

# Taking stock of the digital divide

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Prepared for the Lisbon Research and Policy Workshop:  
Technologies, contents and services for social inclusion: Facing the  
digital divide and the emergence of ambient assisted living, Oct. 29-  
30, 2007

1. What do we know about the evolution of digital divides? Problems with metrics.
2. What is the status of rural regions with respect to the Internet?
3. What are the U.S. policy responses, and what is their effect?
4. What might new tools - such as social networking capabilities - mean for social inclusion?

# What we measure...

## Access

To technology (computer)

To a service (broadband)

## How often

Ever?

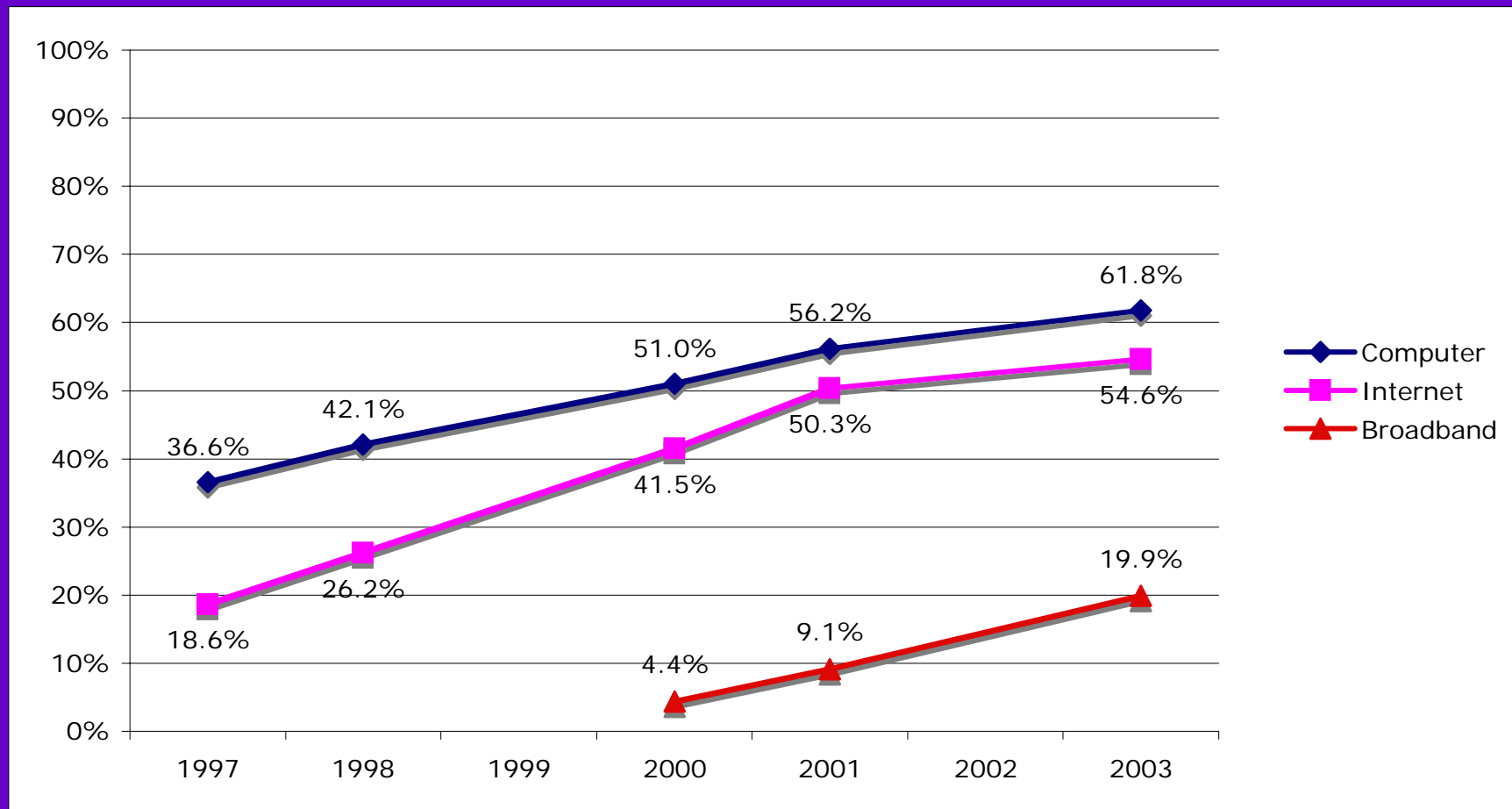
Frequency...

“yesterday”?

## Demographics

Individuals, households

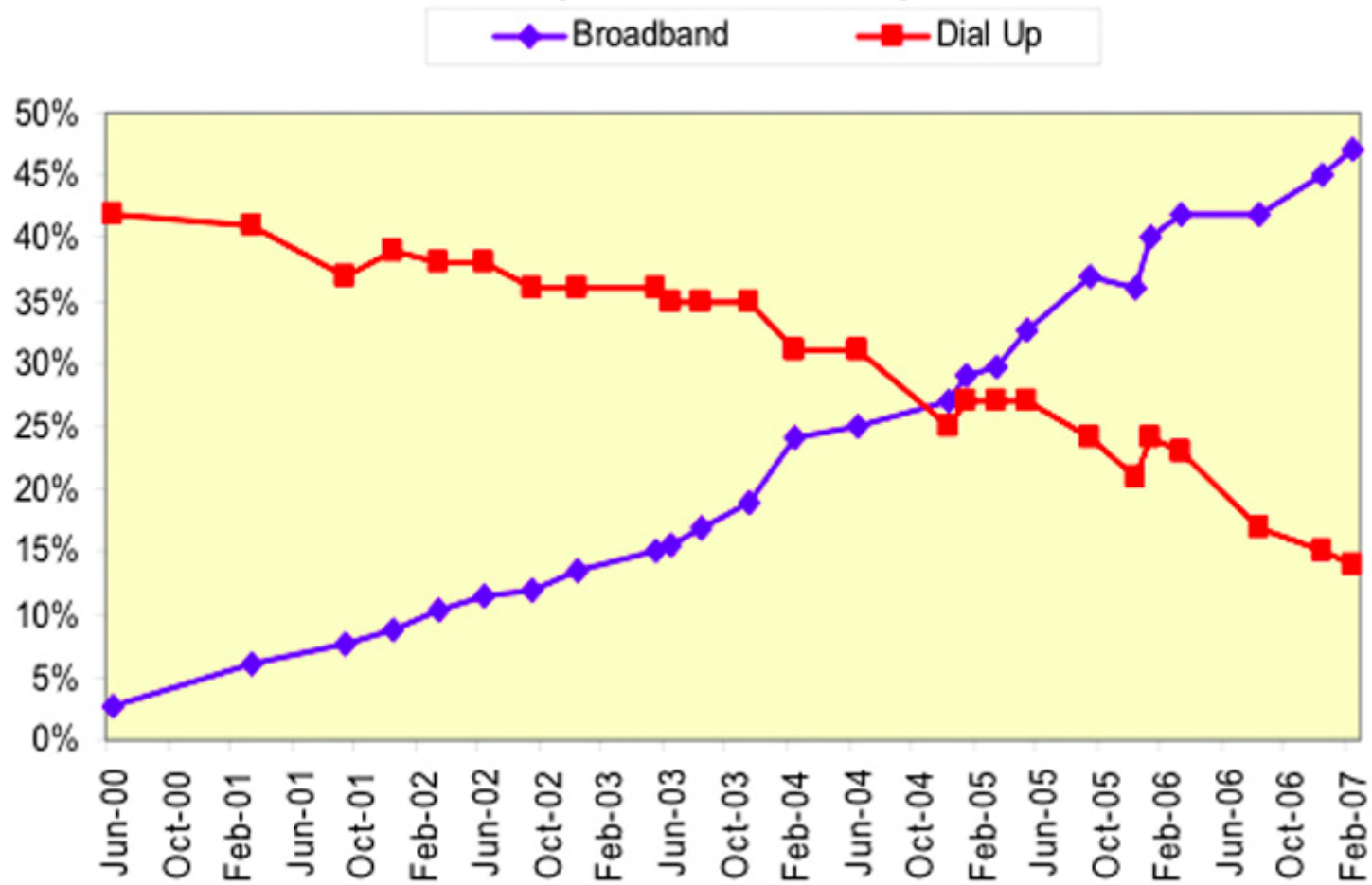
# Percent of Households with Computers and Internet Connections, 1997-2003



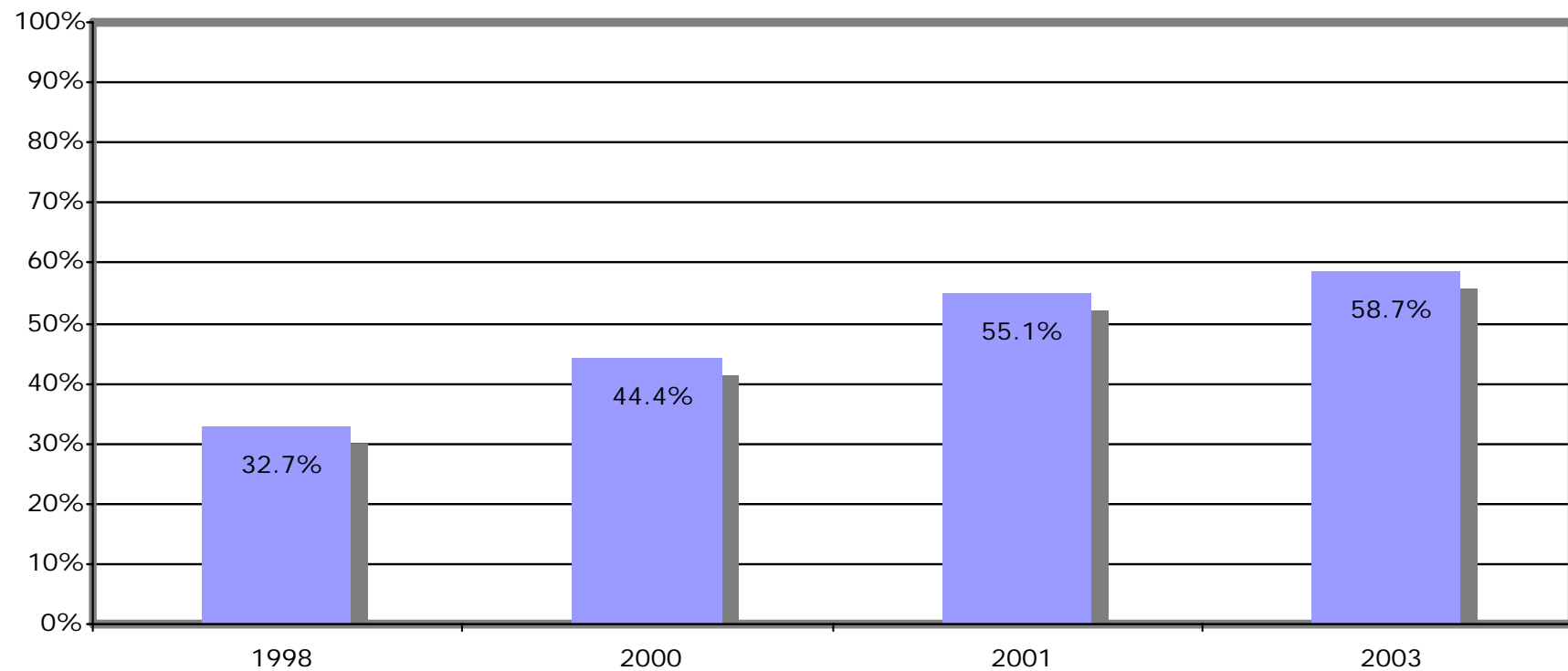
Source: NTIA. (2004). A Nation Online: Entering the Broadband Age

## Home Broadband & Dial-Up Penetration

(% of adult Americans)

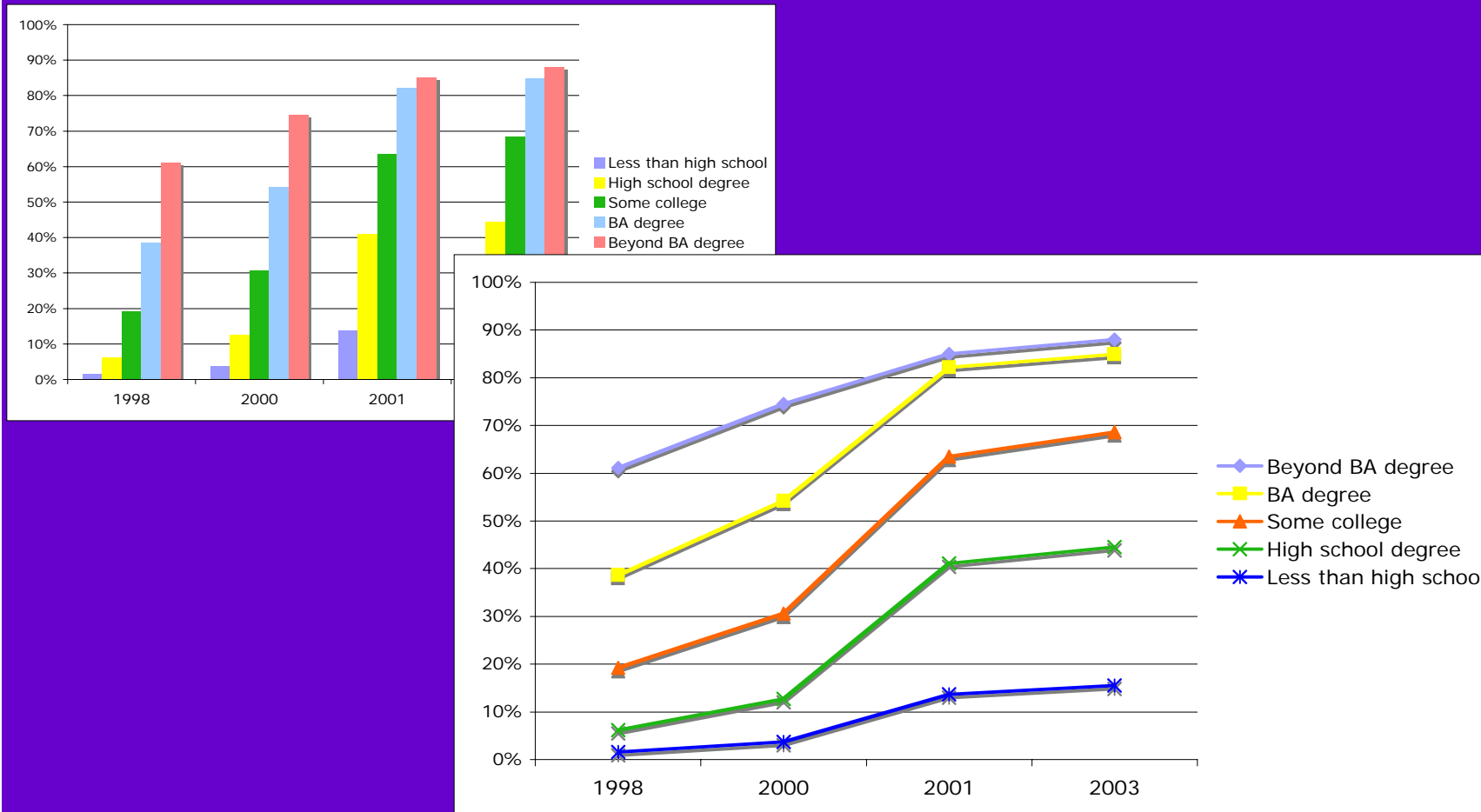


## Internet Use from Any Location by Individuals Age 3 and Older, Select years 1998-2003, ALL Population



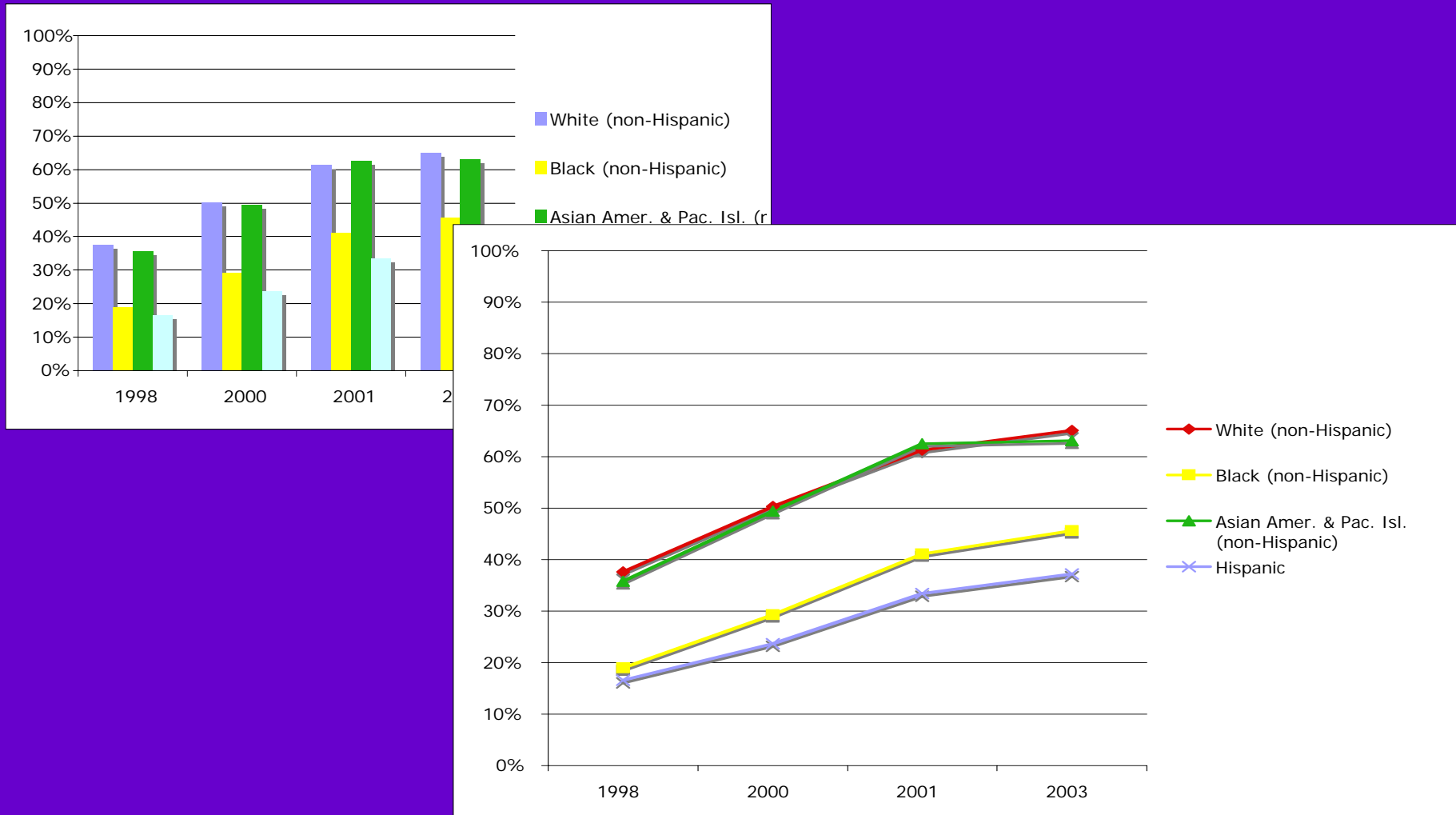
Source: NTIA. (2004). A Nation Online: Entering the Broadband Age; NTIA. (2000). Falling Through the Net: Toward Digital Inclusion

## Internet Use from Any Location by Individuals Age 3 and Older, Select years 1998-2003, by Education



Source: NTIA. (2004). A Nation Online: Entering the Broadband Age; NTIA. (2000). Falling Through the Net: Toward Digital Inclusion

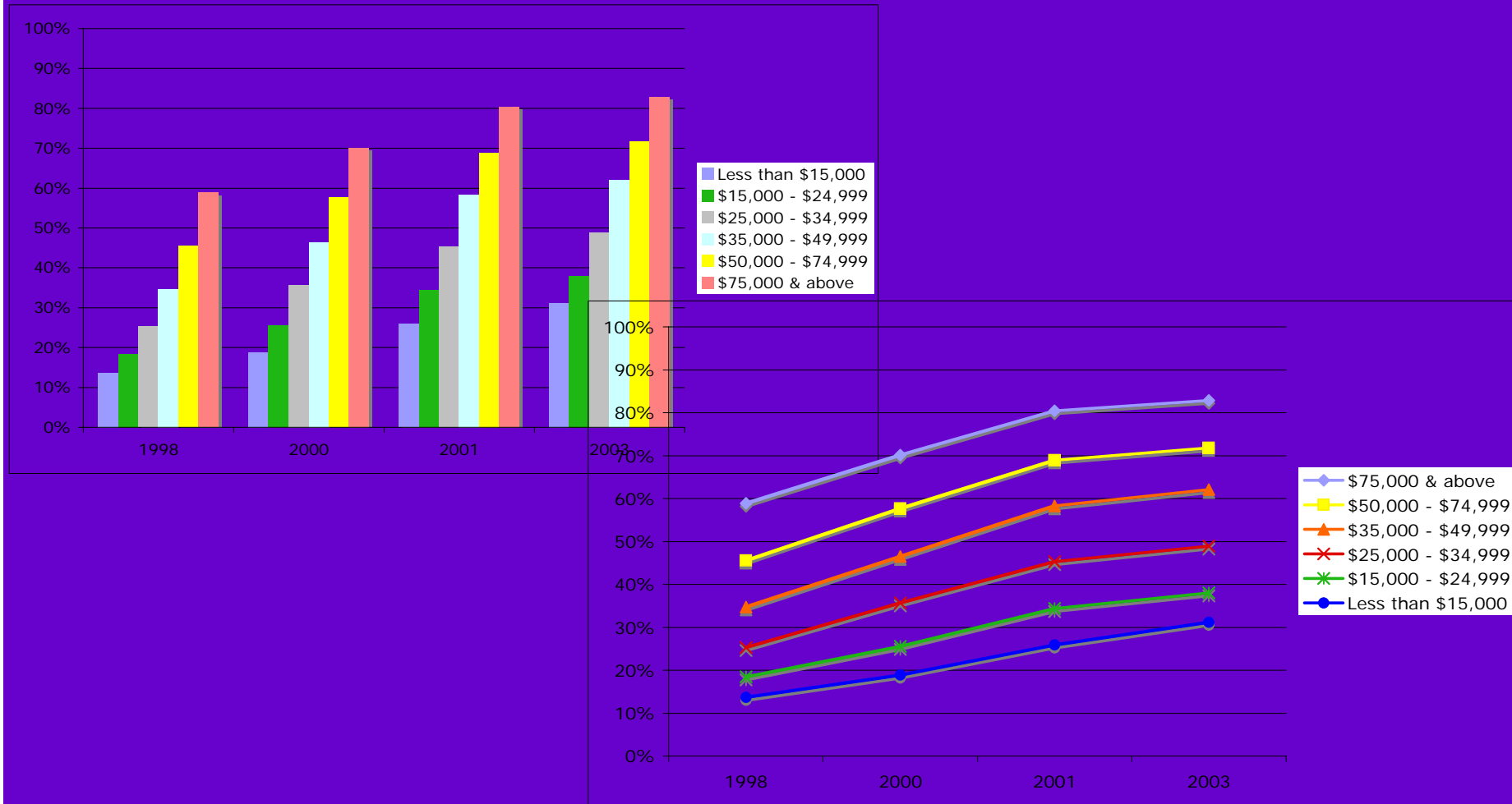
## Internet Use from Any Location by Individuals Age 3 and Older, Select years 1998-2003, by Race/Ethnicity



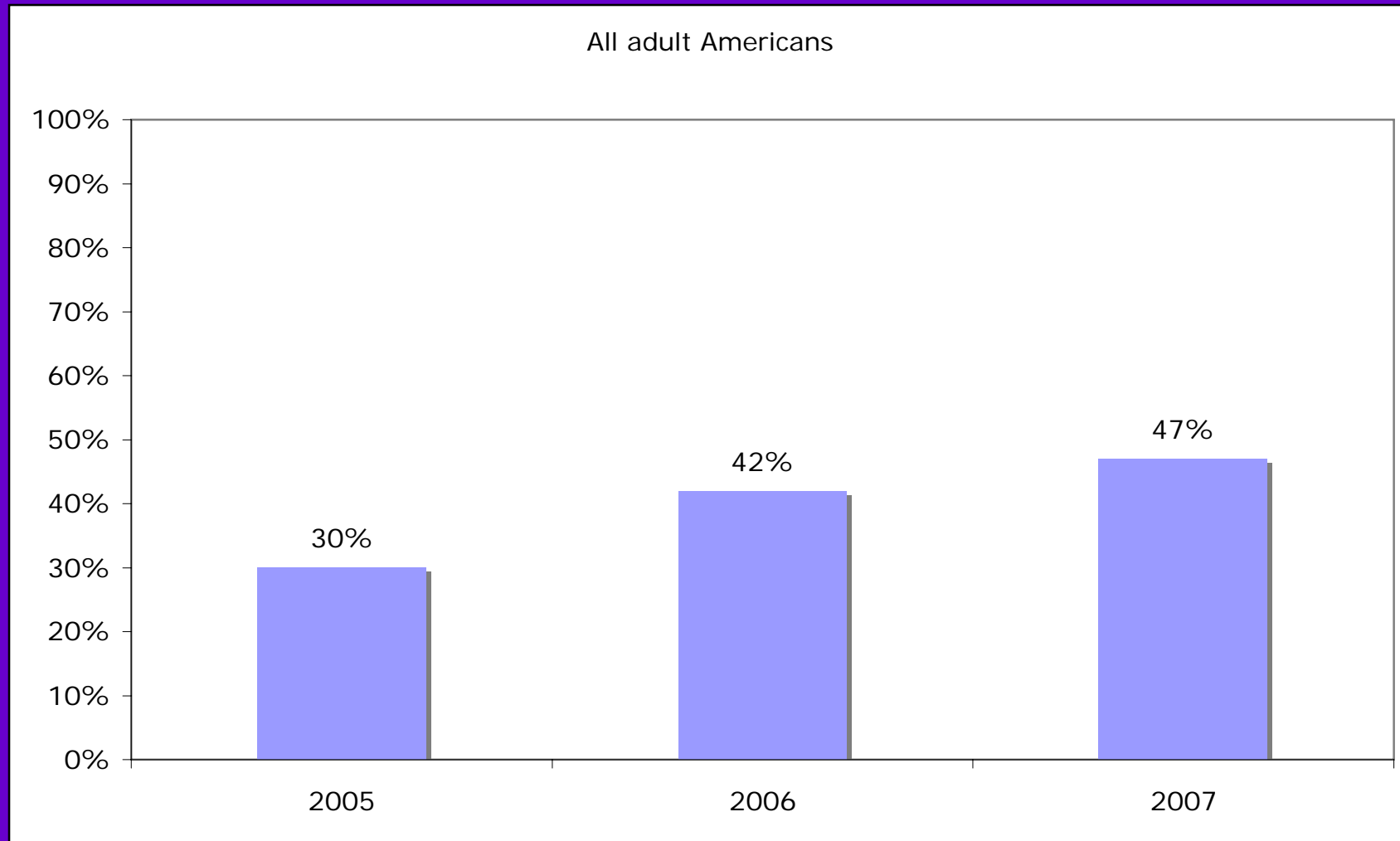
Source: NTIA. (2004). A Nation Online: Entering the Broadband Age; NTIA. (2000). Falling Through the Net: Toward Digital Inclusion



## Internet Use from Any Location by Individuals Age 3 and Older, Select years 1998-2003, by Household Income

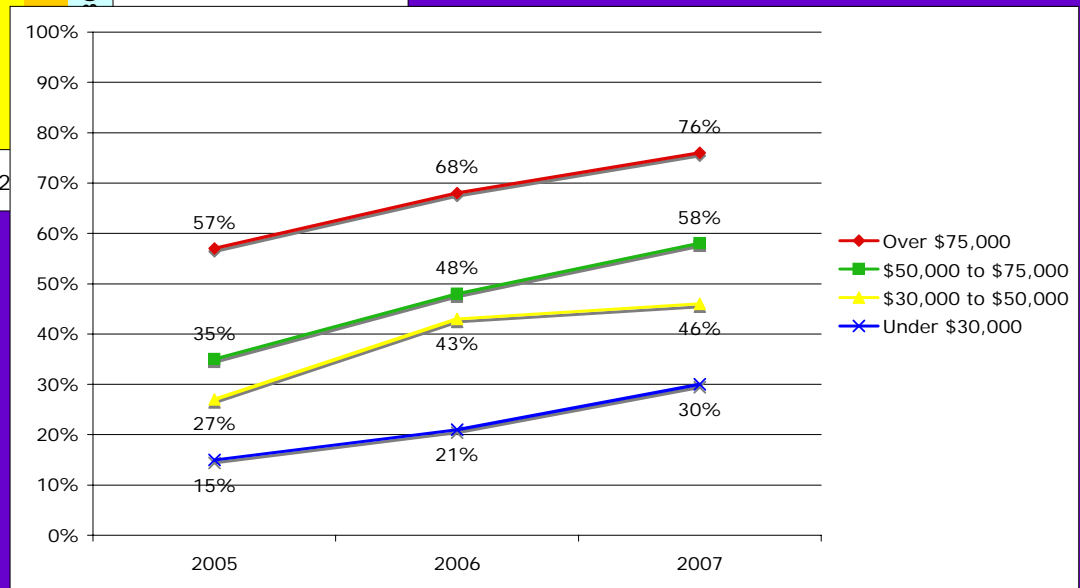
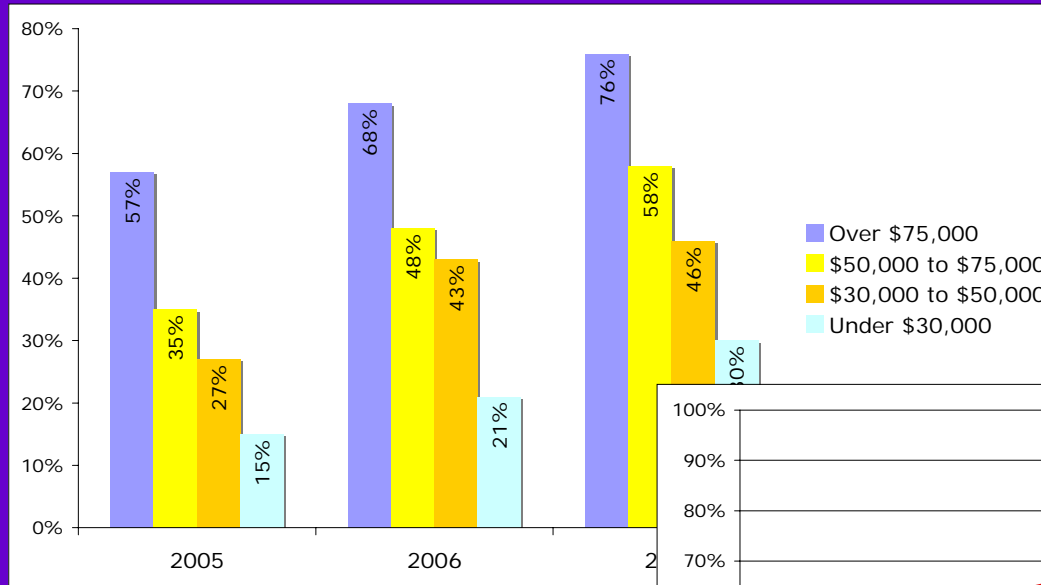


## % of Adult Population with Broadband at Home, 2005-2007 All Population



Source: Pew Internet & American Life Project. (2007, June). Home Broadband Adoption 2007.

# % of Adult Population with Broadband at Home, 2005-2007 By Income



Source: Pew Internet & American Life Project. (2007, June). Home Broadband Adoption 2007.

# % of Adult Population with Broadband at Home, 2005-2007 By Race



Source: Pew Internet & American Life Project. (2007, June). Home Broadband Adoption 2007.

# What we measure...

## Access

To technology (computer)

To a service (broadband)

## How often

Ever?

Frequency...

“yesterday”?

## Cost

Of service? Speed?

## Using...

Computers, the Internet

## For what?

Email

Web surfing

Study

Games...

## Demographics

Individuals, households

# For businesses...

## Investment

Investment in ICTs –  
hardware, software,  
services

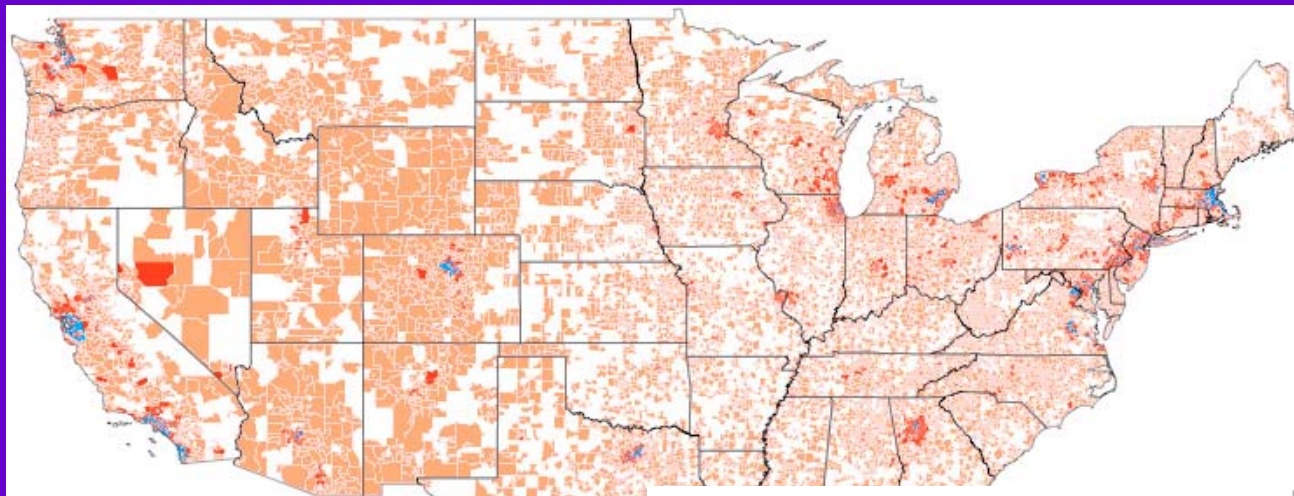
## Jobs

Numbers of employees in  
certain categories

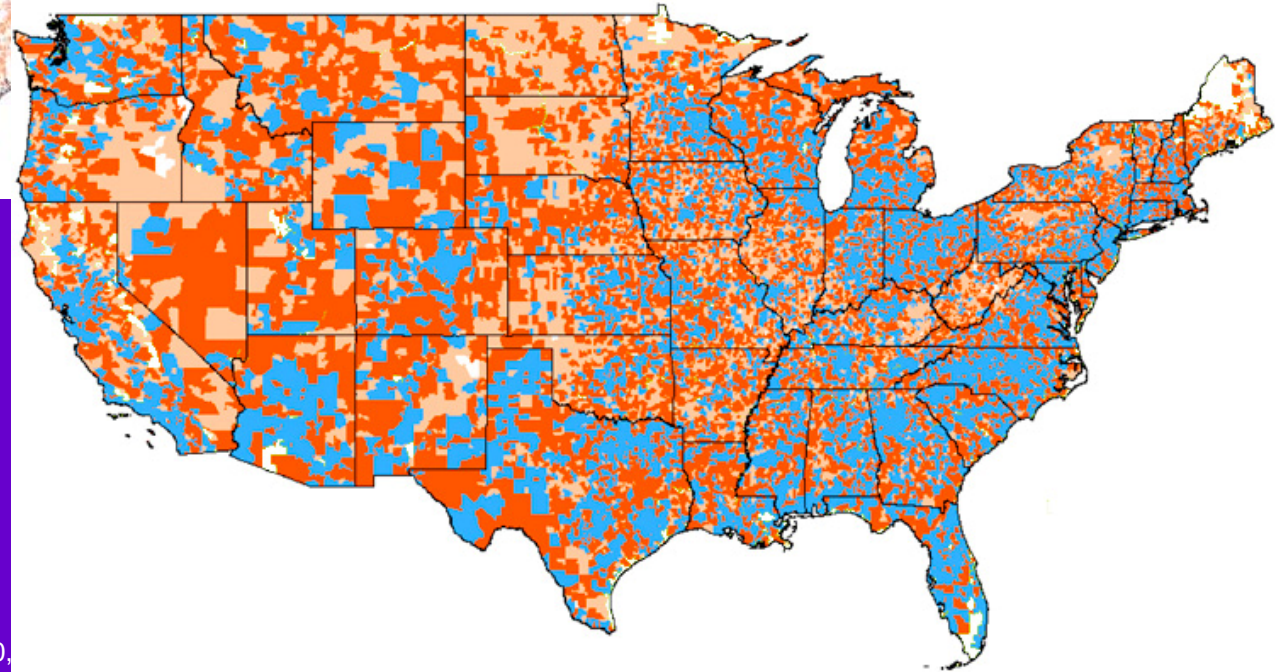
## Deployment – BB

(FCC data)

## Presence of High-Speed Internet providers, 2000-2006



Number of Reporting Providers



Source: Federal Communications Commission. (2000, June 30). Subscribership as of June 30, 2000; Federal Communications Commission. (2007, January). High-Speed Services for Internet Access: Status as of June 30, 2006.

# What we don't measure

- Knowledge, skills
- Need for certain services, information, etc.
- Utility in practical terms
- Available infrastructure
- Affordability
- Benefits in social terms - health; emergency; special populations (deaf, etc.)
- Small and medium businesses:
  - needs;
  - cost equations;
  - opportunity costs

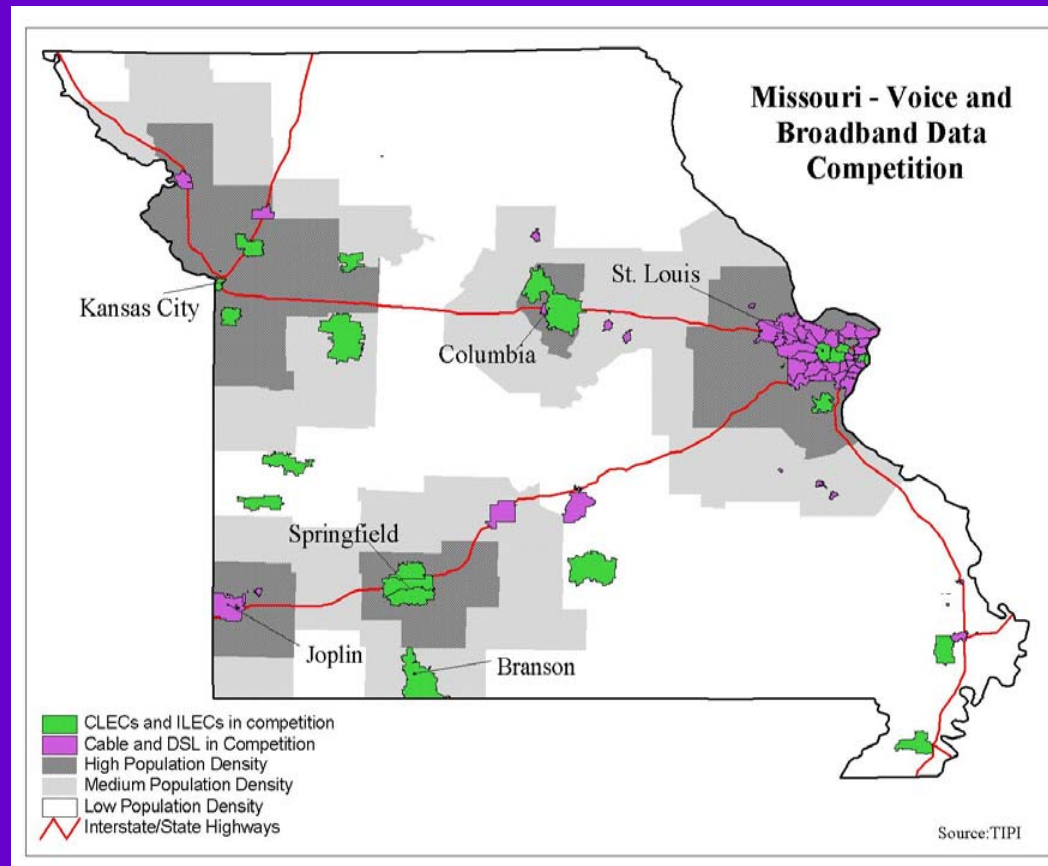


# Rural population at a glance

	Rural	Urban
<b>Population share</b>	21.0%	79.0%
<b>Population Density per square mile</b>	44	633
<b>Per capita income</b>	\$19,285	\$22,198
<b>Adult population with BA degree</b>	20.4%	29.0%
<b>Adult population with high school degree</b>	84.0%	84.1%
<b>White (Non-Hispanic)</b>	86.8%	64.4%
<b>Black</b>	6.0%	14.0%
<b>Hispanic or Latino (any race)</b>	4.0%	14.8%

Sources: U.S. Census Bureau, 2006 American Community Survey;  
U.S. Census Bureau, Census 2000 Summary File 1, Summary File 3

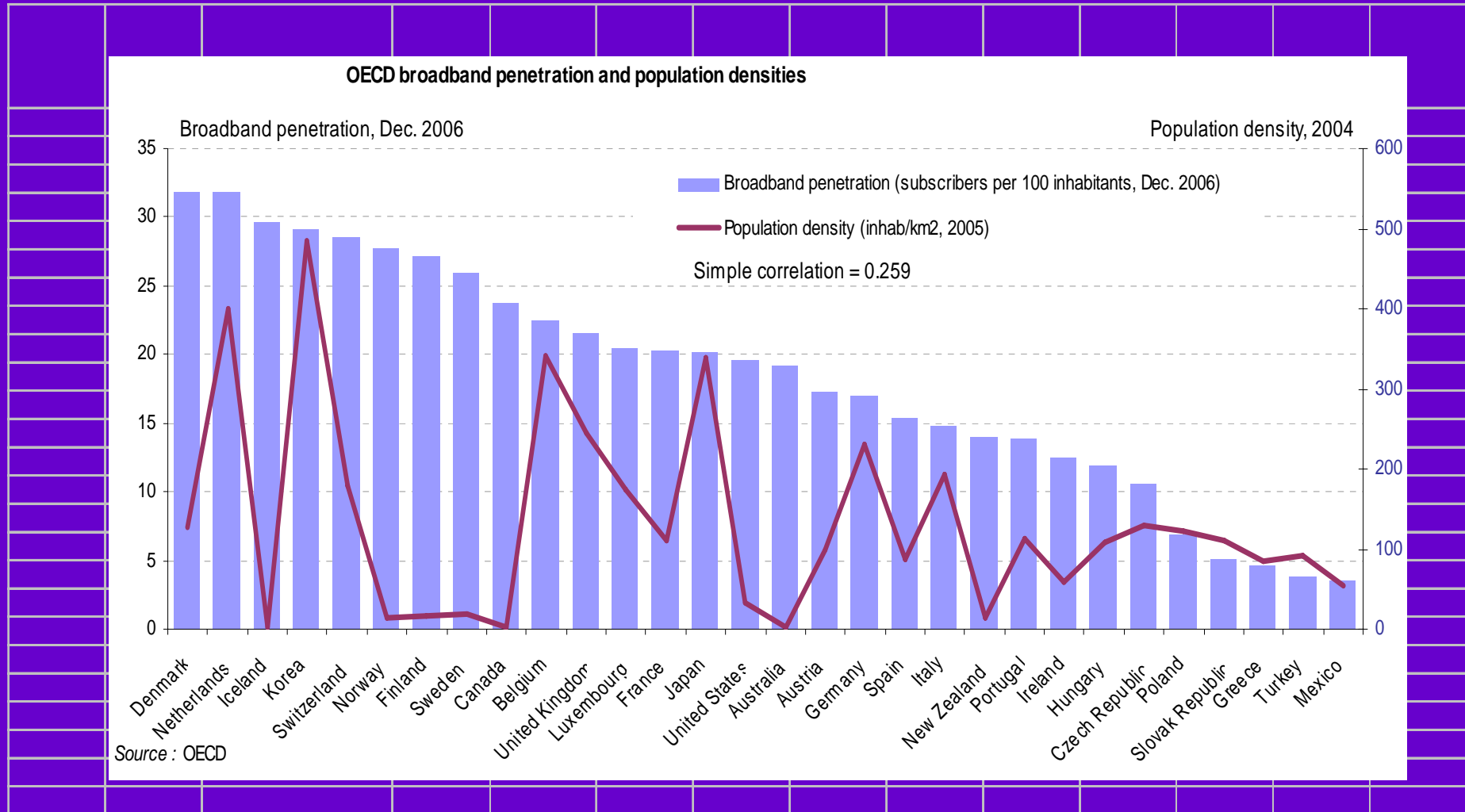
# Where do telecoms compete in Missouri?



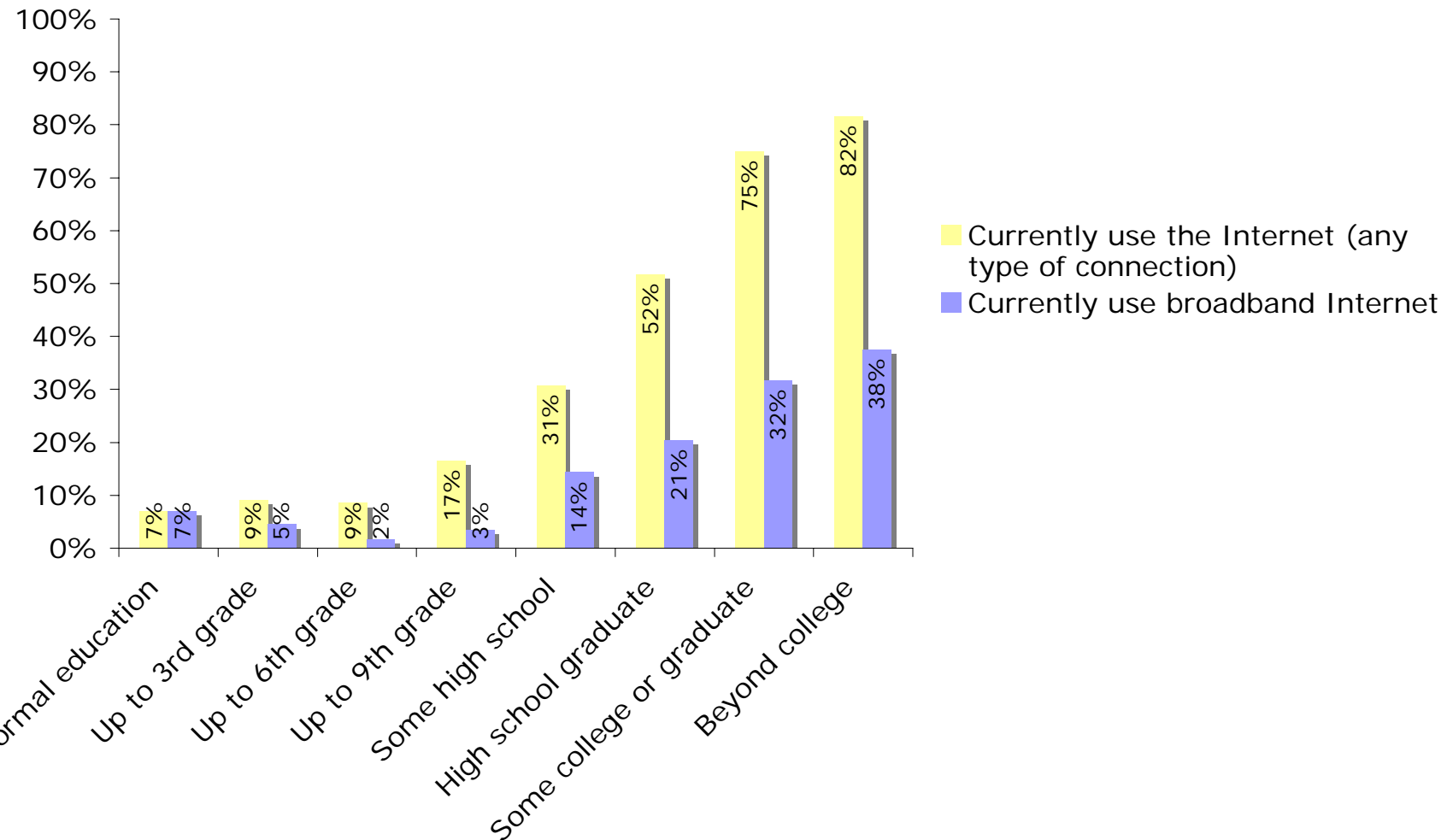
# The Rural Dilemma

- What is rural?
- Special treatment?
  - The Universal Service Program:
    - social equity;
    - network externalities – connect everyone!
    - 94% telephone connectivity
  - Broadband Universal Service:  
Corrective, or **enabler for new opportunities?**

# Population density does not explain broadband penetration well...



# Internet and Broadband use in rural areas in 2005, by a person's years of education



Source: Survey conducted in 2005 by the University of Texas at Austin in four rural communities in Kentucky, Michigan, and Texas

## How Broadband is Spreading Through the Population

Changes in the percentage of each group who have broadband connections at home

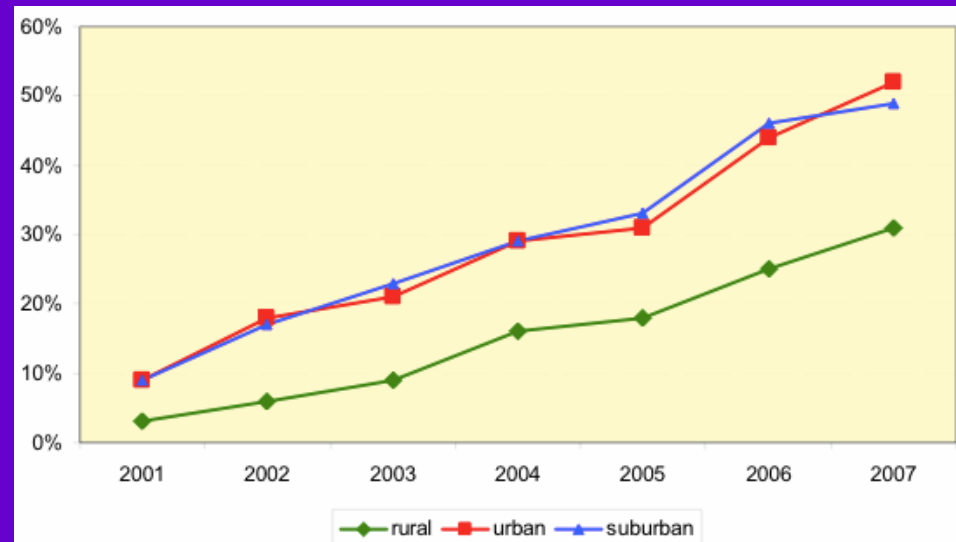
	% with broadband at home (2005)	% with broadband at home (2006)	Percentage point increase	Percentage increase
<b>Gender</b>				
Male	31%	45%	14%	45%
Female	27	38	11	41
<b>Age</b>				
18-29	38	55	17	45
30-49	36	50	14	39
50-64	27	38	11	41
65+	8	13	5	63
<b>Race / ethnicity</b>				
White (not Hispanic)	31	42	11	35
Black (not Hispanic)	14	31	17	121
Hispanic (English speaking)	28	41	13	46
<b>Educational attainment</b>				
Less than high school	10	17	7	70
High school grad	20	31	11	55
Some college	35	47	12	34
College +	47	62	15	32
<b>Household income</b>				
Under \$30K	15	21	6	40
\$30K-50K	27	43	16	59
\$50K-\$75K	35	48	13	37
Over \$75K	57	68	9	19
<b>Community type</b>				
Urban	31	44	13	42
Suburban	33	46	13	39
Rural	18	25	7	39

Sources: 2005 data comes from the Pew Internet Project's combined January-March tracking survey of 4,402 adults; 1,265 were home broadband users. 2006 data comes from the Pew Internet Project's February 15 through April 6 survey of 4,001 adults; 1,562 were home broadband users.

# Internet in Rural Areas

- Broadband access at home -

Community type	% with broadband at home 2005	% with broadband at home 2006	% with broadband at home 2007
Urban	31	44	52
Suburban	33	46	49
Rural	18	25	31



Source: The Pew Internet & American Life Project. (2007, July). *Home Broadband Adoption 2007*.

# Internet in Rural Areas

- Internet users, geographic variance -

<b>Online activities in rural, suburban, and urban communities</b>				
<b>The portions of Internet users in each type of community who have ever used the Internet for some popular online activities.</b>				
	Rural	Suburban	Urban	
<b>Uniform popularity</b>				
Send or read e-mail	90%	93%	92%	
Use a search engine	88	91	89	
Look for info about a hobby	78	76	75	
Look for health info	69	66	65	
Surf for fun	69	65	69	
Visit a government Web site	67	66	65	
Play a game	42	38	39	
<b>More popular among rural users</b>				
Send an instant message	51	44	50	
Look for religious or spiritual information	35	29	24	
<b>More popular among suburban, urban users</b>				
Get news	65	71	69	
Buy a product	57	63	61	
Make travel reservation	49	58	60	
Perform job-related research	46	53	55	
Get financial info	39	45	47	
Look for info about a job	38	40	52	
Bank online	28	35	35	
Look for info about a place to live	26	35	43	
Download music	June 2003	26	30	32
	November 2003	13	15	15

Source: The Pew Internet & American Life Project. (2004, February). *Rural Areas and the Internet*.



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BLUE MOON  
BROADBAND  
AVAILABLE IN THIS AREA  
765-5700



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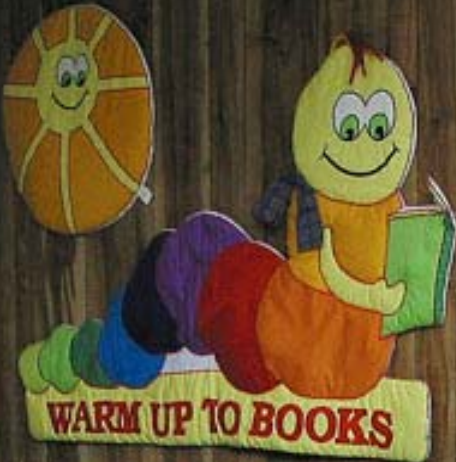




Oden and Strover (2003): ... high ICT access and implementation costs are related to the lack of competition among service providers and specific information failures that limit adoption by locally-owned enterprises in rural and exurban regions.

Difficulties in getting low cost access to advanced telecommunications and external information and support services to effectively implement ICT *are beginning to limit economic development options in rural communities*. There remains a clear need, on market failure grounds, for expanded public sector initiatives and public-private partnerships to overcome ICT access and implementation barriers.





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COURTESY FOR COMPUTER LAB

Attention Patrons  
Please do not turn off  
the Computers.

**NO CHATTING  
OR  
PLAYING GAMES  
ON THE  
COMPUTERS**

Zapala County Public Library  
reserves the right to prevent access  
to offensive material.  
Do not try to do anything illegal,  
violate copyright or view indecent  
material.



“Working with  
the FCC”



# Community Internet is growing

- Hundreds of community/municipal Internet services have been established across the country despite the legal and political challenges from private telecommunications companies in recent years.





	Designated lead State agency for broadband deployment	State databases/maps of broadband facilities	Broadband service-quality regulation	State E-government initiative	State universal service to attract broadband deployment	Grants/loans to broadband providers	Grants/loans to deployment in rural areas	Grants/loans to deployment in underserved areas	Tax incentives to broadband providers
Alabama	X			X					
Alaska	X	X		X	X		X	X	
Arizona	X	X		X			X	X	
Arkansas				X					
California				X					
Colorado	X	X		X		X	X	X	X
Connecticut	X			X	X				
Delaware				X					
District of Columbia				X					
Florida	X			X			X	X	
Georgia	X			X		X			X
Hawaii				X					
Idaho				X					X
Illinois	X	X		X		X	X	X	X
Indiana	X			X				X	
Iowa	X			X					
Kansas	X	X		X	X		X	X	X
Kentucky	X	X		X				X	
Louisiana	X			X					
Maine		X		X					
Maryland	X	X		X	X				
Massachusetts				X					
Michigan	X	X		X		X	X	X	X
Minnesota				X	X		X	X	
Mississippi				X					X
Missouri	X			X	X				
Montana	X			X					X
Nebraska	X			X		X	X	X	X
Nevada				X					
New Hampshire	X			X					
New Jersey	X			X					
New Mexico	X			X					
New York				X			X	X	
North Carolina	X	X		X		X	X	X	X
North Dakota	X			X					
Ohio	X	X		X	X			X	
Oklahoma	X	X	X	X			X	X	
Oregon	X			X					X
Pennsylvania	X	X		X		X	X	X	X
Rhode Island	X			X					
South Carolina	X	X	X	X		X	X	X	X
South Dakota	X			X					
Tennessee	X			X					
Texas	X			X		X	X	X	X
Utah	X	X		X	X	X	X	X	X
Vermont	X			X				X	
Virginia	X	X		X				X	
Washington	X	X		X					

## Broadband initiatives at State level

Type of State government initiative	Number of states implemented
Designated lead State agency for broadband deployment	39
State databases/maps of broadband facilities	17
Broadband service-quality regulation	2
State E-government initiative	51
State universal service to attract broadband deployment	8
Grants/loans to broadband providers	10
Grants/loans to deployment in rural areas	17
Grants/loans to deployment in underserved areas	22
Tax incentives to broadband providers	15

Source: California Public Utilities Commission. (February, 2005). *Broadband Deployment in California Report* (draft).

# Local broadband initiatives (1)

## Electronic villages

Community portals (websites) promoting local community, business, and arts, sometimes offering affordable residential and business broadband service.

# Local broadband initiatives (2)

## Local fiber networks

Municipal or public-private initiatives to build fiber networks for retail or wholesale service.

Examples: UTOPIA (Utah Telecommunications Open Infrastructure Agency) is a consortium of 17 cities in Utah wholesale access to private service providers; the Bristol Virginia Utility Board offers a FTTP service combining Internet, cable, and phone; San Francisco fiber network (initiative to build FTTP networks to be leased to private service providers).

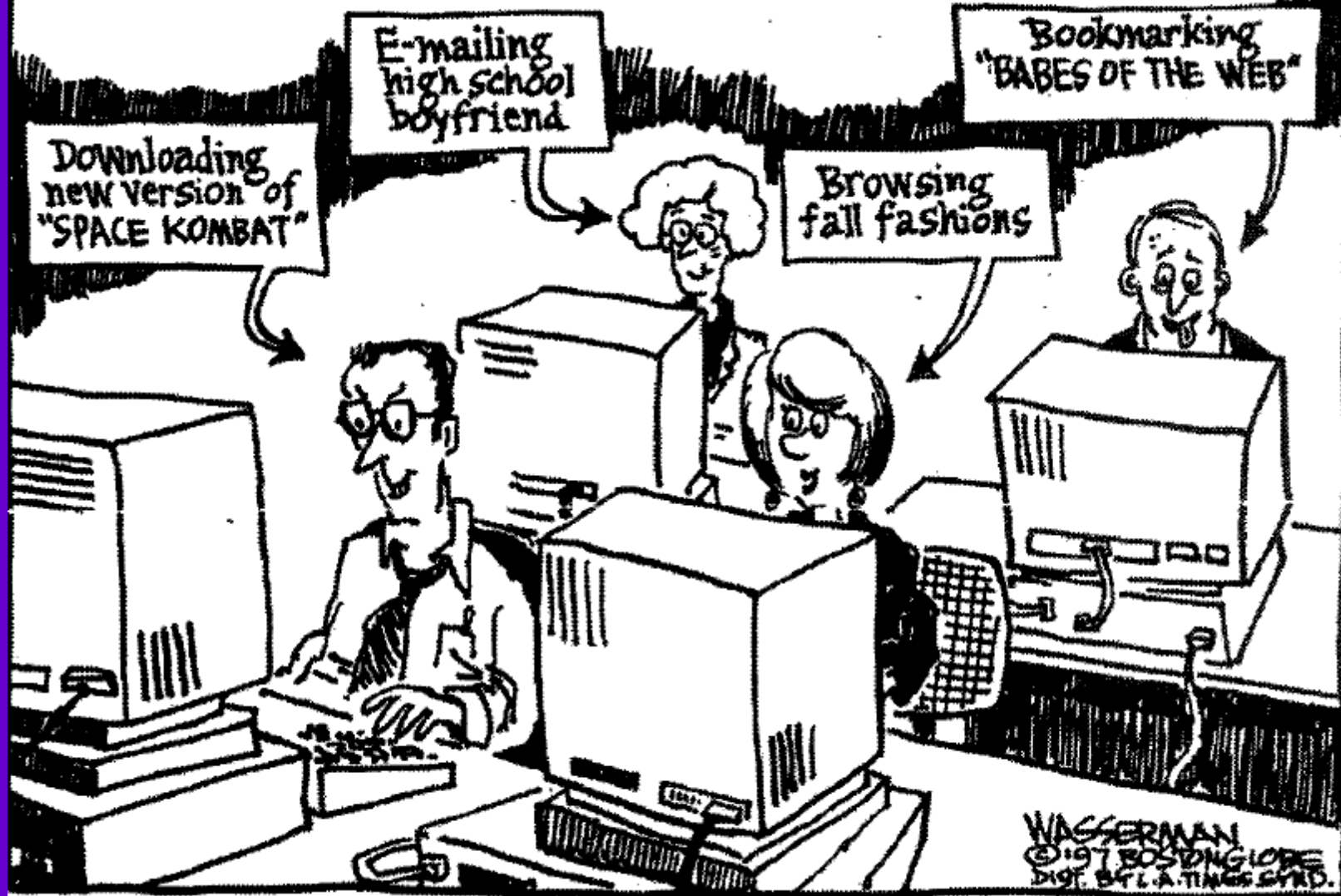
# Local broadband initiatives (3)

## Community Internet: Wired or wireless

Municipal governments, either by themselves or in partnership with private companies, offer free or subscription-based Internet services.

Examples: Wireless Philadelphia (citywide wireless outsourced to a private vendor), Austin Wireless City, Texas (a partnership among the local government and local nonprofit organizations to offer free Wi-Fi access at hotspots), chaska.net (a municipally owned and operated ISP in Chaska, Minnesota).

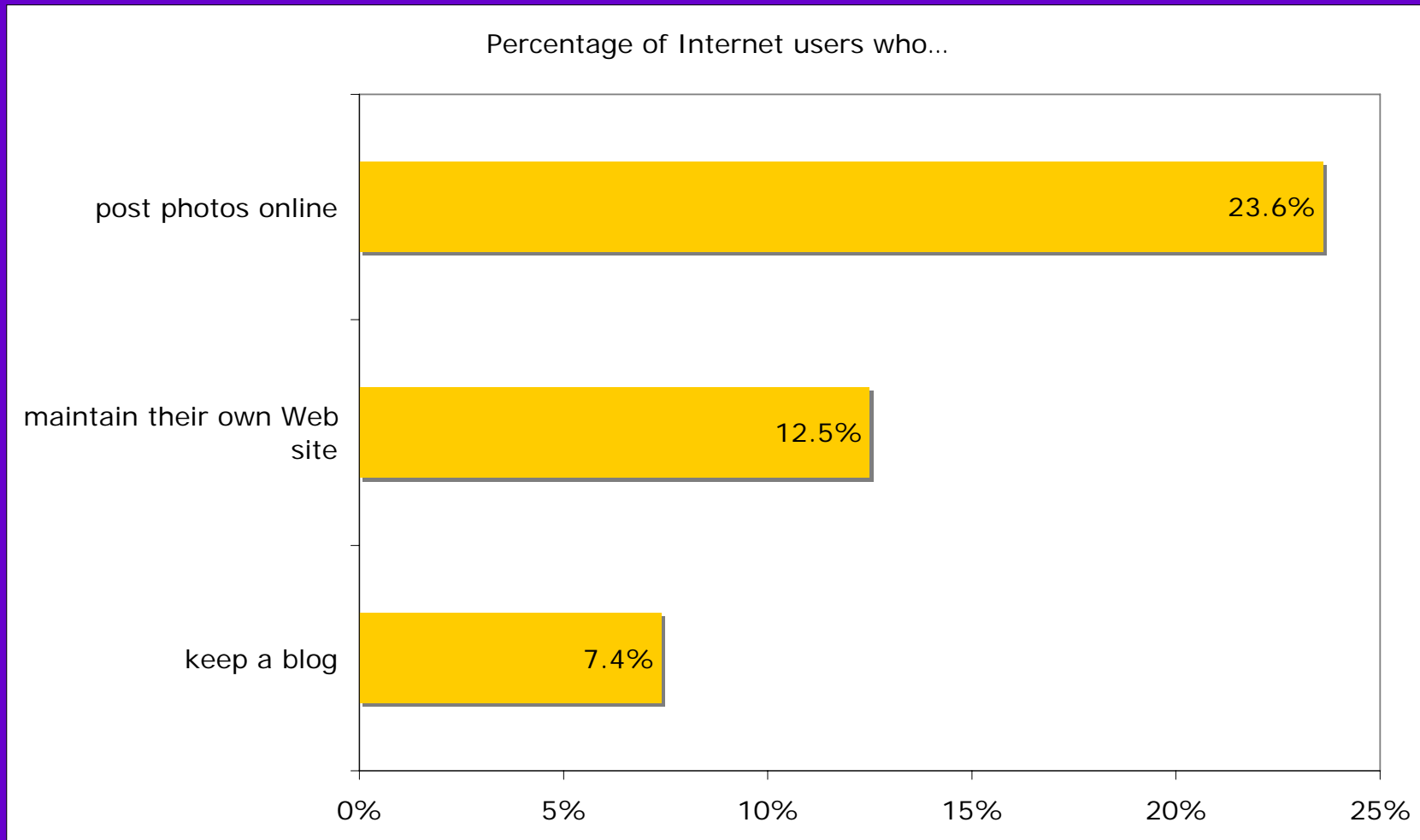
# ECONOMISTS WONDER WHY COMPUTERS HAVEN'T BOOSTED PRODUCTIVITY



With home broadband users accounting for 73% of those who post content to the internet, it is worth noting that 62% of home internet users have high-speed internet connections at home. This means that people with broadband connections account for more than their fair share of content postings to the internet. Some of this may be due to who broadband users are – more likely to be young and therefore more accustomed to expressing themselves using the internet. It is conceivable that some people subscribe to broadband *because* they want to share their creations online. Finally, the availability of the high-speed connection might draw some users to posting things to the internet. Whatever the root causes, there is a significant statistical association between having a home broadband connection and users' putting content online.

---Pew Internet, 2007 (Home Broadband Report)

# User Created Content



Source: The Center for the Digital Future, The University of Southern California. (2007). *Digital Future Report*.