

Trends in Urban Mean Yearly Temperatures from 1973-2002 in the Continental United States: Is There a Human Factor?

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INTRODUCTION

- Global warming appears to be real and sustained.
- Human influence is supported by majority of climatologists (AMS, 2007).
- However, still some disagreement as to extent of human influence on climate (e.g., Lindzen, 2001; Michaels, 2007).

- Thirty-year mean and seasonal temperature trends were determined for each of the selected locations.
- Two-year running average was used to identify the trend in each of the selected locations.

RESULTS

- ALL** locations showed a warming trend over the 30-year period (see Fig. 1).
- Five of those locations (shown in RED in Table 1, above right) were among the ten fastest growing metropolitan areas in the U.S., according to the 2000 U.S. Census.
- Fig. 2 shows yearly temperature deviations from normal for those five locations. Note that the trend flip-flops radically from below normal to above normal beginning in 1986.
- This would support a preliminary conclusion that human activity in those regions is directly influencing the climate via increased warming.

OBJECTIVE

- Examine thirty years of monthly temperature data.
- Identify temperature trends during the thirty year period.
- Determine if warming has taken place during that time.
- Determine if human activity has influenced mean temperatures.

METHODOLOGY

- Continental U.S. divided into six regions (Northeast, Southeast, Northern Midwest, Southern Gulf, Southwest and Northwest).
- Data obtained from NCDC for five representative locations in each of the six regions

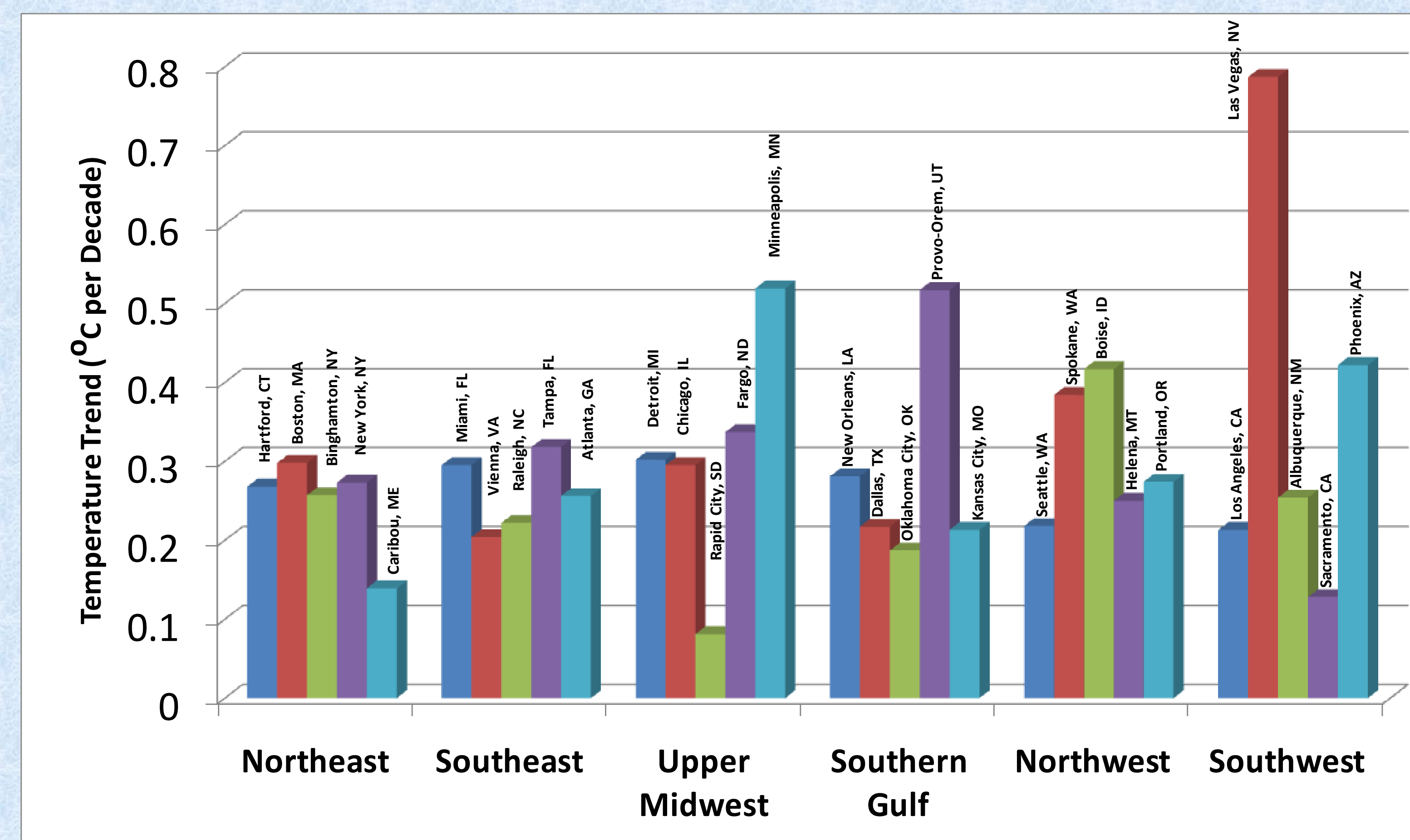


Fig. 1. Decadal Mean Temperature Trends, 1973-2002

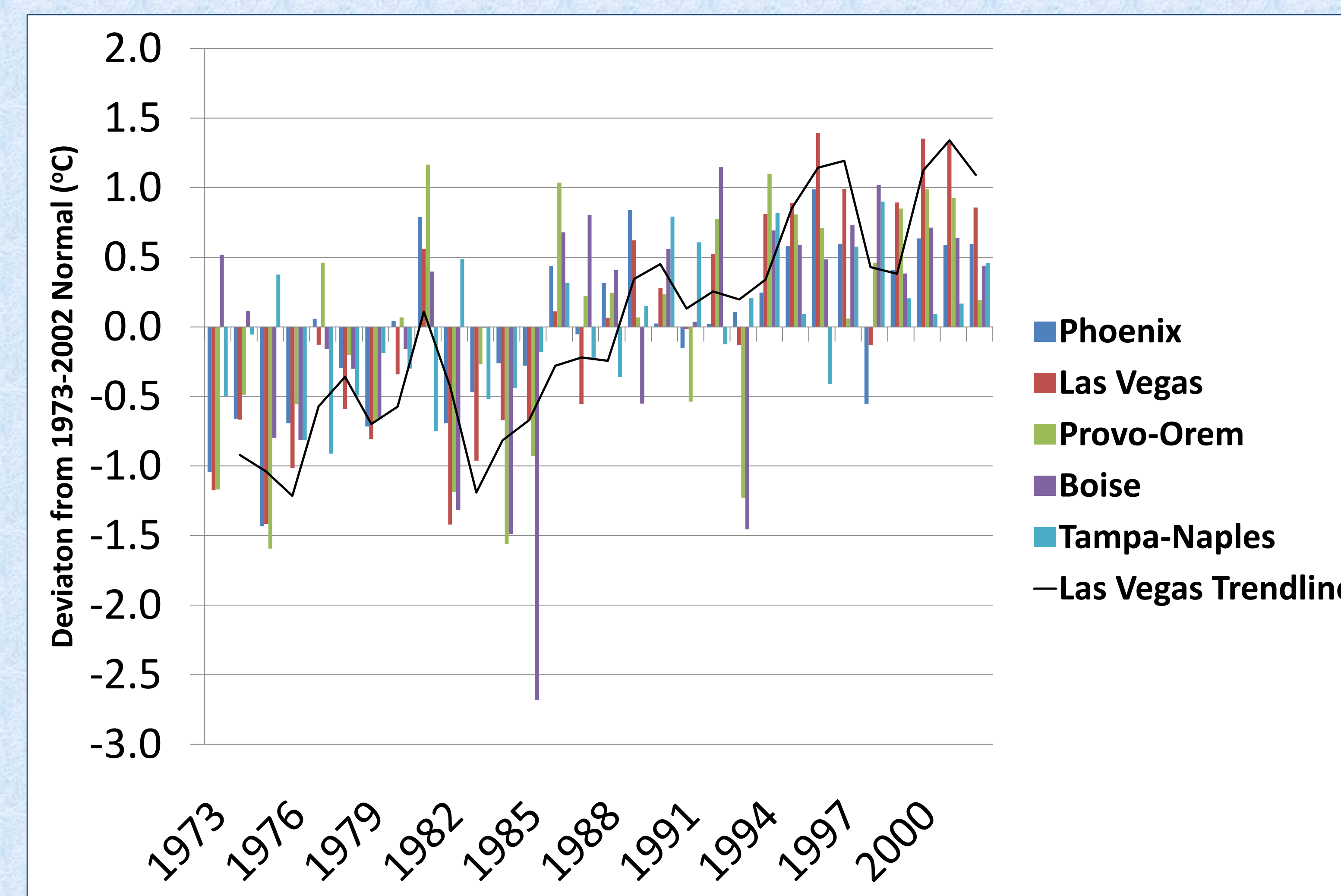


Fig. 2. Mean Yearly Temperature Deviations (°C) from Normal 1973-2002, for Cities in Red in Table 1

Table 1. Ten Fastest Growing U.S. Metropolitan Areas: 1990-2000

Metropolitan area	Population		Change, 1990-2000	
	April 1, 1990	April 1, 2000	Number	Percent
Las Vegas, NV, AZ	852,737	1,563,282	710,545	83.3%
Naples, FL	152,099	251,377	99,278	65.3%
Yuma, AZ	106,895	160,026	53,131	49.7%
McAllen-Edinburg-Mission, TX	383,545	569,463	185,918	48.5%
Austin-San Marcos, TX	846,227	1,249,763	403,536	47.7%
Fayetteville-Springdale-Rogers, AR	210,908	311,121	100,213	47.5%
Boise, ID	295,851	432,345	136,494	46.1%
Phoenix-Mesa, AZ	2,238,480	3,251,876	1,013,396	45.3%
Laredo, TX	133,239	193,117	59,878	44.9%
Provo-Orem, UT	263,590	368,536	104,946	39.8%

Source: U.S. Census Bureau, Census 2000; 1990 Census. Web: www.census.gov

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