Highlights

- **The Federal Highway Administration (FHWA) Spring 2024 long-term forecasts of national vehicle miles traveled (VMT)** show total VMT increasing at an average annual rate of 0.5% between 2019 and 2050.
- **Light-duty vehicle VMT,** the largest component of travel demand, is projected to grow by 0.4% per year through 2050.
- **Combination truck VMT** is forecast to increase by 1.1% annually, while **single-unit truck VMT** is projected to grow 1.9% per year through 2050.
- The United States (U.S.) economy, as measured by real gross domestic product (GDP), is projected to grow at 1.7% per annum through 2050.

Summary

Long-Term Economic Outlook

- The Spring 2024 Economic Outlook from S&P Global[1] projects that overall U.S. economic activity, as measured by real, or inflation-adjusted, GDP will grow at an annual rate of 1.7% between 2019 and 2050. Over the same period, real disposable income per capita is projected to grow at a slightly higher rate (1.9% per annum).
- U.S. population and employment growth are expected to average 0.3% and 0.4% annually, respectively, through 2050.
- In the near term, real gasoline and diesel prices are expected to decrease from the recent peak seen in 2022 through 2025. Over the 31-year forecast horizon (2019 through 2050), gasoline prices are expected to average about $2.85 per gallon (in constant 2017$), with average diesel prices higher at $3.23 per gallon.

Nationwide Vehicle Travel Outlook

- Total VMT by all vehicle types is projected to grow at an average rate of 0.6% annually through 2040 (Table 1). Over the entire 31-year forecast period the average annual growth rate is projected to be slightly lower (0.5%), as VMT growth is anticipated to slow gradually during the latter half of the forecast period. This outlook represents a move towards more moderate growth rates and gradual convergence of VMT with population growth, compared to the higher growth experienced between 1989 and 2019, when total VMT grew at an average rate of 2.0% annually.
- Under the baseline outlook, travel by light-duty vehicles—the largest category of total motor vehicle travel—is forecast to grow at an average annual rate of 0.5% between 2019 and 2040 (Table 1). Light-duty vehicle VMT is expected to grow at a more moderate rate between 2040 and 2050, reducing annual average growth over the entire 31-year forecast period to 0.4%.

[1] S&P Global Market Intelligence

- Combination truck VMT is projected to grow at average annual rates of 1.3% and 1.1% over the 21- and 31-year forecast horizons, respectively. Growth in travel by single-unit trucks is projected to average 2.1% over the 21-year forecast period and 1.9% over the full 31-year period.
- Under the alternative forecasts of U.S. economic growth reflected in the S&P Global pessimistic and optimistic economic outlooks, the 21-year forecast of annual growth in total VMT ranges from 0.5% to 0.9%, while the 31-year forecast of annual growth ranges from 0.4% to 0.8% per year (Table 1).

Table 1. Projected Compound Annual Growth Rates in Vehicle Miles Traveled (VMT): Spring 2024

Vehicle Class	Pessimistic Economic Growth Outlook* 2019-2040 (21 Year)	Pessimistic Economic Growth Outlook* 2019-2050 (31 Year)	Baseline Economic Growth Outlook* 2019-2040 (21 Year)	Baseline Economic Growth Outlook* 2019-2050 (31 Year)	Optimistic Economic Growth Outlook* 2019-2040 (21 Year)	Optimistic Economic Growth Outlook* 2019-2050 (31 Year)
Light-Duty Vehicles	0.4%	0.3%	0.5%	0.4%	0.7%	0.6%
Single-Unit Trucks	1.5%	1.4%	2.1%	1.9%	2.9%	2.6%
Combination Trucks	1.1%	1.0%	1.3%	1.1%	1.5%	1.3%
Total	0.5%	0.4%	0.6%	0.5%	0.9%	0.8%

*See the following sections for detailed descriptions of the baseline and alternative economic outlooks.

FHWA Forecasts of Vehicle Miles Traveled (VMT): Spring 2024

Overview

The Federal Highway Administration Spring 2024 long-term forecasts of nationwide VMT are based on long-term economic and demographic outlooks produced by the economic forecasting firm S&P Global Market Intelligence.[2] FHWA's national VMT forecasts are produced using statistical models that incorporate a variety of factors affecting historical growth in motor vehicle use; these models are then used to develop VMT forecasts that begin in 2023 for single-unit and combination trucks and in 2024 for light-duty vehicles and extend through 2050. [3,4] The following sections highlight the S&P Global baseline forecasts of key economic and demographic factors expected to influence future growth in passenger and freight travel, and discuss their effects on the resulting VMT forecasts. Following this is a brief discussion of the alternative forecasts of U.S. economic performance provided by S&P Global and their potential implications for future VMT growth.

Baseline Economic Outlook

Table 2 summarizes the S&P Global Spring 2024 long-term baseline forecast of the key measures of U.S. economic activity used to develop FHWA's VMT forecasts. The U.S. population is projected to grow by 0.3% annually over the 31-year forecast period, a rate well below its 1.0% annual increase over the previous 30 years. Aggregate economic output, measured by real GDP (expressed in constant 2017$), is anticipated to increase 1.7% annually through 2050, also somewhat lower than the yearly growth rate the U.S. economy has experienced in recent decades.

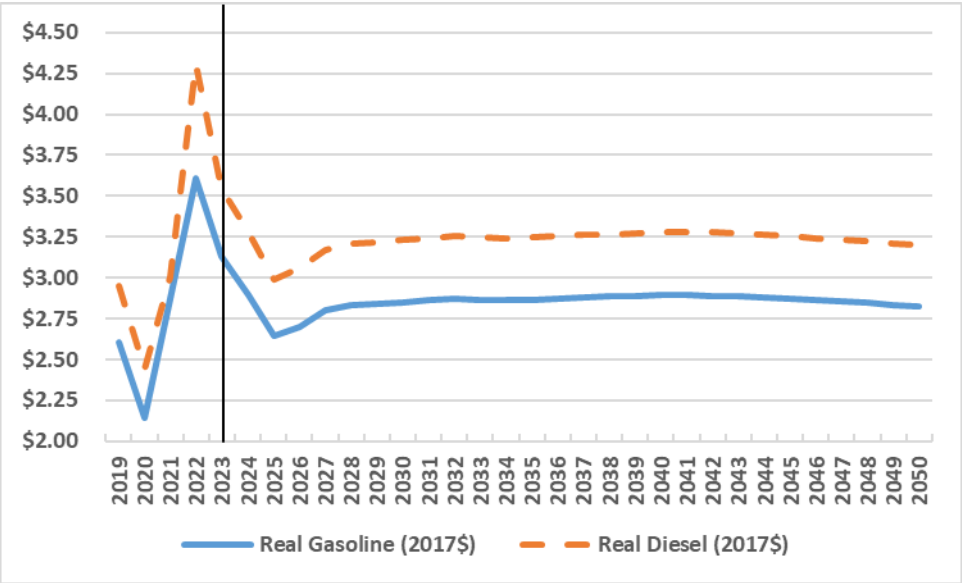
Table 2. S&P Global Baseline Long-Term Economic Forecasts: Spring 2024

Demographic and Economic Indicators	Historical Growth Rate[5]	Forecast Growth Rate: 2019-2050
U.S. Population[6]	1.0%	0.3%
Total GDP (2017$)	2.5%	1.7%
Disposable Personal Income per Capita (2017$)	1.7%	1.9%
Imports and Exports of Goods (2017$)	5.2%	2.3%
Consumption of Other Non-Durable Goods[7] (2017$)	3.1%	2.4%
Gasoline Price per Gallon (2017$)	1.1%	0.3%

[2] https://www.spglobal.com/marketintelligence/en/
[3] For more information on the VMT models, please refer to the technical document at: http://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_model_dev.cfm
[4] Historical VMT data for 2022 are sourced from FHWA's table VM1, while light-duty VMT for 2023 was imputed based on FHWA Traffic Volume Trends. https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm
[5] The historical data period used for comparison is 1989 through 2019.
[6] The S&P Global population forecast is based on the Census Bureau's long-term population projections.
[7] The indicator for other non-durable goods includes consumption of commodities such as pharmaceutical and other medical products, recreational items, household supplies, and magazines and newspapers.

The S&P Global baseline forecast projects that growth in disposable personal income per capita will average 1.9% annually over the 31-year forecast period, in line with its historical average.[8] Growth in imports and exports of goods and consumption of other non-durable goods are both projected to continue outpacing overall economic growth. Gasoline prices (pictured in Figure 1 below) peaked in 2022 before declining as oil markets rebalanced, and are projected to stabilize by the mid-2030s, resulting in an average price of $2.85 per gallon (2017$) between 2019 and 2050.

Figure 1. Price per Gallon of Diesel and Gasoline (2019-2050, 2017$)



Growth in Vehicle Travel under the Baseline Outlook

The S&P Global baseline economic outlook projects steady long-term growth in employment, business investment, and productivity, leading to continuing increases in real economic output (GDP) and real disposable income. In addition, after increasing in the near-term, energy prices are projected to decline gradually. These trends combine with slowing population growth to generate sustained increases in both passenger vehicle and truck travel, although at significantly slower rates than those experienced in previous decades.

The historic drop in light-duty vehicle travel caused by the COVID-19 pandemic and nationwide lockdowns during the spring and summer of 2020 totaled 355 billion vehicle miles. This represented a reduction of over 12% in light-duty VMT from 2019, four times greater than the largest previous one-year drop in VMT travel during the Great Recession of 2008. The significant drop in VMT makes 2020 an impractical historical base year for the VMT forecasting model to project future growth, so to avoid

[8] The specification of the VMT forecasting model attempts to reflect the dual effects of income growth on household travel using light-duty vehicles: On one hand, rising income increases the demand to participate in economic, social, and recreational activities outside the home, which causes increased demand for travel by household members. Meanwhile, however, rising incomes also increase the effective cost of time spent driving, and thus dampen travel demand.

biased results and maintain compatibility with previous versions of the long-run VMT forecast, 2019 was set as the base year.[9]

As shown in Table 3, light-duty VMT growth is projected to average 0.5% per year from 2019 through 2040. Over the following decade, growth is expected to continue moderating, so that throughout the entire 31-year forecast period it is projected to average about 0.4% per year.

Table 3. Baseline Forecasts of VMT Compound Annual Growth Rates: Spring 2024

Vehicle Class	2019-2040 (21 Year)	2019-2050 (31 Year)
Light-Duty Vehicles	0.5%	0.4%
Single-Unit Trucks	2.1%	1.9%
Combination Trucks	1.3%	1.1%
Total	0.6%	0.5%

Truck travel in the U.S. was not affected as seriously by the pandemic as light-duty VMT, as truck VMT fell only slightly (-0.8%) from its 2019 level during 2020, before increasing by 9.1% in 2021.[10] As with the light-duty forecast, the truck travel forecasts reported in Table 3 use 2019 as the base year; they show that growth in truck travel is expected to continue at a slightly higher rate than light-duty vehicle travel.

Single-unit truck VMT growth is projected to average 2.1% and 1.9% per year for the 21-year and 31-year forecast periods, respectively, reflecting ongoing economic activity in construction, distribution and delivery of consumer goods, and other areas of the economy that depend heavily on local trucking. VMT by combination trucks is also expected to increase, reflecting the outlook for sustained growth in two of the most shipping-intensive sectors of the economy: U.S. goods manufacturing and international trade. Combination truck VMT is projected to increase by 1.3% per year between 2019 and 2040 and by 1.1% annually over the entire 31-year forecast period.

Finally, aggregate VMT by all vehicle classes is projected to grow at an average annual rate of 0.6% over the 21 years from 2019 to 2040 (Table 3). Reflecting the projected slowing of travel demand during the last decade of the forecast period, growth in total VMT is expected to average 0.5% annually over the entire 31-year forecast period.

Alternative Economic Outlooks and VMT Forecasts

Over the past two decades, sudden and unexpected changes in vehicle use, such as those observed during the 2008-2009 recession and the 2020 COVID-19 pandemic, have highlighted the uncertainty surrounding forecasts of future growth in motor vehicle travel. Important sources of continuing uncertainty include prospects for future economic growth, likely trends in remote working, alternative interpretations of the causes of recent declines in vehicle ownership and use, and the potential impacts of use of dramatic innovations in technology such as the advent of autonomous vehicles on vehicle use.

[9] Note historical light-duty vehicle VMT data for 2022 is still roughly 4% below 2019 levels, and not recommended as a new base year.

[10] Motorcycles and buses, which are excluded from the forecasts reported in Table 3, together accounted for only about 1% of all U.S. motor vehicle travel in 2019.

To acknowledge this uncertainty, FHWA provides a range of alternative forecasts for future VMT growth that reflect uncertainty about the outlook for future economic growth, but realizes that this represents only one of many potentially important sources of uncertainty about travel activity.

To develop these alternative forecasts, FHWA uses projections of population growth, U.S. economic output and its composition, growth in personal income, and energy prices from the optimistic and pessimistic scenarios reported as part of the S&P Global Spring 2024 31-year economic outlook.

Optimistic Outlook

FHWA's alternative forecast of higher total VMT growth relies on the S&P Global optimistic economic outlook, which projects stronger growth in labor force participation, employment, business investment, and productivity relative to the baseline outlook. These factors—combined with a more robust housing sector and lower energy prices—produce stronger growth in real GDP, goods production, and disposable income than in the baseline outlook. In turn, these developments generate significantly faster growth in freight shipments and truck VMT. Under this more optimistic economic growth scenario, with higher personal disposable income growth, light-duty VMT is also predicted to outpace the baseline outlook over both the 21- and 31-year forecast periods.

Pessimistic Outlook

In contrast, FHWA's alternative forecast of lower growth in VMT reflects the pessimistic economic outlook from the S&P Global Spring 2024 forecast. This alternative outlook predicts weaker growth in productivity, labor force participation, and business investment, together with higher interest rates and more rapid price inflation. Combined with less robust activity in the housing sector and higher energy prices, these factors dampen projected future growth in real GDP and personal income relative to the baseline economic outlook. Under this scenario, slower economic growth leads to lower demand for personal travel, so that light-duty VMT increases primarily as a result of U.S. population growth. At the same time, slower growth in goods manufacturing, freight shipments, and construction activity dampen growth in truck VMT compared to the levels projected under the baseline forecast.

Outlook Comparison

To illustrate the important differences in future economic conditions affecting VMT among the alternative economic outlooks, the figures below compare forecast growth in real GDP (Figure 2), personal disposable income (Figure 3), and gasoline prices (Figure 4) in the pessimistic and optimistic scenarios to the baseline outlook. As Figure 2 shows, real GDP is anticipated to grow about 2.2% per year over the 31-year forecast period under the optimistic outlook, compared to 1.7% annual growth projected for the baseline scenario, and only 1.2% annual growth in the pessimistic scenario.

Figure 2. Projected Growth in Real GDP under Alternative Economic Outlooks (Compound Annual Growth Rate, 2019-2050)

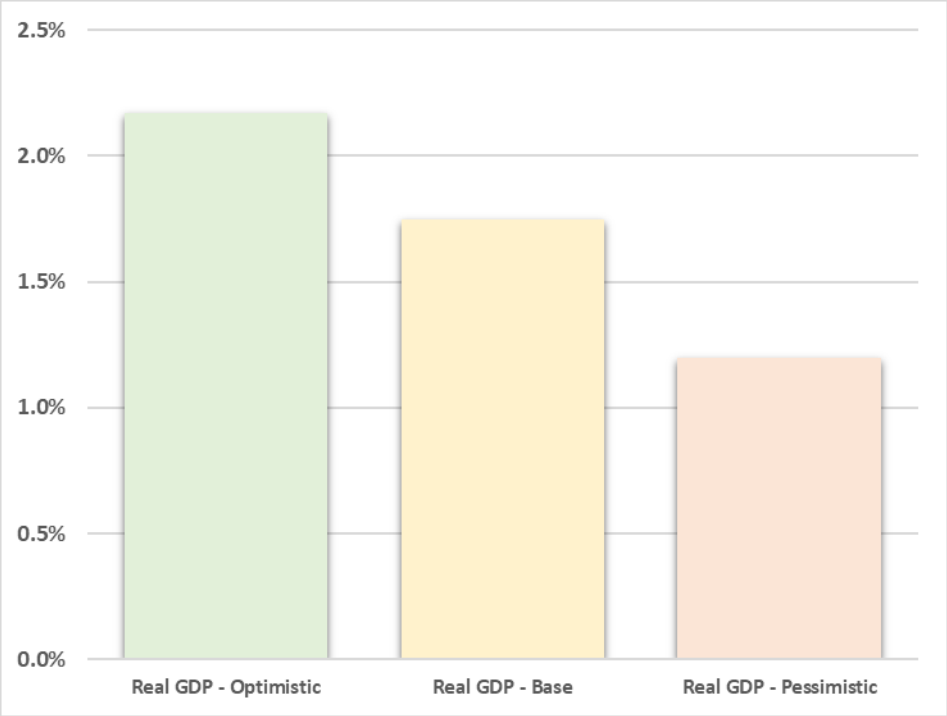


Figure 3 shows that growth in real personal disposable income per capita is forecast to average 2.0% annually in the optimistic 31-year outlook, with the baseline outlook averaging 1.9% per year. In contrast, growth in real personal disposable income under the pessimistic outlook is expected to be considerably slower, averaging only 1.4% annually. Figure 4 illustrates that inflation-adjusted retail gasoline prices are expected to decrease by about 0.1% annually under the optimistic 31-year outlook but to increase by 0.3% and 0.5% annually under the baseline and pessimistic outlooks.

Figure 3. Projected Growth in Real Personal Disposable Income per Capita under Alternative Economic Outlooks (Compound Annual Growth Rate, 2019-2050)

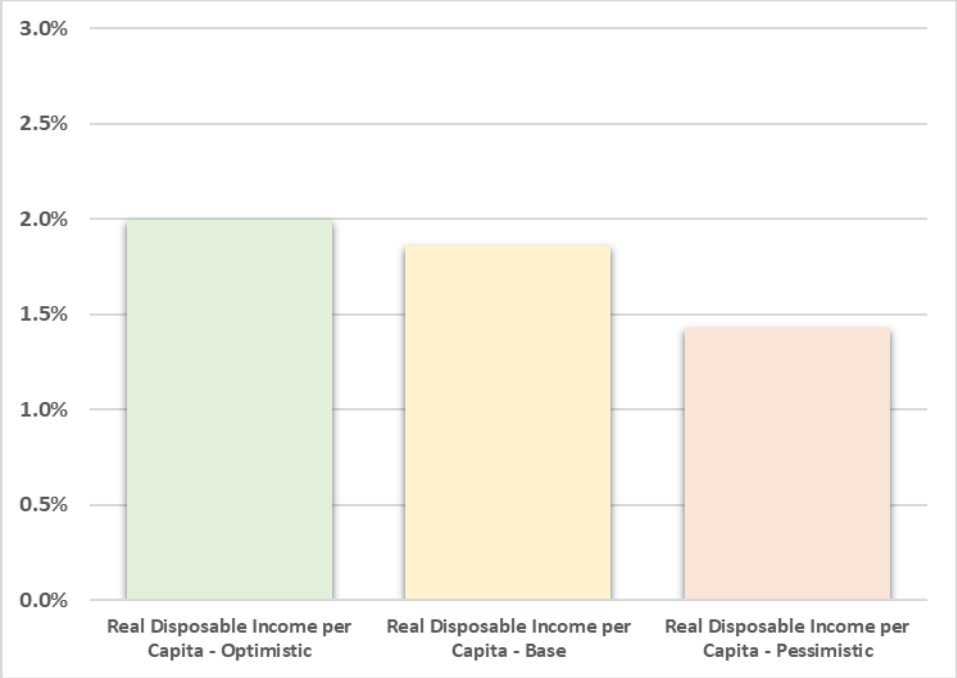


Figure 4. Projected Growth in Real Gasoline Prices per Gallon under Alternative Economic Outlooks (Compound Annual Growth Rate, 2019-2050)

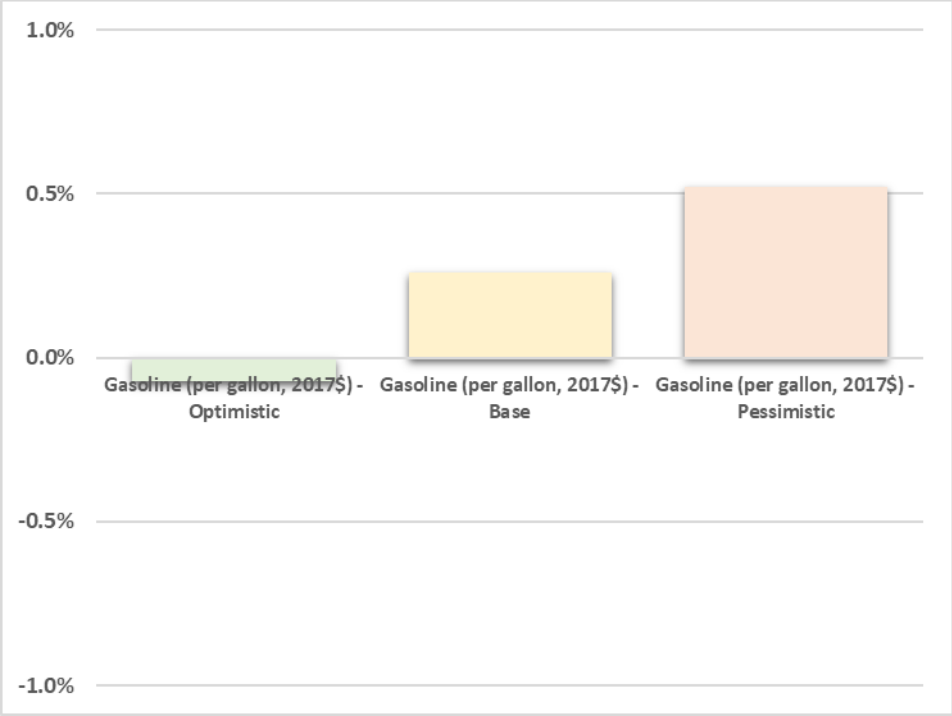


Table 4 reports alternative forecasts of future growth in VMT under these optimistic and pessimistic economic outlooks; the range between them reflects the effect of uncertainty about future economic growth. As the table shows, these alternative outlooks have a pronounced effect on the forecast of future growth in light-duty VMT through 2050, which ranges from 0.6% annually in the optimistic scenario to 0.3% per year under the pessimistic scenario.

The difference between the forecasts of 21- and 31-year growth in truck travel between the optimistic and pessimistic economic outlooks is even larger, as they reflect fundamentally differing outlooks for U.S. consumption, investment, trade, and manufacturing. Because light-duty vehicles account for the largest share of total VMT, however, the long-term 31-year forecast of total VMT by trucks and personal vehicles varies within a comparatively narrow range between the optimistic and pessimistic economic outlooks.

Table 4. Alternative Forecasts of VMT Compound Annual Growth Rates: Spring 2024

Vehicle Class	Pessimistic Economic Growth Outlook* 2019-2040 (21 Year)	Pessimistic Economic Growth Outlook* 2019-20450 (31 Year)	Optimistic Economic Growth Outlook* 2019-2040 (21 Year)	Optimistic Economic Growth Outlook* 2019-2050 (31 Year)
Light-Duty Vehicles	0.4%	0.3%	0.7%	0.6%
Single-Unit Trucks	1.5%	1.4%	2.9%	2.6%
Combination Trucks	1.1%	1.0%	1.5%	1.3%
Total	0.5%	0.4%	0.9%	0.8%

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