



Accelerated Vehicle Retirement for Fuel Economy: “Cash for Clunkers”

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March 3, 2010

Congressional Research Service

7-5700

www.crs.gov

R40654

CRS Report for Congress

Prepared for Members and Committees of Congress

Summary

In an attempt to boost sagging U.S. auto sales and to promote higher vehicle fuel economy, the President signed legislation on June 24, 2009, P.L. 111-32, establishing a program to provide rebates to prospective purchasers toward the purchase of new, fuel-efficient vehicles, provided the trade-in vehicles are scrapped. The program was known as Consumer Assistance to Recycle and Save (CARS), or, informally, as "cash for clunkers." It provided rebates of \$3,500 or \$4,500, depending on fuel economy and vehicle type of both the new vehicle and the vehicle to be disposed of. Congress appropriated \$3 billion for the program in two separate installments. CARS ran for a month, from July 24, 2009, until August 25, 2009.

During this period, nearly 700,000 vehicles were traded. Estimates of new vehicle sales induced by the rebate system range from 125,000 to as many as 440,000. Motor vehicle sales in August 2009 hit 14 million seasonally adjusted units, compared to only 9.5 million being sold on a seasonally adjusted basis in the first six months of 2009. These CARS-assisted summer sales helped propel overall 2009 car sales to 10.4 million units, comparable to annual sales for 2008.

After officially launching on June 24, 2009, when NHTSA regulations were issued, the CARS program was embraced by thousands of consumers and by auto dealers across the country, who advertised it widely. By the end of the first week, the U.S. Department of Transportation (DOT) announced that nearly all of the initial \$1 billion in funds appropriated for it were committed, based on rising dealer applications for rebate reimbursements and surveying of dealer backlogs.

Recognizing the stimulative effect of the program, the House of Representatives voted to appropriate an additional \$2 billion (H.R. 3435) on July 31, 2009, tapping funds from the economic recovery act (American Recovery and Reinvestment Act, or ARRA, P.L. 111-5). The Senate followed suit on August 6, 2009, and President Obama signed the supplemental CARS funding into law (P.L. 111-47) on August 7, 2009.

By most measures, CARS was successful in stimulating auto sales. Among the benchmarks listed by NHTSA, which oversaw CARS:

- August 2009 sales were 43% higher than in June 2009, the last pre-CARS month;
- The total value of all CARS transactions was \$15.2 billion;
- About 60,000 jobs were estimated to have been created in auto parts, assembly, and sales, and an estimated \$7.8 billion added to U.S. Gross Domestic Product.

Similar programs have been implemented in various U.S. states, but this was the first federal program. In general those state pilot programs focused on retiring vehicles with older, and in some cases malfunctioning, emissions control systems in order to promote better air quality. CARS focused, instead, on higher fuel economy and promoting U.S. auto sales. Similar vehicle retirement programs have been implemented in other countries, such as Japan, Germany, France, and China, and provided a similar boost in auto sales.

This report outlines the key provisions of the CARS program and discusses the impact of the program on the economy. It also summarizes similar programs in other industrial countries.

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Introduction

A severe recession and major decline in auto sales in 2009 motivated lawmakers to consider ways to support the domestic automotive industry. Since December 2008, a new, expanded federal presence in the automotive industry has developed, including new grant and loan programs, support through the Troubled Asset Relief Program (TARP), and partial federal ownership of Chrysler and General Motors. Coupled with the economic concerns about the auto industry have been historically high gasoline prices experienced through the summer of 2008 and the prospect of future price hikes when the global recession ends. In response to high fuel prices and growing concerns over greenhouse gas emissions and climate change, Congress has pursued new policies on fuel economy, including tighter Corporate Average Fuel Economy (CAFE) standards enacted in the Energy Independence and Security Act of 2007 (EISA, P.L. 110-140), as well as even tighter standards on fuel economy and greenhouse gases proposed by the Obama Administration's EPA.¹

As a way to promote new vehicle sales, higher fuel economy, and lower emissions, an accelerated vehicle retirement (AVR)—also called “cash for clunkers” or fleet modernization—program was enacted in 2009.² AVR programs provide financial incentives for a vehicle owner to “retire”—that is, usually shred or crush³—an old vehicle and purchase a new vehicle. Previous state-level AVR programs⁴ in the United States have generally focused on air quality,⁵ since newer tailpipe emissions standards are significantly more stringent than older standards,⁶ and many older vehicles no longer meet the less stringent standards for which they were originally certified. However, some recent programs abroad have focused directly on motivating new vehicle sales and propping up the automotive sector.

The 2009 Consumer Assistance to Recycle and Save (CARS) was part of these initiatives to both address the health of the domestic auto industry and to retire older, inefficient vehicles. To boost sagging U.S. auto sales and to promote higher vehicle fuel economy, Congress passed several proposals in 2009:

- On June 9, 2009, the House passed a CARS authorization, H.R. 2751, for a four-year, \$4 billion program; the Senate did not act on it.

¹ For more information on CAFE standards and the Administration proposal, see CRS Report R40166, *Automobile and Light Truck Fuel Economy: The CAFE Standards*, by Brent D. Yacobucci and Robert Bamberger.

² The official name of the legislation establishing the program was Consumer Assistance to Recycle and Save (CARS).

³ In most cases, the state or the dealer is responsible for scrapping the old vehicle. In the case of the federal AVR program (CARS) the dealer, not the consumer, was responsible for transferring the old vehicle to a facility for scrapping.

⁴ For more information on these programs, see CRS Report 96-766, *A Clean Air Option: Cash for Clunkers*, by David M. Bearden.

⁵ Specifically to remove the most polluting vehicles from the road to help the states comply with National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter.

⁶ For example, federal standards for hydrocarbon emissions from new cars are 94% lower than they were 30 years ago (1970). Nitrogen oxide (NOx) standards are 97% lower. J.G. Calvert, J.B. Heywood, and R.F. Sawyer, et al., “Achieving Acceptable Air Quality: Some Reflections on Controlling Vehicle Emissions,” *Science*, vol. 261 (July 2, 1993), p. 37; Frank M. Black, “Control of Motor Vehicle Emissions—The U.S. Experience,” *Critical Reviews in Environmental Control*, vol. 21 (1991), p. 376; National Research Council, *State and Federal Standards for Mobile Source Emissions*, 2006, pp. 92-93; CRS Report RS20247, *EPA's Tier 2 Emission Standards for New Motor Vehicles: A Fact Sheet*, by David M. Bearden.

- On June 18, 2009, the Senate passed the conference report to the Supplemental Appropriations Act of 2009 (H.R. 2346) that the House had passed two days earlier. While focused on supplemental military appropriations, Title XIII of the bill included a scaled-down version of CARS. Added in conference, the provision is similar to H.R. 2751,⁷ but appropriated a billion dollar program instead of the \$4 billion in the earlier, House-passed legislation. A bill with more stringent qualification requirements had been introduced in the Senate (S. 247), but was never considered on the Senate floor. The President signed the supplemental bill on June 24, 2009 (P.L. 111-32).
- With the \$1 billion funding running out for CARS after only a week, Congress turned again to CARS funding before the summer recess. On June 31, 2009, the House passed H.R. 3435, appropriating an additional \$2 billion for CARS, with funding to be taken from the economic stimulus law, the American Recovery and Reinvestment Act of 2009 (P.L. 111-5). The Senate passed the bill on August 6, and President Obama signed the bill into law (P.L. 111-47) on August 7. The CARS program would have ended if additional funds had not been approved.

The CARS program provided consumers with a rebate of up to \$4,500 toward the purchase of a new, more fuel-efficient vehicle. The value of the rebate was based on the fuel economy and fuel savings of the new vehicle compared to the old vehicle, as well as the vehicle class of both (i.e., passenger car, light truck, or work truck). To qualify for a rebate, the auto dealer certified that the engine of the old vehicle would be disabled, and that the vehicle was sent to be crushed or shredded.

CARS combined the goal of promoting auto sales with improved fuel economy. The general argument has been that the United States is at a critical juncture and has an opportunity to use any recovery in the auto sector to foster a switch to more fuel efficient vehicles. Therefore, most cash for clunkers proposals in the 111th Congress, including the legislation signed by the President, have tied incentives to the purchase of vehicles with higher fuel economy.

CARS Program

As enacted, the CARS program provided a rebate toward the purchase of a new, more fuel-efficient vehicle, provided the old vehicle was transferred by the auto dealer to a facility where it was crushed or shredded. Consumers were not responsible for the actual scrapping of the vehicle. The legislation established many of the elements necessary for the program, including the criteria for obtaining a rebate, as well as requirements for auto dealers to be registered under the program. The National Highway Traffic Safety Administration (NHTSA), within DOT, had responsibility for developing regulations to implement the program. Although some original proposals limited CARS rebates to vehicles manufactured in the United States or North America, these limitations were removed over concerns that the CARS program be compliant with World Trade Organization (WTO) rules, and so buyers were eligible for a rebate regardless of where the vehicle was made.

⁷ The key difference is while H.R. 2751 authorized \$4 billion for a one-year program, with the actual funding subject to appropriation, the Supplemental *appropriated* \$1 billion for a four-month program, through October 2009.

Program Regulations

NHTSA was given one month to develop regulations implementing the program, and it did so, issuing them and officially launching the CARS program on July 24, 2009.⁸ Those regulations include

- procedures for dealers to register for the program;
- procedures for dealer reimbursement for the value of the rebate within 10 days of submitting required information;
- a prohibition on dealers using the rebate to offset other rebates or discounts;
- a requirement that dealers disclose the estimated scrappage value of the trade-in and to retain up to \$50 of the actual scrappage value for administrative costs;
- requirements and procedures for the disposal of trade-in vehicles; and
- enforcement of penalties (up to \$15,000 per violation of the above requirements and prohibitions).

P.L. 111-32 includes a clause “[n]otwithstanding the requirements of section 553 of title 5, United States Code, the Secretary shall promulgate final regulations to implement the Program not later than 30 days after the date of the enactment of this Act.” Despite various statutory requirements that could have precluded promulgation of regulations within 30 days—most notably the Administrative Procedure Act, which generally requires sufficient time for public notice and opportunity for comment on proposed regulations⁹—the regulations were issued on time.

Value of a Rebate

Under the CARS program, NHTSA issued rebates directly to auto dealers when they sold an eligible vehicle after July 1, 2009, and until funding ran out at the end of August. The value of the rebate was deducted from the price of the vehicle and the dealer was in turn reimbursed by NHTSA. Only one rebate was allowed per person, and only one rebate was issued per vehicle (regardless of the number of joint owners). NHTSA issued rebates only up to the total value of its appropriation (initially \$1 billion for the CARS program, increased by an additional \$2 billion on August 7).

The value of the rebate was based on the type of new vehicle purchased, the type of trade-in vehicle, and the fuel economy of both. Four classes of vehicles were eligible: (1) passenger automobiles (cars); (2) category 1 trucks¹⁰ (sport utility vehicles and smaller vans and pickup trucks); (3) category 2 trucks (larger light-duty pickup trucks and vans); and (4) category 3 trucks (medium-duty pickup trucks and cargo trucks and vans).

⁸ Although not officially under way until July 24, 2009, a number of auto manufacturers encouraged their dealers to begin trading under the system as early as the first week in July, promising that they would guarantee the transactions, as long as they followed the law. This created a backlog of transactions that were filed with NHTSA starting on July 24, 2009.

⁹ For more information on the Administrative Procedure Act, see CRS Report RL32240, *The Federal Rulemaking Process: An Overview*, by Curtis W. Copeland.

¹⁰ These category definitions are different from the weight-based definitions used to classify trucks (e.g., classes 1 through 8) generally.

Eligible Trade-in Vehicle

To qualify for the rebate, the trade-in vehicle had to be in drivable condition; had to be continuously insured by the same owner for at least one year;¹¹ and had to have been manufactured less than 25 years before the date of trade-in (i.e. since 1984). For all vehicles except category 3 trucks, the trade-in vehicle had to have a combined estimated new Environmental Protection Agency (EPA)-rated fuel economy (as defined on the fueleconomy.gov website) of no more than 18 miles per gallon (mpg). Category 3 trucks had to be from model year 2001 or newer.

Eligible New Vehicle

To qualify for the rebate, the manufacturer's suggested retail price (MSRP) had to be less than \$45,000 for the new vehicle. For cars and category 1 and 2 trucks, the vehicle had to comply with EPA's Tier 2 emissions standards, and for category 3 trucks the vehicle had to comply with new heavy-duty engine standards. Except for category 3 trucks, new vehicles had to meet the following mileage standards: 22 mpg for a passenger car; 18 mpg for a category 1 truck; and 15 mpg for a category 2 truck.

Rebate Value

Rebates were worth either \$3,500 or \$4,500, depending on different parameters, as shown in **Table 1**.

Table 1. Criteria for Determining CARS Rebate Value

Rebate Value	New Vehicle Category			
	Passenger Automobile	Category 1 Truck	Category 2 Truck	Category 3 Truck
\$4,500	At least 10 mpg higher fuel economy than trade-in 22mpg minimum	At least 5 mpg higher than trade-in 18 mpg minimum	At least 2 mpg higher than trade-in 15 mpg minimum	None
\$3,500	At least 4 mpg higher than trade-in 22mpg minimum	At least 2 mpg higher than trade-in 18 mpg minimum	At least 1 mpg higher than trade-in OR trade-in is a MY2001 or newer category 3 truck 15 mpg minimum	Trade-in is a MY2001 or newer category 3 truck Trade-in is of similar size or larger than new truck

Source: CRS Analysis of H.R. 2346.

Note: Category 1 includes sport utility vehicles and smaller vans and pickup trucks. Category 2 includes larger pickup trucks and vans. Category 3 includes medium-duty pickup trucks, cargo trucks, and cargo vans.

¹¹ Because two states, New Hampshire and Wisconsin, do not require auto insurance under state law, NHTSA updated its regulations to exempt vehicles in those two states from the insurance requirement. National Highway Traffic Safety Administration, *Requirements and Procedures for the Consumer Assistance to Recycle and Save Program*, Docket No. NHTSA-2009-0120, Washington, DC, August 2009, <http://www.cars.gov/files/amendment.pdf>.

Impact of the Program: Expectations and Reality

Impact on Auto Industry/Sales

Originally, the impact of the CARS program on the auto industry was expected to be limited by the narrow scope of the program. First, the program was limited to vehicles purchased over a month-long period in the summer of 2009. Second, the number of rebates was limited to the available appropriation—only about 222,000 to 286,000 rebates were expected to be issued under the initial \$1 billion appropriation,¹² and about 750,000 under the total \$3 billion program.¹³ Therefore, it was thought that this program would more likely provide a “shot in the arm” to U.S. auto sales rather than provoking a systemic change in the auto industry, the new vehicle fleet, or fleet-wide fuel economy.

After the CARS program ended, it became clear that it had, in fact, provided a positive stimulus for auto sales, by drawing back many would-be consumers to auto showrooms. As the program was wrapping up, Transportation Secretary Ray LaHood said,

American consumers and workers were the clear winners thanks to the cash for clunkers program. Manufacturing plants have added shifts and recalled workers. Moribund showrooms were brought back to life and consumers bought fuel efficient cars that will save them money and improve the environment.¹⁴

Estimates of the number of car sales prompted by the program vary. The Council of Economic Advisers (CEA) reviewed the CARS program, noting that “our baseline analysis below will assume 50,000 postponed June sales, which yields an estimate of 440,000 net CARS-induced sales over the June-July-August time frame.”¹⁵ The CEA estimated that CARS raised economic growth in the third quarter 2009 by between 0.1% and 0.4%, at an annual rate, due to increased retail sales of motor vehicles in July and August, 2009. The CEA report adds this caveat:

To put it another way, the estimates imply that the \$3 billion program will increase output in the automobile sector in the second half of the year by between about \$2.5 billion and \$6 billion—a substantial direct effect. It is important to note, however, that the boost to the level of GDP is temporary, and is followed by a drop that slightly more than reverses the increase, reflecting the slightly lower level of sales in the “payback” period.¹⁶

Edmunds.com, an online source for auto research and information, painted a very different picture. It estimated that only 125,000 of the 690,000 sales were prompted by the federal rebates and that rising auto sales were prompted by a rebounding auto market. Edmunds issued a press release in October 2009 saying that the rest of the sales would have taken place without “cash for

¹² Assuming \$1 billion, and assuming all rebates are worth \$4,500, NHTSA could issue 222,222 rebates. Assuming all rebates are worth \$3,500, NHTSA could issue 285,714 rebates.

¹³ Council of Economic Advisers, “Economic Analysis of the Car Allowance Rebate System,” September 10, 2009, p. 2.

¹⁴ Statement of DOT Secretary LaHood, issued by DOT, August 26, 2009.

¹⁵ Council of Economic Advisers, “Economic Analysis of the Car Allowance Rebate System,” September 10, 2009, p. 4.

¹⁶ *Ibid.*, p. 12. The “payback” period is a reference to the likely pull forward effect of CARS, bringing forward sales in summer 2009 that would have otherwise taken place later in 2009 or in later years.

clunkers" and stating that "taxpayers paid \$24,000 per vehicle sold."¹⁷ Edmunds developed this estimate by dividing the \$3 billion federal program by the 125,000 vehicle sales it says were spurred.¹⁸

A third estimate of sales induced by "cash for clunkers" was developed by the Center for Automotive Research (CAR) in Ann Arbor, Michigan, which estimated that 303,000 vehicles sold in July and August 2009 were induced by the rebates. CAR looked beyond the summer duration of the clunkers program and further estimated that there was a net positive effect on sales after the clunkers program ended, thereby concluding that 395,000 new vehicles were spurred by the rebates.¹⁹

CEA also suggested that the fourth quarter 2009 GDP would benefit as automakers increased production after CARS to replace depleted inventories: Ford, GM, and Honda announced third and fourth quarter production increases at U.S. facilities. CEA estimated that 60,000 jobs had been saved or created as a result of CARS.

U.S. sales of cars and light trucks, at a seasonally adjusted annual rate, hit 14 million units in August 2009, far ahead of the 9.5 million units sold in the first six months of the year.²⁰ While sales in September then fell to about 8 million units, reflecting sales moved forward by "cash for clunkers," sales in the rest of 2009 were stronger, finishing out with an especially strong December and overall, seasonally adjusted sales for all of 2009 reached 10.4 million units.

Petroleum and Emissions Savings

In its report to Congress, NHTSA estimates that the CARS program will save roughly 820 million gallons of fuel and 9.5 million metric tons of carbon dioxide over the next 25 years. These savings are relatively small compared to projected fuel consumption and transportation emissions. For example, compared to the Energy Information Administration's (EIA) estimates for motor gasoline consumption and carbon dioxide emissions from petroleum consumption in 2020 in the transportation sector, the estimated annual savings from the CARS program represent roughly 0.02% of both consumption and emissions.²¹ The CARS program has been criticized by

¹⁷ Edmunds.com, "Cash for Clunkers Results Finally In: Taxpayers Paid \$24,000 per vehicle sold, Report Edmunds.com," October 28, 2009.

¹⁸ The Obama Administration rebutted the Edmunds.com estimate and said, "The Edmunds' analysis rests on the assumption that the market for cars that didn't qualify for Cash for Clunkers was completely unaffected by this program. In other words, all the other cars were being sold on Mars, while the rest of the country was caught up in the excitement of the Cash for Clunkers program. This analysis ignores not only the price impacts that a program like Cash for Clunkers has on the rest of the vehicle market, but the reports from across the country that people were drawn into dealerships by the Cash for Clunkers program and ended up buying cars even though their old car was not eligible for the program... Edmunds also ignores the beneficial impact that the program will have on 4th Quarter GDP because automakers have ramped up their production to rebuild their depleted inventories." Source: National Public Radio: "Edmunds.com Cash for Clunkers Analysis Riles Obama Team," October 29, 2009.

¹⁹ Center for Automotive Research, "The Economic and Fiscal Contributions of the 'Cash for Clunkers' Program—National and State Effects," January 14, 2010.

²⁰ *BusinessWeek*, "After the Clunkers Party, an Auto Sales Hangover," September 1, 2009.

²¹ The CARS program will save roughly 33 million gallons of gasoline per year and 380,000 metric tons of carbon dioxide. In its preliminary Annual Energy Outlook for 2010, EIA estimates that 141 billion gallons of motor gasoline will be consumed, and roughly 1.9 billion metric tons of carbon dioxide will be emitted from petroleum combustion in the transportation sector. U.S. Energy Information Administration, *Annual Energy Outlook 2010 Early Release Overview*, DOE/EIA-0383(2009), Washington, DC, December 14, 2009, Tables A11 and A18, <http://www.eia.doe.gov/> (continued...)

environmentalists because its scope was too small to affect significant change in the auto sector, and the required increases in fuel economy were not stringent enough.²²

However, regardless of the size of the program, the costs of the program may balance the benefits in at least one sense. In its report, NHTSA estimates that the fuel saved from the program will lead to cumulative savings of between \$1.3 billion and \$2.7 billion over the next 25 years.²³ Assuming a social cost of carbon dioxide of \$20 (the mid-range of NHTSA's scenarios),²⁴ the social benefit of the reduced carbon dioxide emissions from both fuel savings and new vehicle production is between \$0.2 billion and \$0.3 billion.²⁵ Thus total cumulative social benefits from reduced gasoline consumption and emissions range between \$1.5 billion and \$3.0 billion. The upper end of this range is roughly in line with the total federal appropriation for the program. That said, while the net costs and benefits to society may be equal, those who received rebates from the program will benefit (both through reduced vehicle purchase price and reduced fuel costs) more than those who did not receive rebates.

CARS Program Results

About 690,114 CARS vouchers were submitted in July and August 2009 and NHTSA had reviewed 99% of them by late September. Eligible CARS sales reported on the NHTSA hotline grew from about 4,000 on the first day to six times that a few days later. This surge in sales and reporting is one reason that many dealers had difficulty in reaching NHTSA to register and report their eligible sales. According to a survey by *Automotive News*, 90% of dealers were dissatisfied with the time it took to be reimbursed by the government.²⁶

This large surge in transactions in a short period of time overwhelmed the initial DOT system and, eventually, 7,000 people were assigned to review the transactions, many of them contract employees.²⁷

(...continued)

oiaf/aeo/index.html.

²² American Council for an Energy-Efficient Economy, *Vehicle Scrappage Program Needs Repair*, Washington, DC, May 6, 2009, <http://www.aceee.org/press/0905scrappage.htm>.

²³ The range depends on the discount rate for future savings. If future savings are not discounted, then the present value of those savings is higher. If the future is discounted, the present value of the savings is lower. U.S. Department of Transportation, National Highway Traffic Safety Administration, *Consumer Assistance to Recycle and Save Act of 2009*, Washington, DC, December 2009, p. 46.

²⁴ It should be noted that estimates for the social cost of carbon vary widely, from zero for those who believe that the effects of greenhouse gas emissions are negligible, to hundreds of dollars for those who believe that the effects of climate change could be drastic.

²⁵ Again, this range depends on the discount rate (between 0% and 7%). *Ibid.*, p. 49.

²⁶ *Automotive News* survey reported on August 3, 2009.

²⁷ The initial delays in processing CARS applications were eventually remedied. According to NHTSA's December 2009 report to Congress: "NHTSA did not anticipate the volume of the initial demand on the CARS system or a tripling of the demand on that system just twelve days after it began as a result of additional appropriations. Nor did the agency anticipate that the statute's many requirements and those added by NHTSA's rule in order to help deter fraud would prove so difficult for many dealers to meet without repeated submissions. More than half of all the submissions had to be submitted and reviewed more than once, and tens of thousands of them took several iterations before approval was possible. Moreover, to ensure the integrity of the process, any transaction had to be reviewed by two different people in order to be approved for payment. In all, NHTSA conducted approximately two million transaction reviews in order to eventually approve 677,000 requests for payment. Nevertheless, despite the many obstacles it faced and the unprecedented nature of this program, NHTSA managed to achieve an overall mean processing time of 16.9 days from (continued...)"

Table 2. CARS Program by the Numbers
(Highlights of the Motor Vehicle Rebate Program)

Benchmark	Result
Number of motor vehicle dealers that participated	18,908
States that participated ^a	50
Number of voucher applications submitted to NHTSA	690,114
Number of voucher applications paid	677,842
Number of voucher applications cancelled by dealers	12,272
Average voucher	\$4,209
Total federal funds paid out in vouchers	\$2.85 billion
Trade-ins that were passenger cars	14%
New vehicles that were passenger cars	59%
Trade-ins that were SUVs or trucks	85%
New vehicles that were SUVs or trucks	41%
Average age of vehicles traded in	14 years
Average odometer reading of trade-ins	160,170 miles
Average combined EPA fuel economy rating of trade-ins	15.7 mpg
Average combined EPA fuel economy rating of new vehicles	24.9 mpg
Estimated number of jobs saved or created	60,000
Percent of new vehicles manufactured domestically	49%
Estimated reduction in carbon dioxide emissions and related greenhouse gases over 25 years	9 million metric tons
Resulting fuel consumption reduction over 25 years	824 million gallons (33 million gallons per year)

Source: National Highway Traffic Safety Administration (NHTSA), "Consumer Assistance to Recycle and Save Act of 2009: Report to Congress," December 2009.

Notes: Category 3 trucks, used mainly for commercial purposes, were also eligible for CARS and constituted one percent or less of the trade-ins and new vehicles.

a. In addition to the 50 states, dealers in Puerto Rico, Guam and the U.S. Virgin Islands also participated.

According to the December 2009 report to Congress on the CARS program by NHTSA, and shown in **Table 2**, most of the vehicle trade-ins were SUVs and light trucks, whereas most newly-purchased vehicles were cars. The NHTSA report noted that "The total new vehicles sold or leased under the CARS program included 401,274 passenger cars, 274,602 light trucks (Category 1 and 2) and 1,966 heavy trucks (Category 3). The top ten models sold under the program were:

(...continued)

the final submission (i.e., when all necessary documentation was included and errors corrected) of a transaction to the date of payment."

1. Toyota Corolla
2. Honda Civic
3. Toyota Camry
4. Ford Focus FWD
5. Hyundai Elantra
6. Nissan Versa
7. Toyota Prius
8. Honda Accord
9. Honda Fit
10. Ford Escape FWD

Table 3. New Motor Vehicles Purchased Under CARS
(by make of vehicle)

Make Of New Vehicle	Number of Transactions	Share of New Vehicles (%)
Toyota	120,507	17.78
Ford	90,135	13.30
Honda	87,585	12.92
Chevrolet	86,354	12.74
Nissan	58,700	8.66
Hyundai	48,780	7.20
Kia	28,974	4.27
Dodge	24,119	3.56
Subaru	16,816	2.48
Pontiac	16,644	2.46
Mazda	16,144	2.38
VW	12,418	1.83
Jeep	11,211	1.65
GMC	9,704	1.43
Chrysler	9,033	1.33
Scion	7,851	1.16
Mercury	6,626	0.98
Saturn	5,334	0.79
Suzuki	3,707	0.55
Lexus	3,663	0.54
Other	13,537	2.00
Total	677,842	100.00

Source: National Highway Traffic Safety, Report to Congress on CARS Program, December 2009, p. 24

The model breakdown of the 677,842 new vehicles purchased through CARS is shown in **Table 3**. It is notable that Chrysler’s three brands—Jeep, Dodge and Chrysler—sold less than 7% of CARS vehicles because the company shut down all its plants in the spring as part of its bankruptcy and restructuring. The timing of the CARS program caught Chrysler with not enough inventory on hand, and so it ran out of vehicles to sell during the CARS program.

Of all the motor vehicles sold during CARS, just under half were made in the United States, according to NHTSA. The largest number of non-U.S. cars sold was imported from Japan, as shown in **Table 4**.

Table 4. Country of Origin of CARS Vehicles

Country	New Vehicles	Trade-Ins
United States	329,173	499,365
Japan	115,526	54,958
Mexico	81,655	11,307
South Korea	73,119	3,738
Canada	65,177	90,420
Germany	10,056	11,199

Source: NHTSA Report to Congress on CARS Program, December 2009.

One of the concerns about a vehicle retirement program, expressed prior to the CARS enactment, was that it would pull forward sales that would normally have been made in the following months and years. The experience with CARS shows that this is a valid issue, but it has had a limited impact thus far on the recovery of the U.S. retail motor vehicle market.

The major evidence that CARS had pulled sales forward occurred in September 2009, when U.S. motor vehicle sales fell 40% from the CARS-supported levels of August 2009. Nearly all major brands saw a fall-off in sales when “cash for clunkers” ended. Overall U.S. motor vehicles sales came in at a seasonally adjusted annual rate (SAAR) of 9.5% that month, similar to the lackluster performance in the first half the year and well below the SAAR of 14 million in August 2009.

The change was more modest, however, when compared to year-over-year sales: September 2009 sales were 23% lower than the same month in 2008. Compared to the same month in 2008, Ford’s sales in September 2009 fell by 5%, GM’s by 45%, Chrysler’s by 42%, Toyota’s by 13% and Honda’s by 20%. Only Hyundai saw a spike, with sales rising by 27%.²⁸

Fourth quarter U.S. auto sales—October through December—took on a more robust complexion, however, indicating that the pull-forward effects of CARS seemed fairly limited. October sales ran at 10.4 million SAAR, November’s at 10.9 million and December’s at 11.9 million.²⁹ Despite

²⁸ September 2009 data on auto sales is from *CNNMoney.com*, “Auto Sales Fall as Clunkers Rush Ends,” October 1, 2009.

²⁹ *ABCnews.go.com*, “Ford Surges as U.S. Auto Sales End Year on Uptick,” January 5, 2010 and *Automotive News*, “Ford, Hyundai and Toyota Lead Industry to 15% Gain,” January 5, 2010.

these gains during the year, 2009 was the worst year for U.S. car sales since 1982 and the lowest on a per capita basis since 1950.³⁰

Comparison to Programs in Other Major Industrial Countries

AVR³¹ programs have been popular in other countries around the world, from Japan, Korea and China in Asia to many European countries and Russia. (See **Table 5**.)

In Europe, at least 13 countries enacted AVR rebates and tax incentives in 2009.³² In addition to the European countries shown in **Table 5**, these countries also offered programs: The Netherlands, Portugal, Romania, Luxembourg, Cyprus, Slovakia, and Greece. Some European programs (such as the one in France) required that the new vehicle have tighter emissions standards, but others did not have such a requirement (such as the UK's).

One of the most-discussed programs has been Germany's, which provided vouchers for 2,500 Euro (roughly \$3,500)³³ toward the purchase of a new vehicle for scrapping a vehicle at least nine years old. It is credited with boosting auto sales during its one year duration by over 25%. These rebate programs had less dramatic impacts elsewhere, increasing auto sales in France by 4.2% and Austria by over 6%, for example. (In the European Union, auto sales in 2009 were 13.7 million units, down from 15.3 million vehicles sold in 2008 and lower than the 16-16.5 million vehicles sold each year earlier in the decade.)

The success of some European scrappage programs was evident soon after they were enacted in 2009. According to *BusinessWeek*, the German "cash for clunkers" program "caused auto sales to spike 21.5% in February [2009] and created the best sales quarter for GM's Opel brand in a decade."³⁴ In June 2009, European auto sales rose by 2.4%, "their first year-on-year rise in 14 months, thanks almost entirely to scrappage schemes in a dozen countries."³⁵ Some analysts say these programs may eventually lead to a "severe slump in car sales after the expiration of the incentives, which they say will artificially pull forward demand for new cars. 'We're definitely setting up problems for the future,'" said an auto industry analyst at UBS in London.³⁶ When the French offered a similar program in the 1990s, sales fell by 20% when it ended.³⁷

³⁰ *Automotive News*, "Analysts See Signs of Life After Miserable Year," January 11, 2010.

³¹ AVR is accelerated vehicle recovery.

³² Data in this section on European scrappage programs is sourced from the European Automobile Manufacturers Association (ACEA). Website viewed January 22, 2010.

³³ All currency conversions are from Washingtonpost.com, *World Currencies—Current Values and Conversion Tool*, June 22, 2009, <http://financial.washingtonpost.com/custom/wpost/html-currencies.asp>. 1 Euro = \$1.38. 1 Japanese Yen = \$0.0103. 1 Canadian dollar = \$0.882. 1 British pound = \$1.643.

³⁴ *BusinessWeek*, "Cash-for-Clunkers Proposals Gain Popular Traction," April 1, 2009.

³⁵ *Financial Times*, "US Drives Its Claws into Scrappage Deals," July 31, 2009.

³⁶ *Ibid*.

³⁷ *The Globe and Mail*, "The Ugly Economics Behind Europe's Car Scrappage Bonanza," May 16, 2009.

Similarly, Japan is offering a 250,000 Yen (about \$2,600) subsidy for turning in a car at least 13 years old.³⁸ The Japanese government plans to extend the program from its March 2010 deadline until September 2010.

The initial Japanese clunkers program did not permit U.S.-made vehicles to participate, but the extension will permit some low-emission U.S. cars to be eligible. Under Japanese car import rules, all vehicles are subject to an expensive testing procedure, the Type Approval System. For about 30 years, the Japanese government has offered an alternative, less costly certification system for automakers who sell only a limited number of models a year there. Known as the Preferential Handling Procedure, or PHP, it relies, in the case of U.S. automobiles, on EPA and other U.S. standards. The original Japanese clunkers program specifically excluded all PHP vehicles, which the government argued did generally not meet their AVR standards of low emissions and high fuel economy. In January 2010, the government decided to modify the program to permit certain PHP vehicles to qualify for purchase under the rebate program.

China's auto market, assisted by several purchased incentive programs, grew by 45% to over 13.6 million vehicles sales in 2009, boosting it for the first time to the largest automobile market in the world, replacing the United States in that category.³⁹ China's auto sales are expected to rise by 10% or more in 2010 according to some observers.

³⁸ Japan has recently agreed to extend its ATV program until September 2010.

³⁹ By comparison, in 2009, there were 10.4 million vehicles sold in the United States.

Table 5. Recent Foreign Fleet Modernization Programs in Major Industrial Countries

Country	Production and Sales Incentives
Canada	<p>The Canadian government approved C\$92 million to support a limited scrappage program for vehicles produced before 1996 when more stringent pollution laws were enacted. The "Retire Your Ride" program offers consumers C\$300 to scrap their older vehicle, a program administered by a nonprofit foundation. Although auto dealers and manufacturers called on the federal government to commit \$350 million to a scrappage program that would offer consumer a \$3,500 voucher to trade in cars that are at least 10 years old, the federal government did not enact the larger program.^a As much as 75% of Canadian vehicles are made elsewhere, and it was thought that clunkers program would do little to stimulate the Canadian economy.</p>
Europe	
France	<p>A fleet modernization plan was in effect for a year and provided motorists with a €1,000 (\$1,400) subsidy and a staggered tax rebate of up to €5,000 if they replaced and scrapped vehicles more than 10 years old for more fuel efficient vehicles. Eligible-purchase vehicles had to emit reduced carbon dioxide. The French government set aside €380 million for this program,^b which ended in December 2009; French sales rose nearly 11% in 2009. Proposed extensions of the program of up to a year—until the end of 2010—may be considered by the government.</p>
Germany	<p>Germany had one of the most successful fleet modernization programs, where consumers scrapping at least a nine-year-old vehicle received a €2,500 subsidy (\$3,500). Trade-ins had to have been certified as scrapped, with certain parts recycled. The government provided €5 billion to fund it.^c Eligible vehicles had to be more than 9 years old and meet older, Euro 4 emission standards. (The European Union's Euro 4 emissions were set in 2005; requirements for reduced nitrogen oxides and particulates are lower than for comparable U.S. and Japanese vehicles at that time.)</p> <p>A further tax rebate was available for those who purchased Euro 5/6 compliant vehicles. (Euro 5 standards took effect in 2009, raising the nitrogen oxide and non-methane hydrocarbon standard levels; Euro 6 standards will take effect for all vehicles in 2014.)The German scrappage program ran for 7 months, ended in September 2009, and is credited with boosting sales by over 23%.</p>
Italy	<p>Italy's 11-month scrappage program was based on a €2 billion stimulus package for auto and domestic goods industries, including an incentive of €1,500-5,000 to buy a new, less-polluting motor vehicle.^d Cars had to be more than 9 years old and exceed Euro 4 emissions guidelines. The basic €1,500 subsidy could be combined with other incentives (up to €5,000) for cars running on compressed natural gas, liquefied petroleum gas, electricity or hydrogen. New cars sales in 2009 were essentially flat.</p>
Spain	<p>Spain's scrappage program provided a €2,000 (\$2,800) subsidy and interest free loans for the purchase of a new car with low carbon dioxide emissions. Under the program, which ran for 11 months until October 1, 2009, cars had to be at least 10 years old to be eligible for trade and then had to be scrapped. The program also applies to used cars no more than five years old and requires that a scrapped car is at least 15 years old.^f Despite the scrappage incentive, new car sales in Spain fell by nearly 18%, a fact some attribute to the complexity of the Spanish program.</p>
United Kingdom	<p>With a total of £400 million budget, the UK program provided a "scrappage grant" that was available from May 2009 until February 2010 to car owners who turned in a car or van that was at least 10 years old. Owners received a £2,000 (\$3,300) subsidy, the cost of which is split evenly between automakers and the UK government.^g New car sales in the UK fell by over 6% in 2009.</p>

Country	Production and Sales Incentives
Asia	
Japan	A fleet modernization program is under way in Japan, with consumers eligible for a ¥250,000 (\$2,600) subsidy if they turn in their car (at least 13 years old). New cars must be used for at least a year. ^e The government extended the program until September 2010, modifying it to allow some low-emission US-made vehicles for the first time to be eligible for the clunkers program.
China	Under China's stimulus program, sales taxes were cut in half for small cars (under 1.6 liters). Consumers are encouraged to trade in older vehicles with poor emissions, for which there are rebates of \$450 to \$900. Rural areas were also targeted, with special incentives for farmers to buy cars, trucks and motorcycles. The government hopes to remove about 2.9 million vehicles under its year-long incentive program that ends in May 2010.
South Korea	The government implemented a temporary tax incentive program in May 2009, reducing taxes to retire an automobile made before 1999, up to a subsidy of 2.5 million Won (\$2,041). The program ran from May 1, 2009, until the end of the year. New car registrations rose by 3.4% for the year. ^h

Sources: Peterson Institute for International Economics, *Money for the Auto Industry: Consistent with WTO Rules?*, February 2009; *Does the Auto Bailout Undermine Global Trade Rules*, interview with Gary Hufbauer, February 26, 2009; Automotive Trade Policy Council, *Foreign Government Actions to Support Their Auto Industries*; also see notes below; European Automobile Manufacturers Association (ACEA), website viewed January 22, 2010. Information on Euro 4, 5, and 6 emissions standards from http://www.carmall.eu/emission_standards.html.

Note: This table highlights activities in some major industrial countries, but programs have also been enacted in Austria, Greece, Malaysia, The Netherlands, Portugal, Romania, Slovakia, Turkey, and Taiwan, Source: Automotive Trade Policy Council.

- a. CBC.ca, "Support car sales with \$350M 'scrappage' program, auto industry pleads," August 4, 2009.
- b. *The Wall Street Journal*, "In France, Oui to Bailout, Non to Layoffs," March 19, 2009.
- c. *The Wall Street Journal*, "Merkel Pledges Backing for Opel," April 1, 2009.
- d. *The Wall Street Journal*, "Italy Passes Stimulus Package," February 7, 2009.
- e. *Reuters*, "Update I - New Japanese Good For Car Sales-Nissan COO," April 10, 2009.
- f. *Automotive News Europe*, "Subsidies Lead to a Mixed May Sales Result in Europe," June 2, 2009.
- g. Deloitte Touche Tohmatsu, *Deloitte Says More Needed to Revitalize Ailing Automotive Industry*, March 23, 2009.
- h. Korea Automotive Manufacturers Association, "Reports & Statistics."

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