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REPORT BY THE U.S.

General Accounting Office

Replacing Government Sedans Yearly Would Result In Fuel And Cost Savings

Commercial rental companies are ahead of the Government in recognizing and taking advantage of the economics of a 1-year replacement cycle for rental sedans. To GAO's knowledge, the General Services Administration is the only large organization that replaces its rental fleet on a 6-year cycle.

By adhering to this replacement standard, General Services

- --incurs unnecessary maintenance costs,
- --does not take advantage of optimal resale value,
- --is not providing the most cost-efficient vehicle service, and
- --is not taking full advantage of opportunities to conserve fuel.

By converting to a 1-year replacement cycle, General Services could save about $9.1 million a year on lower maintenance costs and higher resale values. In addition, about 4.7 million gallons of gasoline a year--worth about $3.6 million--could be saved.

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MAY 8, 1979

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-158712

The Honorable Paul E. Goulding
Acting Administrator of
General Services

Dear Mr. Goulding:

This report discusses the potential for savings if the General Services Administration replaced its sedans annually instead of every 6 years.

The report contains recommendations to you on page 15. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen, Senate Committees on Governmental Affairs and on Environmental and Public Works; the Chairmen, House Committees on Government Operations and on Public Works and Transportation; and the Director, Office of Management and Budget.

Sincerely yours,

R. W. Gutmann
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE ADMINISTRATOR
OF GENERAL SERVICES

REPLACING GOVERNMENT SEDANS YEARLY WOULD RESULT IN FUEL AND COST SAVINGS

D I G E S T

The General Services Administration (GSA) could save ~~about $9.1 million annually in depreciation~~, maintenance, repair, and tire costs if it replaced the sedans in its motor pool annually. Also, because new sedans are more fuel efficient, General Services could save an additional $3.6 million in fuel costs and over 4.7 million gallons of gasoline each year. (See p. 3.)

In fiscal year 1977 General Services' interagency motor pool owned about 42,000 sedans with annual operating costs of $61 million. General Services' present policy--to replace the cars after 6 years or 60,000 miles--was set in 1947. Despite many changes in automobiles and fleet management practices, the Government's replacement criteria have not changed in over 30 years. (See p. 1.)

Commercial rental and leasing companies replace daily rental vehicles on a 1-year cycle and long-term lease vehicles every 2 to 3 years. As far as ~~GAO~~ could be determined General Services is the only large-scale manager of rental vehicles that replaces its fleet on a 6-year cycle. (See p. 2.)

Since 1954, 10 Government studies have shown that the current 6-year or 60,000-mile replacement standard for General Services sedans is not the most economical and should be shortened. Had General Services adopted GAO's 1971 recommendation to change to a 1-year replacement cycle, the Government could have saved over $46 million from fiscal years 1972 through 1977. (See pp. 2 and 3.)

Since General Services has not had experience in replacing its total sedan fleet annually, it does not know what improvements could be gained

Tear Sheet. Upon removal, the report cover date should be noted hereon.

--if it can process an estimated 42,000 vehicles in and out of its fleet annually;

--what the related costs for space, personnel, and transportation will be;

--how best to dispose of vehicles; and

--what the return on disposal sales will be. (See p. 14.)

Rec With the concurrence and cooperation of the Director, Office of Management and Budget, the Administrator of General Services should

--conduct a pilot study to test a 1-year replacement cycle in one or more of General Services' regional motor pools;

--adopt a 1-year replacement policy, if the test results are positive; and

--consider the merits of a 2-year cycle if the results of the pilot test prove that General Services cannot effectively manage a 1-year replacement cycle.

The Director, Office of Management and Budget, should monitor General Services' efforts and evaluate the feasibility of adopting a shorter replacement standard for other civil agencies and Department of Defense sedans. (See p. 16.)

General Services officials agreed that a shorter cycle would be more economical than the current 6-year replacement cycle, but they were not convinced that a 1-year cycle was best. They agreed that a pilot study should be conducted in line with GAO's recommendation. (See p. 17.)

Officials of the Office of Management and Budget raised some questions about the validity of GAO's estimates of savings and questioned the value of conducting the recommended pilot study. (See p. 17.) GAO believes the potential cost and fuel

savings involved amply support the need for a pilot study to explore the merits of replacing vehicles on a 1-year cycle.

Tear Sheet

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ABBREVIATIONS

DOD	Department of Defense
GAO	General Accounting Office
GSA	General Services Administration
OMB	Office of Management and Budget

CHAPTER 1

INTRODUCTION

As of September 30, 1977, Federal civilian agencies (excluding the U.S. Postal Service) owned and operated nearly 65,000 sedans. During fiscal year 1977, over 42,000 of these sedans were operated by the General Services Administration (GSA) in its interagency motor pool system at a cost of $61 million.

The Federal Property Management Regulations, issued by GSA, prescribe a replacement standard of 6 years or 60,000 miles, whichever occurs first for passenger vehicles. The regulations are mandatory and are applicable to all executive agencies, except the Department of Defense (DOD). DOD's replacement standard is 6 years or 72,000 miles.

DEVELOPMENT OF A REPLACEMENT STANDARD

On the basis of a study of fleet management practices in the late 1940s, the Bureau of the Budget, now the Office of Management and Budget (OMB), in cooperation with an interdepartmental motor equipment committee, developed a 6-year or 60,000-mile Government-wide replacement standard for motor vehicles. The standard was established by averaging the mileage practices reported by seven private firms which operated more than 7,000 automobiles.

In 1947, OMB reported its conclusions to the House Committee on Appropriations. The agency recommended that a 6-year or 60,000-mile replacement standard be included in the annual instructions for budget estimates sent to all Government agencies but that it not be incorporated into legislation. This standard was subsequently adopted by GSA and was included in the Federal Property Management Regulations.

The Government has not changed its replacement standard in over 30 years, despite the many changes in the automobile market, commercial fleet management practices, the size and complexity of GSA's fleet, the analytical tools available for managing fleets, and the maintenance and performance standard of the cars themselves.

COMMERCIAL FLEET OPERATIONS HAVE ADOPTED MUCH SHORTER REPLACEMENT STANDARDS

Commercial fleet vehicles are often replaced on a 1-, 2-, or 3-year time cycle.

For example, an official of a major commercial leasing company that operates a fleet of about 60,000 vehicles informed us that, on the average, the daily rental cars owned and sold by his company in 1977 were 13-1/2 months old and had been driven about 24,000 miles.

Officials of another commercial rental company that operates about 60,000 vehicles for daily rental and 40,000 for long-term leasing stated that their daily rental vehicles are replaced at about 20,000 miles or after 9 to 15 months and their leased vehicles are replaced on a 24- to 36-month cycle.

The American Automotive Leasing Association, which represents 125 leasing companies that operate over 600,000 vehicles, reported in 1977 that the companies' long-term leased vehicles were operated an average of 26.1 months before replacement.

The above figures indicate that commerical rental and leasing companies replace daily rental vehicles on a 1-year cycle and long-term lease vehicles every 2 to 3 years. To our knowledge, GSA is the only large-scale manager of rental vehicles that replaces its fleet on a 6-year cycle.

PREVIOUS STUDIES IGNORED

Since 1954, 10 Government studies have shown that the current 6-year or 60,000-mile replacement cycle for GSA sedans is not the most economical and should be shortened. These studies recommended replacement cycles varying from 1 to 4 years with annual savings estimated at $2.5 million to $10.3 million. The various designs of these studies show that a standard less than 6 years remains more economical.

These studies also show that opportunities for saving the Government money have been lost by not converting to a shorter replacement cycle and that, despite changes in the cost factors related to owning and operating sedans, a shorter cycle is still more economical. (See app. VI for a more thorough discussion of past studies.)

In the following chapters, we discuss how GSA could significantly save operational and fuel costs by adopting a 1-year replacement cycle for its current vehicle fleet.

CHAPTER 2

A SHORTER REPLACEMENT CYCLE OFFERS SUBSTANTIAL SAVINGS

As cars become older, their resale values decrease while their maintenance, repair, and tire costs increase. The resale value of cars decreases not only because the cars become obsolete due to restyling and technological innovations, but also because they lose operating efficiency due to wear and tear. Shortening the current replacement cycle would lessen depreciation, maintenance, repair, and tire costs.

In June 1971, we reported to the Congress that adopting a 1-year replacement cycle for sedans in GSA's interagency motor pools would result in the Government saving about $5.1 million annually. 1/ Had our recommendation been adopted in 1972, we estimate that the Government could have saved over $46 million from fiscal years 1972 through 1977. Presently, the opportunity for savings is even greater. We now estimate that the Government could save over $9 million annually in depreciation, maintenance, repair, and tire costs if GSA adopted a 1-year replacement cycle.

Adopting the annual replacement cycle could save an additional $3.6 million in fuel costs and over 4.7 million gallons of gasoline each year because more fuel-efficient sedans would be introduced into the fleet each year.

ESTIMATED SAVINGS OF A 1-YEAR REPLACEMENT CYCLE

The costs associated with owning and operating a sedan under various replacement cycles are (1) depreciation costs, (2) preparation costs, (3) reconditioning and selling costs, (4) maintenance, repair, and tire costs, and (5) interest on investments. Depreciation costs, as used in this report, are the differences between the acquisition cost to the Government of a new sedan and its resale value. Some operating costs, such as gas and oil, do not vary significantly with the age of a car.

1/"Potential Savings by Replacing Government-owned Sedans Each Year" (B-158712, June 9, 1971).

Adopting a 1-year replacement cycle for the sedans in GSA's interagency motor pools would result in substantial savings because (1) maintenance and repair costs are lowest during the first year a sedan is in service and (2) depreciation costs during the first year of ownership are substantially offset by the discount obtained by the Government when it purchases vehicles. Also, GSA could save up to an additional $21 million in fuel costs and over 26 million gallons of gasoline over the next 6 years since a 1-year cycle would accelerate the replacement of less fuel-efficient vehicles.

We compared the economic benefits of 1- to 6-year replacement cycles under four different methods:

--A historical analysis comparing the actual costs of operating the total GSA sedan fleet from 1972 through 1977 with what the estimated costs would have been under a 1-year replacement cycle.

--A present value analysis of the cost of operating one sedan.

--A computerized cash flow analysis of the operating costs.

--A comparison analysis of unadjusted operating costs.

In addition, we estimated the fuel savings of the accelerated replacement of less fuel-efficient sedans.

Our comparisons, where applicable, were based on

--the assumption that GSA's motor pools would perpetually continue,

--the present value of owning a sedan perpetually under 1- to 6-year replacement cycles at an interest rate of 8-1/4 percent (the average yield on outstanding marketable Treasury obligations) and a rate of 10 percent (the rate recommended by OMB for economic analyses),

--an average cost of $3,384 for new sedans, the price GSA paid for sedans in fiscal year 1977, and

--an estimated inflation rate of 6 percent.

Our analyses indicate that the Government could have saved about $54 million if GSA had adopted a 1-year cycle in fiscal year 1972, and it can presently save about $9 million annually with a 1-year cycle. In addition, we project that a 1-year cycle could result in average yearly savings in fuel costs of $3.5 million over the next 6 years.

HISTORICAL ANALYSIS: SAVINGS COULD HAVE BEEN REALIZED

In this analysis we compared the actual costs of operating the sedans in GSA's interagency motor pools from fiscal years 1972 through 1977 with our estimate of these same costs assuming the sedans had been replaced annually. If GSA had adopted a 1-year replacement cycle in 1972, we estimate that the Government could have saved approximately $46 million over the ensuing 6-year period as shown below.

Savings That Could Have Been Realized
If GSA Had Adopted A 1-Year Cycle
In Fiscal Year 1972

Year	Estimated first year cost for one sedan (note a)	Number of sedans	Estimated cost of fleet under 1-year cycle	Actual cost of fleet under 6-year cycle	Cost difference or lost savings
			----------(000 omitted)----------		
1972	$467	27,916	$ 13,037	$ 20,373	$ 7,336
1973	636	33,954	21,595	25,898	4,303
1974	455	38,250	17,404	34,046	16,642
1975	450	36,887	16,599	17,301	702
1976	446	42,848	19,110	33,837	14,727
1977	551	46,926	23,787	34,348	10,561
Total			$111,532	$165,803	$54,271

a/Average 1-year operating cost per sedan under a 1-year replacement cycle. Details of our calculations are shown in app. I.

The cost (approximately $8 million) of additional capital required to convert to a 1-year cycle was excluded from the above calculations.

Despite major changes in GSA's fleet operations, the comparison shows that a 1-year replacement cycle would have

been far more economical. Some of the changes considered in our analysis that took place in the last 6 years are (1) GSA's fleet of sedans expanded from 27,900 in 1972 to over 42,000 in 1977, (2) the average acquisition price for a GSA sedan went from $2,456 in 1972 to $3,384 in 1977, (3) the GSA fleet started shifting away from large standard and intermediate size cars to compacts and subcompacts, and (4) the resale value of GSA's large cars decreased dramatically in 1974 because of the fuel crisis.

PRESENT VALUE ANALYSIS

To compare replacement cycle alternatives on an equal economic basis, we considered the costs of each alternative at the same point in time or at their "present value." Our comparisons of the present values of the costs of owning a sedan under 1- to 6-year replacement cycles are shown below in order of economy. 1/

Present Value Cost of Replacement Cycles

Present value at 8.25 percent		Present value at 10 percent	
Cycle length	Cost	Cycle length	Cost
1	$ 9,850	1	$8,721
4	10,736	4	9,335
2	10,988	6	9,593
6	11,142	2	9,618
3	11,294	3	9,826
5	11,420	5	9,845

The comparisons show that a 1-year replacement cycle is the most economical.

COMPUTERIZED CASH FLOW ANALYSIS

As a corollary analysis, we used the methodology contained in the GSA report, "Study of Sedan Replacement Cycles Within the GSA Interagency Motor Pool System." The analysis also shows that a 1-year cycle is the most economical.

The GSA computerized model is designed to express the costs of the 1- to 6-year replacement cycles in three ways:

1/Details of our calculations are shown in apps. II and III.

--"Straight" with no modifications regarding inflation or the time value of money (present value).

--Present value with no inflation.

--Present value of inflated dollars at 6 percent.

In addition, the GSA model shows the cycle costs in terms of costs per mile as well as total dollar figures.

The GSA methodology differs from our analysis in several ways. We used perpetuity factors which were designed to put all six cycles on the same comparison level, while the GSA model projected the analysis over a 60-year period. Another major difference between our approach and GSA's methodology is GSA's evaluation of maintenance, repair, and tire costs as "flow" expenses occurring over the course of the year rather than as "spot" expenses occurring only at the end of each year.

The results of the analyses using GSA's methodology agree with our cost comparisons and demonstrate that a 1-year cycle is the most economical. The order of economy changes under the various cost analyses, as the chart on the following page shows. However, in each case, a 1-year replacement cycle remains the most economical.

Summary of Analyses of 1-to-6-year Replacement Cycles

Cycle length (years)	Straight cost	Present value cost: Without inflation	Present value cost: With inflation at 6 percent (note a)
	(Total dollar cost)		
1	$31,440	$8,677	$15,473
2	38,730	9,645	18,120
3	38,900	9,448	17,976
4	39,855	9,392	18,146
5	44,952	9,920	19,847
6	44,430	9,681	19,488
	(Cost per mile)		
1	$0.03444	$0.00950	$0.01695
2	.04311	.01074	.02017
3	.04385	.01065	.02026
4	.04509	.01062	.02053
5	.05128	.01132	.02264
6	.05207	.01135	.02284

a/GSA's computerized model analysis used the 6-percent inflation factor; however, increasing the inflation factor does not alter the final results.

UNADJUSTED COST ANALYSIS OF MAINTAINING ONE SEDAN

We compared the annual costs of maintaining one sedan under the current 6-year or 60,000-mile cycle with the estimated annual cost of a 1-year replacement cycle. The analysis compares the unadjusted major costs associated with owning and operating a sedan.

The extent of the benefits that would result from the GSA's 42,000 sedans being converted to a 1-year replacement cycle is indicated by the estimated annual savings of about $9.1 million, as shown in the following chart. 1/

Annual cost of owning one sedan under:		
6-year replacement cycle:		
Cost of sedan	$3,384	
Maintenance, repair, and tire costs	1,711	
Preparation, reconditioning, and selling costs	153	
Total	$5,248	
Less resale value of a 6-year old sedan	805	
Total	$4,443	
Average annual costs ($4,443 ÷ 6)		$740.50
1-year replacement cycle:		
Cost of sedan	$3,384	
Maintenance, repair, and tire costs	120	
Preparation, reconditioning, and selling costs	153	
Total	$3,657	
Less resale value of a 1-year old sedan	3,133	
Total	$524	
Annual costs		$524.00
Annual savings for one sedan by converting to a 1-year replacement cycle		$216.50
Annual savings for all sedans in GSA's motor pools by converting to a 1-year replacement cycle (42,000 X $216.50)		$9,093,000

1/Details of our calculations on replacement cycles of from 1 to 6 years are shown in app. IV.

The greater economy of a 1-year replacement cycle is attributable to two factors:

--Maintenance, repair, and tire costs during the first year of ownership are lower than the costs during subsequent years.

--The discount obtained by the Government when it purchases sedans substantially offsets the depreciation factor during the first year of ownership.

In addition, converting to a 1-year replacement cycle would result in upgrading the quality of the sedan fleet. No cars would be more than 1 year old, and downtime for repairs would be minimized, increasing the number available for use and decreasing the total number required by the interagency motor pools.

POTENTIAL FUEL SAVINGS

We estimate that GSA could save about $21 million in fuel costs over the next 6 years if it would adopt a 1-year sedan replacement cycle. The savings would result from the accelerated replacement of less fuel-efficient sedans.

The Energy Policy and Conservation Act of 1975, established miles per gallon standards to be achieved by new sedans from 1978 through 1985. Executive Order 12003 requires the Federal Vehicle Fleet to average more miles per gallon than the national standard, as shown in the following chart.

Fleet Average Fuel Economy Objectives

Year	National standard	Federal fleet average
1978	18	20
1979	19	22
1980	20	24
1981	22	26
1982	24	28
1983	26	30
1984	27	31
1985	27.5	31.5

Our analysis of the fuel savings is based on (1) a constant fleet size of 42,000 sedans, (2) an average annual mileage of 12,000 per sedan, (3) a cost of gasoline at 75 cents per gallon, and (4) the presumption that the new sedans will meet the fuel standards for the Federal fleet.

We compared the estimated fuel usage of GSA's sedan fleet under the current 6-year replacement cycle to a 1-year replacement cycle. The results of our comparison are shown in the following chart.

Estimated Fuel Savings If GSA Converts To A 1-Year Cycle

Fiscal year	Estimated fuel usage (gallons) 6-year cycle	1-year cycle	Fuel saved	Cost savings
	(000 omitted)			
1978	30,400	25,000	5,400	$4,050
1979	27,100	23,000	4,100	3,075
1980	25,200	21,000	4,200	3,150
1981	25,200	19,000	6,200	4,650
1982	22,900	18,000	4,900	3,675
1983	20,800	17,000	3,800	2,850
Average savings:			4,767	$3,575

A 1-year replacement cycle would result in estimated savings of about $3.6 million and 4.7 million gallons of gasoline.

INVESTMENT COSTS NEEDED TO CONVERT FLEET TO A 1-YEAR CYCLE

We estimate that about $142 million would have been required to replace the 42,000 sedans in the GSA motor pools in fiscal year 1978. This amount would be offset by about $76 million, the estimated resale value of the sedans in the current GSA fleet. Therefore, the total net additional capital required for immediate conversion to a 1-year cycle would be about $66 million.

This investment would be recovered in about 5 years considering the savings we project by converting to a 1-year replacement cycle--$9.1 million yearly savings on maintenance and ownership costs and about $3.6 million yearly savings on fuel costs.

CHAPTER 3

ADDITIONAL FACTORS THAT WILL AFFECT THE 1-YEAR REPLACEMENT CYCLE

To realize the full benefits of a 1-year sedan replacement cycle, GSA must

--provide the space and manpower required to handle the additional cars,

--make quantity buys earlier in the model year, and

--recondition and dispose of its older vehicles in such a way as to maximize resale revenue.

Since GSA has not had experience in replacing its vehicles within a 1-year time frame, it was not possible to quantify some of the costs associated with this standard.

PROCESSING VEHICLES

To replace one-sixth of its fleet annually, GSA disposes of and buys about 7,000 new sedans each year. The actual processing of new vehicles into the system and disposing of old vehicles is handled by each individual motor pool. Under a 1-year replacement cycle, GSA would have to buy and dispose of about 42,000 sedans each year.

Since GSA has no experience in processing this many vehicles on a yearly turnover, it does not know if the vehicles can be processed through its present system or if alternate methods will be needed. Also, GSA does not know what additional costs for personnel, transportation, and space will be incurred.

NEED FOR MORE TIMELY PROCUREMENT OF NEW CARS

To take maximum advantage of the economy available from a 1-year replacement cycle, cars should be procured and delivered early in the model year. Cars purchased in quantity cost less when they are put into service early, rather than late in the model year. In addition, vehicles delivered to the fleet late in the model year have incurred a year's depreciation before being used.

Under a 1-year replacement cycle, the number of vehicles being replaced would be known; therefore, GSA could award a procurement contract for delivery of vehicles early in the model year. Under its current procurement procedures, GSA

has a lengthy process for consolidating agency requirements; soliciting, receiving, and evaluating bids; awarding contracts; and waiting for delivery of vehicles. This process results in GSA making volume purchases twice each year. Many of GSA's cars are bought late in the model year, and some are received just before introduction of next year's models.

GSA needs to revise its procurement process to allow for delivery of its vehicles earlier in the model year.

In our present value analysis of the costs of operating the GSA fleet, we assumed that GSA would receive its new cars and dispose of its old cars by April of each year. We felt this was a realistic time frame under a 1-year replacement cycle since the majority of the sedan requirements would not change every year. An annual replacement cycle would allow GSA to purchase sedans earlier in a model year.

DISPOSAL CONSIDERATIONS

The disposal of old vehicles must be coordinated with the arrival of new ones. Annual replacement of the entire fleet will require adjustments in the present system.

Current regulations require that old vehicles be taken out of service within 1 month after replacement vehicles have been delivered.

Under a 1-year replacement cycle, both deliveries and disposals will have to be staggered over several months because of manpower and space limitations.

GSA has had no experience in reconditioning and selling newer cars from its interagency motor pools. It will be necessary to determine the most favorable level of reconditioning needed for 1-year-old sedans. This reconditioning is likely to differ from what is currently considered acceptable for 6-year-old cars. GSA will also have to develop marketing techniques to reach a larger group of buyers who are willing to pay a premium price for 1-year-old cars, and it will have to determine if it can sell its used cars at fair market value.

We believe these problems should be resolved before GSA converts its entire sedan fleet to a 1-year replacement cycle. One way to accomplish this would be to test a 1-year replacement cycle in one or more of GSA's regional motor pools. If the results of the pilot test prove that GSA could not effectively manage a 1-year replacement cycle, a 2-year cycle could be considered.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

Commercial rental companies are ahead of the Government in recognizing and taking advantage of the economics of a 1-year replacement cycle for rental sedans. To our knowledge GSA is the only large organization that replaces its rental fleet on a 6-year cycle.

The current 6-year or 60,000-mile sedan replacement cycle used by GSA is not the most economical. By adhering to this replacement standard GSA (1) incurs unnecessary maintenance costs, (2) does not take advantage of the highest resale value on disposal of vehicles, (3) is not providing the most cost-efficient vehicle service to its customers, and (4) is not taking full advantage of opportunities to conserve fuel.

By converting to a 1-year replacement cycle, GSA could realize about $9.1 million per year on maintenance savings and increased resale value. In addition, fuel savings of about $3.6 million per year could be achieved.

We believe GSA should adopt a 1-year replacement cycle for the sedans in its interagency motor pools. However, we believe GSA needs to resolve the operational problems discussed in chapter 3 before converting its entire fleet.

We recommend that the Administrator of General Services, with the concurrence and cooperation of the Director, OMB,

--conduct a pilot study to test a 1-year replacement cycle in one or more of GSA's regional motor pools,

--adopt a 1-year replacement policy if the test results are positive, and

--consider the merits of a 2-year cycle if the results of the pilot test prove that GSA cannot effectively manage a 1-year replacement cycle.

In addition, we recommend that the Director, OMB, monitor GSA's efforts and evaluate the feasibility of adopting a shorter replacement standard for other civil agencies' and DOD's sedans.

CHAPTER 5

AGENCY COMMENTS AND OUR EVALUATION

We met with staff officials of GSA and OMB to obtain their views on our findings and recommendations.

GSA COMMENTS

Although GSA officials did not concede that a 1-year replacement cycle is best, they did agree that the current 6-year cycle is not the most economical and should be changed to a shorter cycle. They also agreed with our recommendation that a pilot study be conducted to test a 1-year replacement cycle. They told us that such a study would provide them with information on how the existing method of procuring, processing, and disposing of vehicles should be changed if they were to convert to a 1-year cycle.

GSA officials told us that their ability to conduct a pilot study was contingent upon concurrence and funding by OMB.

OMB COMMENTS

Knowledgeable OMB staff officials were not convinced that a 1-year replacement cycle would be the most economical choice. These officials told us they thought our position was not persuasive because our report

--assumed that the automobile industry would continue to sell automobiles to the Federal Government at very low prices on volumes several times larger than currently used,

--failed to take into account the likely adverse political reaction to a 1-year replacement cycle on the part of the general public, and

--had not considered some technical cost adjustments involving excise taxes that might well be biasing the results in the direction of shorter replacement cycles.

OMB officials also pointed out that GSA had not been able to sustain the 6-year or 60,000-mile replacement criteria for all vehicles because of budgetary limitations. However, the Congress has been sent a fiscal year 1979 supplemental budget request which, if approved, should make it possible to achieve and maintain a 6-year cycle. Planned improvements

in GSA motor pool performance that are likely to result from achieving the 6-year or 60,000-mile standard should be considered before deciding to make a radical change in the policies for replacing automobiles.

These officials also told us that a test of a 1-year replacement cycle would not help resolve any of the above issues, although consideration should be given to the feasibility and cost of shifting work assignments in GSA motor pools away from maintenance activities toward purchasing, processing, and disposal activities, as would be required by any change to shorter replacement cycles.

In our analysis we used the current acquisition price because high level representatives of the automobile manufacturing industry told us that the price of vehicles sold to GSA should not go up if there were increases in the numbers of vehicles purchased. In fact, one representative told us that larger discounts might be given if the number of vehicles purchased increased.

As to OMB's concern about public opinion, although there may be some adverse reaction, we believe the large majority of the general public would welcome a change in Government vehicle procurement policies and practices that would save millions in operations and conserve fuel.

Concerning excise taxes, since taxes are not involved in the procurement of GSA vehicles, we believe that cost adjustments for these taxes need not be included in our evaluation.

We agree with the OMB comment that GSA has not been able to sustain its 6-year replacement cycle because of funding limitations. However, these limitations were usually imposed by GSA itself or by OMB and not by the Congress. If a shorter replacement cycle is not adopted, then funding to achieve and sustain the 6-year cycle is a good objective that should be pursued. A sustained 6-year cycle should improve vehicle operations, but it does not alter the fact that a shorter cycle is far more economical.

A pilot test of a 1-year replacement cycle would not resolve the issues voiced by OMB officials, but it should provide valuable information on the feasibility of converting to a 1-year cycle. In chapter 3 of the report we point out that to realize the full benefits of a 1-year replacement cycle, GSA must study and evaluate its procurement, processing, and disposal activities to determine if it could physically manage a shorter replacement cycle with their current resources.

In summary, we believe that OMB should support and encourage GSA to conduct a pilot test to explore the merits of replacing vehicles on a 1-year cycle. Otherwise millions of dollars of potential savings will be missed and the fuel conservation advantages will be lost.

CHAPTER 6

SCOPE OF REVIEW

Our review was directed toward determining the best replacement standard for sedans in GSA's interagency motor pools. We reviewed reports on studies of replacement standards prepared by GSA and other Government agencies and analyzed cost and statistical data developed by GSA for a report on vehicles replacement standards. We also reviewed the National Automobile Dealers Association prices for used cars and discussed replacement standards with officials of large commercial rental motor vehicle fleets.

Our review was conducted primarily at GSA headquarters, Washington, D.C.

ESTIMATED FIRST YEAR COST FOR ONE SEDAN (note a)

Year	1972	1973	1974	1975 (note b)	1976	1977
Acquisiton cost	$2,456	$2,551	$2,787	$ -	$2,994	$3,384
Preparation cost	28	28	28	-	28	28
Maintenance and repair costs	143	82	82	-	134	88
Tire costs	54	29	38	-	42	59
Reconditioning cost	75	75	75	-	75	75
Selling cost	50	50	50	-	50	50
Total	2,806	2,815	3,060	-	3,323	3,684
Less Resale Value	2,339	2,179	2,605	-	2,877	3,133
Total	$ 467	$ 636	$ 455	$450	$ 446	$ 551

a/See app. V for source of cost and revenue items.

b/Total cost for 1975 is an average of 1974 and 1976 since GSA did not purchase any 1975 models.

APPENDIX I

COST OF OPERATING ONE SEDAN

UNDER REPLACEMENT

CYCLES OF 1 THROUGH 6 YEARS

AT AN INTEREST RATE OF 8.25 PERCENT (note a)

Column 1 cycle period (year)	Column 2 maintenance	Column 3 present value	Column 4 (2x3)	Column 5 cumulative present value	Column 6 acquisition plus col. 5	Column 7 col. 6 minus trade-in (note b)	Column 8 perpetuity factor (note c)	Column 9 (7x8)	Column 10 total cost
1	$120	0.923788	$111	$ 111	$3,523	$ 522	12.12121	$6,327	$ 9,850
2	146	.853383	125	236	3,648	1,261	5.8205	7,340	10,988
3	217	.788345	171	407	3,819	2,007	3.7247	7,475	11,294
4	327	.728263	238	645	4,057	2,492	2.6800	6,679	10,736
5	453	.672760	305	950	4,362	3,433	2.0559	7,058	11,420
6	448	.621488	278	1,228	4,640	3,960	1.6419	6,502	11,142

Col. 2 = Maintenance, repair, and tire costs.
Col. 3 = Present value factor with a discount rate of 8-1/4 percent.
Col. 5 = Cumulative maintenance, repair, and tire costs.
Col. 6 = Acquisition price $3,384 plus col. 5 plus $28 new car preparation cost.
Col. 7 = Col. 6 minus resale (trade-in) value b/ plus $125 disposal preparation cost.
Col. 8 = Perpetuity factor = 1/(i+1)n-1: i = interest rate; n = number of years in cycle.
Col. 10 = Total cost of ownership (col. 6 plus col. 9).

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a/See app. V for source of cost factors.

b/Resale value = yr. 1, $3,126; yr. 2, $2,512; yr. 3, $1,937; yr. 4, $1,690; yr. 5, $1,054; yr. 6, $805.

c/The cycle costs in col. 7 cannot be compared directly with each other because they are not on an equal basis. For example, the costs of a 1-year cycle are incurred during a 1-year period, whereas the costs of a 6-year cycle are spread unevenly over a 6-year period. Applying the perpetuity factors shown in this col. will transform the cycle costs of col. 7 into present values of perpetuities; thus, putting all the cycles on an equal footing.

APPENDIX II

COST OF OPERATING ONE SEDAN

UNDER REPLACEMENT

CYCLES OF 1 THROUGH 6 YEARS

AT AN INTEREST RATE OF 10 PERCENT (note a)

Column 1 cycle period (year)	Column 2 maintenance	Column 3 present value	Column 4 (2x3)	Column 5 cumulative present value	Column 6 acquisition plus col. 5	Column 7 col. 6 minus trade-in (note b)	Column 8 perpetuity factor (note c)	Column 9 (7x8)	Column 10 total cost
1	$120	0.909091	$109	$ 109	$3,521	$ 520	10.0000	$5,200	$8,721
2	146	.826446	121	230	3,642	1,255	4.7619	5,976	9,618
3	217	.751315	163	393	3,805	1,993	3.0210	6,021	9,826
4	327	.683013	223	616	4,028	2,463	2.1547	5,307	9,335
5	453	.620921	281	897	4,309	3,380	1.6380	5,536	9,845
6	448	.564474	253	1,150	4,562	3,882	1.2961	5,031	9,593

Col. 2 = Maintenance, repair, and tire costs.
Col. 3 = Present value factor with a discount rate of 10 percent.
Col. 5 = Cumulative maintenance, repair, and tire costs.
Col. 6 = Acquisition price $3,384 plus col. 5 plus $28 new car preparation cost.
Col. 7 = Col. 6 minus resale (trade-in) value b/ plus $125 disposal preparation cost.
Col. 8 = Perpetuity factor = $1/(i+1)n-1$: i = interest rate; n = number of years in cycle.
Col. 10 = Total cost of ownership (col. 6 plus col. 9).

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a/See app. V for source of cost factors.

b/Resale value = yr. 1, $3,126; yr. 2, $2,512; yr. 3, $1,937; yr. 4, $1,690; yr. 5, $1,054; yr. 6, $805.

c/The cycle costs in col. 7 cannot be compared directly with each other because they are not on an equal basis. For example, the costs of a 1-year cycle are incurred during a 1-year period, whereas the costs of a 6-year cycle are spread unevenly over a 6-year period. Applying the perpetuity factors shown in this col. will transform the cycle costs of col. 7 into present values of perpetuities; thus, putting all the cycles on an equal footing.

APPENDIX III

COST (note a) OF OPERATING ONE SEDAN UNDER REPLACEMENT CYCLES OF 1 THROUGH 6 YEARS UNADJUSTED (note b)

	1-year cycle	2-year cycle	3-year cycle	4-year cycle	5-year cycle	6-year cycle
Acquisition cost	$3,384	$3,384	$3,384	$3,384	$3,384	$3,384
Preparation cost	28	28	28	28	28	28
Maintenance and repair costs	64	170	341	603	983	1,368
Tire costs	56	96	142	207	280	343
Reconditioning cost	75	75	75	75	75	75
Selling cost	50	50	50	50	50	50
Total	3,657	3,803	4,020	4,347	4,800	5,248
Less Resale Value	3,133	2,512	2,075	1,960	1,054	805
Total	$ 524	$1,291	$1,945	$2,657	$3,746	$4,443

Note: Lines 3 and 4 are cumulative costs.

Comparison Of Total Costs Of Owning And Operating One Sedan Under Various Replacement Cycles For A 6-Year Period

1-year cycle	6 x $ 524 = $3,144
2-year cycle	3 x $1,291 = $3,873
3-year cycle	2 x $1,945 = $3,890
6-year cycle	1 X $4,443 = $4,443

a/See app. V for source of cost factors.

b/Excluded perpetuity and interest factors.

APPENDIX IV

SOURCE DATA

1. Acquisition cost--average price GSA paid for all interagency motor pool sedans purchased in the applicable fiscal year.

2. Preparation cost--estimated cost of labor required to process a new sedan into the fleet. This includes mechanic's time to check the car and apply license plates and decals and clerk's time to prepare documents.

3. Maintenance and repair costs--average direct costs incurred by motor pool sedans in 1 fiscal year. The figures are derived from GSA's statistical and cost reports.

4. Tire costs--average direct costs incurred by motor pool sedans in 1 fiscal year. The figures are derived from GSA's statistical and cost reports.

5. Reconditioning cost--estimated average cost GSA would incur for cleaning and minor repairs in preparation for sale.

6. Selling cost--estimated average cost for arranging to sell vehicles. This includes auctioneers' salaries and travel expenses, advertising costs, and other staff hours required to take a sedan out of service and to make a sale.

7. Resale value--medium between the loan value and the retail value of cars similar to those in GSA's fleet. Prices were obtained from the National Automobile Dealers Association guide.

PRIOR REPLACEMENT STUDIES

Since 1954, 10 Government studies have shown that a replacement cycle shorter than the Government's 6-year or 60,000-mile cycle (and practices) would be more economical. Each study indicated that substantial reductions in maintenance, repairs, and tire and depreciation costs could be achieved by using a shorter replacement cycle.

STUDIES MADE BETWEEN 1954 AND 1970

Five studies made between 1954 and 1970 all supported a shorter replacement cycle; however, they were neither uniform in design nor recommendations. Some studies looked at the total direct costs of owning one car for various periods of time; others computed the cost-per-mile of owning cars of various ages. Some studies considered installation and disposal costs; others ignored them. Two studies considered the entire Federal fleet; others were concerned only with GSA's sedans or sedans and station wagons. Some studies based their findings solely on an economic analysis of the identifiable costs of operating a fleet under various cycles; others included nonquantifiable factors, such as the difficulty of changing the system to accommodate greater turnover. And one study recommended a 4-year cycle because it would require the least additional capital outlay.

These studies recommmended replacement standards varying from 1 to 4 years, with annual savings estimated at $2.5 million to $5 million. The important thing about these studies, considering the different approaches, is that, no matter how it is viewed, a standard substantially less than 6 years remains more economical.

OMB did not concur with the recommendations for a shorter replacment cycle for the following recurring reasons:

--There were higher priorities for the Federal dollar than providing the capital required to convert to a shorter cycle.

--The cost figures were outdated.

--GSA had not replaced all the vehicles it could under the current 6-year or 60,000-mile cycle.

STUDIES MADE IN THE 1970s

The five Government studies on sedan replacement cycles made in the 1970s are discussed in greater detail because their analytical techniques and cost data are more relevant to this study.

OUR JUNE 1971 REPORT TO THE CONGRESS

In a report entitled "Potential Savings by Replacing Government-Owned Sedans Each Year," we informed the Congress that replacing GSA's sedans each year could save the Government about $5.1 million annually.

The report recommended that GSA (1) adopt a 1-year replacement standard for sedans in its interagency motor pools, (2) revise the Federal Property Management Regulations to require other Federal civil agencies to adopt a 1-year replacement standard for sedans, and (3) examine the feasibility of adopting a 1-year replacement standard for station wagons and light trucks in the civilian fleet. GSA agreed with the conclusions and concurred with the recommendations.

The Deputy Director, OMB, commenting on our draft report in a November 20, 1970, letter, agreed that a 1-year replacement standard would result in some long-term savings but disagreed with our assumption that the resale value of used cars would increase in proportion to the cost of new cars. He pointed out that a relatively small increase between resale value and purchase price could change the best replacement cycle. He was also concerned with the amount of capital investment required to convert to a 1-year cycle. He recommended continuing and evaluating both the 6-year or 60,000-mile replacement standard.

In 1973, in response to a congressional inquiry, OMB again explained why it did not support our recommendations. In a July 5, 1973, letter OMB stated that the 1-year replacement policy was "unfavorable" and that our recommendations were based on "out-of-date information."

OMB said that the Government's purchase price for new sedans had risen sharply because of two new statutes (1) Public Law 93-423, Additional Systems and Equipment Act (Sept. 26, 1970) which gave GSA authority to purchase optional features on vehicles without a price limitation and (2) Public Law 92-49 (July 9, 1971) which increased the

statutory price limit on basic sedans and station wagons. According to OMB, such price increases made longer retention periods more economical.

GSA STUDY REPORT--JUNE 1974

In 1974, GSA prepared a report, "Review of Sedan Replacement Criteria," in which it recommended, among other things, that (1) passenger cars and station wagons be operated for 3 model years or 30,000 miles, (2) procurement procedures be reviewed to determine if vehicles can be secured early in the model year, and (3) more care be taken in reconditioning vehicles before disposal.

GSA estimated that it would take $41.4 million to convert to the 3-year replacement cycle and that this change would result in a range of savings from $4.2 million to $10.3 million annually.

GSA STUDY REPORT--FEBRUARY 1975

In another report, "Review of Sedan and Station Wagon Replacement Criteria," dated February 1975, GSA concluded that annual replacement was more favorable. On the basis of cost-per-mile figures, GSA estimated that replacing sedans and station wagons each year could save the Government $4.9 million annually. Conversion to a 1-year cycle would require additional capital of about $45.9 million and a payback period of 9.4 years.

In this report, GSA recommended that regulations be written to allow management some discretion in selecting cars for replacement.

GSA STUDY REPORT--JUNE 1977

In response to an OMB request, GSA prepared a report entitled "Study of Sedan Replacement Cycles Within the GSA Interagency Motor Pool System." This report recommended that (1) GSA change to a 3-year or 50,000-mile replacement cycle phased in over a period of time (preferably 6 years) and (2) this cycle be periodically reexamined because future costs, resale values, and mileage trends could vary.

On the basis of a cost-per-mile figure, GSA estimated that the 3-year replacement cycle would save $2.2 million annually. It also estimated that the new additional capital

required for conversion to a 3-year cycle phased in over 7 years would be $28.1 million.

In this study, the 1-year replacement cycle actually proved to be most economical. However, when a $450 increase in acquisition price was added to the 1- and 2-year cycles, the third year became the most advantageous. The $450 increase was based on the assumption that manufacturers might raise the price of sedans sold to GSA if they were turned over the third year. GSA thought the manufacturers might do this to protect their new and used car dealers.

PRESIDENT'S REORGANIZATION PROJECT REPORT--JULY 1978

The President's Reorganization Project report, "Supply and Support Services," dated June 15, 1978, recommended shortening the sedan replacement cycle to 3 years or 50,000 miles. The report states:

> "Various GAO and GSA studies have substantiated that the current 6-year, 60,000 mile replacement standard is clearly not the most economical. A 3-year, 50,000 mile replacement cycle would produce annual savings of approximately $2.2 million in depreciation, maintenance, repair and tire costs, a 6-year saving of $21 million in fuel cost, and the conservation of 28 million gallons of gasoline."

The savings anticipated in this report are based on the estimates made in GSA's June report.

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