



# ***Human Factors in 2050: Population Trends, Growth, and Urbanization***

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Professor, Urban Affairs & Planning  
Virginia Tech – Alexandria Center  
November 6, 2007**



# **America Grows**

**200 million in 1968**

**300 million in 2006**

**400 million in 2036**

**460 million in 2050**

**615 million in 2080**

**750 million in 2100**

**America adds 100 million people faster  
than any other nation except India and  
Pakistan**

*Source: Analysis by Arthur C. Nelson.*



# Getting Ahead of the Curve – US

<b>US</b>	<b>2000</b>	<b>2050</b>
Population	281 million	460 million
Housing Units	116 million	200 million
Jobs	166 million	300 million*

\*Includes full- and part-time jobs as defined by Bureau of Economic Analysis.

*Source:* Arthur C. Nelson, Metropolitan Institute at Virginia Tech.

# Buildings to go up like never before

## Study: Half needed for 2030 don't exist

By Haya El Nasser  
USA TODAY

Residential and commercial development in the next quarter-century will eclipse anything seen in previous generations as the nation moves to accommodate rapid population growth, according to a Brookings Institution report today.

About half the homes, office buildings, stores and factories that will be needed by 2030 don't exist today, says Arthur C. Nelson, author of the report for the think tank in Washington, D.C.

The U.S. population is expected to increase 33% to 376 million by 2030, according to Nelson's analysis. That's 94 million more people than in 2000.

To serve that population, almost 60 million housing units will have to be built. About 20 million of these units will replace destroyed or aging homes. In addition, half of the largest metropolitan areas will have to add as much or more commercial and industrial space as existed in 2000, the report says.

The projections are startling for a nation already coping with sprawl, traffic congestion and the strains they put on the environment. Phenomenal growth in the South and West has turned deserts and soybean fields into cities. The report projects that these regions, which face water limitations, will experience the greatest surge in construction in the next 25 years.



### New housing needed

■ Your state by 2030, 4A

“That kind of statistic is either terrifying or a wonderful opportunity,” says David Goldberg, spokesman for Smart Growth America, a national coalition of groups that support managing growth.

If development patterns don't change, subdivisions will continue to sprout on farmland farther from metropolitan areas, requiring more roads and sewer lines.

“We need to get this message out to planners so that they see the big numbers,” says Nelson, director of urban affairs and planning at the Metropolitan Institute at Virginia Tech in Alexandria, Va. “There may be no better time than now to plan the shape of the landscape.”

For generations, Americans favored single-family homes on larger lots. Development spread to where land is cheaper but within commuting distance to jobs.

Communities must decide if they “want to develop policies consistent with those preferences or constrain them,” says John Kasarda, director of the Kenan Institute of Private Enterprise at the University of North Carolina-Chapel Hill.

“But change is coming slowly,” says John Mellwain, senior housing fellow at the Brookings Institution, a research group that works with developers. “We’re going to wind up with 60% of development occurring where it’s already occurred since World War II and 40% on the outer edge.”

USA  
TODAY  
.com

Front Page  
December 4,  
2004

# BUSINESS 2.0

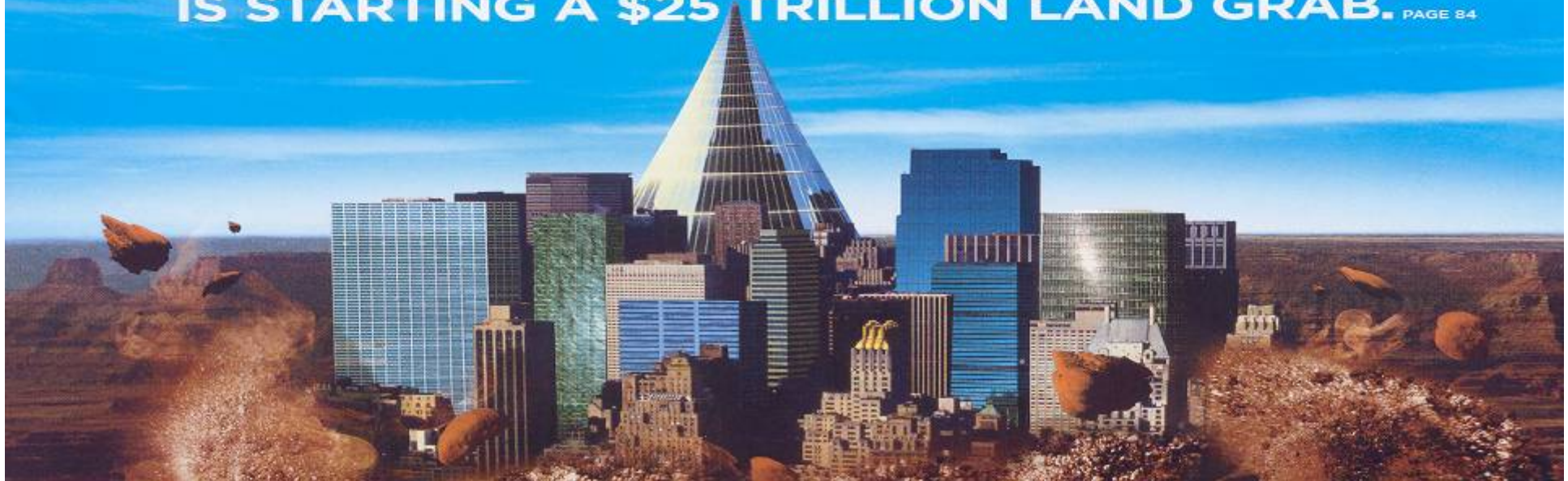
THE PLAYBOOK FOR A NEW GENERATION OF LEADERS | WWW.BUSINESS2.COM

## THE **NEXT** REAL ESTATE BOOM

**SHORT-TERM BUBBLE? MAYBE.**

**LONG-TERM OPPORTUNITY? DEFINITELY.**

**HOW THE HYPERGROWTH OF 10 “MEGAPOLITANS”  
IS STARTING A \$25 TRILLION LAND GRAB.** PAGE 84





# Residential Development

<b>US</b>	<b>2000 to 2050</b>
Growth-Related Units	84 million
Replaced Units	40 million*
Total Units Built	104 million
Average Annual =	2 million
Percent of 2000 Units	90%

*\*Loss rate = ~ 6% per decade compounded based on loss-rate analysis of units enumerated in 1990 and 2000 censuses.*

Source: Arthur C. Nelson, Metropolitan Institute at Virginia Tech.



# Second-Home Market Overrated?

- 4% of HH have 2<sup>nd</sup> homes; 70% between 35-64
- Derived second home demand, new homes:
  - During 1990s = 900k
  - During 2000s = 600k
  - During 2010s = 300k
  - During 2020s = 200k
  - During 2030s = 100k
- Second home demand driven in part by low interest rates and low energy prices → not sustainable

Source: Estimates based on *Second Homes: What, How Many, Who and Where?*  
Harvard Joint Center for Housing (2001). Analysis by Arthur C. Nelson, Metropolitan  
Institute at Virginia Tech.



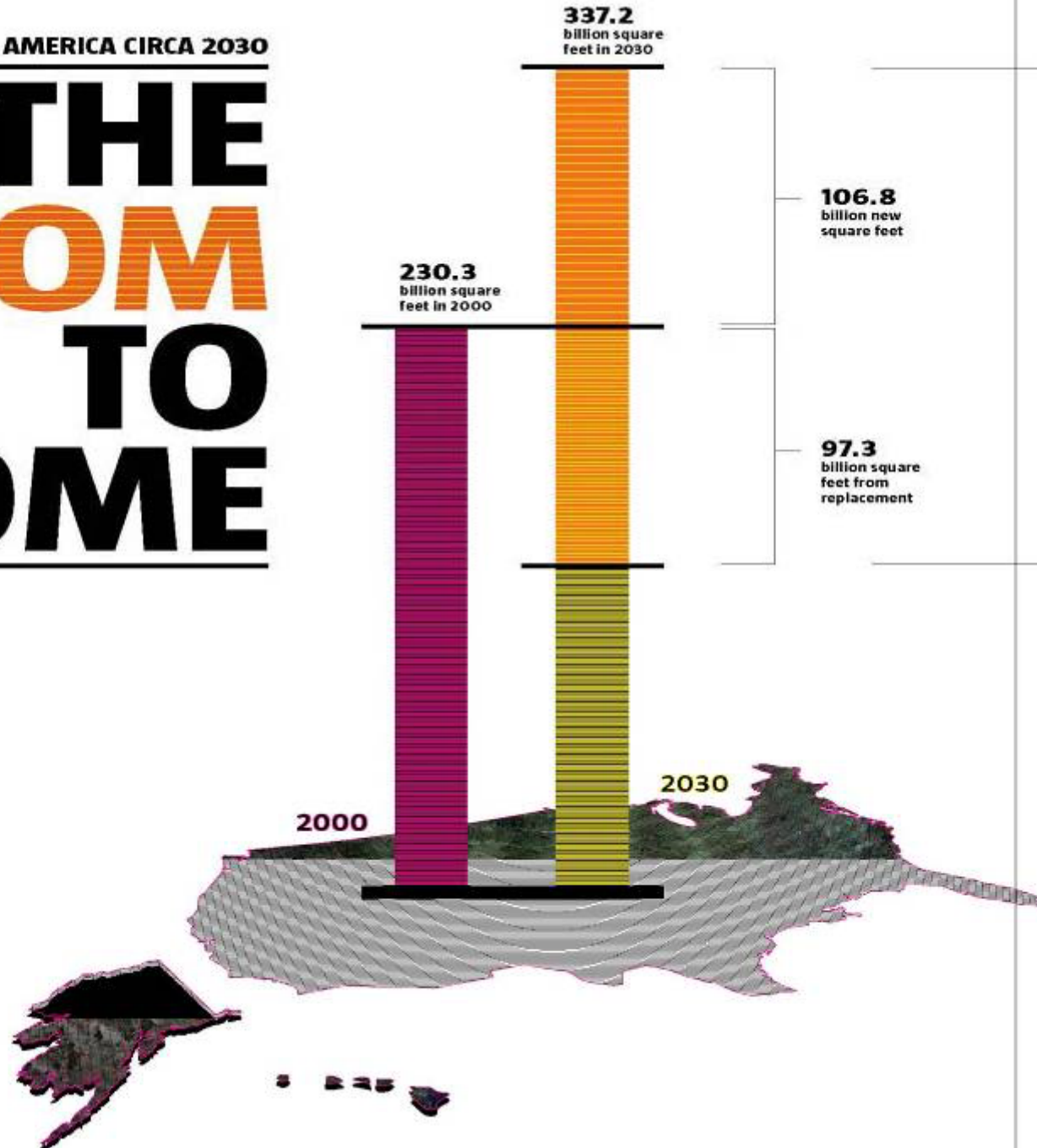
# Nonresidential Development

<b>US</b>	<b>2000 to 2050</b>
<i>Nonresidential space 2000</i>	<i>80 billion</i>
Growth-Related Square Feet	60 billion
Replaced Square Feet	120 billion*
<b><i>Total Square Feet Built</i></b>	<b><i>180 billion</i></b>
Percent of Space in 2000	225%

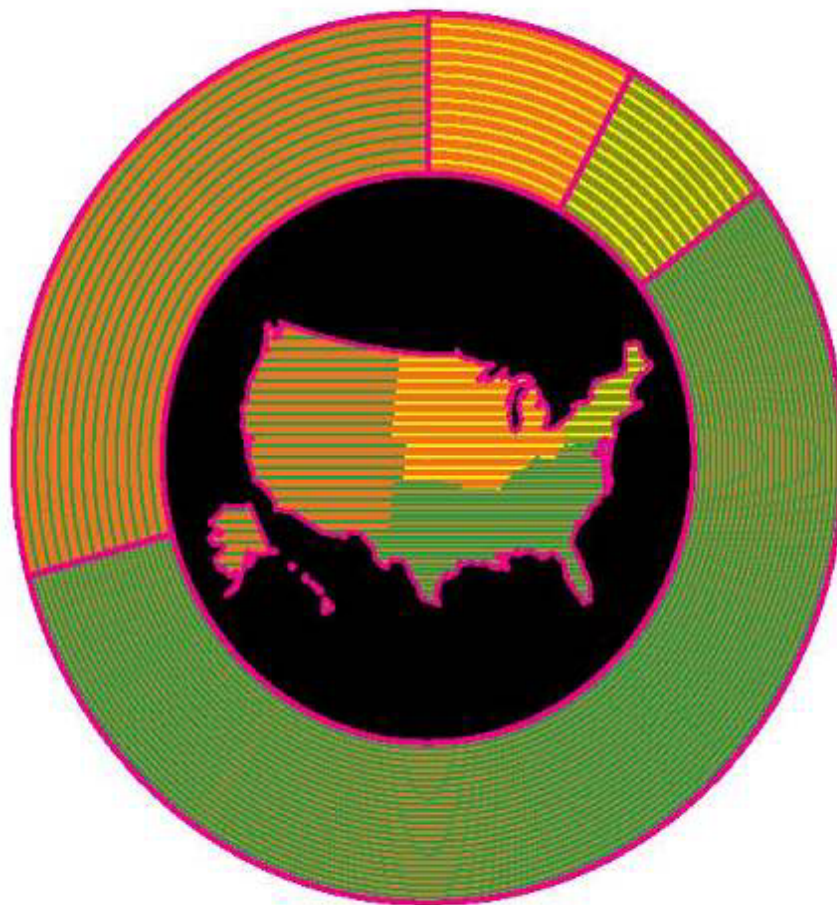
*\*Loss rate = ~ 20% per decade compounded. (Source: Arthur C. Nelson, Metropolitan Institute at Virginia Tech.)*





**AMERICA CIRCA 2030**

# THE BOOM TO COME



# SHARE OF TOTAL GROWTH BY REGION, 2000–2030



-  **MIDWEST: 8.2 %**
-  **NORTHEAST: 6.5 %**
-  **SOUTH: 56 %**
-  **WEST: 29.4 %**

# Life-Span of Building Space





# What About ....?

## ■ Telecommuting?

### ☐ Phenomenal disappointment

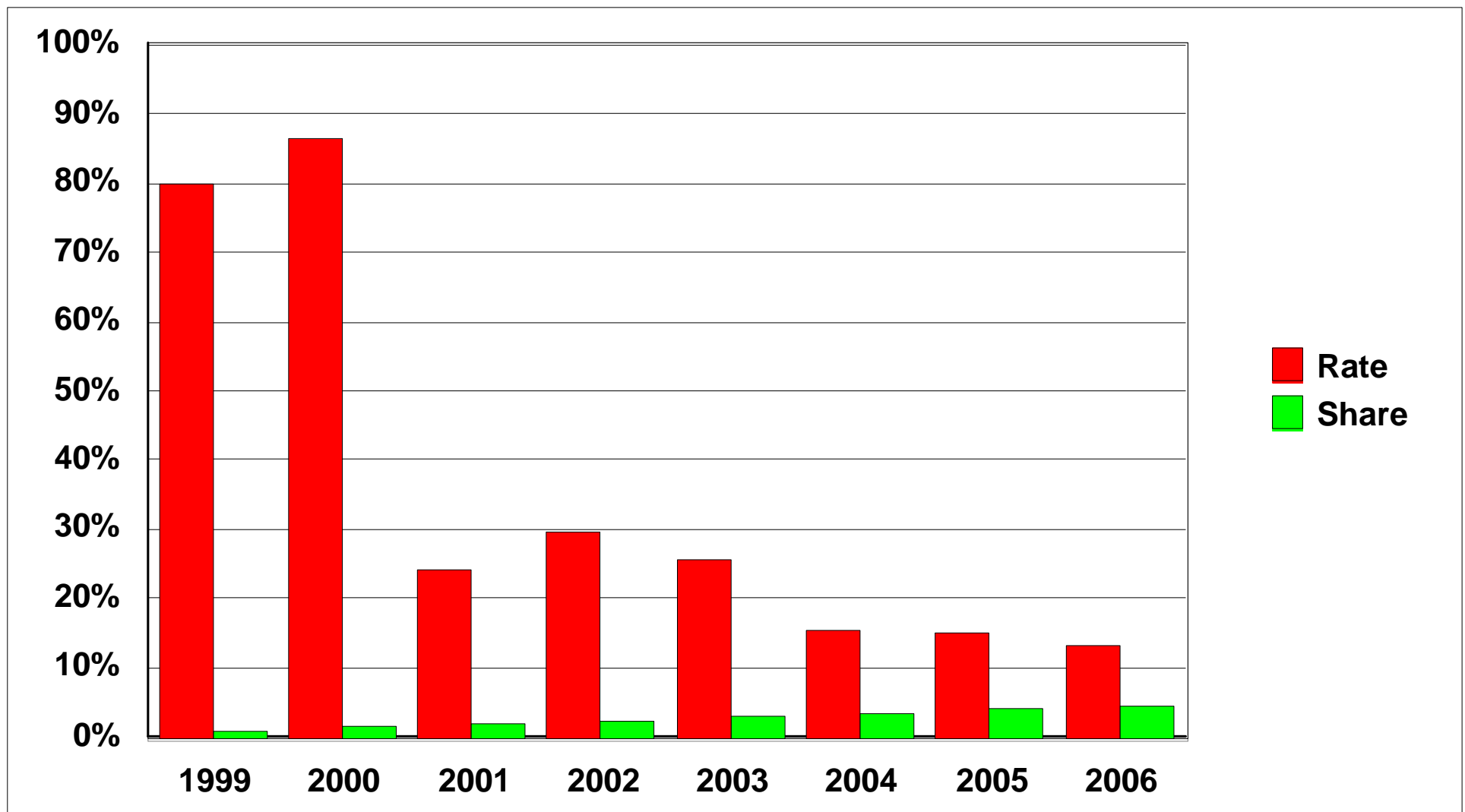
- About 3-4% telecommute full time – every Census
- Does not reduce congestion but may add to it
- Does not reduce pollution but may add to it

## ■ Internet retailing?

### ☐ Retail space demand growing

- Internet sales replacing catalog sales
- Shopping is the ultimate human function:
  - ☐ **Tactile**
  - ☐ **Olfactory**
  - ☐ **Social**

# Internet Retail Sales Growth Rate and Share, 1998-2006





# Retail Center Space Growth

<u>Year</u>	<u>GLA/Cap</u>
1986	14.7
1990	17.6
1995	18.9
2000	20.3
2005	20.5

*Source:* National Research Bureau Shopping Center Database, CoStar Subsidiary. Dollars nominal.



# Reality Check

<u>Space Class</u>	<u>1992</u>	<u>2003</u>	<u>%Dif</u>
<b>Total <i>Glamour</i> Space</b>	<b>145</b>	<b>149</b>	<b>+3%</b>
Warehouse & Storage	45	35	-23%
All Other	75	63	-16%

Non-percentage figures per capita based on Census estimates.

Source: Energy Information Administration, *Commercial Buildings Energy Consumption Surveys* for 1992 and 2003.



# Bottom Line

## New Construction 2000-2050

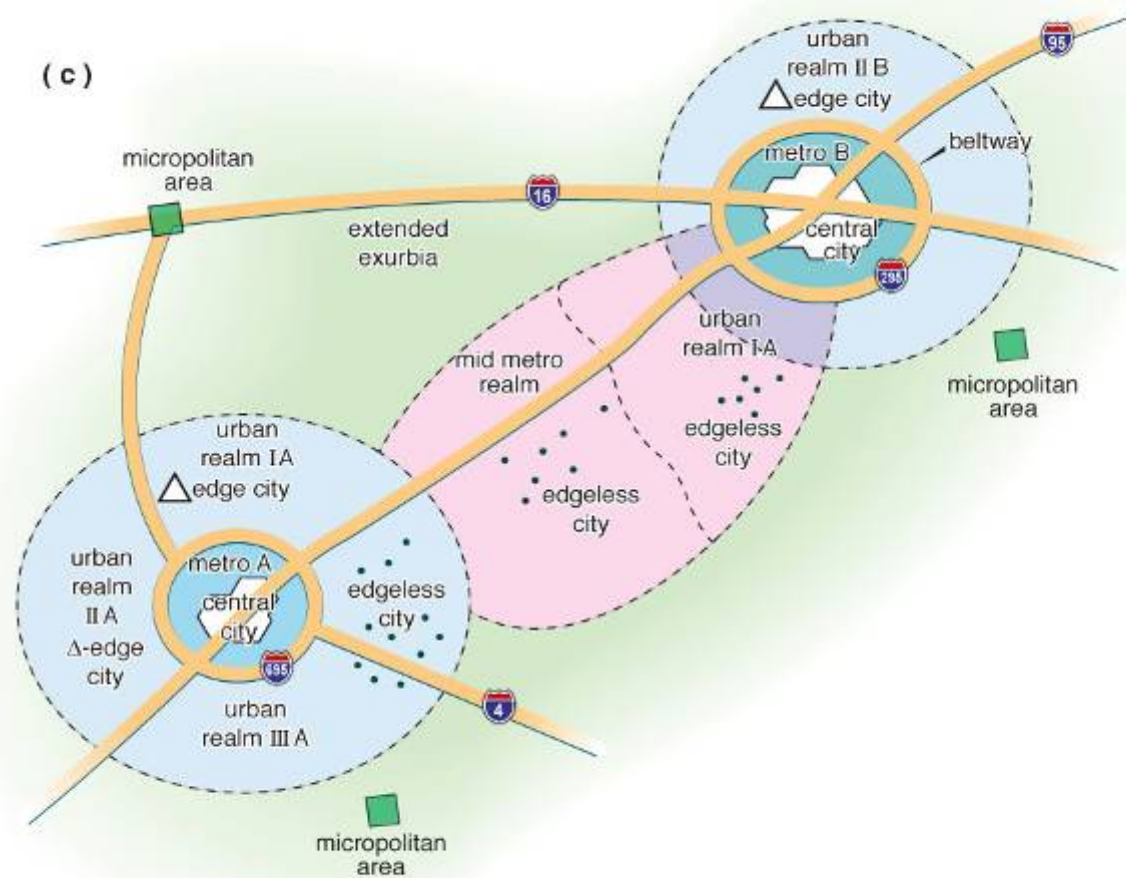
### Construction

<i>Residential</i>	\$30 Trillion
<i>Nonresidential</i>	\$20 Trillion
<i>Infrastructure</i>	\$10 Trillion
<b><i>Total</i></b>	<b>\$60 Trillion</b>

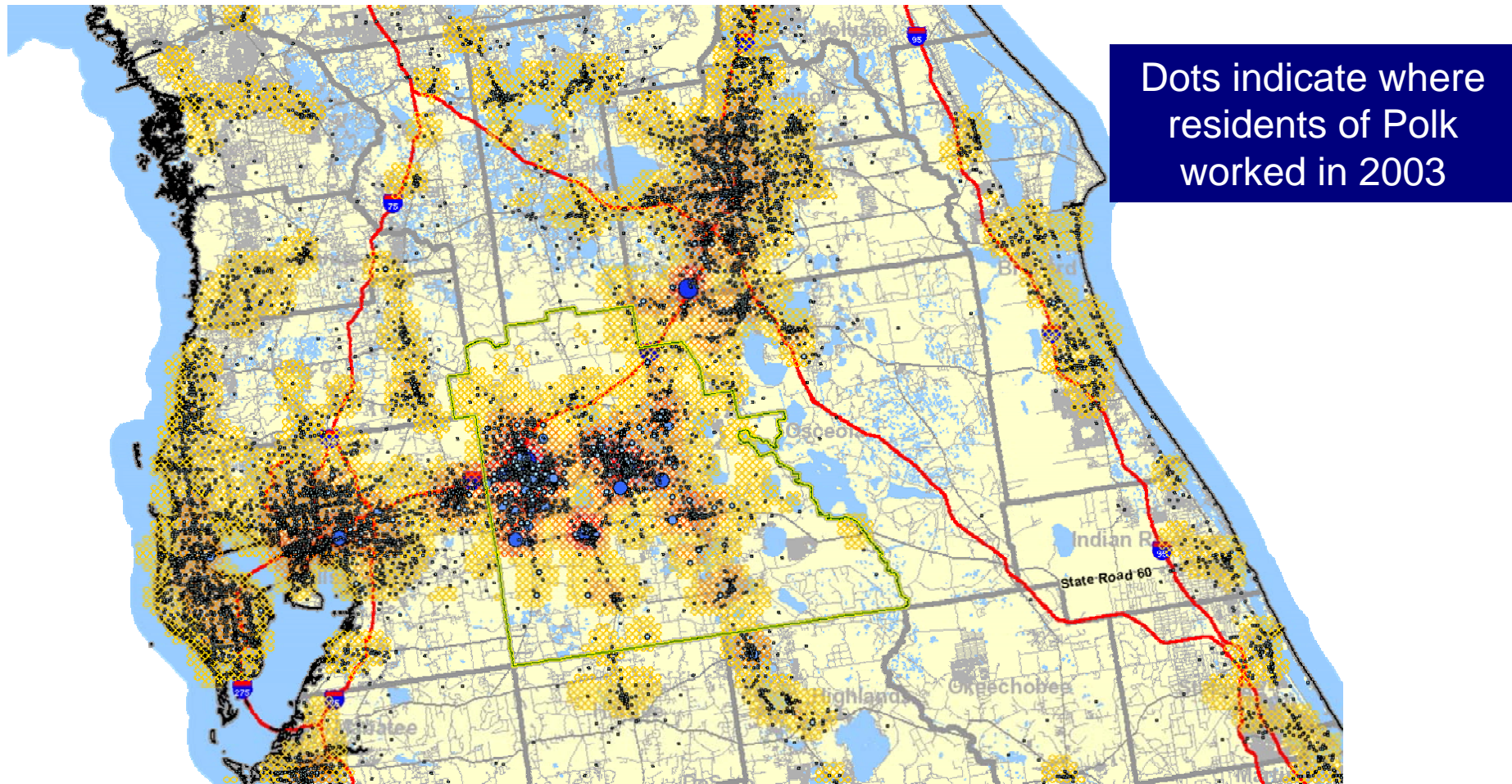


***How Does It Grow?***

# 21<sup>st</sup> Century Megapolitan Form



# Polk County Commuter Shed

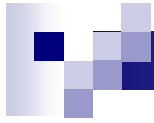


Source: Metropolitan Institute at Virginia Tech, based on *Longitudinal Employer-Household Dynamics*, US Census Bureau.



# MEGAPOLITAN AMERICA





# ***Demographic Drivers***



# **Market Analysts Finding Changing Preferences**

**RCLCO (formerly Robert Charles Lesser Co.)**

**National Association of Realtors**

**National Association of Home Builders**

**Nationally Recognized Market Analysts**

**Urban Land Institute**

**Lend Lease/PriceWaterhouseCoopers**

**Joint Center for Housing Policy at Harvard**

***Golfing Buddies and Taxi Drivers***



# **What is the Market Telling Us?**

- ▶ **Resale prices of condominiums rival resale prices of single-family homes for first time ever**
- ▶ **Appreciation of condominiums is higher than single-family homes nationally and in every region**



# Emerging Resale Price Evidence

## Trends 2<sup>nd</sup>Q'06 to 2<sup>nd</sup>Q'07

Region	SF%	CC%	SF \$	CC \$
<b>US</b>	<b>0.2%</b>	<b>2.0%</b>	<b>\$270k</b>	<b>\$259k</b>
NE	1.3%	5.1%	\$306k	\$283k
MW	-1.6%	3.7%	\$203k	\$226k
S	0.9%	-2.5%	\$231k	\$221k
W	-0.4%	0.3%	\$378k	\$303k

Source: Adapted from National Association of Realtors, August 2007.



# **“Traditional” Households on the Wane**

<b><u>Household Type</u></b>	<b>1960</b>	<b>2000</b>	<b>2040</b>
<b>HH with Children</b>	<b>48%</b>	<b>33%</b>	<b>27%</b>
<b>Single-Person HH</b>	<b>13%</b>	<b>26%</b>	<b>30%</b>



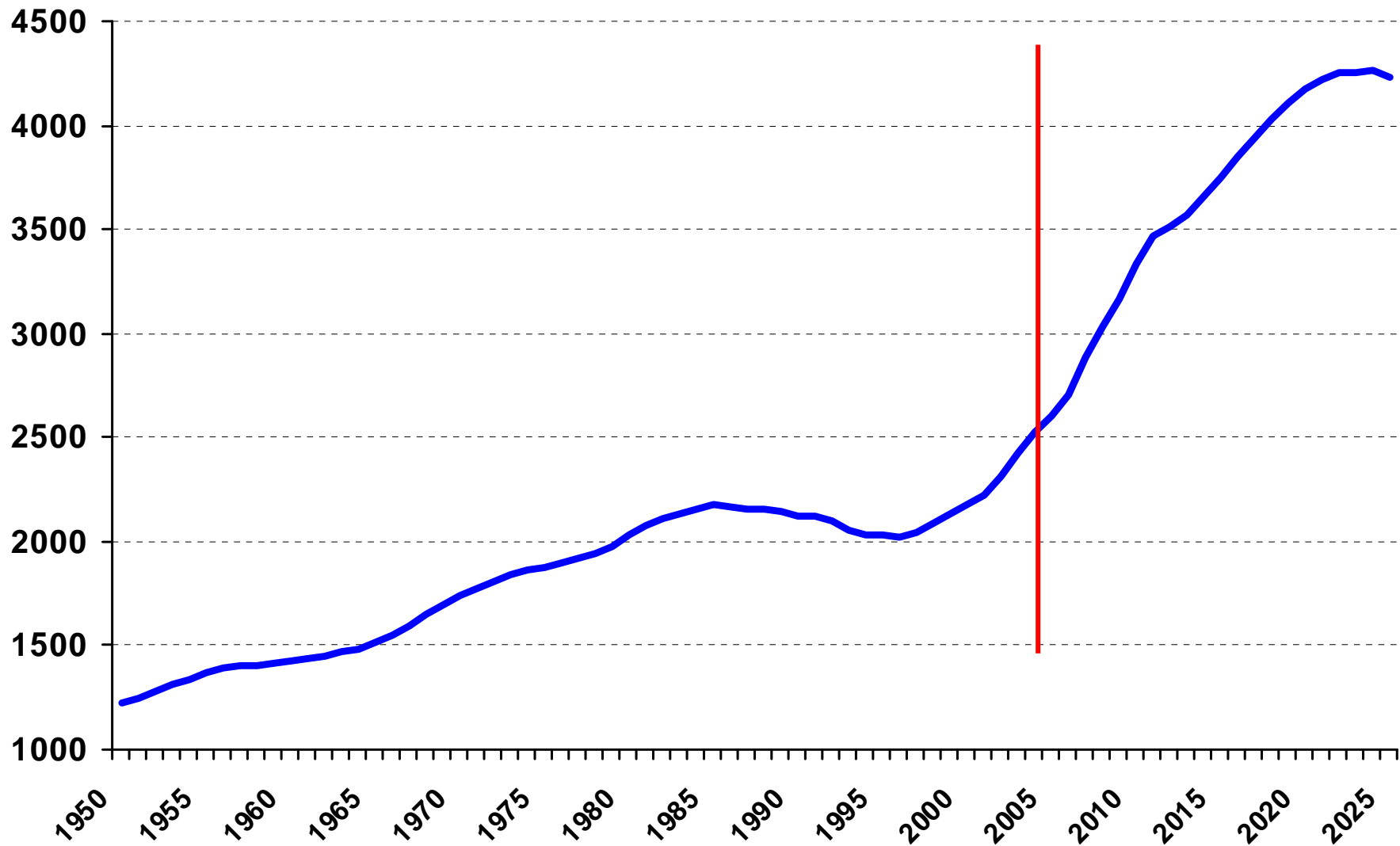
# Share of Growth 2000-2040

<b>HH Type</b>	<b>2000</b>	<b>2040</b>	<b>Change</b>	<b>%Share</b>
W/ children	35	41	6	<b>13%</b>
W/o children	71	111	40	<b>87%</b>
Single-person	26	44	17	<b>38%</b>

Figures in millions of households.

Source: Adapted and extrapolated from Martha Farnsworth Riche, *How Changes in the Nation's Age and Household Structure Will Reshape Housing Demand in the 21st Century*, HUD (2003).

# People Turning 65 *Each Year*



Source: US Census Bureau – *65+ in the United States: 2005*; Wan He, Manisha Sengupta, Victoria A. Velkoff, & Kimberly A DeBarros. December 2005.



# What Futurists Tell Us

Bio-medical advances will extend lifetimes.

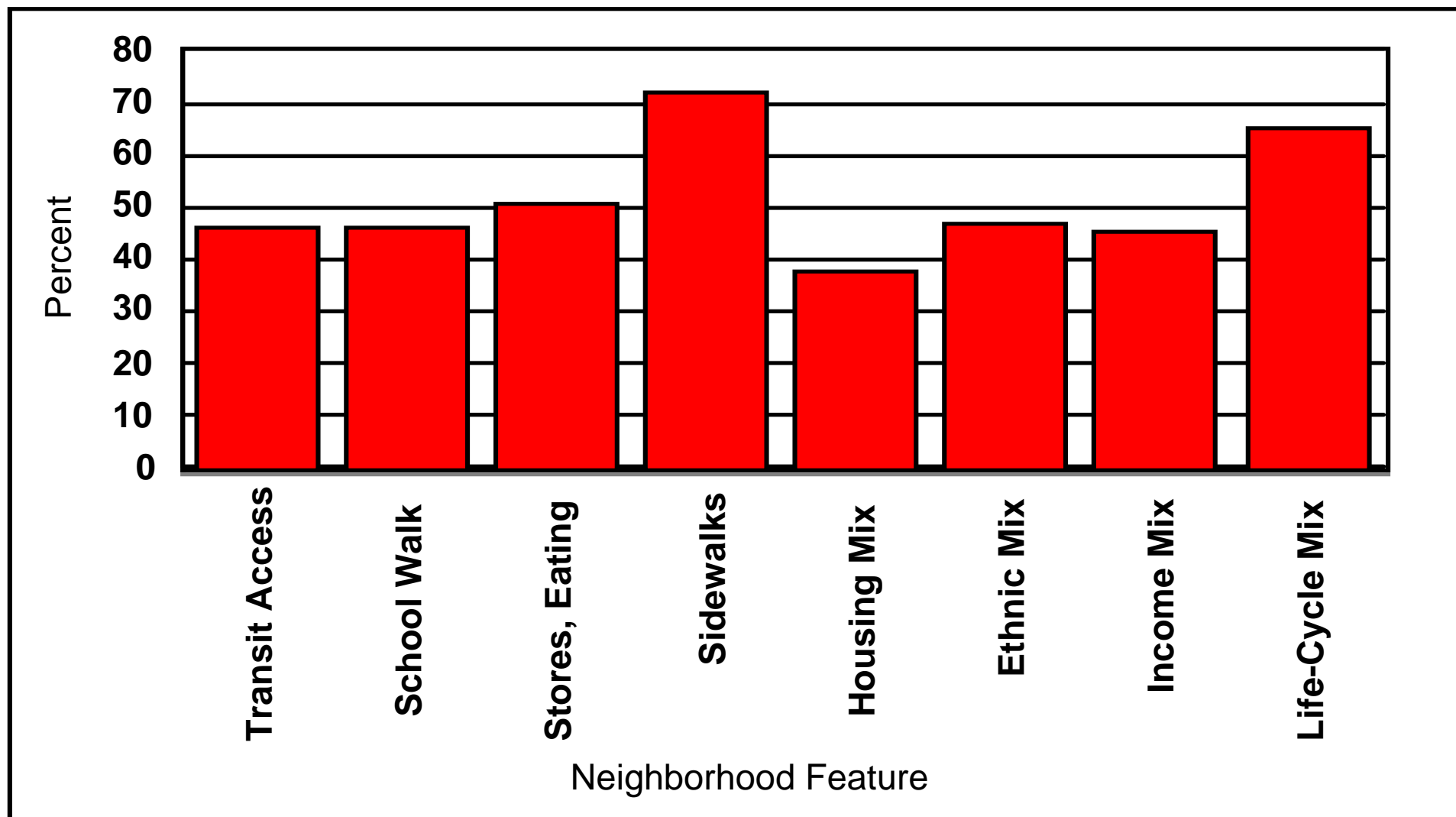
Insurance actuarial tables extend to 120.

*Another 20 years added – minimum.*

Adulthood now 75%+ non child-rearing.

Gen-X & Gen-Y making “family” location decisions differently from prior generations.

# Smart-Growth Preferences



Source: National Association of Realtors & Smart Growth America, 2004.

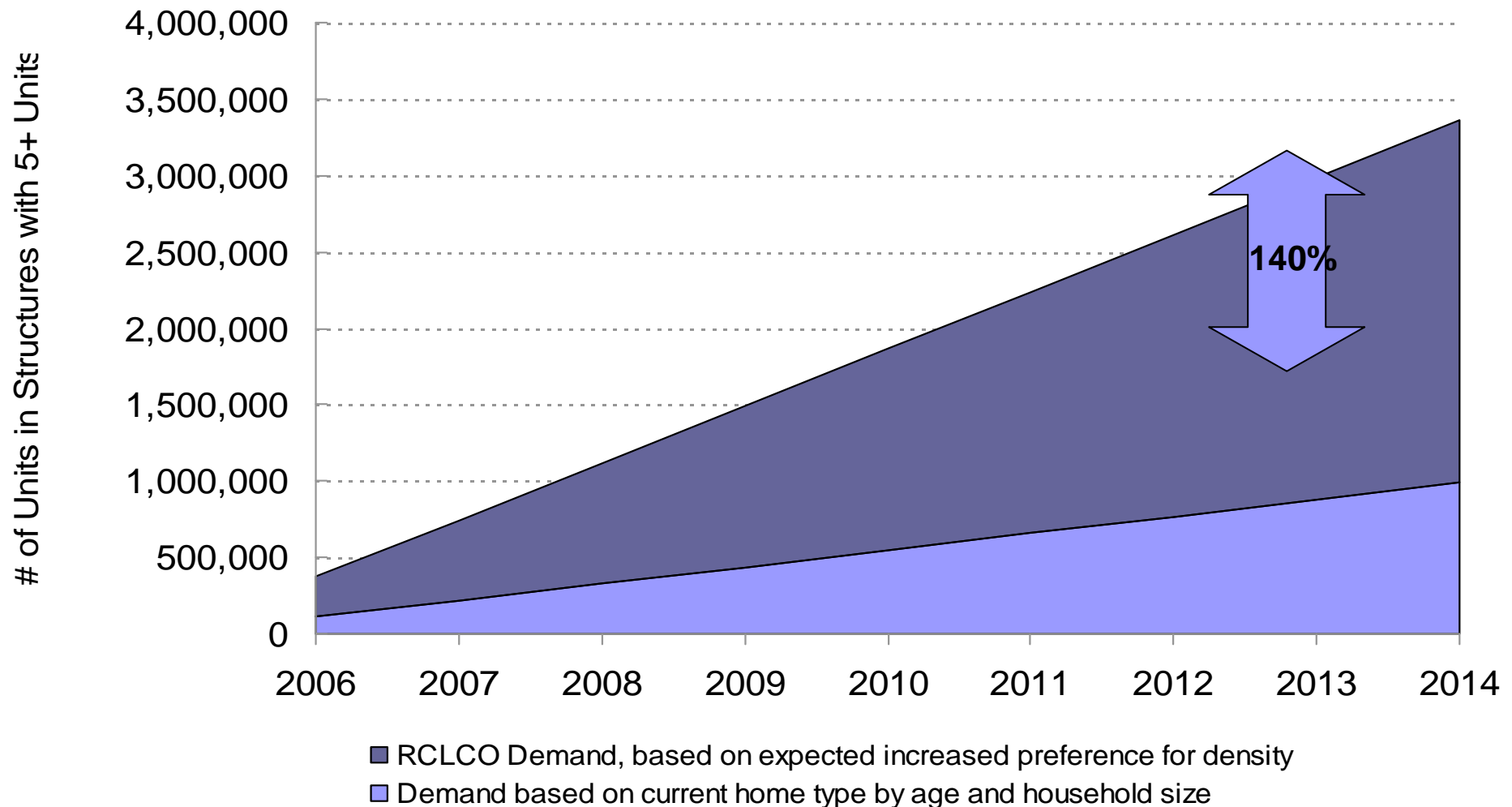


# Unmet *Walkable* Demand

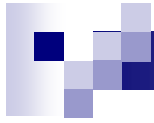
<u>Residential Form</u>	<u>Boston</u>	<u>Atlanta</u>
% want drivable suburbs	30%	41%
<i>% of those who have</i>	<b>85%</b>	<b>95%</b>
% want walkable suburbs	40%	29%
<i>% of those who have</i>	<b>70%</b>	<b>35%</b>

Source: Jonathan Levine, *Zoned Out*, Resources for the Future, 2006.

# Demographic Shift + Preference Shift = Higher Demand for Density



SOURCE: RCLCO Consumer Research



# ***Reshaping the Future***



# Housing Unit Preference by Type, Surveys

<u>Unit Type</u>	<u>Share</u>
Attached	38%
<i>Apartments</i>	14%
<i>Condos, Coops</i>	9%*
<i>Townhouses</i>	15%
Detached	62%
<i>Small Lot (&lt;7,000 sf)</i>	37%
<i>Large Lot (&gt;7,000 sf)</i>	25%

Source: **Low range** of surveys reviewed by Arthur C. Nelson, "Planning for a New Era," *Journal of the American Planning Association*, Fall 2006.

\*Toll Brothers shifting product mix to 15% condominium; *WSJ* 12/06.



# Looming Large-Lot Oversupply, 2005-2030

<u>Unit Type</u>	<u>Supply 2005</u>	<u>Preference Change</u>	<u>Mid-Point Change</u>
Attached	39M	15M	13M
Small Lot	12M	40M	22M
Large Lot	58M	<b>- 23M</b>	<b>- 3M</b>

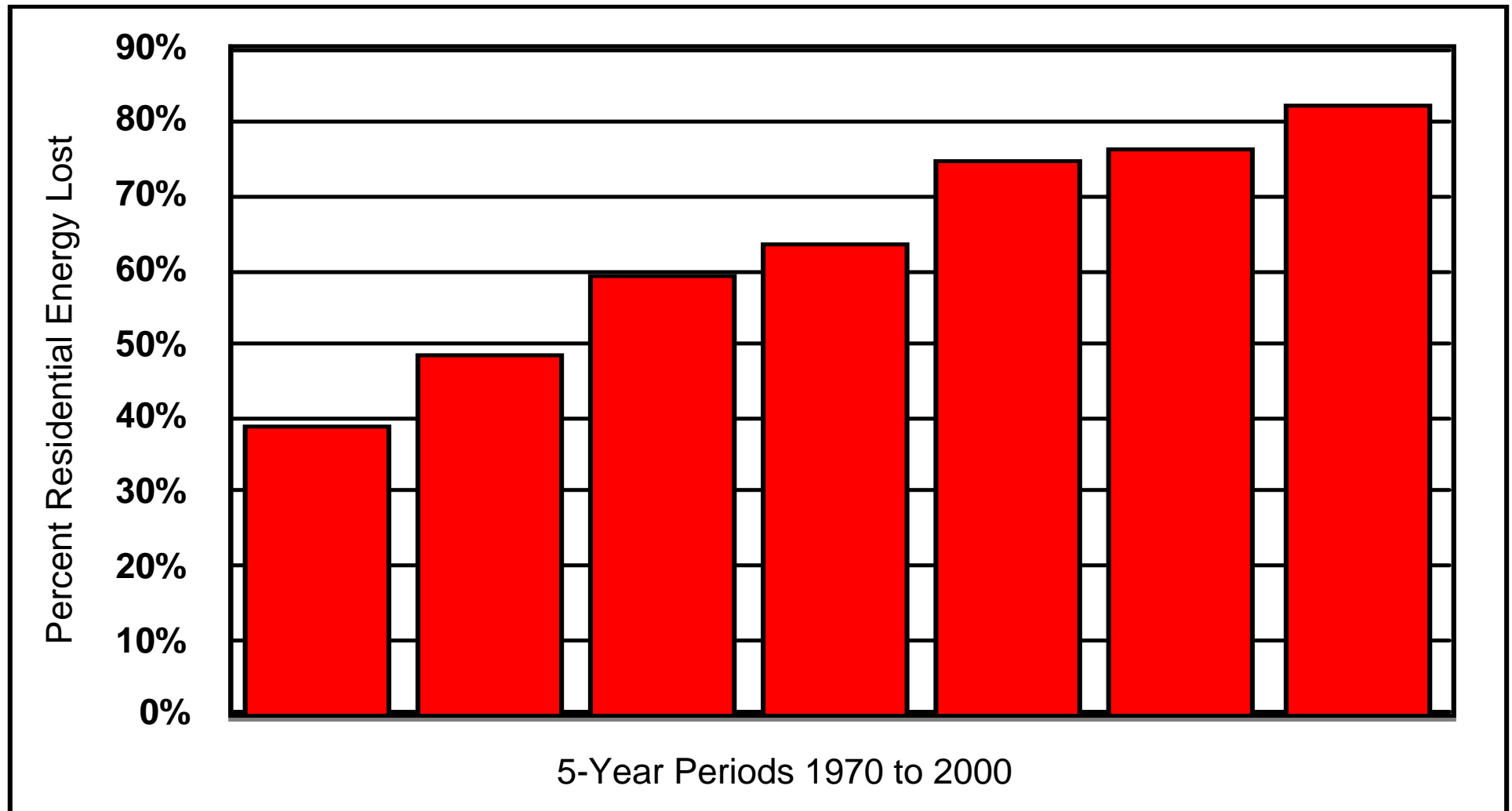
Figures in millions of units.

Preference change based on low-range of preference survey averages.

Mid-point is mid-percentage distribution between 2005 and low-range estimate of preference surveys and supply of occupied units in 2005.

# Wasteful Residential Energy

## Energy Lost as Percent of Energy Used



**Source:** Energy Information Administration 2006.



**The New Promise Land**

## NEW MAIN STREET: *Creating a new community crossroads*



- *Serve both the traditional neighborhood and the university communities.*
- *Create a vibrant mixed-use street.*
- *Build a neighborhood and a pedestrian-friendly Main Street.*
- *Introduce seamless connections from the residential neighborhood to the Charles River and Herter Park.*
- *Develop a significant new cultural facility at the crossroads as a neighborhood and regional attraction.*
- *Create 400,000-600,000 sf of mixed-use development, with heights of 35'-55' and first-floor retail.*
- *Create public gathering place for events, with linkages to community parks.*



*Western Avenue at North Harvard Street: from auto-dominated strip retail to pedestrian-friendly Main Street.*





# **Tear Up a Parking Lot** ***Rebuild Paradise***

Large, flat and well drained.

Major infrastructure in place

4+ lane access, 1+ sides, transit-ready

Single ownership – *Kelo* problems reduced.

Already removed from low-density subdivision use.

FARs at 0.15 to 0.25

May more easy to make NIMBYs into YIMBYs.

Slide title phrase adapted from Joni Mitchell, *Big Yellow Taxi*, refrain: “Pave over paradise, put up a parking lot.”



# Re-Building Capacity

<b><u>Calculation</u></b>	<b><u>Result</u></b>
Ripe Acres	2.8M
Percent Assumed Redeveloped	25%
Redeveloped Acres	0.7M
30 dwellings @ 1,500sq.ft.	
30 jobs @ 500sq.ft.	1.4FAR
Percent Residential Demand	50% <sup>+/-</sup>
Percent Employment Demand	50% <sup>+/-</sup>



# Trend-Watching

*Shifting pressures away from V-Zones?*



# Development “Tide” Changing?

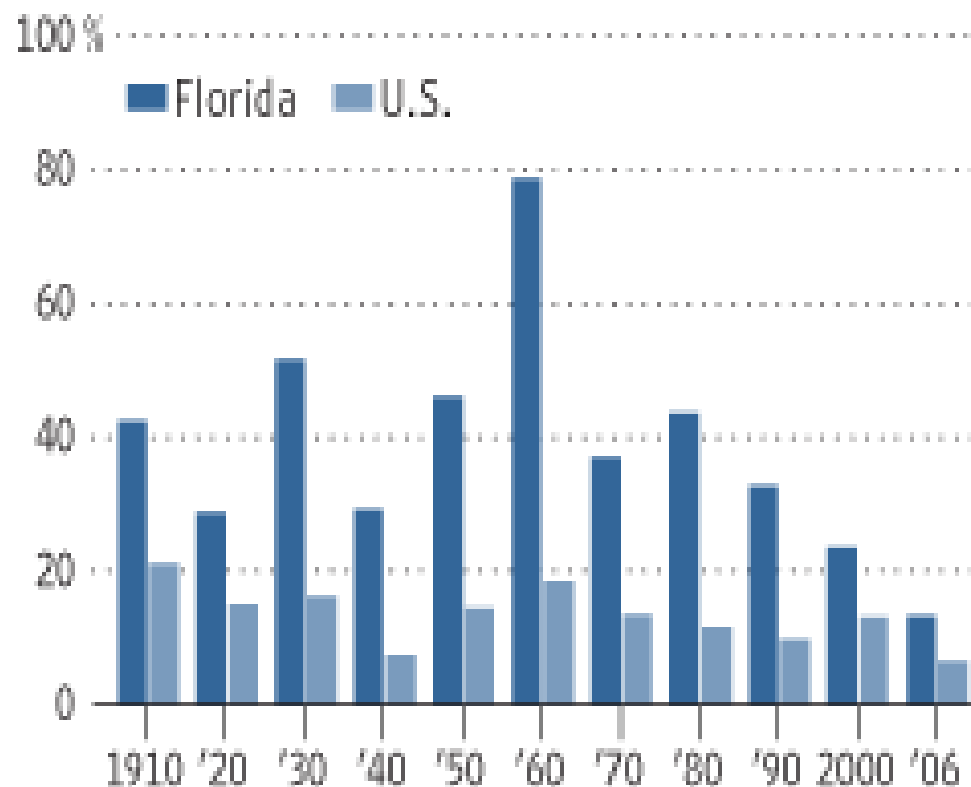
- *Wall Street Journal* asks, “Is Florida Over?”  
(9/29/07)
- Coastal congestion
- Higher taxes/fees for storm-related infrastructure
- Multiple increases in insurance premiums
- Increased storms and intensity
- Floridians by thousands now moving to other SE states – and even Arizona
- Florida as metaphor for V-Zones?

# Cloudy Outlook

Long a boom state, Florida is now seeing a slowdown in growth.

## Population growth

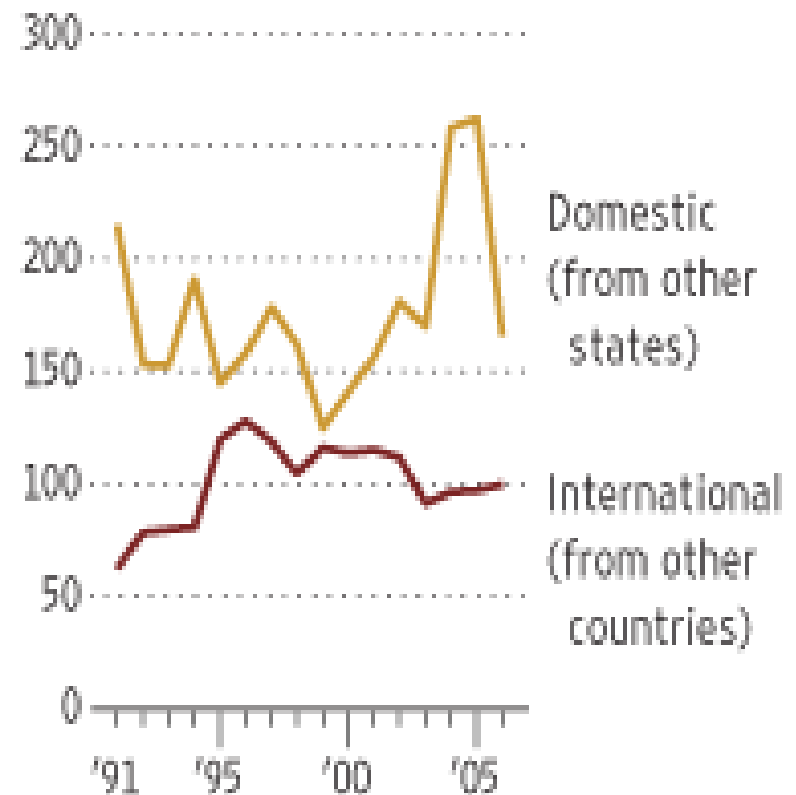
Change from a decade earlier



Source: Census Bureau

## Moving in

Net migration to Florida<sup>\*</sup>



<sup>\*</sup>The difference between migrants moving in and moving out.

# Net Moving Van Destinations

Atlas Van Lines



United Van Lines



Source: Wall Street Journal, 9/29/07

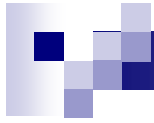


## Other Evidence?

- California growth stagnating.
- California emigration to NV, AZ, UT, CO, OR, SD(?!).
- Growing public awareness of global warming and sea-level rise.
- Real estate values in coastal MD & VA communities plummeting faster than national averages.
- Is there a “sea change” occurring?



***Need to be ahead of curve***



***Thank you!***