

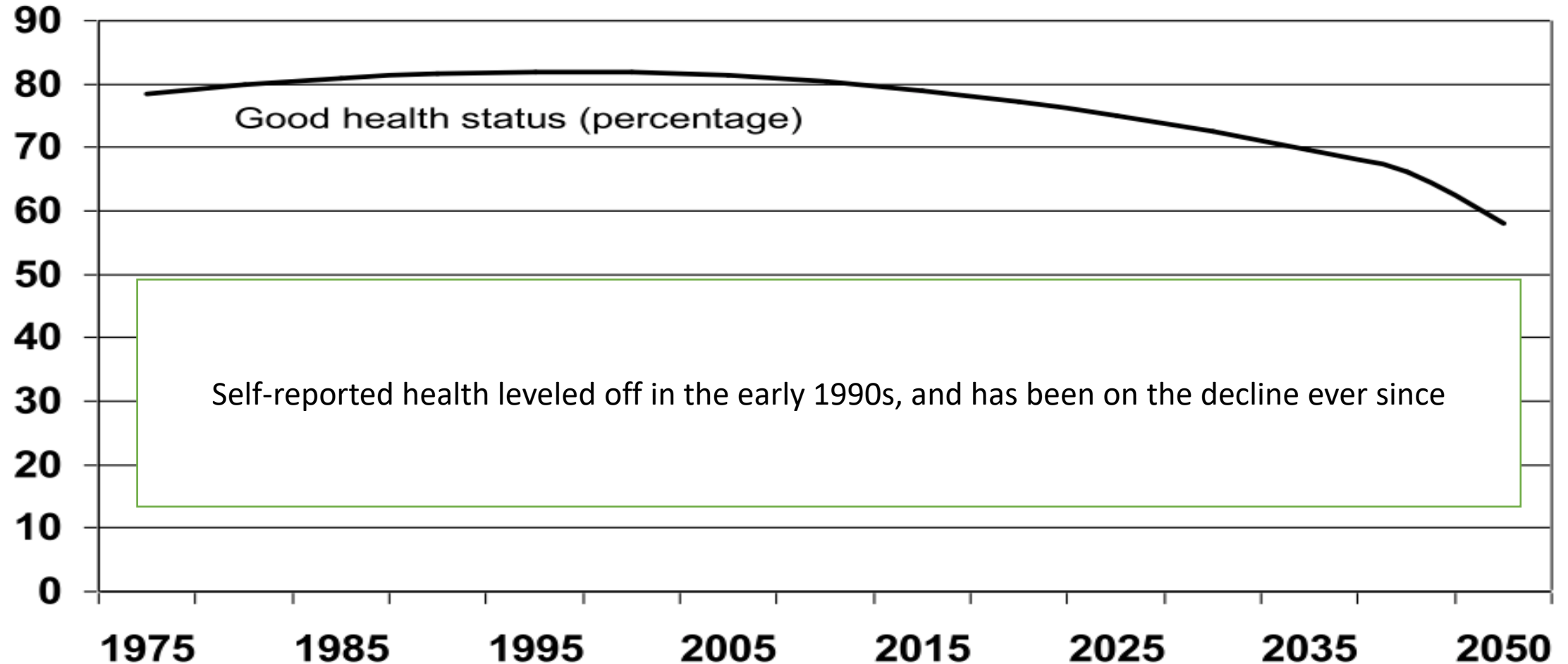


COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

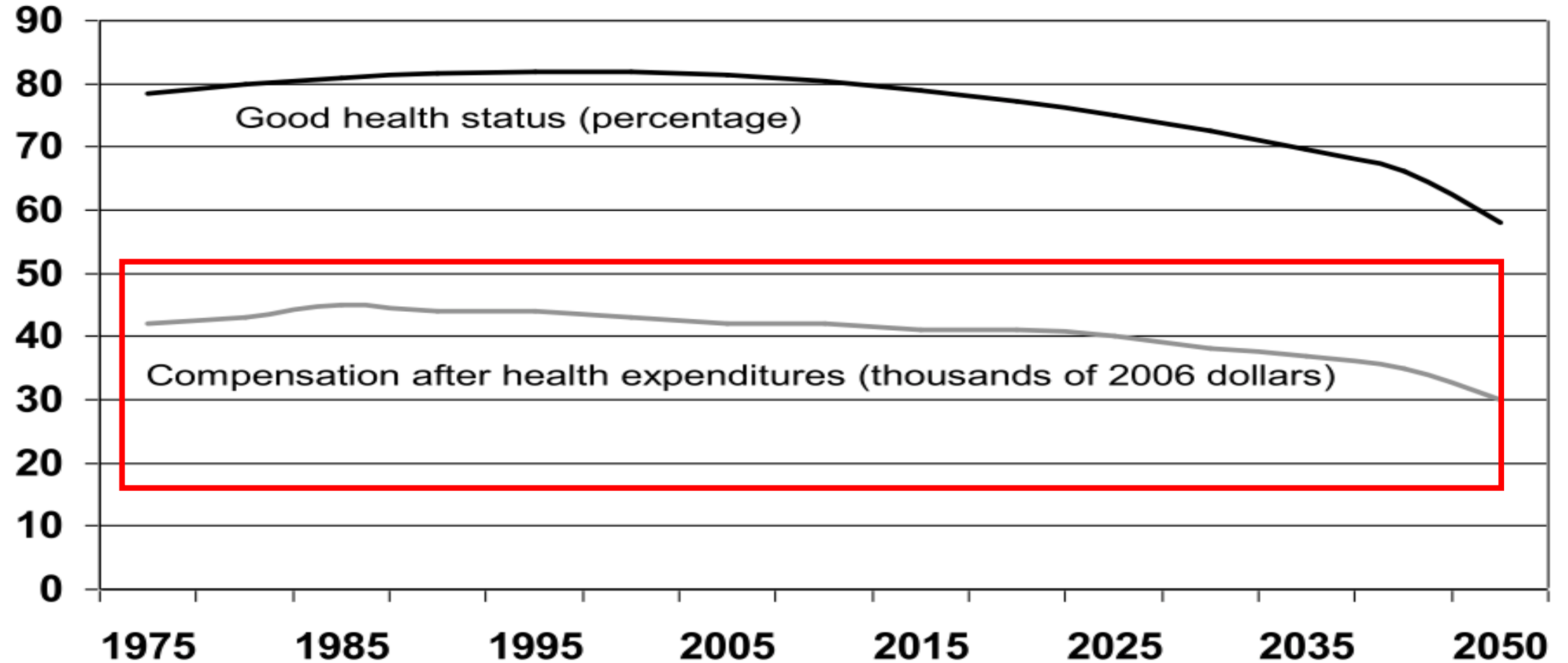
The economic benefits of social policy for health

Peter Muennig, MD, MPH

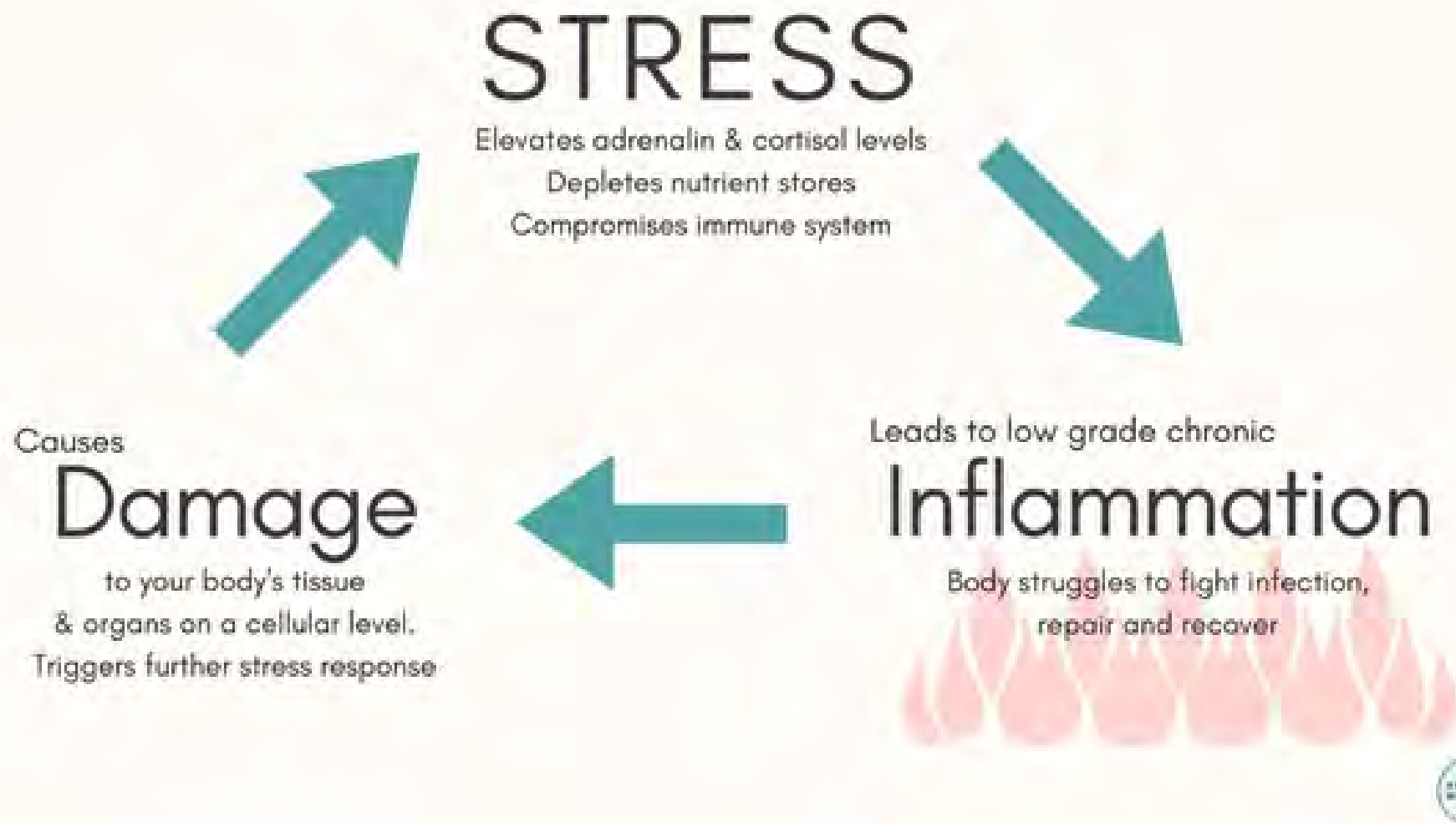
1. The health and well-being of Americans is on the decline

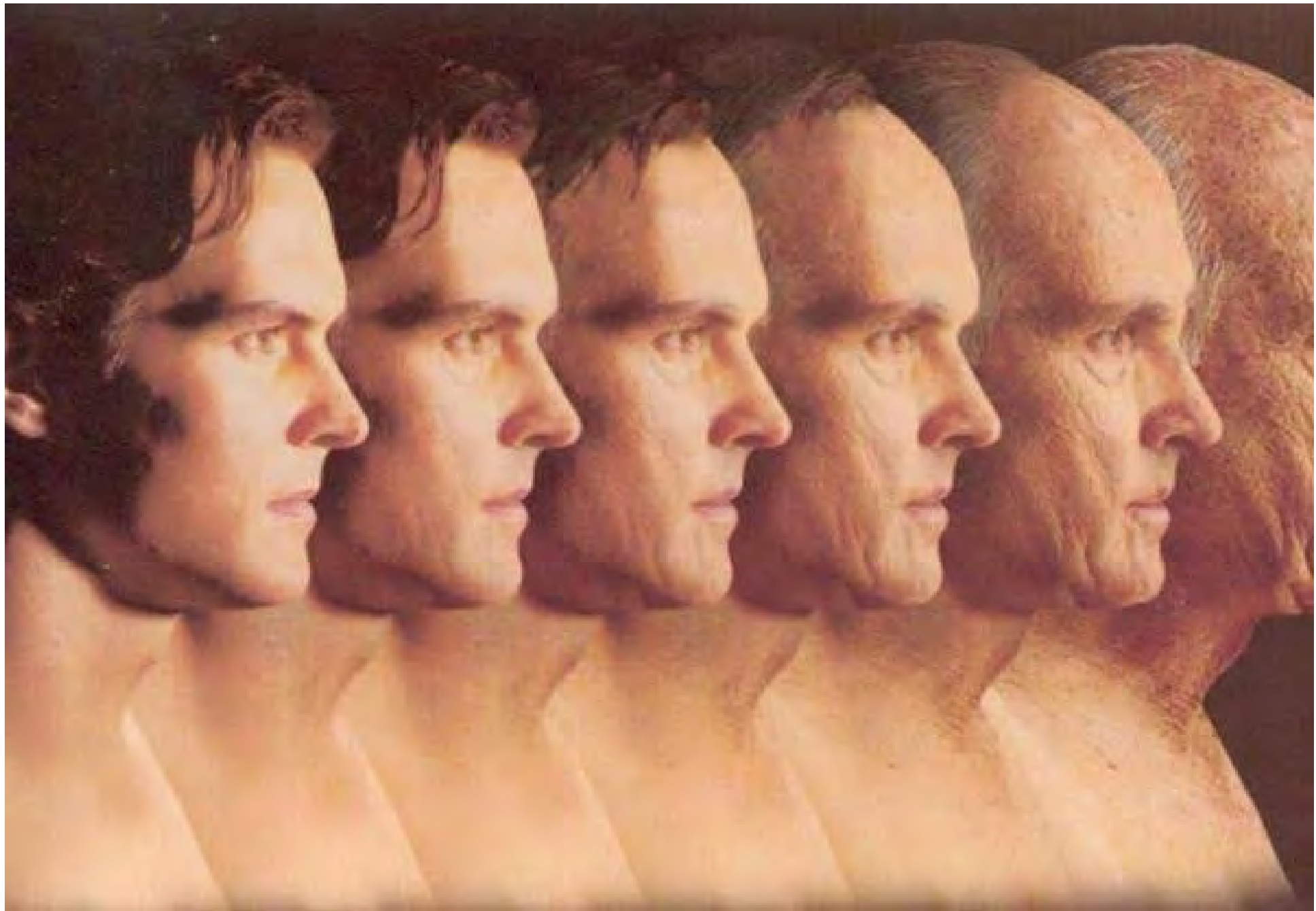


2. Economic distress is a contributor



3. Economic distress produces psychological stress





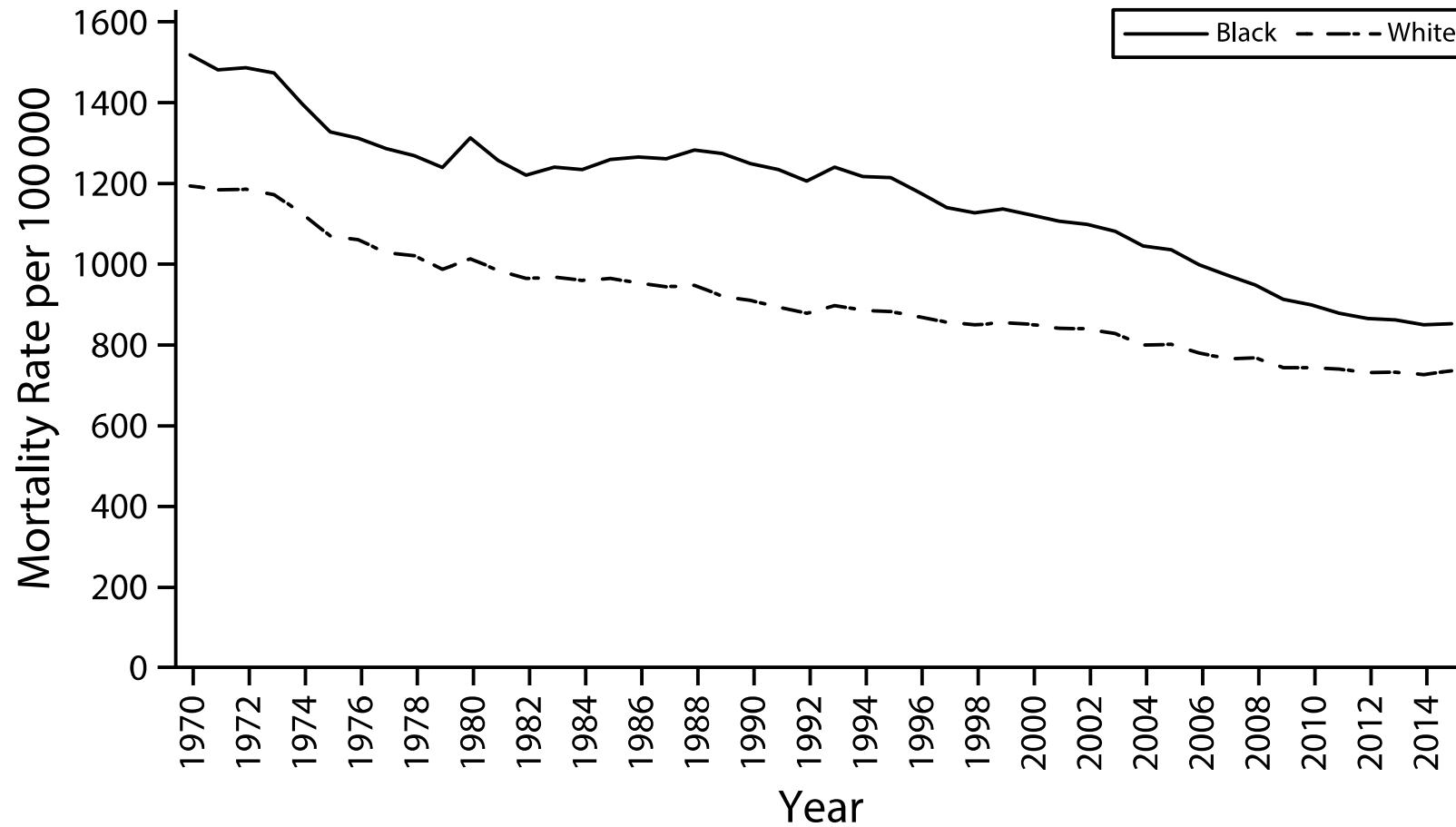
4. Policymakers can intervene on this process



5. Policymakers can also reduce toxic exposures and accidents

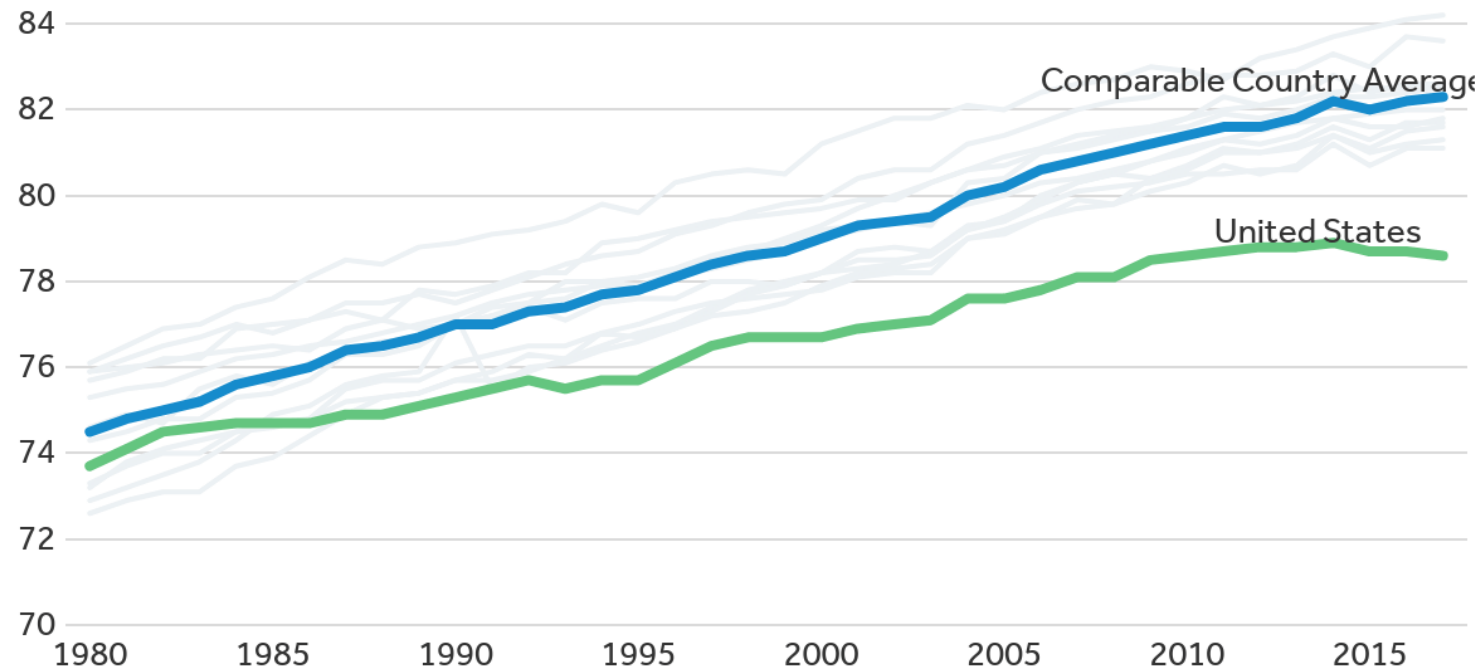


The health of Americans has been on the decline for decades



Even as the health of all peer nations has been improving steadily

Total life expectancy at birth in years, 1980-2017



Note: Break in series for Belgium and Switzerland in 2011, Germany in 1991, and Canada in 1982

There are good guesses as to why:

- Toxic stress
(primarily economic)



There are good guesses as to why:

- Toxic exposures
(e.g., food quality, air pollution)



There are good guesses as to why:

- Accidents









The stress-brain loop

chronic stress

- inadequate sleep
- poor nutrition
- emotional distress

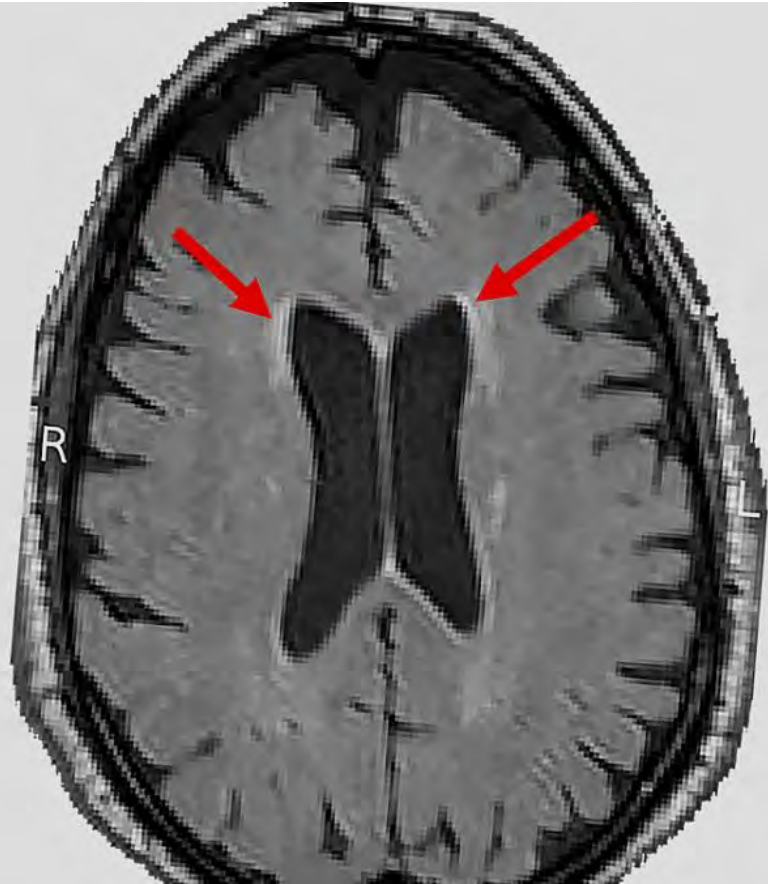
increases
glucocorticoids

decreased regulation
of cortisol

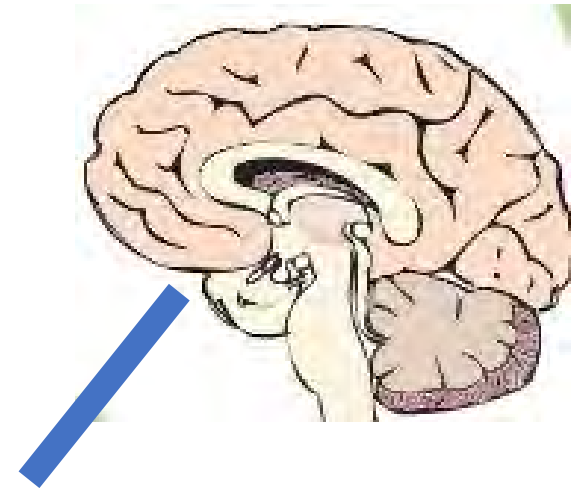
- ↓ attention
- ↓ perception
- ↓ short-term memory
- ↓ learning
- ↓ word finding

cellular changes in
the hippocampus

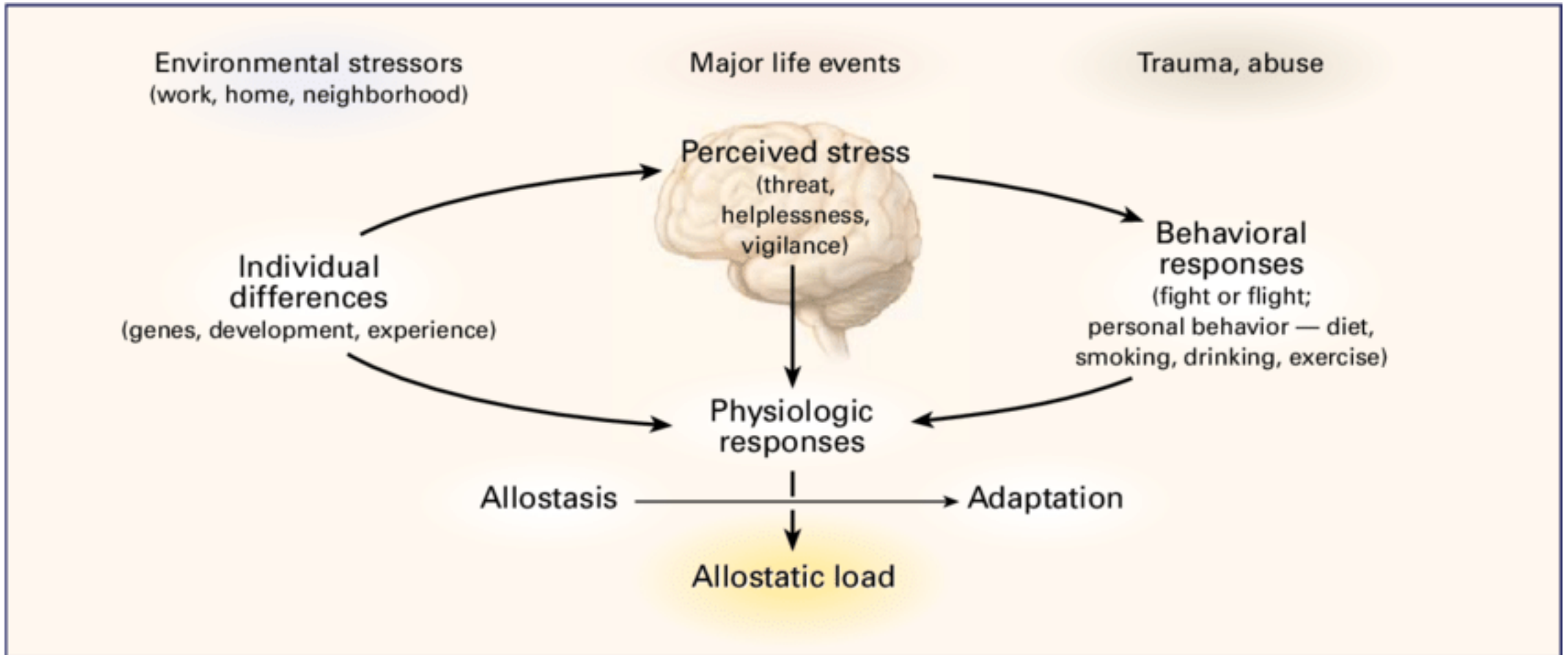




Endocrine control



Rapid Acceleration of the Aging Process

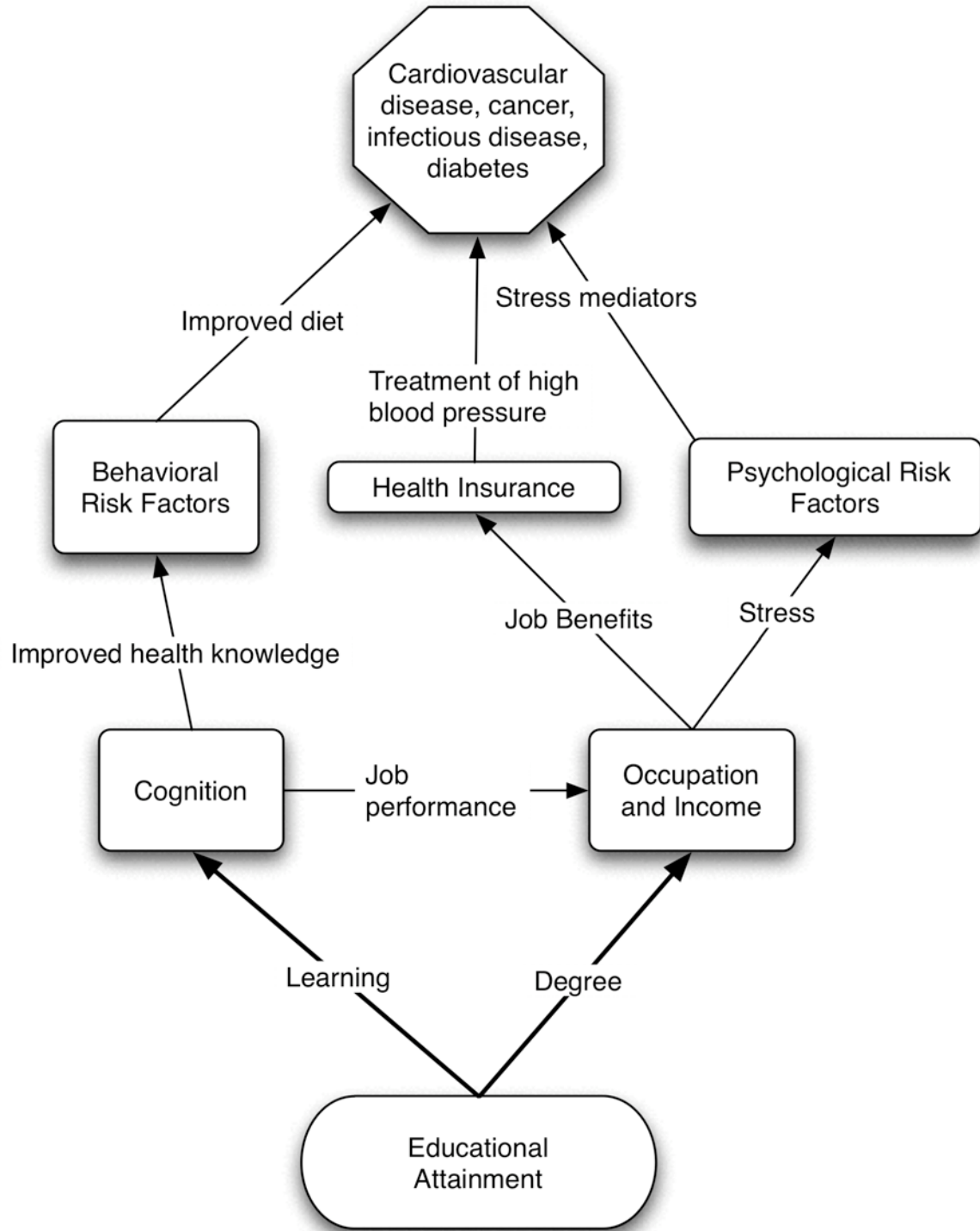


All of us age

The question is how fast

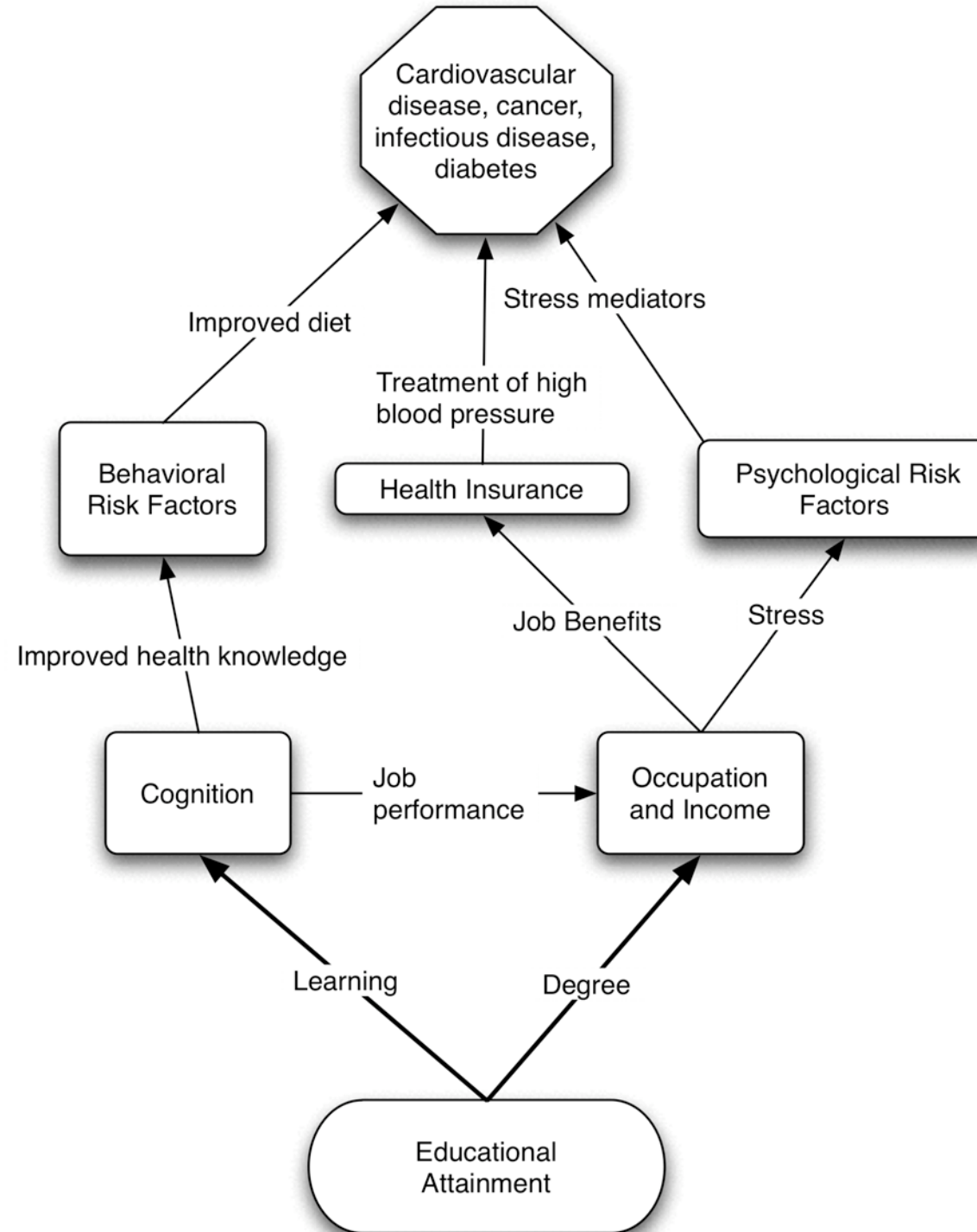
We may be able to slow human aging by investing in education





Also reduces:

- Toxic exposures
- Accidents
- Crime victimization



How do we actually invest in education?

- Pre-K programs
- Teacher prestige via salary increases
- Reduce class sizes
- Improve the architecture and appearance of schools

Leaders:

- Korea
- Finland
- Canada

Maths			Sciences			Reading		
1.	 China (Shanghai)	600	1.	 China (Shanghai)	575	1.	 China (Shanghai)	556
2.	 Singapore	562	2.	 Finland	554	2.	 South Korea	539
3.	 Hong Kong, China	555	3.	 Hong Kong, China	549	3.	 Finland	536
4.	 South Korea	546	4.	 Singapore	542	4.	 Hong Kong, China	533
5.	 Taiwan	543	5.	 Japan	539	5.	 Singapore	526
6.	 Finland	541	6.	 South Korea	538	6.	 Canada	524
7.	 Liechtenstein	536	7.	 New Zealand	532	7.	 New Zealand	521
8.	 Switzerland	534	8.	 Canada	529	8.	 Japan	520
9.	 Japan	529	9.	 Estonia	528	9.	 Australia	515
10.	 Canada	527	10.	 Australia	527	10.	 Netherlands	508
11.	 Netherlands	526	11.	 Netherlands	522	11.	 Belgium	506
12.	 Macau, China	525	12.	 Liechtenstein	520	12.	 Norway	503
13.	 New Zealand	519	13.	 Germany	520	13.	 Estonia	501
14.	 Belgium	515	14.	 Taiwan	520	14.	 Switzerland	501
15.	 Australia	514	15.	 Switzerland	517	15.	 Poland	500
16.	 Germany	513	16.	 United Kingdom	514	16.	 Iceland	500
17.	 Estonia	512	17.	 Slovenia	512	17.	 United States	500
18.	 Iceland	507	18.	 Macau, China	511	18.	 Liechtenstein	499
19.	 Denmark	503	19.	 Poland	508	19.	 Sweden	497
20.	 Slovenia	501	20.	 Ireland	508	20.	 Germany	497
21.	 Norway	498	21.	 Belgium	507	21.	 Ireland	496
22.	 France	497	22.	 Hungary	503	22.	 France	496
23.	 Slovakia	497	23.	 United States	502	23.	 Taiwan	495
24.	 Austria	496	24.	 Norway	500	24.	 Denmark	495
25.	 Poland	495	25.	 Czech Republic	500	25.	 United Kingdom	494
26.	 Sweden	494	26.	 Denmark	499	26.	 Hungary	494
27.	 Czech Republic	493	27.	 France	498	27.	 Portugal	489
28.	 United Kingdom	492	28.	 Iceland	496	28.	 Macau, China	487
29.	 Hungary	490	29.	 Sweden	495	29.	 Italy	486
30.	 United States	487	30.	 Latvia	494	30.	 Latvia	484
:			:			:		
65.	 Kyrgyzstan	331	65.	 Kyrgyzstan	330	65.	 Kyrgyzstan	314



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— where the borders shd b
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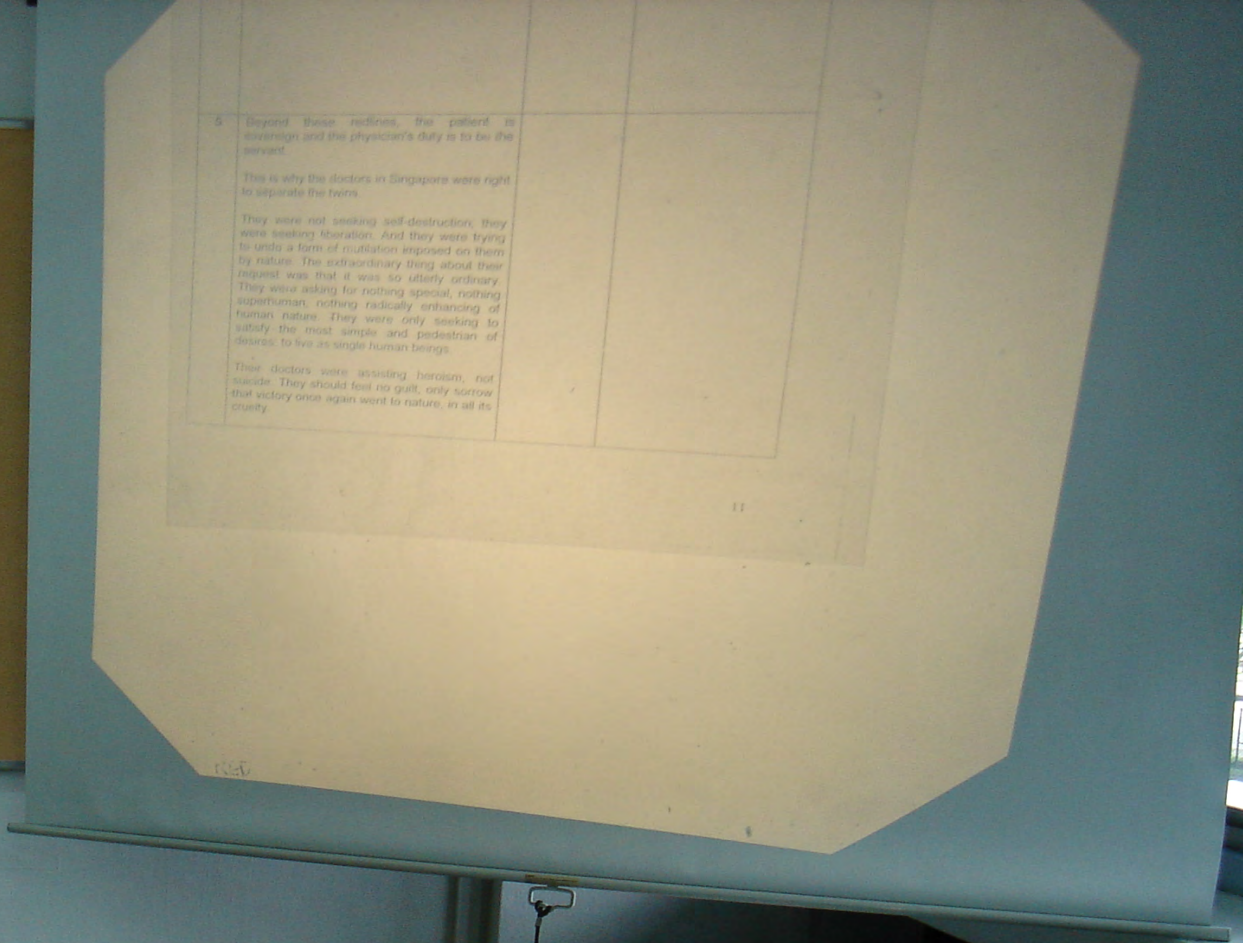
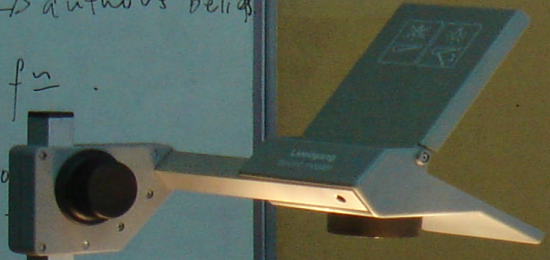
5 Beyond these restraints, the patient is sovereign and the physician's duty is to be the servant.

This is why the doctors in Singapore were right to separate the twins.

They were not seeking self-destruction, they were seeking liberation. And they were trying to undo a form of mutilation imposed on them by nature. The extraordinary thing about their request was that it was so utterly ordinary. They were asking for nothing special, nothing superhuman, nothing radically enhancing of human nature. They were only seeking to satisfy the most simple and pedestrian of desires: to live as single human beings.

These doctors were assisting heroism, not suicide. They should feel no guilt, only sorrow that victory once again went to nature, in all its cruelty.

13-14



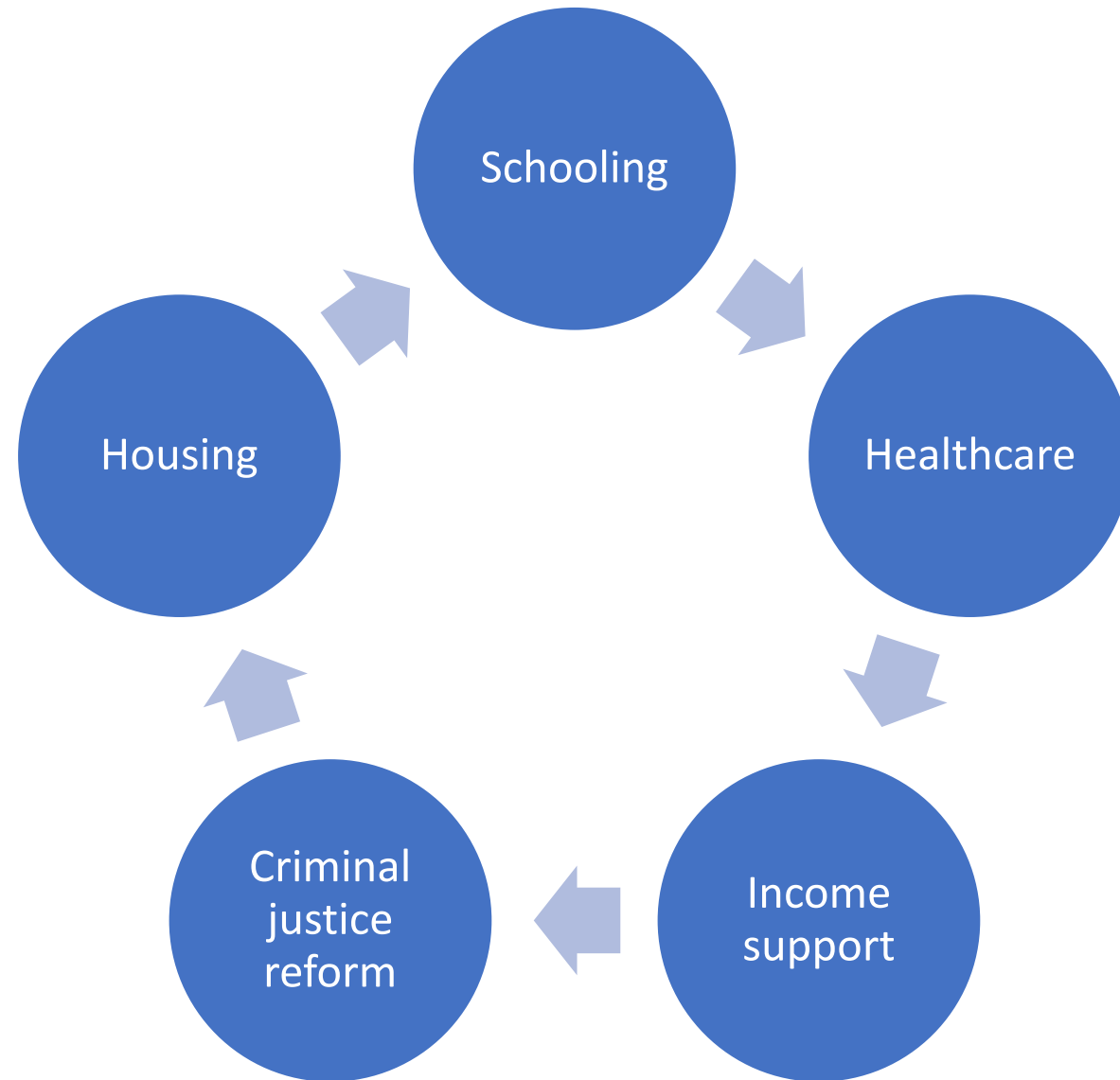


If it is true that teacher quality matters,
then increasing teacher salaries could
improve the quality of education in America.

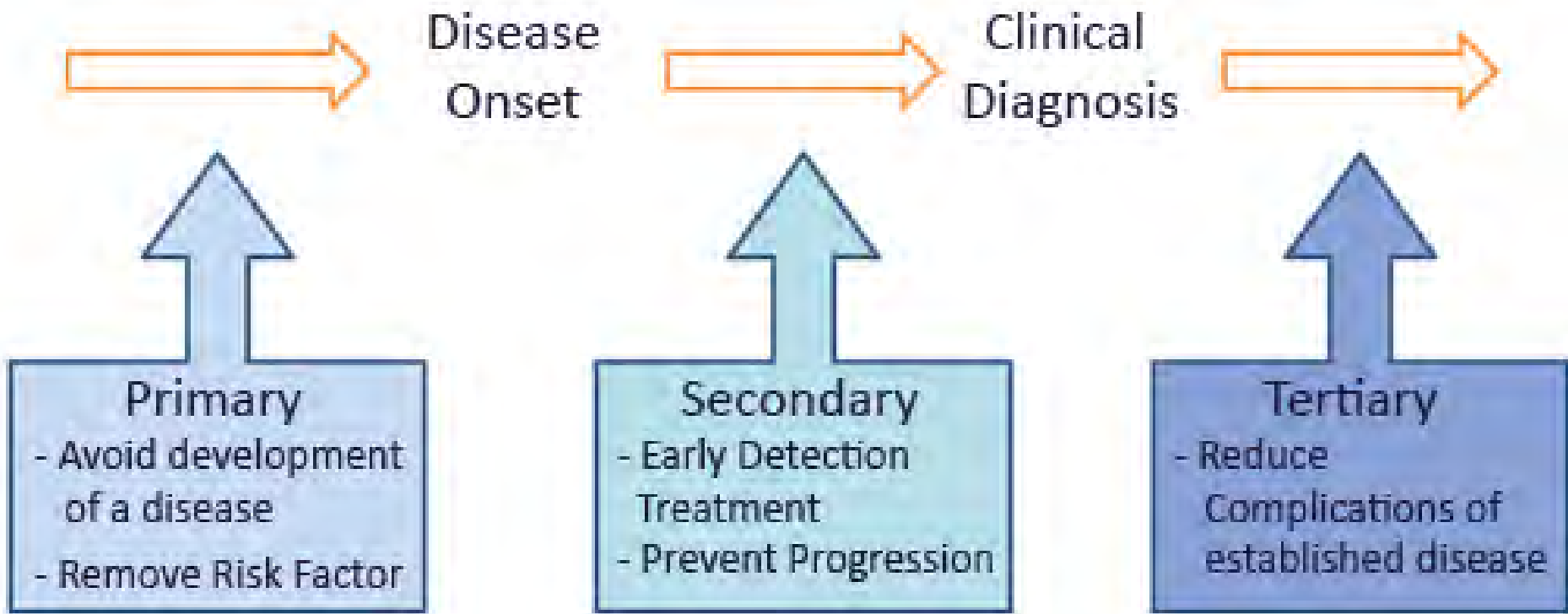
The only way we can know this is through
experimental studies

As I review studies, I will give them a ranking based on the strength of the evidence

Policy options for slowing human decline



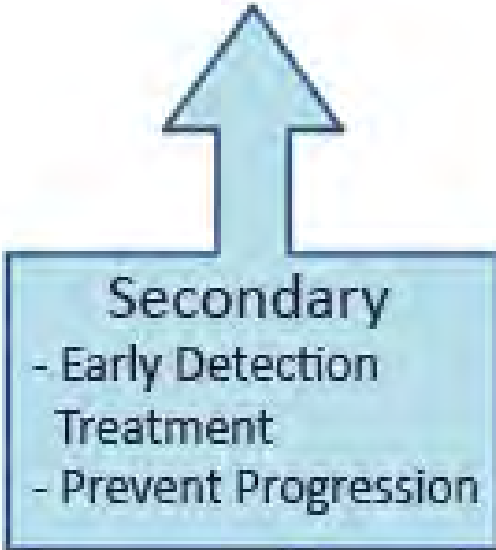
Levels of Prevention Strategies



EPA Regulations

Mammography, Colonoscopy

Cancer Therapies



Economic Evaluation of Social Policy



Imagine you have \$8 million to spend

Mammography detects disease early



Mammography costs \$8 million to save a life



1 life saved with your \$8 million investment



We cannot test this finding. We can only observe outcomes. Evidence 5/10



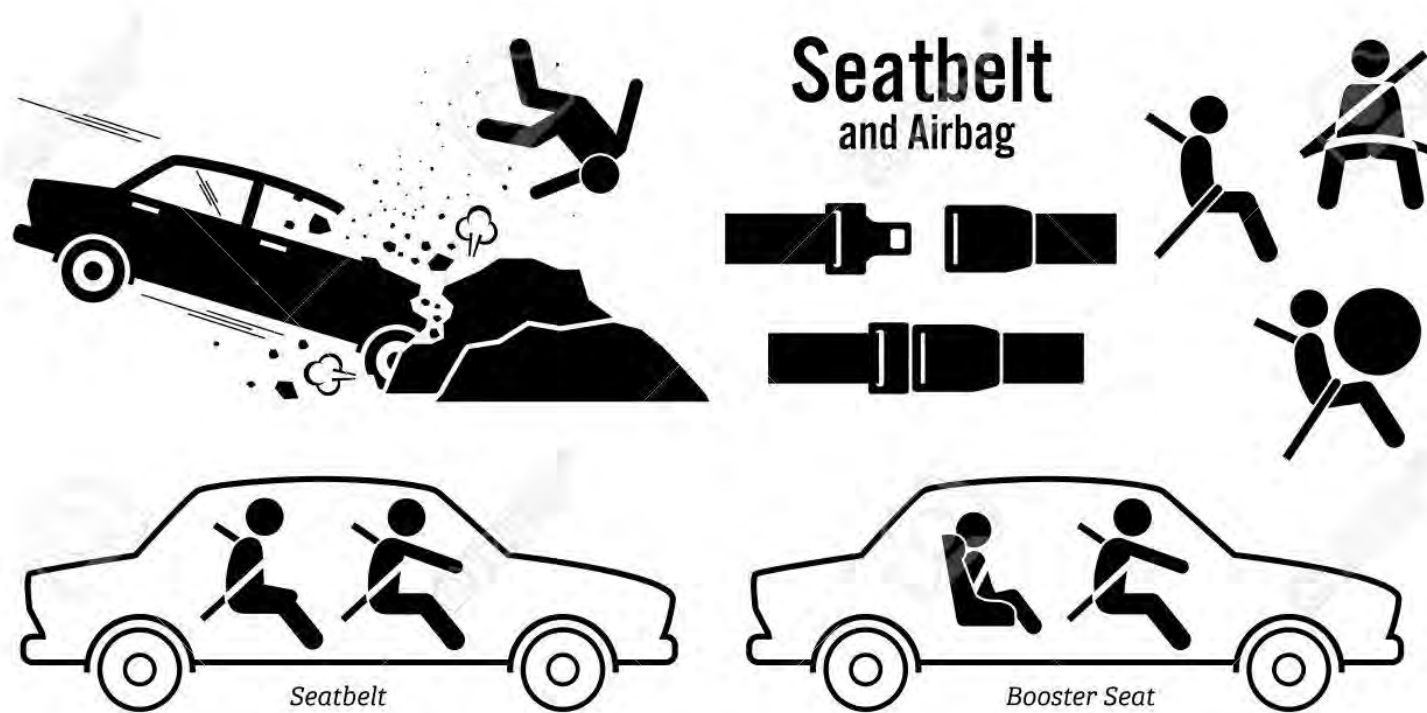
Similar costs associated with treating high blood pressure, cholesterol, and diabetes



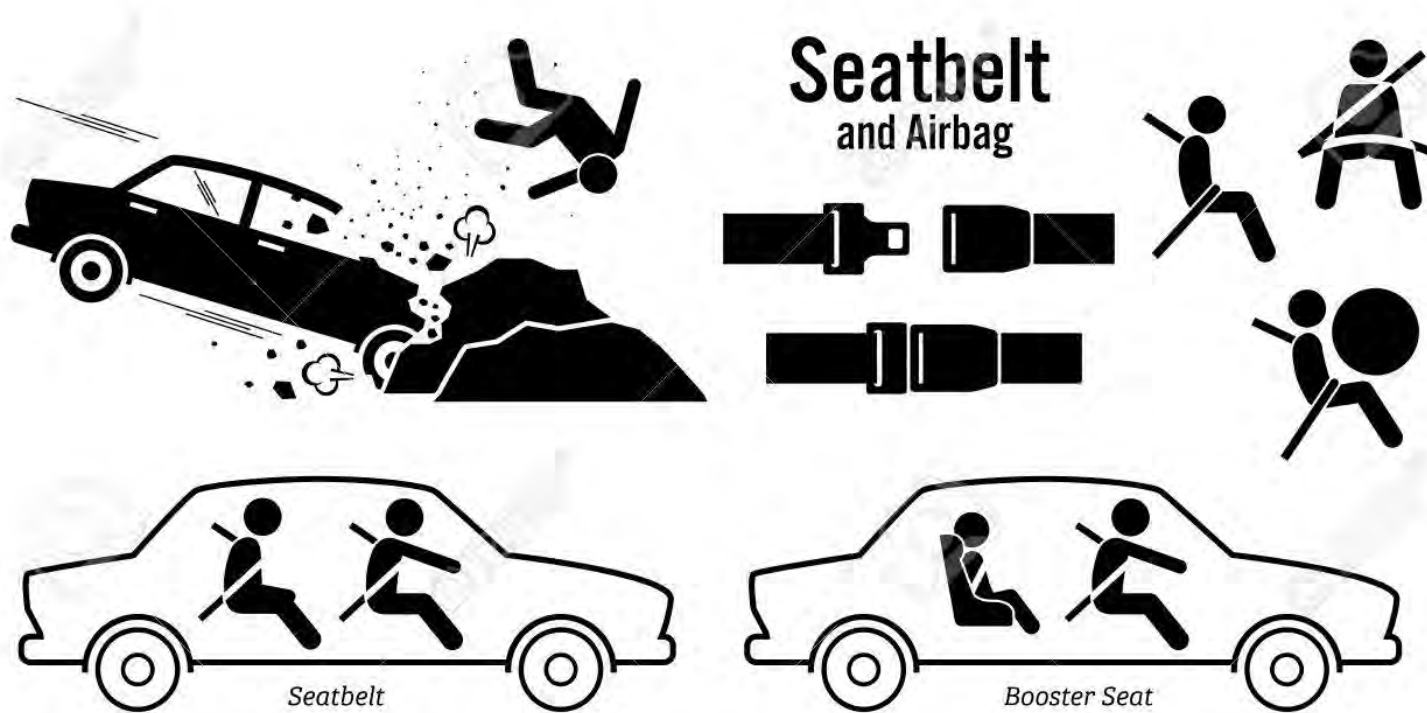
But much better evidence. Multiple randomized trials in humans: 10/10



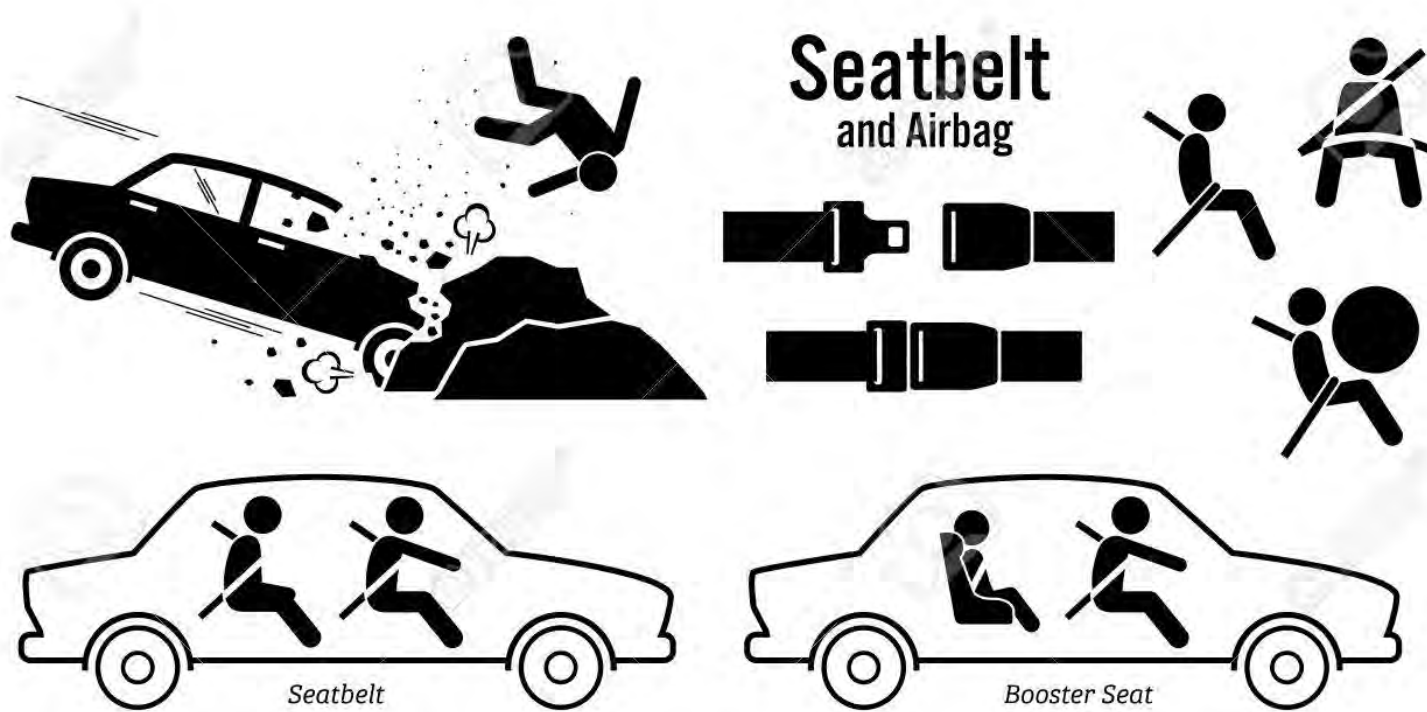
Seat belts prevent injuries from occurring in the first place



Mandatory seat belt legislation costs \$2,790 to save a life



Mandatory seat belt legislation saved 289 lives with \$8 million



We can only observe outcomes among humans but can test in the lab on crash dummies: 8/10



\$1.4 million to save a life most seasons



Randomized trials in humans: 10/10



6 lives saved with \$8 million investment



Income support programs cost saving to \$1m per life saved



We have experimentally tested this in humans multiple times: 9/10

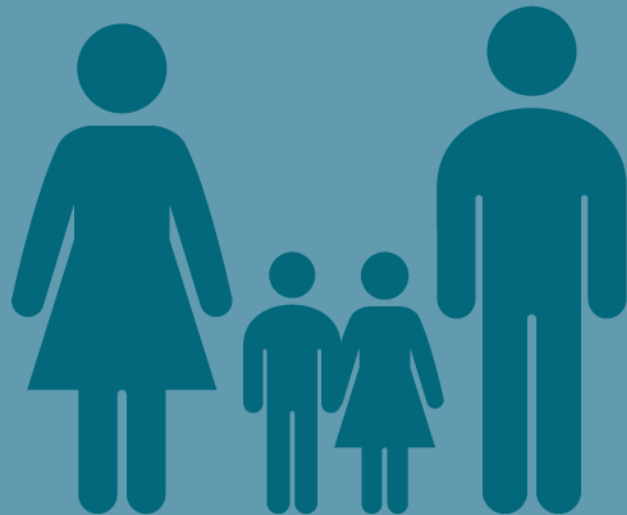


We can maximally invest in those interventions that save money and lives



Restricted housing vouchers save money and lives

Poor children who move to lower-poverty neighborhoods do much better as adults



31%

higher annual incomes

\$302,000

higher lifetime earnings

32%

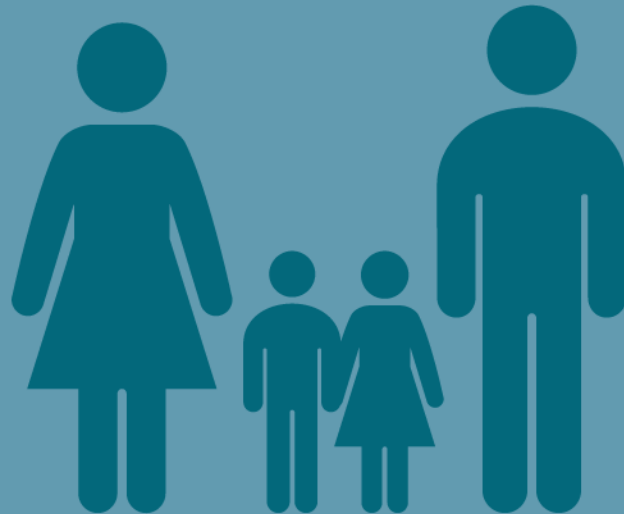
more likely to attend college

26%

girls less likely to become single mothers

We have experimentally tested this in the real world 9/10

Poor children who move to lower-poverty neighborhoods do much better as adults



31%

higher annual incomes

\$302,000

higher lifetime earnings

32%

more likely to attend college

26%

girls less likely to become single mothers

Pre-K saves money and lives

PRE-K FOR ALL



We have experimentally tested this with mixed results: 8/10

PRE-K FOR ALL



Saves money and lives



We have experimentally tested this in humans
10/10



Saves money and lives to \$1.4m per life saved



Medicaid

Experimental and quasi-experimental studies
in humans with mixed results: 8/10



Medicaid

Saves money and lives



We have tested this experimentally and with
quasi-experiments: 9/10



Reducing class size saves money but...



...appears to increase mortality



Based on a single multi-center randomized trial in TN 7/10



Saves money and lives



We only have observational data: 4/10



\$51,000 per life saved



We only have observational data: 4/10



Slow zones in neighborhoods: Saves money and lives



We have quasi-experimental data: 5/10



Freeway Parks: Saves money and lives



Only observational data: 4/10



Bike share cost-saving to \$314,000/life saved



25 lives saved with \$8 million investment



Only observational data 4/10



Congestion pricing: saves money and lives



Only observational data and cost estimates
3/10



These are only some examples of studies that have been done

Summary

- The health of Americans is on the decline
- This may be due to a sub-optimal policy mix relative to peer nations
- There are an array of social policy investments that can be made that will produce returns on the investment
- More studies need to be done