Questions I will address

• What are opioids?

• What characterizes this “crisis” and how has it evolved?

• How does opioid use fit into other drug use?

• What is the basis of the Fed’s interest in a health issue like the opioid epidemic?

• What do we know about the connection between labor markets and opioid use?
Key Takeaways

- Although prescribing rates have come down, opioid overdose deaths continue to rise as the problem evolves.
- West Virginia is one of the hardest hit states in the country, but many states across the nation struggle with rising overdose rates.
- The evidence thus far suggests some correlational but perhaps not causal relationship between labor market outcomes (such as employment-population ratios and unemployment rates) and opioid use.
- However, the data is not perfect and much of the literature is preliminary. Researchers across disciplines continue to work to understand the effect of the opioid epidemic.
What are Opioids?

• Opioids are a class of drugs that reduce the intensity of pain by working on the nervous system or on brain receptors.

• They produce euphoria in addition to pain relief.

• Side effects include:
  - Tolerance
  - Physical dependence
  - Increased sensitivity to pain
  - Other: Constipation, nausea/vomiting/dry mouth, sleepiness/dizziness, confusion, depression, lower sex drive/energy/strength, itching/sweating

Source: Centers for Disease Control
Types of Opioids

• Natural and semi-synthetic (often available by prescription)
  - Natural: morphine, codeine
  - Semi-synthetic: oxycodone (e.g., OxyContin®), hydrocodone (e.g., Vicodin®), hydromorphone, and oxymorphone

• Synthetic (available by prescription)
  - Synthetic opioid analgesics other than methadone (e.g., tramadol and fentanyl—can be pharmaceutical or illegally made)
  - Methadone

• Heroin
  - Synthesized from morphine

Source: Centers for Disease Control
What is the story of opioid abuse in the U.S.?

3 Waves of the Rise in Opioid Overdose Deaths

Wave 1: Rise in Prescription Opioid Overdose Deaths
Wave 2: Rise in Heroin Overdose Deaths
Wave 3: Rise in Synthetic Opioid Overdose Deaths

What about Maryland and Virginia?

Maryland Overdose Deaths

Virginia Overdose Death

Source: Kaiser Family Foundation/CDC
But all states do not look the same....

West Virginia Overdose Deaths

- Natural and Semisynthetic
- Synthetic
- Methadone
- Heroin

Source: Kaiser Family Foundation/CDC
West Virginia has the highest drug overdose rate in the country... and most of those are from opioids.

Drug Overdose Death Rates
Deaths per 100,000 people

Source: Centers for Disease Prevention and Control
The most commonly used opioid varies by state

Drug Overdose Death Rates: Prescription vs Heroin
Deaths per 100,000 people

Source: Centers for Disease Prevention and Control
Why Do People Use Opioids?

Figure 33. Main Reason for the Most Recent Prescription Pain Reliever Misuse among People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year: Percentages, 2016

- Relax or Relieve Tension (10.8%)
- Help with Sleep (3.3%)
- Help with Feelings or Emotions (3.9%)
- Experiment or See What It’s Like (3.0%)
- Feel Good or Get High (12.9%)
- Increase or Decrease the Effects of Other Drugs (0.9%)
- Hooked or Have to Have Drug (2.1%)
- Some Other Reason (0.9%)

11.5 Million People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year

Note: The percentages do not add to 100 percent due to rounding.

Source: 2016 National Survey on Drug Use and Health
Prescription rates over time

Source: Centers for Disease Control, [https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html](https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html)
Are Prescriptions the Most Common Method of Obtaining Pain Relievers?

Figure 34. Source Where Pain Relievers Were Obtained for Most Recent Misuse among People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year: Percentages: 2016

- Prescriptions from More Than One Doctor (1.4%)
- Stole from Doctor’s Office, Clinic, Hospital, or Pharmacy (0.7%)
- Prescription from One Doctor (35.4%)
- Given by, Bought from, or Took from a Friend or Relative (53.0%)
- From Friend or Relative for Free (40.4%)
- Bought from Friend or Relative (8.9%)
- Took from Friend or Relative without Asking (3.7%)
- Got through Prescription(s) or Stole from a Health Care Provider (37.5%)
- Some Other Way (3.4%)
- Bought from Drug Dealer or Other Stranger (6.0%)

11.5 Million People Aged 12 or Older Who Misused Prescription Pain Relievers in the Past Year

Note: Respondents with unknown data for Source for Most Recent Misuse or who reported Some Other Way but did not specify a valid way were excluded.

Note: The percentages do not add to 100 percent due to rounding.

Source: 2016 National Survey on Drug Use and Health
Where do opioids fit into illicit drug use?

Figure 15. Numbers of Past Month Illicit Drug Users among People Aged 12 or Older: 2016

Note: Estimated numbers of people refer to people aged 12 or older in the civilian, noninstitutionalized population in the United States. The numbers do not sum to the total population of the United States because the population for NSDUH does not include people aged 11 years old or younger, people with no fixed household address (e.g., homeless or transient people not in shelters), active-duty military personnel, and residents of institutional group quarters, such as correctional facilities, nursing homes, mental institutions, and long-term care hospitals.

Note: The estimated numbers of current users of different illicit drugs are not mutually exclusive because people could have used more than one type of illicit drug in the past month.

Source: 2016 National Survey on Drug Use and Health
Heroin use is an increasing concern
...and heroin prices have fallen notably

Retail-level average price per gram pure for heroin in the United States

Source: Institute for Defense Analyses
Why is the Fed paying attention?

Some comments from Fifth District employers:

• “We lose 30% of applicants due to drug test failure.”
• “People come in to apply for jobs, but when they find out we require a drug test, they ‘forget something in their car’ and never come back.”
• “Drug problems are holding down labor force participation in West Virginia—it seems like the men, at least, are all either disabled or on drugs.”

According to the American Action Forum (among other news outlets):

• In 2015, 919,400 prime-age individuals were not in the labor force due to opioids;
• Between 1999 and 2015, the decline in labor force participation cumulatively cost the economy 12.1 billion work hours; and
• During that period, the reduction in work hours slowed the real annual economic growth rate by 0.2 percentage points, cumulatively costing $702.1 billion in real output.

...But how true are these statements?
What do we know?

(1) Working People are Less Likely to Consume an Illegal Substance

Percent of the Population 18 and Older, by Employment Status, Reporting Consumption of Any Illegal Substance in the Previous Month (2005-2011)

<table>
<thead>
<tr>
<th>JOB STATUS</th>
<th>PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Time</td>
<td>7%</td>
</tr>
<tr>
<td>Part Time</td>
<td>10%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>19%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: Badel, A., & Greaney, B. (2013). Exploring the link between drug use and job status in the US. The regional economist.
What do we know?

(2) The Labor Force Participation Rate fell from 1999-2015 among prime age adults

Source: Bureau of Labor Statistics
(3) Some preliminary analysis does show a connection between labor force participation and opioid prescription rates

- Krueger (2017) reports that a survey of 571 prime age men indicated that nearly half of the men who were not in the labor force took pain medication on a daily basis
  - In nearly two-thirds of these cases they took prescription pain medication.

- Using data from the household survey, and the county prescription rates, Krugler found that labor force participation was lower in areas with a high rate of opioid prescriptions and fell more (from 1999-01 to 2014-16) in areas where relatively more opioid pain medication was prescribed

- Suggests that opioid prescriptions could account for as much as 20% of the decline in male labor force participation and 25% of the decline in female labor force participation between 1999 and 2015
What do we know?

(4) Appalachia: Historically low LFP rate/employment-to-population ratios and particularly hard hit by the opioid crisis

Source: BLS and CDC
(5) Some recent work examines the link between opioid prescription rates and labor market outcomes

**Hollingsworth et al (2017):** Is opioid/drug use affected by short-term fluctuations in macroeconomic conditions? Answer: Yes
- When county unemployment rates rise, opioid deaths and ED visits are predicted to rise (and vice versa). When county employment-to-population ratios rise, opioid deaths and ED visits are predicted to fall.

**Ruhm (2018):** Do medium-run changes in economic factors change opioid/drug use? Answer: No
- Drug mortality rates went up for counties in economic decline, but effect dramatically reduced when controlling for county-level characteristics
- Changes in economic conditions explain less than one-tenth of the observed increase in drug deaths occurring from 1999-2016 and even less of the growth in opioid analgesic or illicit opioid-involved mortality
- Patterns of drug deaths across sex and age subgroups suggests that changes in the drug environment may be an important determinant of rising drug mortality.
What do we know?

(5) Some recent work brings into question a link between opioid prescription rates and labor market outcomes

Currie et al (2017): (1) Is the opioid crisis a consequence of economic dislocation and (2) Has the indiscriminate prescription of opioids promoted dislocation by transforming workers with curable and chronic injuries into addicts?

• Some evidence that higher employment-to-population ratios reduce opioid prescription per capita among young workers, though this effect is only statistically significant in some specifications and in counties with education above the mean.

• The effect of opioid prescriptions on employment-to-population ratios is positive but small for women and nonexistent for men.
Is there a bigger picture?

Figure 1.5 Drug, alcohol and suicide mortality, men and women ages 50-54

Case and Deaton (2017)
Summary

• The opioid epidemic in the U.S. continues to evolve over time as the rising overdose that was concentrated in opioid analgesics is now rising in illicit drugs such as heroin and synthetic opioids such as illicit fentanyl.

• Although worse labor market outcomes are correlated with higher opioid misuse, the relationship diminishes notably when controlling for other factors.

• There is, thus far, little clear evidence for a causal relationship, in either direction, between economic conditions and opioid use/misuse.

• Within the Fifth District, West Virginia has been the hardest hit state, but as contacts across the District report: “We are only beginning to understand the scope of this problem.”
Questions?

... and thank you!

The views and opinions expressed herein are those of the author. They do not represent an official position of the Federal Reserve Bank of Richmond or the Federal Reserve System.
(Some) Sources


