



Idaho Industrial Commission
Annual Conference
29 October 2015 - Boise, ID



*“Observe how he has made a breast out of his back.
In life he wished to see too far ahead of him,
And now he must crab backwards round this track.”*

Dante Alighieri, *The Inferno* (Canto XX, Circle Eight – The Fortune Tellers and Diviners)

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**Shaking the Foundations of
Workers' Compensation**

LYNCH RYAN TECH

Thesis

There is now happening in America a seismic collision between rapidly accelerating artificial intelligence, an eight year old stagnant economy, profound and continuing wage and earnings losses and a generational shift in how employment is viewed. This threatens not only the more than one-hundred year old workers' compensation system, but also labor itself.



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The Players

- Industry-wide, rapidly accelerating artificial intelligence
- The New Normal Economy
- Aging Baby Boomers
- The rise of the Millennials
- The coming of "Emerging Adults"



The Players

- **Industry-wide, rapidly accelerating artificial intelligence**
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Let's examine a few industries to demonstrate the ever-accelerating movement toward AI

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First: Automotive

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200 BCE



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2,000 Years Later

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The Model T - 1908 - 1927



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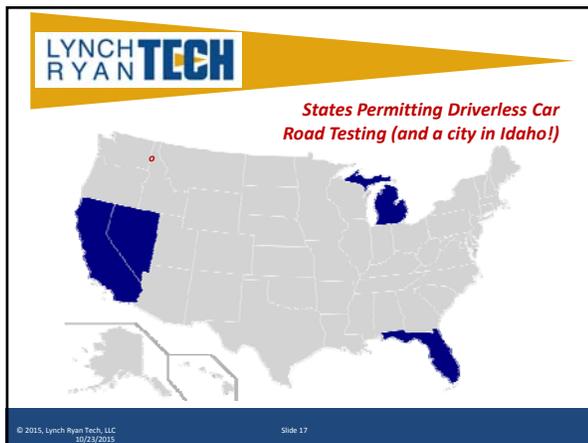
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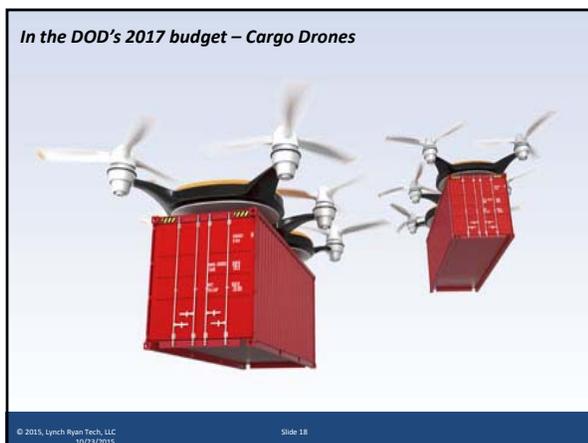
The Model T Assembly Line - 1913



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Railway

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600 BCE – The Diolkos Wagonway – Pulled by horses and used to haul boats across the Isthmus of Corinth – 8.5 km. Ran on grooves in limestone. Wagonways flourished until the collapse of the Roman Empire. ~1,000 years.

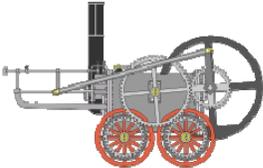
~1550 – Minecarts, pulled by horses, ran on primitive wooden rails to haul iron ore from mines in Wales.

1603 – Huntington Beaumont creates 1st above ground railway. Still wagons on wooden rails pulled by horses

1605 – 1st true railway (funicular railway) carried coal from James Clifford's mines to river barges in Shropshire.

1799 – Iron edge rails introduced to replace the wooden variety.

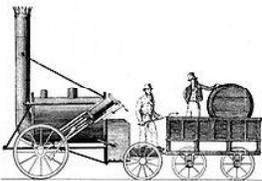
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Richard Trevethnic's Puffing Eagle, 1802. The 1st full-scale working steam locomotive. It made the world's first railway journey on 21 February 1804 in South Wales, UK, hauling 10 tons of iron.

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George Stephenson's "Rocket," built in 1829. Winner of the Rainhill Trials. This success enabled Stephenson's company to become the pre-eminent builder of steam locomotives used in the UK, the US and much of Europe.

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The Last Spike – 1869.



A golden spike to culminate the 1st transcontinental railroad across the United States

Photo - Andrew J. Russell, Promontory Summit, Utah

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1603 – 1869 (266 yrs)



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1879 – 10 years later

The 1st electric passenger train, created by Werner von Siemens in Berlin. The train, consisting of a locomotive and 3 cars, could reach a speed of 13 kilometers per hour.



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135 Years Later

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The Siemens Driverless Electric Train



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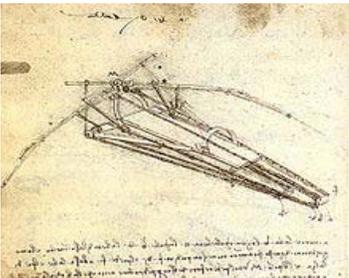
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Aviation

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Leonardo Da Vinci's Ornithopter – circa 1502



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The French pioneered hot air balloon manned flight in the mid to late 18th century. Benjamin Franklin reported watching daredevil pilots while in Paris in 1777.

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1789

French Reconnaissance Balloon, L'Intrépide, the oldest existing manned flying device, now housed in the Heeresgeschichtliches Museum in Vienna.



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114 Years Later

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The Wright Brothers 1st Flight – December, 1903



Kitty Hawk, North Carolina – Orville Wright the Pilot

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11 Years Later

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1914



The 1st flight of a commercial airline was in a Benoist airboat piloted by Tony Janus.

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13 Years Later

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1927



Charles Lindbergh and The Spirit of St. Louis.

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25 Years Later

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1952



The de Havilland Comet, the world's 1st passenger jet airliner

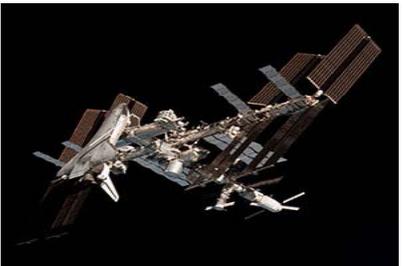
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56 Years Later

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The International Space Station



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The Space Station was built in 10 years – from 1997 to 2008.

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The International Space Station

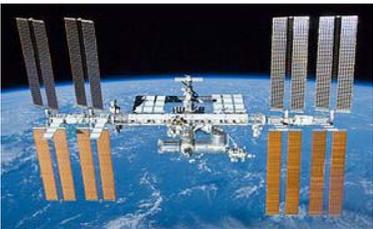


Photo taken 23 May 2010 by departing crew of Atlantis

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It took 105 years to get from Kitty Hawk to the space station.

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The "Blue Marble" – First photo ever taken of earth, 7 December 1972, by the crew of Apollo 17 at a distance of 28,000 miles (45,000 kilometers)

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*The first Selfie!
And it happened in 1966! In Space!
Buzz Aldrin, during a space walk on Gemini 12
Yes, before Apollo there was Gemini*

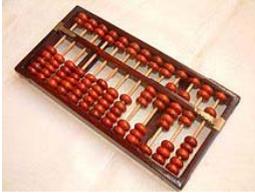
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**Calculation
And
Computerization**

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The 1st hand-held calculator – The Abacus. Dating from 2700 BCE. The originals were beans or stones moved in grooves on tablets of wood.

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4330 Years Later

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William Oughtred (1575 – 1660), invented the Slide Rule in 1632 after John Napier's publication of the concept of the logarithm.

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The Slide Rule

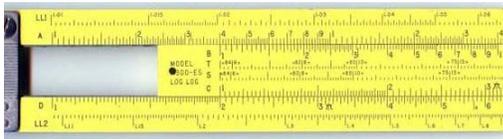


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The Slide Rule – A little Closer

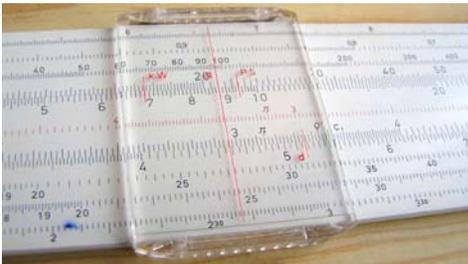


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The Slide Rule – Even Closer



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340 Years Later

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Texas Instruments DataMath – Sep, 1972. This was the 1st commercially-available, consumer-oriented hand-held calculator. It was able to add, subtract, multiply and divide. It retailed for \$149.95, which is about \$330 in today's dollars.

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The first Desktop Computer – and it's not an Apple!

This is the Programma 101, made by Olivetti in 1964.

Priced at \$3200 (\$23,000 in today's dollars), 45,000 were sold, 90% in the US.

Launched at the 1964 New York World's Fair, NASA bought 10 to help plan the Apollo 11 Moon Landing.

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12 Years Later 1976

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The Apple Computer 1



Designed and hand-built by Steve Wozniak.

His friend, Steve Jobs, thought they might be able to sell them.

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39 Years Later

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iPhone 6S

iPhone 6S

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Moore's Law

In 1965, Gordon Moore, co-founder of Intel, predicted that computing power would double approximately every two years. It did. He has now revised his prediction to two and a half years through the next decade.

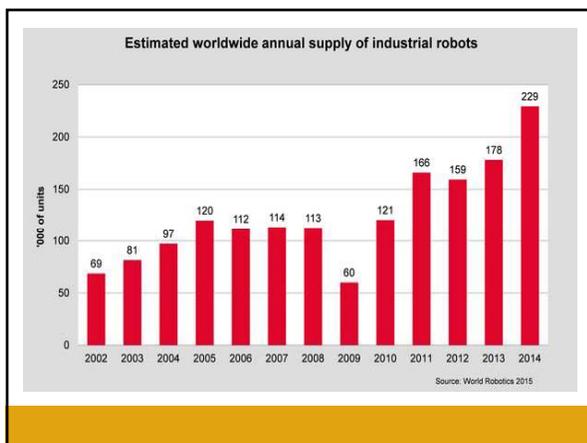
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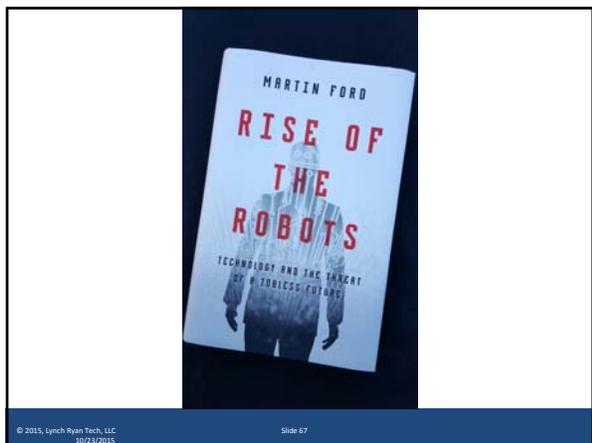
The Players

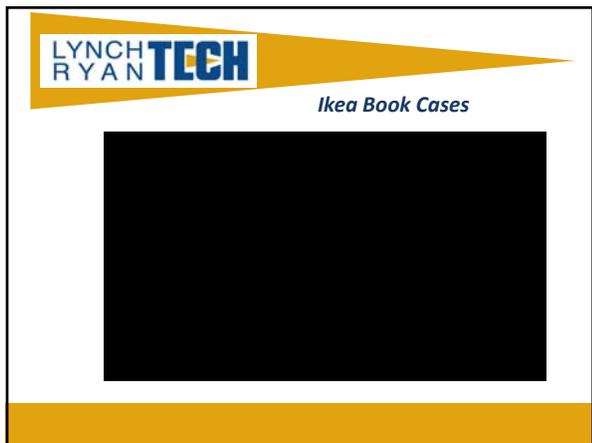
- Industry-wide, rapidly accelerating artificial intelligence
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- The coming of "Emerging Adults"



During the first three years of the recession, American employers laid off 16% of their workers.









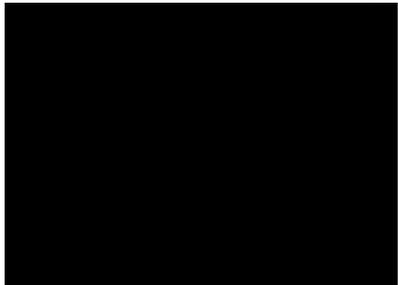
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Watson...



LYNCH RYAN **TECH**

Watson...



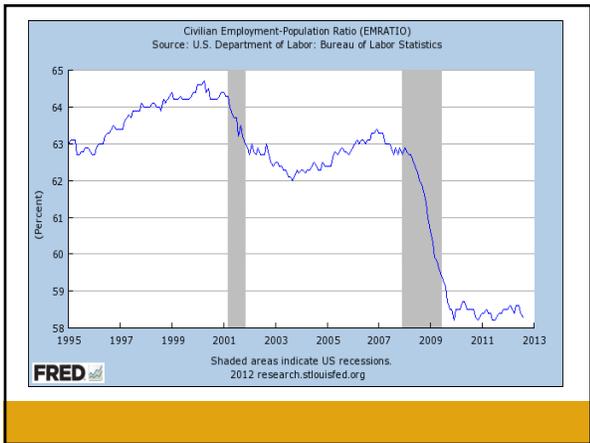
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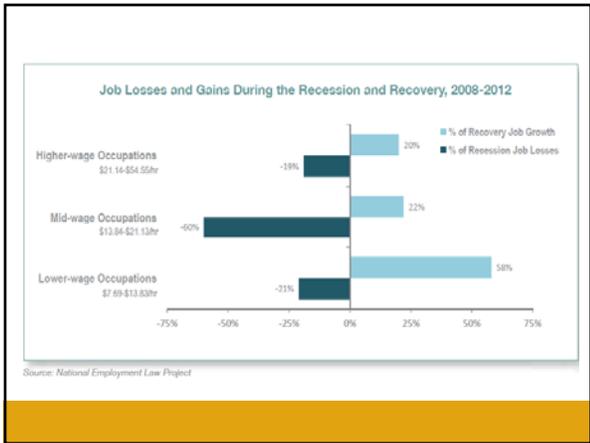
Watson2...





As human involvement becomes more and more engineered out of many jobs, we are left with a question: What is the future of employment?







Average Weekly Earnings – Private Sector
In constant 1984 dollars

1973	\$341
2012 (Dec)	\$295

In this 40 year period, during which earnings declined 13%, productivity rose 107%

Source: Bureau of Labor Statistics

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Average Hourly Wages – Private Sector
In constant 1984 dollars

1973	\$9.26
2012 (Dec)	\$8.76

Source: Bureau of Labor Statistics

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Average Weekly Hours – Private Sector

1973	36.9
2012 (Dec)	33.7

Source: Bureau of Labor Statistics

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Wage & hourly average weekly earnings from SSA
16 years and over - adjusted to CPI in 1982-1984 \$\$

Year	Qtr1	Qtr2	Qtr3	Qtr4
2004	337	341	335	337
2005	336	334	331	332
2006	332	329	334	337
2007	336	335	336	332
2008	335	335	331	340
2009	345	345	345	344
2010	344	342	342	341
2011	338	336	335	335
2012	335	337	332	334
2013	332	334	333	334
2014	336	330		



The Future of Employment: How Susceptible Are Jobs to Computerization?

Carl Benedikt Frey, Ph.D., Oxford Martin School, Program on the Impacts of Future Technology and Michael A. Osborne, Ph.D., Oxford Martin School, Department of Engineering Science, Oxford University Press, September, 2013

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Conclusion

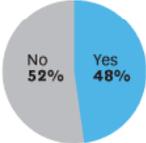
47% of U.S. jobs are "at risk" of computerization by 2025

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EXPERTS ARE DIVIDED ON WHETHER ROBOTS WILL DISPLACE MORE JOBS THAN THEY CREATE

Will networked, automated, artificial intelligence applications and robotic devices have replaced more jobs than they have created by 2025?



Response	Percentage
No	52%
Yes	48%

SOURCE PEW RESEARCH CENTER **HBR.ORG**

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The Increasing Complementarity Between Cognitive and Social Skills

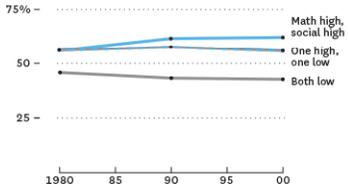
Catherine Weinberger, Ph.D., University of California at Santa Barbara, The Review of Economics and Statistics, December, 2014

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THOSE WITH HIGH MATH AND SOCIAL SKILLS EARN MORE
The importance of having both skills has risen over time.

AVERAGE PERCENTILE RANK IN EARNINGS DISTRIBUTION AMONG YOUNG MEN AGED 24-29



Year	Math high, social high	One high, one low	Both low
1980	~55	~52	~48
1985	~58	~53	~49
1990	~62	~54	~50
1995	~65	~55	~51
2000	~68	~56	~52

SOURCE CATHERINE WEINBERGER **HBR.ORG**

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The Growing Importance of Social Skills in the Labor Market

David Deming, Ph.D., The National Bureau of Economic Research, August, 2015

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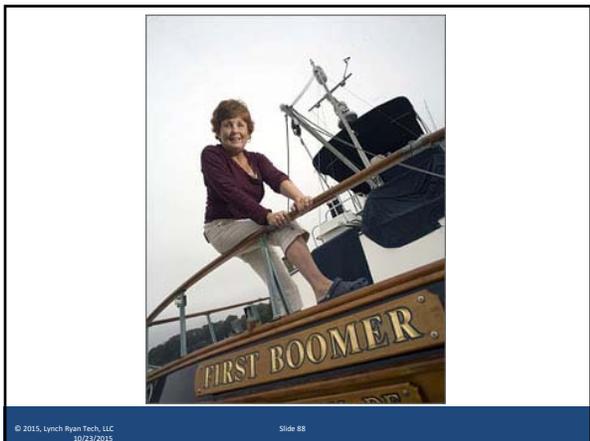
Nearly all job growth since 1980 has been in occupations that are relatively social skill-intensive — high-skilled, hard-to-automate jobs will increasingly demand social adeptness.

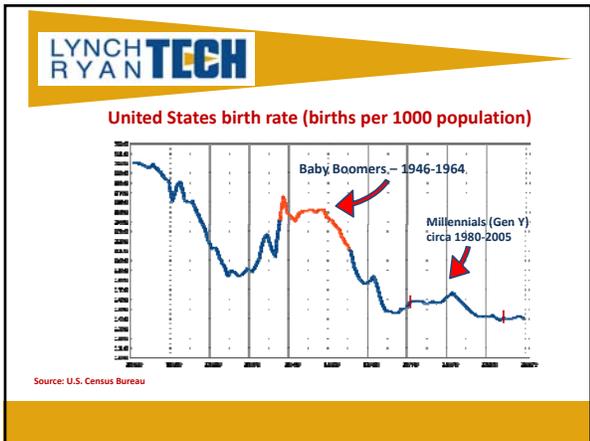
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The Players

- Industry-wide, rapidly accelerating artificial intelligence
- The effects of the Great Recession on employers and employees
- **Aging Baby Boomers**
- The rise of the Millennials
- The coming of “Emerging Adults”





-
- Some characteristics of Baby Boomers**
- They were born on the peak of affluence and privilege
 - They are extremely hardworking
 - They define self worth by work and professional accomplishments
 - They are motivated by high positions and prestige
 - They have a strong belief in individualism
 - They are self-reliant, independent and confident
 - They think GenYers lack work ethics and workplace commitment
 - Television was their "new technology"
 - They don't multi-task and they don't want to; to them, it's stupid



One Last Baby Boomer Characteristic

They run insurance companies, TPAs, law firms, state regulatory agencies and most of the client companies of these organizations.



On The Other Hand...

Every seven seconds another baby boomer retires.



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Some characteristics of Millennials

- Millennials expect technology to simply work—so you'd better make sure that it does... and mobile is the technology closest to their hearts.
- They are a social generation and are constantly networking
- They're passionate about values – including the values of companies they work for and/or do business with, and Trust is the value they value most. This makes transparency at work important
- They need constant feedback and seek leadership and structure, as well as instant gratification and recognition. They're not called the Me, Me, Me Generation for nothing
- They are multitasking pros (but social media easily distracts them)

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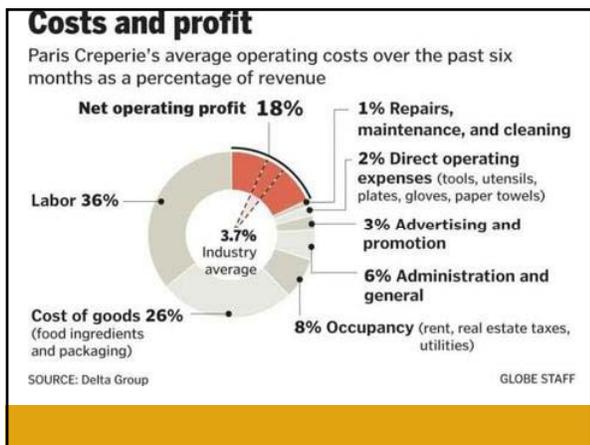
From a report by the San Francisco Federal Reserve Bank

"Just four low-wage sectors now make up nearly 12 percent of the workforce: retail sales, cashiers, office clerks, and food preparation and service workers. These occupations are crucial to the support and growth of major industries across the country, but many of these workers do not earn enough to adequately support their families, even at a subsistence level."





Paris Creperie, Brookline, Massachusetts
Photo: Josh Reynolds, Boston Globe



Yesterday's Most Basic Workers' Comp Problem:

The longer injured workers stay out of work, the harder it is for you to bring them back.

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What People Think Is Today's Most Basic Workers' Compensation Problem

How do you contain medical costs, because when "injured" workers stay out of work they run up big medical bills (maybe to justify/rationalize staying out of work?).

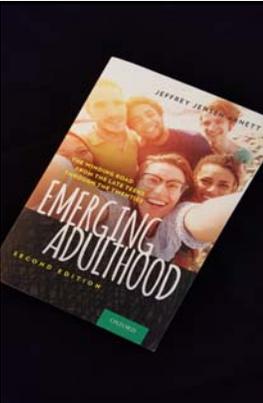
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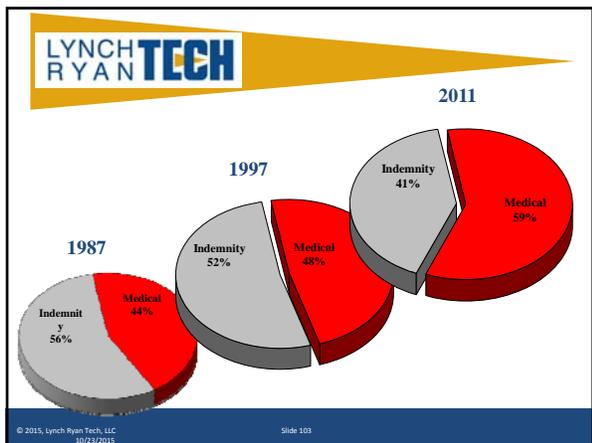
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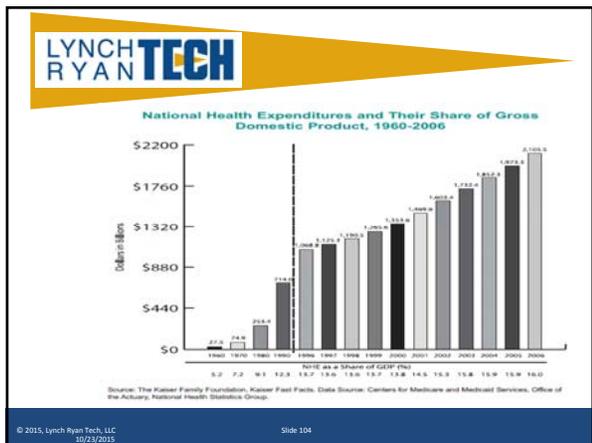
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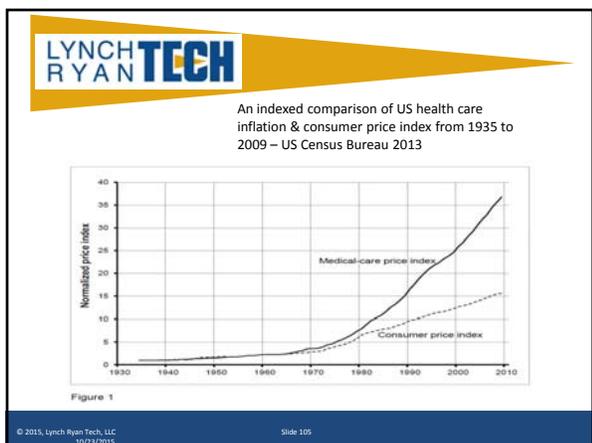
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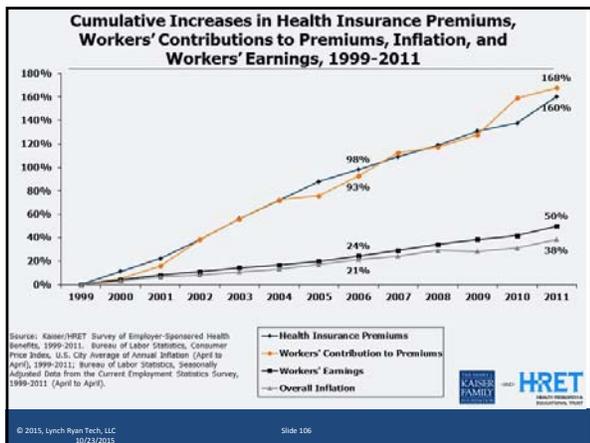


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Stein's Law

If something cannot go on forever, it will not.

Or

Trends that can't continue, won't.

Workers' Comp

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