report “The role of agriculture and farm household diversification in the rural economy: evidence and initial policy implications” [TAD/CA/APM/WP(2009)1/FINAL], which was declassified by the Working Party on Agricultural Policies and Markets in February 2009.

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## **THE ROLE OF AGRICULTURE AND FARM HOUSEHOLD DIVERSIFICATION IN THE RURAL ECONOMY OF THE UNITED STATES**

While the role of agriculture and in some cases the larger agro-food sector accounts for a declining portion of the economies of developed nations, it still plays an important role in many regions. More importantly perhaps, it plays an evolving role in these regions, frequently affecting other sectors directly and indirectly. This report explores these myriad economic roles of the agricultural and agro-food sectors in the United States (US).

The US agricultural sector has been at the forefront of the trend toward increasing productivity, and declining employment and value of production in farming. Concomitant with this trend has been one of increasing value added in the agro-food sector as the traditional agricultural commodities were transformed into more convenient and higher-valued consumer products. More recently the range of products manufactured from agricultural products has increased beyond food and fibre to include a variety of bio-based products including biofuels. Furthermore, the uses of agricultural assets have broadened to include agro-tourism and the production of environmental services (sometimes referred to as multifunctionality). Included in this latter category are such things as watershed protection, wildlife habitat provision, carbon sequestration, wind power generation, and many other activities.

This paper is a broad-brush examination of these issues in the United States. We set out to address eight questions and issues.

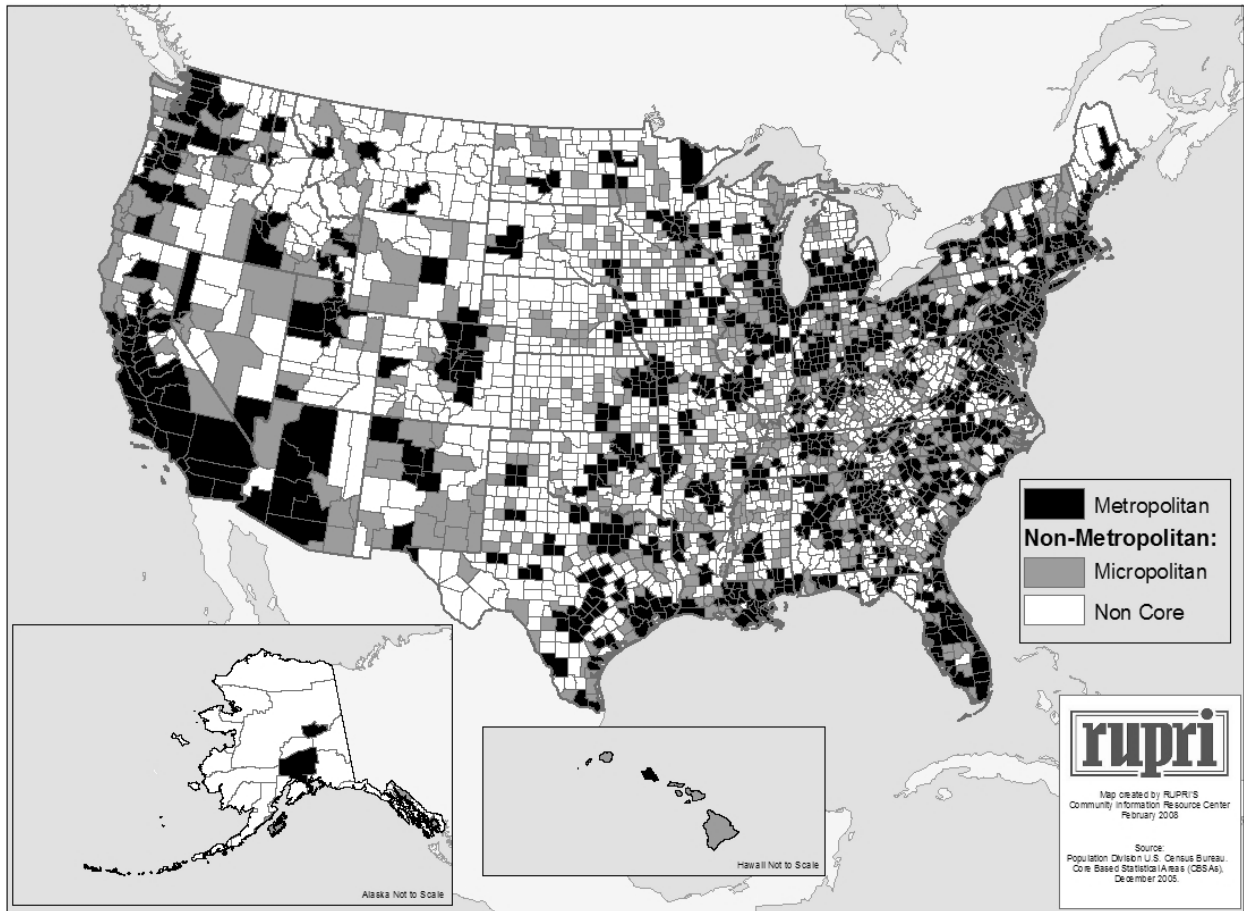
### **Definition of rural areas in national statistics**

Questions addressed in this section include: How are rural areas defined in national statistics? What typology is used to classify rural areas? On which criteria is it based? Are there different definitions/typologies used for specific studies?

There are many definitions of rural in the United States. Many of these were developed for specific administrative purposes sometimes specifically designed to facilitate data collection, but often only tangentially related to data gathering purposes.

One of the most commonly used definitions of rural in the US is Non-metropolitan Areas. Core Based Statistical Areas are defined by the United States Office of Management and Budget, and include both Metropolitan Areas and Micropolitan Areas. Both classifications are county-based. Metropolitan areas have a core county with an urbanized area of 50 000 or more population, plus adjacent counties linked through commuting ties. Micropolitan areas, a new classification in the 2000 census, have a core county with an urban cluster of 10 000 to 49 999 population, plus adjacent counties linked through commuting ties. All other counties are considered noncore counties. Together, micropolitan and noncore areas are considered nonmetropolitan areas (shown in the map in gray and white). The most recent listing of Core Based Statistical Areas for the United States and Puerto Rico (December 2005) by the Office of Management and Budget includes 369 Metropolitan Statistical Areas (361 in the US and 8 in Puerto Rico), and 582 Micropolitan Statistical Areas (577 in the US and 5 in Puerto Rico) (Figure 1).

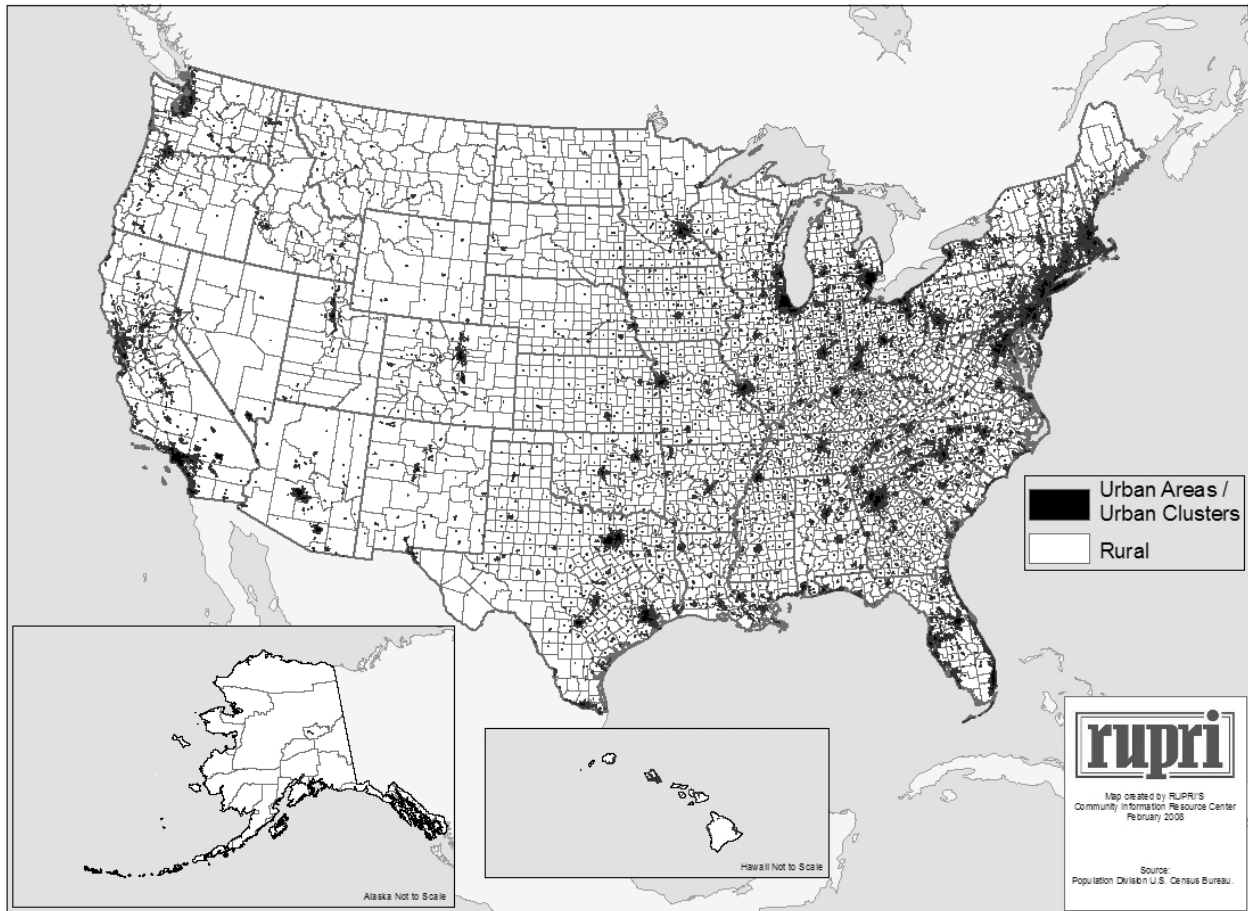
Figure 1. County core based statistical area classifications



Source: Population Division, US Census Bureau, Core-Based Statistical Areas, December 2005.

Common perception equates nonmetropolitan areas with rural areas, but this is not technically correct. The US Census Bureau defines areas as urban or rural, and these definitions are at a sub-county geography. Specifically, urban areas are defined as “core census block groups or blocks that have a population density of at least 1 000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile.” Urbanized areas are areas with populations of 50 000 or more, and urban clusters have populations between 2 500 and 49 999. Any territory not defined as urban using these criteria is considered rural (Figure 2).

Figure 2. Urban and rural areas



Source: Population Division, US Census Bureau.

Counties, then, contain both urban and rural areas using the census definition. There are rural areas within metropolitan counties and urban areas within nonmetropolitan counties. The nonmetropolitan population under the Office of Management and Budget definition is very different from the rural population according to the US Census Bureau definition. In fact, more **rural** residents live in **metropolitan** counties than in micropolitan and noncore counties combined. Based on the Census 2000 population and the current Core Based Statistical Area classifications, 51% of *rural* residents live in *metropolitan* counties. Likewise, metropolitan counties should not be equated with urban. Nearly 13% of the metropolitan population is rural, and 41% of the nonmetropolitan population is urban.

Other classifications seek to further refine the definitions of urban and rural, and metro and non-metro. The Economic Research Service of the US Department of Agriculture has developed two county-level county classifications schemes to provide more detail to the county-level core based statistical areas designations. The Rural-Urban Continuum Codes are a nine category system that classifies counties from the most urban to the most remote rural (Table 1). The metropolitan counties are classified into three categories based on population size, and the non-metro counties are classified into six categories based on their degree of urbanization and adjacency to metro areas. The Urban Influence Codes are a 12 category system, with two categories of metropolitan (large and small), and ten categories of nonmetropolitan. Nonmetropolitan counties are categorized into their micropolitan and noncore classifications and further categorized based on adjacency to other areas and presence of urban places.

**Table 1. Rural urban continuum codes**

<b>Rural urban Continuum Code</b>	<b>Description</b>
<b>Metro counties</b>	
1	Counties in metro areas of 1 million population or more
2	Counties in metro areas of 250 000 to 1 million population
3	Counties in metro areas of fewer than 250 000 population
<b>Non-metro counties</b>	
4	Urban population of 20 000 or more, adjacent to a metro area
5	Urban population of 20 000 or more, not adjacent to a metro area
6	Urban population of 2 500 to 19 999, adjacent to a metro area
7	Urban population of 2 500 to 19 999, not adjacent to a metro area
8	Completely rural or less than 2 500 urban population, adjacent to a metro area
9	Completely rural or less than 2 500 urban population, not adjacent to a metro area

Source: Economic Research Service, US Department of Agriculture.

Another popular classification system is the Rural Urban Commuting Area (RUCA) Codes, developed by the USDA Economic Research Service, the Health Resources and Services Administration's Federal Office of Rural Health Policy (ORHP), and the Washington-Wyoming-Alaska-Montana-Idaho (WWAMI) Rural Research Center at the University of Washington. RUCA codes include 10 primary and 30 secondary classifications of census tracts, based on county classifications, urbanization, and commuting flows (Table 2).

**Table 2. Rural Urban Commuting Area (RUCA) Codes**

<b>RUCA Code</b>	<b>Primary category name</b>	<b>Description</b>
1	Metropolitan area core	Primary flow within an urbanized area (UA)
2	Metropolitan area high commuting	Primary flow 30% or more to a UA
3	Metropolitan area low commuting	Primary flow 5% to 30% to a UA
4	Micropolitan area core	Primary flow within an Urban Cluster of 10 000 to 49 999 (large UC)
5	Micropolitan high commuting	Primary flow 30% or more to a large UC
6	Micropolitan low commuting	Primary flow 10% to 30% to a large UC
7	Small town core	Primary flow within an Urban Cluster of 2 500 to 9 999 (small UC)
8	Small town high commuting	Primary flow 30% or more to a small UC
9	Small town low commuting	Primary flow 10% to 30% to a small UC
10	Rural areas	Primary flow to a tract outside a UA or UC

Source: Economic Research Service, US Department of Agriculture.

For purposes of Federal Programs, most agencies create eligibility requirements specific to programs. For example, the USDA Rural Development program eligibility requirements vary from program to program. A summary of these eligibilities is shown in Table 3.

**Table 3. Sample of eligibility criteria for rural areas in federal programs**

<b>Federal Program</b>	<b>Eligibility Criteria</b>
United States Department of Agriculture (USDA) Rural Development Business and Industry Guaranteed Loans (B&I), Rural Business Enterprise Grants	All areas other than cities or towns of more than 50 000 people and the contiguous and adjacent urbanized area of such cities or towns
USDA Rural Development Intermediary Re-lending Program (IRP)	Any area that is not inside a city with a population of 25 000 or more according to the latest decennial census.
USDA Rural Development Rural Business Opportunity Grants (RBOG)	All areas other than cities or towns of more than 50 000 people and the contiguous and adjacent urbanized area of such cities or towns. In addition, high funding priority given to communities suffering from natural disaster, fundamental economic structural change, persistent poverty, long-term population decline or job deterioration.
USDA Rural Development Community Facilities Programs	Rural areas and towns of up to 20 000 in population
United States Department of Education Rural Education Achievement Programs	Metro-Centric Locale Codes are used for eligibility – these codes identify schools based on the place size in which they are located, and whether they are inside or outside of a core based statistical area.
United States Department of Health and Human, Office of Rural Health Policy Rural Health Grants Programs	Nonmetropolitan Counties are eligible, but certain Census Traces in Metropolitan Counties are also eligible based on their Rural Urban Commuting Area Codes.

Source: USDA and HRSA websites; Arnold *et al.*, 2007.

### **Rural areas in the national economy**

What is the share of rural areas in total population, land, Gross Domestic Product (GDP), and employment? As described in Section 1, the population that is rural is dependent upon the definition of rural that is utilized. The most common definitions are the Core Based Statistical Area definitions of metropolitan and nonmetropolitan areas. The majority of secondary data available to researchers is collected and reported at a county level, making this classification system the most appropriate for data representation. The tables in this section utilize this definition, and where data allows a further breakdown, also presents data based on the US Census Bureau’s definition of rural and urban.

Based on the US Census Bureau rural and urban area definitions, the rural population accounts for 21% of total US population in 2000 (Table 4), and over 97% of total land area (Table 5). In examining these data at the county level, nearly 20% of the US population resided in nonmetropolitan counties in 2000, and nearly 17% in 2005 (Table 4). For comparative purposes, Table 4 also shows the 2000 population based on the 2005 classification of counties. The Core Based Statistical Areas classification system became effective after the release of the 2000 Census. Table 5 illustrates that nonmetropolitan counties account for 80% of total US land area.



Total employment and GDP are reported here using the county-level classification system. Nonmetropolitan areas account for around 15% of total US employment, both in 2000 and 2005 (Table 6). Nonmetropolitan areas also account for around 10% of GDP (Table 7).

**Table 4. Total population**

<b>Geography</b>	<b>Total population, 2000 (2000 County Classifications)<sup>1</sup></b>	<b>Total population, 2000 (2005 County Classifications)</b>	<b>Total population 2005</b>
Total US	281 421 906	281 421 906	296 507 061
Urban	222 360 539	n.a.	n.a.
Rural	59 061 367	n.a.	n.a.
Rural share of US	21.0%	n.a.	n.a.
Metropolitan	225 981 679	232 579 940	246 669 227
Nonmetropolitan	55 440 227	48 841 966	49 837 834
Nonmetro share of US	19.7%	17.4%	16.8%

n.a.: not available.

1. The 2000 classifications represent a prior system of county classification. The 2005 county classifications represent the Core Based Statistical Area classification described above, which was adopted in 2003.

Source: US Census Bureau Decennial Census, 2005 Population Estimates.

**Table 5. Land area**

<b>Geography</b>	<b>Land area (mi<sup>2</sup>), 2000</b>
Total US	3 537 438.44
Urban	92 507.78
Rural	3 444 930.67
Rural share of US	97.4%
Metropolitan	705 789.59
Nonmetropolitan	2 831 648.86
Non-metro share of US	80.0%

Source: US Census Bureau 2000 Decennial Census.

**Table 6. Total full and part time employment**

<b>Geography</b>	<b>Total employment 2000</b>	<b>Total employment 2005</b>
Total US	166 758 800	174 249 600
Metropolitan	141 332 455	148 088 594
Nonmetropolitan	25 426 345	26 161 006
Non-metro share of US	15.2%	15.0%

Source: Bureau of Economic Analysis, Regional Economic Information System

**Table 7. Gross Domestic Product (not adjusted for inflation)**

<b>Geography</b>	<b>GDP 2001 (USD million)</b>	<b>GDP 2005 (USD million)</b>
Total US	10 058 168	12 372 850
Metropolitan	9 038 347	11 097 029
Non-metropolitan	1 019 821	1 275 821
Non-metro share of US	10.1%	10.3%

Source: Bureau of Economic Analysis, Regional Economic Accounts

### **Role of agriculture in rural areas**

Questions addressed in this section include: What is the share of agriculture in land use, GDP and employment at the national level, in rural areas or regions? What is the share of farm family members in the rural population? How have these shares evolved in the last two decades?

Farm land makes up just over 40% of the total land area of the US and has changed little over the past couple of decades. Average farm size has also remained relatively steady, fluctuating from a high of 491 acres in 1992 to a low of 431 acres in 1997, for the data years reported in Table 8.

**Table 8. Land in farms**

<b>Data Year</b>	<b>Land in Farms, acres</b>	<b>Percent of US<sup>1</sup></b>	<b>Average Farm Size, acres</b>
2002	938 279 056	41.4	441
1997	954 752 502	42.2	431
1992	945 531 506	41.8	491
1987	964 470 625	42.6	462

1. US Land Area = 2 263 992 601.6 ac (source: US Census Bureau, Census 2000)  
Source: US Department of Agriculture, Census of Agriculture.

Agriculture (crop and animal production) and forestry and fishing each account for less than one percent of total GDP in the US. Crop and animal production makes up over 3% of the nonmetropolitan share of GDP (Table 9).

**Table 9. Gross Domestic Product (GDP)**

	US Total	Metropolitan	Non-metropolitan	Non-metro share of US
GDP (USD million), 2005				
Total US	12 372 850	11 097 029	1 275 821	10.3%
Crop, animal production	95 858	45 424	42 718	44.6%
As per cent of total GDP	0.8%	0.4%	3.3%	
Forestry, fishing, related	27 242	17 057	5 538	20.3%
As per cent of total GDP	0.2%	0.2%	0.4%	
Total farming, forestry, fishing	1.0%	0.6%	3.7%	39.2%
GDP (USD million), 2001 (not adjusted)				
Total	10 058 168	9 038 347	1 019 821	10.1%
Crop, Animal Production	73 134	35 822	37 312	51.0%
As per cent of total GDP	0.7%	0.4%	3.7%	
Forestry, fishing, related	24 761	15 167	9 594	38.7%
As per cent of total GDP	0.2%	0.2%	0.9%	
Total farming, forestry, fishing	0.9%	0.6%	4.6%	47.9%
GDP (USD million), 1997 (not adjusted)				
Total	8 237 994	n.a.	n.a.	n.a.
Crop, animal production	88 142	n.a.	n.a.	n.a.
As per cent of total GDP	1.1%			
Forestry, fishing, related	22 595	n.a.	n.a.	n.a.
As per cent of total GDP	0.3%			
Total farming, forestry, fishing	1.4%			

n.a.: not available.

Source: Bureau of Economic Analysis, Regional Economic Accounts.

Table 10 illustrates employment in farming, forestry, fishing, and related activities in the US, and by metropolitan and nonmetropolitan areas from 1990 through 2005. As the table illustrates, farming makes up a small share of total US employment, and has represented a declining share of nonmetropolitan employment over the time period shown. A recent report by the Economic Research Service at the United States Department of Agriculture reports the declining share of agriculture of the American workforce. In 1900, 41% of the workforce was employed in agriculture, compared to less than 2% in 2000 (Dimitri *et. al.*, 2005).

**Table 10. Employment**

	<b>US Total</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Non-metro share of US</b>
<b>Employment, 2005</b>				
Total	174 249 600	148 088 594	26 161 006	15.0%
Farming	2 914 000	1 314 852	1 599 148	54.9%
As per cent of total employment	1.7%	0.9%	6.1%	
Forestry, fishing, related	1 012 200	628 901	383 299	37.9%
As per cent of total employment	0.6%	0.4%	1.5%	
Total farming, forestry, fishing	2.3%	1.3%	7.6%	42.9%
<b>Employment, 2000</b>				
Total	166 758 800	141 332 455	25 426 345	15.2%
Farming	3 113 000	1 440 748	1 672 252	53.7%
As per cent of total employment	1.9%	1.0%	6.6%	
Ag services, forestry, fishing, related	2 121 100	1 648 171	472 929	22.3%
As per cent of total employment	1.3%	1.2%	1.9%	
Total farming, forestry, fishing	3.2%	2.2%	8.5%	41.0%
<b>Employment, 1995</b>				
Total	148 982 800	125 311 090	23 671 710	15.9%
Farming	3 106 000	1 412 243	1 693 757	54.5%
As per cent of total employment	2.1%	1.1%	7.2%	
AgServ, forestry, fishing, related	1 779 300	1 385 132	394 168	22.2%
As per cent of total employment	1.2%	1.1%	1.7%	
Total farming, forestry, fishing	3.3%	2.2%	8.9%	36.6%
<b>Employment, 1990</b>				
Total	139 380 900	117 753 103	21 627 797	15.5%
Farming	3 153 000	1 420 149	1 732 851	55.0%
As per cent of total employment	2.3%	1.2%	8.0%	
Ag Serv, forestry, fishing, related	1 454 000	1 136 015	317 985	21.9%
As per cent of total employment	1.0%	1.0%	1.5%	
Total farming, forestry, fishing	3.3%	2.2%	9.5%	44.5%

Source: Bureau of Economic Analysis, Regional Economic Information System.

The farm population in the United States makes up a small portion of the total population, as well as the rural population. From 1980 to 2000, the percent of the rural population residing on farms fell from 10.2% to 5.1% (Table 11). Statistics published by the National Agricultural Statistics Center of the United State Department of Agriculture show that in 1900 (the earliest reported date), 39.2% of the total US population resided on farms (NASS website), and this represents 65% of the rural population in 1900.

**Table 11. Total, rural, and farm populations, US**

<b>Year</b>	<b>Total Population</b>	<b>Rural Population</b>	<b>Farm Population</b>	<b>Farm as a per cent of Total Population</b>	<b>Farm as a per cent of Rural Population</b>
2000	281 421 906	59 061 367	2 987 531	1.1	5.1
1990	248 709 873	61 656 386	3 871 583	1.6	6.3
1980	226 542 199	59 494 813	6 051 000	2.7	10.2

*Source:* Statistics reported by the National Agricultural Statistics Service, USDA, and the US Census Bureau.

### **Role of agri-food industries in rural areas**

Questions addressed in this section include: What is the share of agri-food industries (upstream and downstream) in GDP and employment at the national level, in rural areas or regions? What is the share of forestry in land use at the national level, in rural areas or regions? How have these shares evolved in the last two decades.

Table 12 represents the GDP in several agricultural related industries from 1987 through 2005 and, where available, the metropolitan and nonmetropolitan share of the GDP. These figures have not been adjusted for inflation. As the table shows, agricultural related industries made up a larger share of the nonmetropolitan GDP than the metropolitan and total US GDP, and the shares have remained relatively steady over time.

**Table 12. GDP in agri-related industries**

	<b>US Total</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Non-metro share of US</b>
<b>GDP (USD million), 2005</b>				
Total	12 372 850	11 097 029	1 275 821	10.3%
Food product manufacturing	175 673	135 068	40 605	23.1%
Per cent of total GDP	1.4%	1.2%	3.2%	
Wood product manufacturing	38 960	21 470	17 490	44.9%
Per cent of total GDP	0.3%	0.2%	1.4%	
Paper manufacturing	54 559	40 738	13 821	25.3%
Per cent of total GDP	0.4%	0.4%	1.1%	
<b>GDP (USD million), 2001 (not adjusted)</b>				
Total	10 058 168	9 038 347	1 019 821	10.1%
Food product manufacturing	167 129	129 406	37 723	22.6%
Per cent of total GDP	1.7%	1.4%	3.7%	
Wood product manufacturing	31 313	17 065	14 248	45.5%
Per cent of total GDP	0.3%	0.2%	1.4%	
Paper manufacturing	48 946	36 662	12 284	25.1%
Per cent of total GDP	0.5%	0.4%	1.2%	
<b>GDP (USD million), 1997 (not adjusted)</b>				
Total	8 237 994	n.a.	n.a.	n.a.
Food product manufacturing	135 357	n.a.	n.a.	n.a.
Per cent of total GDP	1.6%			
Wood product manufacturing	27 948	n.a.	n.a.	n.a.
Per cent of total GDP	0.3%			
Paper manufacturing	51 484	n.a.	n.a.	n.a.
Per cent of total GDP	0.6%			
<b>GDP (USD million), 1987 (not adjusted)</b>				
Total	4 663 282	n.a.	n.a.	n.a.
Food and kindred products manufacturing	78 050	n.a.	n.a.	n.a.
Per cent of total GDP	1.7%			
Tobacco products manufacturing	10 210	n.a.	n.a.	n.a.
Per cent of total GDP	0.2%			
Lumber & wood products manufacturing	32 030	n.a.	n.a.	n.a.
Per cent of total GDP	0.7%			
Leather & leather products manufacturing	3 946	n.a.	n.a.	n.a.
Percent of total GDP	0.1%			

n.a.: not available.

Source: Bureau of Economic Analysis, Regional Economic Accounts.

Tables 13 through 15 present earnings in agricultural related industries in 2005, 1995, and 1985. The 2005 tables present industries as organized in the North American Industry Classification System (NAICS), and the 1995 and 1985 tables present industries as organized by the Standard Industry Classification (SIC) system. Due to the change the industry classification systems, comparisons are difficult. These industries together accounted for roughly 3% of total US earnings and 10% of nonmetropolitan earnings in 2005.

**Table 13. Earnings in agri-related industries, 2005**

	<b>US Total</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Non-metro share of US</b>
Total earnings, 2005 (USD 000)	7 983 652 000	7 157 081 346	826 570 654	10.4%
Farm	50 903 000	24 128 236	26 774 794	52.6%
Per cent of total earnings	0.6%	0.3%	3.2%	
Forestry & logging	5 932 000	2 337 421	3 594 579	60.6%
Per cent of total earnings	0.1%	0.0%	0.4%	
Fishing, hunting & trapping	2 071 000	1 426 454	644 546	31.1%
Per cent of total earnings	0.0%	0.0%	0.1%	
Agriculture and forestry support	16 283 000	11 392 157	4 890 843	30.0%
Per cent of total earnings	0.2%	0.2%	0.6%	
Wood products manufacturing	26 273 000	14 806 421	11 466 579	43.6%
Per cent of total earnings	0.3%	0.2%	1.4%	
Food manufacturing	69 882 000	51 035 781	18 846 219	27.0%
Per cent of total earnings	0.9%	0.7%	2.3%	
Beverage & tobacco mnfg	16 607 000	15 495 078	1 111 922	6.7%
Per cent of total earnings	0.2%	0.2%	0.1%	
Leather & leather products mnfg	2 755 000	2 125 324	629 676	22.9%
Per cent of total earnings	0.0%	0.0%	0.1%	
Paper manufacturing	37 959 000	28 670 074	9 288 926	24.5%
Per cent of total Earnings	0.5%	0.4%	1.1%	

Source: Bureau of Economic Analysis, Regional Economic Information System.

**Table 14. Earnings in Agri-Related Industries, 1995**

	<b>US Total</b>	<b>Metropolitan</b>	<b>Non-metropolitan</b>	<b>Non-metro share of US</b>
<b>Total Earnings, 1995 (USD 000)</b>	4 662 406 000	4 124 885 321	537 520 679	11.5%
<b>Farm</b>	39 675 000	20 227 521	19 447 479	49.0%
Per cent of total earnings	0.9%	0.5%	3.6%	
<b>Agricultural services</b>	25 598 000	21 254 613	4 343 387	17.0%
Per cent of total earnings	0.5%	0.5%	0.8%	
<b>Forestry</b>	871 000	488 165	382 835	44.0%
Per cent of total earnings	0.0%	0.0%	0.1%	
<b>Fishing</b>	1 514 000	1 034 720	479 280	31.7%
Per cent of total earnings	0.0%	0.0%	0.1%	
<b>Lumber and wood products</b>	27 220 000	14 395 799	12 824 201	47.1%
Per cent of total earnings	0.6%	0.3%	2.4%	
<b>Food and kindred products</b>	60 902 000	47 680 755	13 221 245	21.7%
Per cent of total earnings	1.3%	1.2%	2.5%	
<b>Tobacco products</b>	2 896 000	2 825 990	70 010	2.4%
Per cent of total earnings	0.1%	0.1%	0.0%	
<b>Paper and allied products</b>	32 977 000	25 322 809	7 654 191	23.2%
Per cent of total earnings	0.7%	0.6%	1.4%	
<b>Leather and leather products</b>	3 027 000	2 275 420	751 580	24.8%
Per cent of total earnings	0.1%	0.1%	0.1%	

Source: Bureau of Economic Analysis, Regional Economic Information System.

**Table 15. Earnings in Agri-Related Industries, 1985**

	<b>US Total</b>	<b>Metropolitan</b>	<b>Nonmetropolitan</b>	<b>Non-metro Share of US</b>
<b>Total Earnings, 1985 (USD 000)</b>	2 671 427 000	2 339 547 631	331 879 369	12.4%
<b>Farm</b>	31 950 000	15 577 084	16 372 916	51.2%
Per cent of total earnings	1.2%	0.7%	4.9%	
<b>Agricultural services</b>	11 184 000	9 077 991	2 106 009	18.8%
Per cent of total earnings	0.4%	0.4%	0.6%	
<b>Forestry</b>	614 000	279 787	334 213	54.4%
Per cent of total earnings	0.0%	0.0%	0.1%	
<b>Fishing</b>	1 501 000	999 710	501 290	33.4%
Per cent of total earnings	0.1%	0.0%	0.2%	
<b>Lumber and wood products</b>	17 028 000	9 229 525	7 798 475	45.8%
Per cent of total earnings	0.6%	0.4%	2.3%	
<b>Food and kindred products</b>	41 129 000	33 318 629	7 810 371	19.0%
Per cent of total earnings	1.5%	1.4%	2.4%	
<b>Tobacco products</b>	2 416 000	2 333 999	82 001	3.4%
Per cent of total earnings	0.1%	0.1%	0.0%	
<b>Paper and allied products</b>	22 240 000	16 994 483	5 245 517	23.6%
Per cent of total earnings	0.8%	0.7%	1.6%	
<b>Leather and leather products</b>	2 841 000	2 061 424	779 576	27.4%
Per cent of total earnings	0.1%	0.1%	0.2%	

Source: Bureau of Economic Analysis, Regional Economic Information System.



Table 16 shows the amount of US land area that is forested land. As the table portrays, the amount of forested land in the US has been relatively stable over the time period reported in the table.

**Table 16. Forest land: total forested land**

	<b>Total Forested Land, acres</b>	<b>Per cent of US land area<sup>1</sup></b>
US, 2002	748 923 000	33.1
US, 1996	746 798 000	33.0
US, 1992	736 681 000	32.5

1. US Land Area = 2 263 992,601.6 ac (Source: US Census Bureau, Census 2000).

Source: USDA Agricultural Statistics, 2007, 2002, and 1994 editions

### **Diversification of activities by farm households in rural areas**

Questions addressed in this section include: What are the activities in which farm households are engaged on the farm and outside? To what extent are they related to farm activities? Do they take place on or off the farm? What is the number of farms engaged in these various non-agricultural activities? Which member of the farm household is engaged in non-agricultural activities?

Table 17 illustrates the farm-related income (other than receipts from farming) received by farms over the 1996 through 2006 period. Farm related income includes custom work, machine hire, recreational activities (see section 7 for further discussion of agri-tourism), forest product sales and other farm sources. This represents 6.2% of total gross cash farm income.

**Table 17. Farm Income and costs report**

	<b>1997-2006 average (USD billion)</b>	<b>Per cent</b>
Gross cash income:	243.2	
Cash receipts from crops and livestock	211.2	86.8
Government payments	16.9	6.9
Farm related income (custom work, machine hire, recreational activities, forest products sales, and other farm sources)	15.1	6.2

Source: Economic Research Service, USDA.

Table 18 represents income of farm households, and the portion that is earned off the farm, from various sources. As the table shows, farm earnings actually make up a small percentage of farm operator household income, with nearly 90% of income coming from off farm sources. The majority of this off farm income is from earnings, either through wages and salaries or in business income.

**Table 18. Farm Household Income Report**

	2006 Value	Per cent of total household income
Units	USD per household	%
Farm operator household income	77 654	
<b>Farm earnings</b>	<b>8 406</b>	<b>10.8</b>
<b>Off-farm income</b>	<b>69 248</b>	<b>89.2</b>
Earned sources		
Off-farm wages and salaries	38 692	49.8
Off-farm business income	11 448	14.7
Unearned income:		
Interest income	2 796	3.6
Dividend income	1 848	2.4
Retirement and other transfer income	10 073	13.0
Other off-farm sources	4 391	5.7

Source: Economic Research Service, USDA.

Table 19 illustrates the off farm work by farm operators and their spouses. In the majority of farms families, either one or both work off the farm. In only 31.3% of farms did neither the operator nor spouse work off the farm.

**Table 19. Off-farm work by farm operators**

	Percent working off-farm, 2006
Only operator works off-farm	20.8
Only spouse works off-farm	13.4
Neither works off-farm	31.3
Both work off-farm	34.5

Source: Economic Research Service, USDA.

### **Factors enhancing/limiting farm household diversification into non-agricultural activities.**

Questions addressed in this section include: What are the main factors explaining farm household diversification (or the lack thereof) into non-agricultural activities: the general economic situation (employment), accessibility/connections, attractiveness, regulations and policies?

Off-farm employment is quite common among US farm households, and has been for many decades. The most recent data available from the USDA Economic Research survey shows that across all farm types, farm operator households earned 89.2% of their household income from off-farm sources (USDA Economic Research Survey, Agricultural Resource Management Survey, 2006). This percentage has increased over time, but off-farm work is not a new phenomenon – in the 1930s about 30% of operators reported off-farm work (Hoppe *et. al.*, 2007). Most off farm income comes from earned sources (see Table 18 in previous section).

In examining 2004 data, the Economic Research Service reports that while operator off-farm income varied across farm size, off-farm income earned by spouses is relatively stable across farm sizes (Fernandez-Cornejo *et. al.*, 2007). In 2004, 52% of farm operators and 45% of spouses worked off-farm. Off-farm wages and salaries provided 47% of farm household income in 2004, while farming income was only 17% of the household income (Covey *et. al.*, 2005).

Off-farm income is generally seen as a means of smoothing out household income flow, which is often viewed as inadequate and/or unstable and off-farm opportunities can provide fringe benefits such as health insurance and pensions (Fernandez-Cornejo, 2004). The main reason offered by operators and spouses in the 2004 Agricultural Resource Management Survey for seeking off-farm work was to increase income of the household; other reasons included obtaining health insurance and personal satisfaction (Covey *et. al.*, 2005).

This latter point deserves additional comment. In the US health insurance is not universally available. While the elderly and the poor have publicly provided health insurance, working-aged residents and children must get insurance through their employer, purchase it privately or go without. Since rural populations are older and poorer than urban populations, uninsured rates are often lower in rural areas. But the self-employed, including farmers, are more likely to have no health insurance.

The most important determinant of the ability of farmers to diversify their operations and to find off-farm employment is degree of rurality (remoteness from urban areas and density of population).

### **Focus on farm tourism**

Questions addressed in this section include: Is farm tourism developed? What are the tourism services provided by farm households? What are the factors explaining the development (or lack of development) of farm tourism?

Agri-tourism is a growing industry in the United States. Unfortunately, there is little data available to allow us to quantify the extent to which this industry has developed. An exception is a very recent study (December 2007) by the USDA Economic Research Service (ERS) that studied a 2004 sample of US farm families. There are also several small scale studies and reports that help to frame this issue.

According to estimates in the ERS study about 52 000 farms (2.5% of US farms) participated in some form of agri-tourism, and earned about USD 955 million in income from farm-based recreation in 2004. Types of agri-tourism activities included outdoor recreation, such as fishing, hunting, wildlife study, and horseback riding; education experiences, such as tours, cooking classes, wine tasting, and museums; entertainment, such as festivals, barn dances, and petting zoos; hospitality services, such as overnight farm stays and guided tours; and on-farm direct sales, such as “pick your own” operations, roadside stands, and farmers’ markets (Brown and Reeder, 2007).

Motivations and limitations for agri-tourism were described in this study. Benefits of agri-tourism included supplementing and diversifying farm income, utilizing assets and expanding employment opportunities; benefits to surrounding communities through income, land preservation, land values, and a “sense of place.” Limitations to agri-tourism discussed in this survey included legal liability issues, reduction in privacy, over use of resources (*e.g.* over-hunting and over-fishing), local traffic congestion, and conflicts over non-traditional land uses (Brown and Reeder, 2007).

The Brown and Reeder study examined both characteristics of the farm operation and farm operator, as well as characteristics of the surrounding community and its proximity to larger urban centres. Results show that agri-tourism was most prevalent in high population density counties, but was more likely in those counties at a greater distance from urban centres. Areas already high in natural amenities tended to

higher levels of agri-tourism as well. Farms with higher net worth were more likely to engage in and benefit from agri-tourism activities (Brown and Reeder, 2007).

Several studies have examined the issue of agri- or nature-tourism in various states or regions of the US. The University of California Small Farm Center discusses the potential of agricultural and nature tourism to increase farm revenues and provide an educational experience to non-farmers (Jolly et. al. 2005). A survey of residents in two California counties showed a high interest and participation rate in agriculture and nature tourism. Motivating factors included direct purchasing of fresh products, experiencing nature, and vacation and relaxation. Also included in the survey questionnaire were questions regarding on-site spending during trips, which averaged between USD 5 and USD 40, illustrating the potential for farm revenue from tourism activities.

The Institute for Tourism and Recreation Research at the University of Montana conducted a survey of farmers and ranchers that were engaged in or planning tourism or recreation businesses (Rademaker *et al.* 2007). The most frequently selected businesses were Fish, Wildlife and Parks (FWP) block management<sup>1</sup>, fee hunting and fishing, guesthouse/cabin rentals, outfitter guide businesses, and working farm/ranch vacations. The most important reasons cited for operating a recreation business were additional income, to offset fluctuations in agricultural income, and to fully utilize the farm resources. The most restrictive obstacles were legal liability issues, regulations and legal constraints, and lack of time on the part of the operator.

A 2001 study examined the agri-tourism industry in New York (Kuehn and Hilchey, 2001). The study, a survey of agri-tourism businesses, found agri-tourism activities included farm produce stands, Christmas tree, pick your own operations, maple production, greenhouses, wineries, livestock breeding, and bed and breakfast establishments. The study reports that the primary motivation for engaging in tourism activities was to increase the profitability of the farm business. Other reasons included the desire to work directly with people, the opportunity to provide an educational service, and employment for family members. The main concerns noted by business owners were legal liability and the high cost of liability insurance. Other concerns included costs of marketing and advertising, labour costs, government regulations, taxes, the need to attract customers, weather, and production concerns.

The National Agriculture Statistics Services has some agricultural tourism<sup>2</sup> statistics for states in which agri-tourism plays a large role. In Hawaii, the value of agri-tourism in 2003 was USD 33.9 million. Specific agro-tourism activities include on-farm sales direct to farm visitors, other retail sales, outdoor recreation, accommodations, education, and entertainment (Hawaii Agricultural Statistics, 2004). In Vermont, income from agri-tourism was USD 19.5 million in 2002, and over a third of farms in the state participated in some agri-tourism activity. The most common source of agri-tourism income was direct sales of farm commodities. Other agri-tourism activities include accommodations, outdoor recreation, education, and entertainment (New England Agricultural Statistics Service, 2004).

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1. "Block management is a cooperative effort between Montana Fish, Wildlife and Parks (FWP), private landowners, and public land management agencies to help landowners manage hunting activities and to provide free public hunting access to private and isolated public lands." Cited directly from the Montana Fish, Wildlife and Parks website: <http://fwp.mt.gov/hunting/hunteraccess/blockman/default.html>.
  2. Agricultural tourism is defined as "a commercial enterprise on a working farm conducted for the enjoyment, education, and/or active involvement of the visitor, generating supplemental income for the farm." Cited from Hawaii Agricultural Statistics: Hawaii Ag-Tourism: [www.nass.usda.gov/hi/speccrop/agtour.htm](http://www.nass.usda.gov/hi/speccrop/agtour.htm).

## Multipliers effects of agriculture and other rural activities

Questions addressed in this section include: What are the multipliers effects of agriculture in rural economies compared to those of agri-food industries, farm tourism, public services or any other activity?

A number of studies have been conducted to measure the economic impact or importance of the agricultural sector, primarily at the state level. In order for these estimates to be meaningful it is important to establish which is included in the definition of agriculture (farming, forestry, fishing, agricultural services, processing, retailing, etc.), the geographic area over which the estimates are made (community, country, state or nation), and whether the impact of spending income earned in agriculture is included in the estimates.

A full accounting of agriculture's impact considers not only the size of the farm sector itself, but also the farm inputs, processing and distribution sectors as well. This often involves the use of economic multipliers which indicate the linkages among this sectors, but careful accounting avoids the double counting that can easily be introduced using this approach.

Most such studies utilize a model called IMPLAN (Impact Analysis for Planning), which is a database and software package that allows input output modelling (multiplier analysis) at various geographic levels. The models allows an analysis of the indirect and induced effect (or multipliers) of various economic sectors on jobs, income, and value added. Indirect effects generally result from business to business transactions, and induced effects refer to wages and other income spent by labour (Deller, 2004).

A study of Wisconsin's agricultural sector (Deller, 2004) analyzes the direct and indirect impacts of agricultural production and several sectors of agricultural processing, as well as the horticulture sector. The study finds an output multiplier for the total agriculture sector of 1.802, meaning that for every dollar of output (sales), an additional 80 cents is generated in other parts of the state economy. With respect to employment, the agricultural multiplier is 2.289, indicating that for every direct job in agriculture, an additional 1.3 jobs is created in other sectors of the economy. Finally, with respect to income or gross state product, the multiplier in the Wisconsin study is found to be 2.78. Output and employment multipliers were generally lower for the agricultural production sectors than for the processing sectors analyzed.

Another study was conducted for the State of Virginia in 1998 (Lamie, 1998). The study found that agriculture and related industries accounted for one of every ten jobs in Virginia. The report analyzed the impact of farm production, processing, distribution, and input sectors, and their impacts on the Virginia economy, utilizing the IMPLAN model. The study found that that in terms of contribution to Sales, Employment, and Gross State Product, the agricultural sector (including agro-forestry) accounted for the following (Table 20):

**Table 20. Average economic impact of Virginia's agricultural economic system, 1991-1996**

<b>Component of Agriculture</b>	<b>Sales</b>	<b>Gross State Product</b>	<b>Employment</b>
Farming production	USD 2.2B	USD 0.4B	30 800
Agricultural processing	USD 16.4B	USD 7.7B	54 900
Distribution of products	USD 2.6B	USD 2.2B	80 900
Input activities	USD 4.9B	USD 2.5B	69 200
<i>Total Agriculture System</i>	<i>USD 26.1B</i>	<i>USD 12.8B</i>	<i>235 800</i>
Induced effects (multiplier effect)	USD 9.7B	USD 6.7B	152 000
Total agriculture related impact	USD 35.9B	USD 19.5B	387 000
Per cent of state total	12.3%	11.2%	9.9%

Source: Reproduced from Lamie 1998, page 8.

## Conclusions

The information presented in this report illustrates some of the “ironies of agriculture.”

- In the United States, rural is not synonymous with agriculture. In fact, only a small percent of US workers (at the national and the nonmetropolitan levels) are employed directly in agriculture. Policies to support rural areas that are focused on agricultural assistance do little to support the broader rural people and places.
- Farms are becoming larger and smaller. Average farm size has increased significantly over the past several decades with advancements in technology and reduced labour demands. Also, large farms (those with sales over USD 250 000) account for the majority of all production. But in terms of numbers of farms small farms are also increasing.
- A decreasing number of rural areas are dependent on agriculture. The Economic Research Service classifies counties as farming dependent, based on their share of employment and income in agricultural activities, and finds 403 nonmetro counties that are farming dependent. On the other hand, 585 nonmetro counties are manufacturing dependent, and 222 are government dependent, and 114 are services dependent.
- While farming is relatively more important in non-metropolitan areas than in metropolitan areas, a majority of farm production occurs in metropolitan areas of the US. In 2005, over 56% of GDP from farming, forestry and fishing was produced in metropolitan areas.
- Agricultural production makes up a smaller portion of total GDP than does processing of agricultural products. In 2005, crop and animal production made up less than one percent of total GDP in the US GDP in agri-related industries (as defined in this report) is nearly three times that of crop and animal production.
- Even for agricultural producers, farming is rarely the major source of employment or income. Most farms rely heavily on off-farm employment and income. In fact, in 2006, nearly 90% of total farm household income was from off-farm sources, and in nearly 70% of farms, either the operator, spouse, or both work off the farm.

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