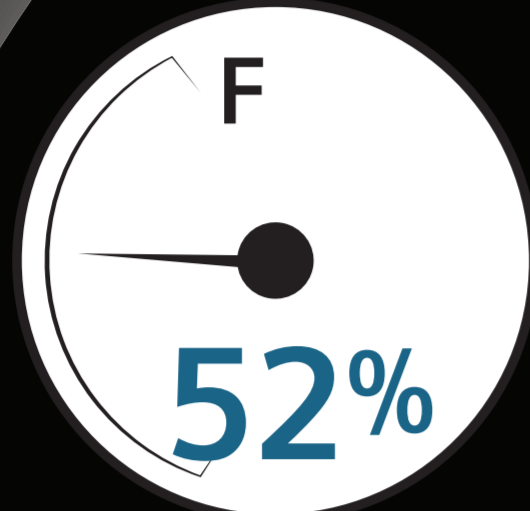


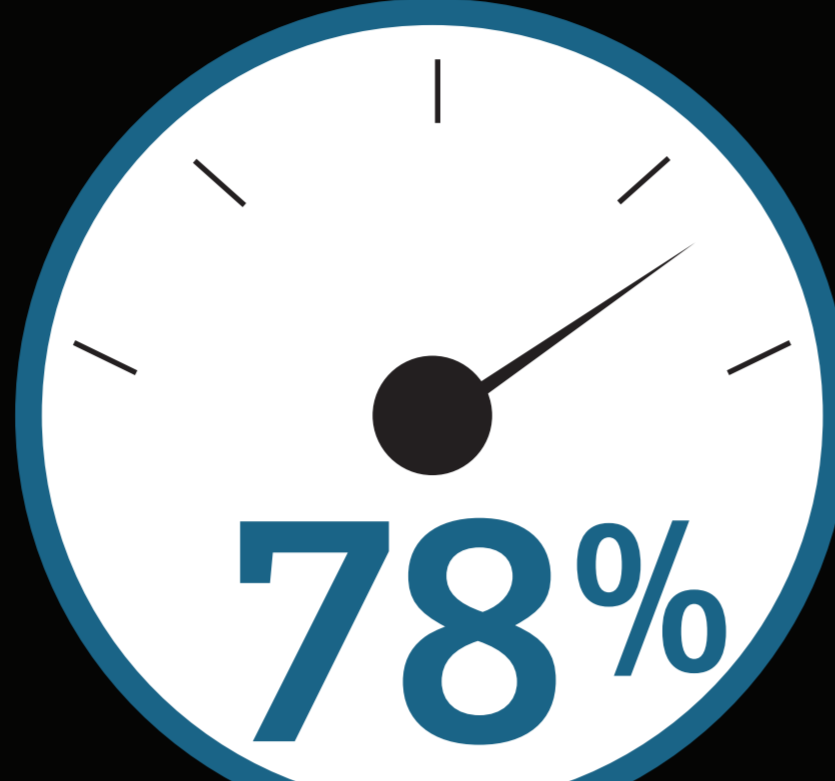
# The future of the automotive industry

The key to meeting fuel efficiency and emissions regulations

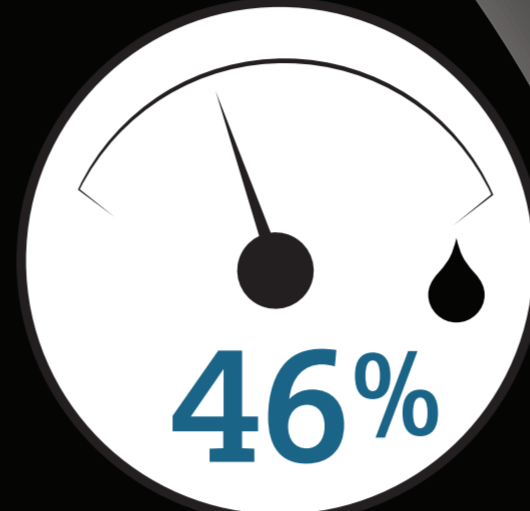
## Top pressures driving change



Need lower-cost automobiles



Automotive companies report fuel efficiency and emissions regulations are the #1 pressure



Seek differentiation with high quality and performance

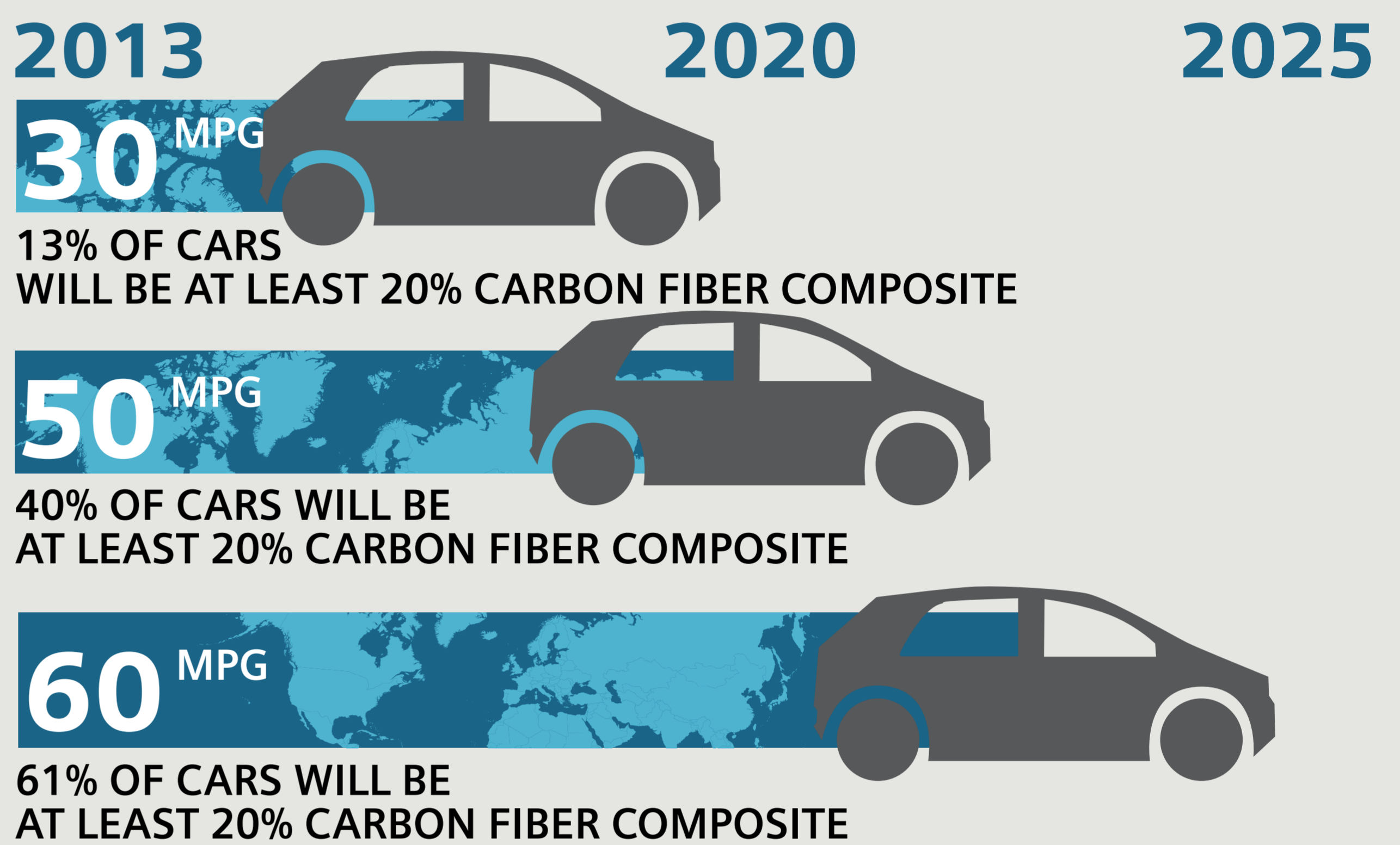
The automotive industry has only a few years to drastically rethink the way vehicles are engineered and manufactured.

Meeting the mandates of rigorous fuel economy and emissions standards is creating unprecedented and fundamental change. To succeed, automotive companies must redesign their vehicles NOW.

## The global race to bring lightweight vehicles to market

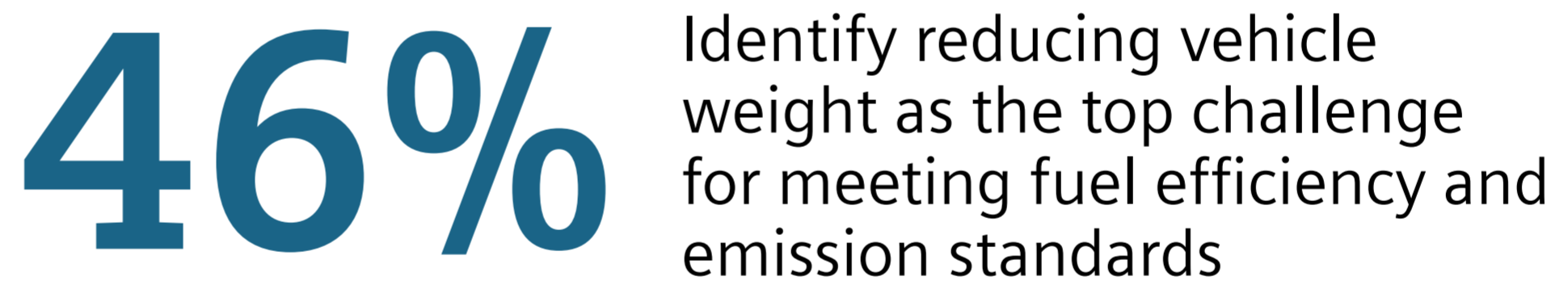
Automotive companies must meet average fuel economy mandates

Lightweighting vehicles is directly linked to lower CO2 emissions and improved fuel economy. Reducing a vehicle's weight by 450 kg (1000 lb) enables an average reduction of 40 g of CO2/km and increases fuel economy by 8-12 percent. Meeting the fuel standards will require automotive companies to nearly double the average fuel economy of new cars by 2025.

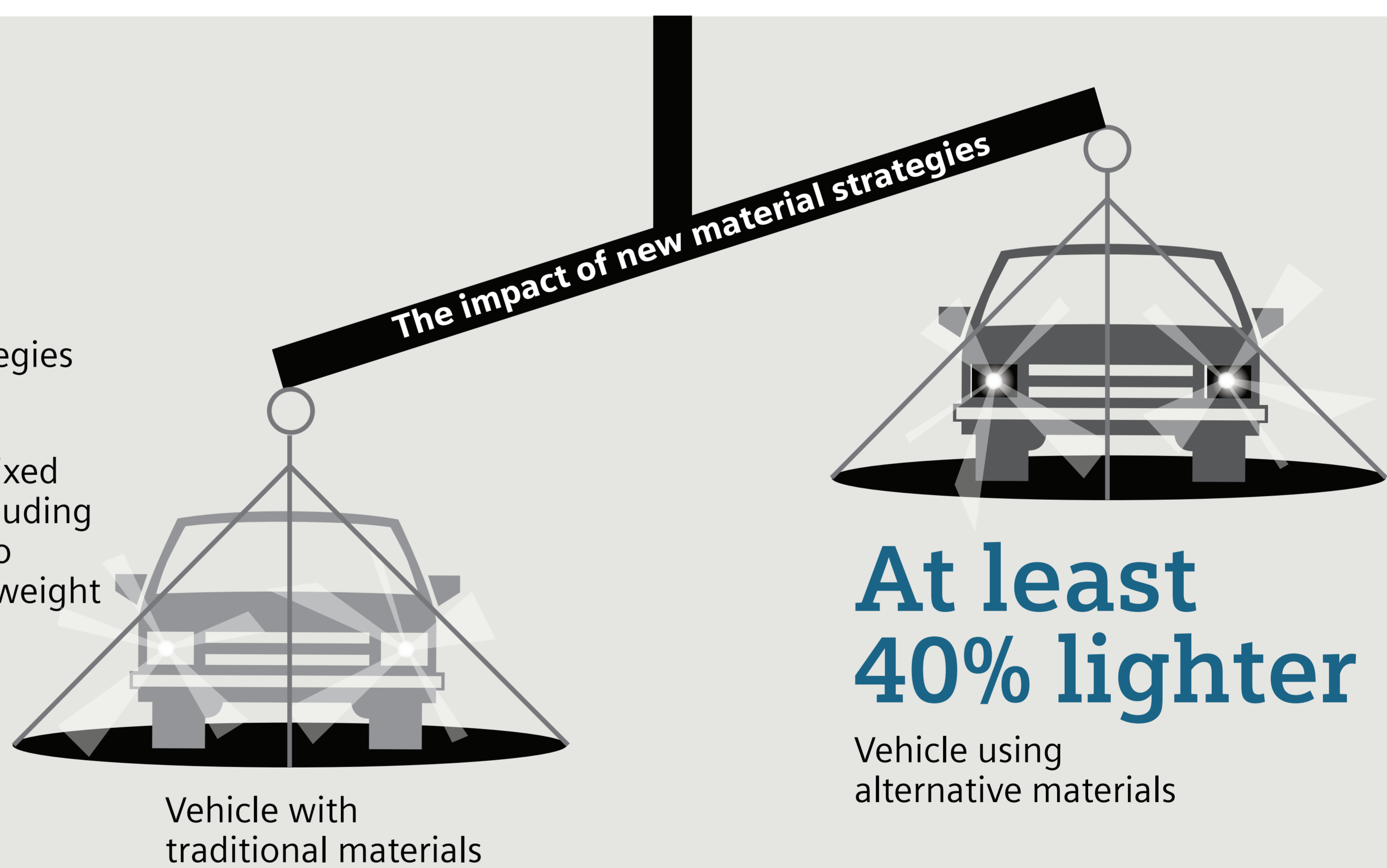
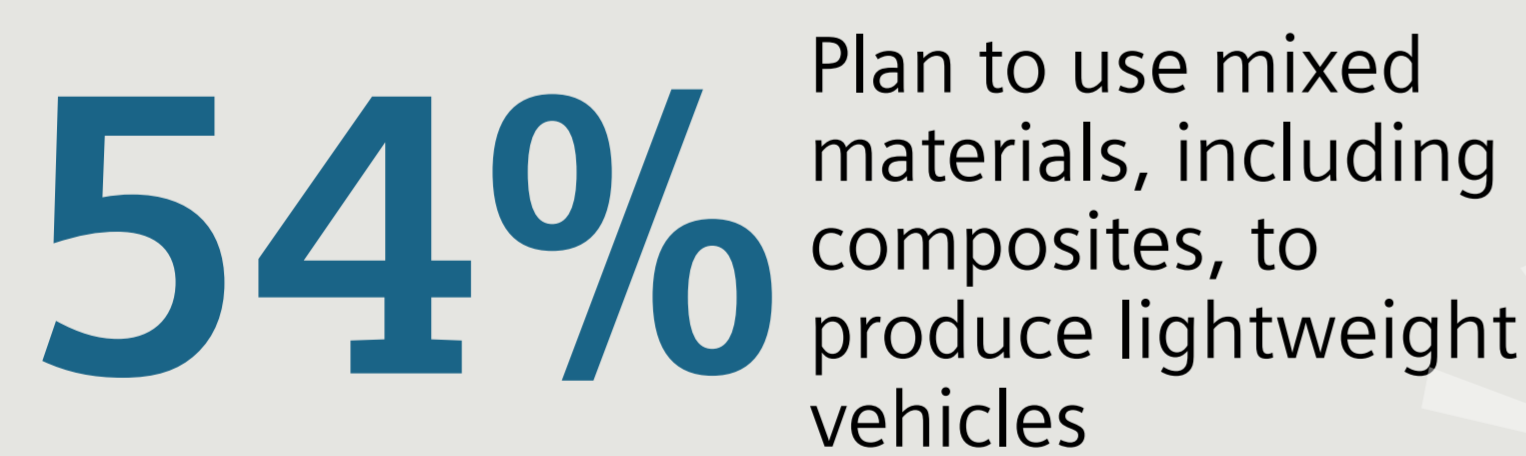
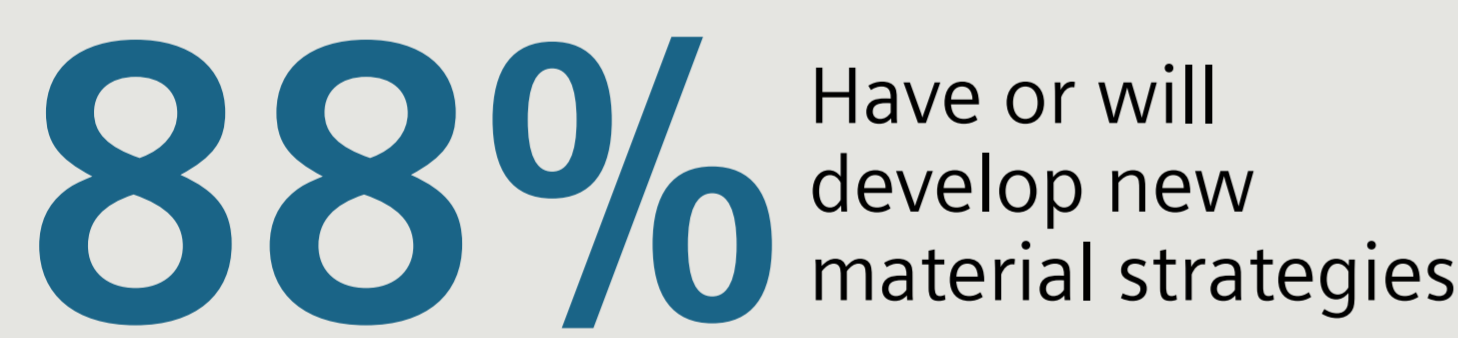


## Time is running out to plan lightweighting strategies

Automotive companies respond by planning now

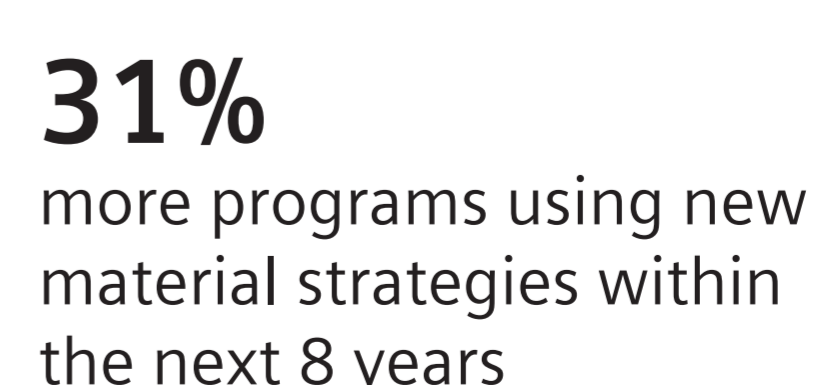
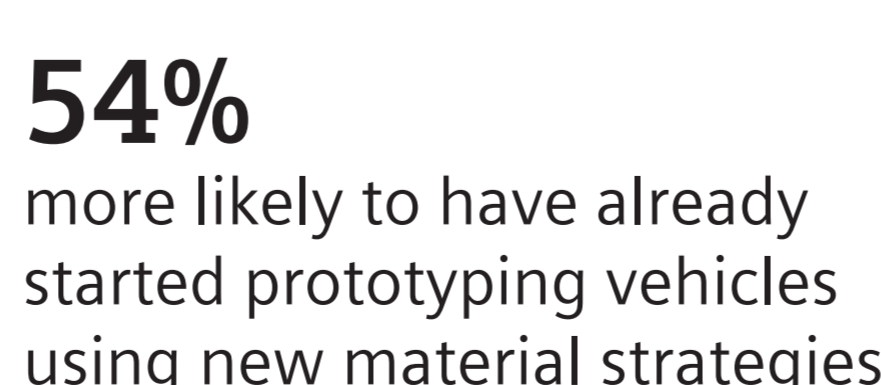
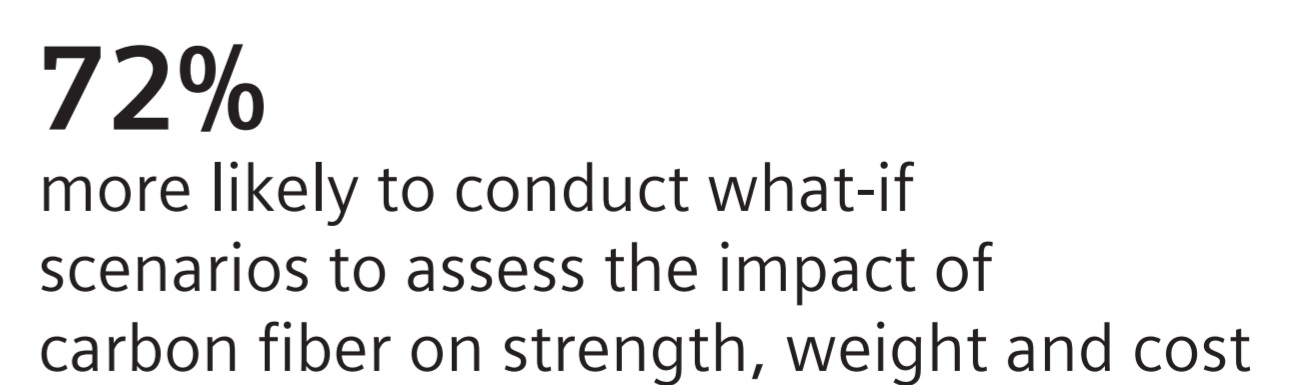
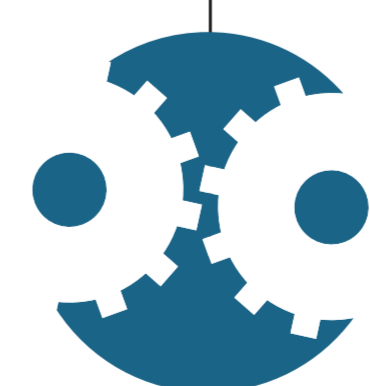
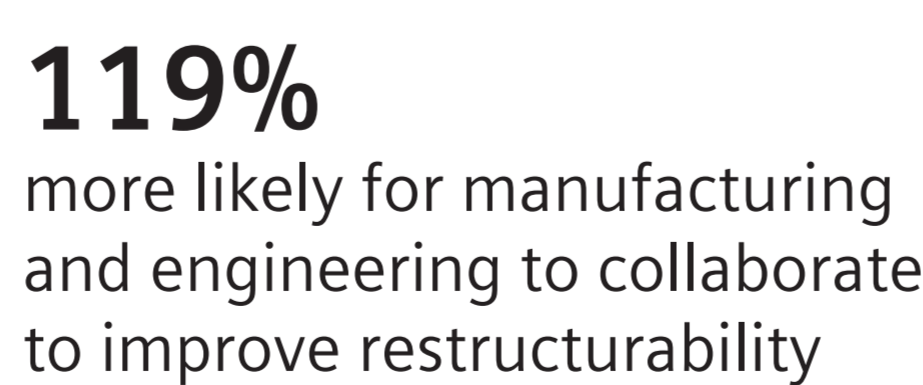
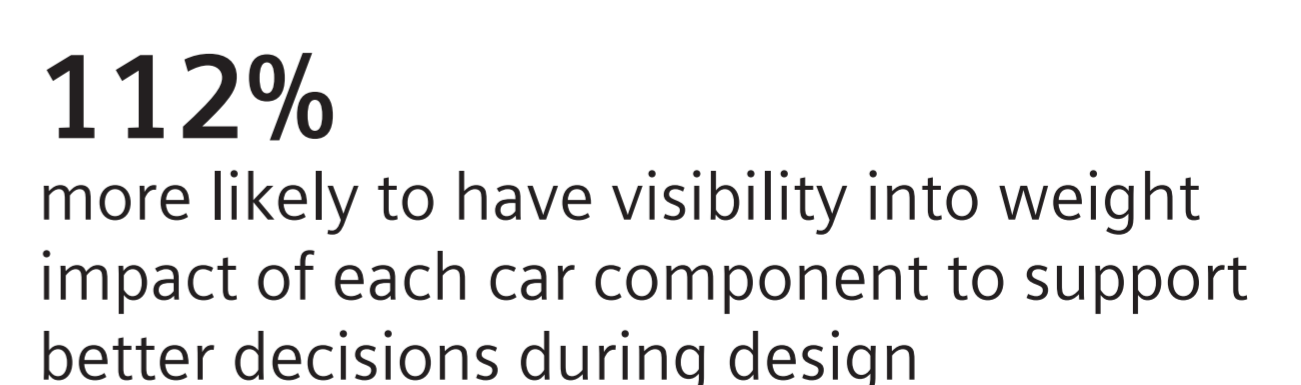


## The solution



## The benefits of using specialized engineering tools

Many predict that 340 to 450 kg (750 to 1,000 pounds) must be removed from a typical sedan to have a shot at meeting the fuel standards. In order to meet such dramatic weight reduction and global regulations, automotive companies will require new technologies, including alternative materials, specialized engineering tools and nontraditional manufacturing processes.



Results from Aberdeen Group study, October 2013