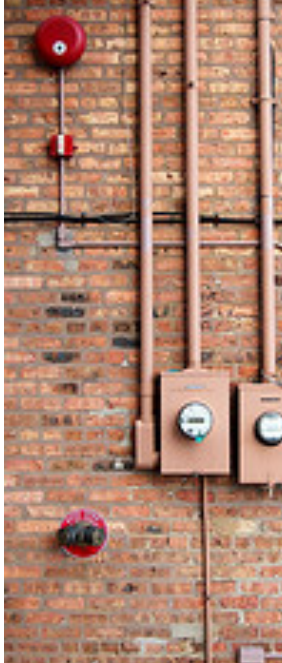
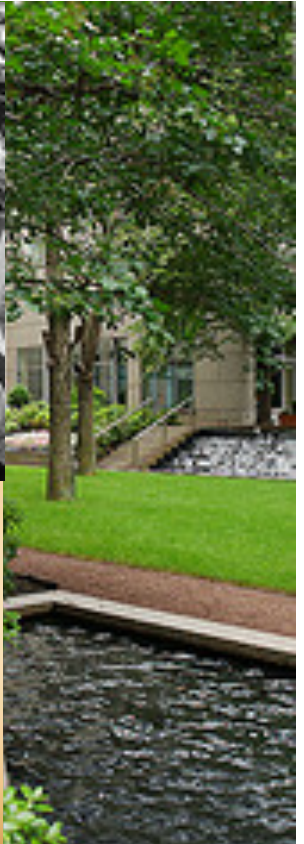


Chapter 10

Natural Environment: How Big is Our Footprint?

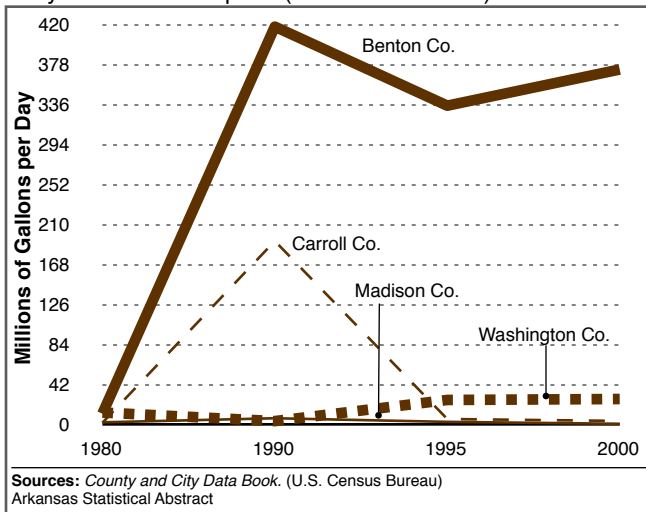


The Natural Environment

The natural environment strongly impacts community quality of life. From the air we breathe to the water we drink, the quality of the natural environment has a direct connection to personal life quality. Low air quality has been directly linked to health problems such as asthma, while low water quality can lead to the spread of disease. Open space allows people to exercise and enjoy the outdoors, improving both their mental and physical well-being. A healthy natural environment promotes a vibrant community.



Figure 10.1
Daily Water Consumption (Ground & Surface)



- ★ Nearly 50 percent of the U.S. population utilizes ground water for its residential supply-- that percentage may be higher in rural locations such as Carroll and Madison County.
- ★ Consumption has clearly been different in Benton compared to the remaining counties in Northwest Arkansas.
- ★ Carroll County experienced a spike in 1990 water consumption but it leveled off by 1995 and looked very similar to Madison and Washington County.
- ★ Off-stream water use often refers to usage for agricultural purposes. This type of system is used to water livestock and can be critical to improving general water quality, animal health, and overall pasture utilization.
- ★ In 2000, Carroll and Madison County were using nearly twice as much off-stream water as the other counties in Northwest Arkansas.
- ★ Off-stream water usage in the state of Arkansas was approximately 170 gallons per person per day.

Figure 10.2
Daily Off-stream Water Usage Per Capita, 2000

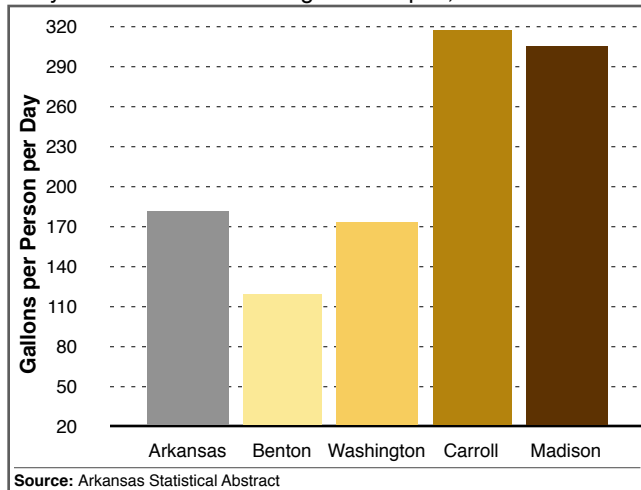
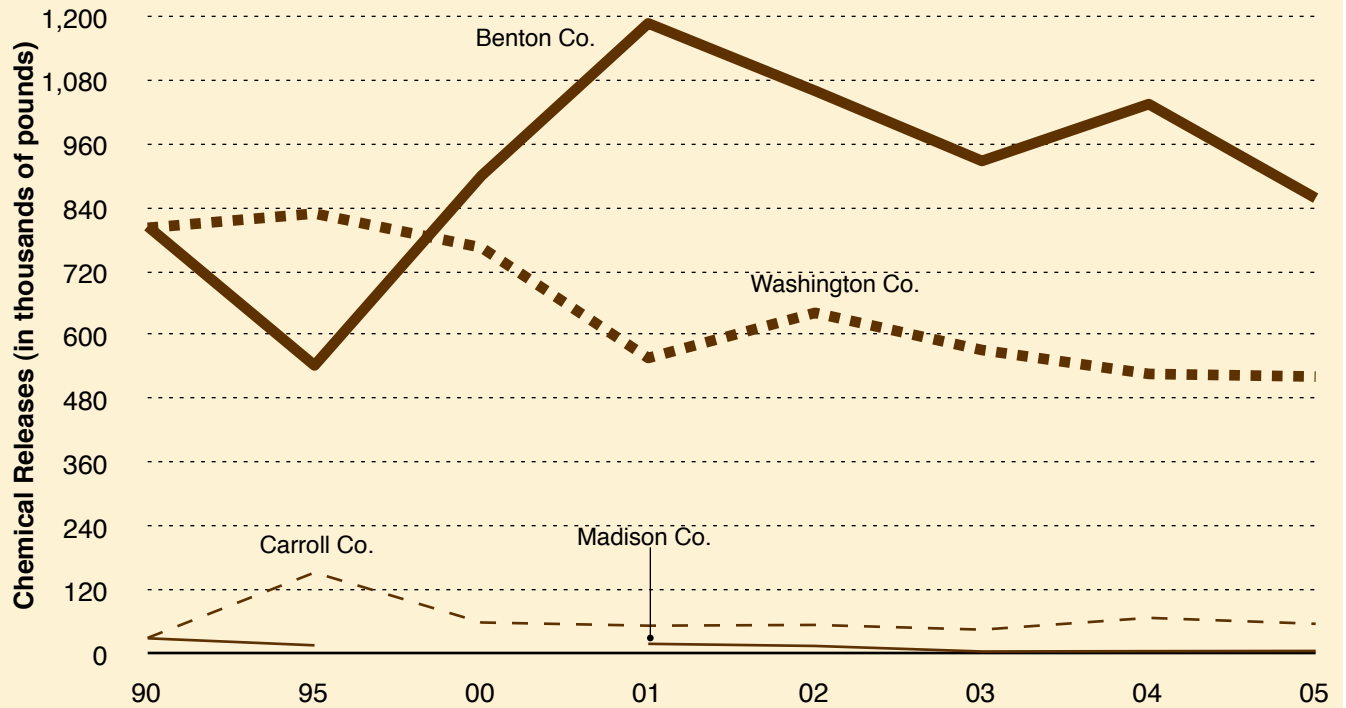


Exhibit 10.1

Annual Toxic Chemical Releases



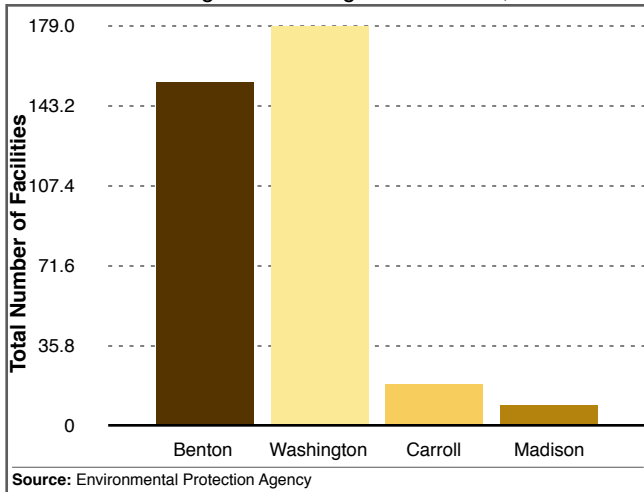
COUNTY	YEAR							
	1990	1995	2000	2001	2002	2003	2004	2005
Benton	806,871	544,761	901,342	1,188,297	1,061,274	929,939	1,036,955	859,820
Carroll	31,070	154,185	60,015	54,055	55,475	46,581	68,720	57,595
Madison	30,270	17,970	nd	19,877	15,883	5,417	6,002	6,480
Washington	803,312	830,490	766,664	558,065	643,007	573,191	528,540	523,132

Source: Arkansas Statistical Abstract

- ★ Annual data on toxic chemical releases refers to a gross estimate from a number of different industrial, commercial and agricultural sources that release into water, air, and land.
- ★ While the least populated counties in Northwest Arkansas (Carroll and Madison) have remained constant regarding toxic release since 1990, a faster growing Benton County registered significant increases in releases during the period between 1995-2000.
- ★ Since 2000, toxic chemical releases in Benton County have declined and after a modest increase in the 2001-02 period, toxic releases in Washington County have leveled off during the same time period.



Figure 10.3
Facilities Producing or Releasing Air Pollutants, 2008



- ★ The Environmental Protection Agency keeps a record of all facilities that engage in potentially hazardous practices that require permit issuance or regular monitoring.
- ★ In 2008, the two largest and the fastest growing counties (Benton and Washington) contained more facilities engaging in environmentally damaging activities.
- ★ Washington County reported more air pollution release and hazardous waste activity than any of the other counties in the Northwest Arkansas region.
- ★ The EPA recently rated much of the western and northern section of the Northwest Arkansas as having failing or near failing air quality based on federally accepted standards.

Figure 10.4
Facilities Reporting Hazardous Waste Activities, 2008

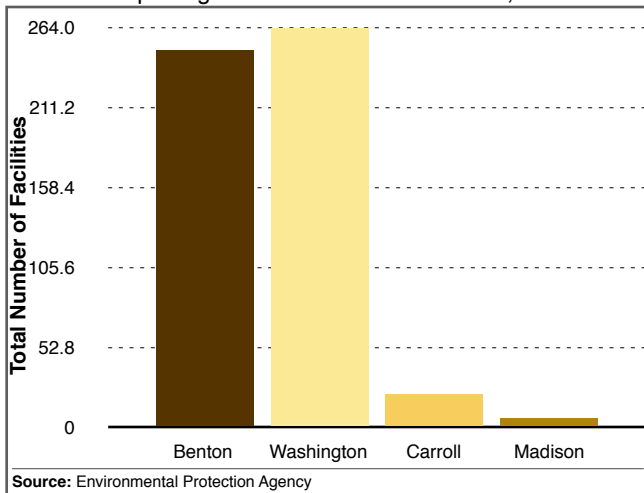
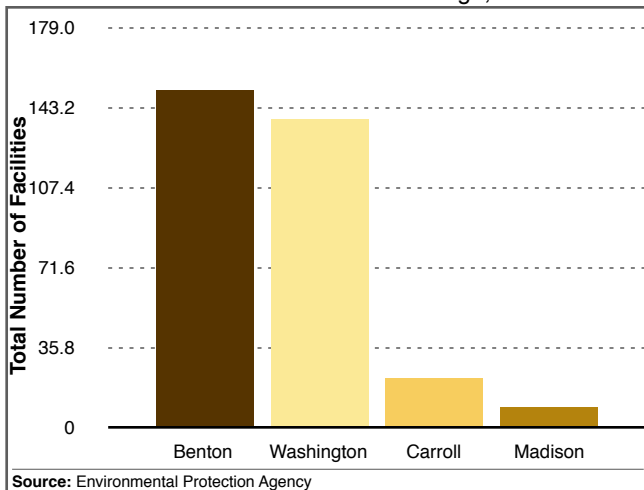
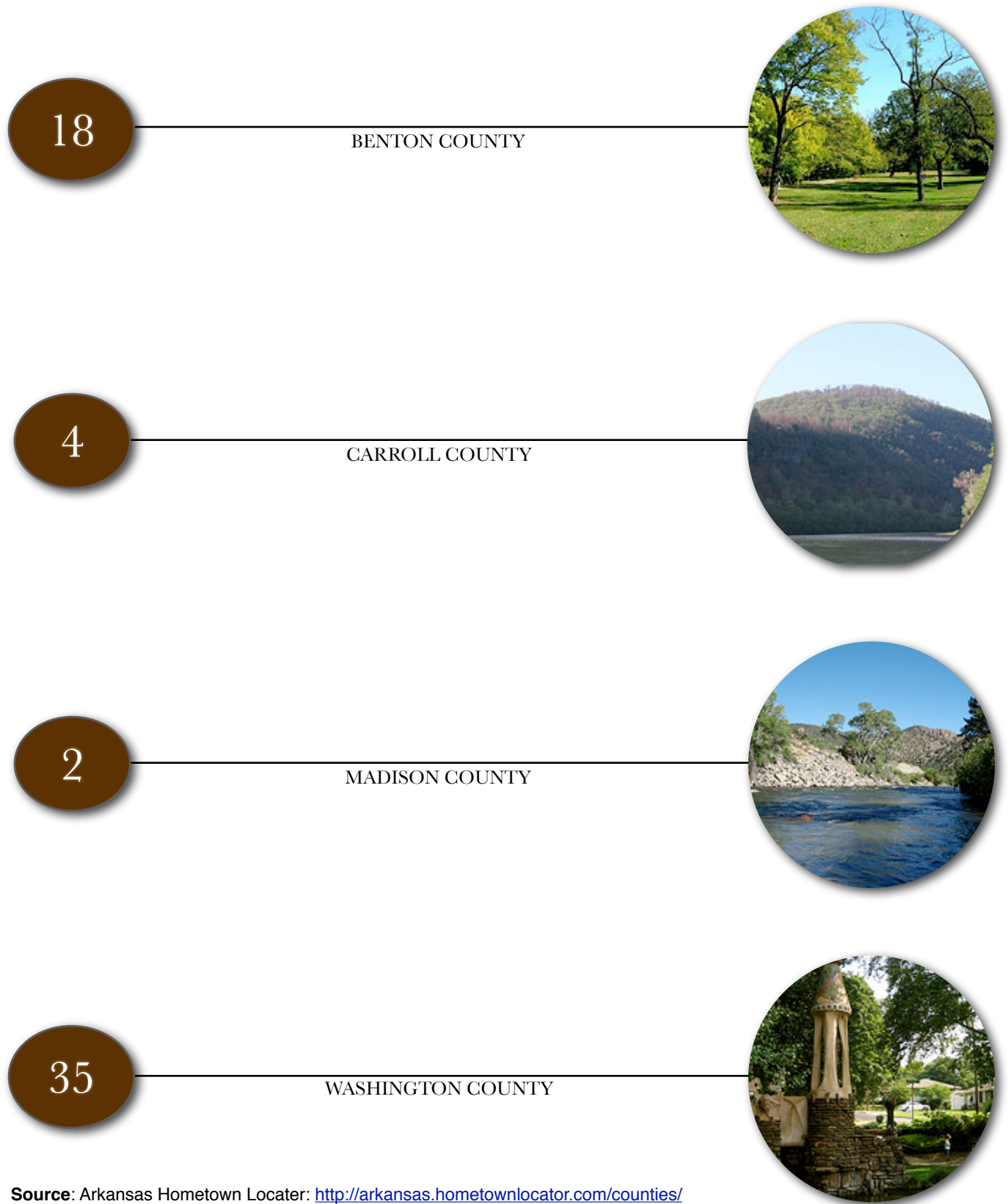


Figure 10.5
Facilities Issued Permits for Water Discharge, 2008



By The Numbers

Public Parks and Land Use in Northwest Arkansas

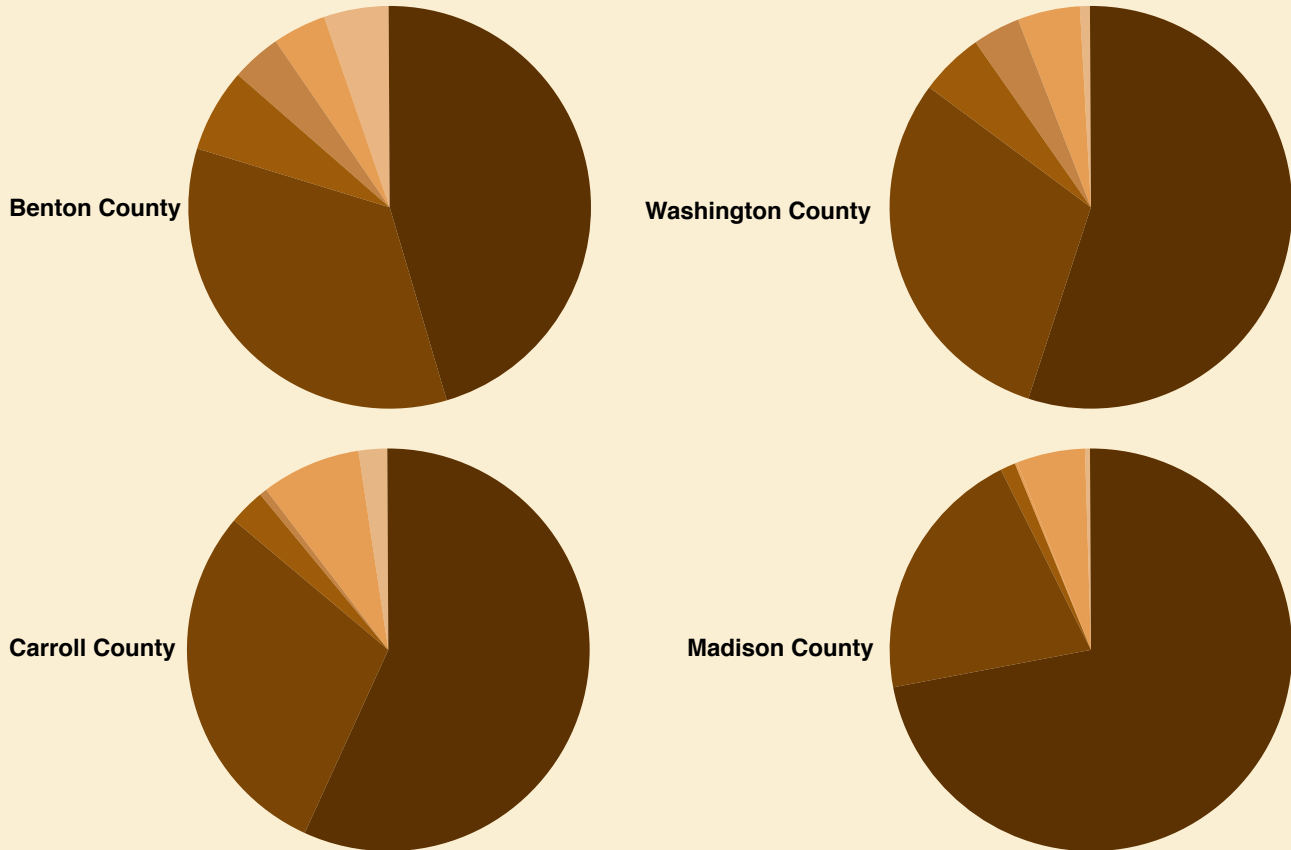


Source: Arkansas Hometown Locator: <http://arkansas.hometownlocator.com/counties/>

Exhibit 10.2

Distribution of Land Use Types in Northwest Arkansas Counties, 2006

● Forest ● Pasture ● Urban: Low ● Urban: High ● Transitional ● All Other



	Benton Co.	Washington Co.	Carroll Co.	Madison Co.
Land Use Type				
Forest	45.5	54.9	56.9	72.1
Pasture	34.4	30.0	29.3	20.6
Urban: Low Density	6.7	5.1	2.9	1.2
Urban: High Density	4.0	3.8	0.6	0.2
Transitional/Woody	4.3	5.0	8.0	5.5
All Other	5.1	1.2	2.3	0.4
Total Acreage	566,355	408,088	609,116	535,386

Source: Center for Advanced Spatial Technologies (CAST), University of Arkansas.

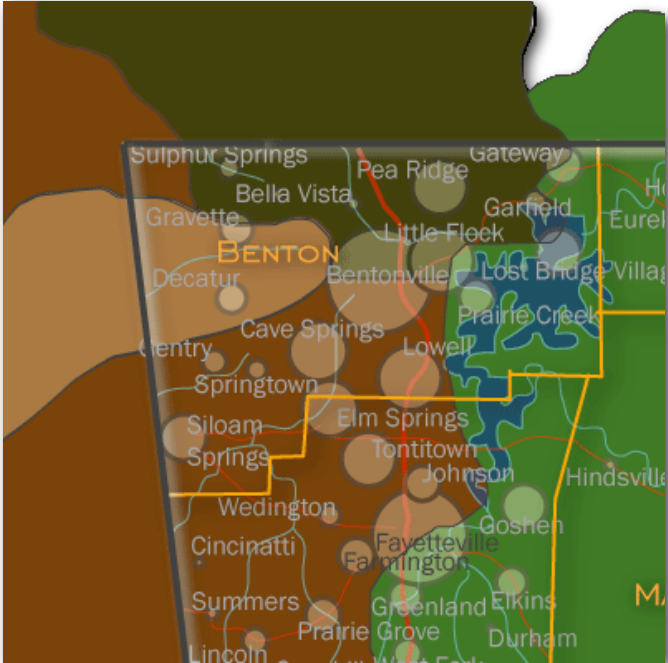
- ★ 2006 land use data shows that all the Northwest Arkansas counties had a majority of forest acreage except for Benton County.
- ★ Pasture land acreage is slightly higher in Benton and Washington Counties than other counties in the region,
- ★ Carroll and Madison Counties had < 5% of their total acreage as developed, high/low density urban acreage as reported in 2006.



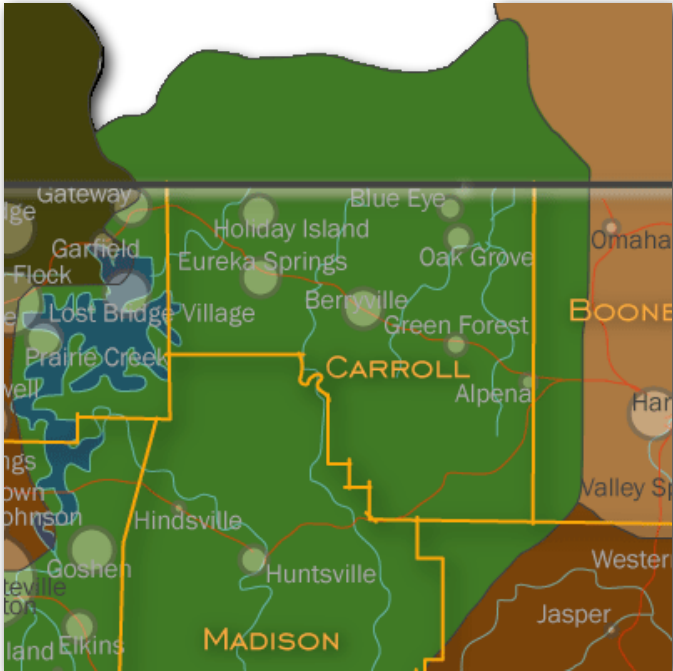
Watersheds of Northwest Arkansas

Watersheds are usually large areas of land absorbing precipitation that drains or seeps into existing natural water systems (marsh, stream, river, lake, ponds, and ground-water). Protecting the watershed is a vital piece of the ecosystem puzzle; Northwest Arkansas depends on these protected watersheds for its primary source of drinking water. The shades and colors represent the different watersheds in each of the four counties.

- BENTON COUNTY WATERSHEDS**
- Beaver Reservoir
 - Elk (Sugar Creek)
 - Illinois
 - Lake O The Cherokees
 - Lower Neosho (Spavinaw)



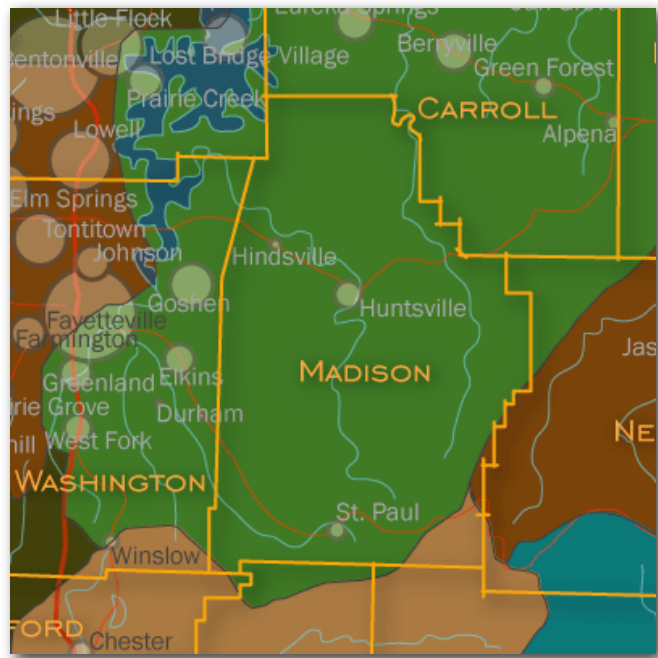
- CARROLL COUNTY WATERSHEDS**
- Beaver Reservoir



Source: Arkansas Natural Resource Commission

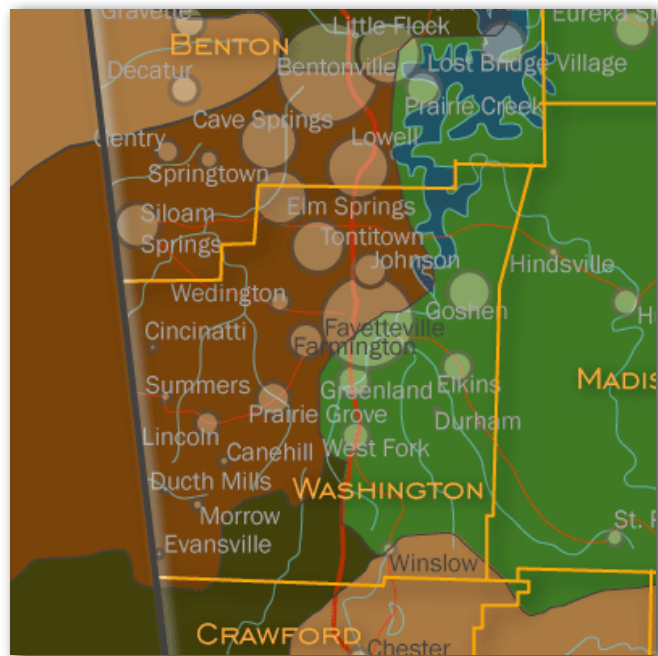
MADISON COUNTY WATERSHEDS

- Buffalo
- Frog-Mulberry
- Upper White (Beaver Reservoir)



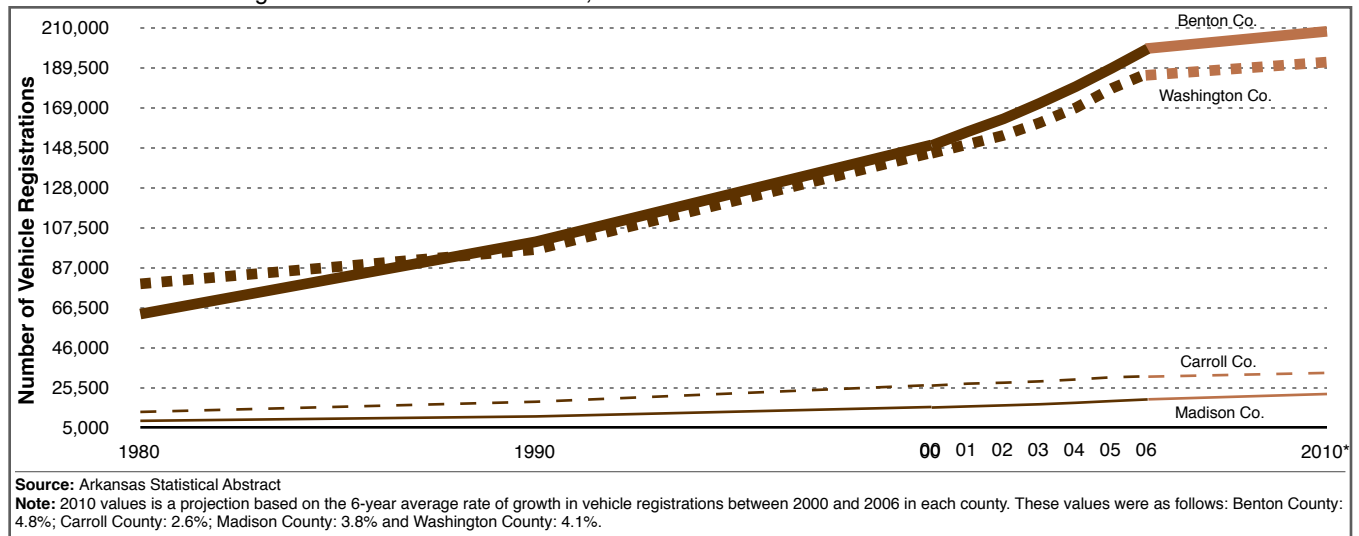
WASHINGTON COUNTY WATERSHEDS

- Frog-Mulberry
- Illinois
- Robert S. Kerr Reservoir
- Upper White (Beaver Reservoir)



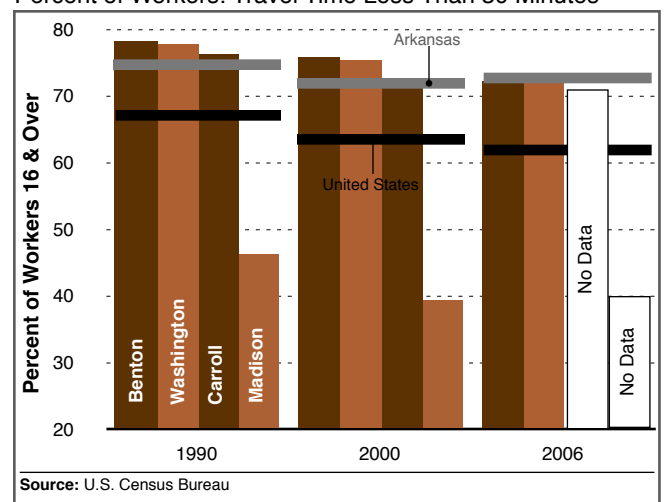
The Automobile Footprint

Figure 10.6
Number of Vehicles Registered in Northwest Arkansas, 1980-2006



- ★ The number of vehicle registrations in Northwest Arkansas counties have mirrored the dramatic population growth taking place in the Northwest Arkansas region since 1990.
- ★ The more populous counties (Benton and Washington) had 6 to 8 times the number of vehicles registered in 1980, compared to Carroll and Madison Counties.
- ★ By 1990, Benton County surpassed Washington County as having the largest number of automobiles registered in a given year in the region.
- ★ On average, since 1990, Northwest Arkansans have travelled shorter distances to work than the average worker in Arkansas and the United States.
- ★ By 2006, the percentage of workers in Washington and Benton Counties who travelled less than 30 minutes to work declined.
- ★ Carroll County workers were similar to Washington and Benton County workers regarding travel time to work.
- ★ By 2000, fewer than 40 percent of Madison County workers took less than 30 minutes to get to work.

Figure 10.7
Percent of Workers: Travel Time Less Than 30 Minutes

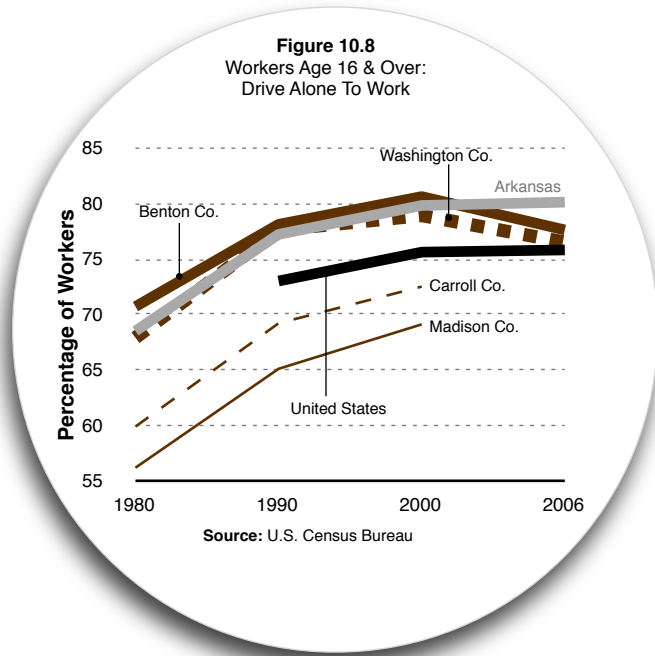


Indicator in the Spotlight:

Commuting To Work in Northwest Arkansas

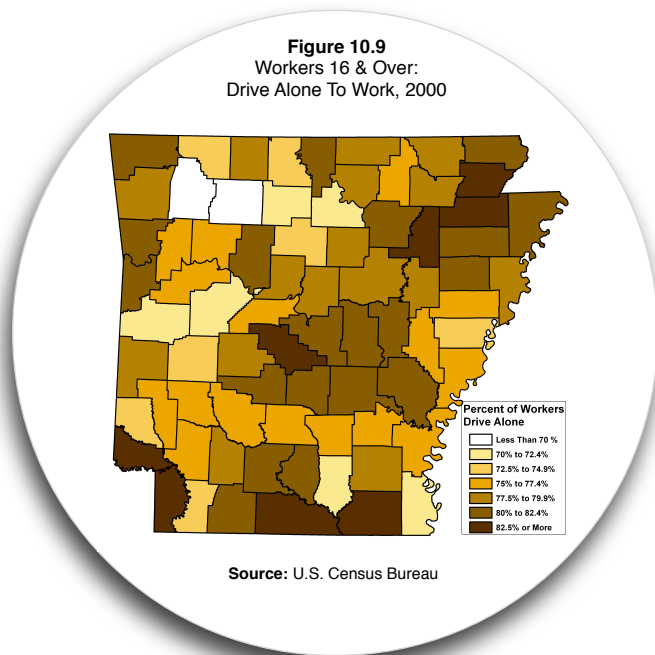
Despite the rising fuel costs, the majority of Americans (88%) drive to work and nearly 75 percent drive to work alone. As expected the majority of workers using public transportation are limited to the largest cities in the United States; these figures will continue to have an impact on the Northwest Arkansas region as it explores alternatives for reducing its carbon footprint.

- ★ The shift in the percentage of workers driving alone to work in Northwest Arkansas has mirrored the trend in both Arkansas and the U.S.
- ★ The largest percentages of Northwest Arkansas workers driving to work alone were in the most populous counties (Benton and Washington).
- ★ By 2006, all the Northwest Arkansas counties had lower percentages of workers driving to work alone compared to the state average (80%).
- ★ In Madison and Carroll Counties, the percentage of workers driving to work alone declined by nearly 20 percent over the last 20 years.
- ★ Madison County had the lowest percentage of workers driving to work alone in Arkansas in 2000.
- ★ The majority of Northwest Arkansas counties looked similar to the rest of the state regarding the percentage of workers who drove alone to work in 2000, except Madison County.



"Cities all over the world are getting bigger as more and more people move from rural to urban sites, and that has created enormous problems with respect to environmental pollution and the general quality of life."

Alan Dundes, American Educator



What's It All Mean?

Growth and environmental impact are strongly correlated--how big the carbon footprint is in an area is partly determined by the growth of its population, commercial and industrial development, and the rate as which natural resources are being used and abused. Since 1990, Northwest Arkansas counties have grown at an alarming rate and that growth has clearly had an impact on the natural resources and environment in the region.

While the data are inconsistent and not as comprehensive at the county level, the indicators suggest that careful monitoring of air and water quality as well as chemical release will be a critical piece to plotting the region's future. In addition, the data show quite clearly that despite

changes in the economy and fuel pricing, even in 2006. Northwest Arkansans were either not using or had limited access to alternatives for getting to work other than driving; unfortunately a large majority of those persons driving to work were driving to work alone.

Perhaps no other chapter in this report has revealed the dramatic impact that growth is having on the Northwest Arkansas region--increased emissions, traffic congestion on streets and highways, and the pressing importance of finding alternatives for the commute to work. As witnessed in other chapters, the importance of developing transportation options in Northwest Arkansas is becoming paramount.

