Notable Grand Rounds
of the
Michael & Marian Ilitch
Department of Surgery

Wayne State University
School of Medicine

Detroit, Michigan, USA

James G. Tyburski, MD

THE GOOD OLE DAYS

October 16 , 2024

About Notable Grand Rounds

These assembled papers are edited transcripts of didactic lectures given by mainly senior residents, but also some distinguished attending and guests, at the Grand Rounds of the Michael and Marian Ilitch Department of Surgery at the Wayne State University School of Medicine.

Every week, approximately 50 faculty attending surgeons and surgical residents meet to conduct postmortems on cases that did not go well. That “Mortality and Morbidity” conference is followed immediately by Grand Rounds.

This collection is not intended as a scholarly journal, but in a significant way it is a peer reviewed publication by virtue of the fact that every presentation is examined in great detail by those 50 or so surgeons.

It serves to honor the presenters for their effort, to potentially serve as first draft for an article for submission to a medical journal, to let residents and potential residents see the high standard achieved by their peers and expected of them, and by no means least, to contribute to better patient care.

David Edelman, MD
Program Director
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and

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The Good Ole Days

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Grand Rounds presentation

Michael & Marion Ilitch Department of Surgery
Wayne State University School of Medicine

October 16, 2024

Note: Dr. Tyburski's slides containing figures, tables, and references are included as an Appendix hereto.

Introduction

Over the past four decades, the field of surgery has undergone significant transformations. As a surgeon who has lived through these changes, I have witnessed firsthand the shifts in techniques, technologies, and patient care that have defined modern surgery. From the advent of laparoscopic procedures to the introduction of robotic surgery, the landscape has continually evolved, often with initial skepticism followed by eventual widespread adoption.

At the same time, the broader healthcare environment—including public health advances, medical education, and compensation for surgeons—has also transformed. While some argue that the "good old days" of medicine were superior, I would argue that patient care, outcomes, and technological innovation are better now than ever before, despite the challenges faced by the current generation of medical professionals.

This paper offers reflections on these changes, combining personal anecdotes with broader data-driven observations, in an effort to examine where we have been and where we are heading.

Life Expectancy and Mortality Rates: Progress and Challenges

One of the most notable changes in healthcare over the past 40 years is the steady increase in life expectancy. From 1980 to 2020, life expectancy in the United States rose significantly, though it took a brief dip during the COVID-19 pandemic. By 2023, life expectancy had begun to rebound, signaling a return to the pre-pandemic upward trend. In addition to this improvement in life expectancy, the age-adjusted death rate has also seen a sharp decline, dropping from over 1,800 deaths per 100,000 in the 1930s to around 700 per 100,000 today.

This improvement is not limited to younger populations. Mortality rates have decreased across nearly all age groups, with the most significant improvements seen in individuals under 14 years old, largely due to advances in infectious disease prevention, vaccination, and prenatal care. Even older age groups have seen notable declines in mortality, driven by better management of chronic diseases and improvements in medical technology.

However, not all diseases have seen equal progress. Certain cancers, particularly lung and bronchus cancers, continue to present significant challenges, despite reductions in smoking rates and advances in treatment. Still, the overall trend is positive, with survival rates improving for many types of cancer, including prostate, breast, and colon cancer.

Cancer Prevalence and Survival in the United States

As the population ages, the prevalence of cancer has increased, particularly among individuals aged 75 and older. However, alongside this increase in prevalence, we have seen substantial improvements in survival rates across many types of cancer. In 1975, for example, the five-year survival rate for prostate cancer was around 67%. By 2023, that figure had risen to over 99%, thanks to advances in early detection and treatment.

Other cancers, such as colon and breast cancer, have also seen improvements in survival rates, though some, like esophageal cancer, continue to have poor outcomes. The fear of cancer recurrence at surgical port sites, particularly with laparoscopic procedures, was a concern when laparoscopy first became popular. However, data has since debunked this concern, demonstrating that laparoscopic and robotic procedures are just as safe, if not safer, than open surgery.

Public health initiatives have also played a significant role in reducing cancer-related mortality. For example, the widespread adoption of colonoscopies and other screening techniques has allowed for earlier detection of colon cancer, leading to better outcomes for patients. As the data from the last several decades show, these interventions have made a significant difference in improving survival rates across the board.

Improvements in Patient Care and Outcomes

One of the most significant trends in surgery over the past 40 years has been the improvement in patient outcomes, particularly for more complex and sicker patients. Today's surgeons are caring for patients with higher levels of acuity than ever before, yet they are achieving better results. For example, in the early 2000s, severe sepsis cases increased by 71%, yet the mortality rate from sepsis decreased by 2% per year over a five-year period.

The rise in patient acuity is evident across various specialties. Spinal fusion surgeries, once performed primarily on younger patients, are now commonly performed on older adults with more comorbidities. Advances in surgical techniques, anesthesia, and postoperative care have allowed for better outcomes, even in these more complex cases. Ultrasound-assisted vascular access, for example, has become the standard of care for placing central lines, significantly reducing complications and improving success rates.

Technological advancements, such as endovascular surgery and the use of cardiac stents, have also revolutionized pa-

tient care. Procedures that were once highly invasive, such as open aortic aneurysm repairs, are now performed endovascularly, resulting in quicker recovery times and fewer complications. Similarly, cardiac stents have replaced many coronary artery bypass surgeries, allowing patients to avoid more invasive procedures while still benefiting from effective treatment.

Financial Challenges and the Rising Cost of Medical Education

While patient outcomes have improved, the financial landscape for surgeons and medical students has become more challenging. One of the most significant changes over the past several decades has been the dramatic increase in the cost of medical education. Historical data from institutions like the University of Pennsylvania show that in 1960, medical school tuition was around $1,200 per year, or about $12,000 in today's dollars. However, the actual cost of attending medical school at a private institution today is closer to $60,000 per year.

The rising cost of education has led to a significant increase in student debt. Many medical students graduate with six-figure loans, creating financial pressure that extends well into their professional careers. At the same time, the relative earning power of surgeons has decreased. For example, in 1975, the average salary for a general surgeon was around $61,000, which would be equivalent to approximately $358,000 today. However, current average salaries for general surgeons are closer to $250,000, meaning that surgeons today are effectively earning less, while also facing higher levels of debt.

This financial burden is compounded by changes in reimbursement rates for surgical procedures. Between 1990 and 2005, reimbursement rates for many types of surgery, particularly vascular procedures, declined significantly. This has made it more difficult for surgeons to maintain the same level of financial stability as previous generations, even as they continue to achieve better patient outcomes.

The Role of Mentorship in a Surgical Career

Throughout my career, several key mentors have shaped my approach to surgery, pushing me to think critically and embrace new ideas. Dr. Phil Clark, the burn director at SUNY Upstate, sparked my initial interest in surgery, while Dr. Bram, a former chairman of our Department, introduced me to the academic side of the field. Finally, Dr. Robert Wilson, my mentor in Detroit, instilled in me the importance of continuous learning and the pursuit of excellence.

Each of these individuals played a significant role in my development as a surgeon, demonstrating the value of mentorship in shaping one's career. Dr. Wilson, in particular, taught me that it doesn't matter where the data takes you—as long as you are chasing excellence and open to learning, you will find success.

Technological Advancements and the Future of Surgery

Looking to the future, it is clear that the pace of technological change in surgery will only continue to accelerate. Robotic surgery, once considered an experimental technique, has now become commonplace, and its use is likely to expand further in the coming years. Artificial intelligence (AI) is also poised to play a transformative role in surgery and medical education, though it remains to be seen exactly how these technologies will be integrated into practice.

One thing is certain: the next generation of surgeons will face challenges similar to those we encountered with the introduction of laparoscopic surgery. They will need to adapt quickly to new technologies, learn new techniques, and continue to push the boundaries of what is possible in patient care.

Conclusion

Over the past four decades, the field of surgery has evolved significantly, with advancements in technology, diagnostic techniques, and patient care leading to better outcomes for increasingly complex and sicker patients. The rise of laparoscopic and robotic surgery, the integration of ultrasound, and the adoption of electronic medical records have all contributed to this transformation.

At the same time, medical education has become significantly more expensive, placing financial strain on students and graduates. Compensation for surgeons, when adjusted for inflation, has decreased, adding to the financial pressures faced by the current generation of medical professionals.

Despite these challenges, the future of surgery remains bright. Every generation of surgeons has faced its own obstacles, and the current one will be no different. However, with advancements in technology and a commitment to excellence, today's surgeons are well-equipped to continue pushing the field forward.

As UCLA basketball coach John Wooden famously said, "It's what you learn after you know it all that really counts." This mindset will serve the next generation of surgeons well as they navigate the rapidly changing landscape of medicine and continue to build on the progress we have made.

* * *

The Good Ole Days…

October 16, 2024

James G. Tyburski, MD
Professor of Surgery
Wayne State University

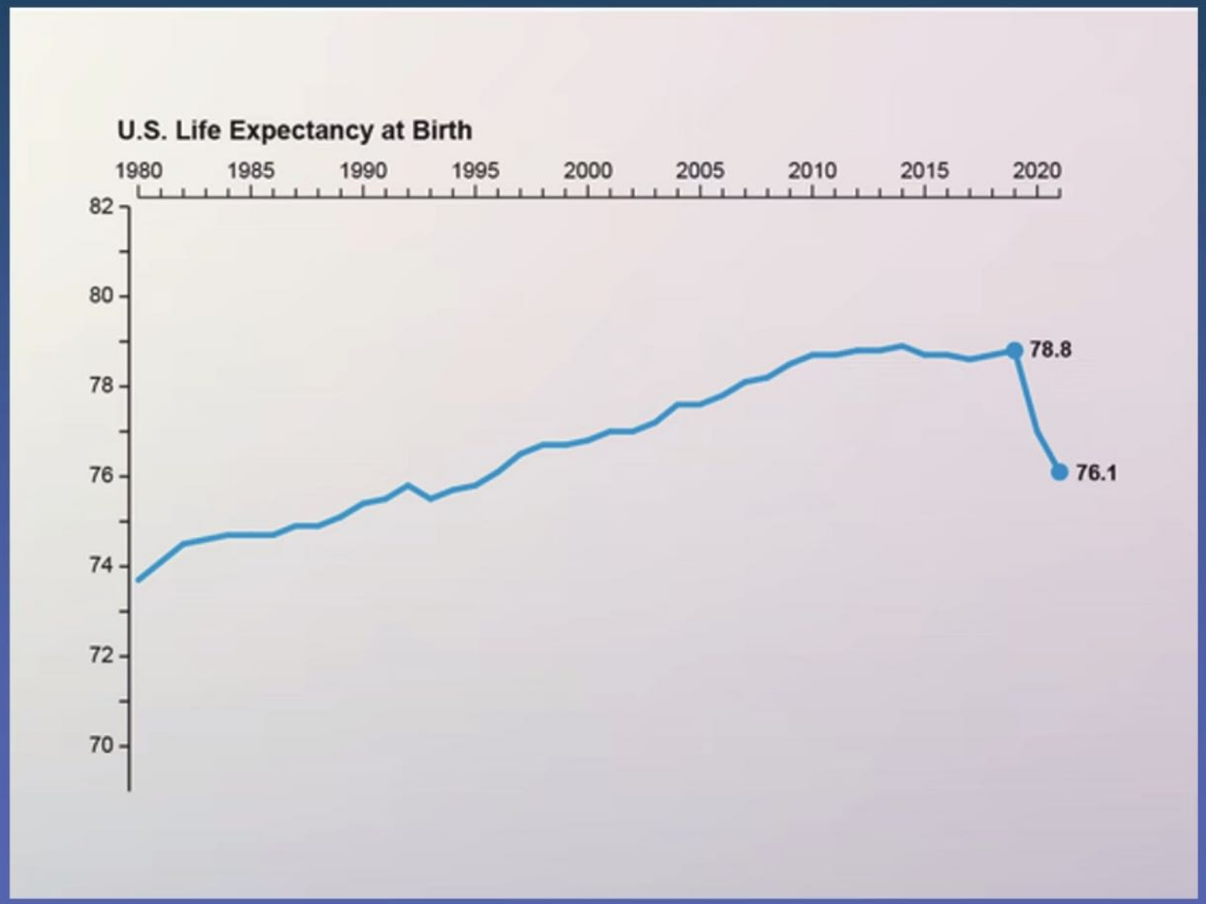
"The world is passing through troublous times. The young people of today think of nothing but themselves. They have no reverence for parents or old age. They are impatient of all restraint. They talk as if they knew everything, and what passes for wisdom with us is foolishness with them."

"The world is passing through troublous times. The young people of today think of nothing but themselves. They have no reverence for parents or old age. They are impatient of all restraint. They talk as if they knew everything, and what passes for wisdom with us is foolishness with them."

(Peter the Hermit, 1274)

The good ole days weren't always good,
and tomorrow ain't as bad as it seems.
Billy Joel

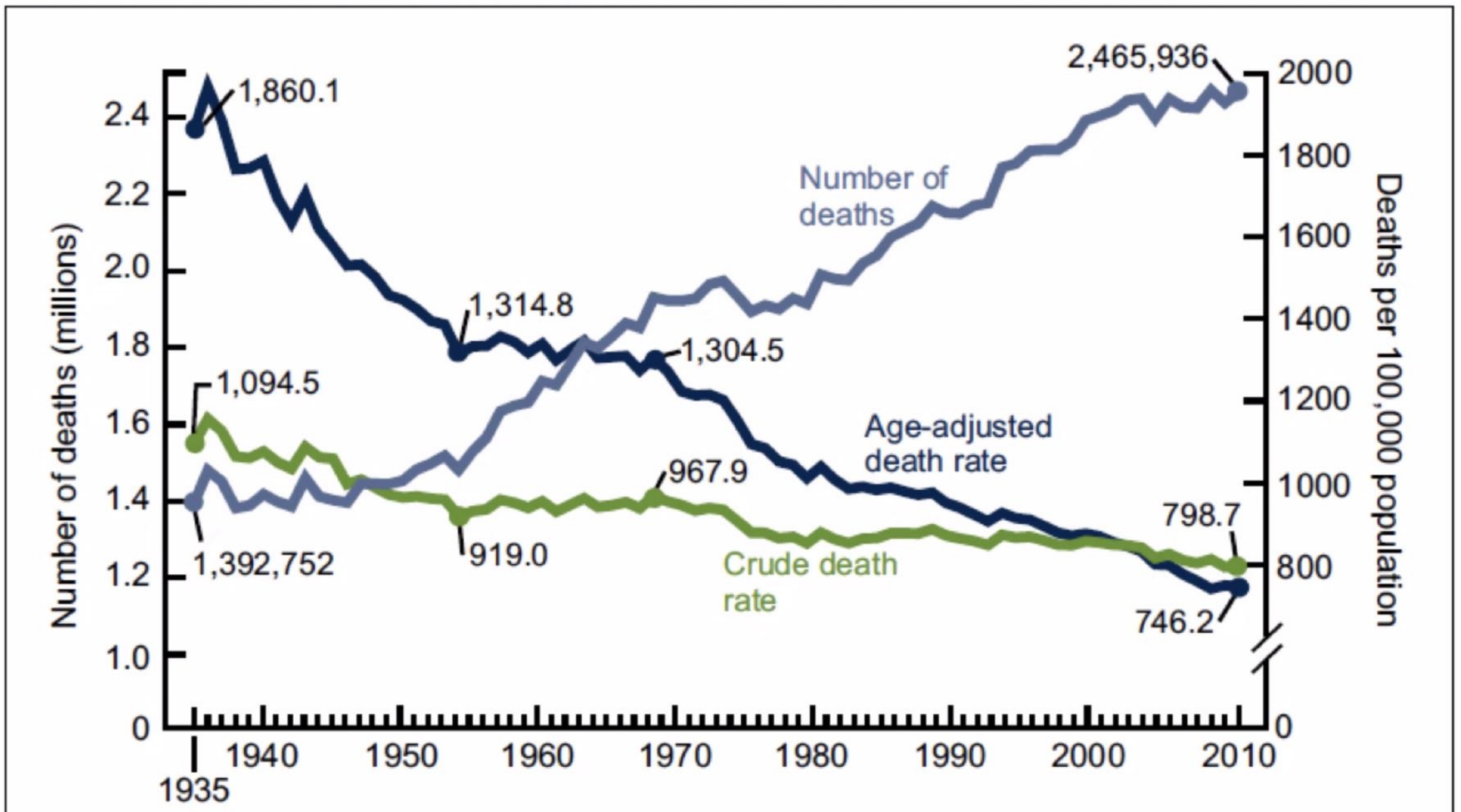
In the vast majority of measurable outcomes, things have improved in and out of the surgical environment.



2023 79.11

Although the number of deaths increased over the 75 years, the risk of dying decreased.

Figure 1. Number of deaths, crude and age-adjusted death rates: United States, 1935–2010

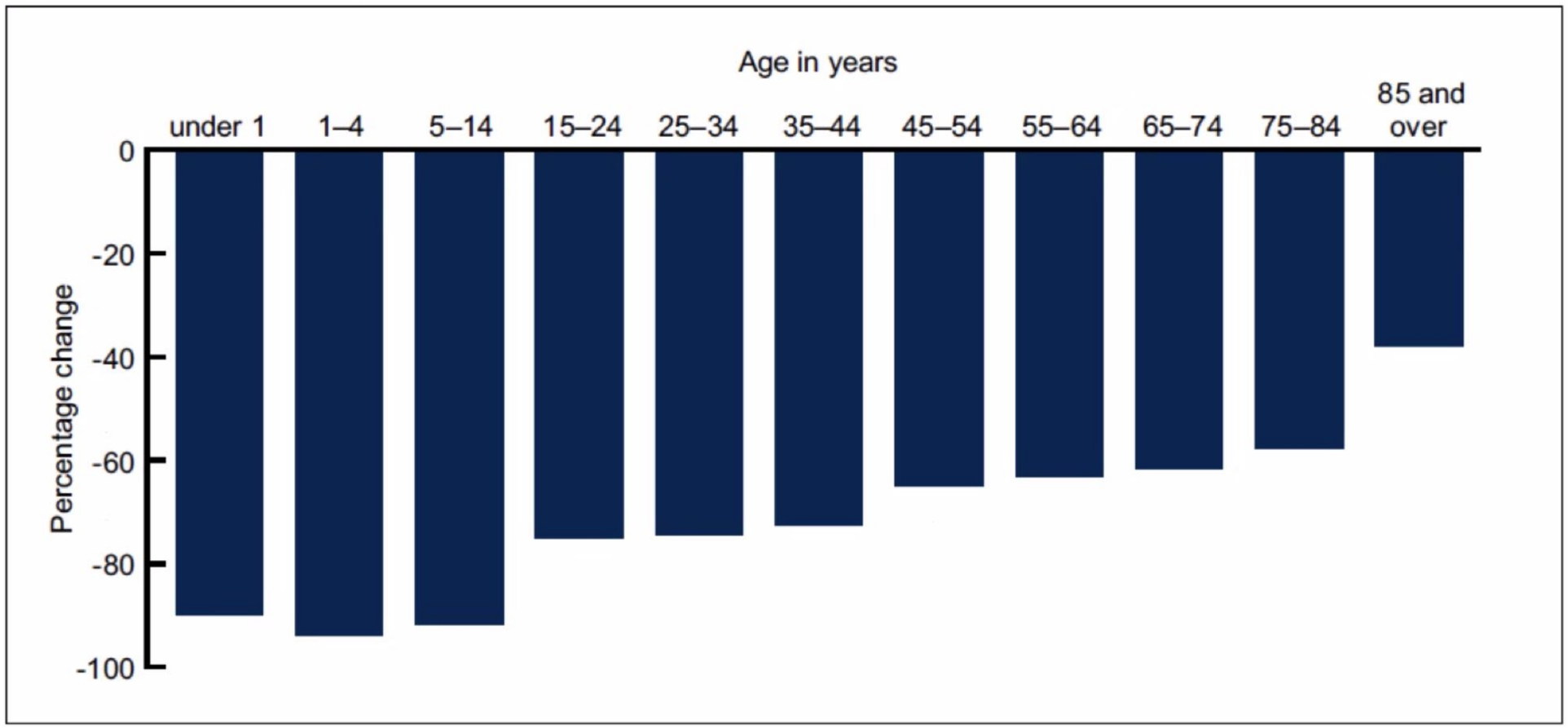


NOTES: 2010 data are preliminary. Crude death rates on an annual basis are per 100,000 population; age-adjusted rates are per 100,000 U.S. standard population. Rates for 2001–2009 are revised and may differ from rates previously published.

SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

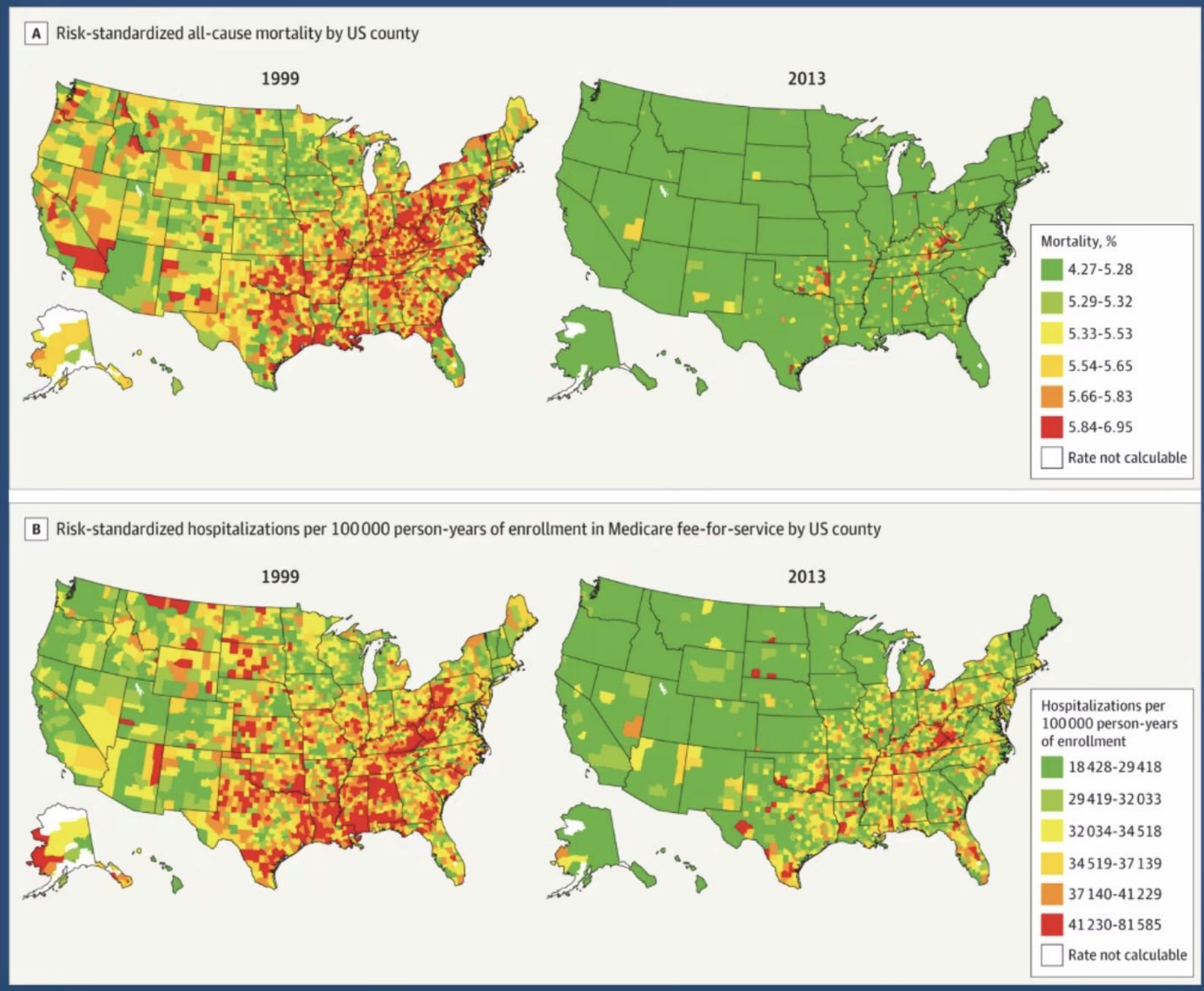
The decrease in death rates over the 75 years varied by age.

Figure 3. Percentage change in death rates by age: United States, 1935–2010



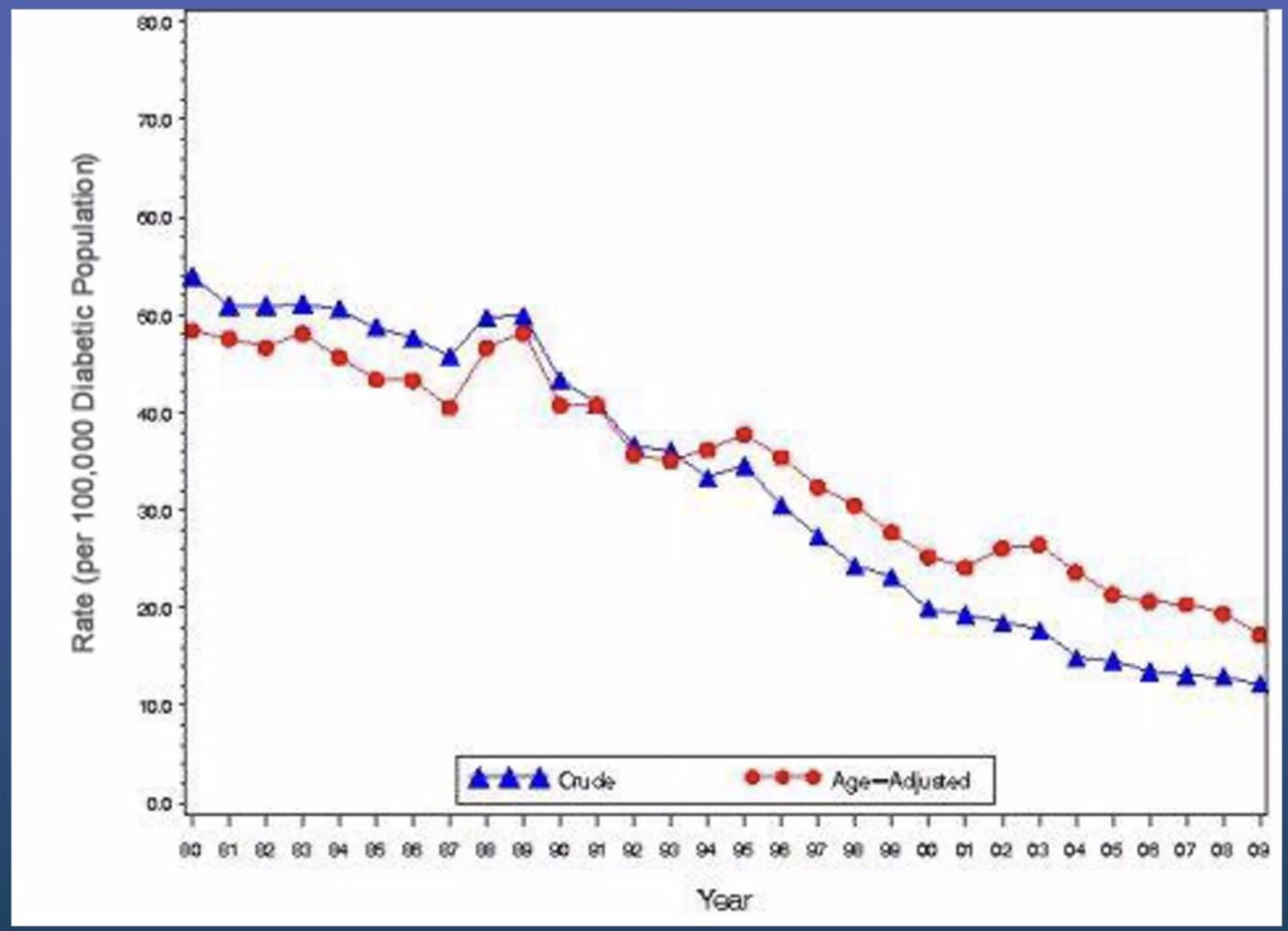
NOTE: 2010 data are preliminary.
SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

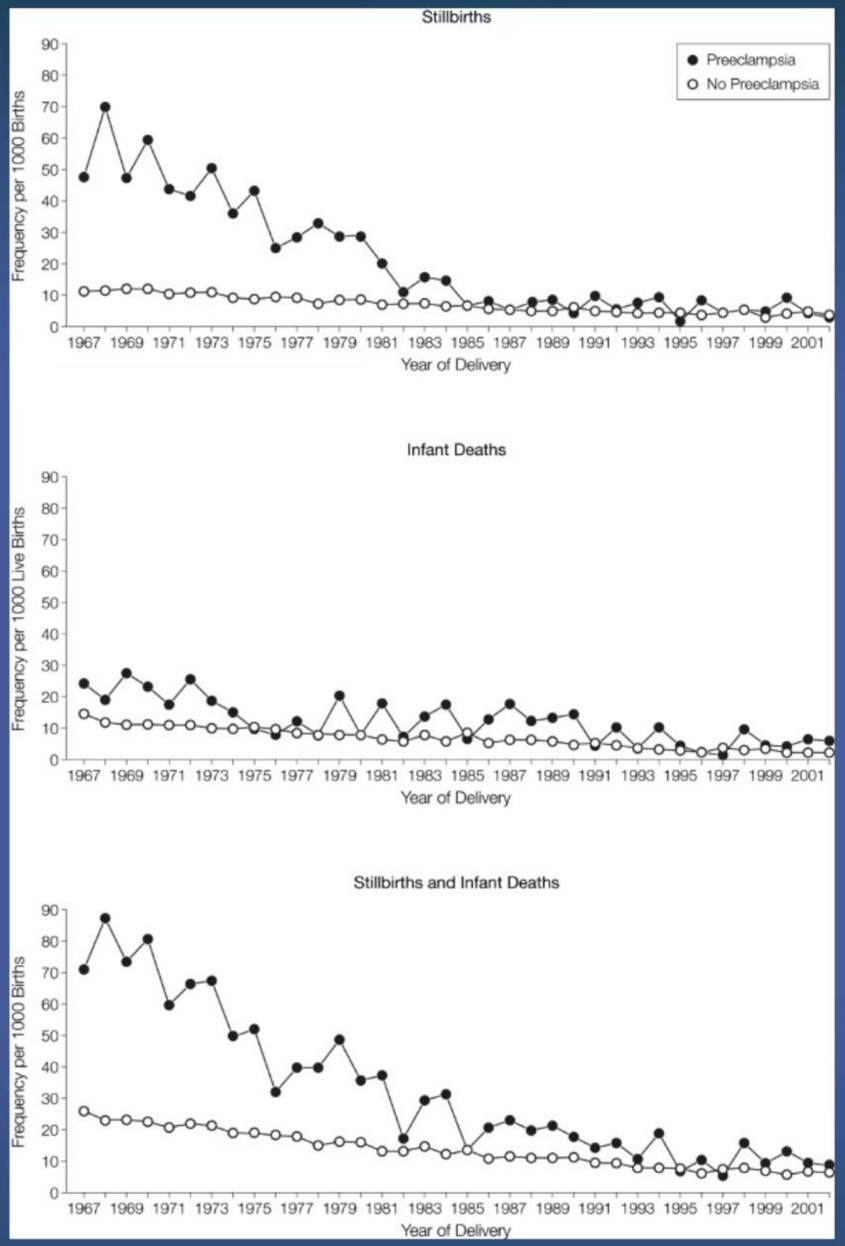
Trends in Risk-Standardized All-Cause Mortality and Hospitalizations Among Fee-for-Service Beneficiaries for Individual US Counties, 1999-2013.



From: Mortality, Hospitalizations, and Expenditures for the Medicare Population Aged 65 Years or Older, 1999-2013 JAMA. 2015;314(4):355-365

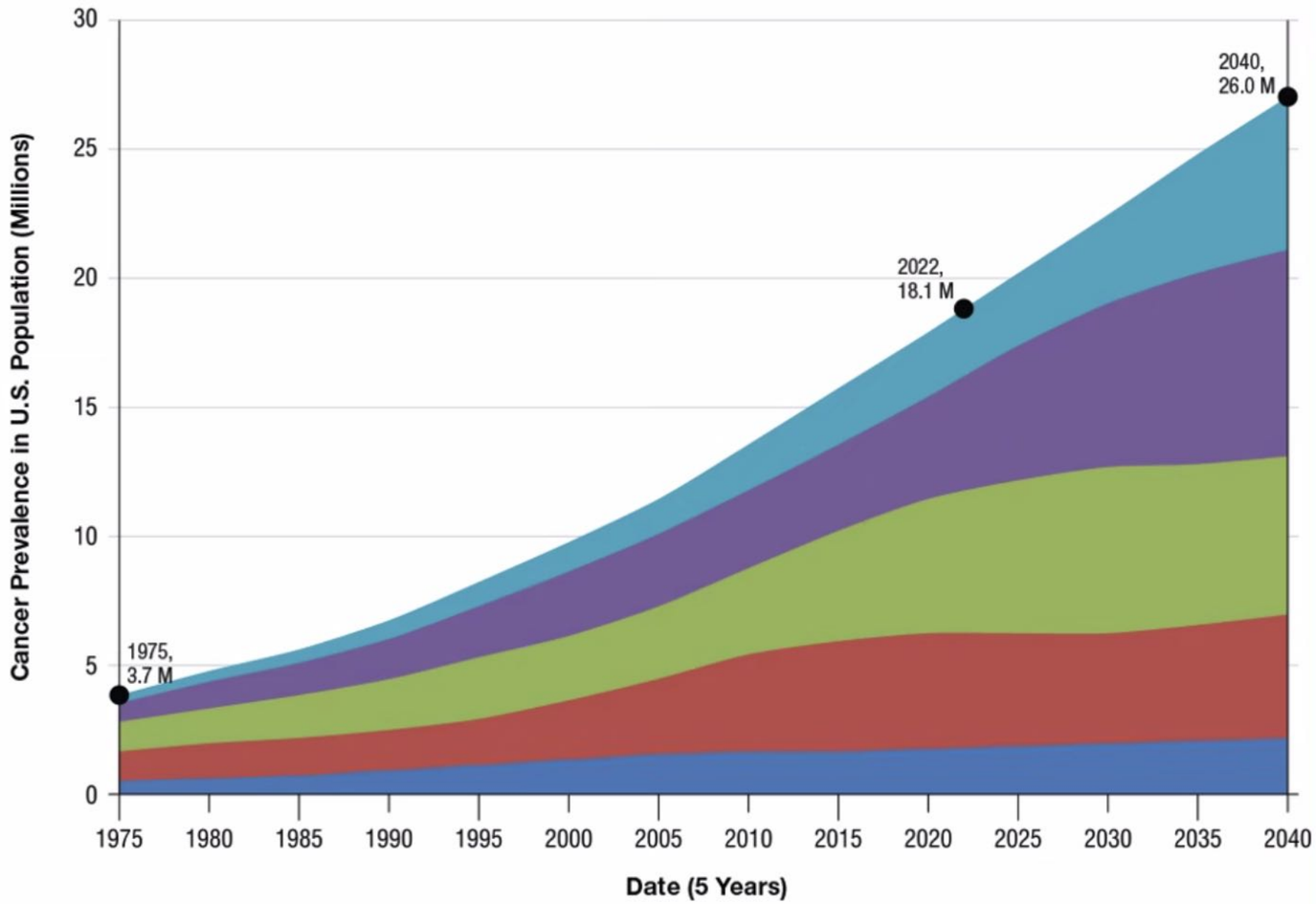
Crude and Age-Adjusted Death Rates for Hyperglycemic Crises as Underlying Cause per 100,000 Diabetic Population - 1980–2009





Trends in Fetal and Infant Survival Following Preeclampsia
JAMA. 2006;296(11):1357-1362. doi:10.1001/jama.296.11.1357

Cancer Prevalence and Projections in U.S. Population from 1975–2040



KEY

Age

<50 | 50–64 | 65–74 | 75–84 | 85+

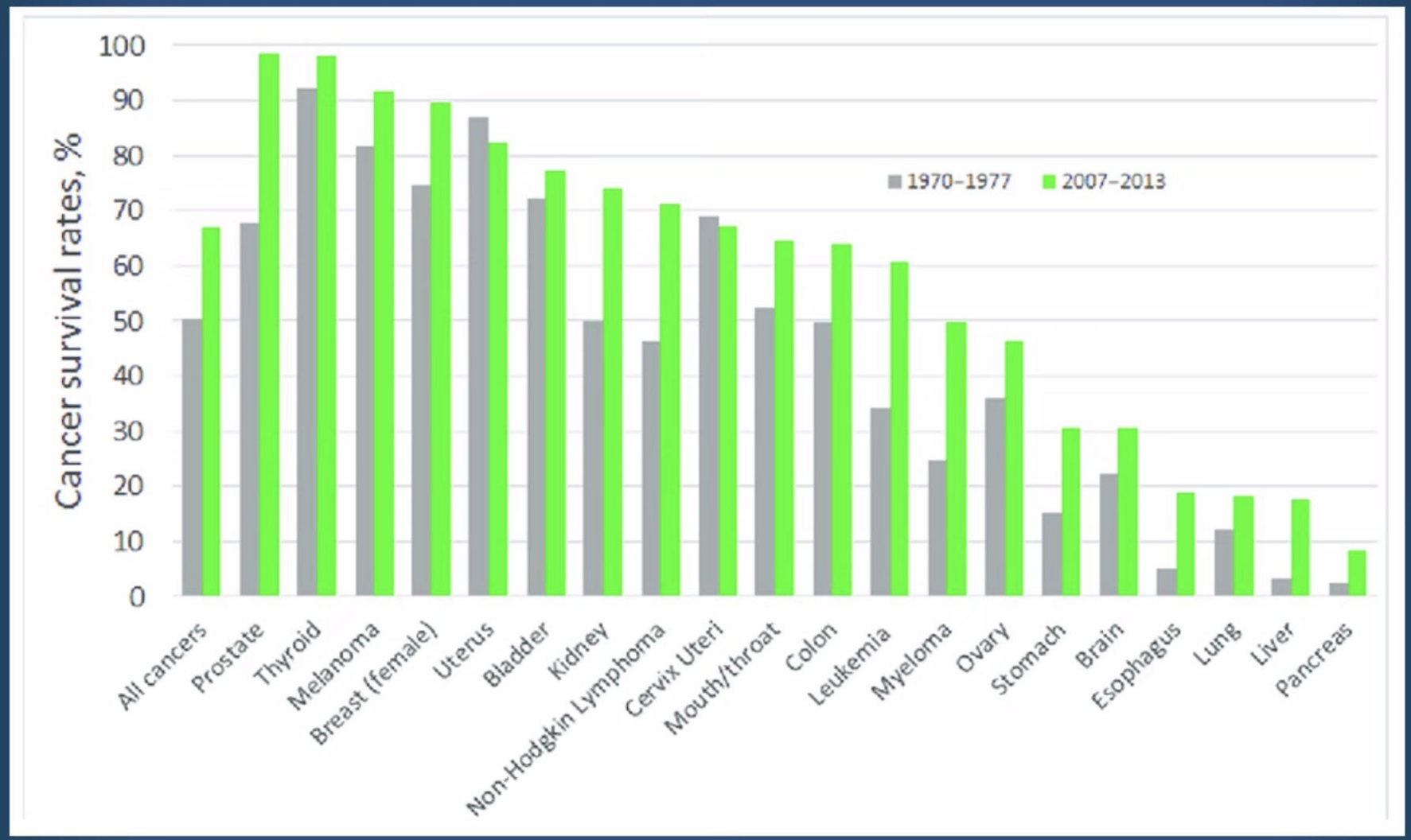
REFERENCES

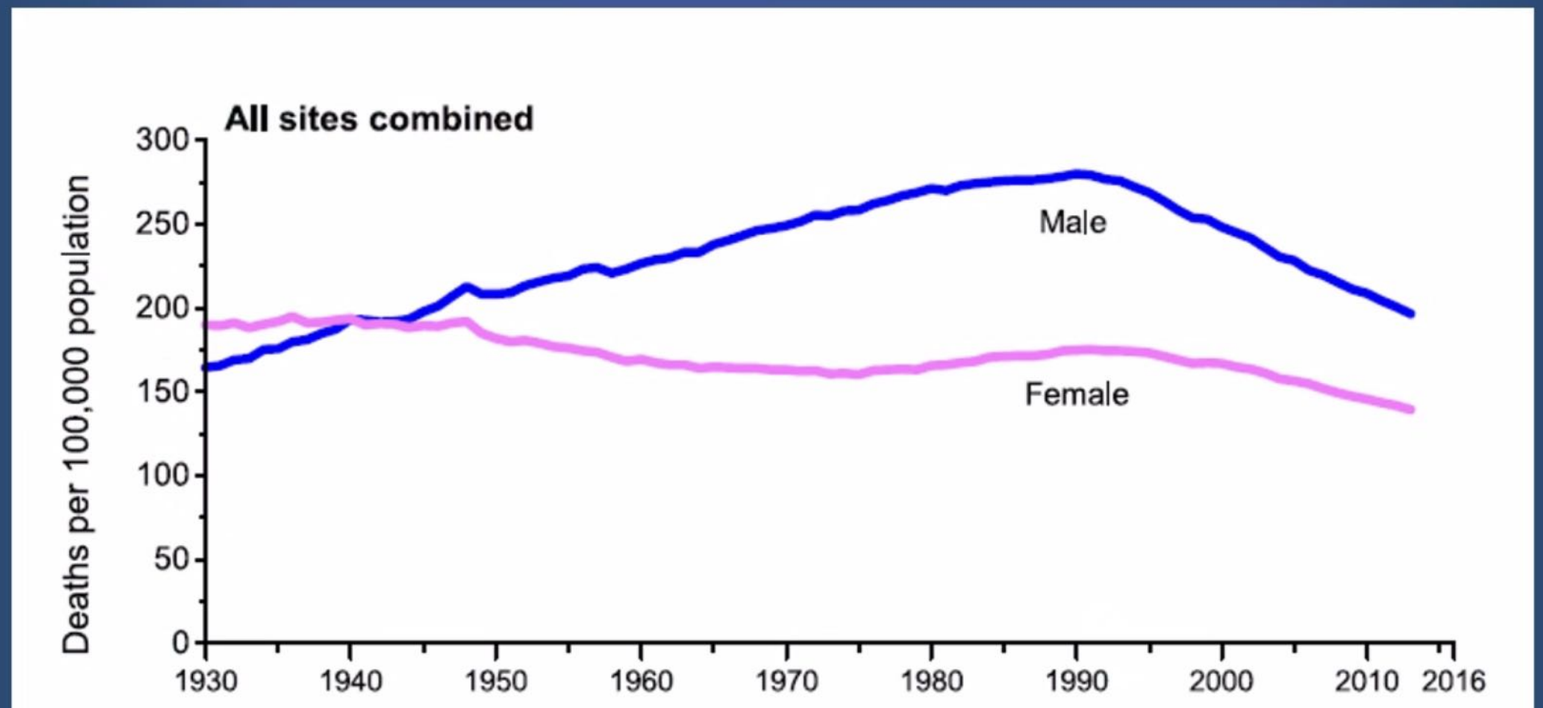
Bluethmann SM, Mariotto AB, Rowland JH. Anticipating the "Silver Tsunami": Prevalence Trajectories and Comorbidity Burden among Older Cancer Survivors in the United States. Cancer Epidemiol Biomarkers Prev. 2016 Jul;25(7):1029-36.

Miller KD, Nogueira L, Devasia T, Mariotto AB, Yabroff KR, Jemal A, Kramer J and Siegel RL. Cancer Treatment and Survivorship Statistics. CA A Cancer J Clin. 2022.

Trends in 5-year Relative Survival Rates

	1975-77	1987-89	2004-10
Breast (female)	75%	84%	91%
Colon	51%	60%	65%
Esophagus	5%	9%	20%
Liver & intrahepatic bile duct	3%	5%	18%
Lung & bronchus	12%	13%	18%
Prostate	68%	83%	>99%
Rectum	48%	58%	68%

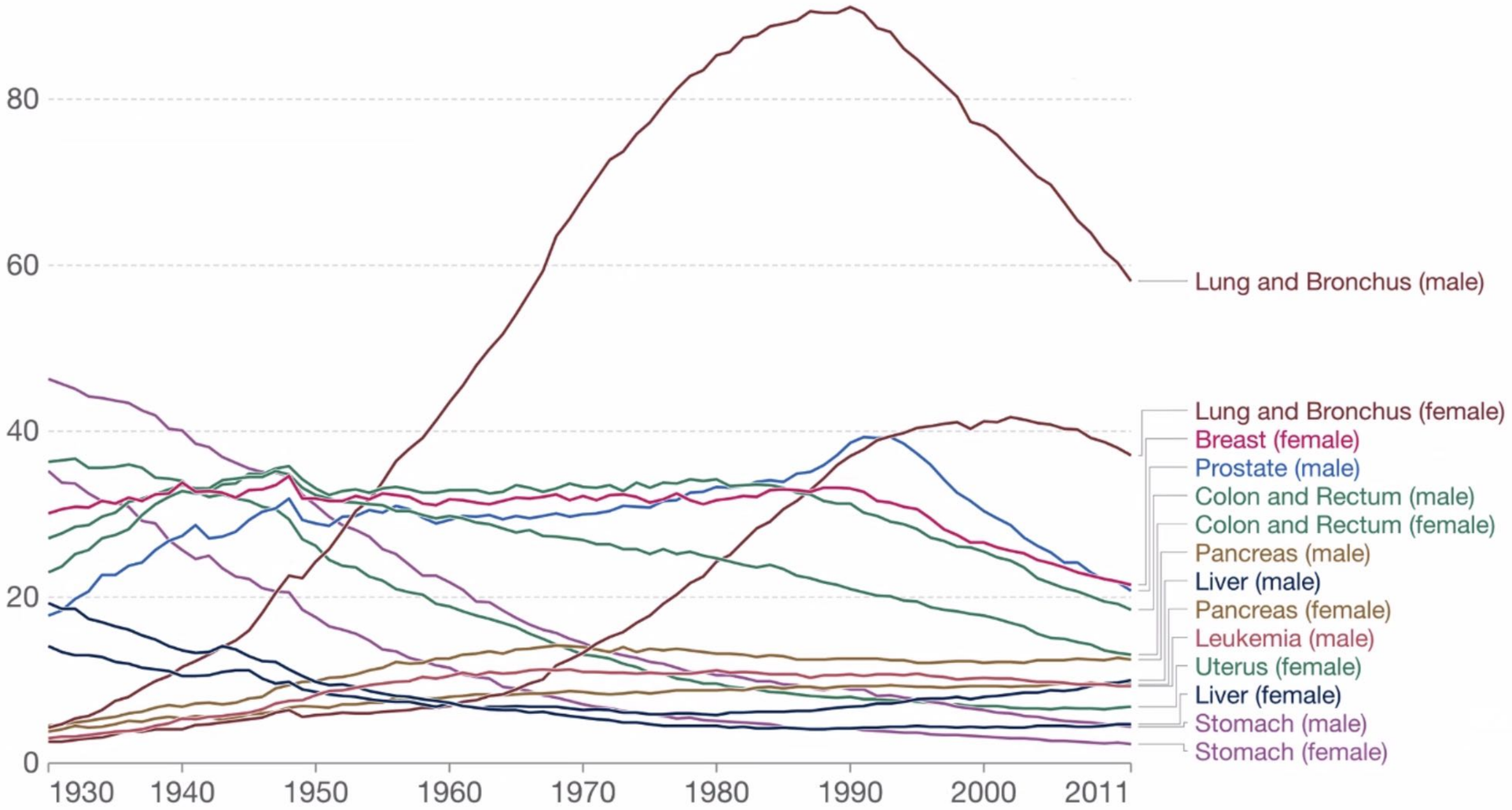




Cancer death rates in the United States over the long-run

Our World in Data

Age-standardized death rates from various forms of cancer in males and females, measured as the number of deaths per 100,000 individuals. Age-standardization is based on normalisation to the standard US population structure in the year 2000.



Source: American Cancer Society

OurWorldInData.org/cancer • CC BY

Oramasionwu, et al. BMC Infectious Disease, 2014 14:536

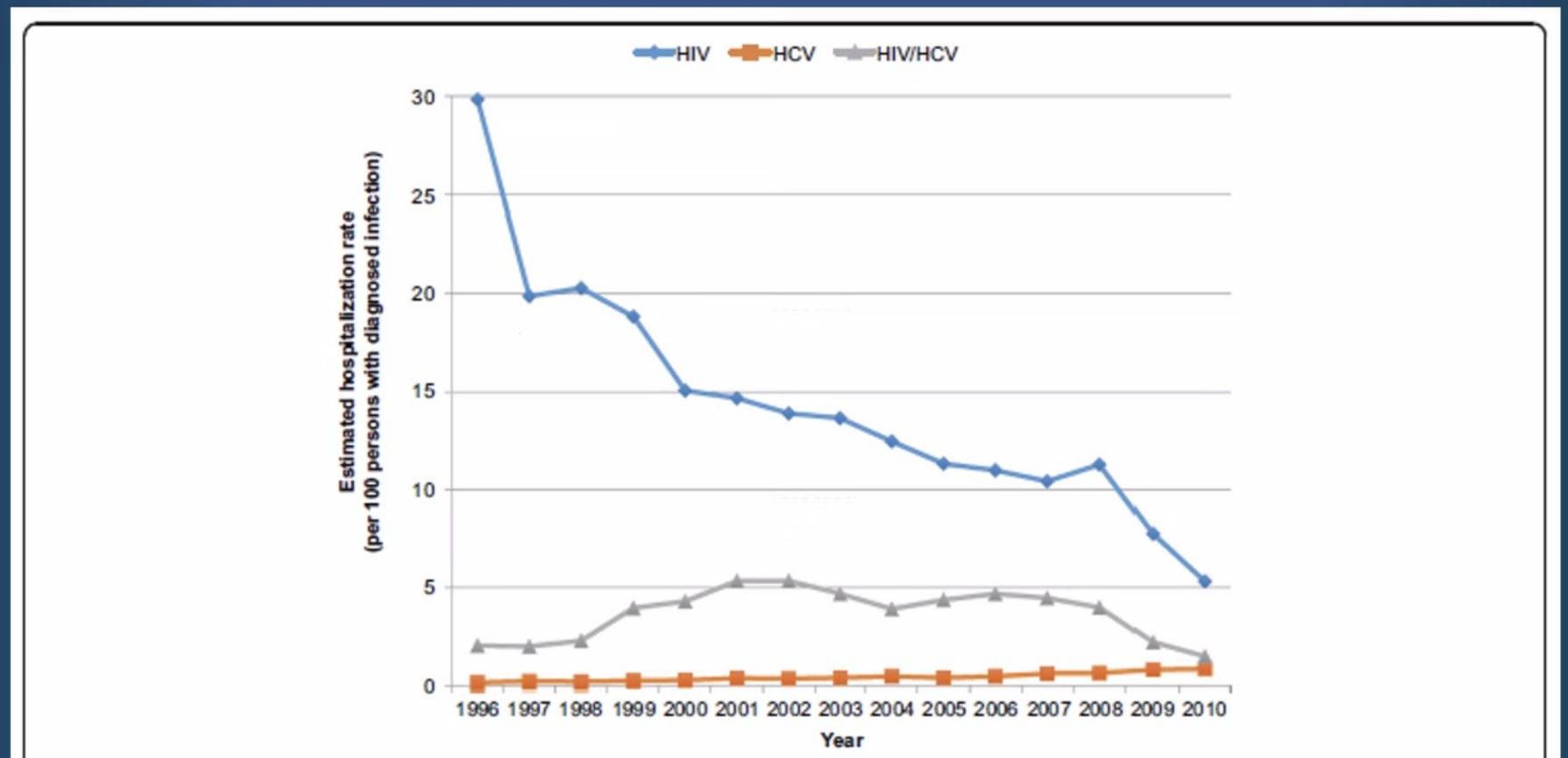
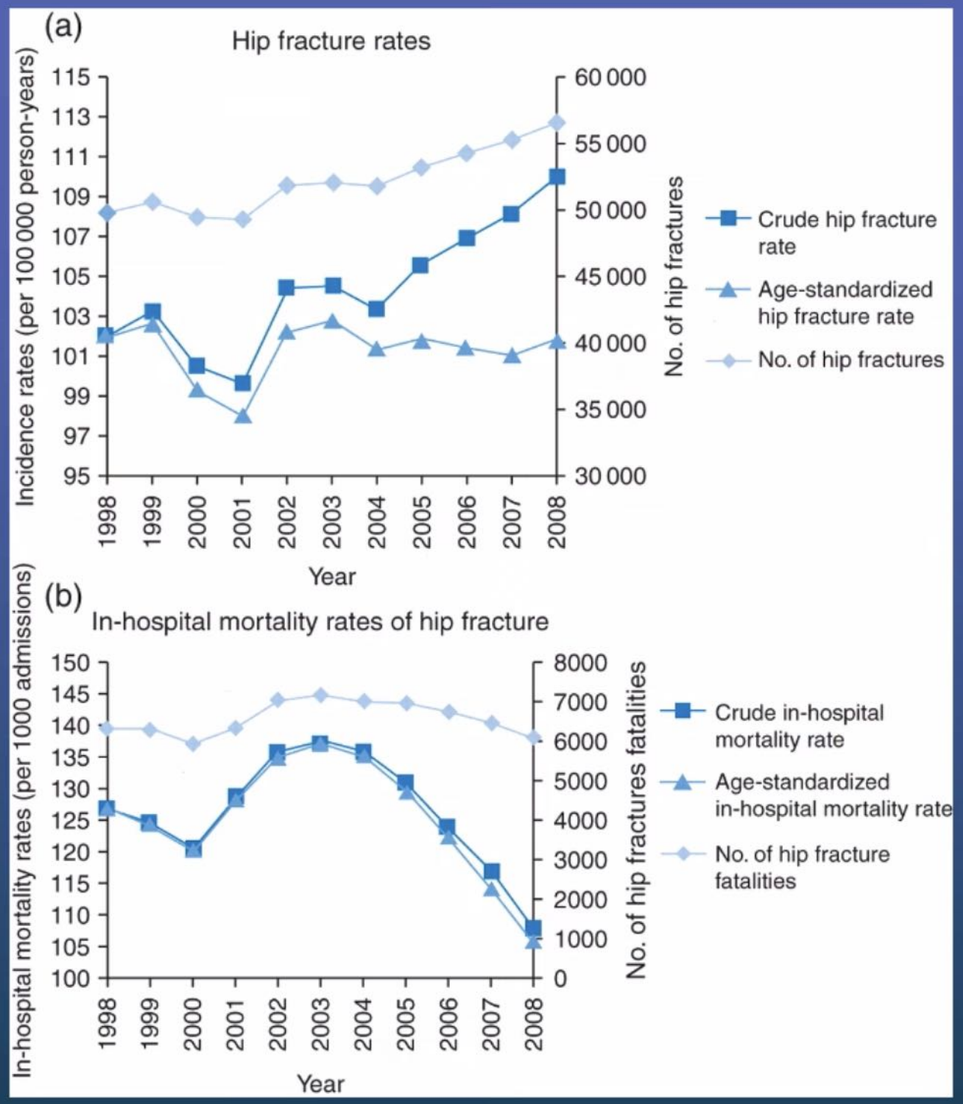
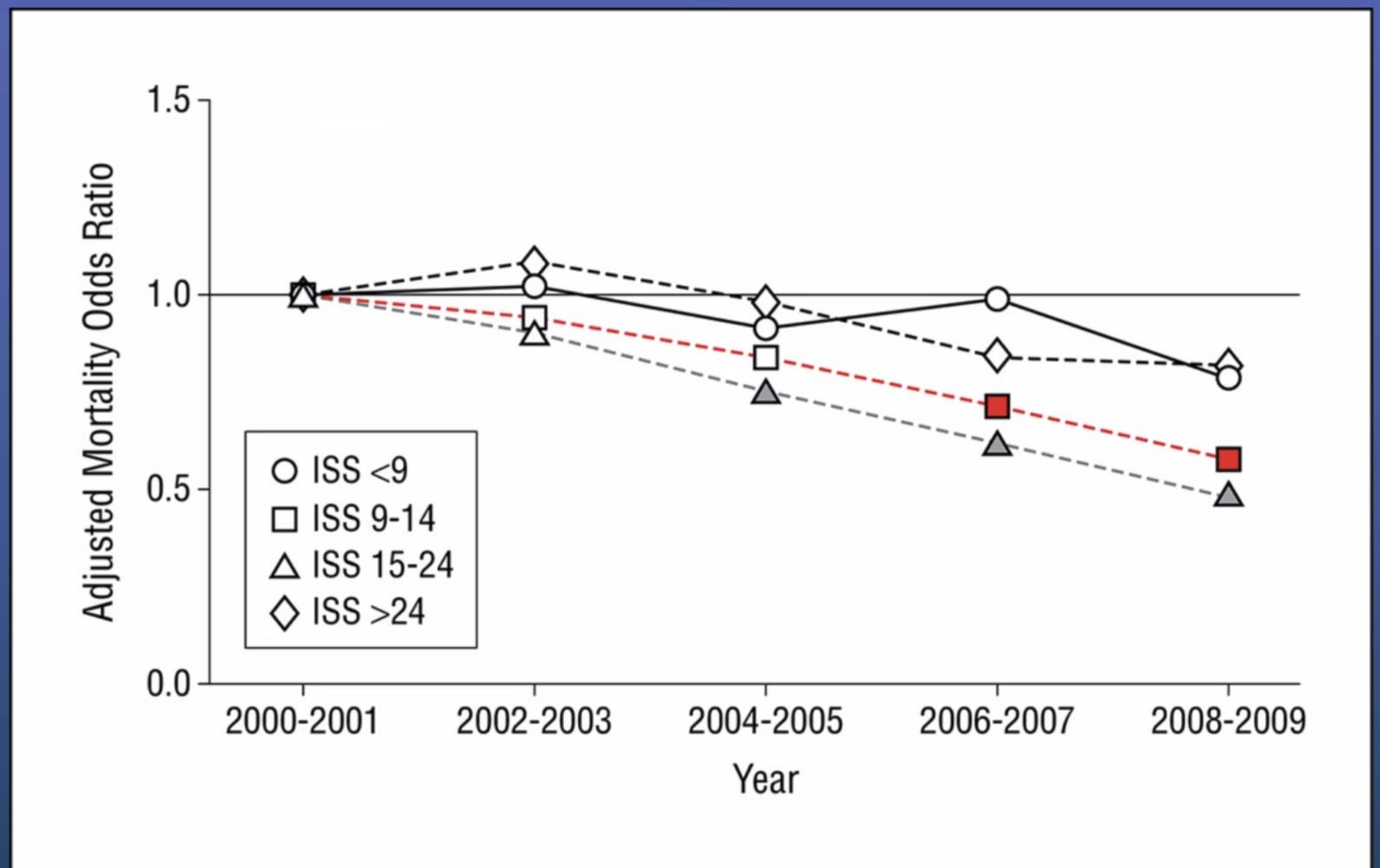


Figure 1 Trends in hospitalization rates for HIV monoinfection, HCV monoinfection, or HIV/HCV coinfection.

Admission rates and in-hospital mortality for hip fractures in England 1998 to 2009: time trends study

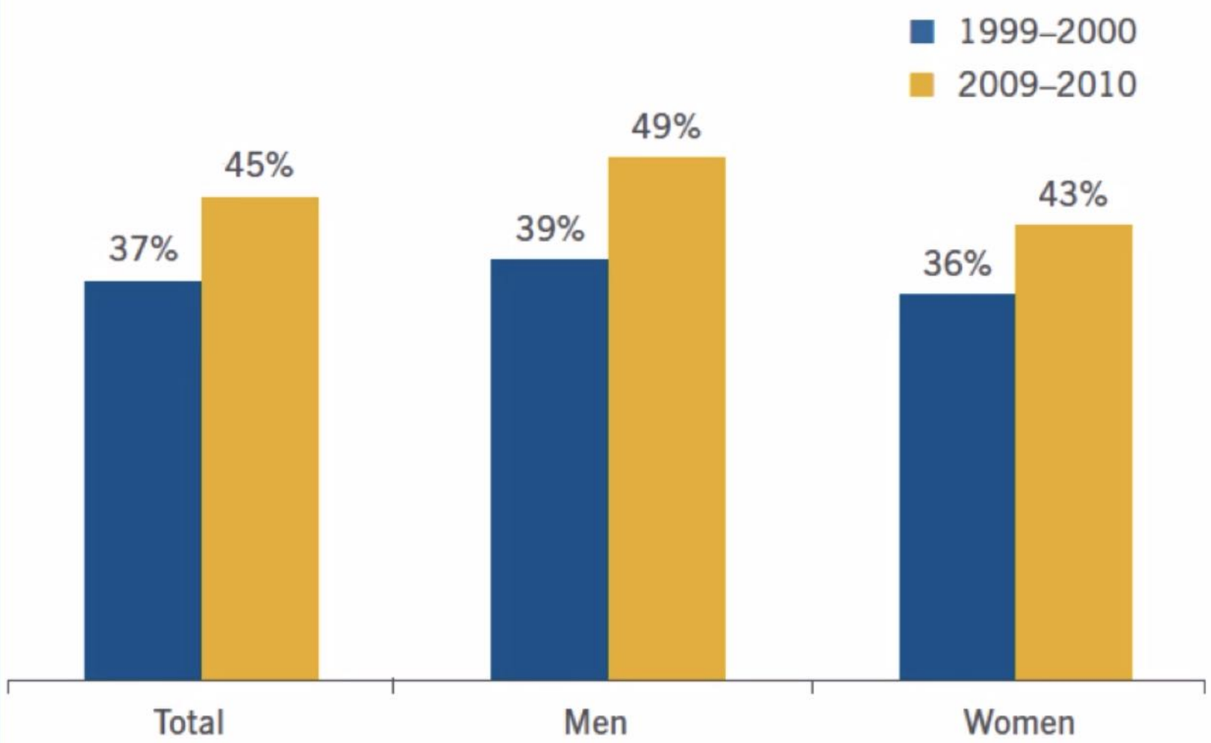


Trends in mortality rate as a function of injury severity



More seniors are living with two or more chronic conditions.

Chart 4: Percentage of Seniors* with Two or More Chronic Conditions, 1999–2000 and 2009–2010

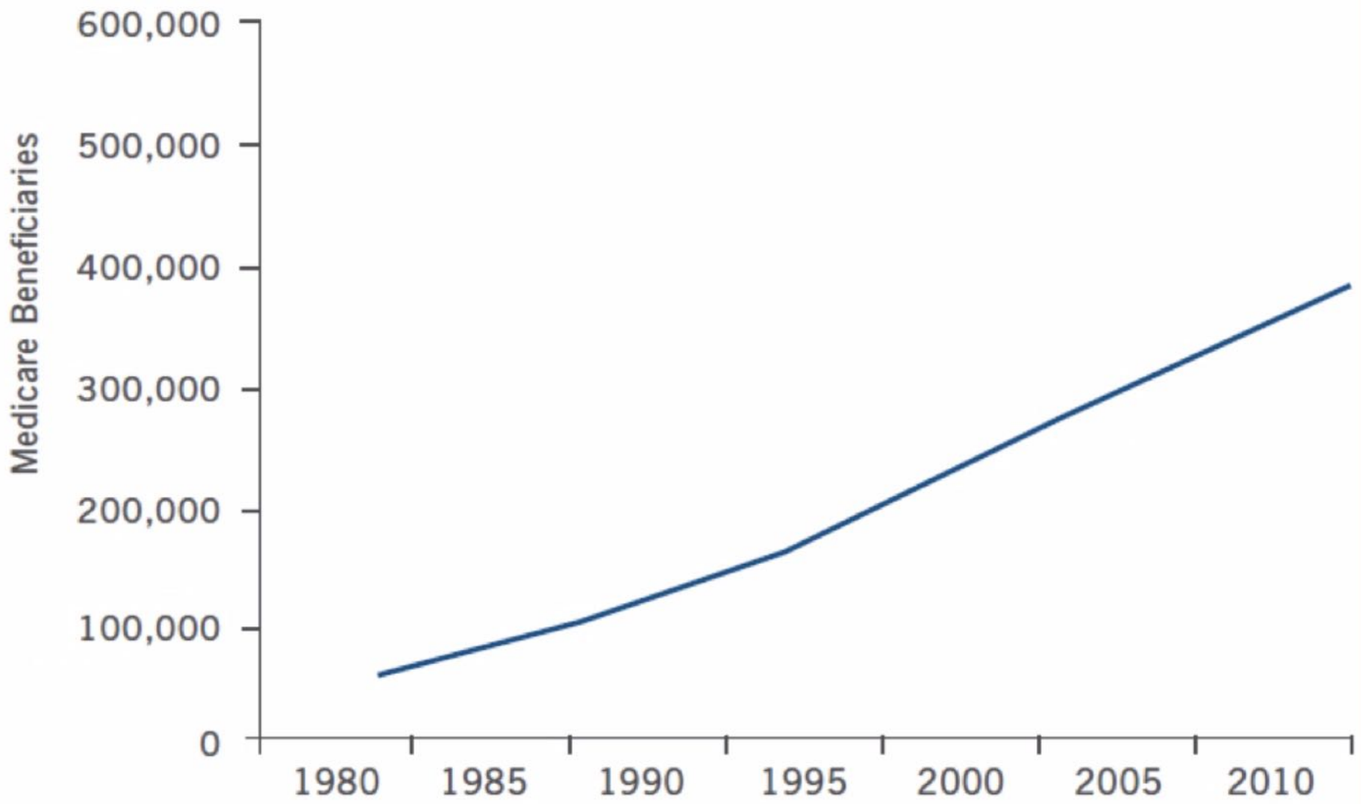


* Seniors are defined as individuals age 65 and older.

Source: Freid, V., et al. (July 2012). *Multiple Chronic Conditions Among Adults Aged 45 and Over: Trends Over the Past 10 Years.*

The occurrence rate of ESRD, one of the highest cost conditions for Medicare, is ballooning.

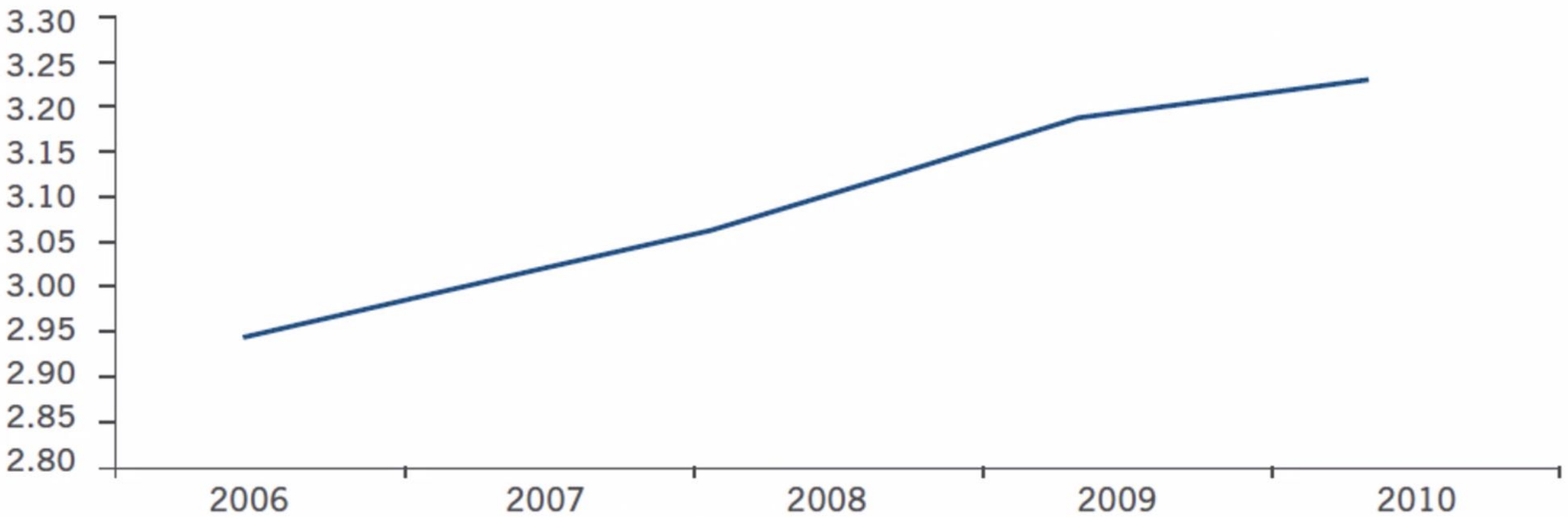
Chart 3: Medicare Beneficiaries with ESRD, 1980–2010



Source: United States Renal Data System. 2012 Reference Tables.

All of these trends are contributing to rising acuity levels in the inpatient setting…

Chart 9: Health Risk Scores* for Admitted Patients, 2006–2010

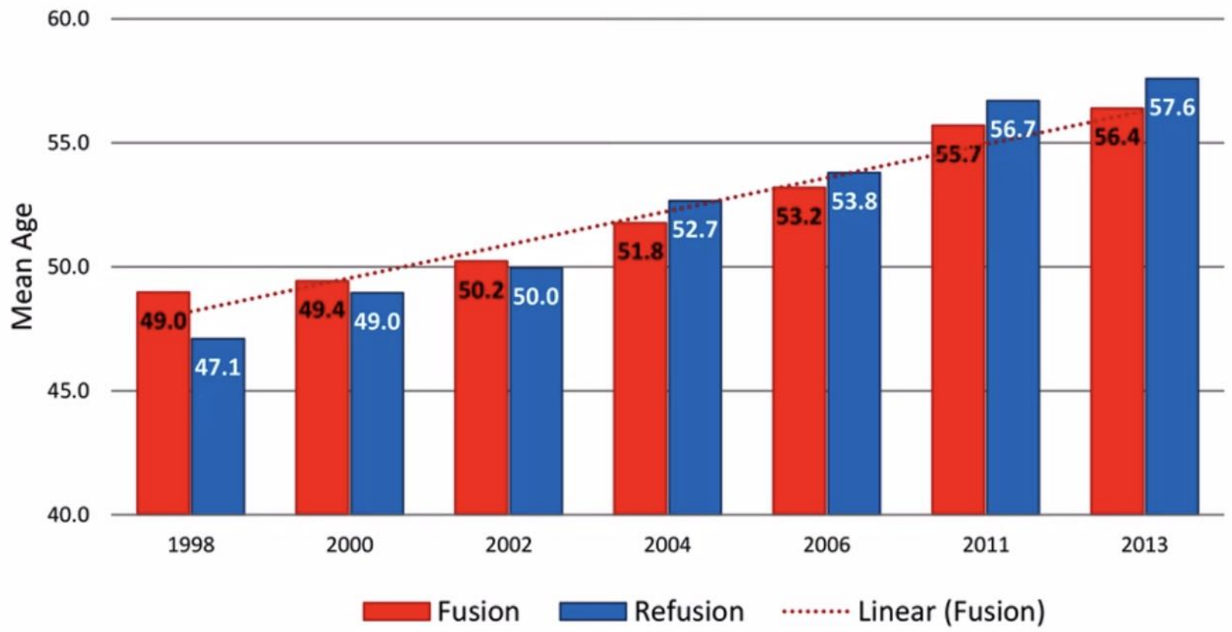


*Hierarchical Condition Category Scores is a measure used by CMS for risk-adjustment in the Medicare Advantage program.
Source: The Moran Company Analysis of Medicare 5% Standard Analytic Files for 2006–2010

Crit Care Med Oct 2012

- Increase in # of cases of severe sepsis (71%)
- Decrease in single organ dysfunction
- Decrease in mortality 2%/year
- Slight decrease in LOS

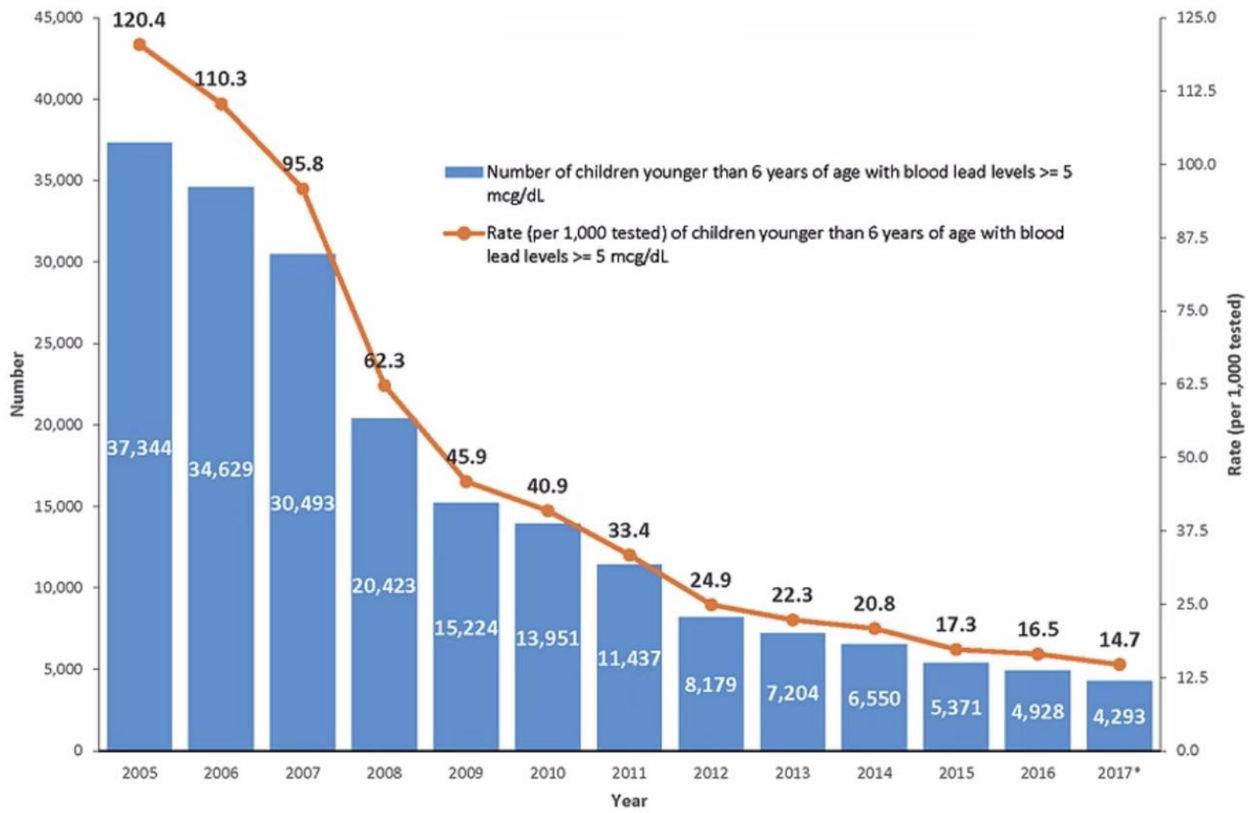
Trend in Mean Age of Spinal Fusion and Refusion Patients, United States 1998 to 2013



Source: HCUP National Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP). 2013. Agency for Healthcare Research and Quality, Rockville, MD. www.hcup-us.ahrq.gov/nisoverview.jsp

File: G2E.0.4.png

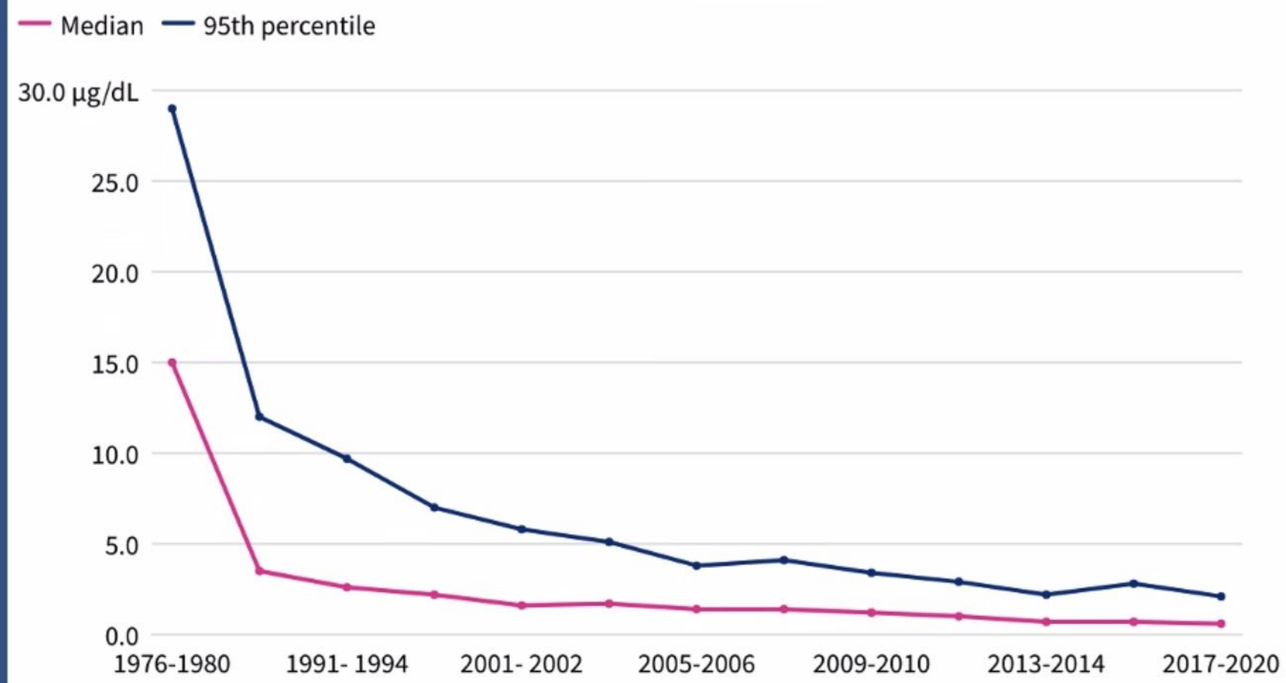
Children with blood lead levels at or above the national reference level



*Note: 2017 data are preliminary. Number and rate (per 1,000 tested) of children younger than 6 years of age with blood lead levels of 5 mcg/dL or greater, 2005-2017. Source: New York City Department of Health and Mental Hygiene Childhood Blood Lead Registry.

The median concentration of lead in the blood of children between the ages of one and five years decreased by 96% between 1976 and 2020.

Median and 95th percentile blood lead levels (µg/dL) in children ages 1-5, 1976–2020



Data for 2020 goes through March 2020 because the NHANES program was suspended due to the COVID-19 pandemic.

Source: Environmental Protection Agency

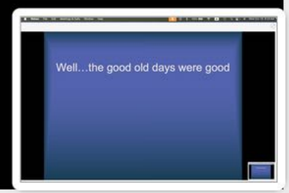
What about pay?

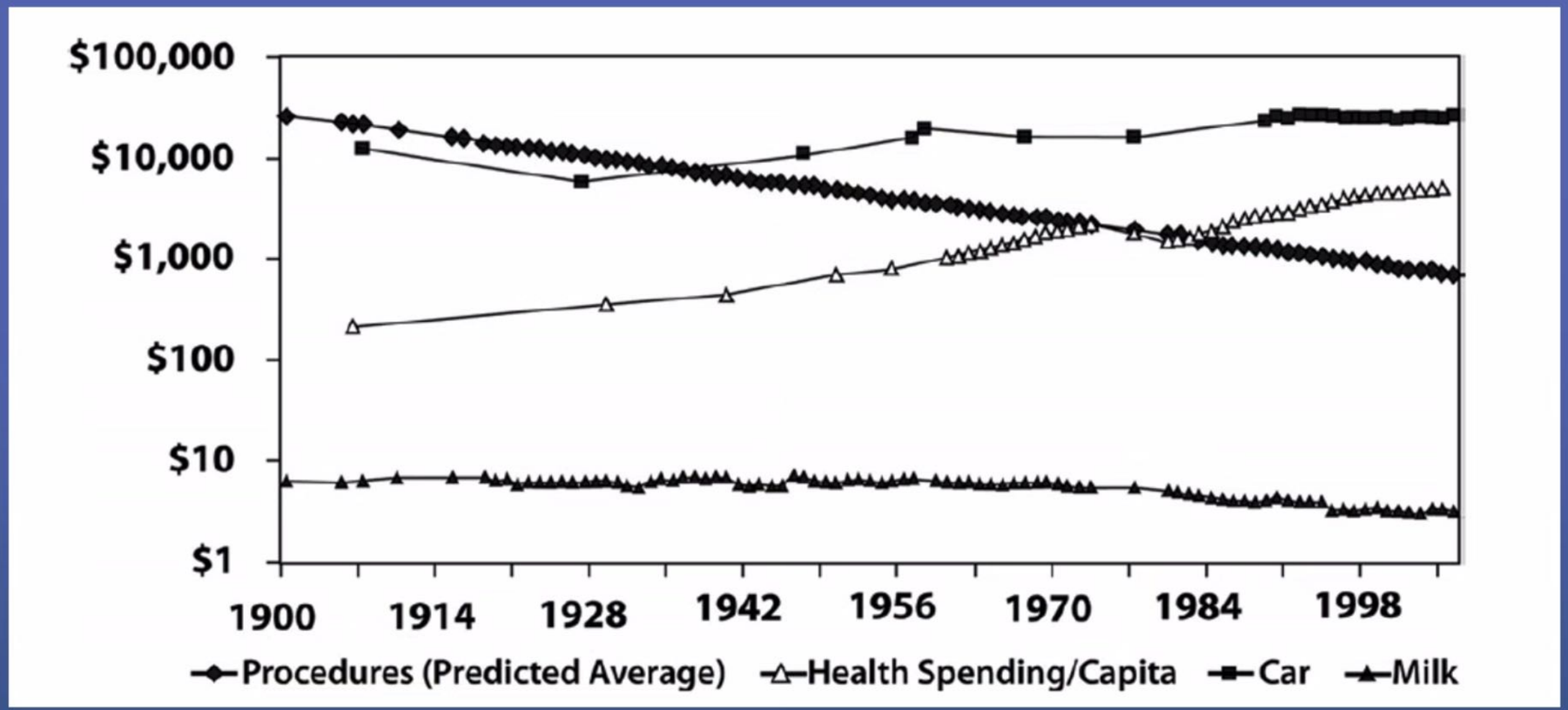
Well…the good old days were good

Reimbursement 1990-2005

Decrease	AAA repair	4.7%
	Thyroidectomy	3.3%
	Cholecystectomy	2.9%
No Change	Inguinal hernia	
Increase	Appendectomy	0.9%

(JACS 2008)




$100,000
$10,000
$1,000
$100
$10
$1
1900
1914
1928
1942
1956
1970
1984
1998
Procedures (Predicted Average)
Health Spending/Capita
Car
Milk

- We found significant decreases in Medicare reimbursement for each of the vascular procedures included in this analysis
- Despite national economic prosperity, there was an average 41% decrease in the buying power per case for vacular surgical procedures over the past decade

(A Decade of Decline: An Analysis of Medicare Reimbursement for Vascular Surgical Procedures, Ann Vasc Surg, 2002)

Comparable Salaries

1975	1980	1990	2024
10,000	21,237	33,685	81,132
30,000	63,711	101,056	243,398
50,000	106,185	168,427	405,664

1975 Average Salary General Surgeon $61,300
2024 $358,680

2024 Average Salary $249,989 (-32.8%)

- Cost of undergraduate and medical school has not gone down…

University of Pennsylvania Tuition & Fee

	Undergrad	Law	Med	2024 Dollars
1960	1,400	1,200	1,200	12,762
1970	2,550	2,550	2,550	20,688
1980	6,300	6,300	8,615	32,912
1990	14,890	15,886	21,294	51,287
2001	26,630	29,680	36,780	65,376
2010	40,514	48,362	45,546	65,857
2014	47,168	56,916	54,330	72,244
2024	63,452		71,935	71,935

SYRACUSE

- $4,400 1987
- $12,192 2024

Combined

1970	Undergrad + Med	$5100/per yr
4 yrs. =	$20,400 ($51,048) 2024	
2024	Undergrad + Med	$135,384
4 yrs. =	$541,548	

Difference = $490,500 (in 2024)

You can judge your age by the amount of pain you feel when you come in contact with a new idea.

– Pearl S. Buck

- Diagnostic peritoneal lavage for trauma vs FAST (and CT scan)

- Subxiphoid pericardial window vs echocardiogram

- If you transfuse blood, always give two units, never just one…

- Ultrasound assisted vascular access vs anatomic markers

- Endovascular vs open surgery
- CABG vs cardiac stents

- Preop/operative time outs vs none

- Electronic medical records vs paper records (physician order entry)

- Neoadjuvant therapy for rectal, pancreatic, and gastric cancer

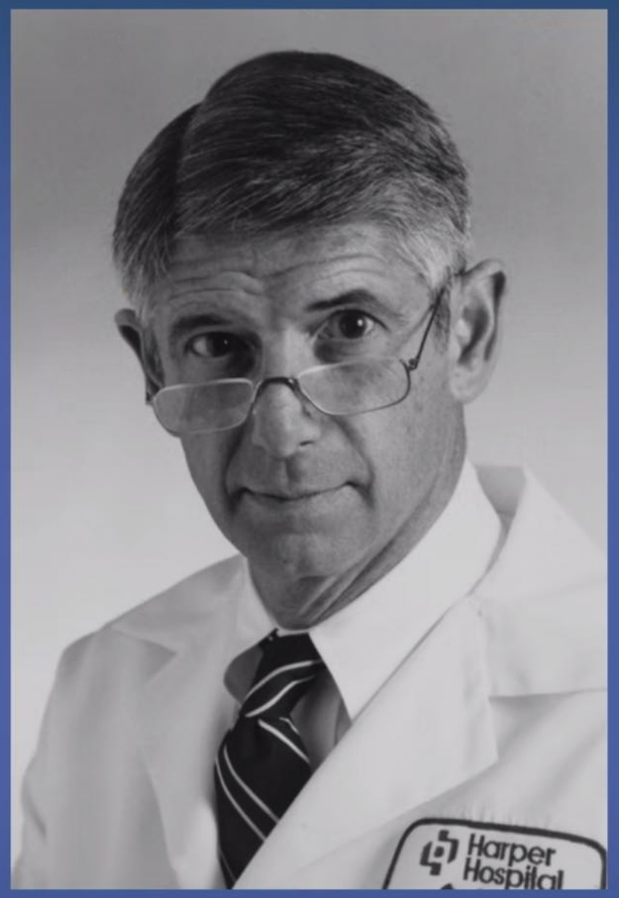
- Laparoscopic vs open surgery

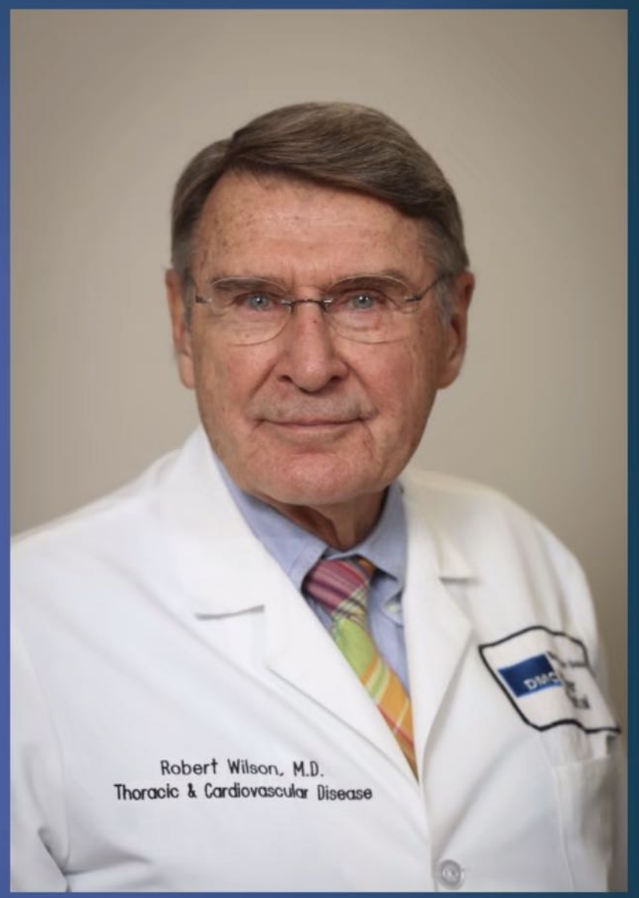
Laparoscopic colon resection (Senagore 2015)

- Initially very threatening to high volume colon surgeons with typically few laparoscopic procedures
- Challenged by reports of port site recurrence
- Cancer studies 2004 disproved these concerns

Perfection is not attainable, but if we chase perfection we can catch excellence.

Vince Lombardi





Conclusions

1. Educational costs were lower then
2. Pay was better then
3. Patients are sicker now
4. Care is better now
5. Every generation has its challenges
6. New ideas, new techniques, new knowledge will continue to cause change
7. The futures is so bright, “I have to wear shades”

It's what you learn after
you know it all that counts.

John Wooden