HLDI
Highway Loss Data Institute

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Toyota Prius theft losses

Summary

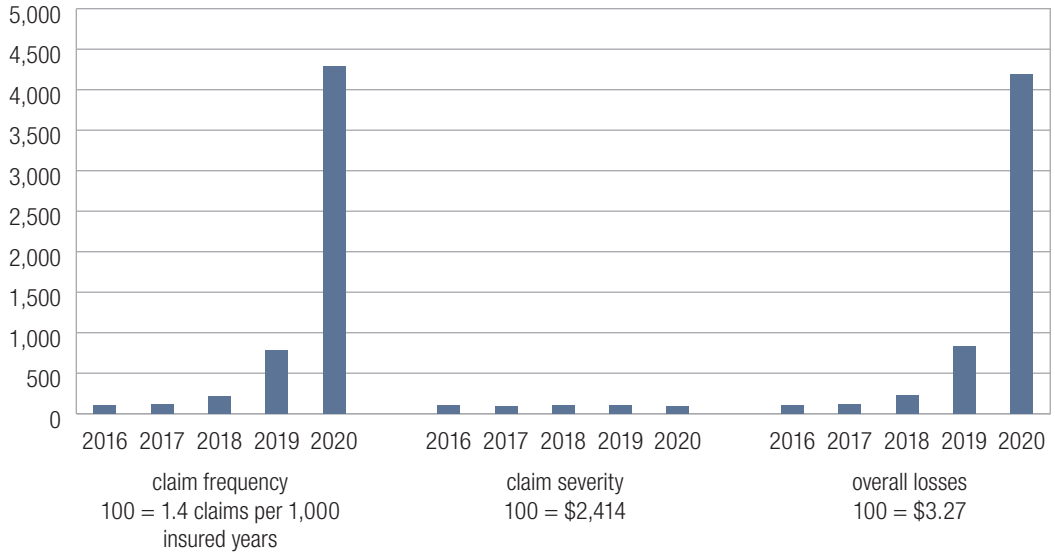
The recent price increase of the precious metals used in catalytic converters has spurred a rise in catalytic converter thefts from motor vehicles (Tabuchi, 2021; Wroughton & Bearak, 2021). One of the most targeted vehicles is the Toyota Prius, specifically model year 2004–09 Priuses. The catalytic converters of certain hybrids, including the Prius, contain more metals than other vehicles because sharing the workload with an electric motor means their combustion engines start and stop more frequently. The catalytic converters of certain hybrids contain more metals than other vehicles in order to work properly under the lower catalytic converter temperatures due to the combustion engine running less. This Highway Loss Data Institute (HLDI) study examines the recent theft trends of the Toyota Prius.

The following figure shows the theft claim frequency, claim severity, and overall losses of the 2004–09 Toyota Prius by calendar year. The results are presented relative to calendar year 2016. Compared with 2016, claim frequency was more than 2 times higher in 2018, almost 8 times higher in 2019, and over 40 times higher in 2020. In sharp contrast, claim severity remained almost flat with results ranging from only 97 to 106. Overall losses followed a pattern similar to claim frequency with large increases in 2019 and 2020.

These high increases in theft losses were not uniform across the U.S. California, which comprises 25 percent of the Prius exposure, had high overall losses of $419 for 2020 compared with $32 for the Connecticut-New Jersey-New York region and $20 for the District of Columbia-Maryland-Virginia region.

Priuses from other design year ranges also experienced increased theft losses. For the earlier model years of 2001–03, claim frequencies were 62 times higher for calendar year 2020 than for calendar years 2016–18. Priuses from model years 2010–15 experienced more moderate increases in claim frequencies, which increased 69 percent between calendar year 2016 and 2020.

Theft losses of 2004–09 Toyota Prius models relative to calendar year 2016



Introduction

Earlier HLDI studies have shown that some vehicles are targeted by thieves for a specific part (HLDI 2006, 2015, 2016a, 2016b, 2017). Examples of high-theft parts include headlamps on the 2000–03 Nissan Maxima, wheels on the 2013–17 Honda Accord, wheels on the 2007–15 Chevrolet Silverado and GMC Sierra 1500 crew cab, and tailgates on the 2009–14 Ford F-150 SuperCrew. High theft claim frequencies were typically associated with these vehicles.

In recent years, the price of the precious metals used to make catalytic converters has dramatically increased (Tabuchi, 2021; Wroughton & Bearak, 2021). The price of a single troy ounce of Rhodium rose from about $1,700 in January 2018 to over $27,000 in February 2021, more than 10 times the price of gold (Wroughton & Bearak, 2021). This increase in price has led to an increase in catalytic converter thefts (Tabuchi, 2021; Wroughton & Bearak, 2021).

One of the vehicles targeted for its catalytic converter is the 2004–09 Toyota Prius. The Prius is sought out because its catalytic converter is easy to remove (just bolts to remove, no cutting is involved), it is easily recognized, and it is a hybrid. The catalytic converter on the Prius and other hybrids contain more metals than other vehicles. The larger quantities of metals are needed for the catalytic converter to function properly at the lower temperature created by the combustion engine running less.

Methods

Theft losses are paid under comprehensive coverage. The primary results in this study are based on theft losses and comprehensive coverage for 2004–09 Toyota Prius models in calendar years 2016–20. Additional theft results were computed for 2001–03 and 2010–15 Toyota Prius models. The coverage and loss data were assigned to states based on each vehicle's garaging location. The actual location where the theft occurred may be different.

The HLDI database does not contain information on which parts were repaired or replaced for a claim. Inferences can be made about the stolen parts from the claim amount and from outside sources. Theft claims in the HLDI database include thefts of entire vehicles that were subsequently recovered, thefts of entire vehicles that were not recovered, thefts of vehicle components (e.g., airbags and wheels), and thefts of vehicle contents (e.g., navigation systems and tools).

Results

Figure 1 shows the theft claim frequency by calendar year for 2004–09 Toyota Prius models. Claim frequency grew from 1.4 claims per 1,000 insured vehicle years in 2016 to 58.1 claims in 2020, with the largest increase occurring between calendar years 2019 and 2020. In contrast, claim severity remained relatively flat between calendar year 2016 and 2020 with results ranging from $2,334 in 2017 to $2,559 in 2019 (Table 1). Theft overall losses followed a trend similar to claim frequencies. Overall losses increased from $3 in 2016 to $137 in 2020, an increase of over 40 times between 2016 and 2020.

Figure 1: Theft claim frequencies of 2004–09 Toyota Prius models by calendar year

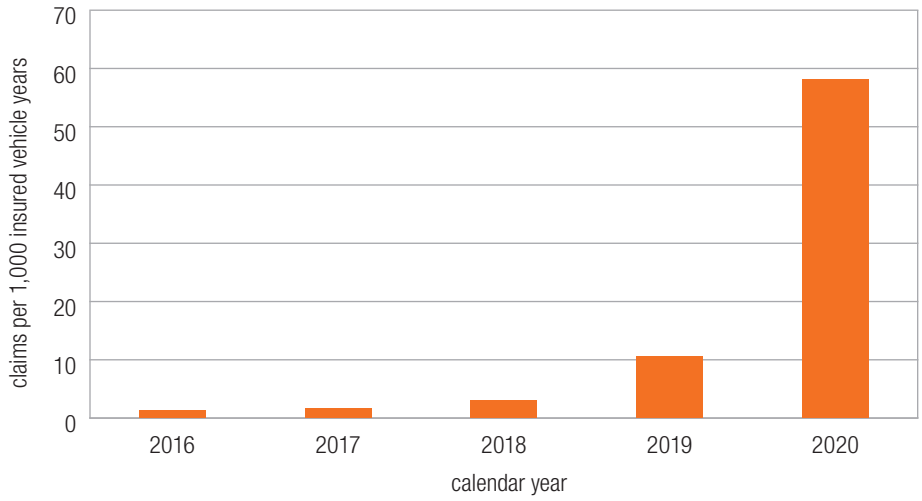


Table 1: Theft losses of 2004–09 Toyota Prius models

Calendar year	Exposure	Number of Claims	Claim frequency*	Claim severity	Overall losses
2016	420,195	569	1.4	$2,414	$3.27
2017	382,722	613	1.6	$2,334	$3.74
2018	342,051	1,006	2.9	$2,540	$7.47
2019	302,020	3,212	10.6	$2,559	$27.22
2020	265,229	15,421	58.1	$2,356	$137.00

* Claims per 1,000 insured vehicle years.

Figure 2 shows the theft claim size distribution for 2004–09 Toyota Prius models in calendar years 2016–17 and 2019–20. For the high-theft years of 2019–20, there was a spike in claims in the $2,501 to $3,000 range (approximately the cost to replace the exhaust system, minus the deductible). For calendar years 2016–17, common loss amounts were less than $500 and between $1,501 and $2,500. Since these vehicles are older, the claim size distribution analysis is complicated somewhat by the fact that some of the vehicles could have been declared a total loss for claim amounts of just a few thousand dollars.

Figure 2: Theft claim size distribution of 2004–09 Toyota Prius models by calendar period

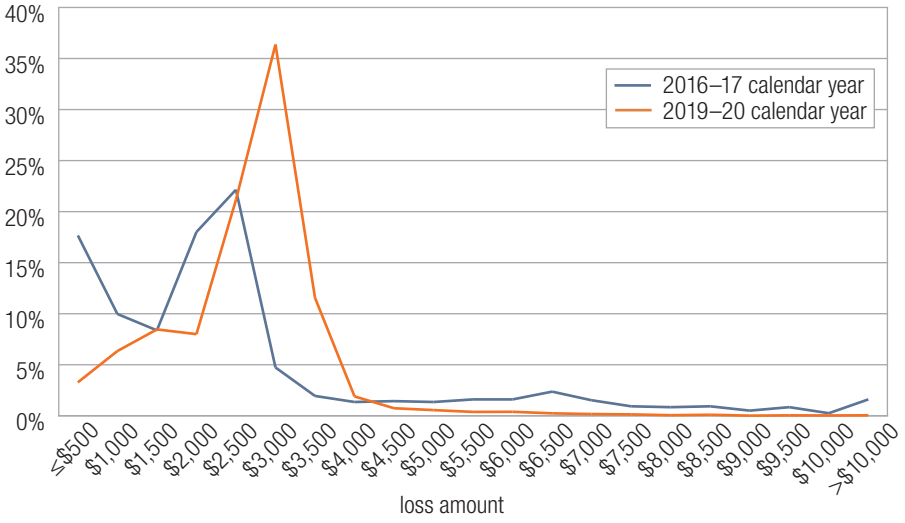


Figure 3 shows the theft claims frequencies for 2004–09 Toyota Prius models by state group in calendar years 2018 and 2020. Not all states are shown due to insufficient data. For all state groups, claim frequency increased significantly between 2018 and 2020. For calendar year 2020, California had the highest claim frequency (157.0 claims per 1,000 insured vehicle years) followed by Oregon-Washington (62.0). Both California and Oregon-Washington also had dramatic increases in overall losses (Table 2). In California, overall losses increased from $23 in 2018 to $419 in 2020. In Oregon-Washington, overall losses increased from $2 in 2018 to $112 in 2020.

Figure 3: Theft claim frequencies of 2004–09 Toyota Prius models by state group

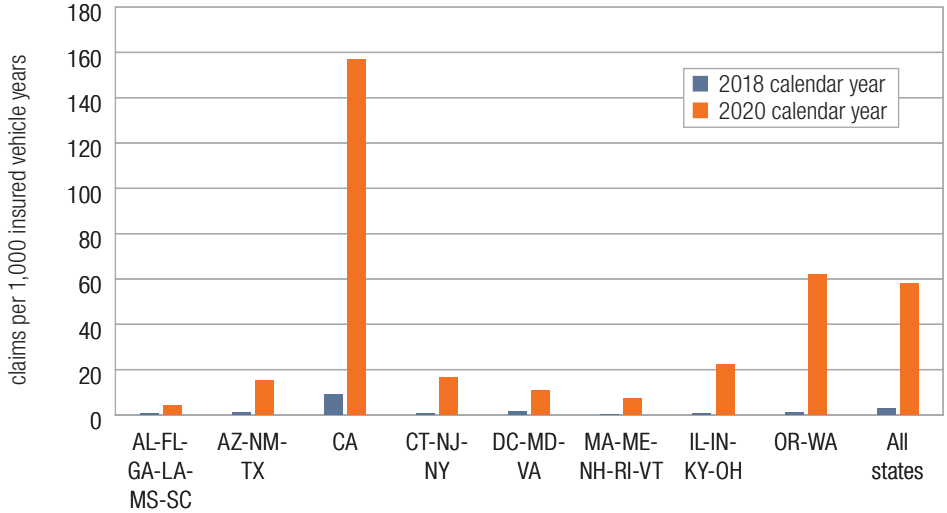


Table 2: Theft losses of 2004–09 Toyota Prius models in calendar years 2018 and 2020 by state group										
	Calendar year 2018					Calendar year 2020				
State group	Exposure	Number of Claims	Claim frequency*	Claim severity	Overall losses	Exposure	Number of Claims	Claim frequency*	Claim severity	Overall losses
Alabama, Florida, Georgia, Louisiana, Mississippi, and South Carolina	28,926	20	0.7	$2,984	$2.06	20,075	88	4.4	$1,874	$8.22
Arizona, New Mexico, and Texas	24,308	27	1.1	$2,845	$3.16	17,398	265	15.2	$1,917	$29.19
California	85,824	785	9.1	$2,494	$22.81	66,786	10,485	157.0	$2,667	$418.66
Connecticut, New Jersey, and New York	23,760	15	0.6	$2,174	$1.37	17,851	294	16.5	$1,966	$32.37
District of Columbia, Maryland, and Virginia	24,369	34	1.4	$3,178	$4.43	18,625	204	11.0	$1,871	$20.50
Illinois, Indiana, Kentucky, and Ohio	27,083	15	0.6	$3,225	$1.79	21,298	471	22.1	$1,634	$36.14
Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont	20,304	5	0.2	$2,720	$0.67	15,827	115	7.3	$1,676	$12.18
Oregon and Washington	31,507	41	1.3	$1,854	$2.41	27,540	1,708	62.0	$1,799	$111.55
All states	342,051	1,006	2.9	$2,540	$7.47	265,229	15,421	58.1	$2,356	$137.00

* Claims per 1,000 insured vehicle years.

Earlier and later designs of the Toyota Prius also saw an upsurge in theft claim frequency. Figure 4 shows the theft claim frequencies by calendar period for 2001–03 Toyota Prius models. Calendar years 2016–18 were combined to meet the exposure reporting threshold. As with the 2004–09 models, claim frequency rose sharply for 2001–03 models in calendar year 2020. Claim frequency increased from 0.8 claims per 1,000 insured vehicle years in 2016–18 to 49.5 in 2020. Large increases were also seen for overall losses (Table 3).

Figure 4: Theft claim frequencies of 2001–03 Toyota Prius models by calendar year

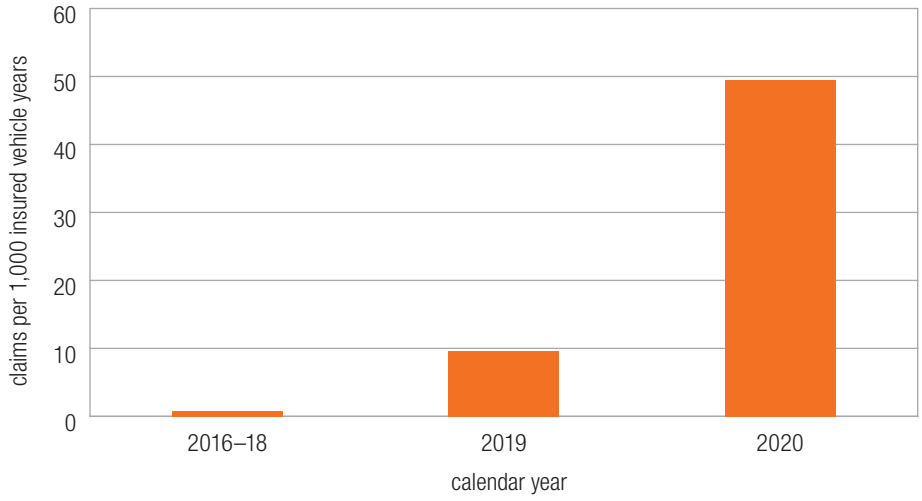


Table 3: Theft losses of 2001–03 Toyota Prius models					
Calendar year(s)	Exposure	Number of Claims	Claim frequency*	Claim severity	Overall losses
2016–18	47,600	37	0.8	$2,765	$2.15
2019	10,434	100	9.6	$2,050	$19.65
2020	8,583	425	49.5	$2,049	$101.47

* Claims per 1,000 insured vehicle years.

Figure 5 shows the theft claim frequencies by calendar year for 2010–15 Toyota Prius models. The increase in claim frequency for 2020 was much more subdued for 2010–15 models than for the earlier Prius models. For calendar year 2020, the claim frequency was only 1.3 claims per 1,000 insured vehicle years for 2010–15 models compared with 58.1 for 2004–09 models. Overall losses also increased at a more modest pace for 2020 compared with the earlier model year groups (Table 4).

Figure 5: Theft claim frequencies of 2010–15 Toyota Prius models by calendar year

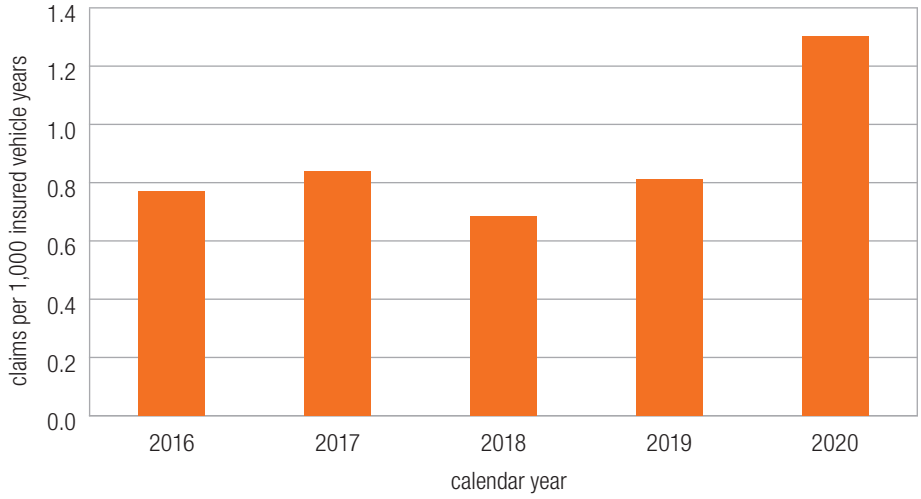


Table 4: Theft losses of 2010–15 Toyota Prius models

Calendar year	Exposure	Number of Claims	Claim frequency*	Claim severity	Overall losses
2016	657,339	506	0.8	$4,179	$3.22
2017	648,088	545	0.8	$4,537	$3.81
2018	629,106	431	0.7	$4,928	$3.38
2019	606,817	493	0.8	$4,169	$3.39
2020	579,405	755	1.3	$3,846	$5.01

* Claims per 1,000 insured vehicle years.

Discussion

Thefts of catalytic converters for their precious metals has led to dramatic increases in the theft losses of 2004–09 Toyota Prius models. Overall theft losses rose from $3 in 2016 to $137 in 2020, an increase of over 40 times between 2016 and 2020. These Prius models may be targeted by thieves because they are hybrids, they are easily recognized, and their catalytic converters can be removed easily (by just undoing bolts). Although information on the specific parts involved in a theft claim is not available in the HLDI database, outside sources such as The New York Times and The Washington Post have reported on the increase in catalytic converter theft and why some vehicles are targeted more than others.

California, which comprises about 25 percent of the 2004–09 Prius exposure, had the highest overall losses for 2020 ($419). The states of Oregon and Washington combined also had high overall losses in 2020 ($112), more than 45 times higher than its 2018 results ($2). HLDI will continue to monitor catalytic converter thefts in the Toyota Prius and other vehicles.

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