

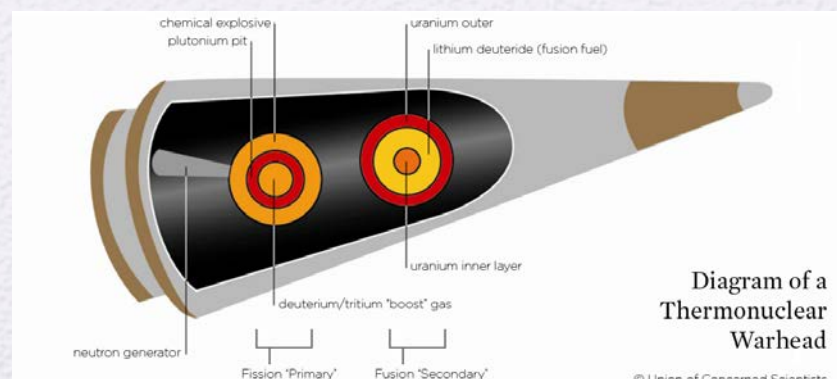
The Nuclear Threat

The Global Threat
of Nuclear Weapons

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What is a Nuclear Weapon?

- Explosive weapon with destructive force from sudden release of energy
- Using “fission” and/or “fusion”
 - **Fission:** energy derived by SPLITTING atoms (1st gen bombs)
 - **Fusion:** energy derived by FUSING together atoms
- Today’s nukes have a combo of both fission and fusion
- Detonate chemical explosives around a sub-critical sphere/“pit” – usually Uranium or Plutonium



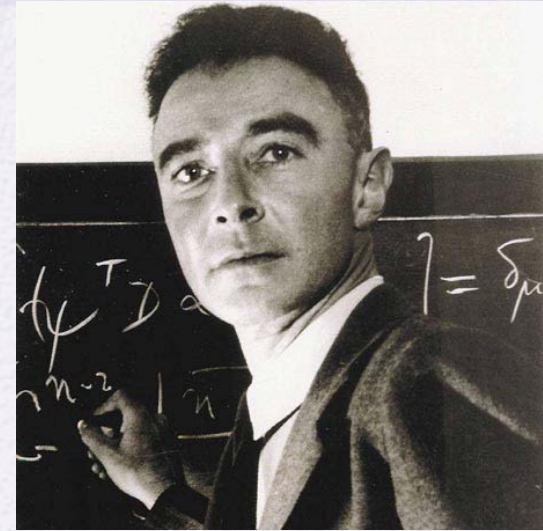
Video of Nuclear Weapon

- https://youtu.be/5gD_TL1BqFg?t=1m52s



History of Nuclear Weapons

- United States was first country in the world to develop and use nukes
- **Manhattan Project** (Robert Oppenheimer, Father of Atomic Bomb)
 - Project sponsored by U.S. govt
 - U.K. and Canada supported it
 - Assigned to gather intelligence on German nuclear weapons project + create own nuke



- **Why was the U.S. govt interested?**

- Pearl Harbor (Dec. 7, 1941)
- “atmosphere of enthusiasm and urgency”
- First atomic bomb detonated in New Mexico, July 1945 (Trinity Explosion)



Use of Nuclear Weapons

World War II (First and only time in history)



- Hiroshima: August 6, 1945, “Little Boy” detonated
- Nagasaki: August 9, 1945, “Fat Man” detonated



- Killed an estimated of 226,000 people in Japan
- President Truman justified decision saying:
 - “We have used [the bomb] against those who attacked us without warning at Pearl Harbor...against those who have abandoned all pretense of obeying international laws of warfare”
- Truman [Address](#) to the American public

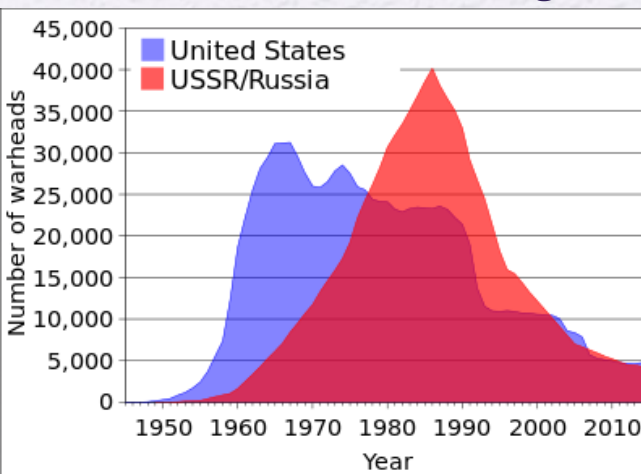
Did we win? Yes and No...



- Sept. 2, 1945, Japan surrenders after attack (V-J Day)
- But... two weeks after Hiroshima/Nagasaki, Stalin signed a decree to lay the basis for a Soviet nuclear program
- Four years later (1949) USSR conducted its first nuclear test explosion



“The fact that the Americans used the bomb meant a lot. That meant they were ready to use it again, perhaps against another enemy, against another target.”– Vladislav Zubok, Russian Historian



- U.K. (1952), France (1960) and China (1964) followed suit thereafter
- A nuclear arms race began this way...

Arms Race (Cold War)

- Nuclear Arms Race took place during the Cold War (1947-1991)
- **Mutual Assured Destruction (MAD)** was reached

MAD: military doctrine which full-scale use of nuclear weapons by two or more opposing sides would cause complete annihilation of BOTH the attacker and defender

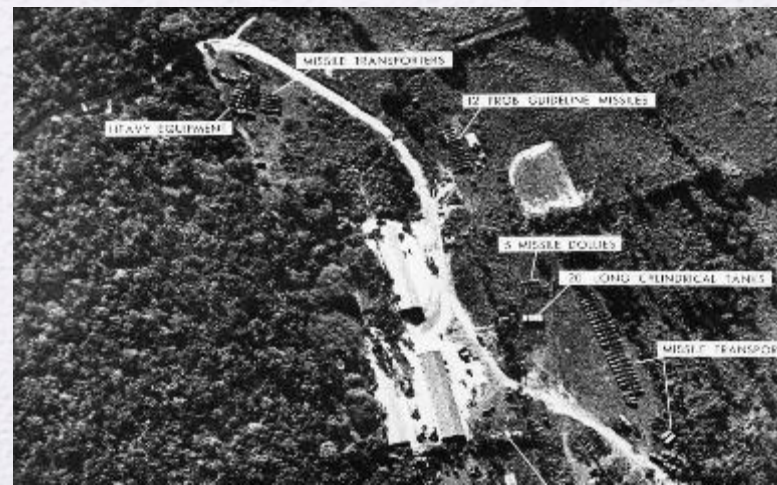


- Both U.S. and Russia reached enough nuclear power to obliterate each other
- EX: Cuban Missile Crisis (next slide)



Cuban Missile Crisis (Cold War)

- **Cuban Missile Crisis** (October 1962): nuclear confrontation between U.S. and U.S.S.R.-- 90 miles away from Florida
 - Closest the Cold War came to escalating a full scale nuclear war!!!
- U.S. attempts to invade Cuba in Bay of Pigs Invasion (fails)
- US ballistic missiles deployed to Italy/Turkey (NATO allies); Soviet ballistic missiles deployed in Cuba (USSR ally)

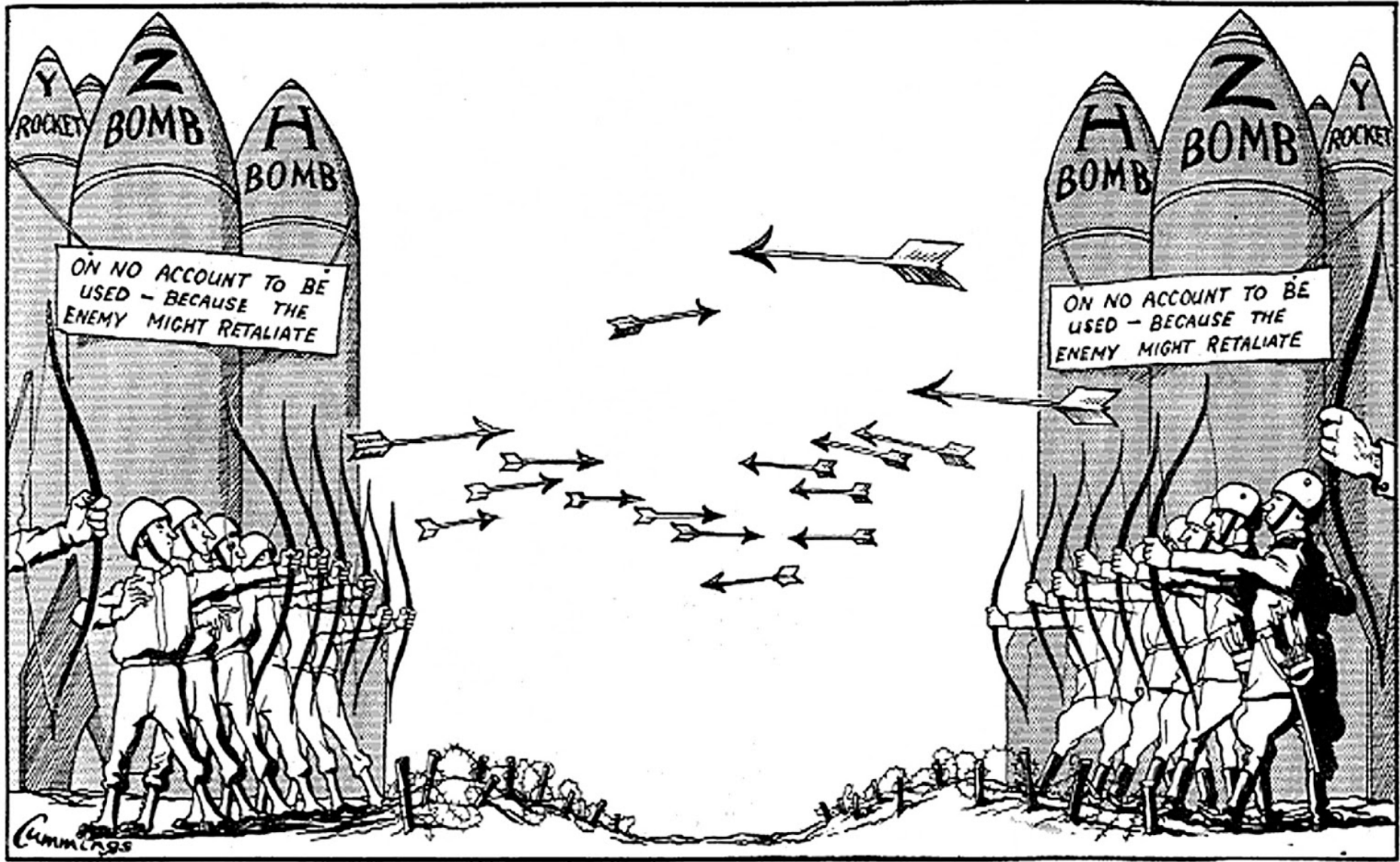


Cuban Missile Crisis (Continued...)

- President Kennedy attempted a naval blockade to stop shipment of nukes to Cuba; Soviets continued to ship missiles
- Invasion and nuclear war **ALMOST** broke out!
 - Thankfully, due to **diplomacy efforts** by Kennedy/Khrushchev, a solution worked out, but close call (**VIDEO**)



Arms Race (Cold War)



Who are the nuclear powers today?

9 countries have nuclear weapons

- U.S.: 7,200
- Russia: 7,500
- China: 260
- India: 90-110
- Pakistan: 100-120
- Israel: 80
- France: 300
- U.K.: 215
- North Korea: <10



See interactive map [here](#)

How MANY total nukes?

There are more than 15,000 nuclear weapons on Earth

Who is seeking nuclear weapons today?

- Other countries

- Iran
- South Korea
- Japan
- Syria
- Saudi Arabia



SEOUL SURVIVORS
As South Koreans Lose Faith in Uncle Sam They Want Nukes of Their Own
Frustrated and frightened by North Korea's nuclear arsenal, Seoul wants more protection. Trump says they should build their own nukes. Does that make sense?

The Saudis are ready to go nuclear

The kingdom's ambassador to London tells the Telegraph that 'all options are on the table' if talks fail to keep Iran in check

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- Terrorists

- Security of nuclear facilities has been weak
 - 84 year-old Catholic nun, Susan Rice, + 2 activists [broke into a nuclear facility](#) in Tennessee to make a point
 - Spent two hours defacing the facility before caught

Mistakes, Miscalculations, Madness...

Mistakes

- Computer errors (technology is technology)
- Goldsboro Bomber Crash, 1961
 - One parachute opened normally, second did not
 - A single switch prevented a U.S. nuclear catastrophe



Miscalculations

- Black Brant Scare, 1995
 - 1995, NASA rocket interpreted by Soviets as a nuclear missile. Pres. Yeltsin took out the nuclear football for the first time. Thankfully didn't press the button.
- Miscommunication, 2007
 - Six nuclear warheads were mistakenly and unbeknownst to the pilots flown on a bomber in U.S. – weapons were unaccounted for 36 hours, left unattended

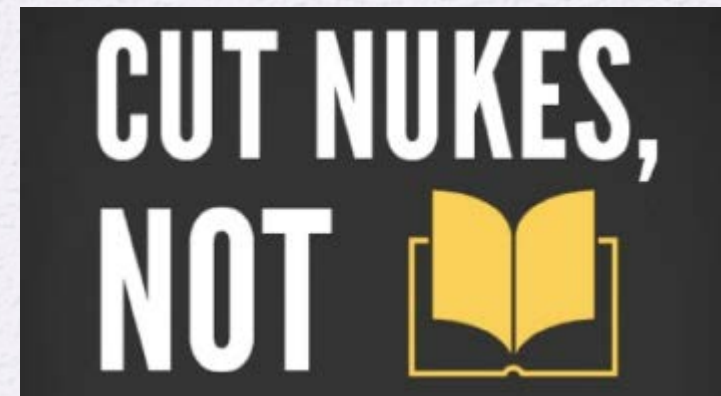
Madness

- Nuclear terrorism
- Lost warheads/nuclear material
 - “In the past two decades, there have been at least 25 instances of nuclear explosive materials being lost or stolen” – former CIA Operative, Valerie Plame Wilson



Why eliminate nuclear weapons?

- **Humanitarian Perspective:** results in massive human death toll
 - Long term effects: cancers, tumors, genetic damage, infertility, birth defects
- **Economic:** \$1 trillion spent on nukes in next decade!
 - While cutting essential services such as education, jobs, healthcare, clean energy, public safety
- **Morality of War:**
 - Cold War is over, no desire for WW3
 - World isn't safer, breaks principles of just war



Faces of the hibakusha

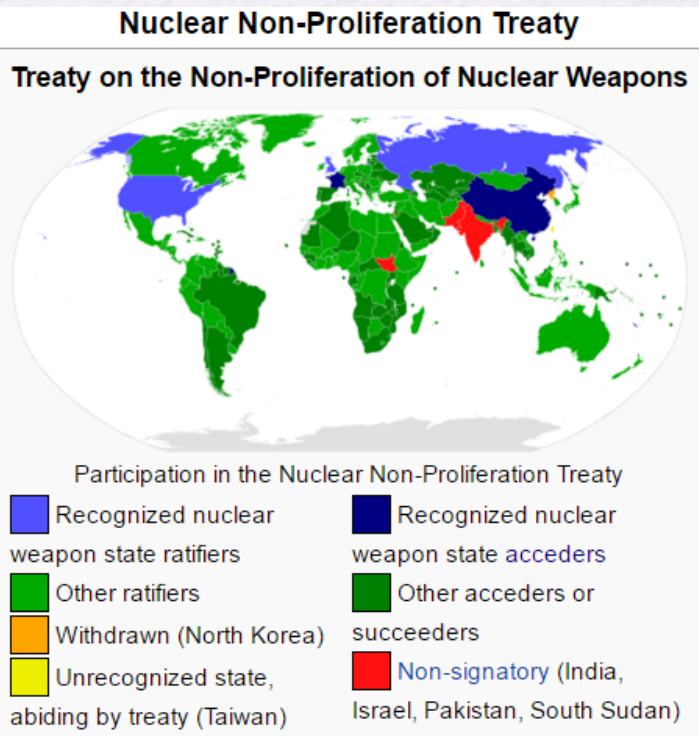
It is the survivors of the atomic bombings are called hibakusha. These are shocked the bomb. The deaths, they were survived as being nuclear, until to many or simply, they are those hibakusha, photographed in 2000, from left to right: Yachiyo Hara, Taro Kawanishi, and Oshichiyo Onizuka.



- **Maybe we should learn from history?**
 - Hibakusha warns us against using them
 - [Oppenheimer](#) regretted creating them, “Now I am become death, the destroyer of worlds”
 - Perhaps we should listen to those who experienced and built them...?

What have we done to stop the spread of nukes?

- **NPT: Non-Proliferation Treaty, 1970**
 - Aimed at limiting the spread of nukes in non-proliferation, disarmament, peaceful use of nuclear energy
 - 191 states signed on, N. Korea withdrew



- **CTBT: Comprehensive Nuclear Test Ban Treaty, 1996**
 - Bans any nuclear weapon test or any nuclear explosion in any environment
 - Has NOT entered into force, 8 countries have not signed/ratified it
 - U.S. is one of the countries that has signed but not ratified!

What have we done to stop the spread of nukes?

- **SALT 1 & 2, Intermediate-Range Nuclear Forces Treaty, 1987**
 - Reagan/Gorbachev met in Reykjavik
 - Served as example for subsequent arms control reduction treaties



- **New START Treaty, 2010**
 - Obama/Medvedev agreement
 - Nuclear arms reduction treaty in Prague
 - Agreement for ceiling of 1,550 nuclear warheads

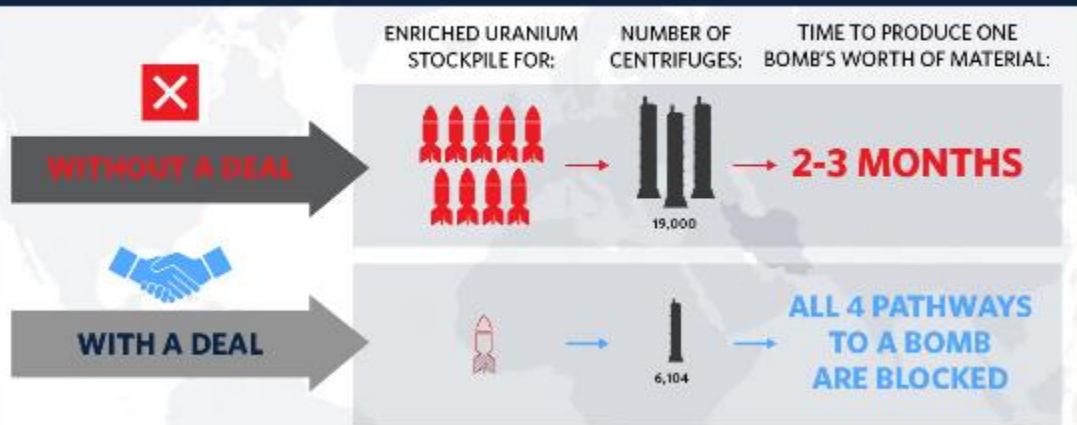
Problem Cases: Iran

- **2016: Iranian Nuclear Deal**
 - P5+1 struck a deal to prevent Iran from obtaining a nuclear weapon
- **Major victory for global security**
 - Less nukes in world!
 - Stop nuclear arms race in Middle East
- **Opposition**
 - Don't trust Iran, don't want to relieve sanctions
 - Trump says it's the "worst deal ever made"



China, France, Russia, U.K., U.S., Germany, Iran

**IF IRAN TRIES TO BUILD A NUCLEAR BOMB TODAY,
HOW LONG WOULD IT TAKE?**



Support

- Why not give diplomacy a chance?
- Sanctions/not talking hasn't worked for 30+ years

Problem Cases: North Korea

- **North Korean Nuclear Program**

- Withdrew from NPT in 2003
- Bush attempted negotiations, but failed. Obama no attempt
- Developed first nuclear weapons in 2009



- **Problem:**

- NK nuclear weapons cannot reach U.S. yet, conflict with S. Korea or Japan affects U.S.
- Nuclear catastrophe = radiation spreading across the Pacific
- Anti-missile system deployed in S. Korea after latest NK nuclear test



- **What can be done?**

- Instead of worrying about Iran, let's focus on N. Korea
- Reopen dialogue, consider easing sanctions; Trump could have foreign policy legacy
- Rex Tillerson has rejected talks with North Korea on nuclear program

Looking towards the future...

Negatives:

- Trump pre-election: “proliferation will happen anyway”
- Denounced START Treaty, said was one sided w Russia
- U.S. recently deployed anti-missile system in S. Korea after N. Korea’s latest test



- More nuclear spending– “U.S. must be on top of pack”
- 2018 budget= 11.3% increase in NNSA

Table 2. 2018 Discretionary Overview by Major Agency

(Not discretionary BA in billions of dollars)

	2017 CR/Enacted ¹	2018 Request ²	2018 Request Less 2017 CR/Enacted	
			Dollar	Percent
Base Discretionary Funding:				
Cabinet Departments:				
Agriculture ³	22.6	17.9	-4.7	-20.7%
Commerce	9.2	7.8	-1.5	-16.7%
Defense	521.7	574.0	+52.3	+10.0%
Education	89.2	83.0	-6.2	-8.5%
Energy	29.7	28.0	-1.7	-6.6%
National Nuclear Security Administration	12.5	13.9	+1.4	+11.3%
Other Energy	17.2	14.7	-2.5	-17.9%
Health and Human Services ⁴	77.7	66.1	-11.6	-16.2%
Homeland Security	41.8	44.1	+2.3	+6.8%
Housing and Urban Development (HUD):				
HUD gross total (excluding receipts)	46.9	40.7	-6.2	-13.2%
HUD receipts ⁵	-10.9	-9.0	+1.9	N/A
Interior	13.2	11.6	-1.6	-11.7%

sources: world wildlife fund, 1. restriction of americas sale bank

WORLD WILDLIFE FUND

Looking towards the future...

- **Positives:**

- Overall, we cut a large part of the world's nuclear arsenal
 - From **70,300** in **1986** to **14,900** in early **2017**
- In the last 8 years, we have reduced U.S. and Russian arsenals; we can and should continue to do so!

Perspective that nuclear proliferation is inevitable?

“Such fatalism is a deadly adversary. For if we believe that the spread of nuclear weapons is inevitable, then in some way we are admitting to ourselves that the use of nuclear weapons is inevitable.” – Obama, 2009 Prague speech



Aww, you got a new puppy...

I got rid of more than 1,000 nukes.

How can YOU make a difference?



- **Educate yourself:**
 - [Countdown to Zero](#) movie
 - Do your research



- **Participate:**
 - Activism/Marches/Protest
 - Contact your Representative, write to Trump, make your voice heard
 - Join orgs that seek to eliminate nuclear weapons (GZ, ICAN)





Resources



- List of anti-nuclear orgs: https://en.wikipedia.org/wiki/Anti-nuclear_organizations
- Nuclear Blast site map: <https://nuclearsecrecy.com/nukemap/>
- Status of World Nukes: <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>
- Animation of how powerful nukes have become: <https://t.co/MKk2A3zrEY>
- UN Secretary General Ban Ki-Moon on nukes: <https://vimeo.com/26176369>
- How young people get involved: <https://vimeo.com/25716425>
- Global Nuclear Security: <http://www.nti.org/about/global-nuclear-policy/>
- Nuclear Terrorist Threat Bigger Than You Think (CNN):
<http://www.cnn.com/2016/04/01/opinions/nuclear-terrorism-threat-cirincione/>
- U.S. deploys anti-missile system in South Korea: <http://www.reuters.com/northkorea-missiles-kcna-idUSKBN16D2MC>
- Hibakusha Short Film about Hiroshima Experience: <https://youtu.be/pYmW-6MV7GM>



Whatever you do... DON'T LOSE HOPE!

- You are the future generation
 - You have a voice; USE IT
 - You can make a difference



Thank you!
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