

# Reducing Fuel Costs by Increasing Safety



**azūga**<sup>TM</sup>  
a Bridgestone Company



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There are many different areas of a fleet that can create efficiencies and reduce cost. From preventative maintenance to dashcams, each opportunity presents itself differently. As we take a look at how fuel consumption can affect a fleet of vehicles, keep in mind that it is a highly variable component. Each vehicle operates with a different fuel economy, and a driver's behavior, tire pressure, and nearest gas station can all influence fuel consumption. Fuel costs fluctuate depending on environmental, political, and societal factors. When the cost of gas is low, many companies relish in the quick cost savings, but historically, prices go back up to normal levels or even higher. As these situations arise, it is important to consider the numerous ways your organization's fleet drivers can have an impact on expenses.

Whether part of a company-owned fleet or workers' property where they are reimbursed for miles, the way vehicles are driven has a major impact on fuel consumption. Given the fluctuating cost of fuel, this ultimately plays an important role in business performance and profitability. This report looks at how drivers' behaviors directly impact operating costs and outlines how to adjust behaviors to reduce expenses.

Finally, we review how today's latest fleet tracking solutions, like Azuga Fleet, can help you identify those behaviors and reduce the impact they can have on your business.



## **Six Driving Behaviors that Impact Operating Costs**

Six driving problems commonly found in organizations with fleets – aggressive driving, sudden acceleration, harsh braking, speeding, idling, inefficient routing, and unauthorized vehicle use – have a strong impact on fuel cost. Let's examine each one in more detail.



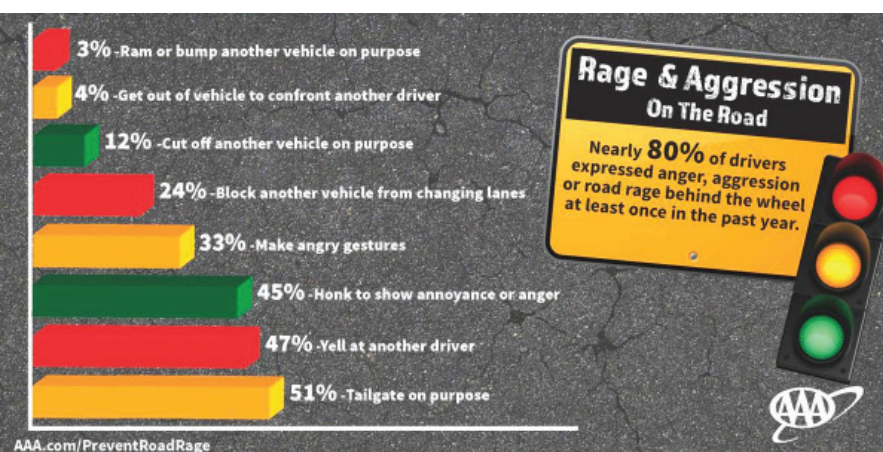


## AGGRESSIVE DRIVING

Weaving in and out of lanes, tailgating, blocking and cutting off other cars are just a few of the different kinds of aggressive driving practices. This kind of erratic driving does not take other drivers or cars into consideration on the road. According to AAA Foundation for Traffic Safety, millions of drivers engage in this type of behavior each year. Nearly 104 million drivers have deliberately tailgated, and nearly 49 million have blocked another vehicle from changing lanes.<sup>1</sup> Blatant disregard for one's personal

safety and the safety for those around them is a choice.

Not only does this type of behavior increase the risk for collisions, it reduces fuel efficiency. The Department of Energy's Oak Ridge National Laboratory found that aggressive behavior on the road can reduce gas mileage in light-duty vehicles from 10% to 40% in stop-and-go traffic and roughly 15% to 30% at highway speeds. This can equate to losing about \$0.21–\$0.85 per gallon.<sup>2</sup> Over time, this can also cause maintenance issues, such as increased wear and tear on belts, clutch burn, and reduce a vehicle engine's lifespan. If an organization has 10 vehicles on the road, losing even 10% efficiency overall is like not having the 10th vehicle at all, resulting in less jobs completed, more wear and tear on other vehicles, and greater risk.



### Key takeaway

Aggressive driving can reduce overall fuel efficiency up to 30–40%.

## SUDDEN ACCELERATION & HARSH BRAKING

Sudden acceleration and harsh braking are part of aggressive driving but hitting the gas or brake too quickly can create more wear and tear on the vehicle's engine than necessary. While fuel consumption differences are minimal during this period, consistent sudden acceleration can deteriorate motor mounts, fuel system components, suspension and brakes. When components are stressed the vehicle starts to incur more damage. Maintenance takes the vehicle off the road while being repaired and may create a gap in your service.

Proper start from a stop should take 15 seconds to get to 50 mph, but no more than 30 seconds. As the vehicle moves through the lower gears it becomes more efficient. (It took you about 15 seconds to read to this point in the paragraph.) Alternatively, getting up to speed too slowly can create inefficiencies as well. During stop-and-go traffic, it is best practice to look two cars ahead for more gradual acceleration and braking. Sudden acceleration is an avoidable behavior. Telematics solutions provide alerts, both in-cab and via notifications, to notify the driver and you when an incident has occurred. Being more cognizant of driving patterns and behaviors will help break the cycle.

Imagine if you have something in tow behind the truck. The force of suddenly accelerating or abruptly stopping can cause shifts in the trailer and its contents. If something is not



secured in place, it could become a projectile and cause serious damage. Coasting, instead of braking, can save significant fuel economies as well. Conversely, hard braking or sudden acceleration could help avoid a collision. Safety is one of the biggest concerns in acceleration and braking instances.

### Key takeaway

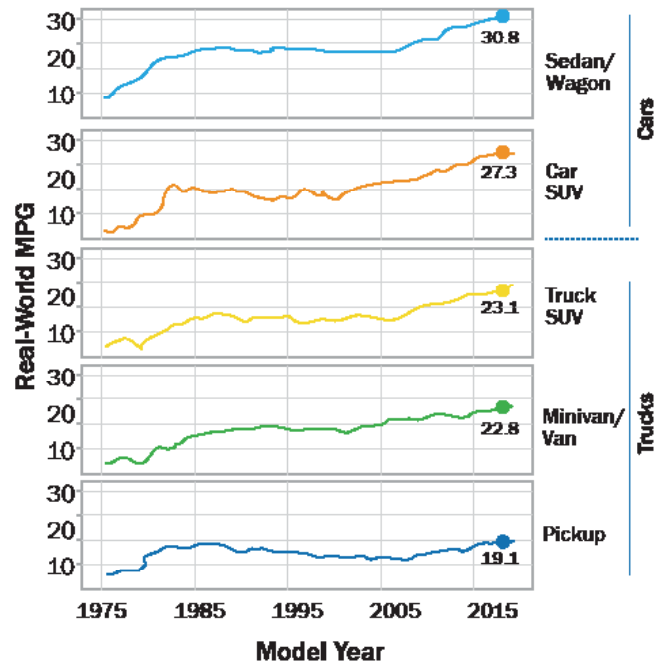
*Sudden acceleration and hard braking creates more stress on the vehicle, meaning more fuel consumed and higher maintenance costs.*

## SPEEDING

According to the U.S. Department of Energy, every 5 miles per hour in excess of 60 mph has the effect of increasing fuel costs by \$0.15–\$0.30 per gallon with gas at \$2.12 per gallon.<sup>2</sup> That represents a significant hike in your fuel costs. In larger vehicles, the impact of speeding is even worse. According to a study completed by Kenworth Cummings, every mile per hour over 55 mph reduces fuel efficiency by 1/10th of a mile per gallon. Vehicles that average 65 mph drop one mpg in fuel efficiency.<sup>3</sup> For medium and heavy duty trucks, this adds up to significantly higher fuel consumption.

While the highest fuel efficiency differs based on vehicle make and model, mileage generally suffers above 55 miles per hour. Thankfully vehicle manufacturers have committed to improving fuel economies and we have seen significant improvements in the last 15 years, as shown in the graph.

Speeding was a factor in 26% of all traffic fatalities in 2018, killing 9,378, or an average of over 25 people per day.<sup>4</sup> Speeding increases the risk of a crash due to less time and distance available to respond. Also part of aggressive driving, vehicle speed management can be improved through speed alerts, cruise control, and speed governors for heavy duty trucks. Incorporating aggressive driving conversations with your team at safety meetings can reinforce positive habits and cut down on speed-related collisions.



Graph source: <https://www.epa.gov/automotive-trends/highlights-automotive-trends-report>

### Key takeaway

*Driving the posted speed limit improves fuel efficiency and greatly reduces risk of collisions.*





## EXCESSIVE IDLING

Most of the energy from fuel is used to operate the vehicle, not to move it down the road. More than 60% of the energy is lost in the process of converting chemical energy into mechanical energy to move the vehicle, due to heat, friction and inefficiencies in the engine and drivetrain

(which are exacerbated by speeding). Only 12–20% of fuel energy is used to propel the vehicle in motion.<sup>5</sup>

Idling steals more than 17% of your fuel's energy. In an 8-cylinder passenger vehicle or light truck, every hour of engine idle time burns a little more than half a gallon of gas. For medium and heavy duty trucks, this number is even higher—closer to one gallon. In addition, at idle your engine is operating at a lower temperature, meaning fuel is being burned inefficiently, leaving residue deposits on your plugs and cylinders and further decreasing

efficiency by as much as 4–5% over time.

Shutting the vehicle down for any stops longer than one minute can save gas, up to \$0.02 per minute. It might sound small, but it will add up over time if the behavior persists and will quickly accumulate the larger fleet you operate. In some situations idling may be what is right for your fleet. Operating heat and A/C in extreme weather, running nonpropulsion objects such as bucket trucks, and lights for emergency vehicles can be reasons to leave a vehicle idling. Each industry and business should have metrics in place to measure these instances. Vehicles at idle get 0 mpg.



### Key takeaway

*Every hour of engine idle time eliminated saves you between \$1.20 and \$3.00 in fuel plus wear and tear.*

# INEFFICIENT ROUTING

The routes your workers take during their work days can add extra costs to your operation. A number of factors can yield poor routing:

## □ Un-monitored workers

Let's face it, not every worker makes the right decision for the business 100% of the time. In some cases, a worker may be gaming the system, racking up miles to waste time or boost mileage reimbursement. In other cases, a worker makes an innocent decision to drive several miles off route to meet friends for lunch.

## □ Criss-crossing routes

Planning routes using knowledge of the area can frequently yield excessive windshield time for drivers. Route planning and optimization software, coupled with wireless dispatch to vehicles, will reduce this waste.

## □ Dispatching decisions

When dispatching work on the fly, selecting the worker that is closest to a customer site can help improve your service levels and decrease the fuel needed to get to the site. When dispatching with paper-based systems and mobile communications, selecting the closest worker can be difficult.

**10  
mobile  
workers**

- ✕ 5 miles per day out of route
- ✕ 250 working days per year
- ✕ \$3.00 per gallon of fuel
- ÷ 10 mpg average fuel efficiency
- = \$3,750 in extra fuel costs

**475  
mobile  
workers**

- ✕ 3 miles per day out of route
- ✕ 250 working days per year
- ✕ \$3.00 per gallon of fuel
- ÷ 10 mpg average fuel efficiency
- = \$106,875 in extra fuel costs



costs

## Key takeaway

Using location information to monitor vehicle routes and enhance dispatch decisions will reduce unnecessary driving and fuel costs.



## UNAUTHORIZED VEHICLE USE

When workers elect to use company vehicles for unauthorized use—whether personal matters or even running side jobs—it increases company risk, vehicle wear and tear, service and fuel costs. For companies that allow workers to drive vehicles home at night, it is important to ensure that the company vehicle does not turn into the worker's personal vehicle.

Effectively monitoring off-hours movement can greatly reduce the amount of fuel consumed. Setting geographic boundaries, geofences, can create alerts when vehicles leave and enter certain areas. It is the company's liability when the vehicle is in an accident even during off-hours. When fuel cards are integrated with a telematics solution, a fleet manager can compare the amount miles driven between fill ups to accurately monitor any questionable trips.



### Key takeaway

*Monitoring unauthorized vehicle use lowers your liability risk, reduces the amount of fuel consumed, and can validate fuel card expenses.*

# HOW FLEET TRACKING SOLUTIONS HELP YOU REDUCE FUEL COSTS

Fleet tracking solutions are increasingly used to solve the operational problems associated with vehicle fleets, as they bridge the information gap that exists between operations management and mobile workers. The table below looks at our six problems discussed, along with the information and tools provided through fleet tracking solutions that help you control them and mitigate their impact.

Problem Behavior	Benefit from Telematics
<b>Aggressive driving</b>	Accurately monitor how drivers' behaviors affect wear and tear, maintenance, and fuel cost, including measuring ROI.
	Coaching and training techniques are offered based on driver scores and where he or she may need the most improvement. Reinforce good driving habits for the safest drivers.
<b>Sudden acceleration &amp; harsh braking</b>	Real-time incab alerts for harsh events notify the driver of poor behaviors.
	Standard and custom reports track improvements and trends for the fleet, including aggressive driving behaviors, driver scores, and idling, among other metrics.
<b>Speeding</b>	Real-time speeding alerts with custom speed settings help you identify speed violations as they happen so they can be addressed quickly..
	Historical reports include vehicle speed and other aggressive driving behaviors, providing a tool for driver training, safe driving reward programs or remediation.
<b>Excessive Idling</b>	Real-time alerts provide information about stops and engine off-on status, helping you identify periods of engine idling.
	Engine idling reports directly from the onboard computer give you visibility and help you control idling among your workers.
<b>Inefficient Routing</b>	Visibility of fleet vehicle location in real-time helps dispatchers select closest workers for service requests.
	Geofence, landmark and route tools let you identify key customers, distributors or route corridors to ensure drivers are staying on task and hitting stops as scheduled.
	Real-time map view with location and geofence alerts provide immediate notification of vehicle entry and exit from predefined areas.
<b>Unauthorized Vehicle Use</b>	Reports on unauthorized use of vehicles help you easily detect after hours use of company assets.
	Immediate real-time alerts on vehicle status change (location, motion, engine status) provide immediate notification of usage.
	Breadcrumb and activity reports provide details on dates, locations, times and routes that vehicles were in use.



## FUEL-SAVING BASICS

- **Monitor tire pressure** – Properly inflated tires monitored weekly can change the rolling distance, putting less stress on the tires.
- **Plan trips carefully** – A warmed-up vehicle, combined with putting the farthest stop first and working your way back, is better for the engine and more efficient. According to Popular Mechanics, a fully warmed-up engine will remain at an efficient temperature even if it's parked for 30 minutes.
- **Make right turns only** – Specific to city driving, it's been proven to save gas, even when slightly going out of the way.
- **Eliminate unnecessary weight** – Clean out and remove items not pertinent to every day work from the vehicle.

## REFERENCES

1. American Automobile Association, "Aggressive Driving," <https://exchange.aaa.com/safety/driving-advice/aggressive-driving/#.XnzmHYhKiUk>
2. <https://www.ornl.gov/news/sensible-driving-saves-more-gas-drivers-think>
3. Kenworth Truck Company, "White Paper on Fuel Economy", March 2006, <https://kenworth.cummins.com/customer-support--secrets-of-fuel-economy--white-paper>
4. <https://injuryfacts.nsc.org/motor-vehicle/motor-vehicle-safety-issues/speeding/>
5. <https://www.fueleconomy.gov/feg/atv.shtml>

# About Bridgestone

Nashville, Tennessee based Bridgestone Americas Tire Operations is the U.S. subsidiary of Bridgestone Corporation, the world's largest tire and rubber company offering a wide range of Bridgestone, Firestone and associate brand tires, BATO maintains wholesale and original equipment sales operations across a broad line of products, including passenger, light truck, commercial truck and bus, agricultural, motorcycle, kart and off-the-road tires.

Additional US subsidiaries include Bridgestone Retail Operations which operates the largest network of company-owned automotive service providers in the world – nearly 2,200 tire and vehicle service centers across the United States – including Firestone Complete Auto Care, Tires Plus, Wheelworks and Hibdon store locations. Bridgestone authorized dealers consist of independent tire retailers that are authorized to sell and service Bridgestone or Firestone products. BATO's Commercial Solutions Group also has an extensive dealer network that also includes Truck, Bus, Radial Division. In summary the Bridgestone network consists of approximately 5,400 service locations for tire, automotive and fleet solutions.

Below is a complete list of links to our products for Commercial, Retreads and Consumer tires.

## Bridgestone Brand

Alenza, Blizzak, DriveGuard, Dueler, Ecopia, Potenza, Turanza  
Bridgestone Consumer product

website: <https://www.bridgestonetire.com/>

Bridgestone Commercial product

website: <https://commercial.bridgestone.com/en-us/index>

## Firestone Brand

All season, Champion, Destination, Firehawk, Transforce, WeatherGrip, Winterforce

Firestone Consumer product

website: <https://www.firestonetire.com/>

Firestone Commercial product

website: <https://commercial.firestone.com/en-us/index>

## Bandag Retread

website: <https://www.bandag.com/en-us/index>

# About Azuga

Azuga, a Bridgestone company, is a leading global connected vehicle platform, helping our customers turn data about vehicles and their use into intelligence that improves operations and safety while reducing costs and risk. Azuga provides reliable end-to-end solutions for commercial fleets, government agencies, insurance companies and automotive industry suppliers, encompassing hardware, the Azuga One platform, award-winning fleet applications and data analytics. Azuga is headquartered in Fremont, California.

Our award-winning Azuga Fleet solution is used by thousands of customers—from the small fleet of one or a few vehicles up to several thousand—and is lauded by our customers for its ease-of-use, robust features and affordable pricing.

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