The Central Wisconsin Economic Indicators Report
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School of Business & Economics
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Outlook
Generally speaking the economy, whether we are talking about the nation, the state or local area, is doing quite well. Table 1 of the report shows the reader that the nation’s economy is growing. In addition, employment is growing, the unemployment rate is very low, the stock market has had a tremendous run, and household income is rising.

The general consensus among economist is that the economy will continue to do well for the rest of the year. However, there are some looming issues that could throw the economy off track. For example, evolving Federal Reserve interest rate policy has the potential to slow the economy as it attempts to normalize interest rates with a series of rate hikes over the next two years. In the short run, recent tax cuts and the booming federal government deficit will provide stimulus to the economy. In the long run, the tax cuts and deficit will place inflationary pressure on an already healthy economy and thus drive up borrowing costs for the public and private sectors. Additionally, the shortage of working age adults is only going to get worse and this too will place a damper on future economic growth.

Currently, the 800-pound gorilla in the room is international trade policy. Much of the discussion concerns the negative aspects of international trade like job loss and trade deficits. Moreover, it is clear that some of our trading partners like China have engaged in unfair practices. Examples include currency manipulation, the theft of intellectual property, and trade barriers that hinder access to Chinese markets. Having a trade war, however, has serious consequences for the nation and the state of Wisconsin. Therefore, I want to take this opportunity to discuss some of the positive aspects of international trade. Perhaps not the most popular position to take on the matter, but I am not running for political office.

Most people do not understand the extent that Wisconsin is engaged in international trade. But first, I want to discuss factors that play a role in determining a state’s export activity. I will primarily be using data from the U.S. Census Bureau, the Business Roundtable, and the Wisconsin Department of Revenue.

There are many factors that can influence the amount of a state’s exporting activity in a state. They include: (1) a state that ships intermediate products to another state for final assembly and export will have its exporting activity undercounted; (2) some products are better suited for export than others, e.g. products that lose weight in the production process are easier to ship than products that gain weight in the production process; (3) a state’s access to international transportation networks plays a big role in determining transportation costs; (4) a state’s location and proximity to foreign markets also has an impact on shipping costs; (5) a state’s regulations and assistance programs can either help or hinder exporting activity; and (6) a state’s entrepreneurial culture or lack thereof can play a huge role in influencing the amount of exporting.

With that in mind, Wisconsin’s international trade is estimated to directly support over 800,000 jobs. Therefore, a large number of jobs in the state are dependent on international trade. In dollar terms, over $30 billion worth of goods and services are exported by Wisconsin firms each year. Keep in mind that 95 percent of the world’s population and 80 percent of the world’s purchasing power exist outside of the U.S. This means that future job growth in Wisconsin and the U.S. will be highly dependent on having access to foreign markets.

It is estimated that over 8,700 Wisconsin businesses export goods and services each year. Wisconsin ranks in the top ten of states for about 30 product categories, such as animal products, dairy products, nonmetallic minerals, and agricultural construction machinery. Additionally the exporting of navigation and measuring instruments, motor vehicle parts, travel, computer software, and insurance services represent important product categories that comprise Wisconsin exports.

Wisconsin companies exported to over 210 countries in 2014. We exported $8.5 billion worth of goods and services to Canada and approximately $3 billion worth of products to Mexico in 2014. Most people would be shocked to learn that Wisconsin exported over $2.3 billion worth of our goods and services to China. Furthermore, Japan, the United Kingdom, and Germany respectively bought $1.5 billion, $1.3 billion and $1.0 billion worth of our products.

Wisconsin’s top six exporting markets are Canada (approximately 30% of the total), Mexico (10%), China (7%), Germany (4%), Australia (3.8%), and Japan (3.8%). Rounding out Wisconsin’s top ten export destinations are the United Kingdom, Chile, Brazil and France. In addition, agricultural products are estimated to add an additional $850 million dollars to the state’s export total (this number excludes processed foods).
What does Wisconsin export to the world? The largest export categories are as follows. Machinery accounts for $5.4 billion or 27 percent of Wisconsin's exports. Construction machinery is the second most important item, followed by general purpose machinery, engines, turbines, and transmission equipment. Not surprising, the largest importers of our machinery are, Canada, China, Chile, and Australia.

Computers and electronics rank second at $3.4 billion or about 17 percent of total exports. Navigational, medical, and control instruments represent the largest share. Computer equipment and semiconductors are the next largest component and China, Japan, Canada and France buy the bulk of these items.

Transportation equipment ranks third in terms of exports at $1.8 billion or 9% of exports. Motor vehicle parts account for over half of this total. Aerospace products and parts represent about a fourth of this category. Canada, Mexico, Germany, United Kingdom and Australia are the top destinations for transportation equipment.

The processed foods category accounts for $1.3 billion or about 7 percent of Wisconsin’s exports. Meat products are around 25 percent of the processed food total and dairy products account for an additional 25 percent of the total. Food (not elsewhere classified) accounts for about 16 percent of the processed foods exporting total.

Chemical products were valued at $1.2 billion or 6 percent of total exports, and include items such as pharmaceuticals, basic chemicals, and cleaning products. The paper industry exports were around $840 million or about 4 percent of export activity. Lastly, the export value of agricultural and livestock products was approximately $850 million. The top products were oilseeds and grain, other animal products, and forestry products.

It is clear that Wisconsin is highly engaged in the global economy. So how does Wisconsin compare to the U.S. in terms of exporting activity? For the last few years, Wisconsin has accounted for about 1.5 percent of U.S. exporting activity. Since Wisconsin’s population is approximately 1.8 percent of the U.S. population (5.72 million/313.91 million), one might expect that our exports would account for about 1.8 percent of the U.S. total. However, this is not the case. In other words, on a per capita basis, we tend to export a little less than the rest of the country.

International trade has another important dimension that most people do not consider: about 60 percent of the $1.3 trillion that the U.S. imports annually are used by U.S. firms as inputs to their products. This helps U.S. firms keep costs down and to stay competitive in the global economy. A Business Round Table study found that relaxed trade barriers reduce prices on imported and domestic made products. In other words, they help to keep inflation in check. For example, the study estimated that over a 10-year period (2004-2014) the price on comparable televisions has declined by over 80 percent, and 69 percent for computers. Further, the average Wisconsin family of four saves about $10,000 a year because of relaxed trade barriers.

We also need to consider the impact of foreign direct investment in Wisconsin. Remember this is a form of international trade. Foreign owned companies employ 88,000 workers in our state. A few examples are the Canadian National Railroad, McCain Foods, Domtar paper manufacturing, Veolia waste management, Aldi groceries stores, and BMO Harris Bank. In addition many well know companies are foreign owned like Budweiser Beer, 7 Eleven convenient stores, Gerber baby food, Frigidaire appliances, Holiday Inn, Citgo gasoline, BP gasoline, Firestone, Honda, and Toyota.

While most would like to see the U.S. win better trade terms with other countries, people should remember that alienating other nations and starting a trade war would cause higher domestic inflation and the loss of jobs here. Clearly this is a very delicate situation and the public needs to be aware of the potential costs. Raising tariffs and other trade barriers with the hope of increasing domestic jobs will come with a steep cost.

State Economy
The unemployment rate in each reporting areas is listed in Table 2. Marathon, Portage and Wood County all experienced substantial declines in their unemployment rates from a year ago. The respective March rates for Portage, Marathon and Wood are now down to 3.4, 2.9 and 4.1 percent in March 2018. The labor force weighted unemployment rate for Central Wisconsin also contracted, and is now at 3.3 percent. Meanwhile, Wisconsin’s unemployment rate dropped from 3.7 to 3.2 percent. Thus,

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Unemployment Rate</th>
<th>Unemployment Rate</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>March 2017</td>
<td>March 2018</td>
<td></td>
</tr>
<tr>
<td>Portage County</td>
<td>3.7%</td>
<td>3.4%</td>
<td>-6.7</td>
</tr>
<tr>
<td>City of Stevens Point</td>
<td>3.4%</td>
<td>3.1%</td>
<td>-8.8</td>
</tr>
<tr>
<td>Marathon County</td>
<td>3.3%</td>
<td>2.8%</td>
<td>-11.8</td>
</tr>
<tr>
<td>Wood County</td>
<td>4.5%</td>
<td>4.1%</td>
<td>-9.3</td>
</tr>
<tr>
<td>Central Wisconsin</td>
<td>3.7%</td>
<td>3.3%</td>
<td>-10.8</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>3.7%</td>
<td>3.2%</td>
<td>-14.1</td>
</tr>
<tr>
<td>United States</td>
<td>4.8%</td>
<td>4.1%</td>
<td>-9.3</td>
</tr>
</tbody>
</table>
unemployment rates were much improved throughout the region and state. The United States unemployment rate also fell from 4.6 percent to 4.1 percent over the past 12 months.

Employment figures in Table 3 are based on the government’s survey of households. Portage County’s total employment figure rose by 600 positions and total employment in Wood County expanded by about 600 jobs over the past year. Meanwhile, Marathon County payrolls are estimated to have grown by 1,800 positions over the past 12 months. Thus, Central Wisconsin as a whole experienced an employment growth of about 3,100 positions. Jobs in the region rose from 144.1 to 147.2 thousand or by 2.2 percent. The survey of households also shows that Wisconsin’s payrolls increased by 2.7 percent. The nation gained 1.5 percent or about 2.2 million jobs over the same period.

Table 3: Employment

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>EMPLOYMENT</th>
<th>CENTRAL WISCONSIN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Employment</td>
<td>March 2017 (Thousands)</td>
</tr>
<tr>
<td>Portage County</td>
<td>38.6</td>
<td>39.2</td>
</tr>
<tr>
<td>City of Stevens Point</td>
<td>14.7</td>
<td>14.9</td>
</tr>
<tr>
<td>Marathon County</td>
<td>72.0</td>
<td>73.8</td>
</tr>
<tr>
<td>Wood County</td>
<td>33.5</td>
<td>34.1</td>
</tr>
<tr>
<td>Central Wisconsin</td>
<td>144.1</td>
<td>147.2</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>2,955.8</td>
<td>3,076.8</td>
</tr>
<tr>
<td>United States</td>
<td>152,628</td>
<td>154,877</td>
</tr>
</tbody>
</table>

* Percent change figures reflect data before rounding.

Table 4 gives the most recent employer based payrolls numbers for Wisconsin. Economists believe the nonfarm employment numbers that are based on employer provided data, give a more accurate assessment of the labor market conditions than the household survey data. From March 2017 to March 2018 Wisconsin’s total nonfarm employment expanded from 2.90 million to 2.93 million or by 0.9 percent. This represents a gain of approximately 27 thousand jobs during the past year. Unlike past periods when only a few of the state’s 11 major industrial sectors expanded, this time all but four of the sectors recorded gains in employment. Overall though, the rate of job generation continues to be very modest in the state as measured by this data set and compared to what our neighbor states are experiencing.

**Figures 1-7**

Figures 1 thru 7 give a historic overview of how the economy in Wisconsin has performed relative to other Midwestern state over the past few years. If past trends hold, then the figures might give us a glimpse into what future levels of activity might look like.

**Figure 1: Employment Level: WI**

**Figure 2: Unemployment Level: WI**

**Figure 3: Unemployment Rate: WI**
County Economy

In Table 5, Portage County sales tax distributions were stronger this year than last, rising from $1.4 million in 2017 to $1.5 million in 2018, an increase of 8 percent. Marathon also experienced an increase in sales tax distributions from the state. Marathon rose from $2.86 million to $2.90 million or by about 1.2 percent. However, Wood County collections eked out a modest gain rising from $1.31 million to $1.32 million or by 0.3 percent over the course of the past year. The data suggests there was improvement in retail activity in Central Wisconsin retail activity.

### Table 5: County Sales Tax Distribution

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>2017 First Quarter (Thousands)</th>
<th>2018 First Quarter (Thousands)</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portage County</td>
<td>$1,430.9</td>
<td>$1,545.2</td>
<td>+8.0</td>
</tr>
<tr>
<td>Marathon County</td>
<td>$2,885.2</td>
<td>$2,899.5</td>
<td>+1.2</td>
</tr>
<tr>
<td>Wood County</td>
<td>$1,317.6</td>
<td>$1,321.3</td>
<td>+0.3</td>
</tr>
</tbody>
</table>

* Percent change figures reflect data before rounding.

### Table 6: Portage County and Wisconsin Demographics

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Portage County</th>
<th>Wisconsin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population, 2015 estimate</td>
<td>70,408</td>
<td>5,771,337</td>
</tr>
<tr>
<td>Population, 2010 (April 1)</td>
<td>70,019</td>
<td>5,687,289</td>
</tr>
<tr>
<td>Population, percent change, April 1, 2010 to July 1, 2015</td>
<td>-0.6%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Population, 2010</td>
<td>70,019</td>
<td>5,686,988</td>
</tr>
<tr>
<td>Persons under 5 years, 2015</td>
<td>4.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Persons under 18 years, 2015</td>
<td>19.5%</td>
<td>22.4%</td>
</tr>
<tr>
<td>Persons 65 years and over, 2015</td>
<td>15.1%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Female persons, 2015</td>
<td>49.7%</td>
<td>50.3%</td>
</tr>
<tr>
<td>White, 2015</td>
<td>94.4%</td>
<td>87.6%</td>
</tr>
<tr>
<td>African American, 2015</td>
<td>0.8%</td>
<td>6.6%</td>
</tr>
<tr>
<td>American Indian and Alaska Native, 2015</td>
<td>0.5%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Asian, 2015</td>
<td>2.9%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Two or more Races, 2015</td>
<td>1.4%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Hispanic or Latino, 2015</td>
<td>3.1%</td>
<td>6.6%</td>
</tr>
<tr>
<td>Foreign born persons, 2010-2014</td>
<td>3.0%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Language other than English spoken at home, pct age 5+, 2010-2014</td>
<td>6.2%</td>
<td>8.8%</td>
</tr>
<tr>
<td>High school graduate or higher, percent of persons age 25+, 2010-2014</td>
<td>92.0%</td>
<td>90.8%</td>
</tr>
<tr>
<td>Bachelor’s degree or higher, percent of persons age 25+, 2010-2014</td>
<td>28.3%</td>
<td>27.4%</td>
</tr>
<tr>
<td>Veterans, 2010-2014</td>
<td>4,867</td>
<td>336,931</td>
</tr>
<tr>
<td>Mean time to work (minutes), 2010-2014</td>
<td>19.2</td>
<td>21.8</td>
</tr>
<tr>
<td>Housing units, 2015</td>
<td>30,421</td>
<td>2,657,231</td>
</tr>
<tr>
<td>Homeownership rate, 2010-2014</td>
<td>68.3%</td>
<td>67.7%</td>
</tr>
<tr>
<td>Housing units in multi-unit structures, 2009-2013</td>
<td>22.8%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Median value of owner-occupied housing units, 2010-2014</td>
<td>$147,600</td>
<td>$165,900</td>
</tr>
<tr>
<td>Households, 2010-2014</td>
<td>27,954</td>
<td>2,293,250</td>
</tr>
<tr>
<td>Persons per household, 2010-2014</td>
<td>2.39</td>
<td>2.43</td>
</tr>
<tr>
<td>Per capita money income, 2010-2014</td>
<td>$26,482</td>
<td>$27,907</td>
</tr>
<tr>
<td>Median household income, 2010-2014</td>
<td>$50,837</td>
<td>$52,738</td>
</tr>
<tr>
<td>Persons below poverty level, 2010-2014</td>
<td>15.4%</td>
<td>12.1%</td>
</tr>
</tbody>
</table>
Table 6 presents Portage County and Wisconsin demographic information. A highlight from this table is that Portage County population is estimated to have reached 70,408 in 2015, only growing by 0.6 percent from 2010 to 2015. Likewise the state grew by just 1.5 percent over the same time period. Table 7 contains the business and geographic data for Portage County and the state of Wisconsin. These tables give the reader points of comparison in terms of the local area’s characteristics relative to the state. Moreover, the latter provides some insights into Portage County’s share of the state’s economic activity.

Another measure of the local economy is presented in Table 8. It shows that new unemployment claims rose from 105 to 144 or by 36.6 percent over the year. Moreover, total unemployment claims climbed from 820 to 1,040 or by 26.9 percent in our year over comparison. Perhaps this result is partially due to the very long and harsh winter in central Wisconsin and to layoffs in the retail sector.

Local Economy

The CWERB’s survey of area business executives is reported in Table 9. The mark of 58 means this group believes that recent events at the national level have led to an improvement in economic conditions. More importantly, it indicates that they believe local business climate has strengthened over the past 12 months. When they were asked to forecast economic conditions at the national level they were less optimistic. Also, they expressed similar levels of optimism for the local economy, and for their particular industry, i.e. the appraisals were 56 and 58. Overall, Table 9 shows that the level of optimism expressed in 2018 was about the same as expressed in 2017.

In Table 10 the CWERB’s retailer confidence survey mark of 58 means that merchants feel that store sales were higher than a year ago. This is good news for the local economy. This is a good result considering the brutal winter weather of February, March and April which undoubtedly influenced the numbers in a negative way. When it comes to expectations about the future it appears that the March 2018 assessment of retail activity was marginally lower than what it was in March 2017. Also this group feels that retail activity in the summer of 2018 will be higher than in
2017. The overall significance of the survey is that local merchants believe that the local retail sector did well in light of the harsh winter weather.

Help Wanted Advertising in Table 11 is a barometer of local labor market conditions and the indexes for Stevens Point, Wausau, Marshfield and Wisconsin Rapids are now based on job advertising on the Internet. The index for Stevens Point and Wisconsin Rapids fell by 6 percent and by 5 percent respectively when compared to a year ago. Likewise Marshfield advertising fell 8 percent. Further, Wausau experienced a small increase in the amount advertising taking place, 1.3 percent. Adams County was way down in advertising. While advertising in Lincoln County was flat. The data taken together suggests that advertising growth has been very uneven in the area.

Table 12 presents the residential construction numbers for the Stevens Point-Plover area. In our yearly comparison the number of permits issued in First Quarter was 10, the number of permits last year was 15. The 2018 estimated value of the construction was $2.6 million and represents 11 housing units. When comparing First Quarter 2017 to that of 2018 residential alteration activity expanded from 152 to 182 permits. However, the estimated value of this type of activity went down from $2.7 million to $1.2 million over the year. Overall, the 2018 construction data are off the pace from a year ago.

The nonresidential construction figures in Table 13 were as follows for First Quarter 2018. The number of permits issued was just 2 and the estimated value was $10.2 million. The number of business alteration permits was 89 in 2018 compared to 69 in 2017. The estimated value of alteration activity was $2.7 million 2018 compared to the 2017 figure of $4.3 million. In sum, the pace of nonresidential construction activity remained brisk in the area.

<table>
<thead>
<tr>
<th>TABLE 11 HELP WANTED ADVERTISING</th>
<th>Index Value</th>
<th>Q1 2017</th>
<th>Q1 2018</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stevens Point</td>
<td>1180.57</td>
<td>1111.25</td>
<td>-5.9%</td>
<td></td>
</tr>
<tr>
<td>Wausau</td>
<td>1208.90</td>
<td>1315.00</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Marshfield</td>
<td>742.00</td>
<td>682.00</td>
<td>-8.1%</td>
<td></td>
</tr>
<tr>
<td>Wisconsin Rapids</td>
<td>966.33</td>
<td>911.42</td>
<td>-5.7%</td>
<td></td>
</tr>
<tr>
<td>Lincoln County</td>
<td>1287.50</td>
<td>1262.58</td>
<td>-0.4%</td>
<td></td>
</tr>
<tr>
<td>Adams County</td>
<td>939.67</td>
<td>879.92</td>
<td>-6.5%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 12 RESIDENTIAL CONSTRUCTION STEVENS POINT - PLOVER AREA</th>
<th>2017</th>
<th>2018</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential Permits Issued</td>
<td>15</td>
<td>10</td>
<td>-33.3</td>
</tr>
<tr>
<td>Estimated Value of New Homes</td>
<td>$4,656.6 (thousands)</td>
<td>$2,613.0 (thousands)</td>
<td>-35.6</td>
</tr>
<tr>
<td>Number of Housing Units</td>
<td>16</td>
<td>11</td>
<td>-31.3</td>
</tr>
<tr>
<td>Residential Alteration Permits Issued</td>
<td>152</td>
<td>182</td>
<td>+19.7</td>
</tr>
<tr>
<td>Estimated Value of Alterations</td>
<td>$2,713.7 (thousands)</td>
<td>$1,176.8 (thousands)</td>
<td>-56.6</td>
</tr>
</tbody>
</table>

Figures 12 thru 15 give an economic history lesson as to how the employment level, the unemployment level, the unemployment rate, and the labor force have trended and likely will trend in the future. The City of Stevens Point, the City of Wausau, as well as the Combined Statistical Area (CSA) of Wausau, Stevens Point, Wisconsin Rapids and Marshfield are presented in the figures.

Figure 12: Employment Level: Portage

Figure 13: Unemployment Level: Portage
Housing Market Information

The following seven tables contain information on the national, regional, and local housing market. Housing activity is an incredibly important aspect of the economy. We believe the reader will gain valuable insight into housing market conditions and greater insight into the local economy in this section of the report.

Table 14 gives national median home price for the U.S. and major regions in the U.S. The median home price in the U.S. rose to $250,400 in March 2018. Housing prices in the Midwest, as always, remain the lowest in the nation. The median home price in our part of the country fell from 2017 to $192,200 in 2018. In general, housing prices are slowly increasing in the U.S. and are rising in nearly all of its geographic regions. The West has the highest median housing prices at $377,100.

Table 15 for the United States existing home sales data show a modest increase in sales activity over the past year. In the Midwest 1.29 million homes are forecasted to be sold in 2018. For the Midwest, the preliminary estimate for 2018 is that 10,000 fewer homes will be sold than in 2017. In 2011 the number of homes sold in the Midwest bottomed out at 910 thousand units.

Table 16 shows the national inventory of homes. As of March 2018 the inventory backlog is estimated to be 3.6 months. Going all the way back to 2010 the national supply of homes was 9.4 months. Thus, a great deal of improvement has taken place in housing inventory number. The statistics indicate that the backlog of unsold houses has been greatly reduced.

Tables 17-1 and 17-2 present national housing affordability data. Over the years very low interest rates and falling home prices have greatly improved the affordability of homes. However, starting in 2013 housing prices and interest rates started to trend upwards and affordability started trending lower. The preliminary estimate for the affordability index in 2018 is 159.6. The higher the index, the more affordable housing is for the typical family. This means that in 2018 a household earning at the median household income level has 159.6 percent of the income necessary to qualify for a conventional loan covering 80 percent of a medium-priced existing single-family home.
Table 18 displays data on state and local area median prices. For the most part, Wisconsin and local area home prices have been more stable than the U.S. as a whole. In Central Wisconsin, the lowest median home price can be found in Wood County at $110,000. Portage County has the highest median price at $161,500, and Marathon falls somewhere between the other two counties, with a median house price of $149,900. In comparison, the median price of a house in Wisconsin is about $170,000. In addition, after a few years of rising values, the preliminary data for 2018 suggests that the median price for a house in the local area and state are declining.

Table 19 gives the number of local housing units sold, from 2015 to 2018. The counties in our region have all experienced some stagnation in the number of units sold over this time period. Please note the listed number of homes sold in 2018 only represents the January to March activity.

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The Economics of the Opioid Epidemic
by Professor Scott Wallace and Erika Rattunde ’18

The authors would like to thank Sue Bailey and C.R. Marshall for their very helpful comments.

Introduction
Opioids represent a class of pharmaceuticals that can be used to reduce pain. Physicians prescribe opioid-based drugs like oxycodone (OxyContin), hydrocodone (Vicodin), and morphine to relieve pain. Users of opioids experience feelings of euphoria. Opioids are highly addictive with overdoses often resulting in death from respiratory failure. Heroin and fentanyl also are opioids. Fentanyl is a synthetic opioid which has been prescribed to treat severe pain. Fentanyl, like heroin, is also distributed illegally throughout the United States (CDC, 2018).

The United States is in the midst of a severe opioid epidemic. More than 165,000 Americans died from prescription-based opioid overdoses from 1999 to 2014 (Kano & Thiruvananthapuram, 2016). The sale of prescription opioids per capita increased by 356% between 1999 and 2015. In 2011, 44% of Medicare recipients under 65 had been prescribed opioid medication (Krueger, 2017, 31-2). The Center for Disease Control estimates that more than 11 million people abused prescription opioids in 2016 alone (CDC, 2018). While the abuse of prescription opioids primarily fueled the epidemic early on, illicit drugs like heroin and fentanyl have been the dominant drivers since 2010.

This report reviews the recent economic literature on the opioid epidemic. We begin by looking at studies that estimate the economic costs of the epidemic. Next the report explores some of the demand-side factors that have contributed to the epidemic. Then it examines the factors that effectively increased the supply of opioid drugs. We also investigate the increasing role of illicit opioids like heroin and fentanyl in propelling the epidemic over the last half dozen years or so. We conclude by briefly considering the policy implications drawn from these studies.

A note of caution is in order. Human behavior is complex. It is extraordinarily difficult for economists (and other social scientists) to identify the true causes behind specific kinds of behavior. It is also important to recognize that there are differences in beliefs among economists over the epidemic’s causes and costs. In addition, many of the studies we describe are “working papers,” meaning they haven’t yet been subject to a rigorous review process that is typically required for publication. Despite these provisos, we believe that a review of the current economic literature can illuminate many of the issues surrounding this epidemic and thereby provide needed context in trying to find solutions to this terrible problem.

The Economic Costs of the Opioid Epidemic
Economists have attempted to estimate the very significant costs of the opioid epidemic on economic performance and society overall. In this section, we review and summarize the results of their studies. We initially look at the impact of the epidemic on the nation’s workforce and then focus on broader societal costs associated with the epidemic.

Labor Force Participation Rate (LFPR)
In evaluating the health of a patient, doctors look at blood pressure, weight, heart rate, and cholesterol levels as well as a host of other indicators. Economists similarly rely on multiple measures in assessing the performance of the overall economy. Neither doctor nor economist, however, can evaluate well-being by only looking at a single measure; each must make sense of a wide range of indicators in making their appraisals.

A critical gauge of the health of the economy is the unemployment rate. The symptoms of an economy suffering from high unemployment include psychological and financial hardships incurred by individuals and their families as well as the lost output to the economy. The unemployment rate measures the proportion of the labor force that is out of work. The labor force consists of all civilian adults who are either employed or who are unemployed and are looking for work. The labor force, however, doesn’t include those non-working adults that retire, attend school full time, or who no longer seek employment (McEachern, 2012, 142-3). Looking solely at changes in unemployment rate therefore provides an incomplete picture because it fails to account for changes in the number of those outside of the labor force.

In addition to the unemployment rate, economists also consider the labor force participation rate in their analyses. The labor force participation rate (LFPR) is the share of working-age adults that are in the labor force. The LFPR
reached a relatively recent historical peak of 67.3% in 2000 but has been steadily declining ever since with it currently standing at 62.9%.

The labor force participation rate is important because it partially accounts for an economy’s productive capacity; the lower the labor force participation rate, all things equal, the lower the capability of the economy to produce goods and services (McEachern, 2012, 144). Declining labor force participation means that employers often have a difficult time finding workers during economic expansions. In addition, the longer potential workers stay out of work, the more likely their skills will become obsolete. Other negative effects of a low LFPR include reductions in the tax base and increases in social spending which exacerbate a nation’s fiscal well-being.

While retiring baby boomers and increased school enrollment account for most of the decline, Alan Krueger (2017) has found evidence that the opioid epidemic has had a significant impact as well. The Princeton Pain Survey revealed that 47 percent of prime age men (ages 25-54) who were not in the labor force took pain medication on a daily basis. Approximately two-thirds of these men were taking prescription pain medication. Krueger’s study also finds that 31% of non-labor force (NLF) prime age men were using opioid-based medication. All-in-all, Krueger estimates that the increase in opioid prescriptions was responsible for approximately 20% of the decline in the labor force participation rate from 1999 to 2015.

**Employer Costs and Lost Earnings**
In addition to reducing the number of employees available for hire, the opioid epidemic has imposed substantial costs on employers in other ways. The National Safety Council surveyed and interviewed US businesses that employed 50 or more workers in 2017 regarding their experiences with employees who used prescription pain medication. More than 70 percent had been affected by prescription drugs. Thirty nine percent reported that prescription drug use led to increases in absenteeism. In addition, 29 percent of employers cite that the abuse of prescription pain-killers has reduced the performance of the workers with 15 percent finding that they contributed to workplace accidents and injuries (Hersman, 2017). Employers also report that is becoming more difficult to find job candidates that can pass drug tests and that turnover has increased dramatically because of the epidemic. In addition, employees who abuse opioids have double the healthcare costs relative to non-abusers (Saraiva, Laya, & Smialek, 2017).

Altarum, a non-profit health system research organization, has published several studies diagnosing the economic costs of opioid abuse in the United States. Altarum estimated the lost wages and productivity arising from overdose fatalities, non-fatal productivity decreases, and incarceration for 2016 (Rhyan, 2017, 2). The total costs in lost wages and productivity reached $40 billion in 2016. The table below breaks down the both the individual and private sector losses as well as the reduction in government tax revenues at the federal, state, and local levels.

**Table 1: 2016 Lost Earnings and Productivity (in billions)**

<table>
<thead>
<tr>
<th>Event</th>
<th>Individual &amp; Private Sector Losses</th>
<th>Lost Federal Tax Revenues</th>
<th>Lost State Tax Revenues</th>
<th>Lost Local Tax Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overdose Fatalities</td>
<td>$31.1</td>
<td>$8.2</td>
<td>$2.2</td>
<td>$1.7</td>
</tr>
<tr>
<td>Incarceration</td>
<td>$0.9</td>
<td>$0.2</td>
<td>$0.1</td>
<td>$0.1</td>
</tr>
<tr>
<td>Nonfatal Productivity</td>
<td>$8.1</td>
<td>$2.1</td>
<td>$0.6</td>
<td>$0.4</td>
</tr>
<tr>
<td>Total</td>
<td>$40.0</td>
<td>$10.6</td>
<td>$2.8</td>
<td>$2.2</td>
</tr>
</tbody>
</table>

Rhyan, 2017, 2

The loss in future productivity from opioid overdose fatalities averaged $800,000 on a per capita basis (with 41 being the average age of the victim). “The average lost productivity per death and number of deaths has increased substantially due to the opioid epidemic transitioning away from overdoses in the older population using prescription opioid pills towards overdoses in younger users of illicit drugs like heroin and fentanyl” (Rhyan, 2017, 2).

**Other Societal Costs**
Florence et. al. (2016) estimated the total health care and substance abuse treatment costs from the opioid epidemic reached $29 billion in 2013. More recently, costs associated with emergency room visits and in-patient hospital services from overdoses alone was $12.2 billion in 2016 with Medicaid and Medicare covering $8.5 billion of these costs. Indirect costs such as diseases related to addiction like neonatal abstinence syndrome, tuberculosis, and hepatitis summed to $9.2 billion (Rhyan, 2017, 2 – 3).

The epidemic has also dramatically increased costs in the areas of criminal justice, education and social services like child and family assistance. Costs associated with police protection, corrections and incarceration, judicial and legal administration, and property losses amounted to $7.5 billion in 2016. The increased need for child and family assistance associated with higher rates of child neglect raised spending on these services by $6.1 billion. Education expenses increased by $4.4 billion (Rhyan, 2017).

As troubling as these numbers are, these estimates vastly underestimate the total costs from the opioid epidemic. They exclude the enormous emotional costs borne by family members and friends of victims as well as the social deterioration from a loss of community in areas where the
epidemic is concentrated. By focusing on lost productivity and earnings, these estimates fail to consider the full value of lives that are lost to the epidemic (Rhyan, 2017). Federal agencies, for example, use the “value of statistical life” in their cost-benefit analyses of new policies and regulations. “Such valuations are typically based on how individuals trade off wealth for reduced mortality risks” (CEA, 2017, 3). Using such an approach, the Council of Economic Advisers (2017) estimated that opioid-related overdose fatalities accounted for close to $432 billion in fatality costs in 2015. Adding non-fatality costs, the CEA estimated total costs from the opioid crisis reached $504 billion or approximately 2.8% of GDP in 2015 (CEA, 2017)!

**Demand-Side Factors**

In analyzing the opioid crisis, it is important to understand why people over the last 20 years have been more willing to consume opioids. In other words, why has the demand for these drugs increased over time?

**Economic Despair**

Princeton economists Anne Case and Nobel Prize winner Angus Deaton have explored the rise in middle-age mortality rates among white non-Hispanic Americans since 2000. This unprecedented increase in mortality rates represents a clear break from the past in which rates have consistently declined over time for all racial and ethnic groups. The problem seems to be confined to American whites as mortality rates have been declining in other wealthy nations (e.g. Canada, United Kingdom, Germany, Sweden, and Australia) at an average rate of 2% annually (Case and Deaton, 2017).

As the graph below shows, the middle age (Age 50-54) mortality rates for black non-Hispanic and Hispanic Americans (BNHs) have continued to decline over this time period. The increase in mortality for white non-Hispanics (WNHs) has largely been concentrated in individuals with a high school education or less and is now 30% higher than black non-Hispanics.

Not only are American white non-Hispanics the only group experiencing increasing mortality rates, Figure 2 shows that the overwhelming cause of the higher rates is what Case and Deaton call “deaths of despair,” namely fatalities from alcohol and drug poisonings, suicides, alcohol liver diseases, and cirrhosis (Case and Deaton, 2015, p. 15079). These “deaths of despair” overwhelmed the progress made from declines in heart disease and cancer as causes of mortality.

**Figure 2. Mortality by cause, white non-Hispanics ages 45-54**

Case and Deaton (2017) conjecture that the dramatic increases in mortality for less educated, middle aged whites largely reflect the declining economic fortunes of this population since the early 1970s. Globalization, technological change, and other economic shocks have led to increasing unemployment and falling real incomes for people who don’t have a college degree with each subsequent generation doing worse than the previous one. The authors provide a narrative of “cumulative disadvantage from one birth cohort to the next – in the labor market, in marriage and child outcomes, and in health – is triggered by progressively worsening labor market opportunities at the time of entry for whites with low levels of education” (Case and Deaton, 2017, 397). Concomitant with worsening economic conditions and deaths of despair are a host of indicators like higher rates of morbidity, out-of-wedlock births, and divorce that reveal significant social
deterioration. “Mortality rate increases varied in different parts of the country in the period 1999-2015. Of the nine census divisions, the hardest hit was East South Central (Alabama, Kentucky, Mississippi, and Tennessee) which saw mortality rates rise 1.6 percent a year on average for WNHs age 50 – 54, increasing from 552 to 720 deaths per 100,000 during this period” (Case and Deaton, 2017, 413).

Case and Deaton (2017) view the opioid epidemic as just one cause of the increase in mortality rates. They provide a narrative that characterizes opioid abuse as a symptom of the underlying despair felt by this population. “Although we do not see the supply of opioids as the fundamental factor, the prescription of opioids for chronic pain added fuel to the flames, making the epidemic much worse than it otherwise would have been” (Case and Deaton, 2017, 399).

Other Studies
Two studies have shown that the level of regional unemployment has had an impact on the use of illegal drugs. Carpenter, McClellan, and Rees (2017) find a significant and positive relationship between state unemployment rates and the illicit use of opioids including prescription drugs and heroin (p. 64). Their results confirm Case and Deaton (2017) by showing that the rates of analgesic disorders are countercyclical and are “driven by men, whites, lower educated individuals, and prime aged adults (31 – 64 years old)…” (Carpenter, McClellan, and Rees, 2017, 70). Using county level data, Hollingsworth, Ruhm, and Simon (2017) found that a one percent increase in the unemployment rate increased opioid-related mortality rates by 3.6% and increased opioid-related emergency room visits by 7.0% (p. 222). These authors similarly found that mortality rates among whites were much higher than other racial or ethnic groups.

Pierce and Schott (2016) provide evidence that changes in trade policy have contributed to increasing mortality rates in those counties most impacted by those policies. In October 2000, the United States granted Permanent Normal Trade Relations (PTNR) to China which effectively eliminated the annual renewals of trading relationship status and the threat of tariff increases on Chinese imports into the United States. By lowering tariff rates and reducing the level of uncertainty, trade liberalization “differentially exposed U.S. counties to increased international competition via their industry structure” (p. 1). Those counties most impacted experienced loss in employment, concentrated in the manufacturing sector and higher mortality rates from causes, like suicide and illicit drug overdoses that are associated with loss of employment. For these counties, the authors estimate that increased competition from Chinese imports led to a 27.7% increase in poisonings relative to the rate in 2000, before PTNR was implemented (Pierce and Schott, 2016, 14). Consistent with the findings from Case and Deaton (2016), the authors found that the increase in poisonings and suicides were concentrated among whites.

Age and Cohort Effects
The studies so far have identified economic causes behind the increasing mortality rates for middle-aged white non-Hispanics. One study shows that individuals born between 1947 and 1964 (aka the Baby Boomers) demonstrated the greatest risk for prescription opioid overdose than any other cohort (Huang, Keyes, & Li, 2018). The reason may have more to do with cultural values of the baby boom generation than economic despair. The baby boomers have shown a greater proclivity to experiment with drugs (both legal and illegal) than other generations. Stephen Pinker notes that “opiod overdose are largely an epidemic of the druggy Baby Boomer cohort reaching middle age. The peak age of poisoning deaths in 2011 was around fifty, up from the low forties in 2003, the late thirties in 1993, the early thirties in 1983, and the early twenties in 1973. Do the subtractions and you find that in every decade it’s the members of the generation born between 1953 and 1963 who are drugging themselves to death” (Pinker, 2018, 184). When it comes to heroin overdoses, however, Huang et al. (2018) find that individuals born between 1979 and 1992 have been at greatest risk.

Supply-Side Factors
Other economists have focused on the increasing availability of opioids (both prescription and illicit) combined with changes in medical practices as primary causes of the epidemic.

Regional Variation in Opioid Prescription Rates
Krueger (2017) has identified significant differences in opioid prescription rates across different regions in the United States. “The average quantity of opioids prescribed per capita varies by a factor of 31 to one in the top 10 percent of counties relative to the bottom ten percent of counties, according to CDC data” (Krueger, 2017, 33). The stark differences in prescription rates far exceed the differences in health outcomes across counties. Krueger also found that there is a positive correlation between prescription rates and the use of pain medication at the county level. On a per-capita basis, a ten percent increase in the amount of opioids prescribed is correlated with a two percent increase in the proportion of people who report taking pain medication on a daily basis (Krueger, 2017, 34). While the direction of causation is ambiguous, Krueger found areas with higher prescription rates to be associated with lower rates of labor force participation.
Changes (and Differences) in Prescribing Behavior among Physicians

The 1990s witnessed a sea change in the attitude among many doctors regarding the treatment of pain. Physicians increasingly considered pain a “fifth vital sign” that required their medical attention. Pharmaceutical companies, meanwhile, aggressively promoted new brands of opioid painkillers like OxyContin. Greater time pressures combined with the increased reliance on “patient-satisfaction surveys” in evaluating performance induced many physicians to adopt more liberal prescribing practices. These practices created an “excess medication” problem in which prescribed painkillers were often diverted to non-patients who would abuse them. By the early 2000s, pain clinics emerged in states like Ohio and Florida where less than scrupulous physicians prescribed and distributed opioids on a cash-basis only (Satel, 2017, 6-7).

Despite the trend toward more liberal prescribing practices, there remain significant differences among physicians with respect to prescribing painkillers. Schnell and Currie (2017) analyze the relationship between physicians’ educational backgrounds and their opioid prescription practices. Their study shows that physicians who graduated from the lowest ranked medical schools prescribe close to three times as much opioids compared to physicians from top-ranked programs. The figure below shows the number of annual opioid prescriptions per physician based on their school’s rank relative to Harvard, the highest ranked medical program.

![Figure 3: Opioid Prescriptions by Medical School Rank](image)

The relationship between medical school rank and opioid prescription rates even persisted among physicians in the same specialty who practiced in the same county. The authors estimated that if general practitioners “prescribed like those from the top ranked school, we would have had 56.5% fewer opioid prescriptions and 8.5% fewer deaths over the period 2006 to 2014” (Schnell and Currie, 2017, 3). These differences in prescribing practices among physicians encouraged “doctor shopping” in which patients patronize numerous physicians to receive multiple prescriptions for the same condition (Mallat, 2017, 2).

Introduction of Medicare, Part D

Under the Medicare Drug Benefit Program (Part D), Medicare recipients are now eligible to receive voluntary coverage for prescription drugs. The program’s introduction in 2006 dramatically decreased prescription drug costs to senior citizens. Powell, Pacula, and Taylor (2016) claim that the reduction in drug prices had the effect of increasing access to opioid medications to those 65 and older. The increase in supply of opioids to seniors precipitated “spillovers” to other individuals who used opioids for nonmedical reasons. Approximately, “two-thirds of people who report nonmedical use of prescription pain relievers get them from a friend or relative” (Powell, Pacula, & Taylor, 2016, 3). The authors also found that states with a high percentage of elderly people had greater access to opioids because of Medicare, part D. Their “estimates imply that a 10% increase in medical access to opioids leads to a 7.4% increase in opioid-related mortality and a 14.1% increase in substance abuse treatment” (Powell, Pacula, & Taylor, 2016, 6). Much of the increase in opioid abuse was the result of the “diversion” of prescription drugs to non-Medicare recipients who used them for nonmedical purposes.

Changes in the Drug Environment

In a recent study, Christopher Ruhm, an economist from the University of Virginia, finds that the primary cause of the recent increase in fatalities from opioid overdoses is an increase in supply of illicit opioids such as heroin and fentanyl. While counties facing economic hardships experienced higher rates of drug-related deaths than more prosperous ones, Ruhm found that economic conditions account for less than ten percent of the difference (Ruhm, 2018, 6). The figure below decomposes drug-related mortality rates according to whether fatalities were related to the use of opioid analgesics or illicit opioids over the 1999 – 2015 period. Early on, the abuse of prescription painkillers was the dominant cause of fatalities. Around 2010, mortality rates related to abuse of analgesic plateaued while mortality rates from illicit opioids skyrocketed. The rapid increase in mortality rates from all drugs since 2010 is due exclusively to rise in the number (and share) of fatal overdoses from illicit opioids (Ruhm, 2018, 5).
Not only did the number of illicit drug fatalities increase in absolute and relative terms, the composition of the victims changed as well. Ruhm’s analysis finds that the “explosive growth in illicit opioid death rates after 2010 was accompanied a rising share of drug deaths being accounted for by males and relatively young adults, as well as a faster growth in fatalities involving these drugs for them relative to females and other adults” (Ruhm, 2018, 6). Fatalities from prescription opioids tended to be concentrated among middle-aged adults of both sexes while younger adult males accounted for a disproportionate share of overdoses from heroin and fentanyl.

The differences in the drug of choice between these different age cohorts and the change in the pattern of fatalities suggests that the demand-side “deaths of despair” arguments are misguided, according to Ruhm. “If economic conditions are the primary driver of the drug epidemic, there would be no reason to expect that these shifts in the drug composition to affect the distribution of the demographic groups killed by overdoses. Instead, individuals self-medicating for their ‘despair’ would simply switch to the newly more available types of drugs” (Ruhm, 2016, 5). Ruhm’s analysis suggests that the recent rise in drug mortality is the result of increased availability and lower price of illicit opioids like heroin and fentanyl. The sharp increase in opioid consumption and fatalities strongly suggest that the epidemic is largely a supply-side phenomenon.

From Prescription Opioids to Illicit Drugs
As discussed, the kinds of drugs that have fueled the epidemic have shifted from prescription opioids to illicit drugs like heroin and fentanyl. Approximately 80% of heroin users had originally abused prescription opioids (Kano & Thiruvanathapuram, 2016). In addition to increases in the supply of illicit drugs (and the resulting lower prices), changes in public policy and new formulations of prescription opioids contributed to this shift. Initiatives designed to curb the abuse of prescription opioids include pain clinic laws, Prescription Drug Monitoring Programs, and abuse deterrent drug formulations (Alpert, Powell, & Pacula, 2017). Evidence suggests that these changes have encouraged some abusers to substitute illicit drugs like heroin for prescription opioids.

The Reformulation of OxyContin
Much of the opioid epidemic can be attributed to the widespread abuse of OxyContin which contains the opioid oxycodone. In its original formulation, OxyContin acted as a time-release drug that provided its users pain relief over an extended period of time. Abusers of OxyContin would crush or dissolve the pills so that the drug could be snorted or injected in its most concentrated form. In 2010, the FDA approved a reformulation of OxyContin that was designed to make it difficult for abusers to crush or dissolve the pills. The introduction of this abuse-deterrent version did have the intended effect of reducing the quantities of OxyContin used for nonmedical purposes with overdose deaths from prescription opioids declining for the first time since 1990. Deaths, however, from heroin overdoses tripled between 2010 and 2014 (Alpert, Powell, and Pacula, 2017, 4).

Alpert, Powell, and Pacula (2017) estimate that the reformulation reduced the nonmedical use of OxyContin by approximately 40 percent. States with high rates of OxyContin abuse before the reformulation saw the greatest reductions in OxyContin abuse after reformulation; these states, however, simultaneously saw sharp spikes in heroin deaths. “Each percentage point reduction in the rate of OxyContin misuse due to reformulation leads to 3.1 more heroin-related deaths per 100,000. Extrapolating our estimates to the national trend implies that as much as 80% of the three-fold increase in heroin mortality since 2010 may be due to the OxyContin reformulation” (Alpert, Powell, & Pacula, 2017, 5-6). These results suggest that a significant number of prescription drug abusers switched to heroin after OxyContin’s reformulation.
Prescription Drug Monitoring Programs (PDMPs)
The practice of “doctor shopping” greatly expanded the diversion of prescription opioids for illegal, nonmedical purposes. “In 2013, 23.8% of past-year non-medical users reported obtaining opioid pain relievers from at least one doctor, and 46.1% for free from a friend or relative who obtained them from at least one doctor” (Meinhofer, 2017, 3). Physicians, unfortunately, had no way of determining if their patients were engaging in this practice.

In response, many states have implemented Prescription Drug Monitoring Programs (PDMPs) as a means of reducing doctor shopping. “PDMPs are electronic databases that collect designated data on controlled substances dispensed within a state, and allow selected healthcare providers, law enforcement officials, PDMP administrators, and other authorized stakeholder to identify consumption patterns that are consistent with doctor shopping” (Meinhofer, 2017, 3-4).

There is evidence that these programs have reduced the levels of prescription opioid abuse. Angelica Meinhofer (2017) found that PDMPs decreased prescription opioid quantities by 9% and also reduced overdose deaths from prescription opioid abuse by 9%. The author also found rather weak evidence that heroin deaths had increased by 12% over the same period (p. 8). In a different study, Justine Mallat (2017) found that nationwide PDMPs accounted for an 8% decrease in oxycodone shipments. She also found that in counties with the highest pre-PDMP oxycodone per capita, that PDMP causes a 47% to 84% increase in criminal incidents involving heroin (pp. 25-6). These results are consistent with drug abusers substituting heroin for prescription opioids.

Fentanyl
When discussing the opioid epidemic, it is critical to include fentanyl’s role on the increase of deaths caused by overdoses. As defined by the DEA, “Fentanyl is an odorless [synthetic] substance considered to be 25 to 50 times more potent than heroin and 50 to 100 times more potent than morphine. Fentanyl is potentially lethal, even at very low levels.” (US Drug Enforcement Administration, 2016). Fentanyl is cheaper, more potent, and easier to transport in high volumes than heroin or cocaine. Illicit drugs such as heroin, cocaine, or counterfeit pills sold on the black market are commonly laced with fentanyl in order to make the product stronger or to compensate for a weak product. Oftentimes the consumer has little or no knowledge if it is laced into their product. Because of its potency, a simple miscalculation of a fentanyl dosage is much more dangerous than heroin. A study using data from the National Vital Statistics System found that in 2016, 45.9% of opioid related deaths involved synthetic opioids, compared to 14.3% in 2010 (Jones, Einstein, & Compton, 2018).

Conclusion
How can the above economic studies (and economics in general) inform public policy? In addressing the abuse of prescription opioids, Schnell and Currie (2017) recommend that changes in physician education can play an important role in reducing differences in prescribing behaviors among physicians from different educational backgrounds. In addition, initiatives like OxyContin reformulation, PDMPs, and outlawing of pain clinics have reduced the level of prescription opioid abuse (Alpert, Powell, & Pacula, 2017; Mallat, 2017). While there is strong evidence that many nonmedical users switched to illicit drugs like heroin as a result, these policies are likely to be effective in the long-run by reducing current and future abuse of prescription opioids (Alpert, Powell, & Pacula, 2017, 31). Future supply-side policies need to consider substitution responses by those addicted to prescription opioids. A greater offering of treatment options need to be available to help opioid-dependent individuals (Mallat, 2017, 26).

What kinds of public policies should be implemented to address the abuse of illicit drugs like heroin and fentanyl? Economist Tom Wainwright has been critical of the traditional US approach that has focused on reducing the supply of illegal drugs which has had the effect of increasing price.

Demand for drugs is inelastic – that is, when prices rise, people cut consumption relatively little. (Given that most banned drugs are addictive, this isn’t surprising). So even when governments can drive up prices, dealers continue to sell almost as much as they did before - only at higher prices, meaning that the value of the criminal market increases (Wainwright, 2016).

Wainwright recommends the expansion of policies that reduce demand for illegal drugs like drug education, rehabilitation, and treatment programs. “Reducing demand, by contrast, triggers a fall in both the amount consumed and the price paid, cutting into the criminal market on two fronts” (Wainwright, 2016). In addition, these policies tend to be a lot less expensive than the supply-side interventions that often require the use of military resources.
References


MISSION AND VISION
The mission of the UWSP Central Wisconsin Economic Research Bureau is to foster economic development by bringing timely economic analysis to our region, focusing on Marathon, Portage and Wood counties.

The mission has been accomplished through the publication of Economic Indicators Reports. These reports are compiled and released for Central Wisconsin.

The CWERB aspires to be Wisconsin’s premier research center focused on regional economic development.

HISTORY
The CWERB is a nonprofit organization founded in October 1983. Its operating budget comes from the private sector and the UWSP School of Business and Economics. The CWERB also represents an important part of the outreach efforts of the UWSP School of Business and Economics.

SOURCES OF FUNDING
• UWSP School of Business and Economics
• BMO Harris Bank of Stevens Point
• BMO Harris Bank of Marshfield
• BMO Harris Bank of Wausau
• Centergy Inc. of Wausau
• Community Foundation of Greater South Wood County - Wisconsin Rapids

SCHOOL OF BUSINESS & ECONOMICS
• Enrollment of 1,000 students; More than 30% of our students come from Marathon, Portage and Wood counties; approximately 50% of our graduates stay in the three-county area

• The SBE is in the pre-accreditation phase by the Association to Advance Collegiate Schools of Business (AACSB), once completed, SBE will be among the top 18% of all business schools in the world.

CWerb CLIENTELE
• Central Wisconsin business firms are the most crucial component in the economic development of our region. Business firms are keenly aware of the important role that informed decision making plays in any developmental strategy.

• Private sector organizations devoted to economic development in Central Wisconsin, such as area chambers of commerce and their affiliated economic development agencies.

• Public sector organizations devoted to economic development in Central Wisconsin.

• The general public, in order to make informed decisions, take advantage of the unbiased information and analysis about the economy.

• The CWERB employs student research assistants which provides an excellent educational setting while also providing the opportunity for students to earn funds toward education. Faculty, staff and students at UWSP utilize the reports and resources of the CWERB.

CWerb ACTIVITIES
Research conducted during the last 25 years by CWERB is disseminated through more than 230 publications, media reports and presentations for the Portage, Marathon and Wood counties. Each report provides an analysis of the economy at the national, state and regional levels, and also contains a special section devoted to a topic of economic significance to the Central Wisconsin region. These special topic reports are often written by UW-Stevens Point faculty members and include current topics such as Medicare, debt and deficits and the Central Wisconsin housing market.

The Economic Indicators Reports are presented on a periodic basis by Professor Segura and the author of the special topic report. These reports have received substantial media coverage on a variety of economic matters.