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Dennis DesRosiers

Vehicle Longevity

Every few years, we like to examine Canada's vehicle fleet to determine which vehicles remain serviceable and desirable as they progress through their aging cycle. In other words, which cars and trucks disappear from the roads sooner than others? Which ones maintain a presence in the used market? How do survival rates compare between brands? Survival rates have major implications for the OEMs, the aftermarket, and - most importantly - those agencies within

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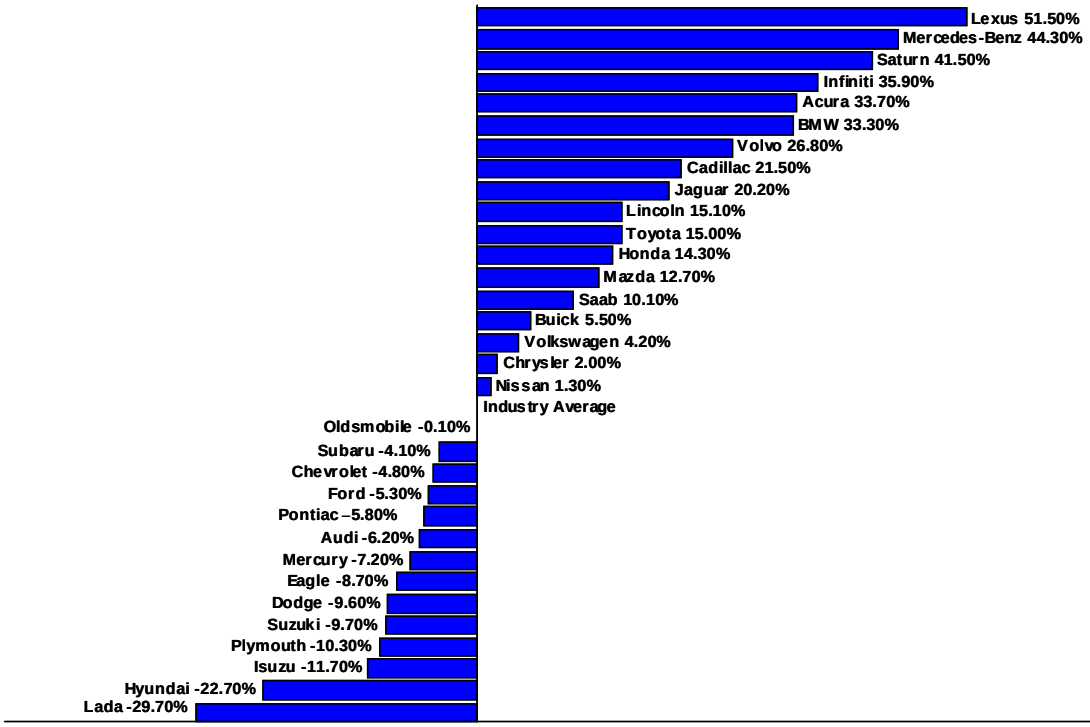
Passenger Cars Bought 11 to 20 Years Ago that Remain on the Road Today

(percent above/below average)



32.9 %

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our government which monitor and regulate the automotive sector.

Older vehicles are, by a large margin, the least fuel efficient and highest polluting road users. The sooner they disappear, the sooner some of our environmental targets will be met. A cursory look at survival rates makes it crystal clear that all levels of government should be focusing on getting older vehicles off the road rather than the much more difficult goal of persuading consumers to purchase more fuel efficient vehicles. Some 64 percent of light trucks and 53 percent of passenger cars survive fifteen years of active ownership. In those fifteen years, fuel efficiency had increased significantly and emissions have dropped dramatically. If the government wants to make large inroads on the environmental front, its time would be well spent getting these old clunkers off the road. More on this issue later.

A cursory look at survival rates makes it crystal clear that all levels of government should be focusing on getting older vehicles off the road.

Methodology and Limitations

We perform this study by comparing original sales numbers in each model year with Polk's current vehicle on the road data, giving us a clear picture of how many units are still in operation. From this, we can determine survival rates by vehicle model year over a 21 year period.

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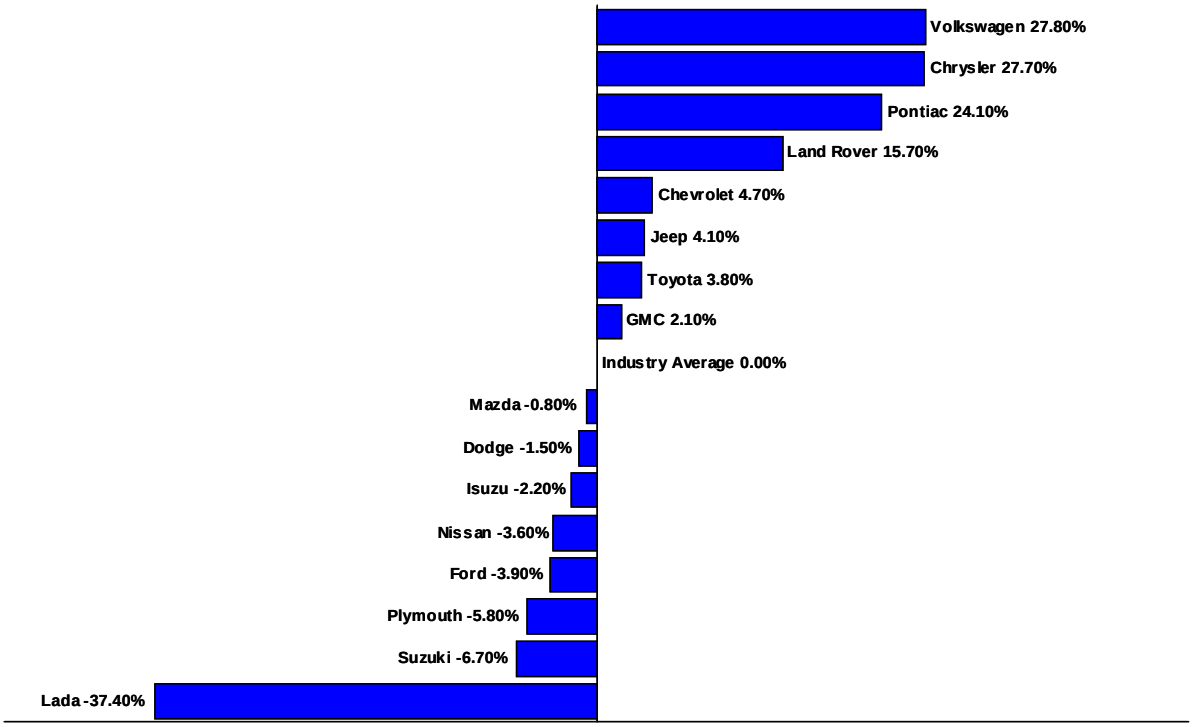
Light Trucks Bought 11 to 20 Years Ago that Remain on the Road Today

(percent above/below average)



50.9 %

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Observations - "Vehicle Longevity"

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Let me pick on Suzuki to illustrate some of the issues involved in this analysis. Of

In 2005, more than half the light vehicles sold to consumers in Canada were import nameplate cars and light trucks.

13,304 1990-model Suzukis sold new in Canada, 3,845 remained registered as of July 2005. This equates to a survival rate of 28.9 percent for fifteen year old Suzukis. On the surface, one would assume that the low Suzuki number (in comparison to the 1990 light vehicle average of 46.9 percent) equates to a major lapse in the Japanese brand's quality control mechanisms, but there are several mitigating factors. Yes, longevity is a good indicator of "quality," but various externalities tend to place the longevity focus on issues outside a vehicle's ability to continue running.

First, Suzuki's 1990 lineup was limited to the Swift, Sidekick, and Samurai - three inexpensive, sub-compact vehicles. With low initial purchase prices, these vehicles tend to "bottom out" on the used vehicle market quicker than larger, more expensive models. Furthermore, the insurance industry is likely to consider a lightly-damaged 10-year-old Suzuki Swift a "total loss" more readily than, say, a 10-year-old Lincoln Town Car.

Second, if a demand hypothetically existed in the U.S. for used Suzukis, said vehicles would disappear from Canadian registration rolls. We have no way of telling how a vehicle vanishes from Canadian roads, but arbitrage situations have existed in the past which have had a significant effect on

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Survival Rates - All Light Vehicles

Model Year	Total Light Vehicle Original Registrations	Total Light Vehicle On the Road As Of July 2005	Total Light Vehicle Survival Rate	Passenger Cars Survival Rate	Light Truck Survival Rate	Passenger Car Versus Light Truck
2004	1,293,333	1,293,333	100.0%	100.0%	100.0%	0.0%
2003	1,499,459	1,488,866	99.3%	99.6%	98.9%	0.8%
2002	1,464,434	1,408,780	96.2%	97.2%	94.8%	2.6%
2001	1,265,469	1,191,122	94.1%	95.2%	92.6%	2.8%
2000	1,406,927	1,308,124	93.0%	96.3%	88.5%	8.9%
1999	1,202,197	1,079,775	89.8%	94.7%	83.5%	13.4%
1998	1,327,248	1,146,299	86.4%	93.7%	78.0%	20.2%
1997	1,202,015	1,045,697	87.0%	92.1%	80.1%	15.0%
1996	911,291	801,880	88.0%	90.8%	84.3%	7.7%
1995	1,108,684	937,642	84.6%	84.2%	85.2%	-1.3%
1994	1,057,480	853,963	80.8%	79.2%	83.3%	-5.0%
1993	1,078,955	790,786	73.3%	70.9%	77.9%	-8.9%
1992	1,200,296	794,142	66.2%	63.5%	72.2%	-12.0%
1991	1,175,443	659,276	56.1%	52.6%	64.0%	-17.9%
1990	1,240,875	582,303	46.9%	42.6%	57.2%	-25.6%
1989	1,349,869	464,552	34.4%	28.9%	46.9%	-38.4%
1988	1,472,092	387,598	26.3%	20.6%	39.5%	-47.9%
1987	1,324,453	253,812	19.2%	15.0%	31.0%	-51.7%
1986	1,457,367	220,315	15.1%	11.2%	27.1%	-58.5%
1985	1,292,069	151,065	11.7%	8.3%	23.3%	-64.3%
1984	1,194,291	114,999	9.6%	6.6%	20.8%	-68.3%
Total	**26,524,247**	**16,974,329**	**64.0%**	**59.1%**	**72.9%**	**-19.0%**

Source: DesRosiers Automotive Consultants Inc. and Registration Data © R.L. Polk Canada, Inc. 2005, released September 2005.

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our survival ratings. The best example of this phenomenon occurred between 1996 and 2000, when an unrealistically large cohort of light trucks disappeared from Canadian registration records very early in their service lives. Rather than being scrapped, they were exported to the U.S.

At present, the survival rate for 1998-model light trucks sits at 78 percent, while the equivalent figure for passenger cars is 93.7 percent. Such a wide disparity can only be explained through one-way cross border trade. Light trucks were very popular in the U.S. in the late 1990s, so a portion of our used stock was exported to help feed demand.

The opposite phenomenon has happened with a number of luxury products, where Canadian survival rates have been driven up by the high volumes of vehicles imported from the U.S. This has the effect of making certain survival rates look better than average, distorting our analysis.

Of course, this reasoning does not explain the Suzuki situation. With no evidence of cross-border demand for sub-compacts, one is left to assume that Suzukis have faired poorly on the used vehicle market, that they engender quantitatively less aftermarket support, and that 1990-vintage examples did indeed suffer from more quality problems than most other vehicles.

Despite the shortcomings of this data, we still think that survival rates are important for both government and industry to understand, as the lessons learned from this analysis can help in strategic planning and policy development.

The Effect of Fleet Sales

GM, Ford, and DaimlerChrysler fare poorly in our longevity analysis. Through the first fifteen years of ownership, import nameplate vehicles (especially passenger cars) typically have survival rates in the range of 5 to 15 points higher than their Detroit competitors. For example, whereas 52.6 percent of 1990-model import nameplate passenger cars are still on the road, only 36.8 percent of same-

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Survival Rates - Passenger Cars - Import vs GM, Ford, DCX Nameplates

Model Year	Import Nameplate Survival Rate	GM, Ford, DCX Nameplate Survival Rate	Difference
2004	100.0%	100.0%	0.0%
2003	99.4%	99.9%	-0.5%
2002	97.1%	97.3%	-0.2%
2001	94.3%	96.2%	-1.9%
2000	96.3%	96.4%	-0.1%
1999	95.6%	93.9%	1.7%
1998	94.2%	93.4%	0.8%
1997	93.5%	91.2%	2.3%
1996	92.7%	89.7%	3.0%
1995	86.5%	83.0%	3.5%
1994	82.0%	77.8%	4.3%
1993	74.5%	68.6%	5.9%
1992	71.8%	58.1%	13.7%
1991	61.2%	47.1%	14.1%
1990	52.6%	36.8%	15.8%
1989	35.9%	25.9%	10.0%
1988	24.8%	18.8%	6.1%
1987	19.4%	12.9%	6.5%
1986	13.7%	10.2%	3.5%
1985	9.4%	7.9%	1.5%
1984	8.6%	6.0%	2.5%
Total	**69.7%**	**52.2%**	**17.6%**

Source: DesRosiers Automotive Consultants Inc. and Registration Data © R.L. Polk Canada, Inc. 2005, released September 2005.

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year GM, Ford, and DaimlerChrysler passenger cars remain registered. Considering the full-line nature of the three U.S.-based brands, it's not enough to say - as we did for Suzuki - that all these cars started with low market values and reached the nadir of their depreciation cycles more quickly than import-nameplate competitors. The high quality of import nameplate vehicles may be part of the equation but we suspect the bulk of the problem relates to fleet sales.

When we speak about a vehicle's age, we're making an implicit judgment about a vehicle's mileage. To wit: cars are driven an average number of kilometres every year, and those that sustain a higher number of lifetime kilometres are the longevity champs. Fleet sales change this equation.

Fleet vehicles (daily rentals, corporate/government fleets, and executive vehicles) are driven significantly more during the first few years of ownership than their equivalents on the retail market. For instance, we estimate that the average light vehicle bought for commercial use is driven three times more often than its consumer market counterpart.

Therefore, it is entirely possible that a Chevrolet Impala could be nearing 250,000 KMs at the same time that a Honda Accord is approaching 150,000. Taking this theory a bit further, there might be a kernel of truth in proposing that the average Impala has higher mileage than the average Accord. In this way, part of the import/domestic disparity is explained: GM, Ford, and DaimlerChrysler dominate fleet sales and these fleet vehicles rifle through their service lives more quickly than import nameplate competitors who typically do not sell to fleets.

Survival Rates - Light Trucks - Import vs GM, Ford, DCX Nameplates

Model Year	Import Nameplate Survival Rate	GM, Ford, DCX Nameplate Survival Rate	Difference
2004	100.0%	100.0%	0.0%
2003	99.4%	98.7%	0.7%
2002	97.2%	94.1%	3.2%
2001	93.8%	92.2%	1.6%
2000	94.6%	87.2%	7.4%
1999	91.6%	82.1%	9.5%
1998	92.0%	76.0%	16.0%
1997	90.8%	78.7%	12.1%
1996	91.2%	83.8%	7.4%
1995	91.8%	84.6%	7.2%
1994	88.3%	82.8%	5.5%
1993	82.6%	77.1%	5.6%
1992	75.2%	71.6%	3.5%
1991	67.1%	63.4%	3.7%
1990	59.8%	56.7%	3.0%
1989	44.5%	47.2%	-2.7%
1988	35.8%	39.9%	-4.1%
1987	31.7%	30.9%	0.9%
1986	23.2%	27.7%	-4.5%
1985	21.5%	23.5%	-2.0%
1984	12.4%	22.7%	-10.4%
Total	**79.3%**	**71.7%**	**7.6%**

Source: DesRosiers Automotive Consultants Inc. and Registration Data © R.L. Polk Canada, Inc. 2005, released September 2005.

Import Nameplate Longevity and its Implications for the Traditional Aftermarket

One of the groups most seriously affected by the

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changing mix of vehicles on Canadian roads is the coalition of installers and distributors that makes up the traditional aftermarket.

We have watched as import nameplate vehicles have won ever-increasing amounts of market share away from GM/Ford/DCX for over twenty years. In 2005, more than half the light vehicles sold to consumers in Canada were import nameplate cars and light trucks. As the GM/Ford/DCX vs. import ratio continues to slide in the new vehicle market, the differences become even more exaggerated in the used vehicle market. Since import nameplate vehicles last longer than GM/Ford/DCX vehicles, they stay in the aftermarket longer.

Vehicles built "traditional style," consistently endure the test of time better than unit-body cars and light trucks.

Our survey data shows that import nameplate vehicle owners have greater loyalty to their dealer networks than drivers of GM, Ford, or DCX-branded vehicles. Even as their vehicles transition into the older, higher-maintenance age brackets, many import nameplate owners continue to patronize new vehicle dealers for regular maintenance and major servicing. The growth of the car dealer as a major force in the vehicle repair industry will continue unabated as long as GM/Ford/DCX continue to lose market share and import vehicles continue to last longer.

Extreme Survivors

Certain vehicles manage to stand the test of time better than others. To assess trends in the very long term, it helps to look at age brackets with meaningful correlations to the used vehicle market. Specifically, we look at the oldest cohort of vehicles as an eleven year block (1984-1994). Vehicles in this category are at (or nearing) the very bottom of their depreciation cycles. Newer vehicles have more inherent value, while older vehicles have potential collectible appeal and are not governed by the same market dynamics.

When you examine the list of manufacturers whose passenger cars occupy the best slots on our "11 to 21 years old" survival rate list, you notice some distinct similarities. Of the OEMs selling vehicles for each of those years (i.e., 1984-1994), the following have survival rates above 50 percent: Mercedes-Benz (77.3%), BMW (66.2%), Volvo (59.8%), Cadillac (54.4%), and Jaguar (53.1%). All are luxury brands. With the exception of Cadillac, all brands were comprised of principally rear-wheel-drive lineups in the 1984-1994 timeframe.

Luxury vehicles tend to lead long lives for a number of reasons. Foremost among them is purchase price: if a vehicle costs more at the outset, it will retain a modicum of market value for a longer period of time than a less expensive vehicle. A BMW, for example, will take longer to "bottom out" on the used car market than a Ford. Additionally, cars that retain their worth are more likely to be repaired (rather than scrapped) if involved in a collision, further extending their potential service lives.

Demographics also play a key role. Luxury vehicles are often purchased by older and wealthier consumers, maintained more diligently, and driven less frequently. Longevity and dealer loyalty also seem to run hand-in-hand. In fact, the brands topping the longevity list are arranged in virtually the same rank order as the dealer loyalty leaders. This correlation should be noted by all vehicle OEMs since it proves the long term value of a positive dealer service experience.

Additionally, it is not uncommon for luxury cars to be used in multi-vehicle households, so a greater likelihood exists for owners to spread their mileage

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around among several vehicles. Thus, all the brands with the best survival rates are luxury products.

On the light truck side of the industry, an entirely different pattern emerges. Of the OEMs with market presence in the years mentioned above, Volkswagen (78.6%) is the runaway longevity leader. This can only be explained through the VW Vanagon's "cult vehicle" status and relative uniqueness on the market, both then and now.

Other light truck leaders are more conventional. Chevrolet (55.6%), Jeep (55.0%), Toyota (54.7%), GMC (53.0%), and Mazda (50.1%) round out the list of OEMs with survival rates over 50 percent. Again, major commonalities exist: with the exception of Jeep (potentially another player in the 'cult' demographic), all OEMs in the above list were selling light truck lineups comprised primarily of full-frame pickup trucks or large vans.

Vehicles built "traditional style," with body-on-frame construction and rear wheel drive,

Mileage limits are more far-reaching than the piecemeal emissions programmes currently in effect.

consistently endure the test of time better than unit-body cars and light trucks. Light trucks, particularly pickups, are often very simple and reliable vehicles. Add to that the comparative ease with which collision damaged pickup trucks and SUVs are repaired and a potent recipe for long-term survival emerges.

Additionally, older vehicles with commercial utility - often purchased by businesses or individual tradesmen - retain a greater degree of real-world value than passenger cars of similar age. An old pickup always has a use, whether as a secondary vehicle in a business, on a farm, or as an occasional-use load-hauler. Conversely, an older passenger car is often an encumbrance to keep around, as its functional value is duplicated by newer vehicles in the household.

Time is Crueler to Some

On the opposite end of the longevity spectrum, several manufacturers languish at the

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Survival Rates - Hyundai

Model Year	Total Original Registrations	Number On the Road As Of July 2005	Survival Rate	Hyundai Relative to Industry Average
2004	57,299	57,299	100.0%	0.0%
2003	65,237	65,094	99.8%	0.5%
2002	71,246	68,745	96.5%	0.3%
2001	49,743	44,518	89.5%	-4.6%
2000	34,642	32,755	94.6%	1.6%
1999	27,934	26,002	93.1%	3.3%
1998	22,306	20,370	91.3%	5.0%
1997	18,186	15,843	87.1%	0.1%
1996	12,964	11,000	84.9%	-3.1%
1995	23,067	17,363	75.3%	-9.3%
1994	14,788	8,448	57.1%	-23.6%
1993	24,229	8,099	33.4%	-39.9%
1992	19,361	6,482	33.5%	-32.7%
1991	22,306	4,152	18.6%	-37.5%
1990	16,114	2,426	15.1%	-31.9%
1989	29,875	2,244	7.5%	-26.9%
1988	25,649	1,061	4.1%	-22.2%
1987	37,146	1,249	3.4%	-15.8%
1986	80,310	1,143	1.4%	-13.7%
1985	73,171	893	1.2%	-10.5%
1984	14,149	488	3.4%	-6.2%
Total	**739,722**	**395,674**	**53.5%**	**-10.5%**

Source: DesRosiers Automotive Consultants Inc. and Registration Data © R.L. Polk Canada, Inc. 2005, released September 2005.

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bottom of our "11 to 21 years old" survival rate list. Notable are brands like Lada (3.3%) and Hyundai (10.3%), both notorious for building vehicles (in that era) to a quality standard far below that of the American and Japanese manufacturers.

In the case of Lada, the explanation is obvious and unspectacular: bad cars, no dealer network, and an ownership body sufficiently tiny that wholehearted legacy support would have made poor financial sense. Given that Ladas have historically been cheap to purchase - but expensive to repair - they have faded relatively quickly from the Canadian radar.

Hyundai makes a far more interesting case study, if only because the brand has endured and improved to a level unimaginable in the 1980s. The original Canadian-market Hyundai offerings - Pony, Stellar, and Excel - were primitive cars, and the survival rates bear out that rather harsh assessment.

Just 1.4 percent of 1986 Hyundai's are still in operation. In fact, the historical survival rates only begin to approach those of the wider industry with the 1995 model year, when the Accent finally exorcized the old Excel from Hyundai showrooms. Since that time, Hyundai survival rates have been in lock-step with other mainstream manufacturers. Theirs is a success story providing conclusive proof that improved engineering and manufacturing processes (i.e., better cars) can result in a wholesale longevity turnaround.

Replacing old vehicles with new vehicles should be the single most important agenda item.

Public Policy Implications

It is in the realm of long-lived used vehicles where the least fuel efficient, least environmental sensitive cars and trucks reside. Our vehicle longevity study indicates that it takes twenty to twenty-five years to completely refresh the Canadian vehicle fleet, so it makes sense for new "air care" programmes to concentrate on the 19 million strong "installed base" rather than the 1.5 million incoming trickle. Replacing old vehicles with new vehicles should be the single most important agenda item for any policy maker hoping to positively impact the environment.

In Japan, where extremely urban density has led to concentrated pollution problems, legislation exists that makes long term ownership of vehicles very unattractive. High taxes are levied on vehicles that have reached certain mileage levels (e.g. 60,000 KM), virtually ensuring that Japan's national vehicle fleet turns over on a much more frequent basis than Canada's. Granted, a 60,000 KM policy in Canada would have the effect of killing the used vehicle market, but it does present some interesting scenarios.

Japanese driving dynamics are very different from our own, so a 60,000 KM limit would be ludicrous, but suppose the bar were set around 180-200,000 KM. A large portion of the country's out-of-tune engines would be removed from service, the new vehicle market would receive a boost, and the used vehicle market would still have enough headroom to operate with a degree of health. Loopholes could be written for people wishing to collect high mileage classic cars, but the vast majority of daily commuters would be forced into making ecologically-sound transportation choices.

The plan outlined above is more far-reaching than the piecemeal emissions programmes currently in effect, and it is potentially more effective than the ill-fated "Feebate" initiative that occasionally surfaces on Official Ottawa's horizon. Will it ever happen? Likely not in the near term, but if this article succeeds in triggering even a few discussions, the ball will have begun rolling. **DAR**

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