

Research and Funding Direction: We should advocate for an NIH Institute for Trauma Research Con—

Or Clinical Research Tasseomancy

Timothy C. Fabian, M.D., FACS
April Trauma Systems Conference
April 18, 2017
Bethesda, MD



AMERICAN COLLEGE OF SURGEONS
*Inspiring Quality:
Highest Standards, Better Outcomes*



The art of tea leaf reading
is known as

TASSEOMANCY



10 Leading Causes of Death by Age Group, United States – 2014

Rank	Age Groups										Total
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	
1	Congenital Anomalies 4,746	Unintentional Injury 1,216	Unintentional Injury 730	Unintentional Injury 750	Unintentional Injury 11,836	Unintentional Injury 17,357	Unintentional Injury 16,048	Malignant Neoplasms 44,834	Malignant Neoplasms 115,282	Heart Disease 489,722	Heart Disease 614,348
2	Short Gestation 4,173	Congenital Anomalies 399	Malignant Neoplasms 436	Suicide 425	Suicide 5,079	Suicide 6,569	Malignant Neoplasms 11,267	Heart Disease 34,791	Heart Disease 74,473	Malignant Neoplasms 413,885	Malignant Neoplasms 591,699
3	Maternal Pregnancy Comp. 1,574	Homicide 364	Congenital Anomalies 192	Malignant Neoplasms 416	Homicide 4,144	Homicide 4,159	Heart Disease 10,368	Unintentional Injury 20,610	Unintentional Injury 18,030	Chronic Low. Respiratory Disease 124,693	Chronic Low. Respiratory Disease 147,101
4	SIDS 1,545	Malignant Neoplasms 321	Homicide 123	Congenital Anomalies 156	Malignant Neoplasms 1,569	Malignant Neoplasms 3,624	Suicide 6,706	Suicide 8,767	Chronic Low. Respiratory Disease 16,492	Cerebro-vascular 113,308	Unintentional Injury 136,053
5	Unintentional Injury 1,161	Heart Disease 149	Heart Disease 69	Homicide 156	Heart Disease 953	Heart Disease 3,341	Homicide 2,588	Liver Disease 8,627	Diabetes Mellitus 13,342	Alzheimer's Disease 92,604	Cerebro-vascular 133,103
6	Placenta Cord. Membranes 965	Influenza & Pneumonia 109	Chronic Low. Respiratory Disease 68	Heart Disease 122	Congenital Anomalies 377	Liver Disease 725	Liver Disease 2,582	Diabetes Mellitus 6,062	Liver Disease 12,792	Diabetes Mellitus 54,161	Alzheimer's Disease 93,541
7	Bacterial Sepsis 544	Chronic Low Respiratory Disease 53	Influenza & Pneumonia 57	Chronic Low Respiratory Disease 71	Influenza & Pneumonia 199	Diabetes Mellitus 709	Diabetes Mellitus 1,999	Cerebro-vascular 5,349	Cerebro-vascular 11,727	Unintentional Injury 48,295	Diabetes Mellitus 76,488
8	Respiratory Distress 460	Septicemia 53	Cerebro-vascular 45	Cerebro-vascular 43	Diabetes Mellitus 181	HIV 583	Cerebro-vascular 1,745	Chronic Low. Respiratory Disease 4,402	Suicide 7,527	Influenza & Pneumonia 44,836	Influenza & Pneumonia 55,227
9	Circulatory System Disease 444	Benign Neoplasms 38	Benign Neoplasms 36	Influenza & Pneumonia 41	Chronic Low Respiratory Disease 178	Cerebro-vascular 579	HIV 1,174	Influenza & Pneumonia 2,731	Septicemia 5,709	Nephritis 39,957	Nephritis 48,146
10	Neonatal Hemorrhage 441	Perinatal Period 38	Septicemia 33	Benign Neoplasms 38	Cerebro-vascular 177	Influenza & Pneumonia 549	Influenza & Pneumonia 1,125	Septicemia 2,514	Influenza & Pneumonia 5,390	Septicemia 29,124	Suicide 42,773

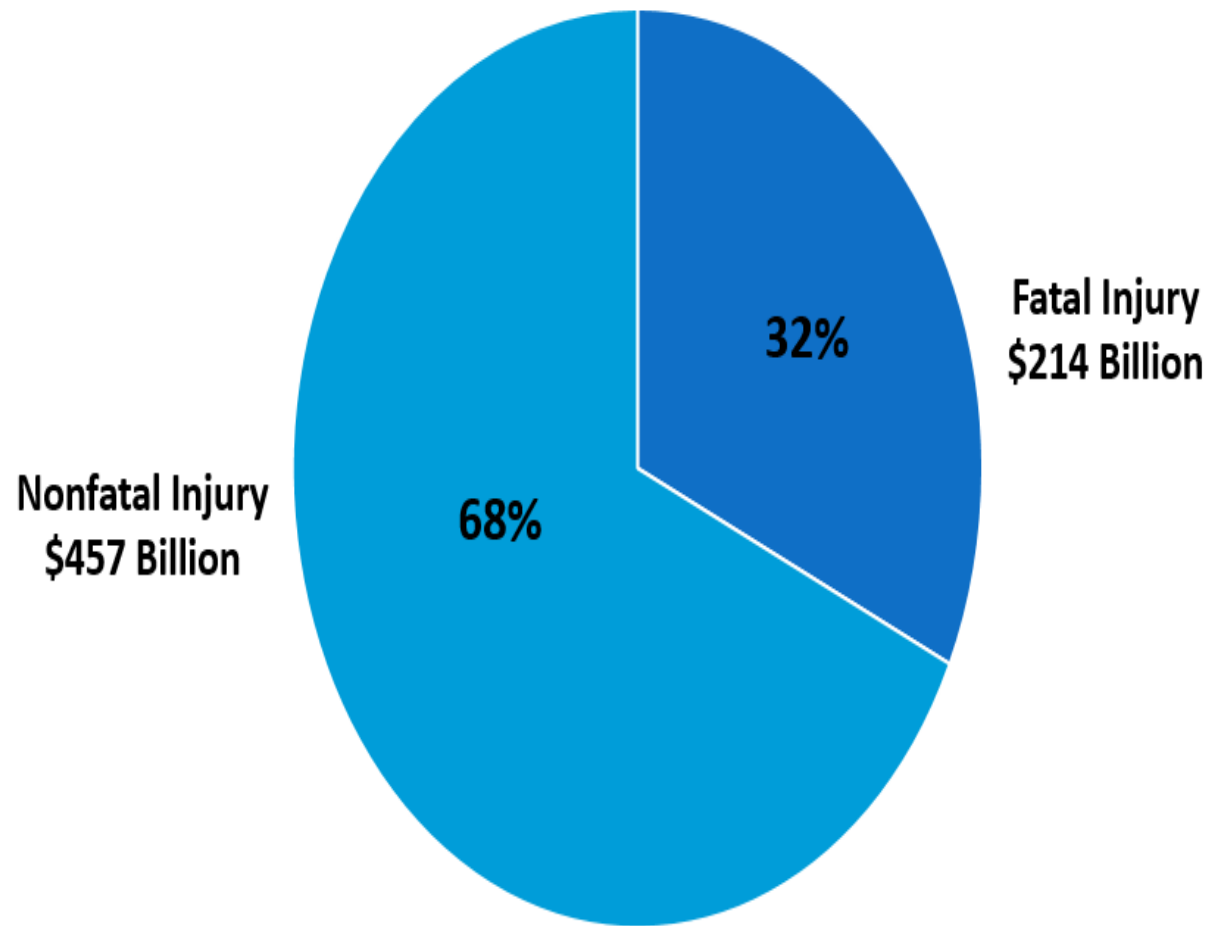
Data Source: National Vital Statistics System, National Center for Health Statistics, CDC.
Produced by: National Center for Injury Prevention and Control, CDC using WISQARS™.



Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Injuries Cost the U.S. \$671 Billion in 2013

Over two-thirds of these costs were due to nonfatal injuries

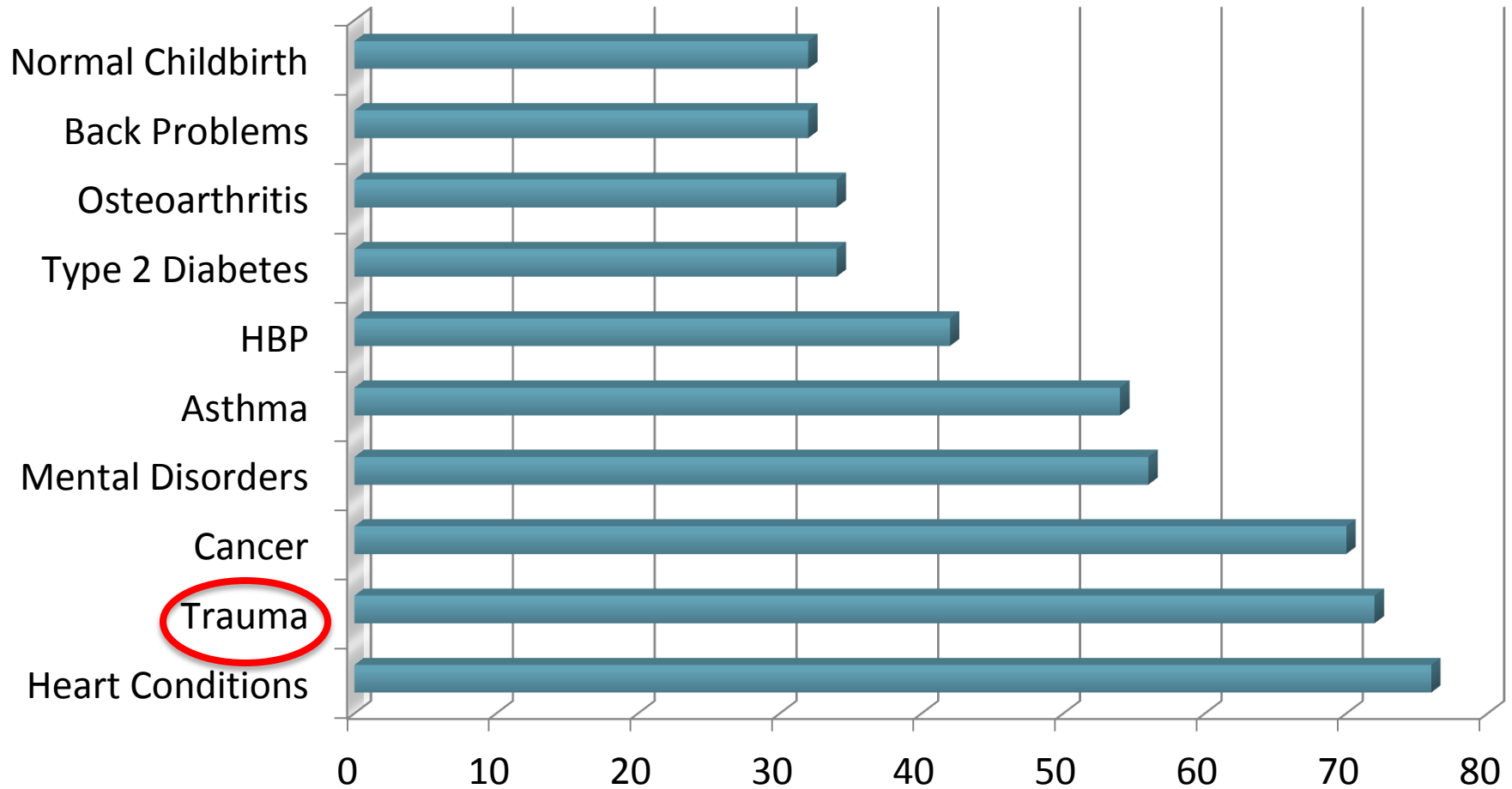


Lifetime medical and work loss costs of injury, United States, 2013



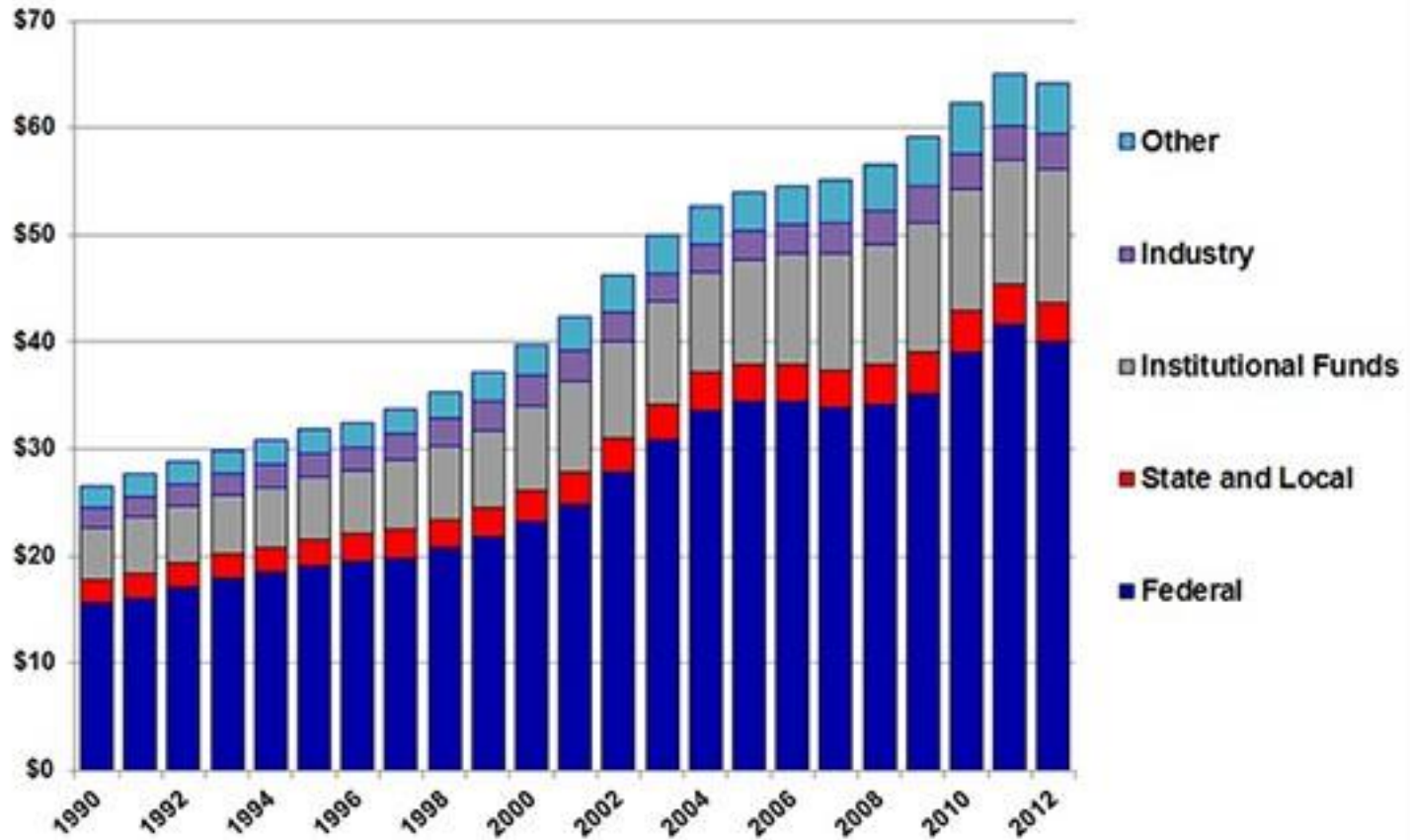
AHRQ 2008 Top 10 Healthcare Costs

\$ Billion



University R&D Funding by Source

expenditures in billions, FY 2014 dollars

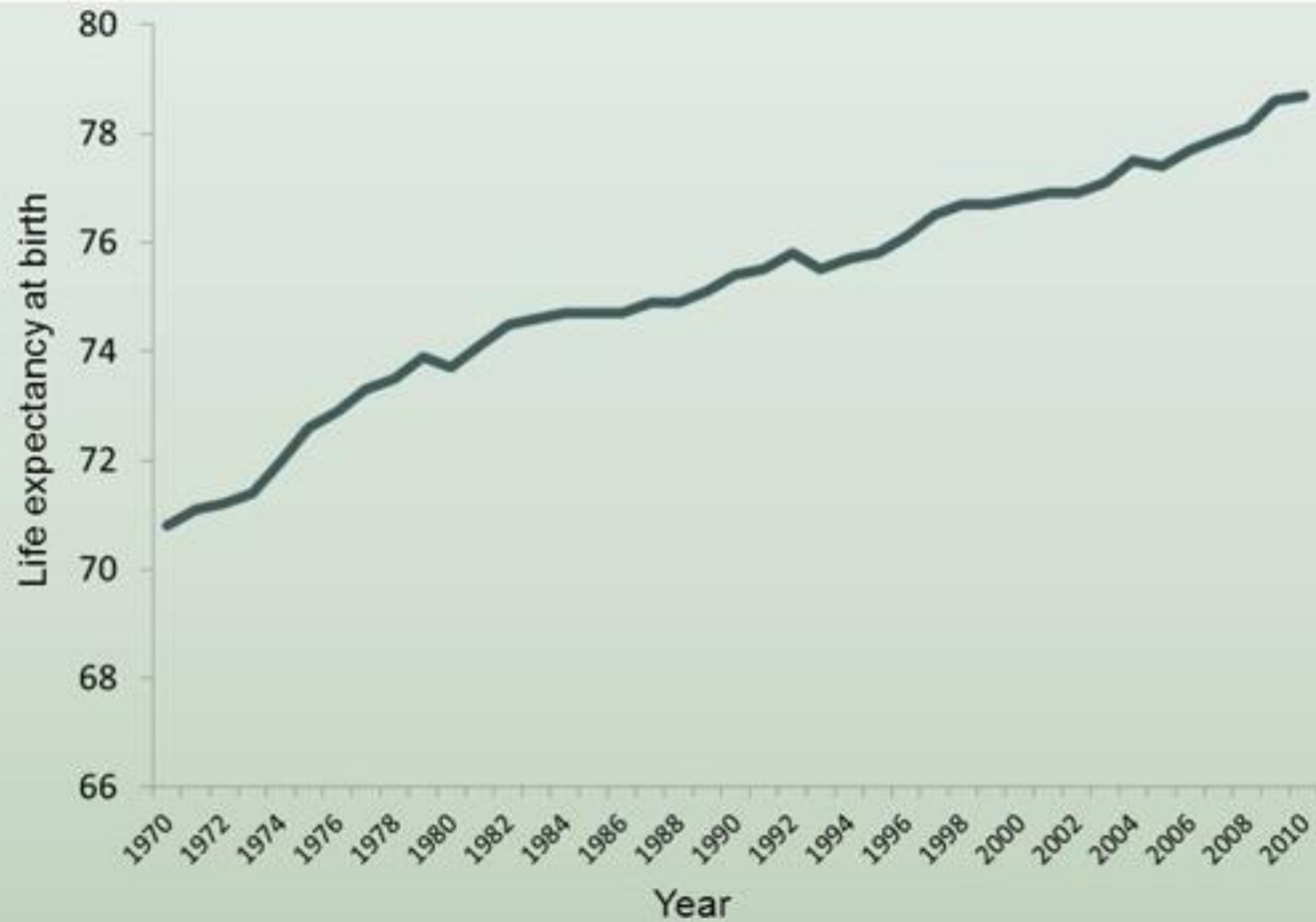


Source: NSF, National Center for Science and Engineering Statistics, *Higher Education R&D* series, based on national survey data. Includes Recovery Act funding. © 2014 AAAS

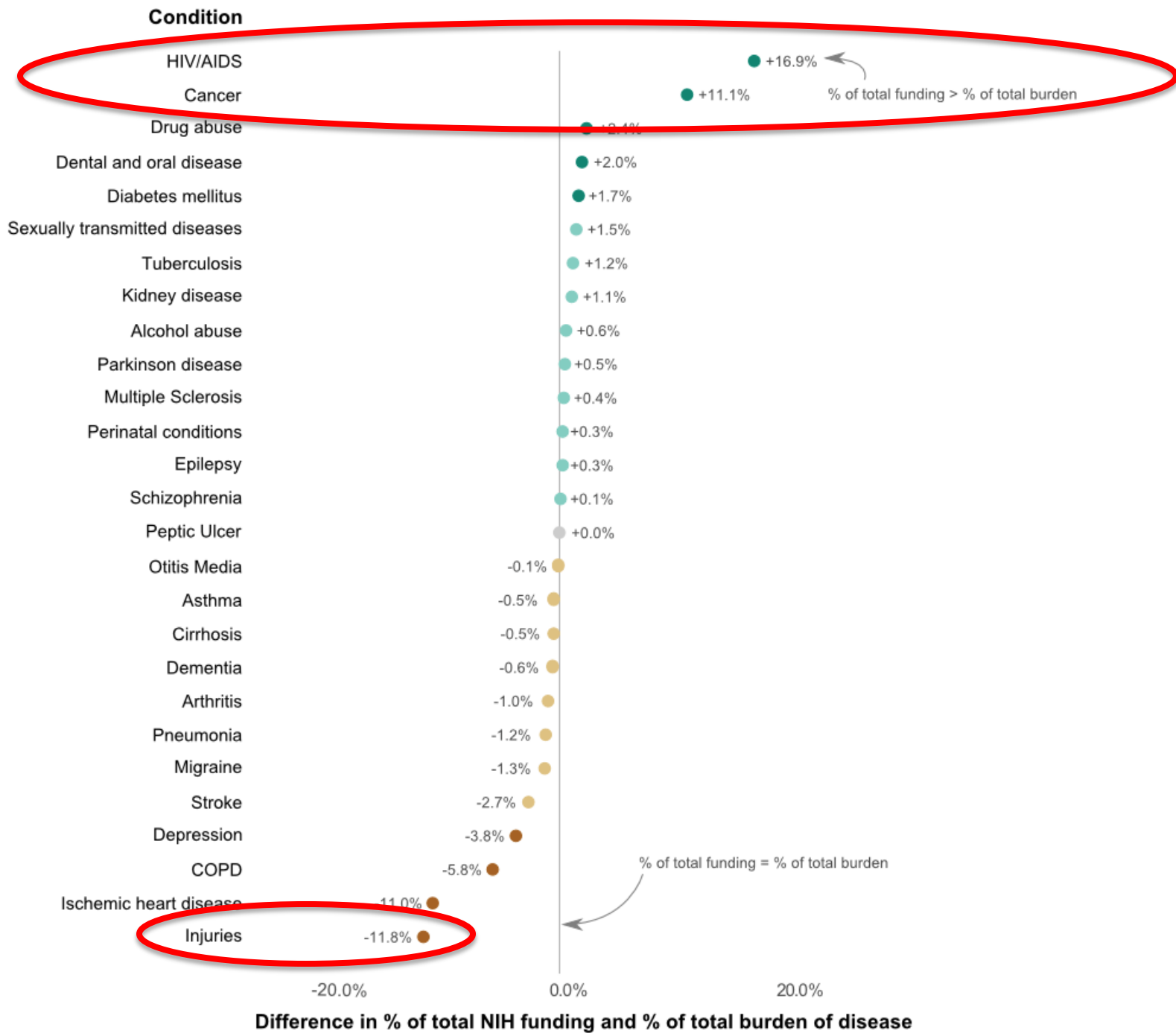
Federal Medical Research Budgets

- NIH \$31 Billion (81%)
- CDC \$7 Billion (18%)
- AHRQ \$470 Million (1%)

U.S. Life Expectancy



Adapted from: CDC National Vital Statistics Reports, Vol 60, No 4, January 11, 2012



NASEM Recommendation #7

- To strengthen trauma research and ensure that the resources available for this research are commensurate with the importance of injury and the potential for improvement in patient outcomes, the ***White House*** should issue an executive order mandating the establishment of a ***National Trauma Research Action Plan***

Public Law 94-282
94th Congress

An Act

To establish a science and technology policy for the United States, to provide for scientific and technological advice and assistance to the President, to provide a comprehensive survey of ways and means for improving the Federal effort in scientific research and information handling, and in the use thereof, to amend the National Science Foundation Act of 1950, and for other purposes.

May 11, 1976

[H.R. 10230]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Science and Technology Policy, Organization, and Priorities Act of 1976".

National Science
and Technology
Policy,
Organization, and
Priorities Act of
1976.
42 USC 6601
note.

TITLE I—NATIONAL SCIENCE, ENGINEERING, AND
TECHNOLOGY POLICY AND PRIORITIES



Office of Science and Technology Policy

- The US Congress established the Office of Science and Technology Policy (OSTP) in 1976 with a mandate to advise the President on the effects of science and technology.
- ***Advancing Basic and Applied Science***: Launched with approximately **\$100 million in the President's Fiscal Year (FY 2014 Budget, the BRAIN initiative** ultimately aims to help researchers find new ways to treat, cure, and even prevent brain disorders, such as Alzheimer's disease, epilepsy, and **traumatic brain injury**.
- **Wouldn't NASEM Zero Preventable Deaths fit in nicely?**



Clinical
Research

The New York Times

Trump Leaves Science Jobs Vacant, Troubling Critics

By CECILIA KANG and MICHAEL D. SHEAR

MARCH 30, 2017

WASHINGTON — On the fourth floor of the Eisenhower Executive Office Building, the staff of the White House chief technology officer has been virtually deleted, down from 24 members before the election to, by Friday, only one.



Clinical
Research



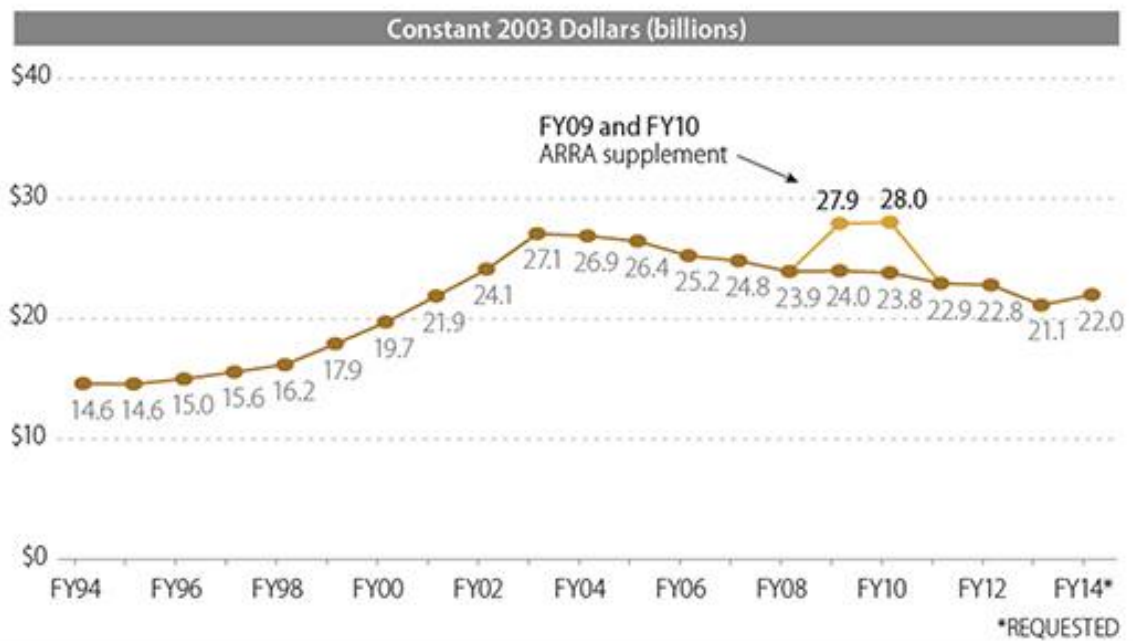
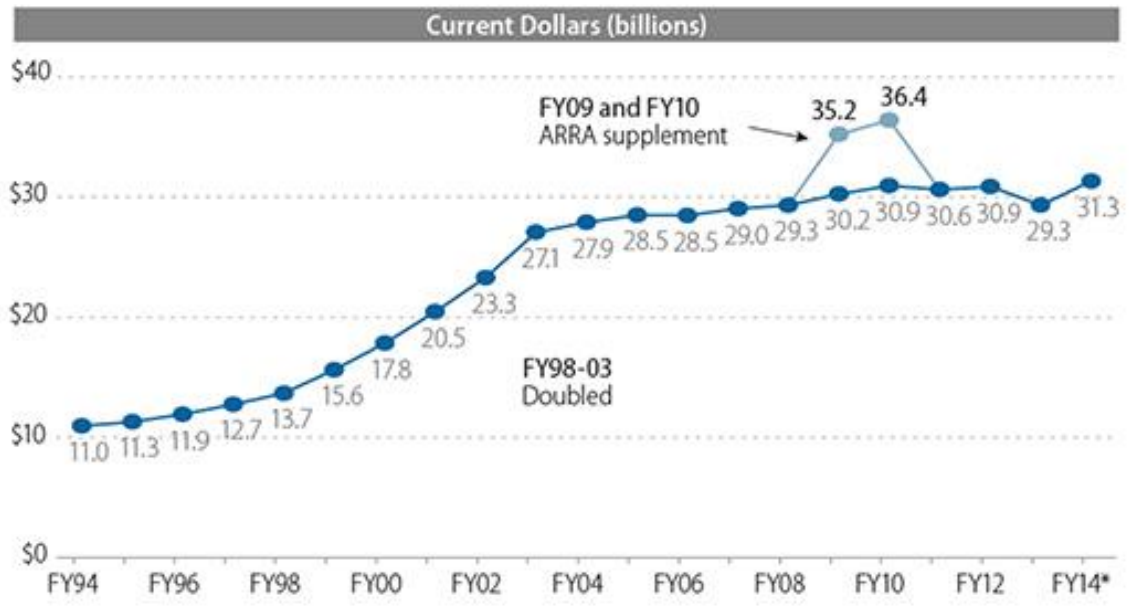
National Institutes
of Health

Clinical
Research



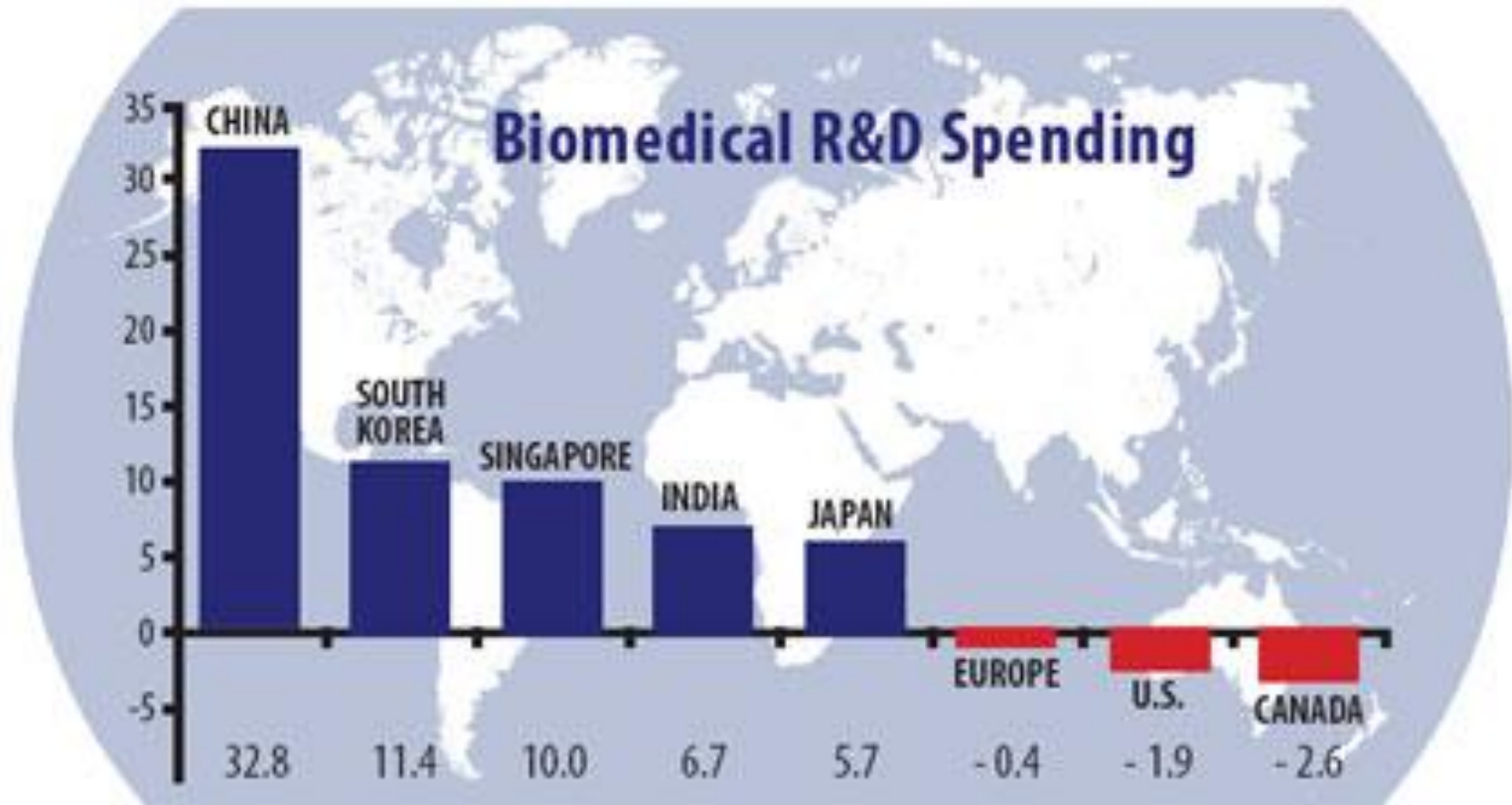
National Institutes of Health (NIH) Appropriations, FY1994-FY2014 request

Program Level Funding in Current and Constant (2003) Dollars



*REQUESTED

Global Trends (% change) 2007-2012



Source NIH; adapted from NEJM, 2014

Rise in Federal Funding Doubtful

- Continued resolutions
- Sequestration
- Congressional divide

NIH Appropriations, FY 2003-15

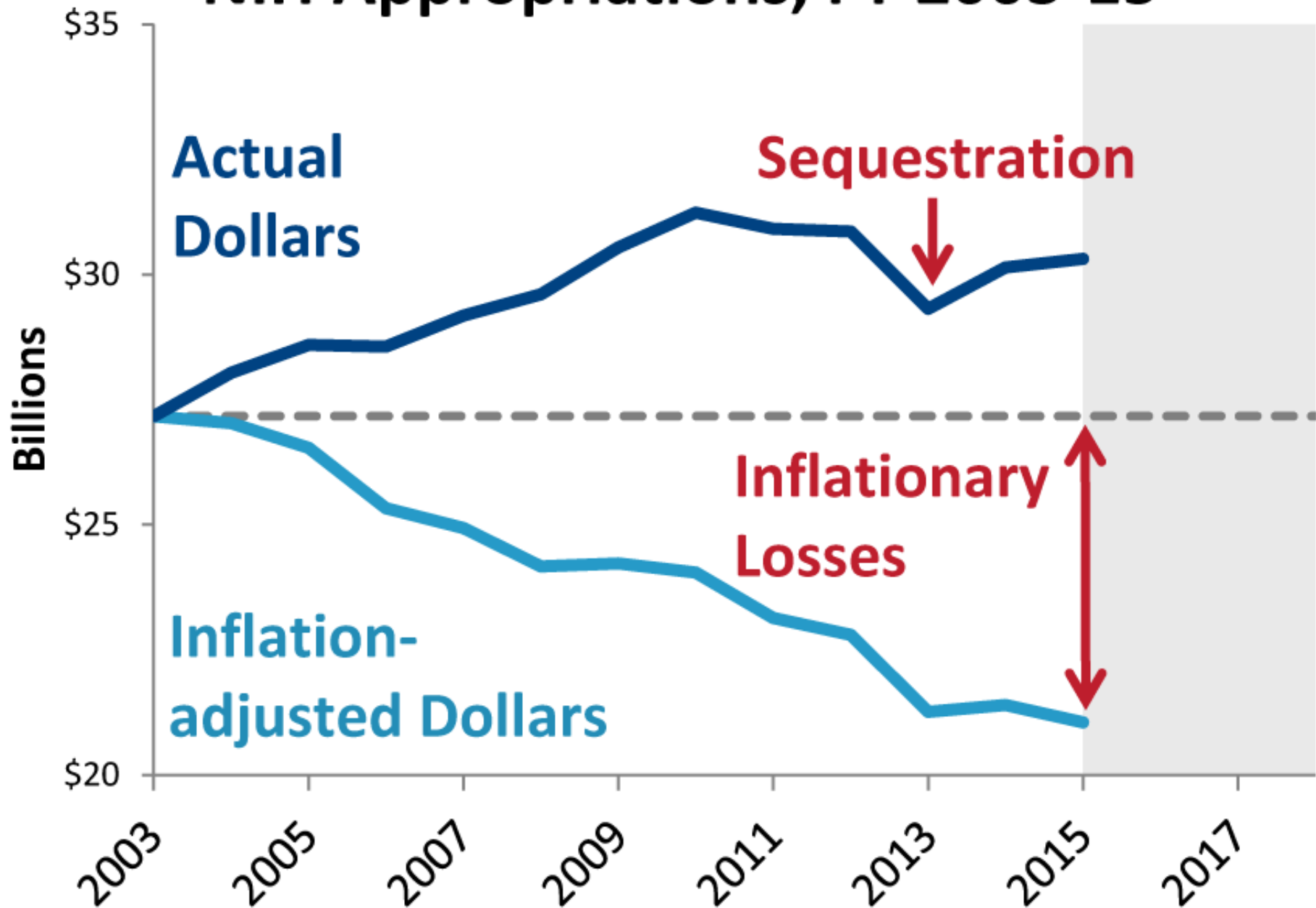


Table 2. Trials Registered in ClinicalTrials.gov From 2006 Through 2014 by Year of Trial Start^a

Year of trial start	Total No. of Trials ^b	Funding Agency, No. (%) ^c			
		National Institutes of Health	Industry	Other US Federal Agency	All Others
2006	9208	1189 (12.9)	4516 (49.0)	229 (2.5)	3397 (36.9)
2007	10 275	1035 (10.1)	4950 (48.2)	265 (2.6)	4163 (40.5)
2008	11 650	1039 (8.9)	5359 (46.0)	278 (2.4)	5078 (43.6)
2009	12 507	1062 (8.5)	5469 (43.7)	300 (2.4)	5807 (46.4)
2010	12 903	1062 (8.2)	5325 (41.3)	311 (2.4)	6324 (49.0)
2011	13 514	949 (7.0)	5424 (40.1)	304 (2.2)	6955 (51.5)
2012	13 909	935 (6.7)	5135 (36.9)	290 (2.1)	7668 (55.1)
2013	14 221	951 (6.7)	5017 (35.3)	306 (2.2)	8084 (56.8)
2014	14 618	873 (6.0)	5274 (36.1)	292 (2.0)	8295 (56.7)
% Difference (95% CI) ^{d,e}		-6.9 (-7.7 to -6.2)	-13.0 (-14.2 to -11.7)	-0.5 (-0.1 to 0) ^f	19.9 (18.6 to 21.1)
Absolute difference, No. (%) ^e	5410 (58.8)	-316 (-26.6)	758 (16.8)	63 (27.5)	4898 (144.2)

^a Data as of June 26, 2015.

^b One trial may have more than 1 funding source.

^c Unless otherwise indicated.

^d Comparisons yielded *P* values of <.001 unless otherwise indicated.

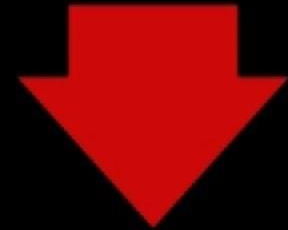
^e Comparisons are between the year 2006 and 2014.

^f *P* = .01.

TRUMP'S BUDGET



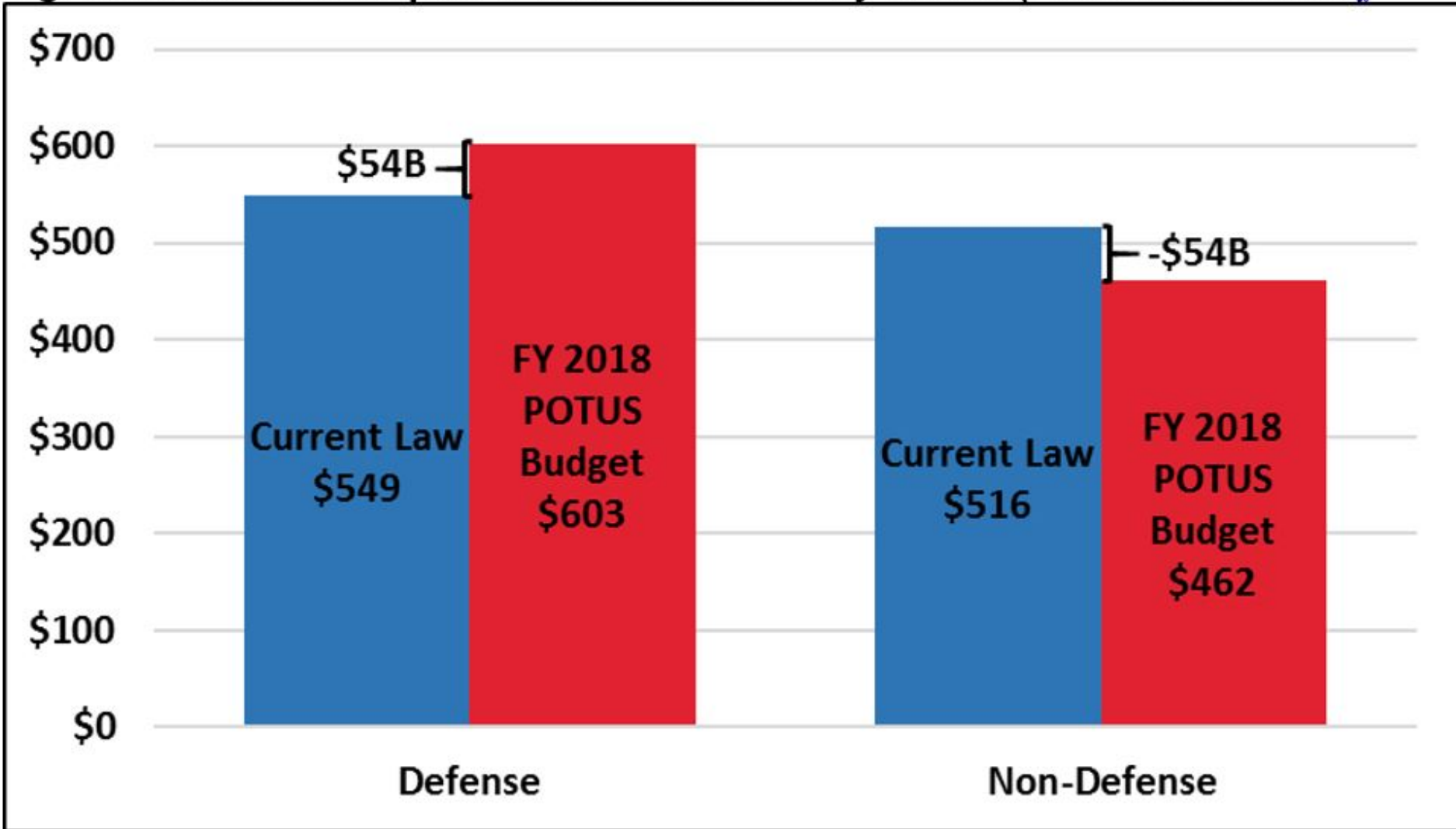
- Dept. of Defense
- Homeland Security
- Veteran Affairs
- Social Security Administration



- EPA
- State Dept.
- Agriculture Dept.
- Labor Dept.
- Health and Human Services
- Army Corps of Engineers
- Commerce Dept.
- Education Dept.
- HUD
- Transportation Dept.

SOURCE: OFFICE OF MANAGEMENT AND BUDGET

Fig. 1: President Trump's FY 2018 Discretionary Levels (Billions of Dollars)



Sources: Office of Management and Budget, Congressional Budget Office

America First
A Budget Blueprint to Make
America Great Again



Office of Management and Budget

- Reduces NIH by \$5.8 billion to \$25.9 billion
- Eliminates the Fogarty International Center
- Consolidates AHRQ within NIH
- Reduces administrative costs to research funding



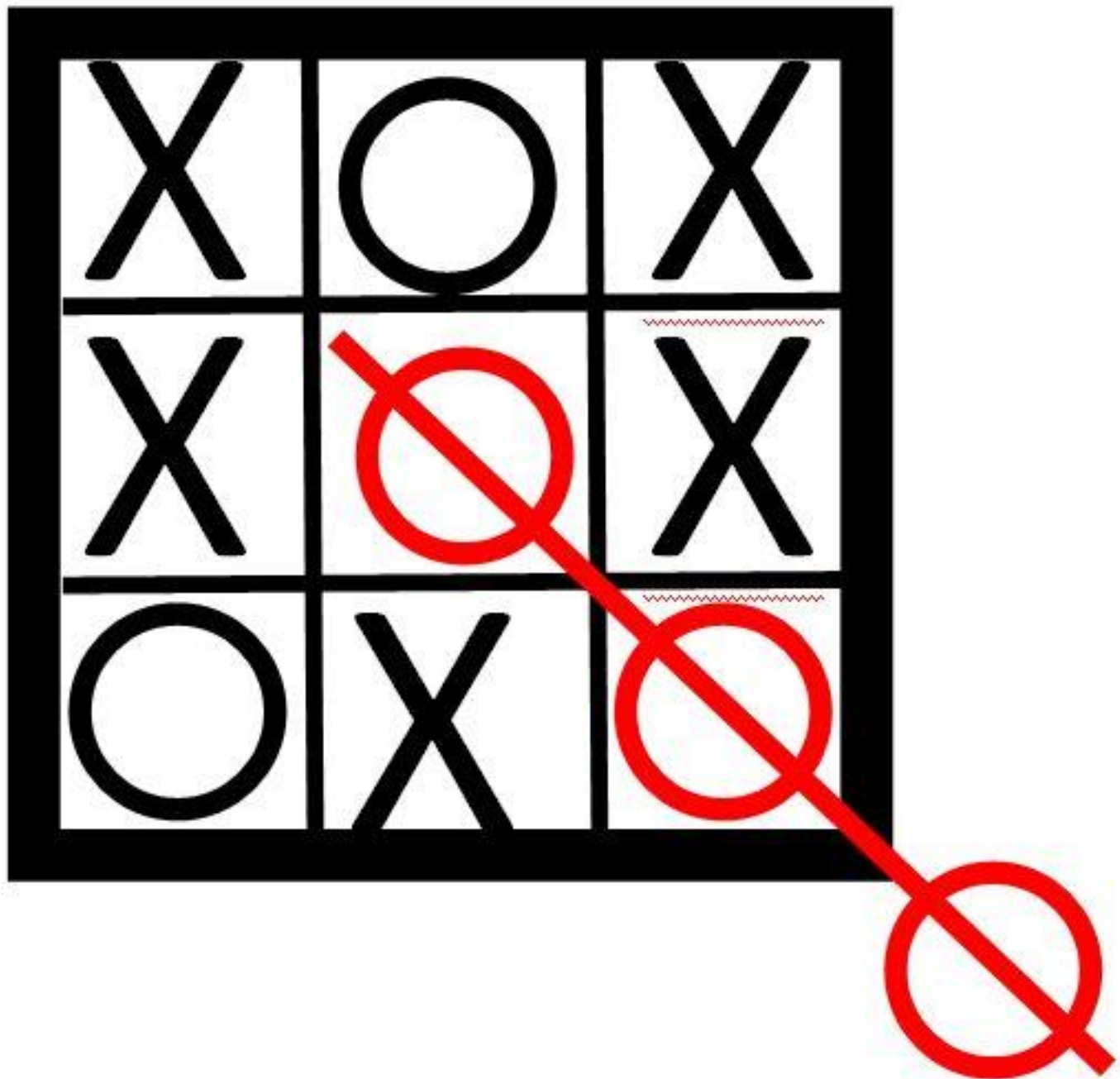
Clinical
Research



I think it says we're in trouble.

when nothing
goes right...

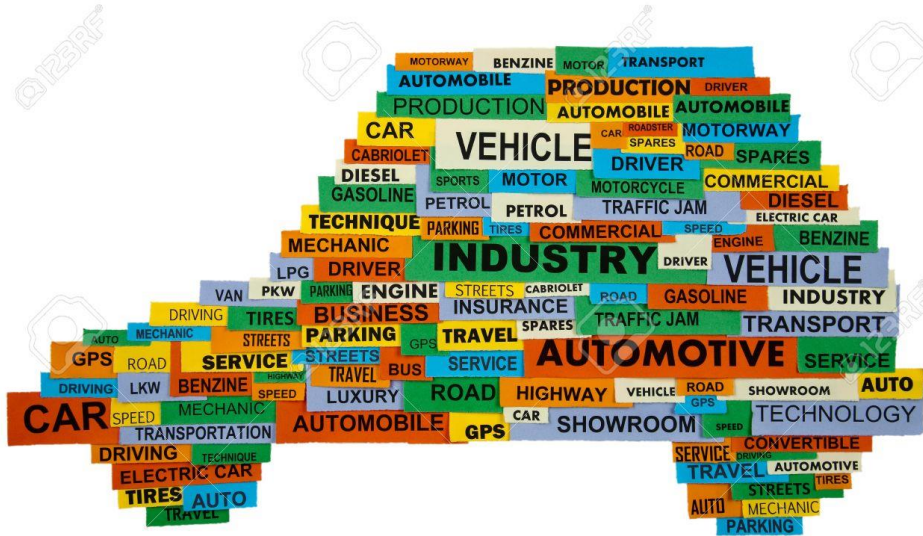
go left.





Clinical
Research

Industry Supported Research



GLOBAL MEDICAL DEVICE MARKET GEOGRAPHICAL SEGMENTATION

✓ USD 298 Billion (2013)

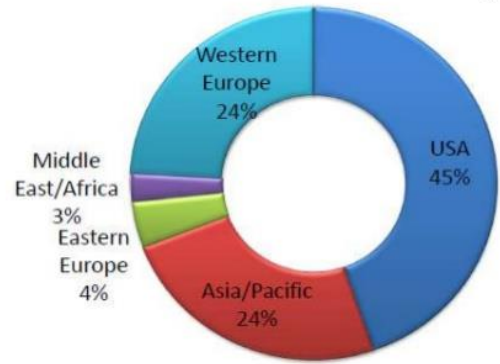
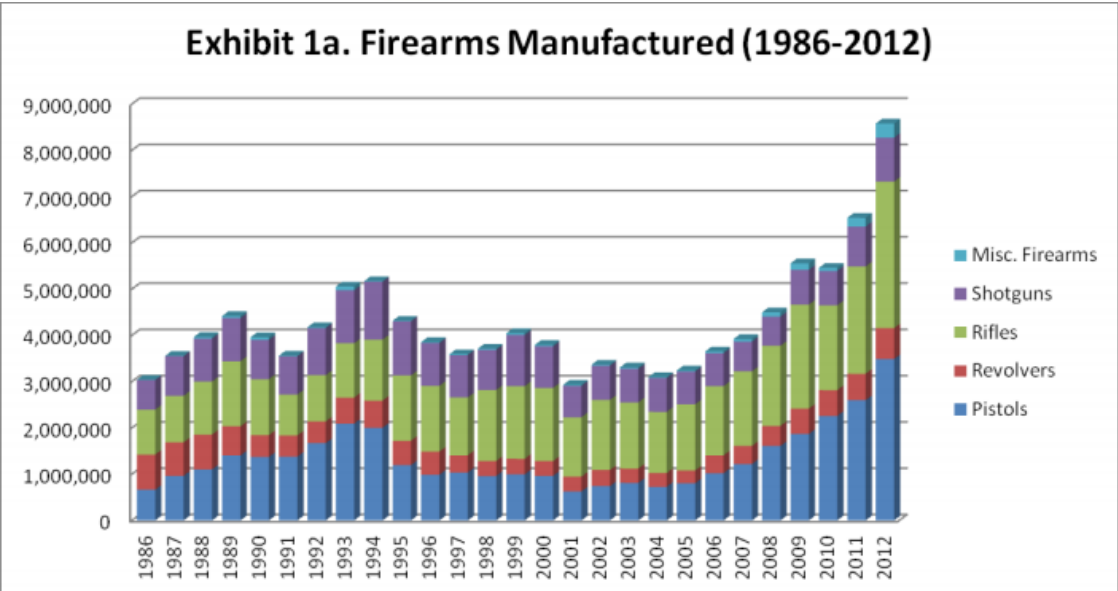


Exhibit 1a. Firearms Manufactured (1986-2012)





Possibly a bridge

Clinical
Research



DEFENSE
BUDGET

\$561B

Trump's
proposed
addition

\$54B



*Best Bet for
the Near Future*

Clinical
Research

Seed Corn

Impact of Managed Care on Medical Education and Research

James C. Thompson, M.D.

From the Department of Surgery, The University of Texas Medical Branch, Galveston, Texas

Genesis 41:

v. 35 And let them . . . lay up corn . . .

v. 36 . . . that the land perish not through the famine.

“In the Bible, we are admonished to lay up corn so that the land would not perish through famine. If we fail to invest in future education and research, we may have a medical famine.”