THE PRESCRIPTION OPIOID EPIDEMIC: CURRENT TRENDS, ANALYSIS AND INTERPRETATION

PRESENTED BY THOMAS M. BRYAN AND DR. RICHARD K. THOMAS

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Session CS06 Shaping Human Health with Data

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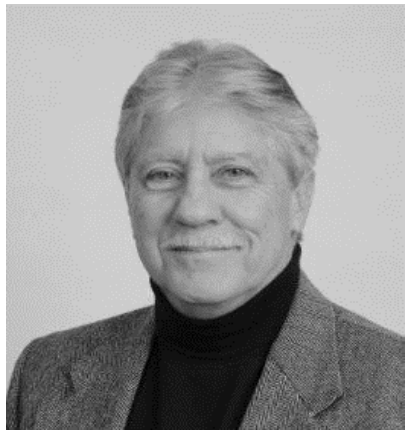
OUTLINE

- Introduction
- Opioid Epidemic Landscape
- Measures of the Epidemic
- National Survey of Drug Use and Health, 2002-2014 and 2015 onward
- Analytics, Findings and Interpretation
- Takeaways

INTRODUCTIONS

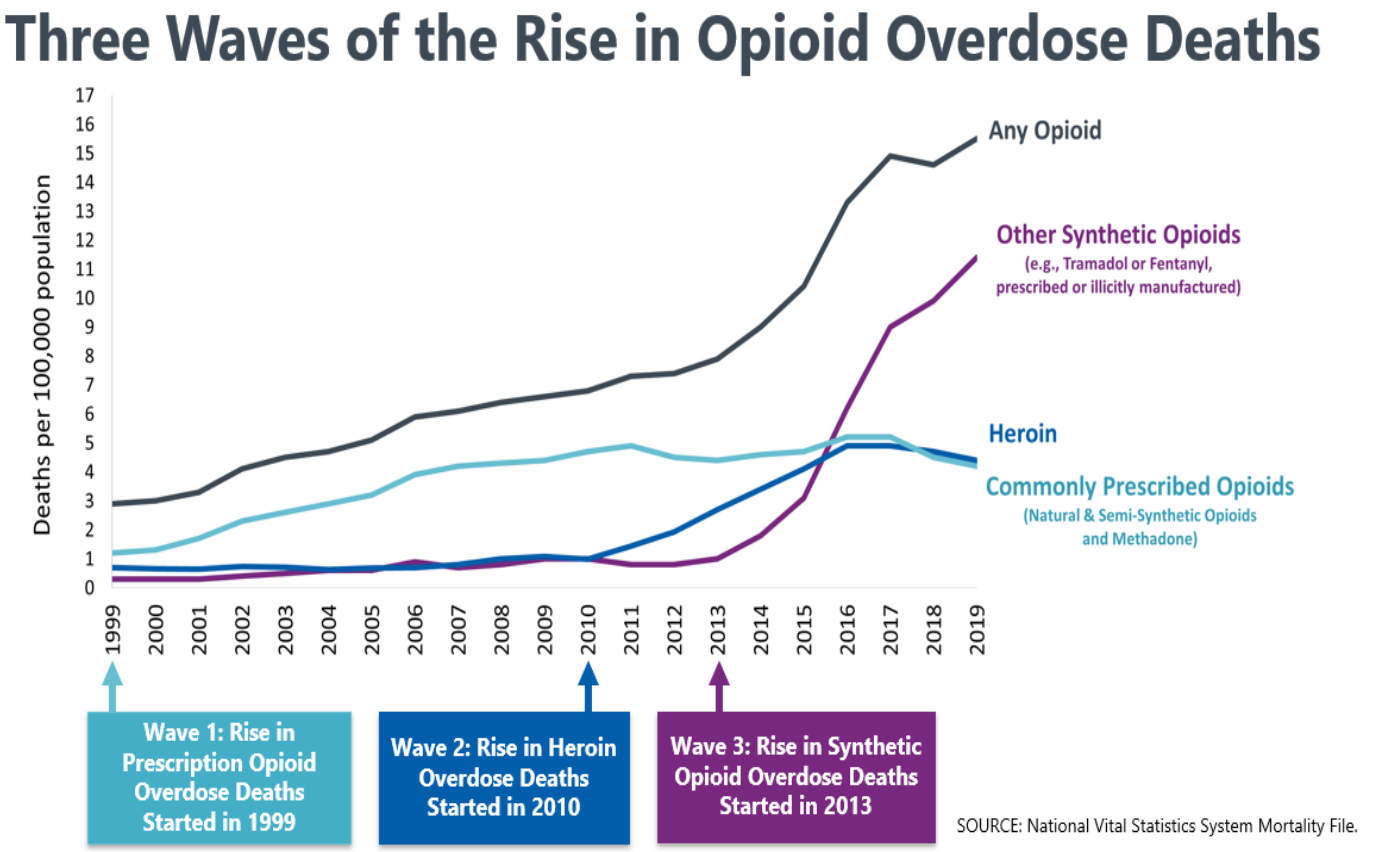
- Mr. Thomas M. Bryan has led the analytic and research consulting firm BGD for over twenty years, working as a consultant and expert witness in areas ranging from discrimination and redistricting cases to health and tobacco research.



- Dr. Richard K. Thomas is a medical sociologist and health demographer. He serves as a consultant to healthcare organizations in the areas of market research, strategic planning, business development and evaluation. He has written over 20 books on healthcare and has served on the faculties of several universities and medical schools. He has been responsible for obtaining numerous federal grants for health services research.

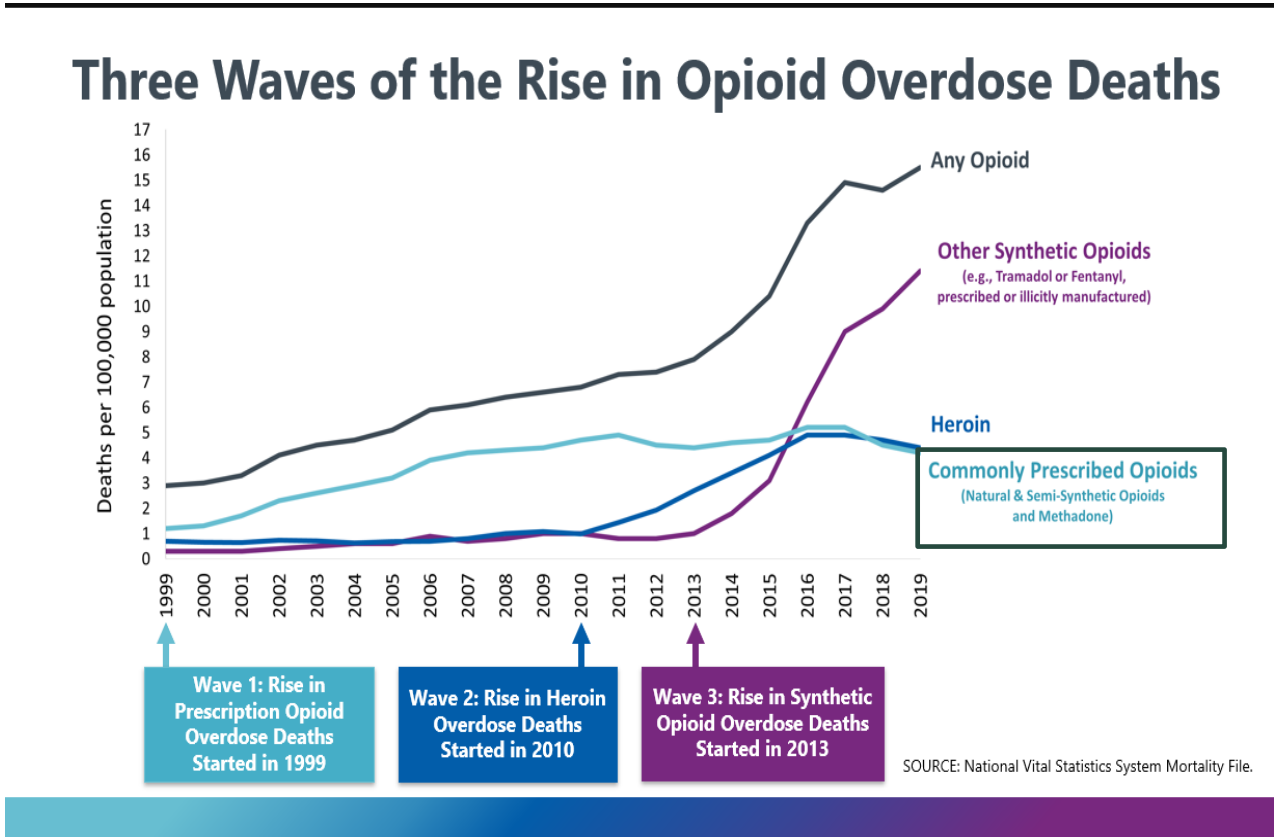
OPIOID EPIDEMIC LANDSCAPE

- From 1999–2019, nearly 500,000 people died from an overdose involving any opioid.
- This rise in opioid overdose deaths can be outlined in three distinct waves.
  1. The first wave began with increased prescribing of opioids in the 1990s, with overdose deaths involving prescription opioids.
  2. The second wave began in 2010, with rapid increases in overdose deaths involving heroin.
  3. The third wave began in 2013, with significant increases in overdose deaths involving synthetic opioids, particularly those involving illicitly manufactured fentanyl.



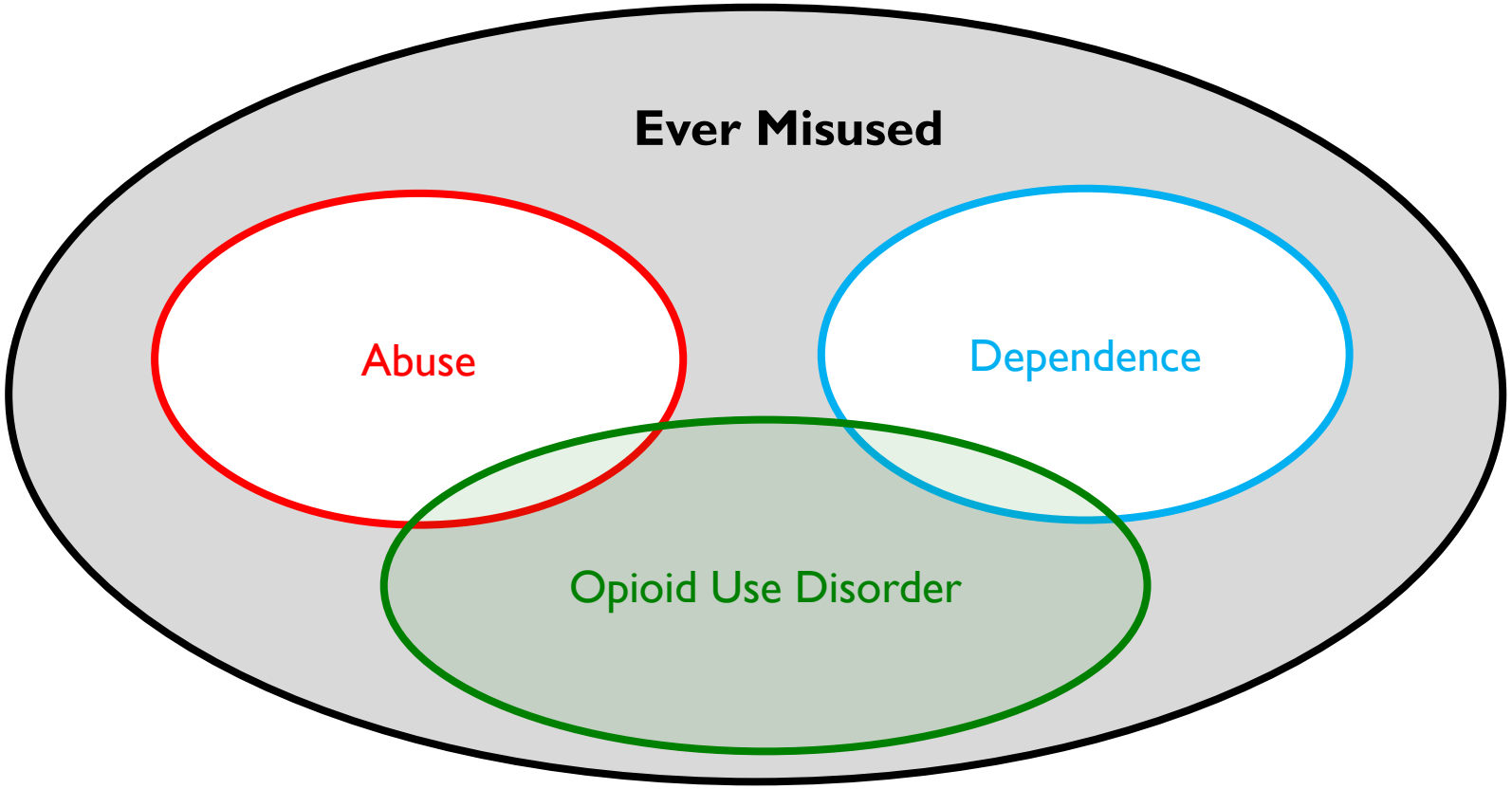
PROJECT

- Began in 2017. Retained by a pharmaceutical company.
- Create a time series measuring the number of US adults misusing, abusing, dependent on and on the opioid use disorder (OUD) scale **for commonly prescribed opioids.**
- Task: project these conditions, by demographic group, to understand the future risk universe for commonly prescribed opioid deaths.



WHAT ARE OUR VARIABLES? MEASURES OF THE EPIDEMIC

- Ever Misused
- Abuse
- Dependence
- Opioid Use Disorder
  - Mild
  - Moderate
  - Severe



"Ever Misuse" is important here because that is the universe for analyzing and projecting all other measures.

WHERE DO WE GET THESE? NSDUH

- SAMHSA administers the National Survey of Drug Use and Health (NSDUH) which contains voluminous, detailed information on commonly prescribed opioids and many illegal drugs.
- In 2002 – opioids were barely on the health communities' radar, so the NSDUH questions related to them were limited and vague. The NSDUH survey went largely unchanged from 2002-2014.
- By 2015, NSDUH was in desperate need for an overhaul. Recognizing the significance of the opioid epidemic, SAMHSA completely overhauled the survey instrument to get significantly more, and more accurate data.
  - Good news: there is now a LOT more data available since 2015
  - Bad news: since the opioid ever misuse questions are now different, our universe and time series for our measures are broken.

EVER MISUSE MEASUREMENT CHANGES

2002-2014

Please think again about answering this question: Have you ever, even once, used any type of prescription pain reliever that was not prescribed for you or that you took only for the experience or feeling it caused?

2015:

When you answer these questions, please think only about your use of the drug in any way **a doctor did not direct you to use it,** including:

- Using it without a prescription of your own
- Using it in greater amounts, more often, or longer than you were told to take it
- Using it in **any other way** a doctor did not direct you to use it

Have you ever, even once, used any prescription pain reliever in any way a doctor did not direct you to use it?

Keep this one in mind!

OPIOID DEPENDENCE

DSM characterizes substance dependence as "a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems"

A respondent was determined to be dependent on pain relievers if they reported a positive response to 3 of 7:

1. Spent a great deal of time over a period of a month getting, using, or getting over the effects of the substance
2. Unable to keep set limits on substance use or used more often than intended
3. Needed to use substance more than before to get desired effects or noticed that using the same amount had less effect than before
4. Unable to cut down or stop using the substance every time he or she tried or wanted to
5. Continued to use substance even though it was causing problems with emotions, nerves, mental health, or physical problems
6. Reduced or gave up participation in important activities due to substance use
7. experienced substance specific withdrawal symptoms at one time that lasted for longer than a day after they cut back or stopped using.

This did not change from 2002-2014 to 2015 onward in NSDUH

OPIOID ABUSE MEASUREMENTS

A respondent was determined to be abusive of pain relievers if they reported a positive response to one or more of the following four abuse criteria and was determined not to be dependent:

1. Respondent reported having serious problems due to substance use at home, work or school
2. Respondent reported using substance regularly and then did something where substance use might have put them in physical danger
3. Respondent reported substance use causing actions that repeatedly got them in trouble with the law
4. Respondent reported having problems caused by substance use with family or friends and continued to use substance even though it was thought to be causing problems with family and friends.

This did not change from 2002-2014 to 2015 onward in NSDUH

OPIOID USE DISORDER MEASUREMENTS

There are 15 conditions that are tested for OUD:

- Was there a month or more when you spent a lot of your time getting or using prescription pain relievers?
- Was there a month or more when you spent a lot of your time getting over the effects of the prescription pain relievers you used?
- Did you try to set limits on how often or how much prescription pain relievers you would use?
- Were you able to keep to the limits you set, or did you often use prescription pain relievers more than you intended to?
- Did you need to use more prescription pain relievers than you used to in order to get the effect you wanted?
- During the past 12 months, did you notice that using the same amount of prescription pain relievers had less effect on you than it used to?
- Did you want to or try to cut down or stop using prescription pain relievers?
- Did you have 3 or more of these symptoms after you cut back or stopped using prescription pain relievers?
- Did you continue to use prescription pain relievers even though you thought this was causing you to have problems with your emotions, nerves, or mental health?
- Did you continue to use prescription pain relievers even though you thought this was causing you to have physical problems?
- Did using prescription pain relievers cause you to give up or spend less time doing these types of important activities?
- Did using prescription pain relievers cause you to have serious problems like this either at home, work, or school?
- Did you regularly use prescription pain relievers and then do something where using prescription pain relievers might have put you in physical danger?
- Did you have any problems with family or friends that were probably caused by your use of prescription pain relievers?
- Did you continue to use prescription pain relievers even though you thought this caused problems with family or friends?

If score = 2 or 3 then OUD = "Mild";
If score = 4 or 5 then OUD = "Moderate";
If score >=6 then OUD = "Severe";

ANALYTICS

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PROJECTION METHODOLOGY

- Population Projections: US Census Bureau Age, Race & Ethnicity and Sex

  x

- Prevalence Projections: NSDUH by Age, Race & Ethnicity and Sex

  =

- Ever misuse, abuse, dependence and OUD projections by Age, Race & Ethnicity and Sex

- The projection approach is reasonable and safe, in the absence of law or policy changes.

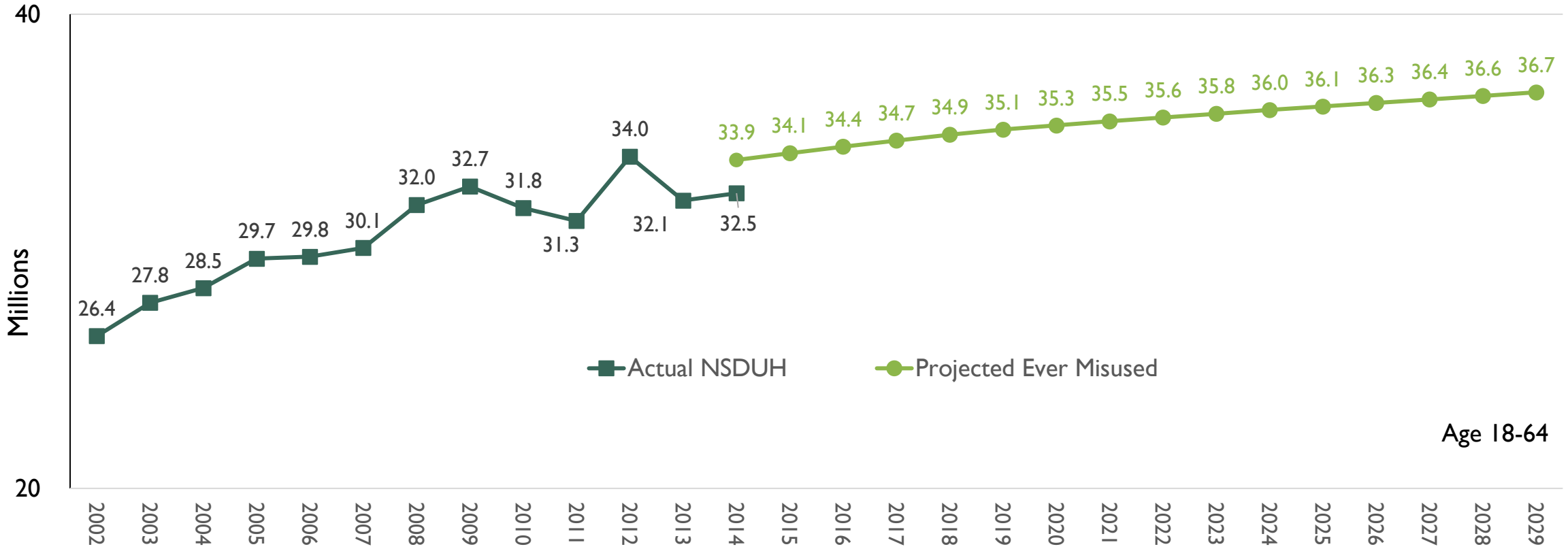
age group	race	sex
18-25	WNH	MALE
18-25	WNH	FEMALE
18-25	OTHER	MALE
18-25	OTHER	FEMALE
18-25 Total		
26-34	WNH	MALE
26-34	WNH	FEMALE
26-34	OTHER	MALE
26-34	OTHER	FEMALE
26-34 Total		
35-64	WNH	MALE
35-64	WNH	FEMALE
35-64	OTHER	MALE
35-64	OTHER	FEMALE
35-64 Total		
Grand Total		

PROJECTION METHODOLOGY BENEFITS

- By combining projections of the population with projections of opioid conditions, we are able to decompose what is actually driving changes in the opioid epidemic over time. For example,
  - Opioid misuse prevalence may be increasing in a certain demographic group, but the size of that group may be declining over time.
  - Among 18-25 WNH males, the projection of ever misusers by 2029 based on prevalence changes alone (increasing) is +400K. The projection based on the population alone (decreasing) is -160K.
  - The offsetting effect of increasing prevalence and decreasing population is a projection of +240K.
- Projected changes in prevalence and population can offset or compound each other.
- Knowing what is driving changes by demographic group is critical to policy and treatment decisions.

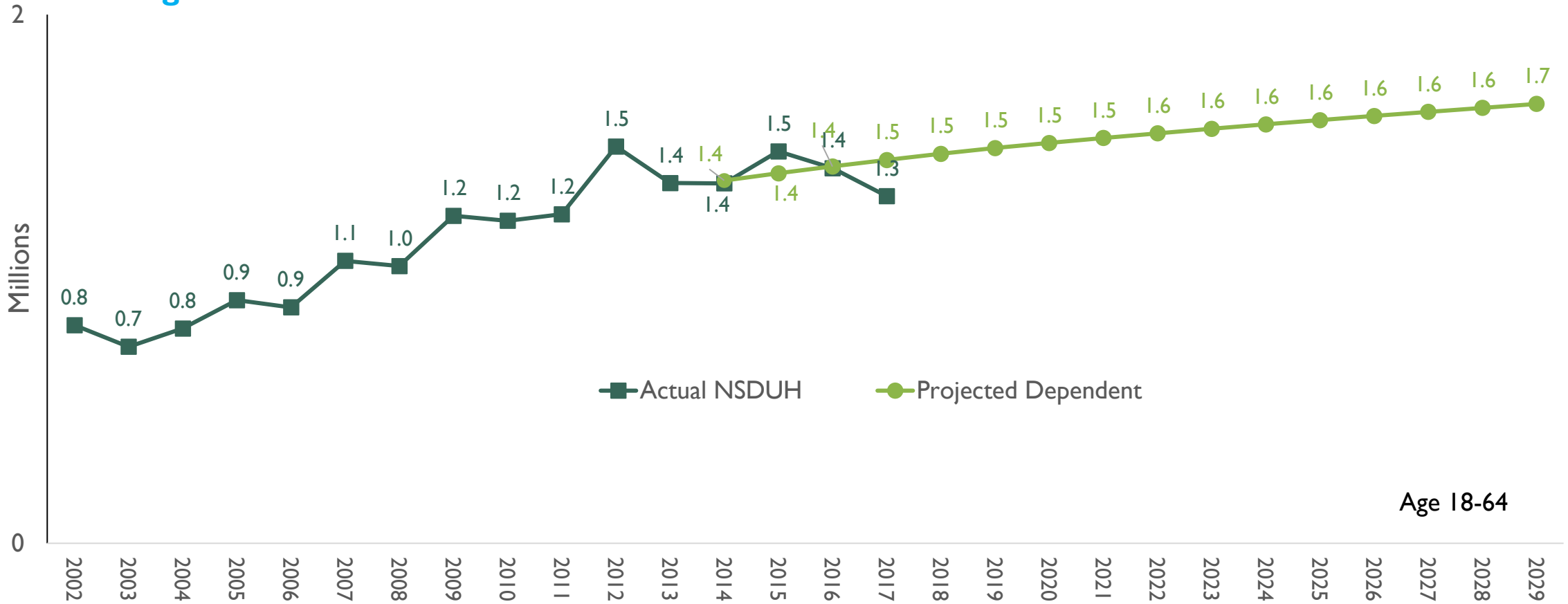
ACTUAL EVER MISUSE FROM NSDUH AND PROJECTIONS

Out of 2.8MM additional ever misused, 1.6MM are estimated from pop growth and 1.2MM are estimated from prevalence growth. + 3.2MM comes from 26+, offset by a decline of -300K among 18-25.



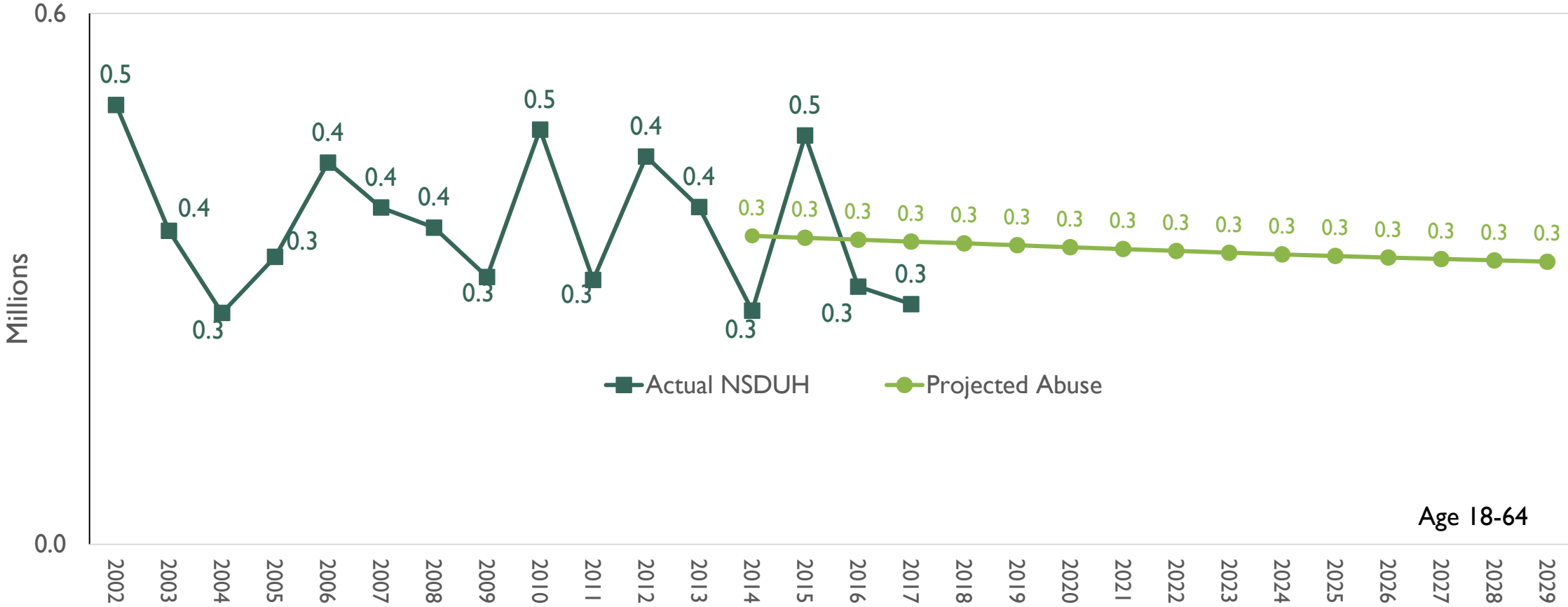
ACTUAL OPIOID DEPENDENCE FROM NSDUH AND PROJECTIONS

Out of 280K additional dependent, 120K are estimated from pop growth and 160K are estimated from prevalence growth.



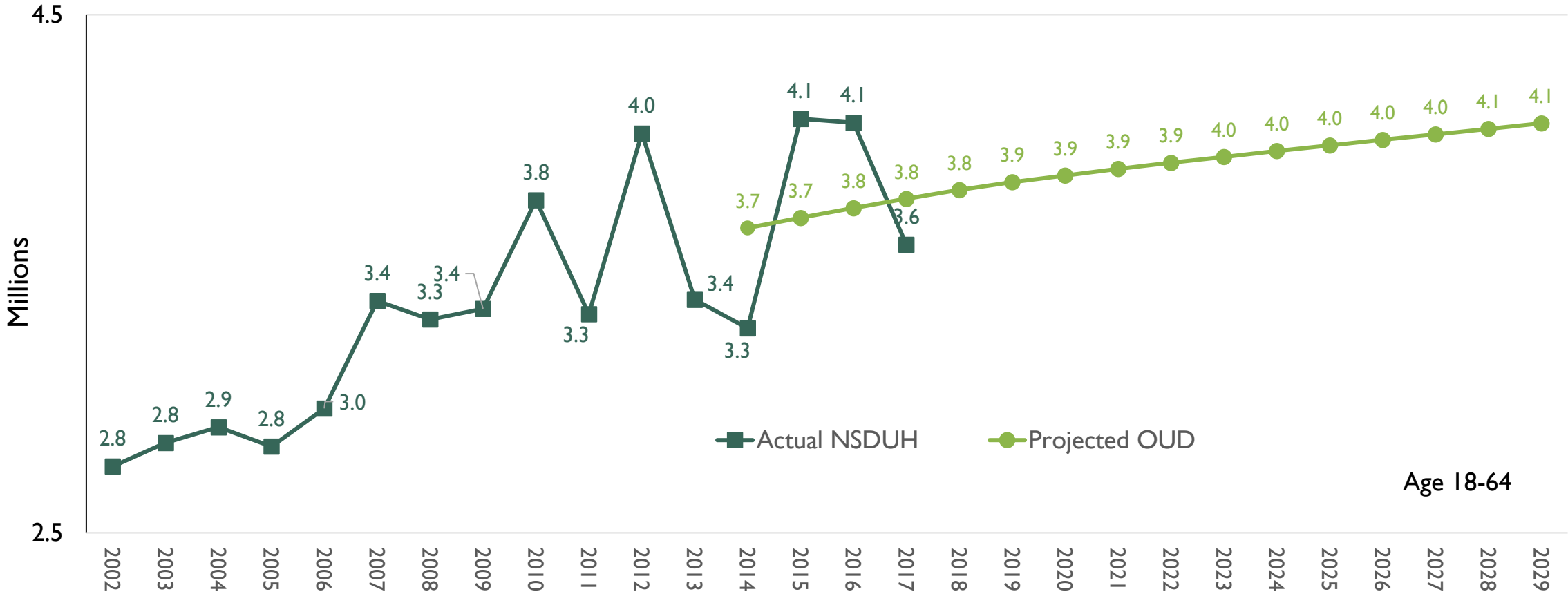
ACTUAL OPIOID ABUSE FROM NSDUH AND PROJECTIONS

The -25K decline comes from +30K in population growth, offset by -55K from a decline in prevalence growth.

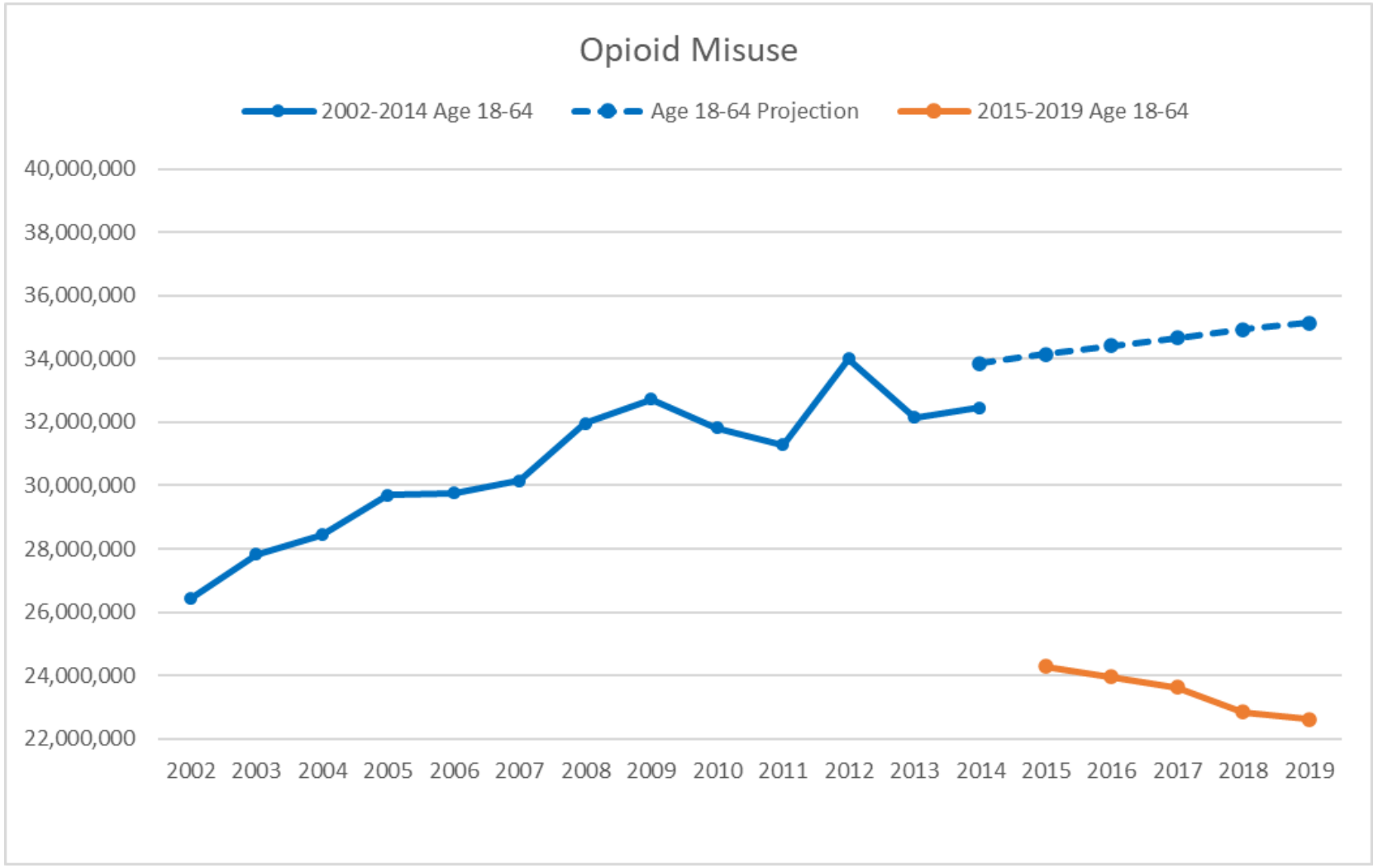


ACTUAL OUD FROM NSDUH AND PROJECTIONS

Out of 400K additional, 310K are estimated from pop growth and 90K are estimated from prevalence growth.



SO. HOW ARE OUR PROJECTIONS DOING?



NSDUH EVER MISUSE MEASUREMENT CHANGES

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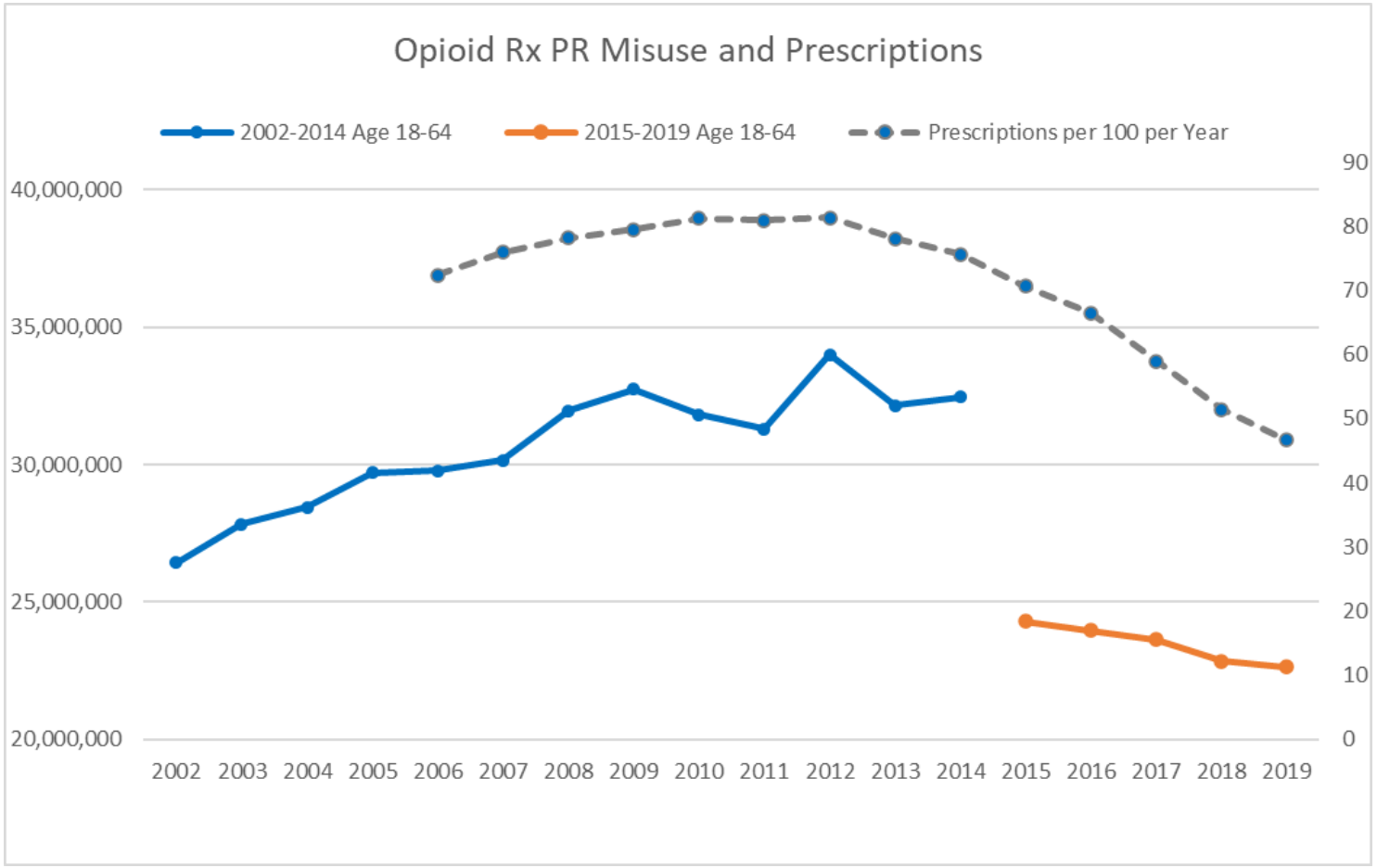
Have you ever, even once, used any prescription pain reliever in any way a doctor did not direct you to use it?

Remember this?

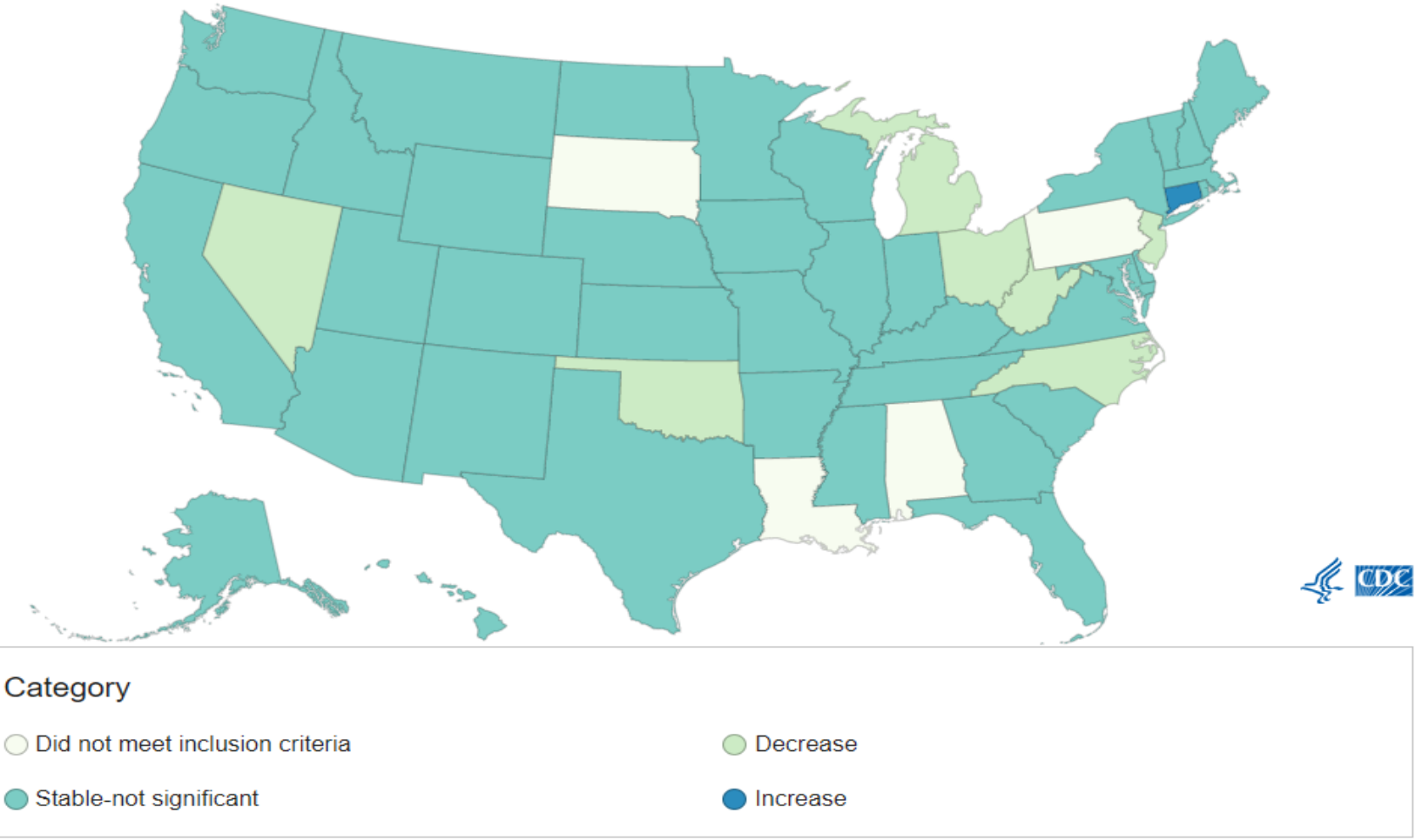
SO. HOW ARE OUR PROJECTIONS DOING?

- The change in the questionnaire could easily account for the level shift in respondents misusing, but it's a stretch to think that would cause a sudden decline. Something else was up.
- After a steady increase in the overall national opioid dispensing rate starting in 2006, the total number of prescriptions dispensed peaked in 2012 at more than 255 million and a dispensing rate of 81.3 prescriptions per 100 persons.
- The overall national opioid dispensing rate declined from 2012 to 2019, and in 2019, the dispensing rate had fallen to the lowest in the 14 years.
- https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html



RX PR OVERDOSE DEATH RATE CHANGES 2018-2019

What do we know? Declines in prescription opioid overdose deaths are geographically concentrated. Most states are stable, several decrease and one (Connecticut) increases.



SOURCE: CDC/NCHS, National Vital Statistics System, Mortality. CDC WONDER, Atlanta, GA: US Department of Health and Human Services, CDC; 2020. https://wonder.cdc.gov/ .

https://www.cdc.gov/drugoverdose/data/prescribing/overdose-death-maps.html

TAKEAWAYS

- Not only have trends in commonly prescribed opioid misuse and prescriptions reversed, but recent overdose death rate changes are now either stable or declining nationwide.
  - https://pdas.samhsa.gov/#/
- In this context, reductions in Rx PR prescription rates appear to have preceded reductions in misuse, which in turn have preceded reductions in Rx PR opioid-related overdose deaths.
- Our demographic projections were valid and informative at the time, but wrong. We should have done better anticipating the impact of the reduction in opioid prescription rates on rates of abuse, dependence and OUD.
- The opioid epidemic is **not** in decline overall. One potential takeaway is that the reduction in prescription opioids has been more than offset by the adoption of illegal and far more deadly synthetic opioids.

NEXT STEPS

- It would be extremely beneficial to know which populations are seeing decreases. Knowing which populations are most impacted could significantly benefit and impact public policy and treatment decisions.
- Current health surveys are not adequately measuring the explosion of synthetic opioids. It would be virtually impossible for them to, because synthetics such as fentanyl are frequently used by illegal manufacturers and distributors on other drug platforms such as heroin – and users oftentimes don't even know they are using it. Hence, they die.
- In light of these developments, we strongly advocate that:
  - SAMHSA and the CDC consider how to innovate survey research to capture synthetic opioid misuse; and
  - The public health community rapidly direct resources towards analyzing these changes.