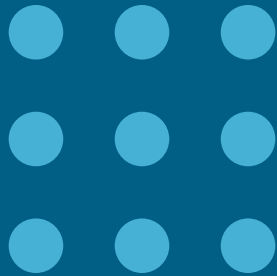




Living Long In A Networked Era

Norman Jacknis
May 7, 2010





The Challenge



From A Concept Of Easing Into Debilitation



Think rotting bananas



To A Concept Of Enabling The Strength Of Many Years



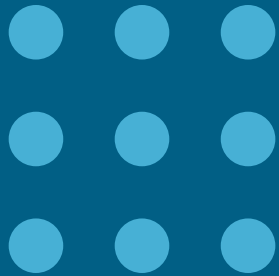
**Think giant sequoia, growing
stronger over hundreds of years**



**The communications revolution
and changes in the economy will
make this transition possible.**

Why?



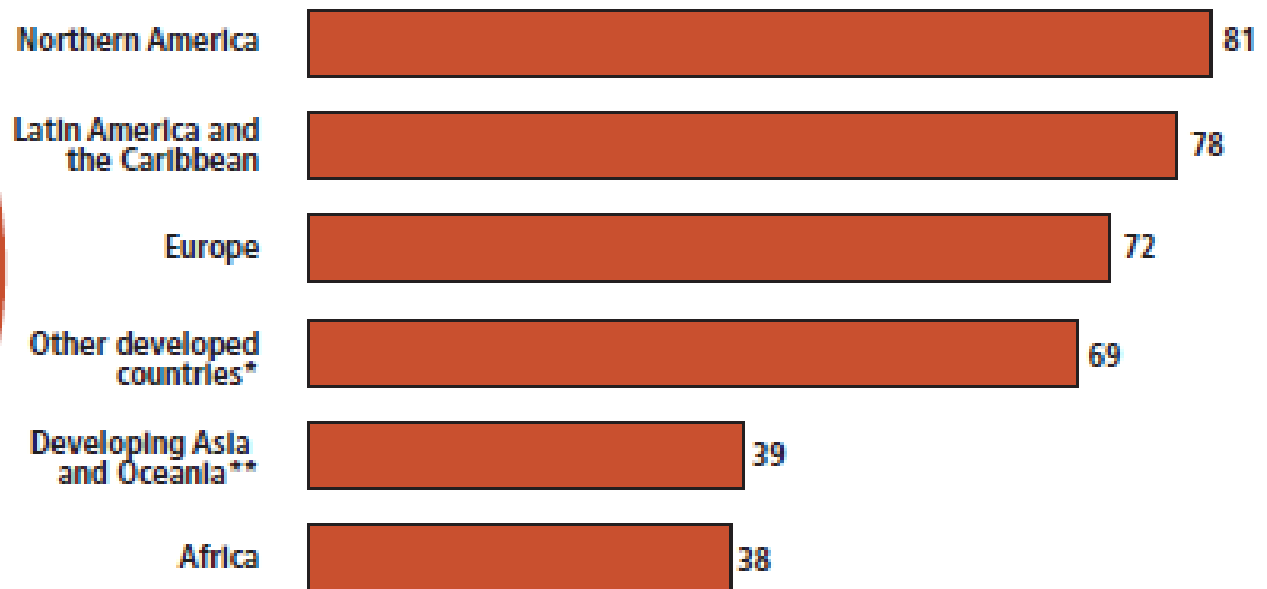


The Road To Today



Urbanization

Urban population as percentage of the total population, 2005

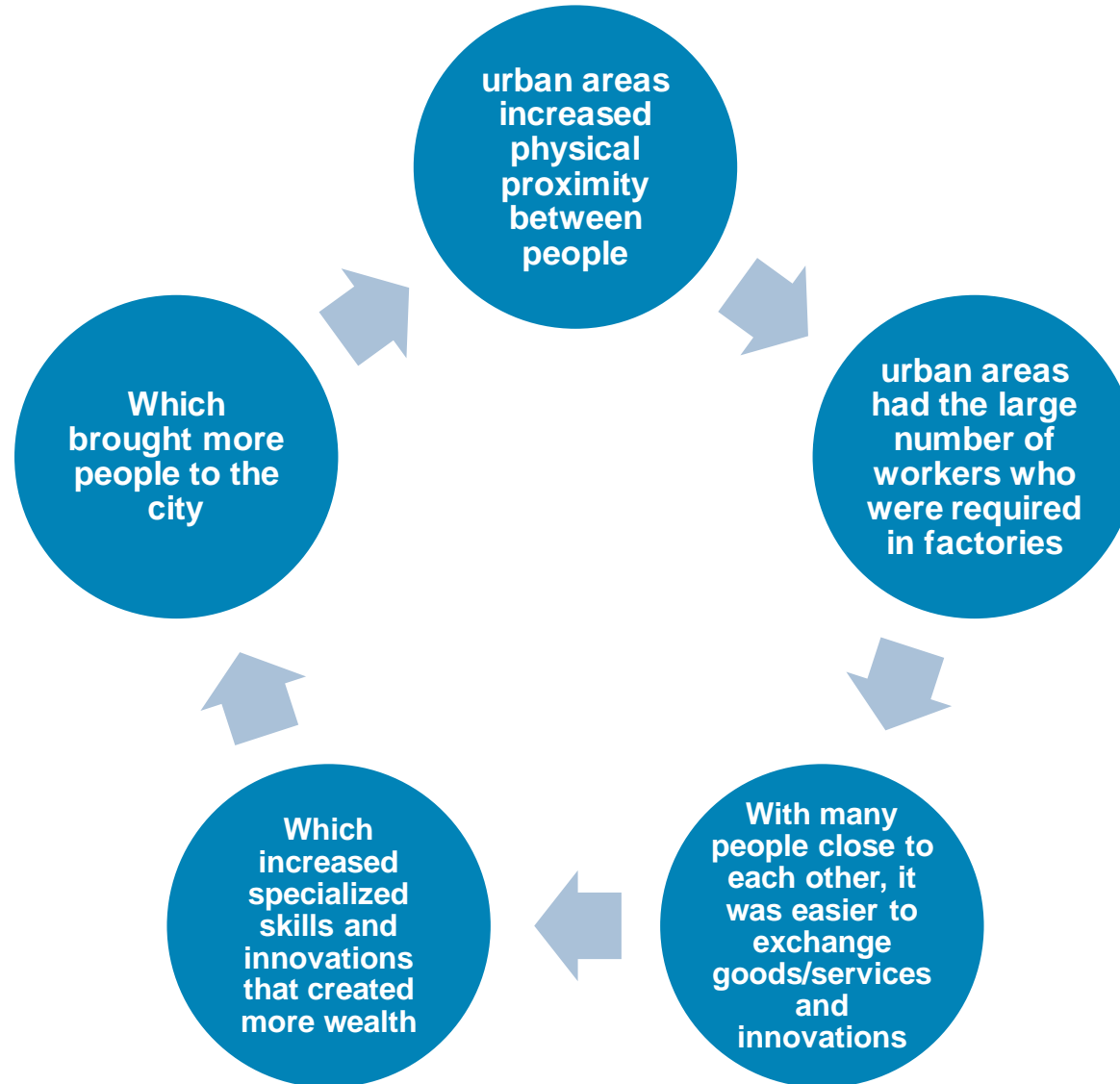


* Australia, New Zealand and Japan.

** Excluding Australia, New Zealand and Japan.



Urban Areas Attract People Because They Have Been Engines Of Wealth

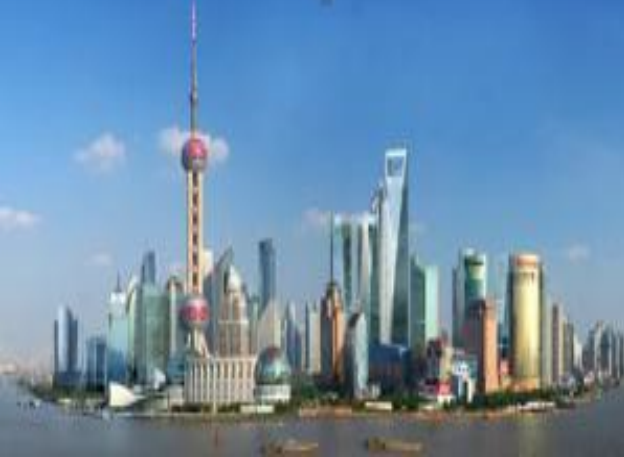


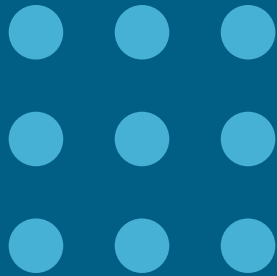
U.S. Employment Trends For The Last 100 Years

Thousands of employees and percent of total

	Employment 1900	Employment 2000	Percent 1900	Percent 2000
Agriculture	11,680	3,281	43.5 71%	2.4
Goods	7,252	25,710	27.0	18.8
Services	6,832	85,370	25.4	62.5 79%
Government	1,094	22,131	4.1	16.2
Total	26,858	136,492	100.0	100.0







The Current Transition



Where Did All The Office Workers Go?



“If I can make it there, I'll make it anywhere”



“Today, 36 percent of daily trades in stocks that are listed on the New York Stock Exchange are actually executed on the exchange, down from about 75 percent nearly four years ago. The rest of are conducted elsewhere, on new electronic exchanges ... half of the jobs there have disappeared over the last five years ...

“Unlike the Big Board, the new electronic exchanges are virtually unknown outside financial circles. Direct Edge, the largest, is in Jersey City. Another, the BATS Exchange, is based in Lenexa, Kan [picture above]. Both are only about five years old. But each now accounts for about a 10th of daily United States stock trading. “

– October 15, 2009 New York Times Front News Page

The Home Office



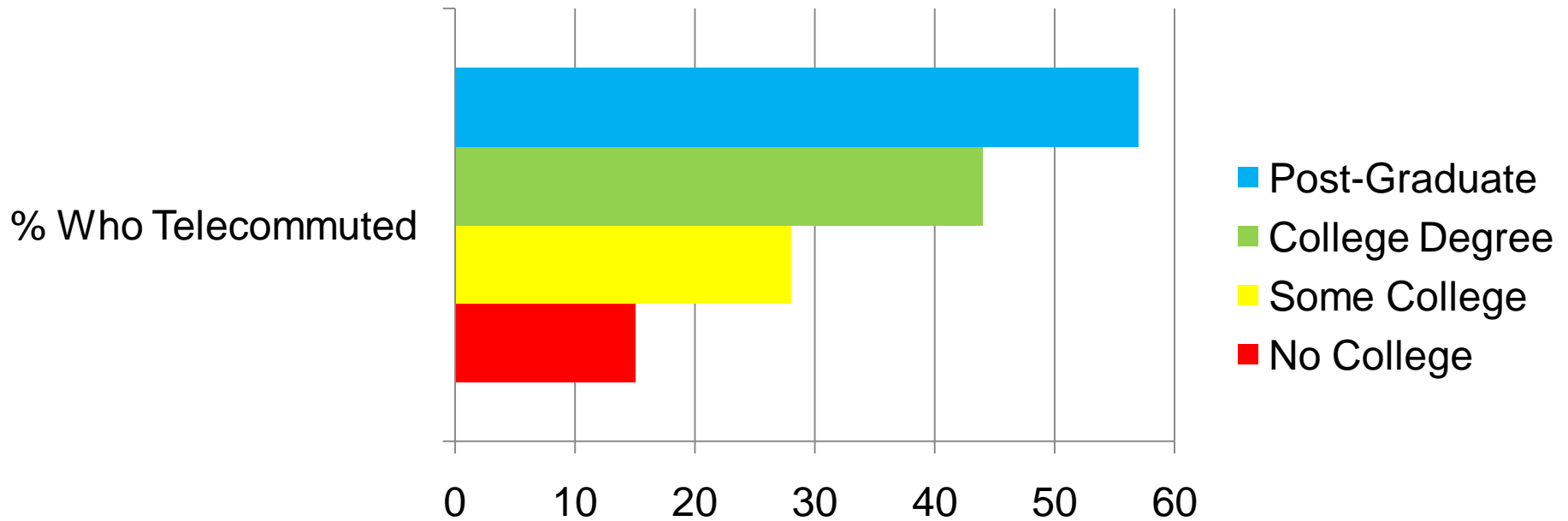
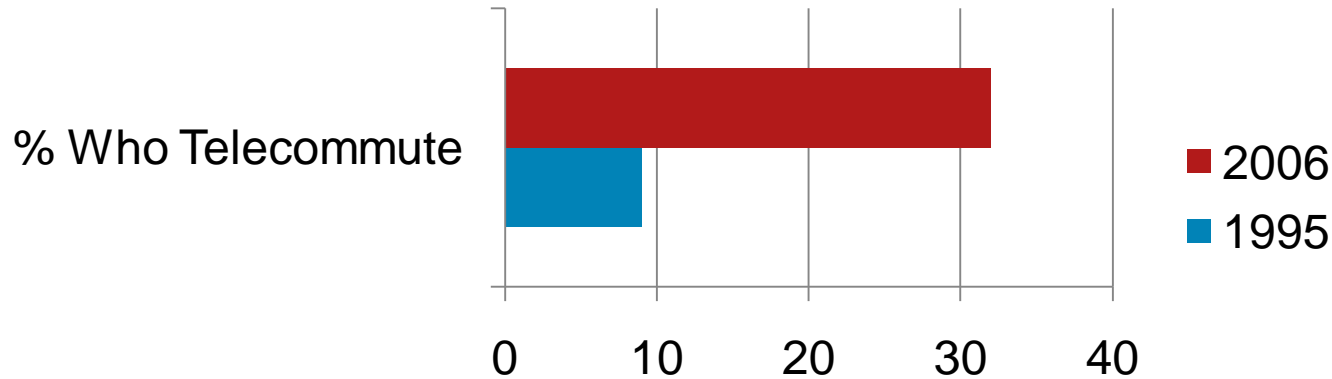
A Communications Network Revolution

Internet growth

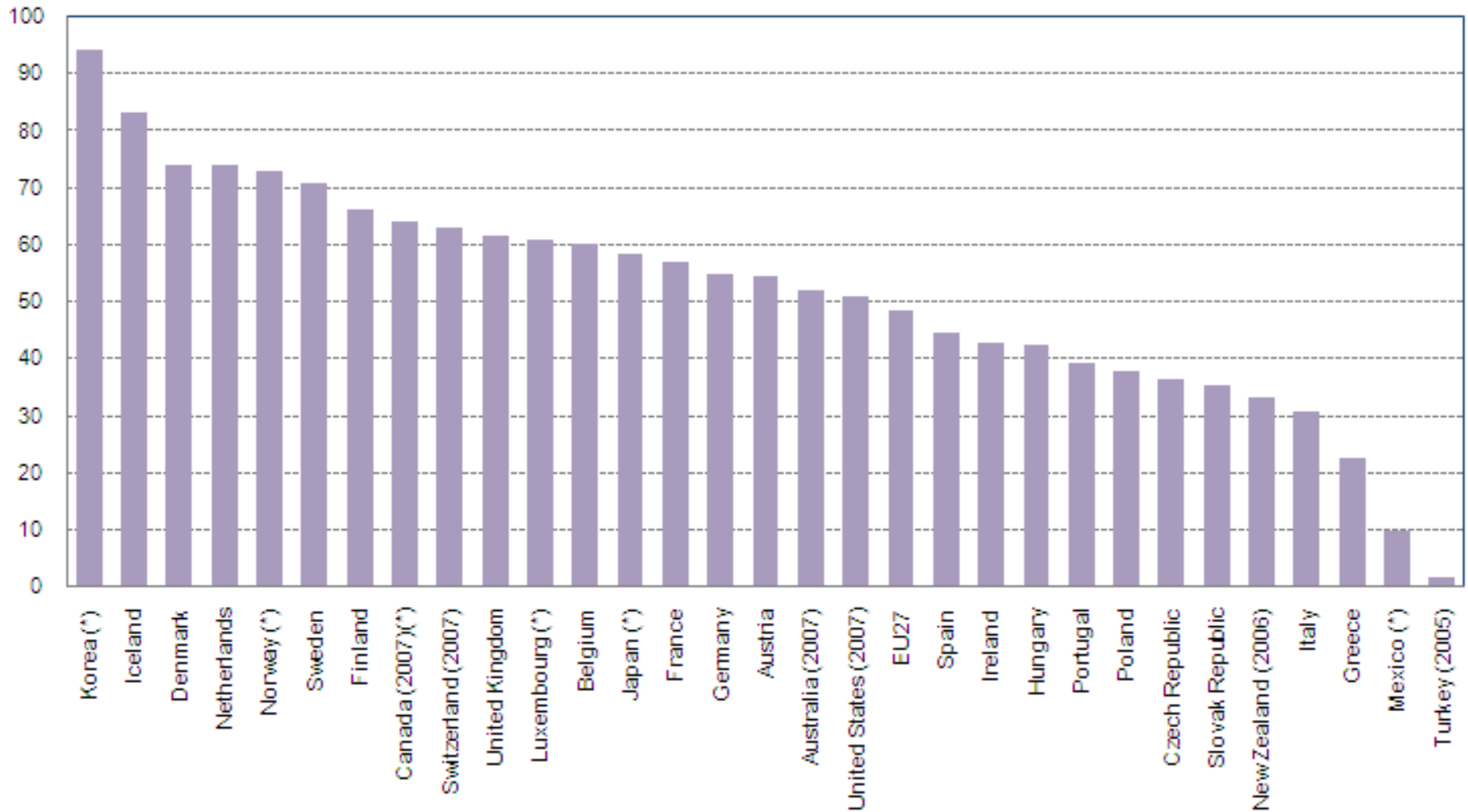
Broadband growth

Video growth

One in Three U.S. Workers Have Telecommuted to Work [2006]



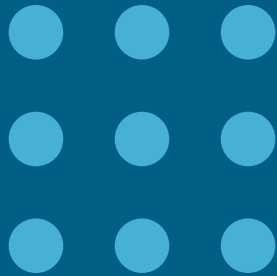
Percentage Of All Households With Broadband In 2008



Growth Results From The Human Collaboration That Networks Make Possible

“The public works projects that have the largest effect on economic growth are those that integrate markets in different areas of the country,”

-- Francisco Rodriguez, director of research at the Human Development Report Office of the United Nations and author of a recent study on the role of infrastructure investment on economic growth. New York Times Week In Review, November 29, 2009



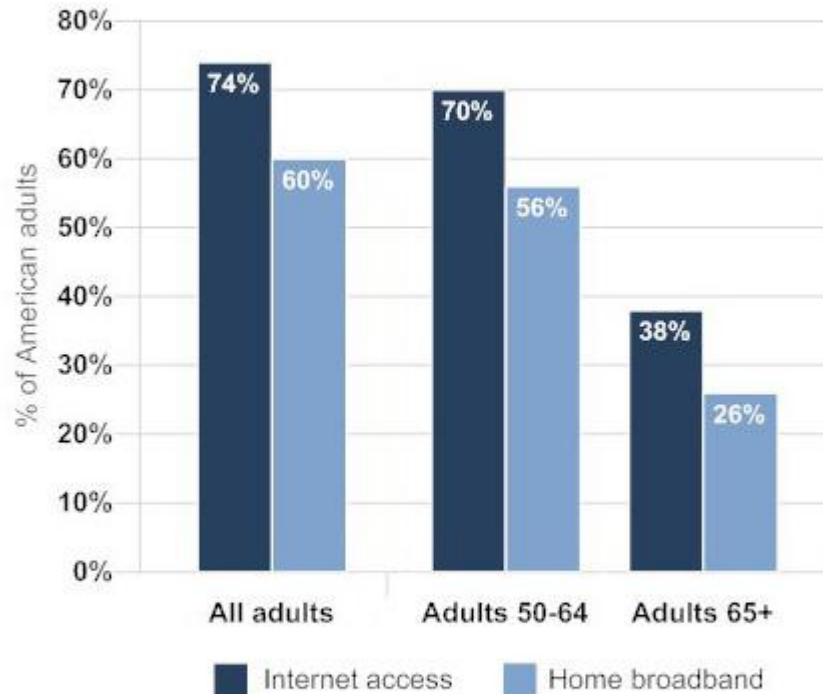
The Long-Lived Also Live And Work Online



“Four In Ten Seniors Go Online”

Seniors less likely to go online

As of December 2009, 38% of U.S. adults age 65 and older use the internet, a significantly lower rate of internet adoption than the general population (74%).



Source: The Pew Research Center's Internet & American Life Project, November 30-December 27, 2009 Tracking Survey. N = 2,258 adults, 18 and older, including 565 cell phone interviews. Interviews were conducted in both English (n=2,197) and Spanish (n=61). Margin of error is $\pm 2\%$.

More News Headlines

- **“The largest percentage increase in Internet use since 2005 has been in the 70-to-75 age group, according to the Pew Internet and American Life Project. The survey found that 45 percent of that age bracket is online, compared with 26 percent in 2005.”**
- **“All in the Facebook family: older generations join social networks**
CNN, April 13, 2009
- **“Seniors finding social networking exhilarating”**
The Dallas Morning News, October 12, 2009

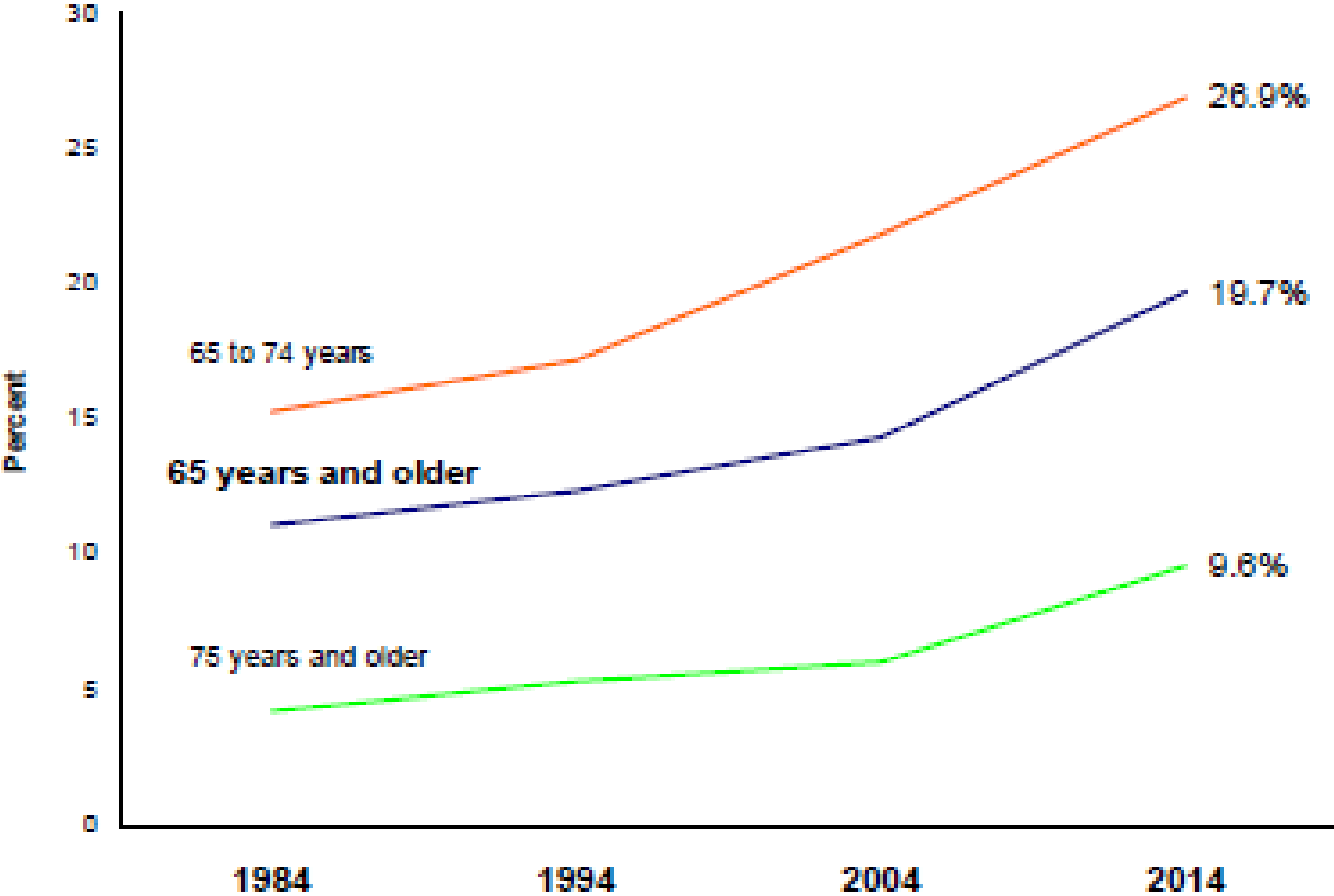


Attitudes About Working After Retirement

- **Current retirees who work for pay: 12%**
- **Current workers who expect to work for pay after retirement: 77%**
 - 60% because they want to; 30% because they have to**
- **“The latest Pew findings suggest that retirement is a phase of life about which public attitudes, expectations and experiences are in a period of transition.”**
- **“About one third of the retired people in Beijing want to keep on working to earn more and to stay in touch with society.” [Xinhua News]**



Labor Force Participation Rates [U.S.]



Source: Bureau of Labor Statistics, "Labor force projections to 2014: retiring boomers" (2005)



“Successful Seniors Who Won’t Retire”

Successful Seniors Who Won't Retire

17 of 67 ◀ ▶

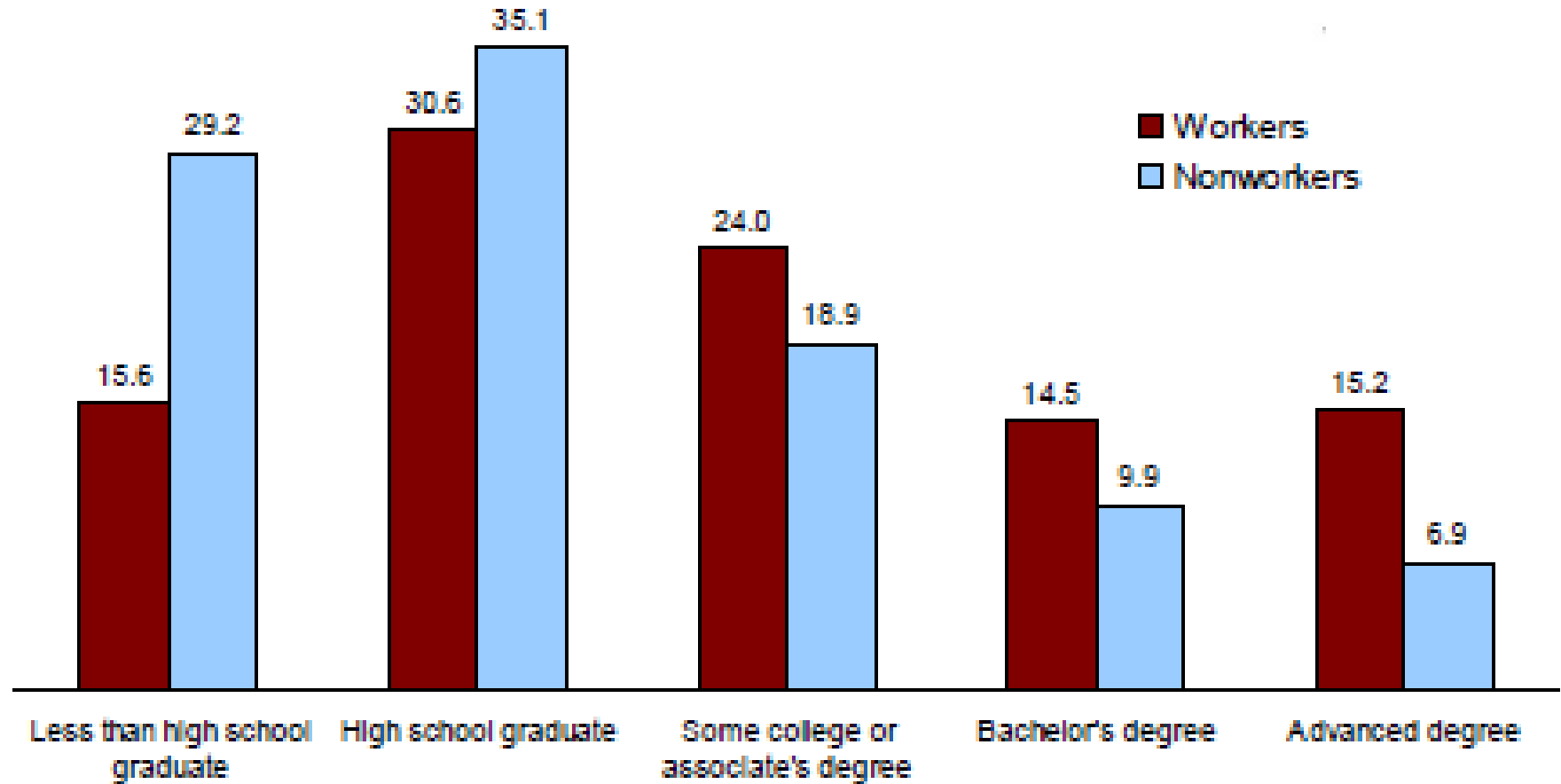


**Bloomberg
Businessweek**

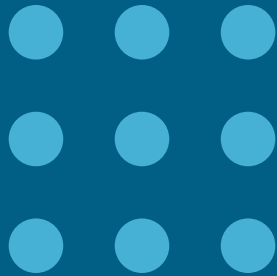


Older Workers Had Higher Educational Attainment Overall Than Older Non-workers

(Percent distributions of educational attainment by employment status)



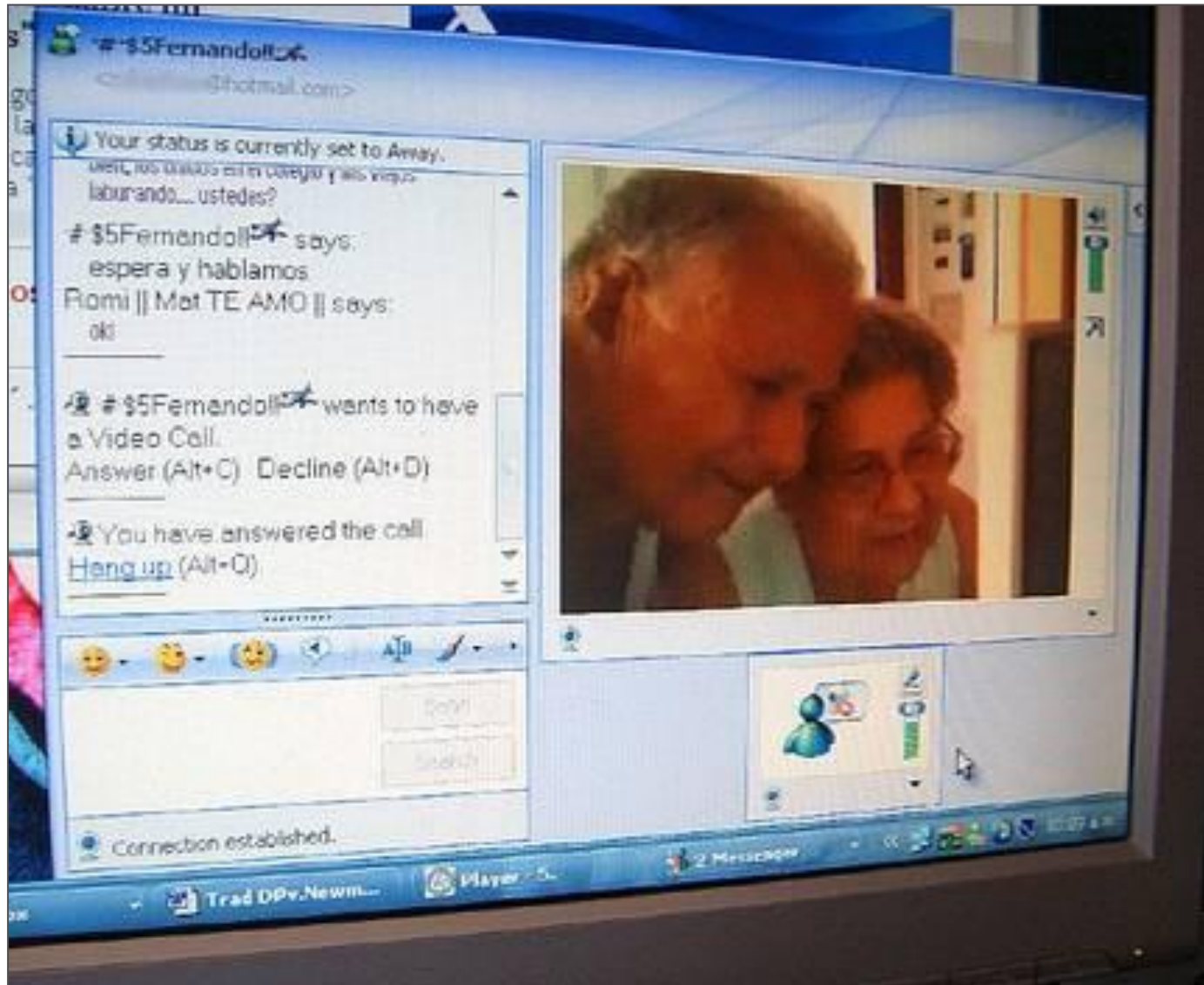
The labor force participation rate for older workers with advanced degrees (27%) was about three times as high as the rate for older workers with less than a high school education (8%).



Impact Of Ubiquitous Communications



Talking To The Grandkids 2007



High Definition Video-conferencing Will Be A “Game Changer”



The number of Telepresence systems will grow to 36,371 in 2013.

By 2013, global online video will be 60% of consumer Internet traffic up from 32 percent in 2009.

and it is only in the early stages now

It's Almost Like Being There



And You Can Be In Many Places In One Day

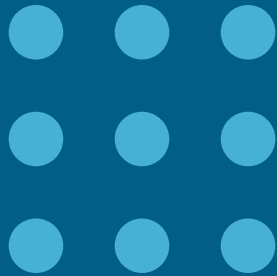


Not yet today, but by 2030

A world of ubiquitous, high quality visual communication and easy collaboration, enabling anyone anywhere to virtually meet anyone else anywhere else.

Where the majority of economic activity is no longer bound to a farm, factory or even a dedicated office building

Where not just people, but places are connected



Increasing The Connectivity And Intelligence Of Physical Places



Living In A Hybrid Physical & Virtual World

- We will live in more connected and thus more intelligent physical environments
- The physical world will become ever more intermixed with the virtual



Walls That Understand You



Environments That React To You



**When people
are sitting on the sofa**



The Responsive Home/Office/Shop Connects Universal Design To The Ubiquitous Network

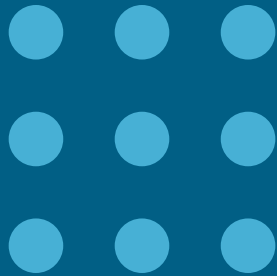
- **Universal design principles will apply to the hybrid physical and virtual space**

The combination will make universal design much more powerful

- **For example, Tele-health can be built into the environment where people live**

Built-in prevention and detection of falls among adults





The Future Nature Of The Economy And Work



The Laws Of Economics Will Not Change

- **Economic growth will still depend upon:**
 - Differentiation of the skills of people so everyone is producing the most for society**
 - Creation of new knowledge and innovations, which results in new products/services or enhances productivity in producing existing products/services**
- **These, in turn, will still depend upon communications and collaboration among many, diverse people**
- **What changes is that physical proximity will no longer be the only or dominant way to connect people**



Traditional Companies Will No Longer Be The Source Of Lots Of Jobs & Economic Growth



The monolithic 20th century company has been breaking down:

- **Global supply chains & outsourcing**
- **Contractors instead of employees**
- **Global presence instead of one main location**
- **“Company moves” move no jobs**
- **Decreasing impact of tax incentives**

The Individual Increasingly Becomes The Unit Of Economic Activity



As the costs of coordinating activity goes down, more small and flexible teams are likely

More individuals will have more choice in where they live since they can take their economic activity wherever they go



Business Support Services Also Become Reachable Around The Globe

Business support services will become within reach of people in more locations than in the past ...

From any other city to the people in your city



Economically Successful People Will Be Connected To A Growth Ecosystem



In a networked world, the business services that support entrepreneurs and innovators will become much more widely available

The best university research will be available through the network

Even capital will flow globally and be widely available

To support local economic growth, it will be necessary to make sure that entrepreneurs are connected to these services and funds.



The Most Important Learning Will Be After People Have Left Classrooms



Unlocking Knowledge,
Empowering Minds.

Free lecture notes, exams,
and videos from MIT.
No registration required.

> Learn more

"When I realized I could follow along with an MIT course... I thought, 'I can handle this!'"

Ali Sheikh
Student
United States

> Read more



In A Knowledge Economy Innovators Will Do Best

"[A] really wonderful book."
—MALCOLM GLADWELL,
author of *Blink*

David W. Galenson

OLD MASTERS

and

YOUNG GENIUSES

The Two Life Cycles of Artistic Creativity

“Creativity can be divided into these types -- conceptual and experimental.”

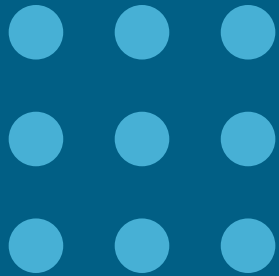
Galenson “brings together a vast array of evidence to better understand the nature of creative production over time”

“ at the not-so-tender age of 55, [he] has fashioned something audacious and controversial: a unified field theory of creativity. Not bad for a middle-aged guy.”

LATE BLOOMERS

Why do we equate genius with precocity?

by Malcolm Gladwell



Experiencing Life



**When most people can work
anywhere, where will they
choose to live and work?**

**This is the key question for local
economic strategy in 2030.**



Many People Will Choose Where To Live Based On Quality Of Life



What your city has done to attract tourists is a good start. In the future, those attractions will be what attracts people to live and stay in your city



Quality Of Life Means Different Things

There is general agreement on what is low quality of life



But different people desire different qualities, so each city can find its own ideal residents by enhancing some of its qualities

Quality Of Life Includes The Social And Citizen Experience

- **Does government provide a collaborative experience for the citizen?**

Especially the citizen of long standing who is most involved in civic affairs

- **Are those citizens of long standing valued?**

As a community resource and

As a source of knowledge and wisdom in a knowledge age

- **Example of Oakland County, Michigan, USA**



People Will Live Anywhere If They Can Get Quality Health Care



Telehealth and telecare make even remote areas viable

Sometimes, all it takes is a bit of imagination on the part of physicians and public leaders



Virtual Social Interaction Combined With Better Health



The Vermont Telecare for Rural Health Project

- **Two-way interactive tai-chi exercise class for those over 70.**
- **"We know that exercise is helpful for senior patients, but we can't get to them. And we know that Tai Chi helps keep seniors healthy, increases their well-being and balance."**

Health Maintenance For Chronic Diseases

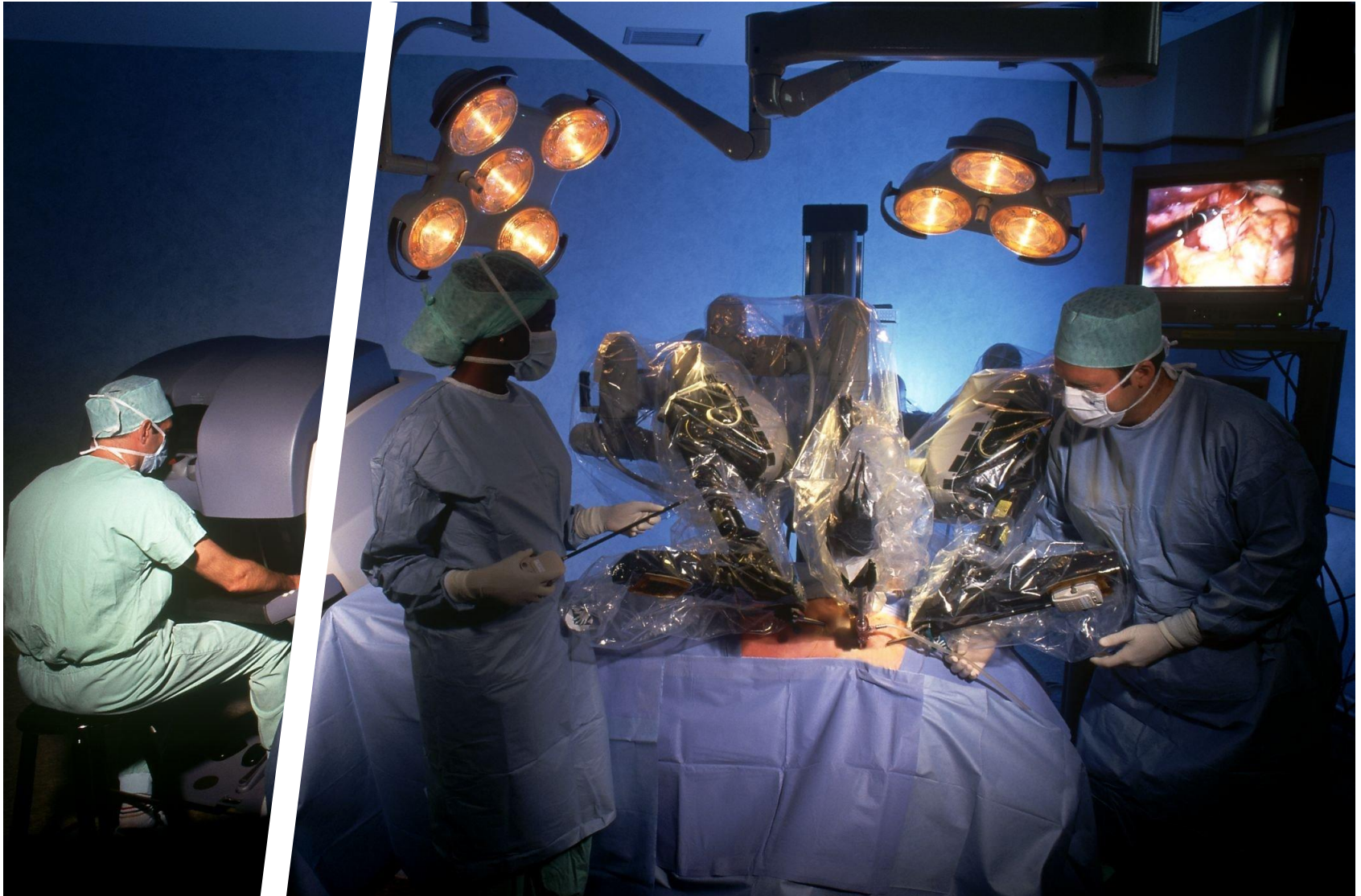


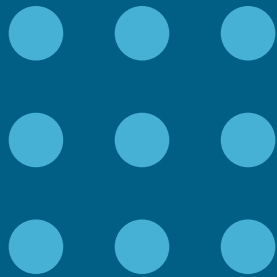
Remote Diagnosis & Consultation



**Especially
for massive
amounts of
data, such
as Radiology
PACS**

Remote Surgery





Diminishing The Handicaps Of The Long-Lived



Overcoming Obstacles To A Full Life

- **Lack of mobility**

Not as necessary with virtual mobility

- **Presumed loss of memory**

Intelligent devices remind everyone of their tasks now

With search tools and data bases, do we need to remember everything?

- **Poor health**

Catch problems quicker so they can be treated quicker

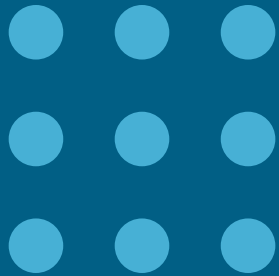


The New Equation

$$e = (mc)^2$$

**Enhancement of life experience
results from **more connectivity**
which leads to **more choices.****





Thank You!

