Diesel, Gasoline, and Oil Price Update - May 2022

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Introduction

Fuel prices now average over $4 a gallon in every state for the first time ever. This fact likely wasn't lost on consumers as prices rolled above $4/gallon. For farmers though, the situation is even worse as diesel prices have increased at a much faster pace than gasoline prices. This article examines the current fuel price situation, why diesel has increased faster than gasoline prices, and where fuel prices might be headed over the next year.

Current situation

As shown in Figures 1 and 2, diesel and gasoline prices are in record territory although when adjusted for inflation, there have been periods in the past when prices were higher. What has caught consumers and producers off-guard is the rapid increase in fuel prices over the last 18 months. During the last week of 2020, national gasoline and diesel prices were $2.30 and $2.64 respectively. As of the week of May 16, 2022, gasoline and diesel prices average $4.59 and $5.61 respectively. This is a 100% increase in the gas price and a 113% increase in the diesel price.

Some analyses have blamed the Russia/ Ukraine conflict for the increase in fuel prices but much of the fuel price increase happened before the conflict started. As of February 21, 2022, the week Russia invaded Ukraine, gas and diesel prices were $3.62 and $4.06, respectively. Thus gasoline had already increased 58% and diesel had increased by 54% before the conflict started. Oil prices have increased 140% during that same time frame with prices increasing 95% before the conflict started (see Figure 4)

More concerning for farmers is the widening spread between gasoline and diesel prices as illustrated in Figure 3. As shown in the figure, highway diesel prices have sold at a premium compared to gasoline prices over the last 10 years. However, this price gap has been fairly consistent until recently. Now, highway diesel prices are nearly a $1/gallon above gasoline prices.

Oil prices have always been a good predictor of fuel prices (R-squares above 0.9). The Oklahoma daily spot prices, as shown in Figure 4, have likely become more volatile since the Russian/Ukraine conflict started, jumping above $120/barrel right when the conflict started. Even with the extra volatility, prices have averaged near $110/barrel over the last several months. As shown in Figure 5, a regression model that estimates fuel prices from weekly oil prices, $110 oil should produce $4.37 diesel and $3.97 gasoline. As can be seen in Figure 5, there are a group of diesel prices well off the prediction line.

Figure 6, taken from the Energy Information Administration (EIA weekly outlook), also highlights the gasoline-diesel price differential. The difference is wider than at any other time in the last five years. This figure also has EIA's estimate of when this price differential might improve. Unfortunately for farmers, while the difference does decrease, it will take until September until most of it goes away. Even then there will still be a bigger than normal premium for diesel.

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Reasons for the gas-diesel price differential

The EIA calls the refinery margin for gas and diesel the product crack spread. These are shown in Figure 7 (Figure 2 from the EIA publication). The crack spread is higher now than it has been in the last four years for all products and it is especially high for both diesel and jet fuel. This situation should improve as refiners have a lot of incentive to produce diesel fuel right now.

The reason that crack spreads are so large can be traced back to the inventory situation of both gas and diesel fuels. Both fuel types have had below average inventories since January of 2021. While gasoline inventories have now caught up to the 5-year average, the diesel inventory level has continued to get worse. Current diesel inventories are now 30% below the 5-year average.

While refiners could have underestimated how quickly the economy would rebound from Covid when allocating between diesel and gas (within the refinery limits for a fuel), there are also refinery capacity and utilization issues at work in the low inventory levels of gas and diesel. The U.S. could very well be short of the needed refinery capacity when the economy is strong. As shown in Figure 8, refinery capacity was at 19 million barrels a day at the start of the pandemic. It is now 5% lower at 18 million barrels. The U.S. didn't need that much capacity during the pandemic but it would be useful now. Whether that capacity is ever replaced is an important question when fossil fuels seem to be out of favor. Adding refinery capacity is a very expense proposition that companies won't undertake without good long-term prospects for fuel demand.

Refinery utilization obviously dropped during the pandemic and the EIA is forecasting utilization to be in the upper 90 percent range by this summer. Refineries perform much of their yearly maintenance during February, March, and April so refineries are ramping back up again. The refineries certainly have strong incentives to get maximum use of their facilities.

Some analyses are blaming higher exports of diesel fuel as a cause of higher diesel prices. Much of our exported diesel goes to Mexico. However, a visual inspection of the weekly diesel exports provided by the EIA (Figure 10) would not support that theory. Exports of diesel fuel look very similar over the last five years.

Outlook for prices going forward

The Russia/Ukraine conflict is likely to keep oil prices at current levels with above average volatility. However, there are many factors that could move oil prices either up or down. One of the things economists like to say is the cure for $4 gasoline is $4 gasoline. That is, high gas prices often correct themselves by causing recessions. A major US recession would certainly reduce gas and diesel prices.

The Russia/Ukraine conflict is affecting oil and fuel prices as Russia is a major energy producer. Fortunately, the U.S. is much less dependent upon foreign oil than it used to be. As shown in Figure 10, the U.S. produces much more of its own oil now. This increase started to happen in 2007 when oil fracking technology became widespread in the U.S. As shown in Figure 10, the U.S. imports about 20% of its oil now. The U.S. both imports and exports oil which may seem strange but oil is a unique product. The U.S. is better set up to refine heavier weight oils so those oil types are imported. The lighter weight oils that are produced here end up as exports as they are easier to refine and other countries don't have the sophisticated refinery system that exists in the U.S. Even though the U.S. is only importing 20% of its oil, the fungible nature

of oil means that prices here in the U.S. are reflected in the global oil price.

The price differential for gas and diesel should improve but expect diesel to trade at a higher differential even after this fall. Both gas and diesel prices should follow the regression line for prices as shown in Figure 5 a little closer by fall. Still fuel prices are likely to be above this line to some degree. Because the oil price is a key driver of fertilizer prices, don't expect much relief in those prices either.

References

EIA "This Week in Petroleum" - May 11, 2022. https://www.eia.gov/petroleum/weekly/archive/2022/220511/includes/analysis_print.php

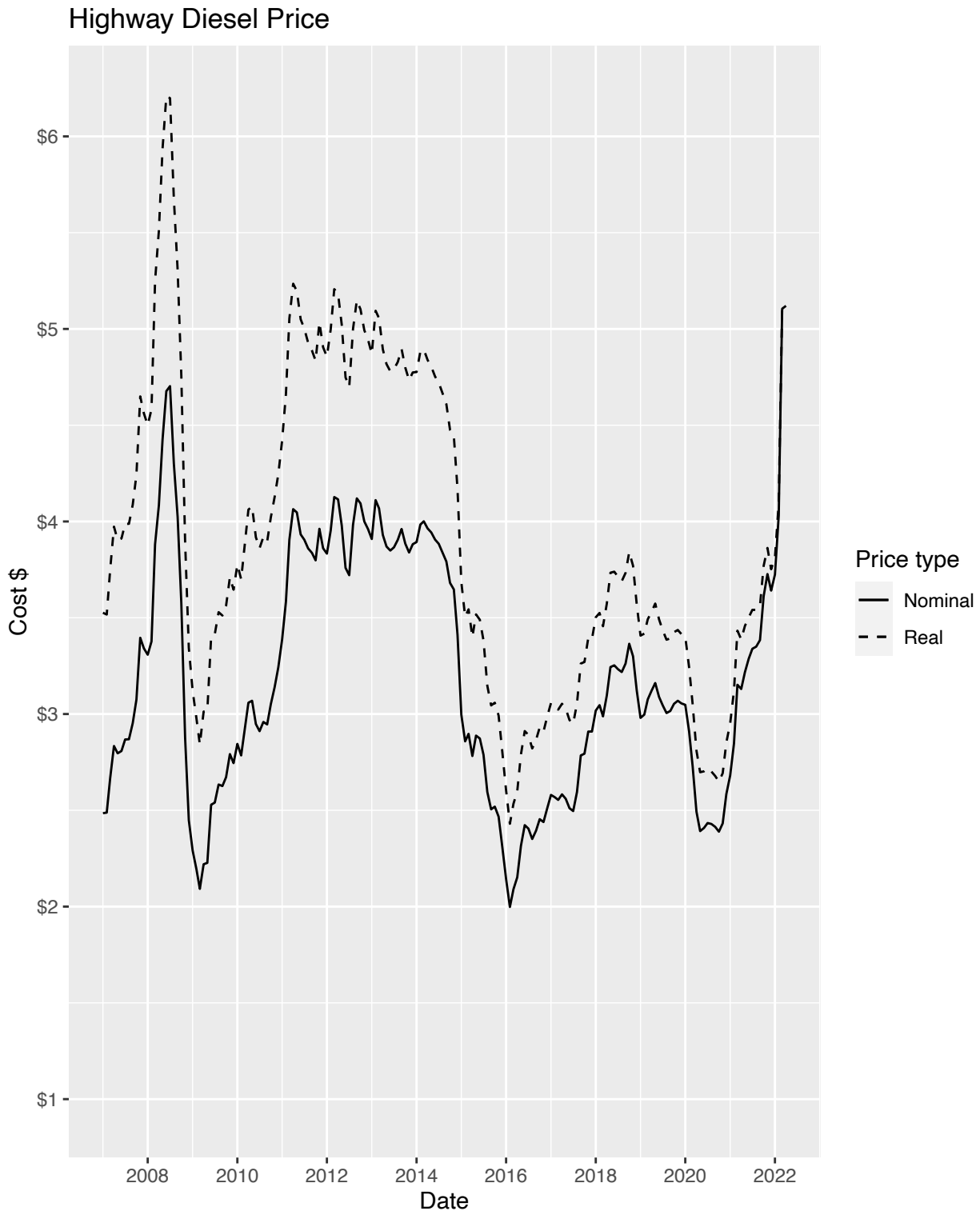


Figure 1. Historical Highway Diesel Prices - Nominal and Real Prices

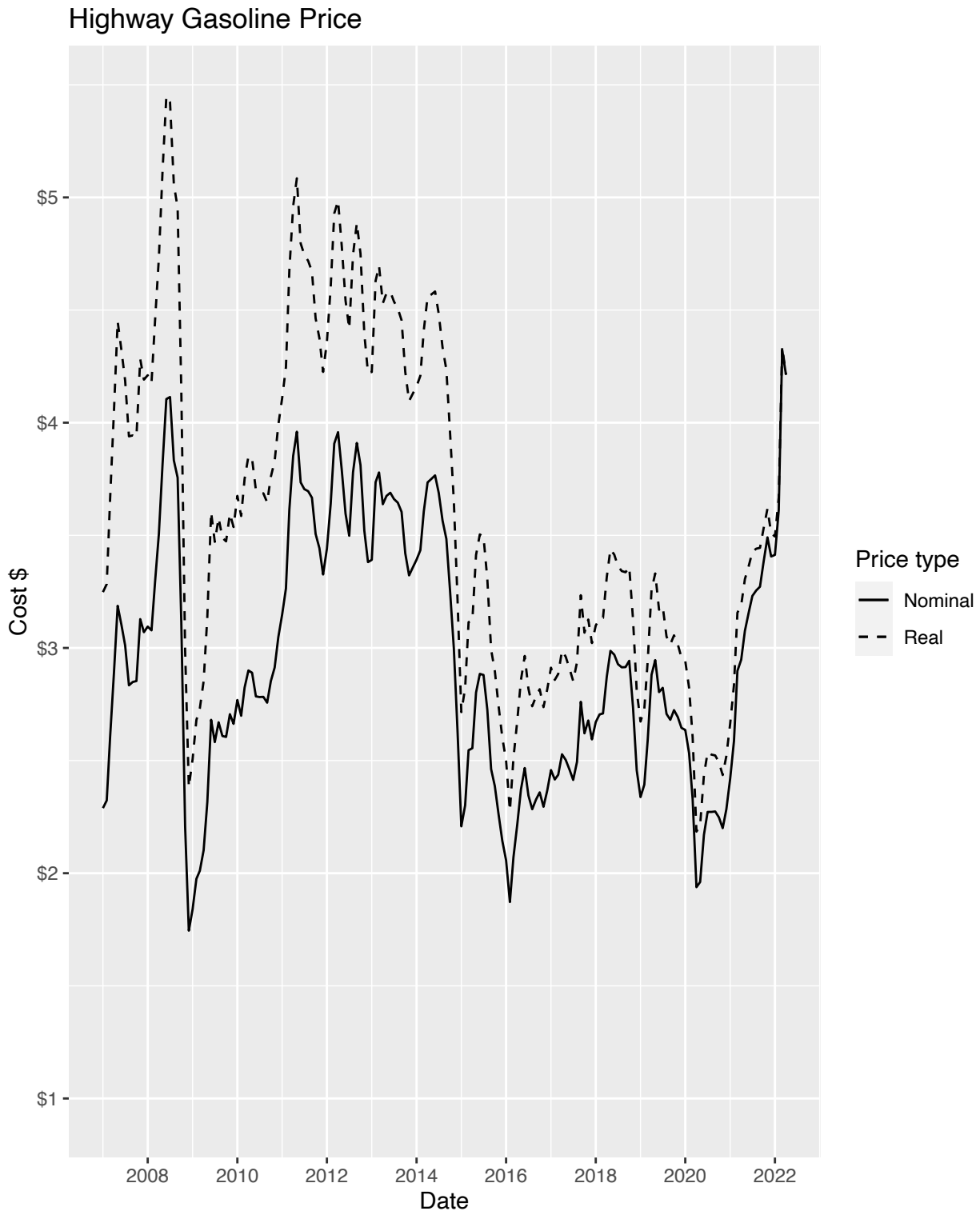


Figure 2. Historical Gasoline Prices - Nominal and Real Prices

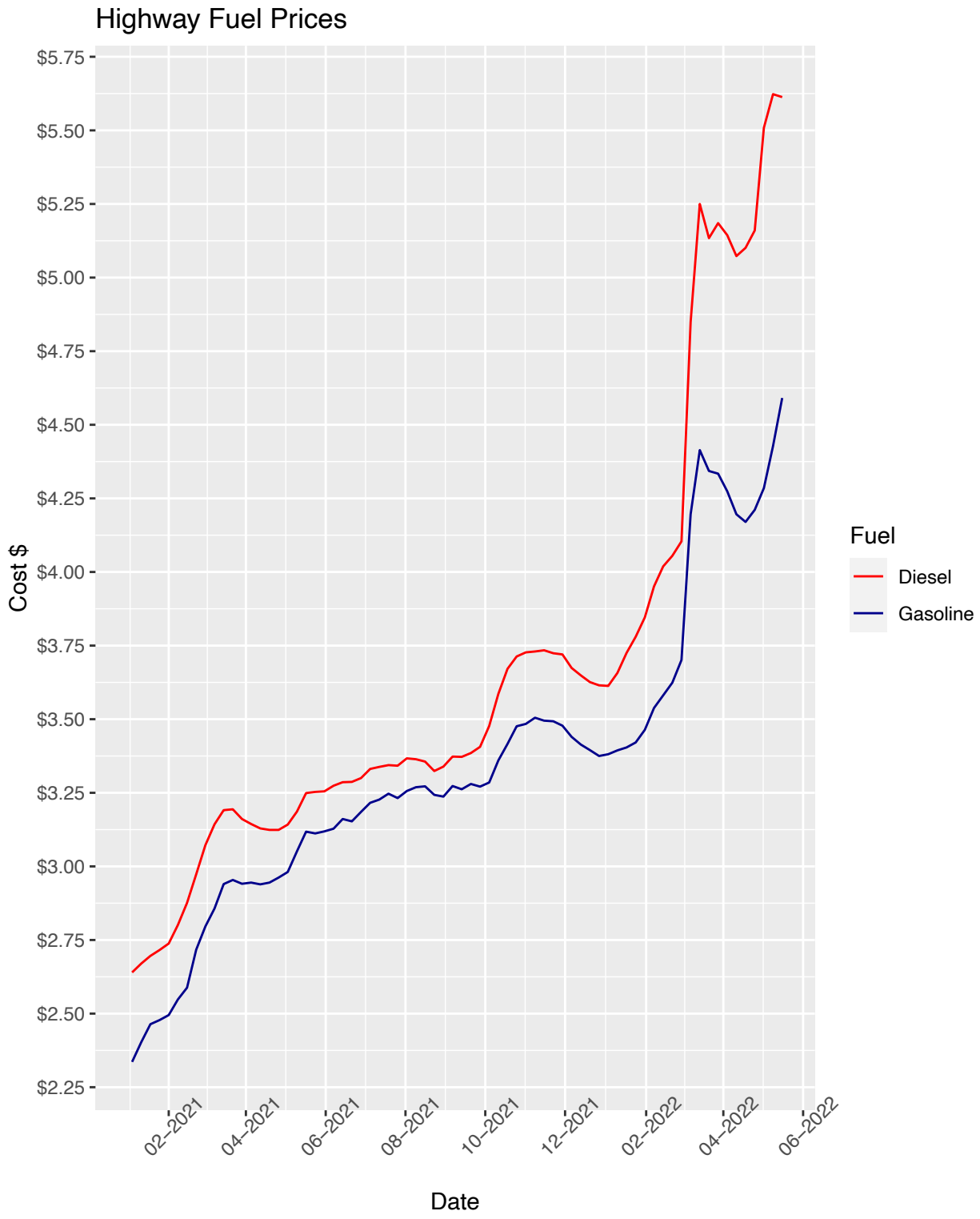


Figure 3. Weekly Diesel and Gasoline Prices Since January 2021

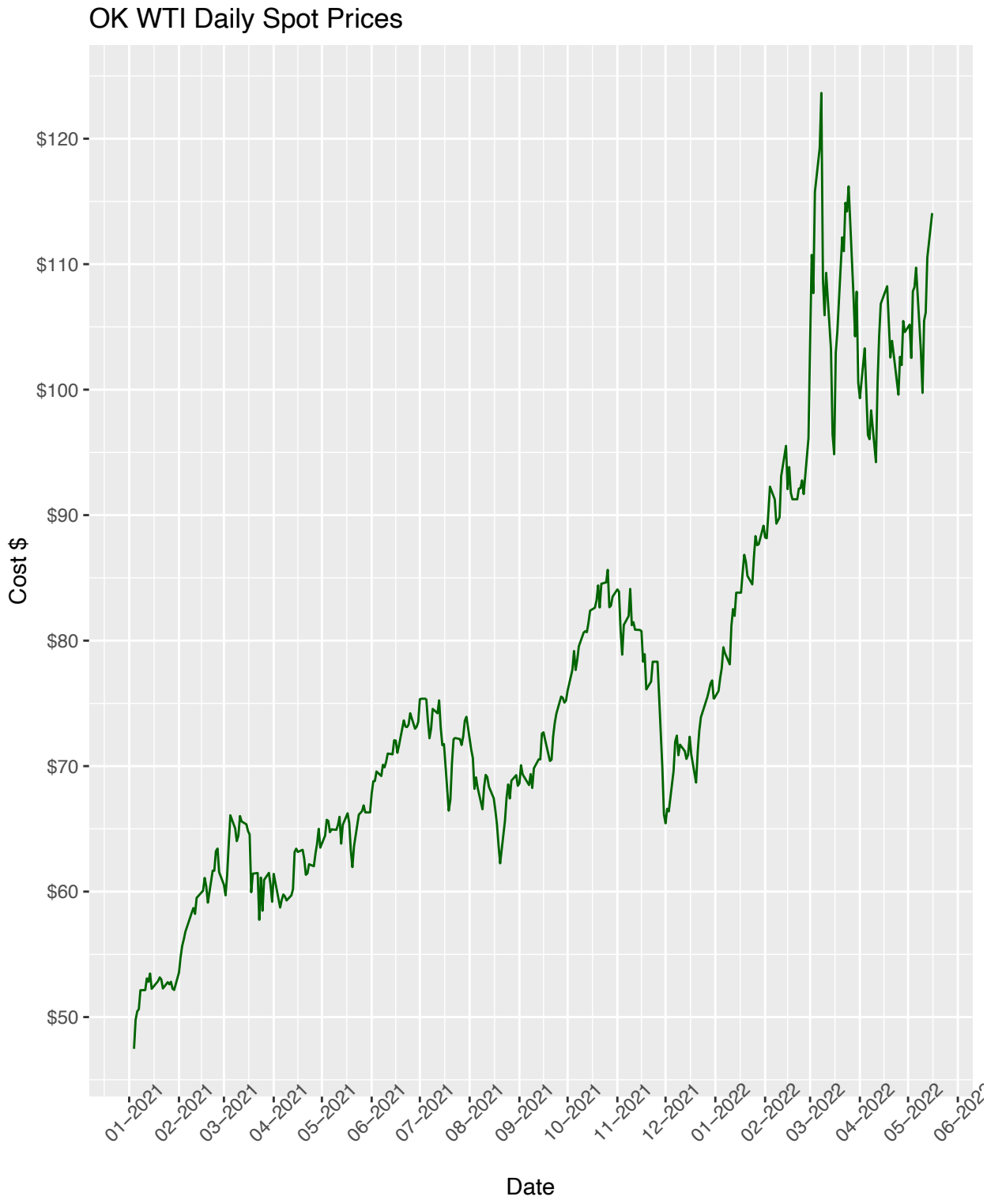


Figure 4. Daily Oil Prices Since January 2021

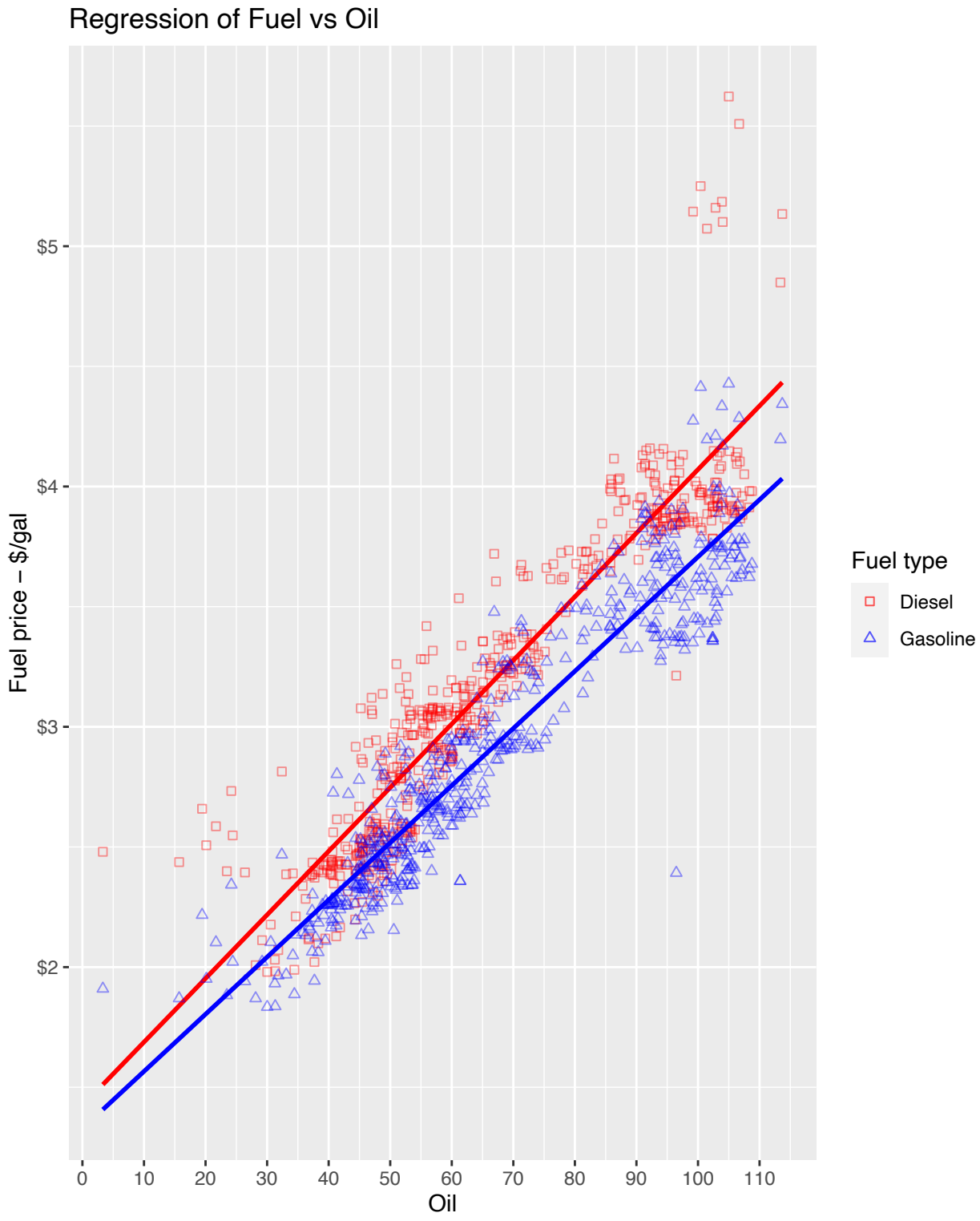


Figure 5. Prediction of Gas and Diesel Prices Based on Oil Price Using Last 10 Years of Weekly Data

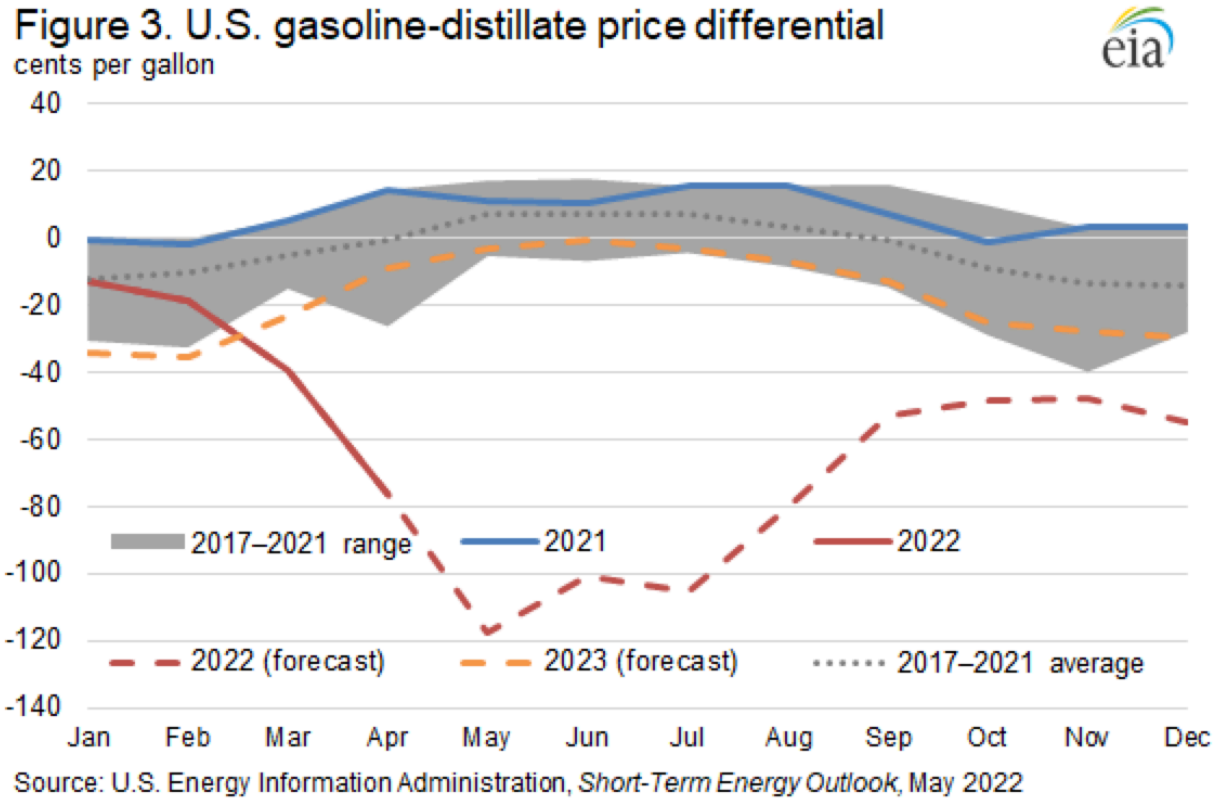


Figure 6. EIA Graph of U.S. Gas-Diesel Price Differential

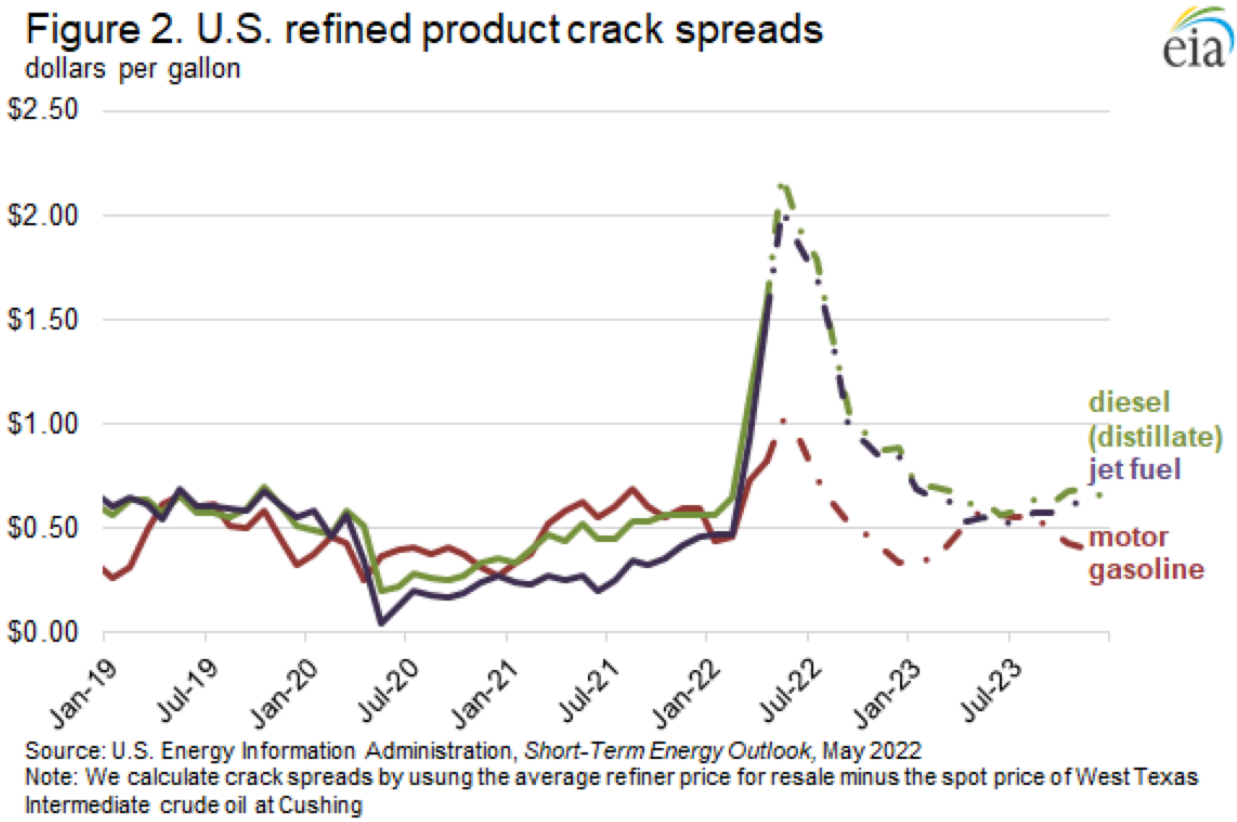


Figure 7. EIA Graph of U.S. Refined Product Crack Spreads

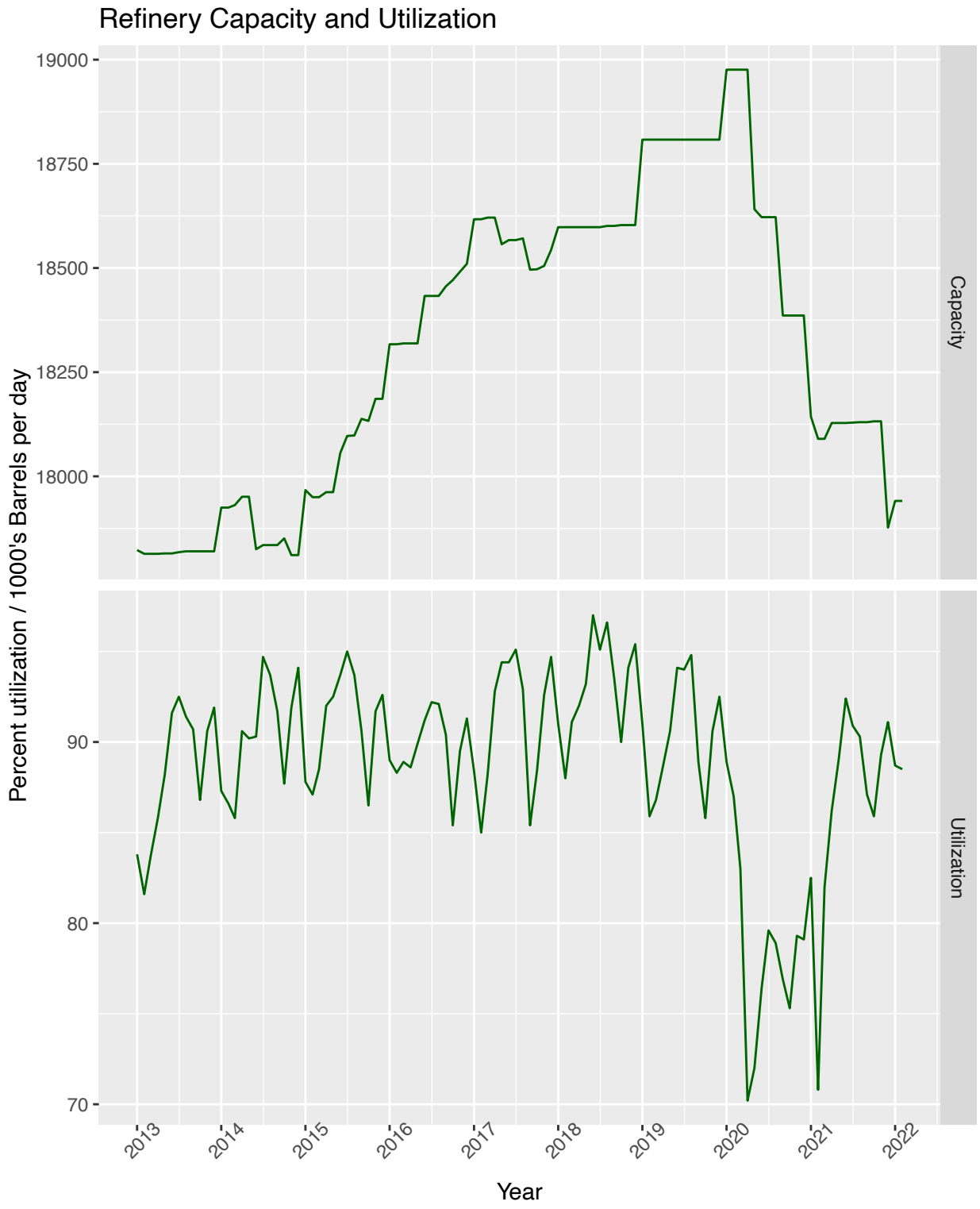


Figure 8. Refinery Capacity and Utilization

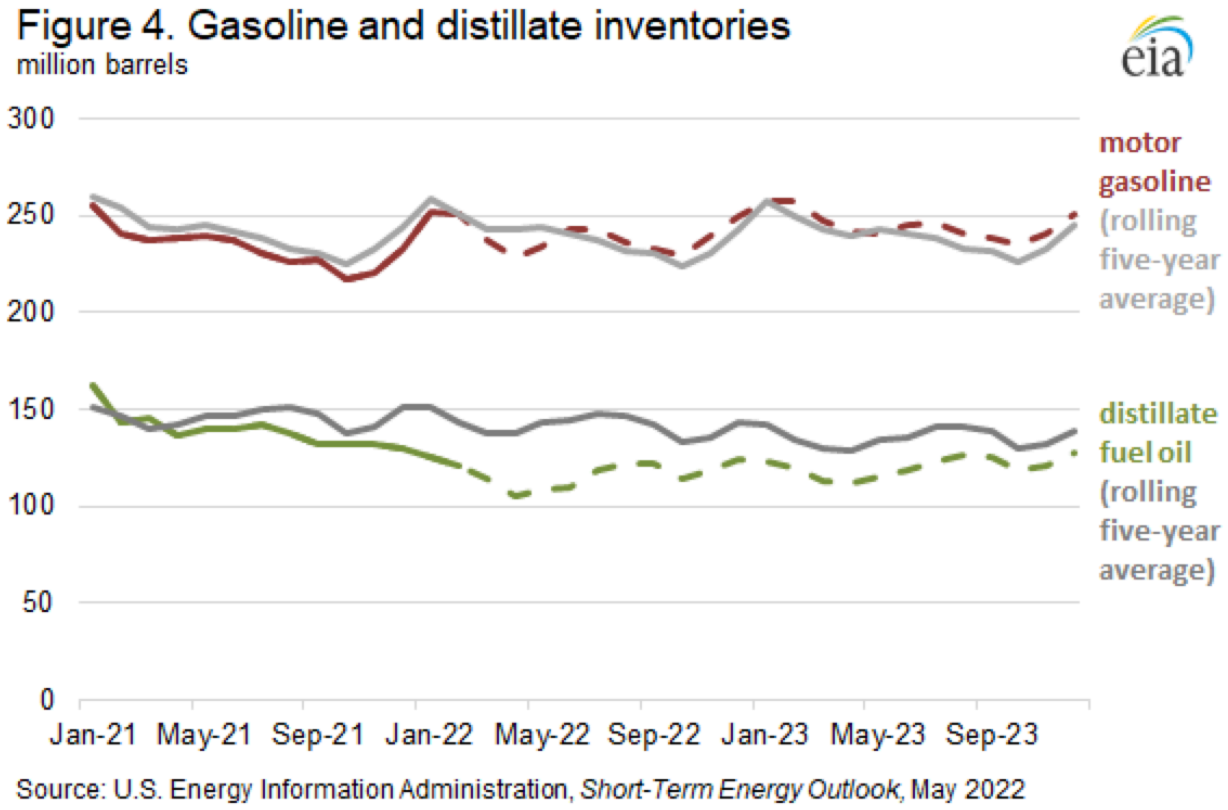
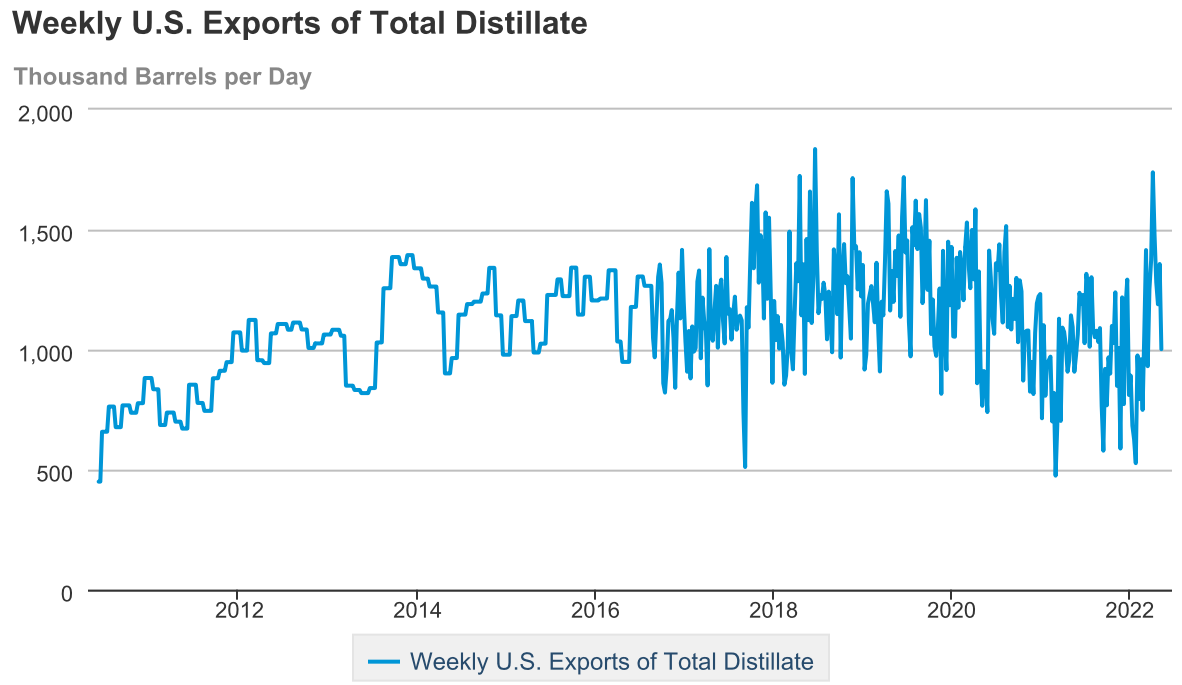


Figure 9. EIA Graph of Gas and Diesel Inventories



eia Source: U.S. Energy Information Administration

Figure 10. EIA Graph of Weekly Diesel Exports

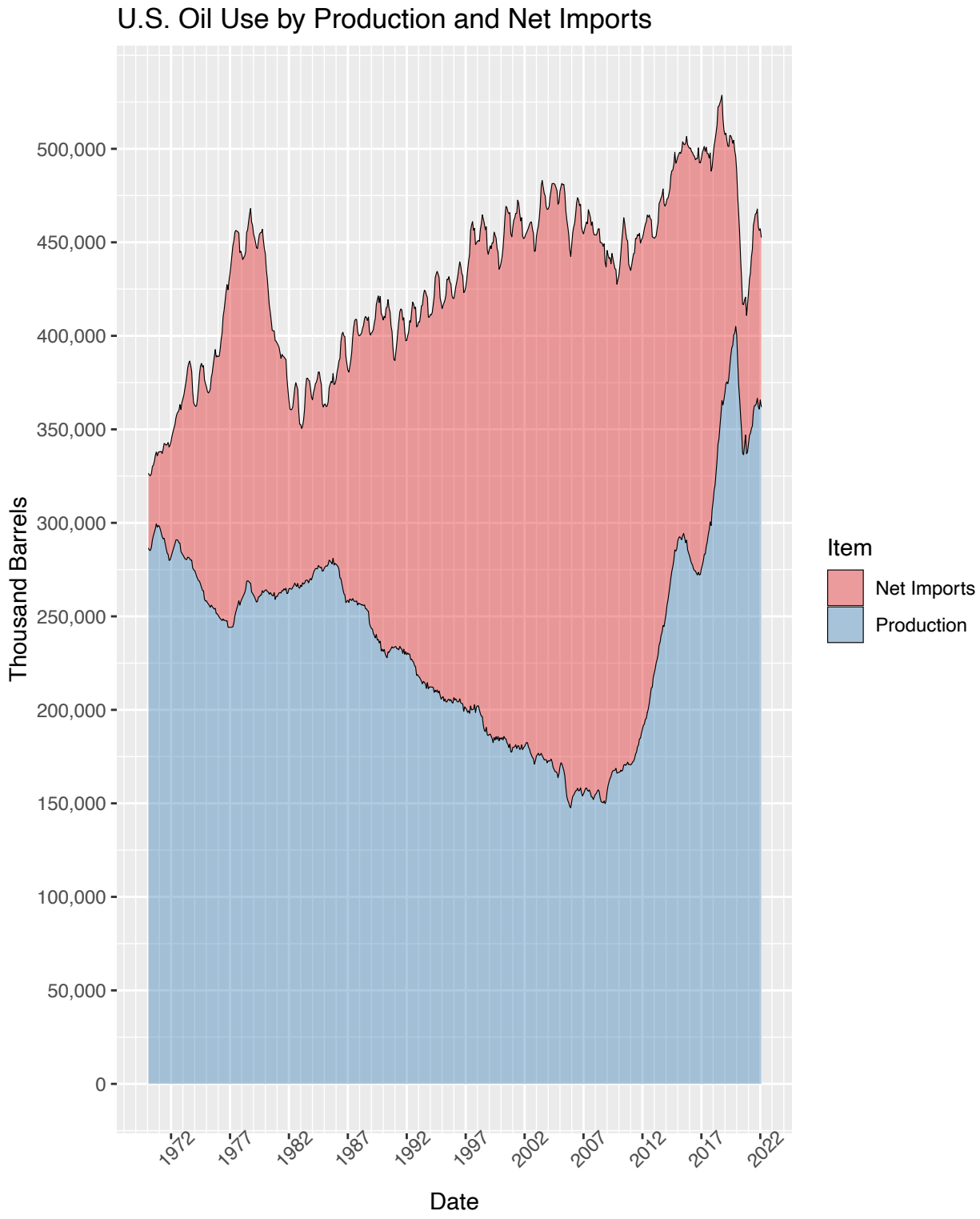


Figure 11. U.S. Oil Use by Production and Net Imports

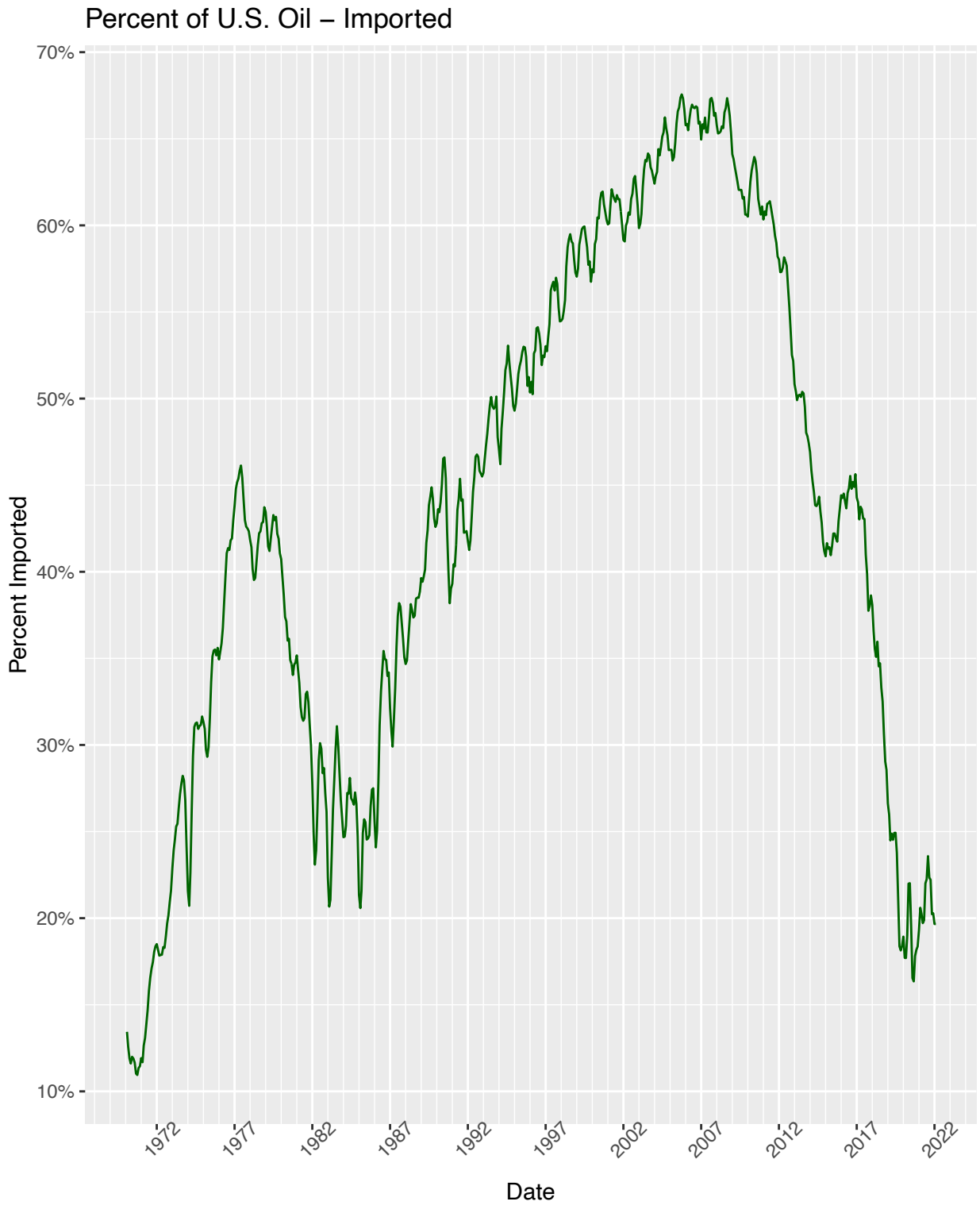


Figure 12. Percent of U.S. Oil That Is Imported