



# ***Climate Change and Urban Form in the West***

The Climate and Deserts Workshop  
April 9, 2008

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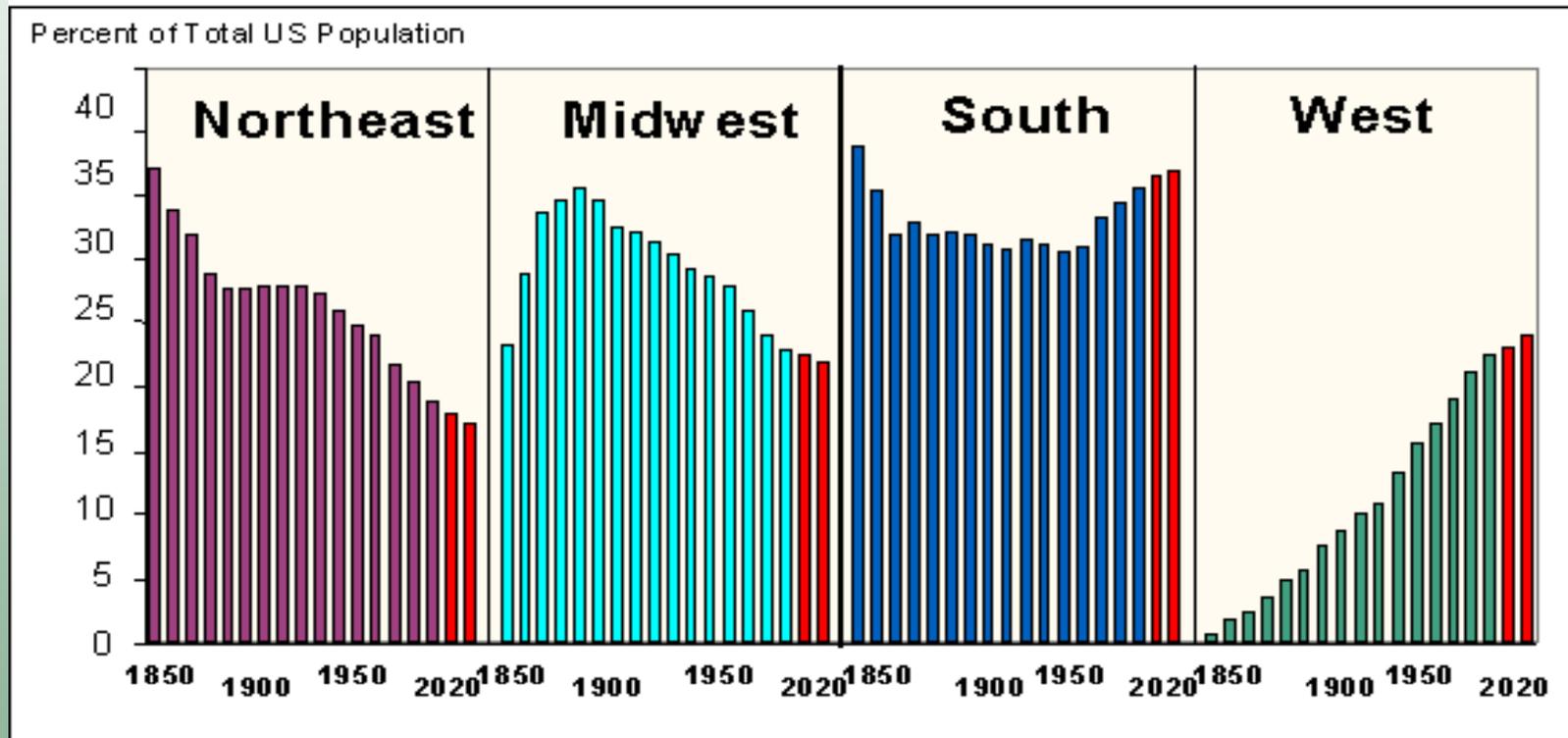




# Population Growth

**Figure 1**

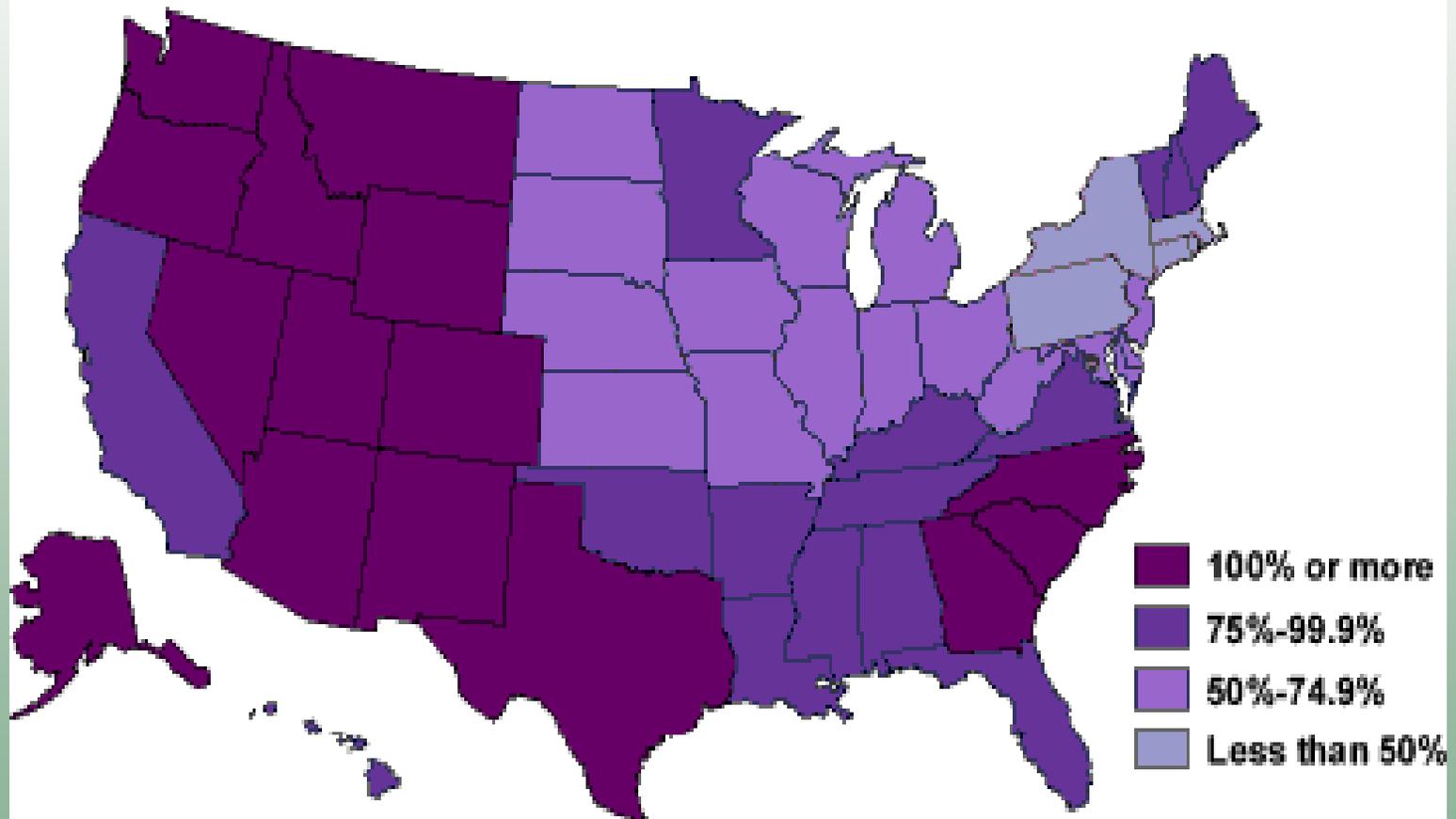
**The West Has Gained Share of U.S. Population Every Decade Since 1850**



Source: State of Montana, The Demography of the Changing West,  
<http://fwp.mt.gov/tmc/reports/demographics.html>.

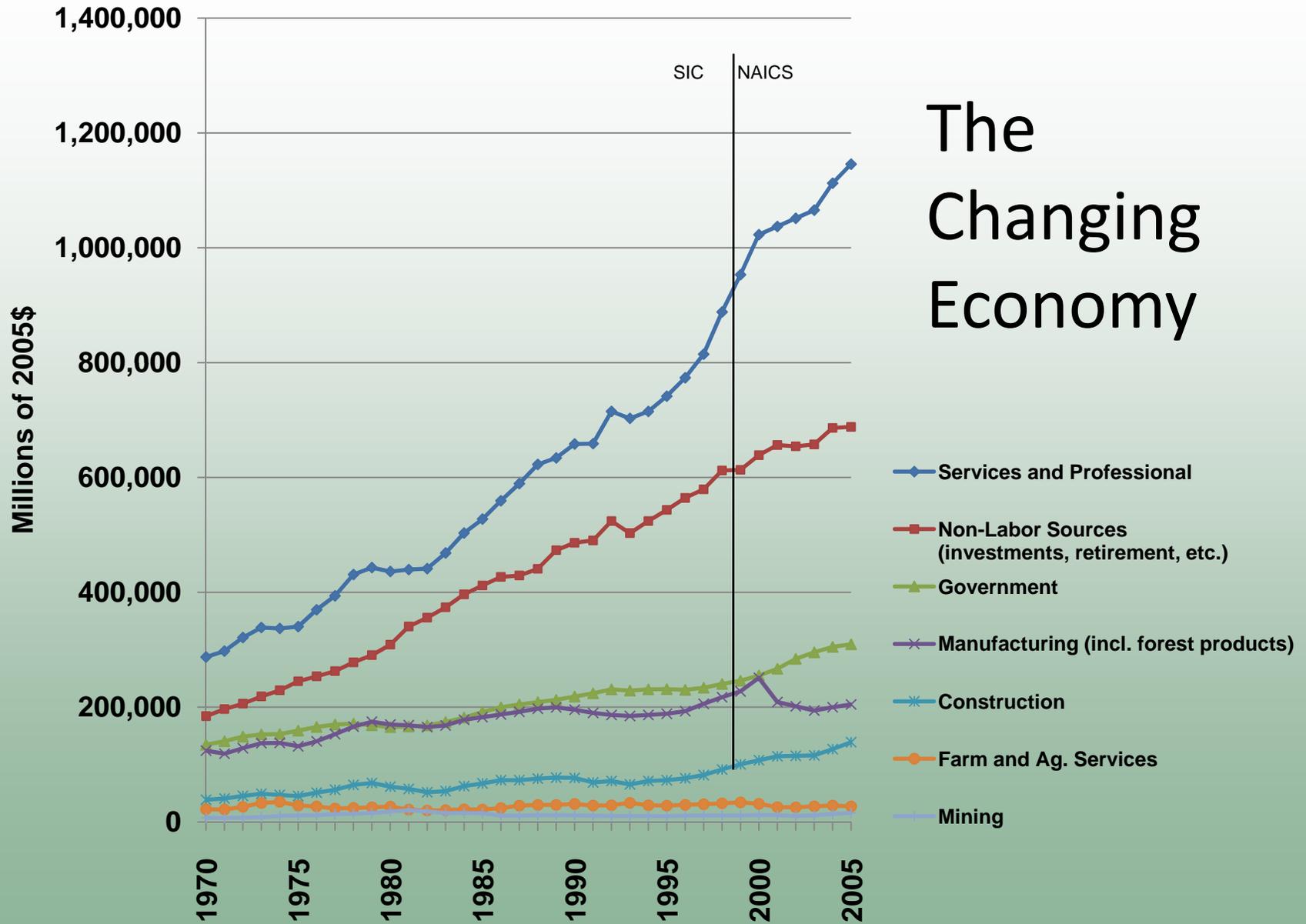
# Changing Demographics

## Percent Change in the Population Age 65 and Older, by State, 2000 to 2020



Source: Population Reference Bureau using Census Bureau 2000 data

Personal Income Sources in the West, 1970-2005



# The Changing Economy

*Rural Renaissance...*

## **Urban Nerds Move to the Country**

FAIRFIELD, Iowa: It's a significant turnabout. Big companies that depend largely on manufacturing have been heading to the hinterlands for years, seeking low taxes and compliant workers. But now it's the brain-intensive industries, and more importantly the people who start them, who are headed out to the country.

For the first time since the 1970s, migration to rural counties by urbanites has begun to outpace the movement of rural people to the cities.

Hoping to cash in on the rural wave, Nebraska and other states normally considered behind the times have pushed for massive investment by local utilities in

fiber-optic cable and other state-of-the-art transmission equipment.

They are encouraged by predictions that the back-to-the-country movement could accelerate the departure of even the most skilled professionals from major urban areas.

Although technology is the enabling factor, the primary driver may be the increasingly repellant features of the big metropolitan areas themselves. With even once-pristine nerdistanas such as Silicon Valley and Orange County, there may be a greater allure for opting for a small-town lifestyle - as long as it's sufficiently wired. ■

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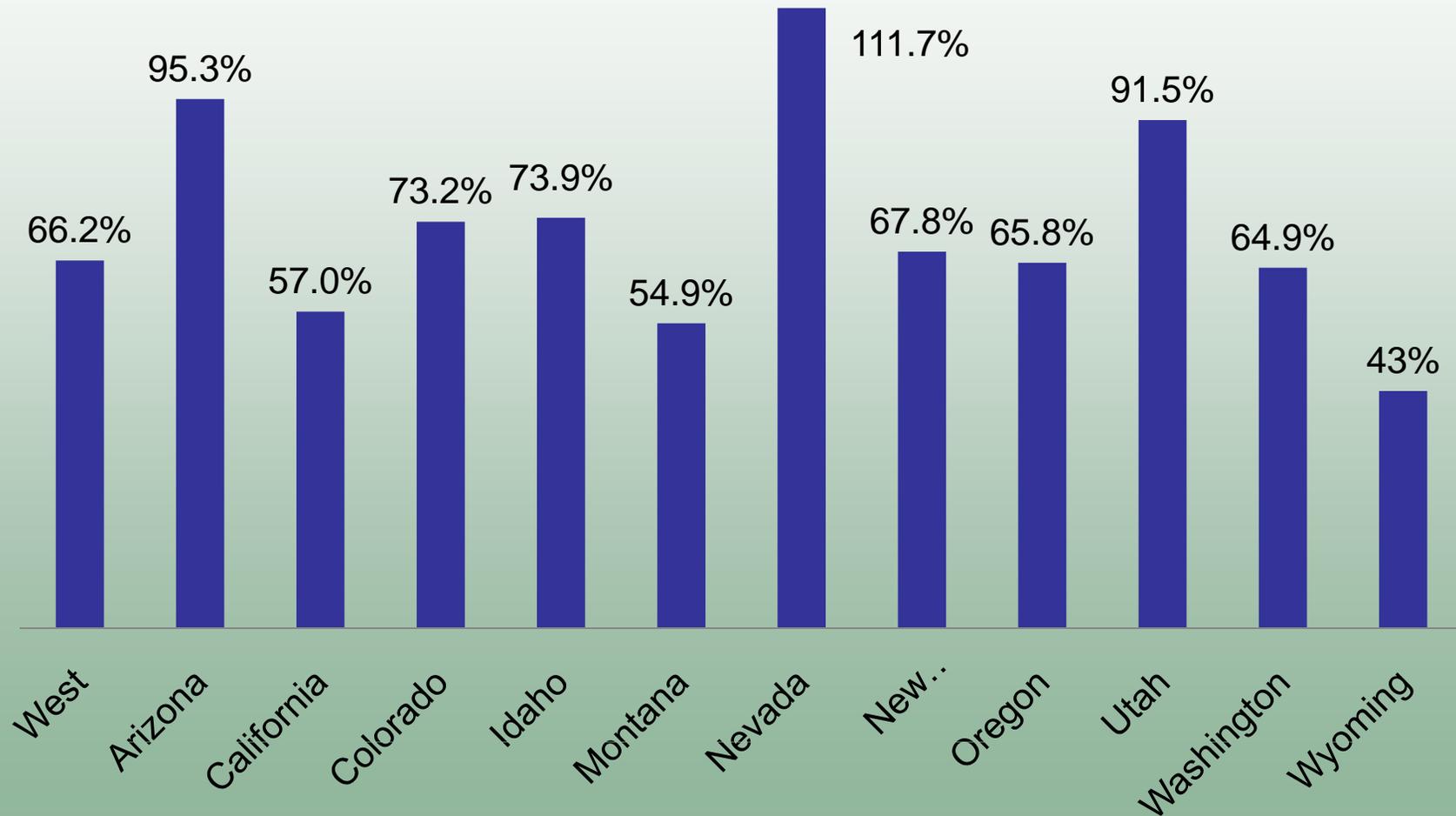
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# Connections between the changing economy and the changing climate

- Much of the West's population and economic growth is tied to quality of life (QOL)
- More people, esp. knowledge workers and baby boomers/retirees, have the ability to choose where they live based on QOL
- Scenic beauty, recreational opportunities, and ecosystem health are key aspects of QOL – and are likely to be heavily impacted by current and future climate change, making this an economic issue as well.

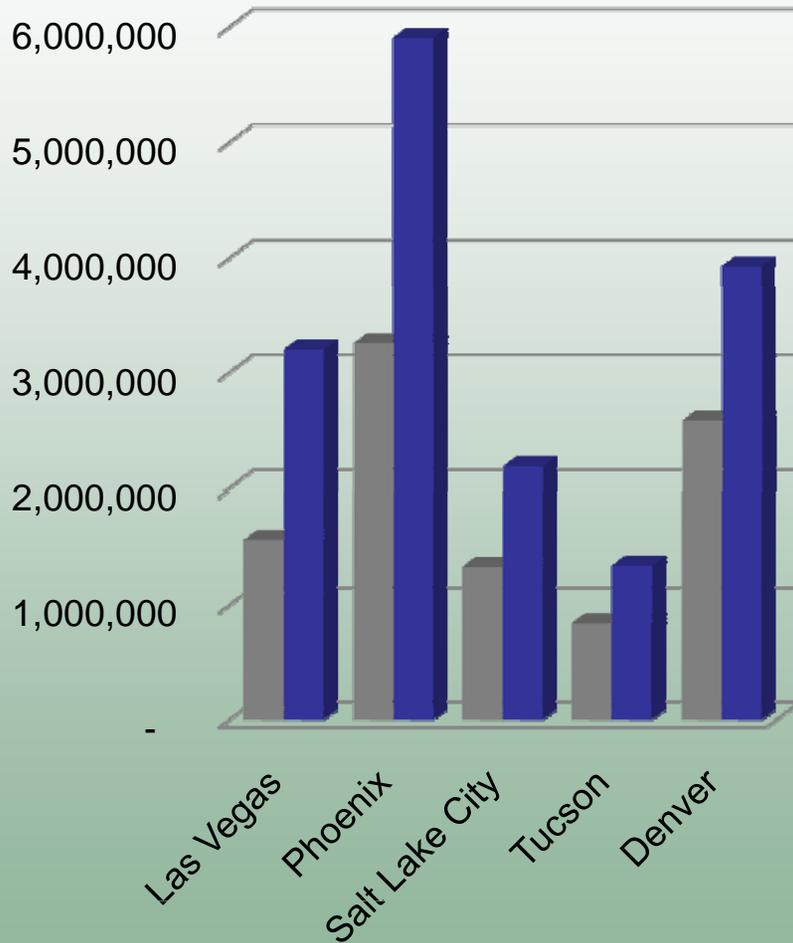
# Changing Land Use Patterns

## Percent Housing Units Needed by 2030 Built After 2000



Data source: Nelson 2004

## Population Growth in Western Cities, 2000 to 2030

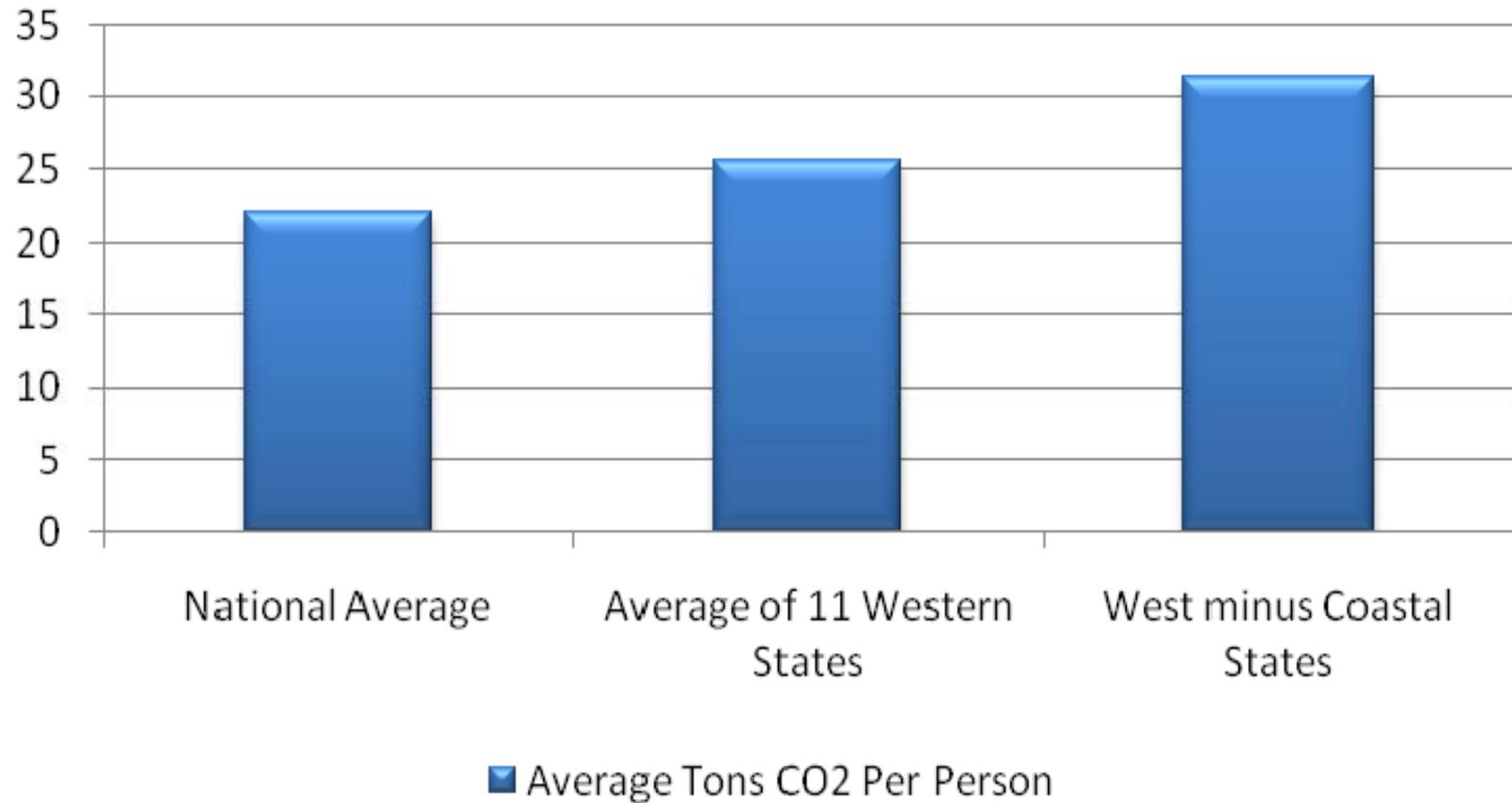


■ Population 2000   ■ Population 2030

Metropolitan Area	New Housing Units Needed 2000-2030	Percent Housing Units Needed by 2030 Built After 2000
Las Vegas	810,000	123.5%
Phoenix	1,336,000	100.4%
Salt Lake City	378,000	82.9%
Tucson	286,000	77.9%
Denver	739,000	70.9%

Data source: Nelson 2004

## Per Capita CO2 Emissions



Source: Derived from Climate Impacts Analysis Tools, World Resources Institute.

- Land is being consumed for development almost three times faster than the population is growing.
- Population growth alone only accounts for a quarter of the increase in vehicle miles driven over the past couple of decades.
- The region faces additional challenges including a changing economy and limited resources such as water, energy and open space, which must increasingly be shared among additional residents.

An aerial photograph of a desert landscape. In the foreground, there is a residential development with several houses, some with swimming pools, and winding roads. The middle ground shows a large, dark, rocky hill or mesa. In the background, there are more residential areas and distant mountains under a clear blue sky.

# The Role of Land Use Planning in Mitigation and Adaptation

- 1) Location
- 2) Density
- 3) Edge Treatment

# 1) Location

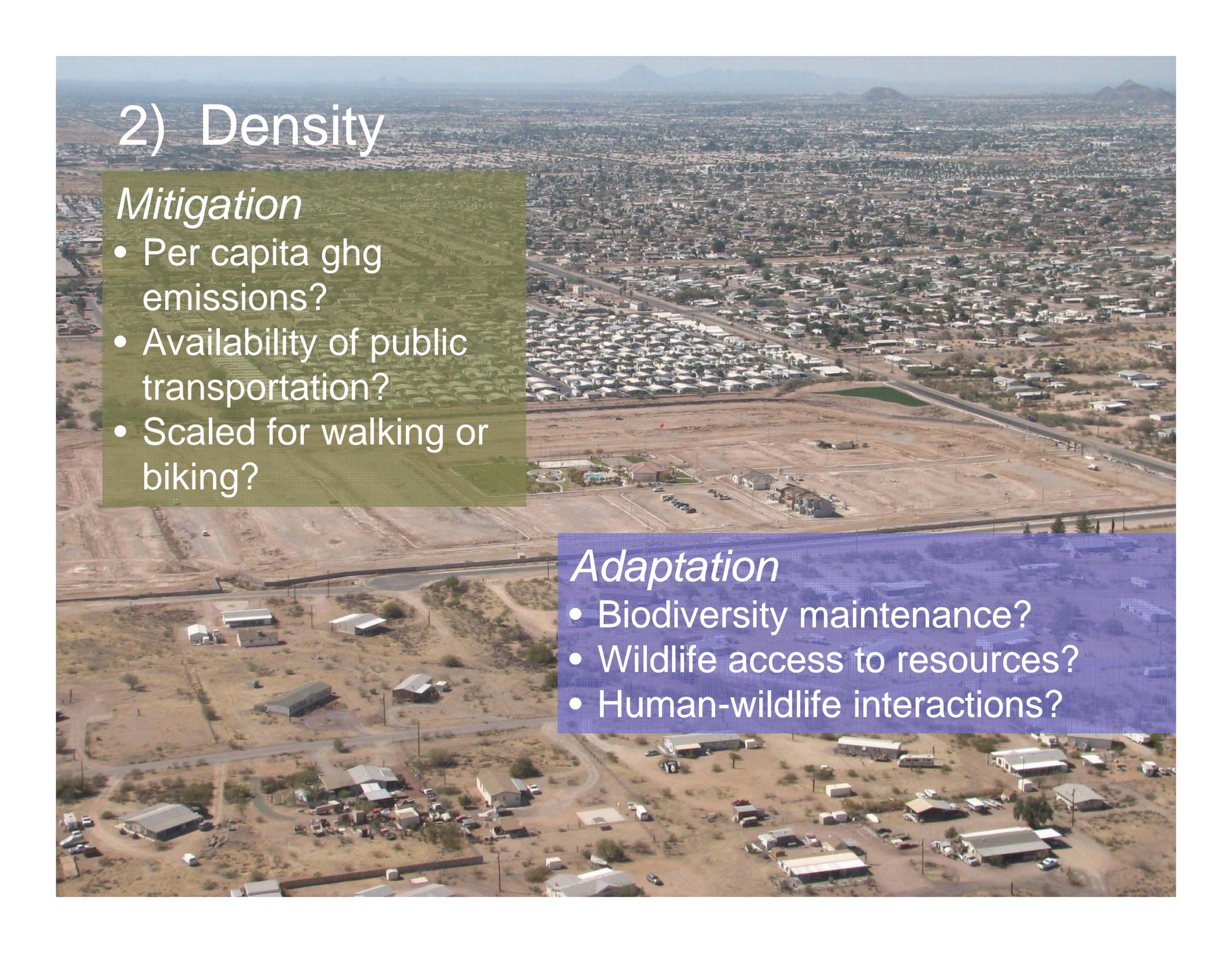
## *Mitigation*

- Connectivity to jobs, schools, services, recreation?
- Access to public transportation?
- CO2 sequestration potential sacrificed?

## *Adaptation*

- More extensive floodplains?
- Wildlife corridors?
- Access to resources?
- Potential increase in human use of and impacts on ecosystems?

## 2) Density

An aerial photograph of a city, likely Phoenix, Arizona, showing a dense urban core in the background and a large, undeveloped area in the foreground. The foreground area is mostly flat, brownish ground with some scattered buildings and parking lots. The background shows a dense residential or commercial area with many small buildings and streets. In the far distance, there are mountains under a clear sky.

### *Mitigation*

- Per capita ghg emissions?
- Availability of public transportation?
- Scaled for walking or biking?

### *Adaptation*

- Biodiversity maintenance?
- Wildlife access to resources?
- Human-wildlife interactions?

### 3) Edge Treatments



### 3) Edge Treatments

#### *Mitigation*

- Effects on VMT?
- Scaled for walking or biking?

#### *Adaptation*

- Wildlife access to resources?
- Human access to wild lands?
- Preservation of functional ecosystems?



Where and how development takes place and the resultant urban form will have significant bearing on how well the region mitigates and adapts to climate change.

Questions?  
Comments?  
*Thanks!*