Toyota Age Equivalent Estimates

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The following table provides the estimated ages of when a typical 1999 model by Toyota Motor Corporation will be about as troublesome as a typical 1999 model of selected other manufacturers and lines were at ages 3, 4, 5, 6, and 7 years.

Age Equivalent Estimates for Toyota Motor Corporation

Estimated Ages of When a Typical 1999 Toyota Motor Corporation Model Will be as Problem-Plagued as Typical 1999 Models of Other Automobile Manufacturers, Groups, and Lines Were at Ages 3, 4, 5, 6, and 7 Years

Manufacturer or Group	Line	Estimated Age of Toyota Model Corresponding to a 3-Year-Old Model of Listed Manufacturer or Line	Estimated Age of Toyota Model Corresponding to a 4-Year-Old Model of Listed Manufacturer or Line	Estimated Age of Toyota Model Corresponding to a 5-Year-Old Model of Listed Manufacturer or Line	Estimated Age of Toyota Model Corresponding to a 6-Year-Old Model of Listed Manufacturer or Line	Estimated Age of Toyota Model Corresponding to a 7-Year-Old Model of Listed Manufacturer or Line
Nissan Motor Company		5 years	6 years	8 years	9 years	11 years
Mazda Motor Corporation		9 years	11 years	13 years	16 years	19 years
	Ford	15 years	16 years	18 years	20 years	23 years
	Lincoln	14 years	16 years	19 years	22 years	26 years
	Mercury	15 years	17 years	20 years	22 years	26 years
Ford Motor Company		15 years	17 years	19 years	21 years	24 years
BMW AG		9 years	12 years	20 years	24 years	26 years
Mercedes-Benz		17 years	22 years	24 years	27 years	27 years
	Chrysler	18 years	22 years	26 years	32 years	32 years
	Dodge	17 years	21 years	24 years	29 years	32 years
	Plymouth	13 years	21 years	24 years	32 years	33 years
	Jeep	20 years	23 years	24 years	26 years	34 years
Chrysler Group		17 years	22 years	25 years	29 years	32 years
	Saturn	8 years	13 years	17 years	17 years	17 years
	Buick	14 years	17 years	20 years	23 years	24 years
	Cadillac	22 years	22 years	24 years	29 years	32 years
	Chevrolet	19 years	22 years	25 years	31 years	34 years
	Pontiac	20 years	24 years	27 years	30 years	36 years
	Oldsmobile	20 years	25 years	28 years	33 years	35 years
General Motors Corporation		19 years	22 years	25 years	29 years	33 years
	Audi	15 years	23 years	27 years	31 years	33 years
	Volkswagen	20 years	27 years	31 years	38 years	42 years
Volkswagen AG		19 years	25 years	29 years	35 years	40 years

The computation of these estimated age equivalents is rather involved. (While some PhD theses seem to have been thrown together in a Saturday afternoon, the above estimates were not, as you'll soon see.)

What follows is, in the main, what appeared in a November 2007 article on AutoOnInfo.net.

We begin with the following table of Reliability Score averages for model year 1999.

Auto Manufacturer and Line Durability

Manufacturer and Line Reliability Score Averages of 1998 Models When the 1998 Vehicles Were 2-to-4 Years Old, 3-to-5 Years Old, 4-to-6 Years Old, 5-to-7 Years Old, and 6-to-8 Years Old and the Change in Score Averages from the Earliest Period to the Latest

Item No.	Manufacturer	Line	2-to-4 Years	3-to-5 Years	4-to-6 Years	5-to-7 Years	6-to-8 Years	Change
10	Toyota	**Lexus**	0.78	0.76	0.78	0.76	0.79	0.01
50	Toyota	**Toyota**	0.76	0.71	0.68	0.59	0.62	-0.14
51	**Toyota**		0.77	0.72	0.71	0.63	0.66	-0.11
59	Honda	**Acura**	0.74	0.77	0.74	0.66	0.66	-0.08
73	Honda	**Honda***	0.83	0.83	0.76	0.69	0.73	-0.11
74	**Honda***		0.79	0.80	0.75	0.68	0.70	-0.09
75	**The Reliable Two***		0.78	0.75	0.72	0.65	0.68	-0.10
88	**Subaru**	**Subaru**	0.70	0.68	0.63	0.55	0.47	-0.23
97	Nissan	**Infiniti**	0.74	0.77	0.72	0.65	0.60	-0.14
118	Nissan	**Nissan**	0.59	0.53	0.49	0.43	0.36	-0.23
119	**Nissan**		0.62	0.56	0.54	0.48	0.41	-0.21
120	**The Top Four***		0.73	0.69	0.67	0.60	0.58	-0.15
142	**Mazda**	**Mazda**	0.64	0.53	0.39	0.30	0.27	-0.37
163	**Volvo**	**Volvo**	0.26	0.14	0.05	-0.09	-0.38	-0.63
173	**Mercedes-Benz**	**Mercedes-Benz**	0.24	0.19	0.12	-0.01	0.01	-0.23
185	**BMW**		0.54	N/A	0.24	0.07	0.01	-0.53
209	**Isuzu**	**Isuzu**	0.41	0.37	0.12	-0.02	-0.16	-0.56
229	Volkswagen	**Audi**	0.31	0.17	0.11	-0.13	-0.25	-0.56
242	Volkswagen	**Volkswagen**	0.28	0.07	-0.08	-0.22	-0.35	-0.64
243	**Volkswagen**		0.30	0.12	-0.02	-0.16	-0.30	-0.60
251	Ford	**Lincoln**	0.46	0.33	0.35	0.26	0.15	-0.32
267	Ford	**Mercury**	0.46	0.38	0.31	0.17	0.02	-0.44
314	Ford	**Ford**	0.42	0.34	0.29	0.21	0.14	-0.28
315	**Ford**		0.44	0.35	0.30	0.20	0.11	-0.33
326	General Motors	**Buick**	0.39	0.30	0.21	0.10	0.09	-0.30
348	General Motors	**GMC**	0.29	0.18	0.00	-0.21	-0.35	-0.64
355	General Motors	**Cadillac**	0.13	-0.03	-0.12	-0.15	-0.26	-0.38
370	General Motors	**Oldsmobile**	0.28	0.10	0.04	-0.05	-0.06	-0.34
378	General Motors	**Saturn**	0.53	0.42	0.27	0.15	0.18	-0.35
417	General Motors	**Chevrolet**	0.30	0.20	0.12	-0.04	-0.18	-0.47
431	General Motors	**Pontiac**	0.30	0.20	0.13	-0.02	-0.09	-0.39
432	**General Motors**		0.30	0.18	0.09	-0.05	-0.13	-0.44
441	Chrysler	**Jeep**	0.36	0.18	0.15	0.02	-0.05	-0.40
471	Chrysler	**Chrysler**	0.48	0.34	0.27	0.08	-0.13	-0.61
505	Chrysler	**Dodge**	0.39	0.27	0.12	0.00	-0.09	-0.48
524	**Chrysler**		0.41	0.28	0.16	0.02	-0.10	-0.51
525	**The Big Three**		0.37	0.25	0.16	0.03	-0.05	-0.41

* These averages and changes do not include the Reliability Score of the Honda Passport in their computation, as (1) the Honda Passport is a rebadged Isuzu product, (2) each Reliability Score for this rebadged Isuzu product was much, much below that of any other Honda model, (3) the Reliability Score for the Isuzu product was unavailable for the last period, and consequently (4) including the Reliability Scores of the Honda Passport would have significantly distorted all durability computations and extrapolations involving Honda's, or the Reliable Two's or the Top Four's, Reliability Score average for the last period.

Note: The ten vehicle lines that performed worst between the first and the last age sets are highlighted.

Also Note: The Change in Reliability Score Averages is true change, not the change of the rounded Reliability Score Averages.

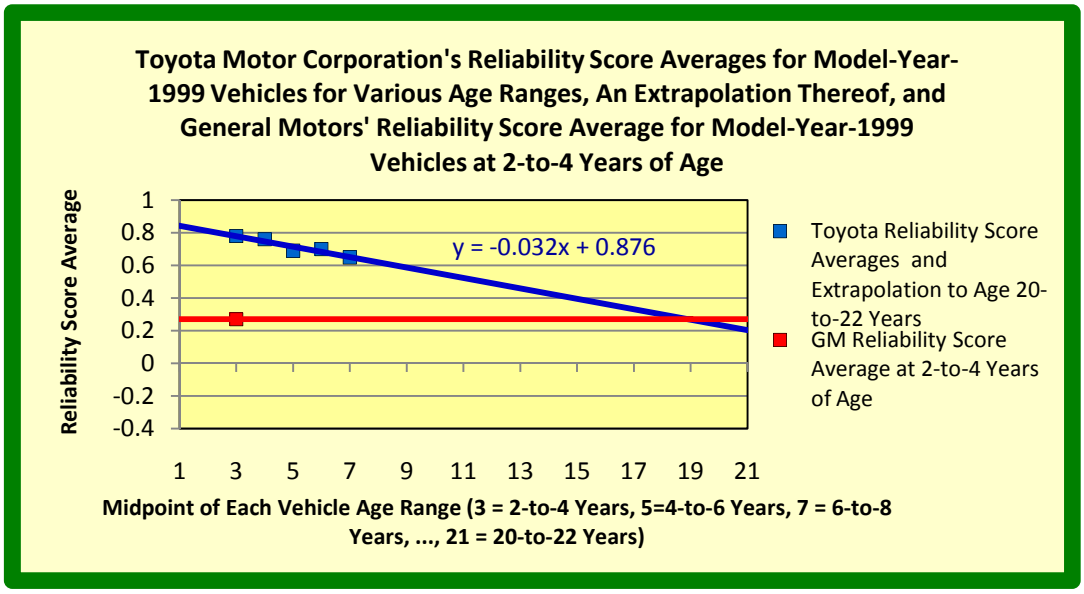
Also Note: The Reliability Score Averages of Toyota and Honda for vehicles at ages 6-to-8 years exceed those of Ford, Chrysler, and GM for vehicles at ages 2-to-4 years, by quite a margin.

See **Table I-MVRP** for color coding of Reliability-Score -Average cells.

See **Methodology** for computation of Reliability Scores and Reliability Score averages.

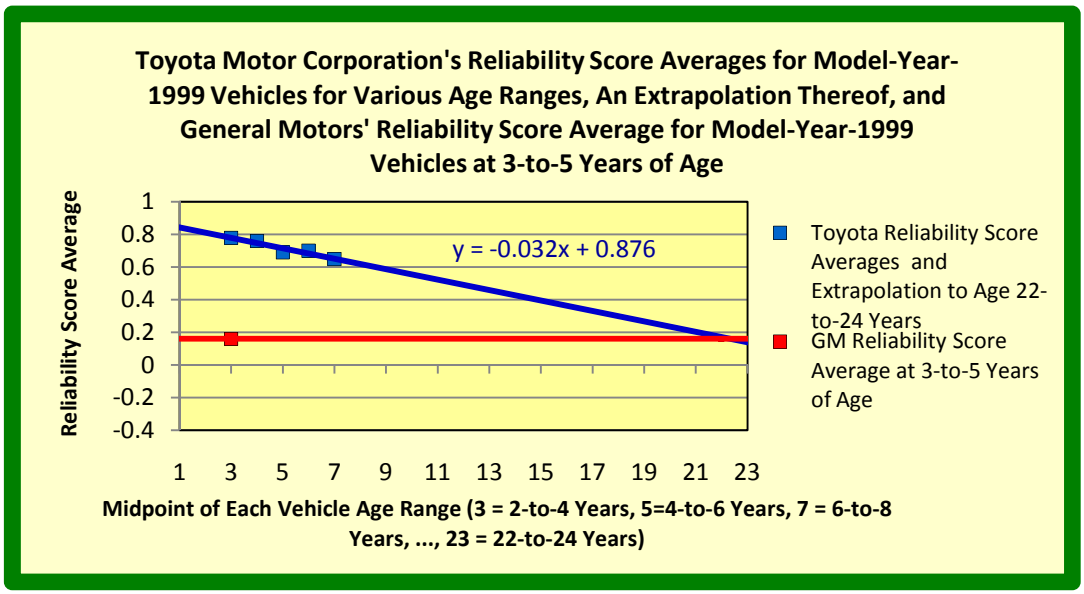
Note The above Excel table is the original table from the November 2007 article, so it bears the visual shortcomings of the graphics made by earlier Microsoft products.

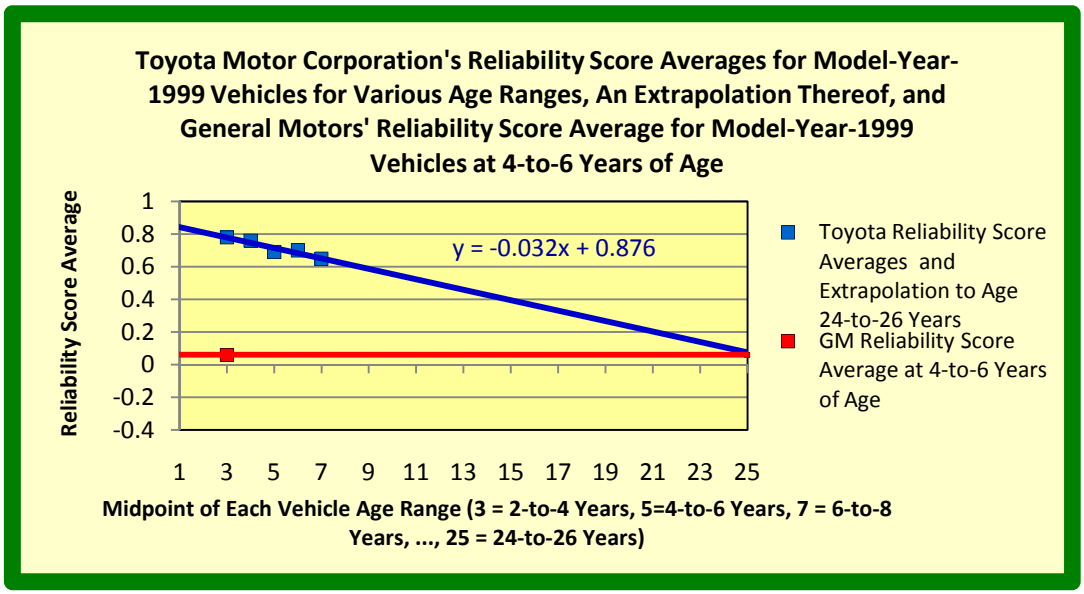
Next, we plot the Reliability Score averages of Toyota Motor Corporation for each of the above age ranges (2-to-4 years, 3-to-5 years, ..., 4-to-6 years) and make an extrapolation of these plots, a linear regression of degree one. We will first determine an estimate of when a typical 1999 model of Toyota Motor Corporation will be as troublesome as a typical 1999 model of General Motors Corporation at about age 3 years. To do this, we plot GM's Reliability Score average for the first age range (2-to-4 years) and draw a horizontal line. For the x-axis, we use the midpoint of each age range. We have:

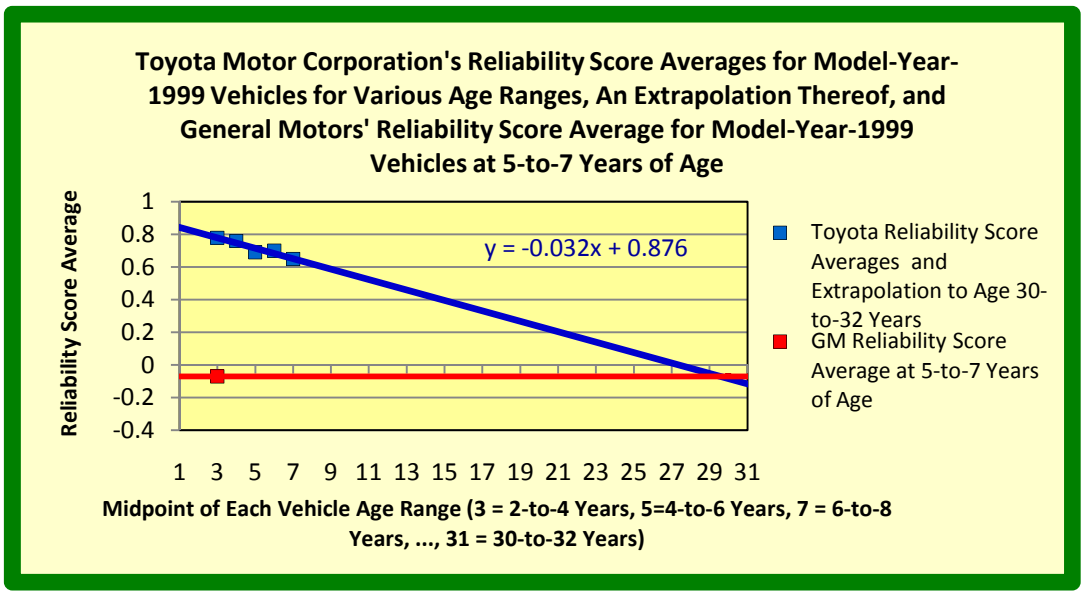


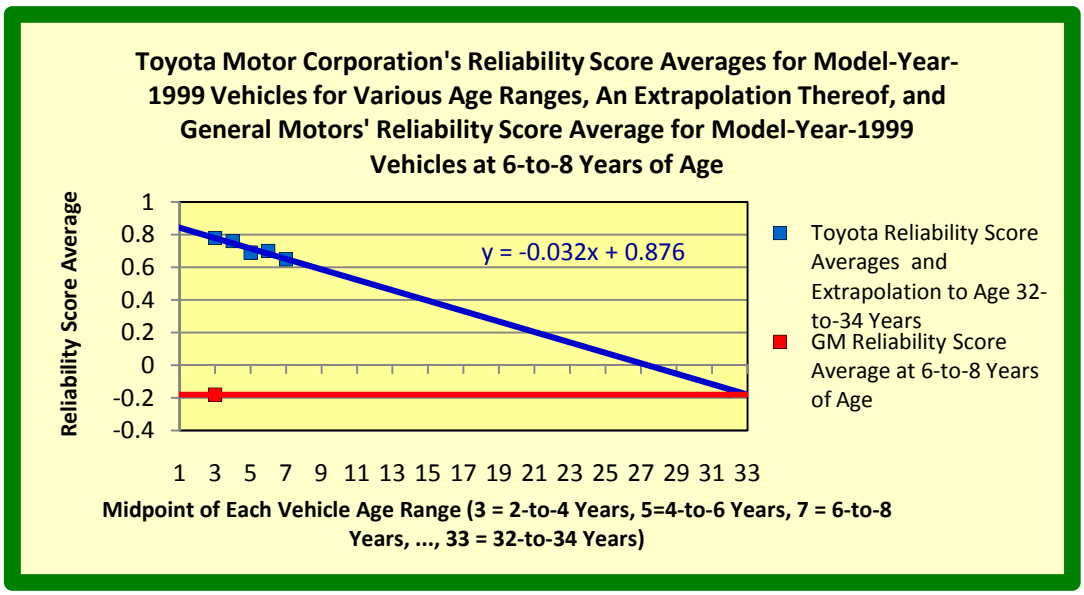
The equation on the chart is the regression equation for Toyota's extrapolation. From the chart's extrapolation, we see the estimate of when a typical 1999 Toyota model may be as troublesome as a typical 1999 GM model circa age 3 years to be about 19 years. By computation, substituting GM's rounded Reliability Score average of .27 (for age range 2-to-4 years) for y in Toyota's regression equation, we obtain an estimate of 19.0 years. Another way of viewing the result is: If a typical 1999 GM vehicle became unacceptable to own by reason of trouble or risk of trouble at about 3 years old (calendar year 2002 or earlier), then a typical 1999 Toyota vehicle may become unacceptable to own at about age 19.0 years, or circa calendar year 2018.

The next four charts depict similarly derived estimates of age equivalents (with respect to vehicular deterioration) for a typical 1999 model of Toyota corresponding to approximate ages 4 years, 5 years, 6 years, and 7 years of a typical 1999 GM model.









From the charts, we see that the estimates of when a typical 1999 Toyota model may be as troublesome as a typical 1999 GM model at about ages 4 years, 5 years, 6 years, and 7 years are about 22 years, 25 years, 29 years, and 33 years, respectively. By computation, substituting GM's rounded Reliability Score averages for y in Toyota's regression equation, we

obtain the following estimates of when a typical 1999 Toyota model will be as troublesome as a typical 1999 GM model at ages 4 years, 5 years, 6 years, and 7 years: 22.4 years, 25.5 years, 29.4 years, and 33.1 years, respectively.

Note that each succeeding chart requires an extrapolation farther into the future and consequently each succeeding age-equivalent estimate is less certain.

By substituting the Reliability Score averages for each of the manufacturers and lines into Toyota's regression equation, we obtained the above table of Toyota age-equivalent estimates, rounded to the nearest whole year.

With regard to the computation of Reliability Score averages, I borrow the old summary:

> The definition of Reliability Score begins with two observations. First, the symbols in the right-most column of a *Consumer Reports* auto model reliability table depicts reliability performance of categories (called "trouble spots," by *Consumer Reports*) of components of motor vehicles in the approximate age range of 0 to 1 year – the exact age range depending upon when the corresponding model year began and ended and when *Consumer Reports* stopped accepting returned questionnaires for its compilations. Second, similarly, the second column from the right, the third column, the fourth column, the fifth column, the sixth column, the seventh column, and the eighth column depict reliability performance of the same categories of components in the approximate age ranges of 1 to 2 years, 2 to 3 years, 3 to 4 years, 4 to 5 years, 5 to 6 years, 6 to 7 years, and 7 to 8 years, respectively.
>
> Next, some particular Reliability Scores are defined, from which may be seen a general definition. The Reliability Score RS(**The Lexus LS400**,**1991**,**7-8**) was obtained as follows:
>
> 1. The leftmost column of the Lexus LS400 reliability table in the April 1999 issue of *Consumer Reports* was selected, as it is this column that rates problem frequencies by "trouble spots" in the **1991 Lexus LS400**s that were in the age range of **7-8** years, approximately.
>
> 2. The trouble spots of "Manual Transmission," "Clutch," "Brakes" and "Exhaust" were eliminated from this left-most column for reasons discussed in step 1 of the foregoing definitions of Reliability Index Value and Average.
>
> 3. If all of the remaining 12 trouble spots had a *Consumer Reports* rating, the following was done. First, -1 was ascribed to each of those trouble spots that earned the lowest rating (had the highest frequency of reported auto problems. Second, - ½ was ascribed to each of those trouble spots that earned the second lowest rating (had the second highest frequency of reported auto problems. Third, 0 was ascribed to each of those trouble spots that earned the middle rating (had the third highest frequency of reported auto problems. Fourth, + ½ was ascribed to each of those trouble spots that earned the second highest rating (had the second lowest frequency of reported car problems. Fifth, +1 was ascribed to each of those trouble spots that earned the highest rating (had the lowest frequency of reported auto problems.
>
> Next, the numbers that were obtained in 3 were added together and divided by 12. This value is the Lexus LS400's Reliability Score:
>
> RS(The Lexus LS400,1991,7-8).
>
> Rather at once, it is seen that this value falls in the closed interval [-1,+1], as is the case for all Reliability Index Values.

While the above computations are for model year 1999, they likely apply to more recent model years as well, since changes in quality occur at a rather glacial pace.

As the above computations are quite involved, they are not likely to be duplicated soon, and updating for more recent years is additionally complicated by the possibility that Consumer Reports may have changed the definitions of the symbols it uses, which would require an additional examination to determine whether the change, if any, is significant with respect to maintaining uniform Reliability Scores.