

Global passenger car production grew 4.5 percent in 2004, to an estimated 44.1 million units.¹ Since 1950, annual car production has grown more than fivefold.² (See Figure 1.) Production of sport utility vehicles (SUVs) and other “light trucks” also reached a new record, 18 million, almost 6 percent more than in 2003.³ There are now 551 million cars on the world’s roads.⁴ (See Figure 2.)

Car production and use remain heavily concentrated in North America, Western Europe,

and Japan. The three regions together accounted for 70 percent of global passenger car production

in 2003 and for more than two thirds of all cars on the roads in 2002.⁵ Elsewhere, only Brazil, China, and South Korea are significant producers, and only Argentina, Australia, Brazil, India, Mexico, Poland, Russia, and South Korea have fleets of 5 million vehicles or more.⁶

Car density relative to population is by far the highest in the United States. Western Europe had a car density in 2002 comparable to the U.S. level of the 1970s.⁷ And China’s car density today is equivalent to U.S. levels in 1912.⁸

Automobiles are major contributors to global climate change. Carbon emissions from U.S. motor gasoline use—at 1,139 million tons in 2002—surpassed those of the entire Japanese economy.⁹ Auto carbon emissions can be reduced significantly by boosting fuel efficiency. In the United States, fuel economy lags behind the levels reached in Japan and Europe.¹⁰ Heavier cars, with more horsepower and faster acceleration, have prevented efficiency improvements during the last two decades.¹¹

Despite the growing use of lightweight materials, average car weight has been on the rise since the mid-1980s and is now back to the level of the mid-1970s.¹² In 2003, a typical U.S. passenger car incorporated 824 kilograms of steel, 149 kilos of iron, 126 kilos of aluminum, and 116 kilos of plastics and composites.¹³ Automobile manufacturing consumes huge quantities of materials, accounting for 33 percent of total U.S. aluminum use, 27 percent of iron, and 15 percent of steel.¹⁴ (See Figure 3.)

In 1950, Americans drove some 588 billion

kilometers (365 billion miles) in 40 million cars—almost 14,600 kilometers per car.¹⁵ By 2003, the average distance traveled per year had grown to more than 19,000 kilometers (about 12,000 miles).¹⁶ Multiplied by the far larger number of vehicles now on U.S. roads, the total distance traveled had thus grown more than sevenfold—to 4,281 billion kilometers.¹⁷ That’s the equivalent to 14,308 roundtrips from Earth to the sun.¹⁸ Driving all these vehicles required 8.3 million barrels per day of fuel in 2002, up from 5.1 million barrels in 1970.¹⁹ Passenger vehicle fuel consumption now surpasses total U.S. domestic oil production and is a major driver of rising imports.²⁰

China is rapidly increasing its car dependency. Sales of cars and light commercial vehicles are expected to reach 5 million units in 2005 and 7.3 million by 2007.²¹ The Chinese government introduced fuel economy standards for cars, SUVs, and minivans in late 2004.²² These are more stringent than those prevalent in the United States but a bit less strict than the ones adopted semi-voluntarily by industry in Europe and Japan.²³

Toyota and Honda are the pioneers in introducing hybrid electric cars (which complement the traditional internal combustion engine with an electrical motor, yielding lower fuel intake and less pollution). Worldwide, Toyota’s cumulative hybrid sales surpassed 280,000 in late 2004.²⁴ The company expects that some 2 million hybrids will be sold by 2010.²⁵

In the United States, Toyota and Honda have sold more than 120,000 hybrids since 1999.²⁶ Sales there are expected to reach some 200,000 units in 2005 alone.²⁷ With other carmakers getting on the bandwagon, analysts predict a continued doubling of hybrid sales, with perhaps 1 million hybrids on U.S. roads by 2007 or 2008.²⁸ Toyota expects hybrids to capture half the U.S. market for new cars by 2025, although this ambitious forecast is not universally shared.²⁹

Hybrids and other alternative fuel vehicles still account for a marginal share of total car fleets. In the United States, an estimated 548,000 hybrids were on the roads in 2004, up from about 247,000 in 1995.³⁰

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Figure 1. World Automobile Production, 1950–2004

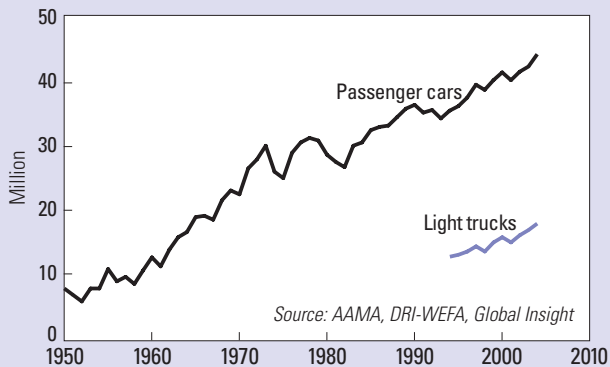


Figure 2. World Passenger Car Fleet, 1950–2004

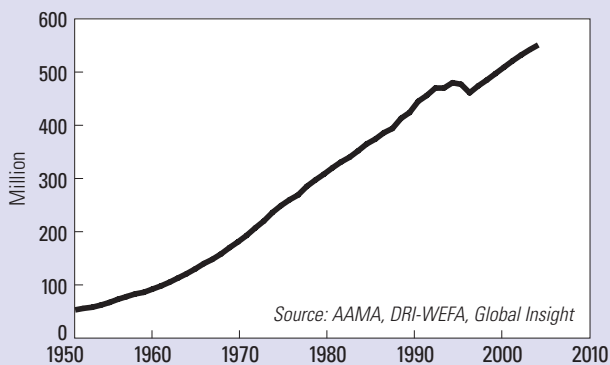
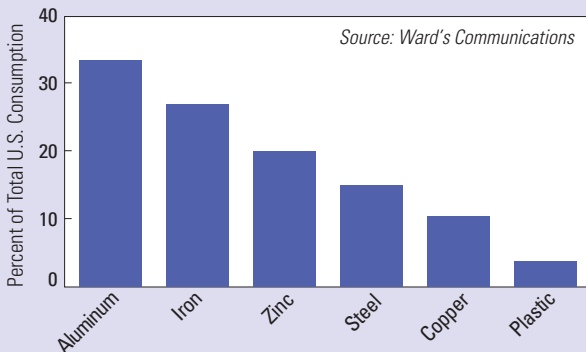


Figure 3. Selected Materials Use by the U.S. Automobile Industry, 2003



World Automobile Production, 1950–2004

Year	Production (million)
1950	8.0
1955	11.0
1960	12.8
1965	19.0
1970	22.5
1971	26.5
1972	27.9
1973	30.0
1974	26.0
1975	25.0
1976	28.9
1977	30.5
1978	31.2
1979	30.8
1980	28.6
1981	27.5
1982	26.7
1983	30.0
1984	30.5
1985	32.4
1986	32.9
1987	33.1
1988	34.4
1989	35.7
1990	36.3
1991	35.1
1992	35.5
1993	34.2
1994	35.4
1995	36.1
1996	37.4
1997	39.4
1998	38.6
1999	40.1
2000	41.3
2001	40.1
2002	41.4
2003	42.2
2004 (prel)	44.1

Source: American Automobile Manufacturers Association, DRI-WEFA, and Global Insight.

Notes

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3. Couchman, *op. cit.* note 1.
4. *Ibid.*
5. Calculated from Ward’s Communications, *Ward’s Motor Vehicle Facts & Figures 2004* (Southfield, MI: 2004), pp. 14, 47–49. Ward’s includes Mexico in its definition of North America and Turkey as part of Western Europe. For the purposes of this calculation, these two countries were not included.
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7. Oak Ridge National Laboratory (ORNL), *Transportation Energy Data Book 24* (Oak Ridge, TN: 2004), Figure 3.1.
8. *Ibid.*
9. *Ibid.*, Tables 11.1 and 11.5.
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20. *Ibid.*, Table 1.12 and Figure 1.7.
21. “Driving the Economy,” *National Geographic*, February 2005.
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