

Insurance Report



Whole vehicle theft losses

2020–22 passenger cars, pickups, SUVs, and vans

WT-22 April 2023



Highlights

The 2020–22 model year passenger vehicles combined had a whole vehicle theft claim frequency of 0.41 claims per 1,000 insured vehicle years. The average loss payment per whole vehicle theft (claim severity) was \$45,068. That translates to an average loss payment per insured vehicle year (overall losses) of \$18.

The Dodge Charger SRT Hellcat, a large four-door car, had the highest relative whole vehicle theft claim frequency at over 60 times the all-passenger-vehicle average. The Tesla Model 3 electric four-door 4WD, a midsize luxury car, and the Tesla Model Y electric four-door 4WD, a midsize luxury SUV, had the lowest relative whole vehicle theft claim frequencies at just 3 percent of the all-passenger-vehicle average.

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► Introduction

Theft claims under comprehensive coverage in the Highway Loss Data Institute (HLDI) database can result from three different types of thefts: theft of contents from a vehicle, theft of vehicle parts, and theft of the entire vehicle. Most companies do not supply data to HLDI about the type of theft. Using the methodology defined in the **Appendix**, vehicle age and price were used to classify total theft losses.

The purpose of the current analysis is to quantify the extent to which whole vehicle theft varies by vehicle size/class and make/series. This report is an update of previous HLDI reports. It presents whole vehicle theft losses under comprehensive coverage for passenger vehicles produced during model years 2020–22. Vehicles in this report were up to 4 years old during the period studied.

Results for all 2020–22 vehicles are included in the overall totals and in the separate totals for class and size subgroups in the principal table (**Table 4**). A detailed description of these class and size subgroups appears in the HLDI *Technical Appendix* (2010). Only vehicles with 20,000 insured vehicle years of exposure or 100 claims are included. A total of 308 passenger car, pickup, SUV, and van series met one or both of these reporting criteria.

Results in this report were standardized to control for the effect of demographic and geographic variables to accurately assess the contribution of the vehicle to insurance losses. Losses were standardized by calendar year; model year; garaging state; number of registered vehicles per square mile (vehicle density); deductible; risk; and driver age, gender, and marital status. Standardization was accomplished using a two-step process. First, regression models were constructed to produce estimates for each variable for claim frequency, claim severity, and overall losses. Then, the estimates were reweighted so that every vehicle has the same exposure distribution across all of the variables in the model.

This standardization procedure was first described in HLDI special report A-77, *Make and Series Results and Modeling* (2008). Further modifications were described in special report A-82, *Collision Losses After All-Variable Standardization* (2009). For details about this procedure, see *HLDI Loss Data Computation Methods* (2018).

► Whole vehicle theft losses by vehicle type

Table 1 lists whole vehicle theft losses for 2020–22 passenger vehicles by vehicle type after all-variable standardization. The 2020–22 model year passenger vehicles combined had a whole vehicle theft claim frequency of 0.41 claims per 1,000 insured vehicle years. The average loss payment per whole vehicle theft (claim severity) was \$45,068. As a result, the average loss payment per insured vehicle year (overall losses) was \$18. Passenger cars had the highest whole vehicle theft claim frequency (0.55), while pickups had the highest claim severity (\$61,071) and overall losses (\$29).

Table 1: Whole vehicle theft losses for 2020–22 model years by vehicle type after all-variable standardization

Vehicle type	Claim frequency	Claim severity	Overall loss
Passenger cars	0.55	\$37,085	\$21
Pickups	0.47	\$61,071	\$29
SUVs	0.32	\$45,264	\$15
All passenger vehicles*	0.41	\$45,068	\$18

*All-passenger-vehicle total includes 38,758 years of exposure and 13 claims from vans.

► **Whole vehicle theft losses by class and size**

Figures 1–3 show relative whole vehicle theft claim frequencies, claim severities, and overall losses by vehicle class and size for 2020–22 models. In each figure, the value 100 represents the average result for all passenger vehicles.

Relative claim frequencies ranged from 17 for midsize station wagons to 889 for large two-door cars, a category that includes only variants of the Dodge Challenger. Large four-door cars had the second-highest relative whole vehicle theft claim frequency (774) (Figure 1). Relative claim severities ranged from 40 for four-door microcars, a category that only includes the Mitsubishi Mirage, to 286 for very large luxury cars (Figure 2). Relative overall losses ranged from 13 for midsize station wagons to 1,131 for large two-door cars (Figure 3). Small sports cars, small luxury cars, and large vans did not have enough exposure to produce credible results.

Figure 1: Relative whole vehicle theft claim frequencies by class and size, 2020–22 model years

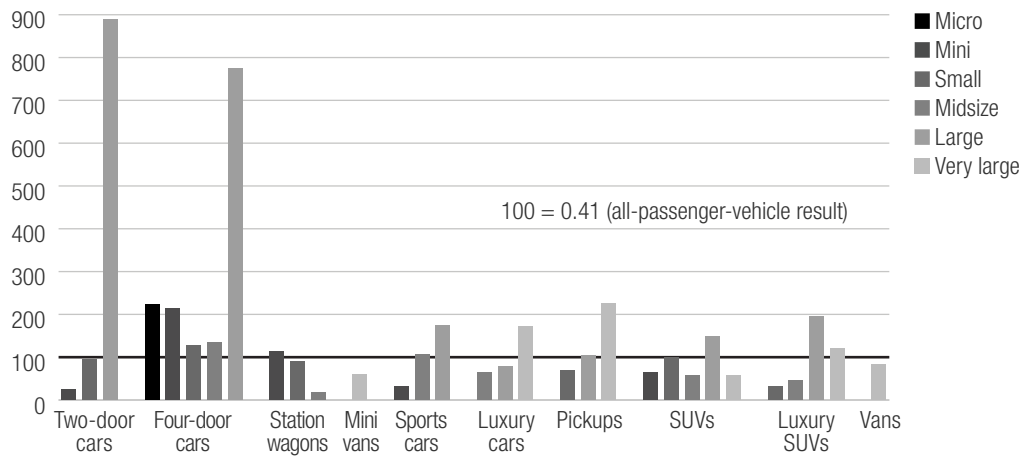


Figure 2: Relative whole vehicle theft claim severities by class and size, 2020–22 model years

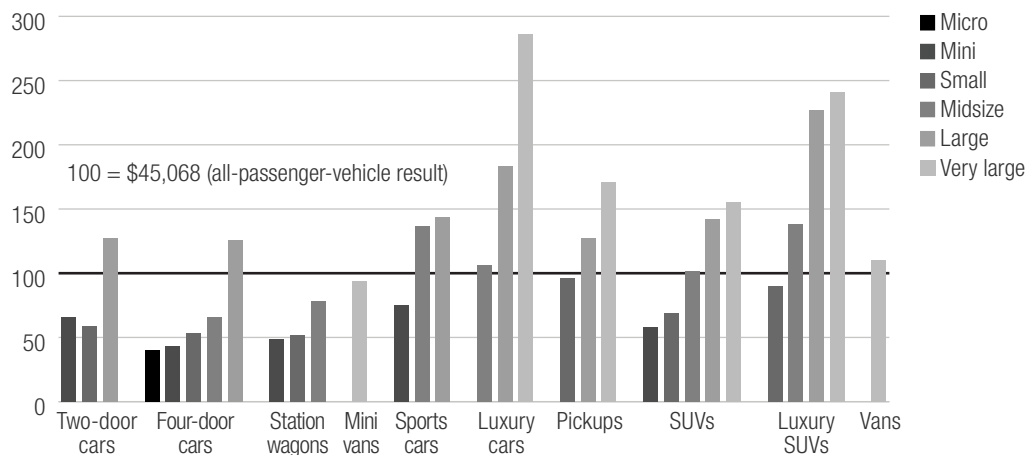
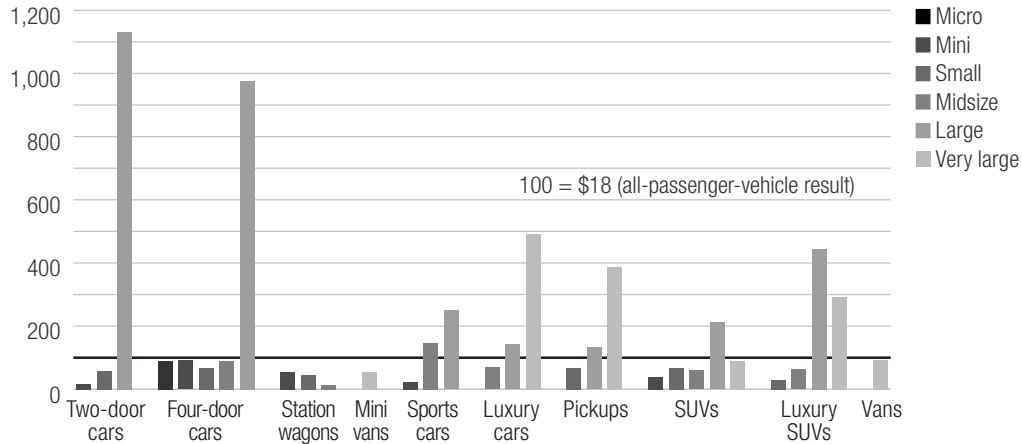


Figure 3: Relative whole vehicle theft overall losses by class and size, 2020–22 model years



► **Lowest and highest whole vehicle theft losses**

Table 2 lists the 20 vehicle series with the highest relative claim frequencies for whole vehicle theft. Many of the vehicles included on this list are expensive or boast high horsepower. There are also four Kia vehicles on this list as a result of a viral trend that has encouraged thieves to target the brand. The Dodge Charger SRT Hellcat, a large four-door car, had the worst result (6,128). Seventeen of the twenty vehicle series with the worst theft claim frequencies had overall losses that were more than twice the all-passenger-vehicle average.

Table 2: Highest whole vehicle theft claim frequencies, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Dodge	Charger SRT Hellcat	20–22	7,826	196	6,128	197	12,073
Dodge	Charger HEMI	20–22	79,139	712	2,197	115	2,523
Infiniti	Q50 4dr	20–22	24,970	90	878	92	805
Dodge	Challenger	20–22	119,461	375	766	107	822
Land Rover	Range Rover 4dr 4WD	20–22	44,436	111	611	254	1,551
Kia	Sportage 4dr	20–22	197,281	387	479	58	279
Land Rover	Range Rover Sport 4dr 4WD	20–22	78,574	148	460	211	971
Kia	Sportage 4dr 4WD	20–22	217,834	370	415	61	255
Honda	CR-V 4dr 4WD	20–22	681,118	1,141	409	76	312
BMW	X6 4dr 4WD	20–22	22,124	33	361	191	688
Kia	Rio	20–22	78,233	115	359	43	155
Kia	Forte	20–22	341,001	499	357	49	174
Ford	F-350 SuperCrew 4WD	20–22	115,324	165	349	189	659
BMW	X7 4dr 4WD	20–22	85,382	118	338	192	649
Ford	F-250 SuperCrew 4WD	20–22	226,836	313	337	176	592
Honda	Accord	20–22	613,914	771	306	69	211
Ram	3500 crew cab LWB 4WD	20–22	65,599	82	306	155	474
Infiniti	Q50 4dr 4WD	20–22	23,108	27	287	99	285
Nissan	Maxima	20–22	49,447	58	284	82	234
Honda	CR-V 4dr	20–22	307,809	341	270	70	188

Table 3 lists the 20 vehicle series with the lowest relative claim frequencies for whole vehicle theft. Six of the 20 vehicles are made by GM, and an additional 6 are electric (5 of which are manufactured by Tesla). The Tesla Model 3 electric four-door 4WD, a midsize luxury car, and the Tesla Model Y electric four-door 4WD, a midsize luxury SUV, headed the list with relative claim frequencies of 3. All of the vehicles with the best results had whole vehicle theft claim frequencies that were less than a quarter of the all-passenger-vehicle average. Relative overall losses were also less than a quarter of the all-passenger-vehicle average for almost all the vehicles on this list.

Table 3: Lowest whole vehicle theft claim frequencies, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative severity	Relative overall losses
Tesla	Model 3 electric 4dr 4WD	20–22	255,929	3	3	136	4
Tesla	Model Y electric 4dr 4WD	20–22	372,928	5	3	128	4
Volvo	XC90 4dr 4WD	20–22	108,720	3	6	114	7
GMC	Acadia 4dr 4WD	20–22	122,400	4	7	108	8
Tesla	Model X 4dr electric 4WD	20–22	53,970	2	8	248	19
Volvo	XC40 4dr 4WD	20–22	79,823	3	8	100	8
Tesla	Model 3 electric 4dr	20–22	179,019	6	9	111	10
Volvo	XC60 4dr 4WD	20–22	90,763	4	10	114	11
Lexus	UX 250 hybrid 4dr 4WD	20–22	39,808	2	10	96	10
Chevrolet	Trailblazer 4dr 4WD	21–22	73,187	3	10	57	6
Cadillac	XT5 4dr	20–22	53,584	2	11	97	10
Buick	Envision 4dr 4WD	20–22	60,623	3	11	92	10
Chevrolet	Traverse 4dr 4WD	20–22	200,459	10	12	99	12
Land Rover	Defender 110 4dr 4WD	20–22	32,971	2	13	190	25
Nissan	Leaf electric	20–22	32,882	2	14	74	10
Buick	Encore GX 4dr 4WD	20–22	63,088	4	14	74	10
Mercedes-Benz	GLE class 4dr	20–22	63,116	4	15	149	22
Volvo	XC60 4dr	20–22	31,659	2	15	113	17
Subaru	Ascent 4dr 4WD with EyeSight	20–22	312,099	19	15	92	14
Tesla	Model S 4dr electric 4WD	20–22	58,562	4	15	253	38

► Vehicle series whole vehicle theft losses

Detailed whole vehicle theft results for all 2020–22 passenger vehicles with at least 20,000 insured vehicle years of exposure or 100 paid whole vehicle theft claims are listed in **Table 4**. The values reported are total exposure (insured vehicle years), number of claims, and relative results for three loss categories: claim frequency, claim severity, and overall losses. The value 100 corresponds to the average result for all passenger vehicles in each loss category. Individual series are listed in ascending order of relative overall losses within each size and class group.

The total exposure accumulated for the three model years was nearly 13 million insured vehicle years for passenger cars and nearly 33 million insured vehicle years for pickups, SUVs, and vans. Whole vehicle theft claims numbered over 7,000 for passenger cars and more than 11,000 for pickups, SUVs, and vans.

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
All passenger vehicles		20–22	45,394,030	18,596	100=0.41	100=\$45,068	100=\$18
All passenger cars		20–22	12,742,143	7,046	135	82	111
MICROCARS							
4-door		20–22	21,429	20	224	40	89
MINICARS							
2-door		20–22	25,850	2	24	66	16
Mini	Cooper	20–22	25,850	2	24	66	16
4-door		20–22	257,975	226	214	43	91
Chevrolet	Spark	20–22	87,653	29	81	38	31
Hyundai	Accent	20–22	50,841	55	265	45	120
Kia	Rio	20–22	78,233	115	359	43	155
Station wagons		20–22	75,045	35	113	49	55
Sports		20–22	32,691	4	32	75	24
Mazda	MX-5 Miata convertible	20–22	30,157	2	17	77	13
SMALL CARS							
2-door		20–22	56,364	22	95	59	57
4-door		20–22	3,914,787	2,031	127	53	67
Nissan	Leaf electric	20–22	32,882	2	14	74	10
Toyota	Prius hybrid 4WD	20–22	33,837	4	26	64	16
Volkswagen	GTI	20–22	25,749	2	23	71	16
Mazda	3 hatchback 4WD	20–22	24,036	2	24	69	16
Toyota	Corolla hatchback	20–22	69,292	9	33	54	18
Hyundai	Ioniq hybrid	20–22	23,636	3	30	60	18
Mazda	3	20–22	47,864	8	40	54	22
Mazda	3 hatchback	20–22	25,974	4	37	59	22
Toyota	Prius Prime plug-in hybrid	20–22	81,556	11	33	75	25
Subaru	Impreza 4WD with EyeSight	20–22	44,282	9	49	51	25
Mazda	3 4WD	20–22	23,572	4	41	65	27
Toyota	Corolla hybrid	20–22	112,190	24	53	60	32
Toyota	Prius hybrid	20–22	59,375	13	52	65	34
Toyota	Corolla	20–22	930,617	263	69	51	35
Honda	Insight hybrid	20–22	61,733	16	63	65	41
Subaru	WRX 4WD	20–22	85,023	19	55	83	45

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Honda	Civic hatchback	22	27,750	7	60	78	47
Nissan	Kicks	20–22	160,384	66	101	52	53
Nissan	Sentra	20–22	274,565	121	107	52	56
Hyundai	Elantra	21–22	150,050	63	102	55	56
Nissan	Versa	20–22	112,783	70	152	42	64
Honda	Civic	22	111,669	44	95	69	66
Acura	ILX	20–22	48,309	23	118	66	77
Kia	Forte	20–22	341,001	499	357	49	174
Station wagons		20–22	959,500	353	90	52	46
Subaru	Crosstrek 4WD with EyeSight	20–22	441,962	39	21	66	14
Subaru	Impreza 4WD with EyeSight	20–22	99,472	24	58	54	31
Kia	Soul	20–22	379,064	283	182	49	89
MIDSIZE CARS							
4-door		20–22	3,332,494	1,833	134	66	89
Subaru	Legacy 4WD with EyeSight	20–22	105,230	8	18	60	11
Hyundai	Sonata	20–22	236,571	47	48	65	31
Volkswagen	Jetta	20–22	196,433	53	65	57	37
Toyota	Camry 4WD	20–22	82,504	20	58	73	42
Nissan	Altima 4WD	20–22	72,591	20	67	63	42
Honda	Accord hybrid	20–22	85,432	21	61	76	46
Chevrolet	Malibu	20–22	167,055	64	94	57	54
Toyota	Camry hybrid	20–22	129,644	40	75	76	57
Volkswagen	Passat	20–22	53,899	21	96	61	59
Toyota	Camry	20–22	733,115	284	95	67	64
Nissan	Altima	20–22	302,239	159	129	59	76
Kia	K5 2WD/4WD	21–22	165,327	77	114	69	79
Honda	Accord	20–22	613,914	771	306	69	211
Nissan	Maxima	20–22	49,447	58	284	82	234
Station wagons		20–22	638,820	44	17	78	13
Subaru	Outback 4WD with EyeSight	20–22	638,820	44	17	78	13
Sports		20–22	277,489	122	107	137	147
Ford	Mustang 2dr	20–22	50,012	12	57	78	44
Toyota	GR Supra 2dr	20–22	28,320	9	74	129	95
Ford	Mustang GT 2dr	20–22	61,831	43	172	99	171
Chevrolet	Corvette convertible	20–22	22,649	8	91	252	230
Chevrolet	Corvette 2dr	20–22	47,009	22	116	212	245
Luxury		20–22	1,385,007	370	65	106	69
Tesla	Model 3 electric 4dr 4WD	20–22	255,929	3	3	136	4
Tesla	Model 3 electric 4dr	20–22	179,019	6	9	111	10
BMW	3 series 4dr	20–22	61,684	5	22	94	20
Mercedes-Benz	C class 4dr 4WD	20–22	36,477	3	21	103	22
Lexus	ES 300h hybrid 4dr	20–22	35,455	3	21	109	23
Lexus	ES 350 4dr	20–22	114,061	12	26	99	25
Lexus	IS 300 4dr	20–22	23,322	3	31	85	26

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Mercedes-Benz	C class 4dr	20–22	40,467	5	31	108	33
Audi	A4 4dr 4WD	20–22	33,992	6	44	96	43
Mercedes-Benz	CLA class 4dr	20–22	21,069	4	52	91	47
Mercedes-Benz	A class 4dr	20–22	20,703	5	56	88	49
BMW	2 series 4dr 4WD	20–22	20,181	5	64	85	54
BMW	3 series 4dr 4WD	20–22	64,226	15	57	101	57
Cadillac	CT5 4dr	20–22	20,779	6	66	91	60
BMW	M340xi 4dr 4WD	20–22	22,225	6	70	130	91
Acura	TLX 4dr 4WD	21–22	20,215	10	117	99	115
Acura	TLX 4dr	21–22	23,781	12	123	95	118
Infiniti	Q50 4dr 4WD	20–22	23,108	27	287	99	285
Infiniti	Q50 4dr	20–22	24,970	90	878	92	805
LARGE CARS							
2-door		20–22	139,218	507	889	127	1,131
Dodge	Challenger	20–22	119,461	375	766	107	822
4-door		20–22	329,713	1,045	774	126	976
Toyota	Avalon hybrid	20–22	29,737	8	62	89	55
Toyota	Avalon	20–22	38,438	14	88	87	77
Kia	Stinger 2WD/4WD	20–22	42,246	26	148	96	143
Dodge	Charger	20–22	65,106	53	200	75	150
Chrysler	300	20–22	20,763	19	226	74	167
Dodge	Charger HEMI	20–22	79,139	712	2,197	115	2,523
Dodge	Charger SRT Hellcat	20–22	7,826	196	6,128	197	12,073
Sports		20–22	132,674	94	173	144	250
Chevrolet	Camaro 2dr	20–22	74,580	53	173	88	153
Luxury		20–22	301,810	96	78	183	142
Mercedes-Benz	E class 4dr 4WD	20–22	31,445	3	21	130	27
Mercedes-Benz	E class 4dr	20–22	27,877	3	26	125	32
Tesla	Model S 4dr electric 4WD	20–22	58,562	4	15	253	38
BMW	5 series 4dr	20–22	29,189	5	45	113	51
Genesis	G70 4dr 2WD/4WD	20–22	31,268	7	53	106	56
BMW	5 series 4dr 4WD	20–22	34,891	13	93	131	122
VERY LARGE CARS							
Minivans		20–22	790,023	190	59	94	55
Toyota	Sienna hybrid van 4WD	21–22	56,574	6	27	108	29
Chrysler	Pacifica 4WD	20–22	21,741	3	37	104	38
Toyota	Sienna hybrid van	21–22	89,951	12	33	124	41
Chrysler	Pacifica plug-in hybrid	20–22	33,195	5	38	113	43
Chrysler	Pacifica	20–22	141,641	28	48	91	44
Kia	Carnival	22	30,660	7	53	92	49
Honda	Odyssey	20–22	297,930	92	76	95	72
Luxury		20–22	71,254	50	172	286	491

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
All pickups, SUVs, and vans		20–22	32,651,888	11,550	86	111	96
PICKUPS							
All pickups		20–22	7,325,367	3,419	114	136	154
All small pickups		20–22	2,028,840	584	70	96	67
2-door plus		20–22	151,940	36	57	74	42
Ford	Ranger ext. cab 4WD	20–22	26,075	4	40	81	33
4-door		20–22	1,876,901	548	71	97	69
Ford	Ranger crew cab 4WD	20–22	135,689	11	20	95	19
Chevrolet	Colorado crew cab 4WD	20–22	147,724	14	24	98	23
GMC	Canyon crew cab 4WD	20–22	57,591	6	26	98	25
Chevrolet	Colorado crew cab	20–22	72,215	15	52	72	37
Toyota	Tacoma double cab 4WD	22	49,722	9	42	103	44
Ford	Ranger crew cab	20–22	57,306	13	56	79	44
Nissan	Frontier crew cab SWB 4WD	22	24,402	5	46	97	45
Toyota	Tacoma double cab	22	26,141	8	76	86	66
GMC	Canyon crew cab	20–22	24,738	8	83	83	69
Honda	Ridgeline crew cab 4WD	20–22	113,517	41	89	95	84
Jeep	Gladiator crew cab pickup 4WD	20–22	373,366	193	126	112	141
All large pickups		20–22	4,141,700	1,766	104	127	132
2-door		20–22	12,769	11	—	—	—
2-door plus		20–22	108,947	26	59	87	51
Ram	1500 Classic ext. cab 4WD	20–22	44,666	8	44	82	36
Ram	1500 Classic ext. cab	20–22	21,903	11	122	76	93
4-door		20–22	4,019,983	1,729	105	128	135
Chevrolet	Silverado 1500 ext. cab 4WD	20–22	93,636	9	25	88	22
Nissan	Titan crew cab short bed 4WD	20–22	42,933	5	29	112	32
Toyota	Tundra CrewMax 4WD	20–22	226,207	28	30	119	36
Chevrolet	Silverado 1500 ext. cab	20–22	27,018	6	57	84	48
Ram	1500 crew cab LWB 4WD	20–22	48,301	8	42	126	52
Ford	F-150 hybrid crew 4WD	21–22	52,563	8	36	151	54
Toyota	Tundra double cab 4WD	20–22	57,327	14	59	97	57
Ford	F-150 SuperCrew	21–22	42,932	10	58	102	60
Ford	F-150 SuperCrew 4WD	21–22	263,354	47	44	146	64
Ram	1500 quad cab 4WD	20–22	102,927	33	78	95	74
Toyota	Tundra CrewMax	20–22	52,956	17	78	107	83
Chevrolet	Silverado 1500 crew cab 4WD	20–22	839,356	313	91	118	108
Chevrolet	Silverado 1500 crew cab	20–22	216,007	115	130	97	126
Ram	1500 crew cab SWB	20–22	118,043	72	149	107	159
Ram	1500 quad cab	20–22	28,620	22	185	91	169
GMC	Sierra 1500 crew cab 4WD	20–22	461,652	331	175	131	230
Ram	1500 crew cab SWB 4WD	20–22	669,173	414	151	159	239
GMC	Sierra 1500 crew cab	20–22	74,540	76	248	109	269
All very large pickups		20–22	1,154,827	1,069	226	171	386
2-door		20–22	2,960	3	—	—	—

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
2-door plus		20–22	11,632	5	—	—	—
4-door		20–22	1,140,234	1,062	227	171	389
Chevrolet	Silverado 3500 crew cab 4WD	20–22	58,563	21	88	167	148
Ram	2500 crew cab SWB 4WD	20–22	200,680	97	117	151	177
Chevrolet	Silverado 2500 crew cab 4WD	20–22	198,425	118	146	148	216
GMC	Sierra 3500 crew cab 4WD	20–22	52,305	34	158	175	276
Ram	2500 mega cab 4WD	20–22	23,756	20	208	175	365
GMC	Sierra 2500 crew cab 4WD	20–22	140,744	147	256	169	432
Ram	3500 crew cab LWB 4WD	20–22	65,599	82	306	155	474
Ford	F-250 SuperCrew 4WD	20–22	226,836	313	337	176	592
Ford	F-350 SuperCrew 4WD	20–22	115,324	165	349	189	659
SUVs							
All SUVs		20–22	25,287,764	8,118	78	100	79
Mini SUVs		20–22	446,212	118	64	58	38
Kia	Niro hybrid 4dr	20–22	30,324	7	55	65	36
Honda	HR-V 4dr 4WD	20–22	218,097	55	62	61	37
Hyundai	Venue 4dr	20–22	75,496	23	74	51	38
Honda	HR-V 4dr	20–22	112,865	31	68	58	39
Small SUVs		20–22	9,920,617	4,015	99	69	68
Chevrolet	Trailblazer 4dr 4WD	21–22	73,187	3	10	57	6
Chevrolet	Trax 4dr 4WD	20–22	98,468	8	21	56	12
Subaru	Forester 4dr 4WD with EyeSight	20–22	711,534	52	18	70	13
Chevrolet	Equinox 4dr 4WD	20–22	348,711	29	20	69	14
GMC	Terrain 4dr 4WD	20–22	138,045	11	19	75	14
Chevrolet	Trax 4dr	20–22	182,110	24	32	50	16
Ford	Escape hybrid 4dr	20–22	31,649	3	27	68	18
Toyota	Venza hybrid 4dr 4WD	21–22	110,061	9	20	92	19
Mazda	CX-30 4dr 4WD	20–22	116,463	14	30	63	19
Ford	Escape 4dr 4WD	20–22	239,337	26	27	71	19
Chevrolet	Equinox 4dr	20–22	497,928	68	33	61	20
Jeep	Renegade 4dr 4WD	20–22	109,863	16	35	61	22
Chevrolet	Trailblazer 4dr	21–22	112,198	17	37	59	22
Mazda	CX-30 4dr	20–22	48,941	8	38	60	23
GMC	Terrain 4dr	20–22	146,442	20	33	70	23
Mazda	CX-5 4dr 4WD	20–22	384,091	48	31	75	23
Nissan	Rogue 4dr 4WD	20–22	374,691	53	34	69	24
Hyundai	Kona 4dr 4WD	20–22	156,150	29	45	56	25
Nissan	Rogue Sport 4dr 4WD	20–22	103,663	20	46	57	26
Jeep	Compass 4dr 4WD	20–22	229,466	39	42	64	27
Ford	Bronco Sport 4dr 4WD	21–22	171,830	23	32	85	27
Ford	Escape 4dr	20–22	162,059	30	46	61	28
Hyundai	Santa Fe 4dr 4WD	20–22	210,755	35	40	73	29
Volkswagen	Taos 4dr	22	28,509	5	43	69	30
Mitsubishi	Outlander 4dr 4WD	22	30,796	5	42	75	32

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Hyundai	Tucson 4dr	22	63,072	12	47	72	34
Hyundai	Kona 4dr	20–22	131,615	34	64	53	34
Ford	EcoSport 4dr 4WD	20–22	67,161	17	61	56	34
Toyota	RAV4 hybrid 4dr 4WD	20–22	455,249	72	39	89	35
Hyundai	Santa Fe 4dr	20–22	230,319	51	54	67	36
Ford	Escape hybrid 4dr 4WD	20–22	38,784	7	45	81	36
Toyota	C-HR 4dr	20–22	130,635	32	61	61	37
Toyota	RAV4 4dr	20–22	445,846	93	51	73	37
Toyota	RAV4 4dr 4WD	20–22	532,491	111	51	76	39
Nissan	Rogue 4dr	20–22	292,218	74	62	64	40
Hyundai	Tucson 4dr 4WD	22	77,723	18	57	72	42
Nissan	Rogue Sport 4dr	20–22	94,492	31	81	58	47
Mitsubishi	Outlander Sport 4dr 4WD	20–22	28,452	10	85	57	48
Jeep	Compass 4dr	20–22	67,849	25	90	57	51
Jeep	Renegade 4dr	20–22	48,973	22	111	57	64
Mitsubishi	Outlander Sport 4dr	20–22	35,960	20	136	53	72
Kia	Seltos 4dr	21–22	28,226	16	137	58	79
Kia	Seltos 4dr 4WD	21–22	143,343	135	230	61	140
Honda	CR-V 4dr	20–22	307,809	341	270	70	188
Honda	CR-V hybrid 4dr 4WD	20–22	134,760	125	226	85	193
Kia	Sportage 4dr 4WD	20–22	217,834	370	415	61	255
Kia	Sportage 4dr	20–22	197,281	387	479	58	279
Honda	CR-V 4dr 4WD	20–22	681,118	1,141	409	76	312
Midsized SUVs		20–22	8,414,103	2,013	58	102	59
GMC	Acadia 4dr 4WD	20–22	122,400	4	7	108	8
Chevrolet	Traverse 4dr 4WD	20–22	200,459	10	12	99	12
Subaru	Ascent 4dr 4WD with EyeSight	20–22	312,099	19	15	92	14
Toyota	Highlander hybrid 4dr	20–22	34,559	2	17	92	16
Chevrolet	Blazer 4dr 4WD	20–22	113,325	9	19	85	16
GMC	Acadia 4dr	20–22	97,818	9	23	78	18
Volkswagen	Tiguan 4dr 4WD	20–22	210,566	23	27	70	19
Toyota	4Runner 4dr	20–22	68,612	5	19	101	19
Chevrolet	Traverse 4dr	20–22	257,014	30	28	82	23
Volkswagen	Atlas 4dr	20–22	54,367	6	26	90	24
Hyundai	Palisade 4dr	20–22	162,585	17	25	100	25
Ford	Mustang Mach-E electric 4dr 4WD	21–22	28,414	2	16	164	26
Mazda	CX-9 4dr 4WD	20–22	75,743	9	29	91	27
Volkswagen	Tiguan 4dr	20–22	149,603	25	41	65	27
Ford	Edge 4dr 4WD	20–22	183,234	23	31	88	28
Ford	Bronco 4dr 4WD	21–22	58,598	5	21	136	28
Hyundai	Palisade 4dr 4WD	20–22	219,687	26	29	102	30
Volkswagen	Atlas Cross Sport 4dr	20–22	38,113	6	35	84	30
Toyota	Highlander 4dr	20–22	192,422	25	31	95	30
Kia	Sorento 4dr	21–22	52,704	9	40	83	33

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Nissan	Murano 4dr 4WD	20–22	96,242	16	40	89	36
Kia	Telluride 4dr 4WD	20–22	299,870	41	34	106	36
Jeep	Cherokee 4dr 4WD	20–22	318,313	64	49	73	36
Kia	Telluride 4dr	20–22	168,608	27	39	96	37
Ford	Explorer 4dr 4WD	20–22	494,931	78	38	106	41
Kia	Sorento 4dr 4WD	21–22	64,506	12	44	95	42
Ford	Explorer 4dr	20–22	191,940	37	47	91	42
Volkswagen	Atlas 4dr 4WD	20–22	119,703	22	44	101	44
Toyota	4Runner 4dr 4WD	20–22	406,767	69	42	113	47
Honda	Passport 4dr	20–22	35,172	8	56	84	47
Toyota	Highlander 4dr 4WD	20–22	345,454	69	49	101	49
Honda	Passport 4dr 4WD	20–22	110,490	28	61	85	52
Jeep	Wrangler plug-in hybrid 4dr 4WD	21–22	47,343	8	40	132	53
Jeep	Wrangler 2dr 4WD	20–22	97,655	25	62	91	56
Volkswagen	Atlas Cross Sport 4dr 4WD	20–22	80,134	21	63	93	58
Toyota	Highlander hybrid 4dr 4WD	20–22	138,691	32	56	110	61
Jeep	Cherokee 4dr	20–22	98,692	40	98	66	64
Chevrolet	Blazer 4dr	20–22	161,196	53	81	81	65
Honda	Pilot 4dr 4WD	20–22	360,882	116	78	95	74
Honda	Pilot 4dr	20–22	149,200	58	95	86	81
Nissan	Murano 4dr	20–22	81,400	35	105	79	83
Jeep	Wrangler 4dr 4WD	20–22	619,145	236	93	117	109
Jeep	Grand Cherokee L 4dr 4WD	21–22	107,589	44	101	115	116
Jeep	Grand Cherokee 4dr 4WD	21–22	232,609	118	124	96	119
Jeep	Grand Cherokee 4dr	21–22	40,698	26	156	91	141
Large SUVs		20–22	685,656	419	149	142	211
Chevrolet	Tahoe 4dr	21–22	49,078	11	55	135	74
Ford	Expedition 4dr 4WD	20–22	57,388	11	49	158	77
Chevrolet	Tahoe 4dr 4WD	21–22	130,714	28	52	164	84
GMC	Yukon 4dr 4WD	21–22	71,397	17	58	181	105
Ford	Expedition 4dr	20–22	53,333	20	90	132	118
GMC	Yukon 4dr	21–22	23,356	8	84	172	143
Dodge	Durango 4dr	20–22	53,292	36	165	94	156
Dodge	Durango 4dr 4WD	20–22	115,694	127	267	106	282
Very large SUVs		20–22	260,539	61	57	155	88
Chevrolet	Suburban 1500 4dr 4WD	21–22	50,578	7	34	173	59
GMC	Yukon XL 1500 4dr 4WD	21–22	39,860	6	36	209	75
Ford	Expedition Max 4dr 4WD	20–22	52,982	10	48	160	76
LUXURY SUVs							
Small luxury SUVs		20–22	813,408	108	32	90	29
Volvo	XC40 4dr 4WD	20–22	79,823	3	8	100	8
Lexus	UX 250 hybrid 4dr 4WD	20–22	39,808	2	10	96	10
Buick	Encore GX 4dr 4WD	20–22	63,088	4	14	74	10
Buick	Encore GX 4dr	20–22	104,886	8	19	58	11

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
BMW	X1 4dr 4WD	20–22	36,348	2	17	93	16
BMW	X1 4dr	20–22	22,027	2	19	85	16
Mercedes-Benz	GLB class 4dr	20–22	33,170	3	20	97	19
Buick	Encore 4dr	20–22	58,095	9	36	56	20
Lincoln	Corsair 4dr	20–22	38,032	4	23	91	21
Lincoln	Corsair 4dr 4WD	20–22	49,840	7	36	103	37
Mercedes-Benz	GLB class 4dr 4WD	20–22	47,339	8	41	96	40
Land Rover	Range Rover Evoque 4dr 4WD	20–22	47,210	11	56	107	60
Audi	Q3 4dr 4WD	20–22	116,886	31	64	94	61
Midsize luxury SUVs		20–22	3,903,923	728	46	138	63
Tesla	Model Y electric 4dr 4WD	20–22	372,928	5	3	128	4
Volvo	XC90 4dr 4WD	20–22	108,720	3	6	114	7
Cadillac	XT5 4dr	20–22	53,584	2	11	97	10
Buick	Envision 4dr 4WD	20–22	60,623	3	11	92	10
Volvo	XC60 4dr 4WD	20–22	90,763	4	10	114	11
Buick	Envision 4dr	20–22	74,394	5	18	73	13
Volvo	XC60 4dr	20–22	31,659	2	15	113	17
Cadillac	XT5 4dr 4WD	20–22	55,560	4	17	107	18
Mercedes-Benz	GLC class 4dr	20–22	70,572	6	19	110	21
Mercedes-Benz	GLE class 4dr	20–22	63,116	4	15	149	22
Mercedes-Benz	GLC class 4dr 4WD	20–22	113,156	10	21	115	24
Lexus	RX 450h hybrid 4dr 4WD	20–22	54,800	4	19	126	24
Cadillac	XT6 4dr	20–22	37,334	3	21	115	24
Land Rover	Defender 110 4dr 4WD	20–22	32,971	2	13	190	25
Cadillac	XT6 4dr 4WD	20–22	55,770	4	19	134	25
Acura	RDX 4dr 4WD	20–22	182,917	22	30	99	30
Lincoln	Nautilus 4dr 4WD	20–22	44,282	5	28	110	31
Lexus	RX 350 4dr	20–22	136,498	15	27	113	31
Lexus	RX 350 4dr 4WD	20–22	182,861	20	27	120	33
Volvo	XC90 plug-in hybrid 4dr 4WD	20–22	22,970	2	20	176	34
Lincoln	Nautilus 4dr	20–22	25,988	4	38	97	37
Land Rover	Discovery Sport 4dr 4WD	20–22	26,121	4	40	99	40
BMW	X3 4dr	20–22	73,415	12	39	104	41
BMW	X3 4dr 4WD	20–22	175,997	26	36	119	42
Audi	Q5 4dr 4WD	20–22	135,661	27	48	104	50
Acura	RDX 4dr	20–22	86,410	21	59	91	54
Acura	MDX 4dr 4WD	22	54,899	10	44	133	58
Mercedes-Benz	GLE class 4dr 4WD	20–22	192,389	32	41	144	59
Alfa Romeo	Stelvio 4dr 4WD	20–22	22,458	5	58	103	60
Lincoln	Aviator 4dr 4WD	20–22	62,714	13	50	153	77
BMW	X5 4dr	20–22	58,821	14	59	144	85
Audi	SQ5 4dr 4WD	20–22	24,618	7	65	138	90
Genesis	GV80 4dr 4WD	21–22	25,798	6	59	158	94
Infiniti	QX50 4dr 4WD	20–22	37,765	16	101	95	96

Table 4: Whole vehicle theft losses by series, 2020–22 model years

Make	Series	Model years	Exposure (insured vehicle years)	Claims	Relative claim frequency	Relative claim severity	Relative overall losses
Infiniti	QX50 4dr	20–22	33,861	16	117	85	100
Jaguar	F-Pace 4dr 4WD	20–22	37,134	13	89	126	112
BMW	X4 4dr 4WD	20–22	32,576	12	88	135	119
Porsche	Macan 4dr 4WD	20–22	77,130	27	87	154	133
Land Rover	Range Rover Velar 4dr 4WD	20–22	49,810	32	157	145	227
BMW	X5 4dr 4WD	20–22	141,902	113	194	161	313
Mercedes-Benz	GLE class coupe 4dr 4WD	21–22	20,222	14	173	235	406
BMW	X6 4dr 4WD	20–22	22,124	33	361	191	688
Large luxury SUVs		20–22	771,339	620	196	227	445
Tesla	Model X 4dr electric 4WD	20–22	53,970	2	8	248	19
Lexus	GX 460 4dr 4WD	20–22	112,016	19	42	141	60
Mercedes-Benz	GLS class 4dr 4WD	20–22	71,105	16	56	212	118
Audi	Q7 4dr 4WD	20–22	63,632	23	86	140	121
Porsche	Cayenne 4dr 4WD	20–22	39,784	17	102	199	202
Cadillac	Escalade 4dr 4WD	21–22	29,720	12	98	270	264
Audi	Q8 4dr 4WD	20–22	29,513	19	160	176	281
BMW	X7 4dr 4WD	20–22	85,382	118	338	192	649
Land Rover	Range Rover Sport 4dr 4WD	20–22	78,574	148	460	211	971
Land Rover	Range Rover 4dr 4WD	20–22	44,436	111	611	254	1,551
Very large luxury SUVs		20–22	71,969	36	121	241	293
Lincoln	Navigator 4dr 4WD	20–22	20,501	6	72	196	141
All vans		20–22	38,758	13	81	91	73
VANS							
Midsized vans		20–22	18,365	6	—	—	—
Very large vans		20–22	20,393	7	84	110	92

► Appendix — methodology

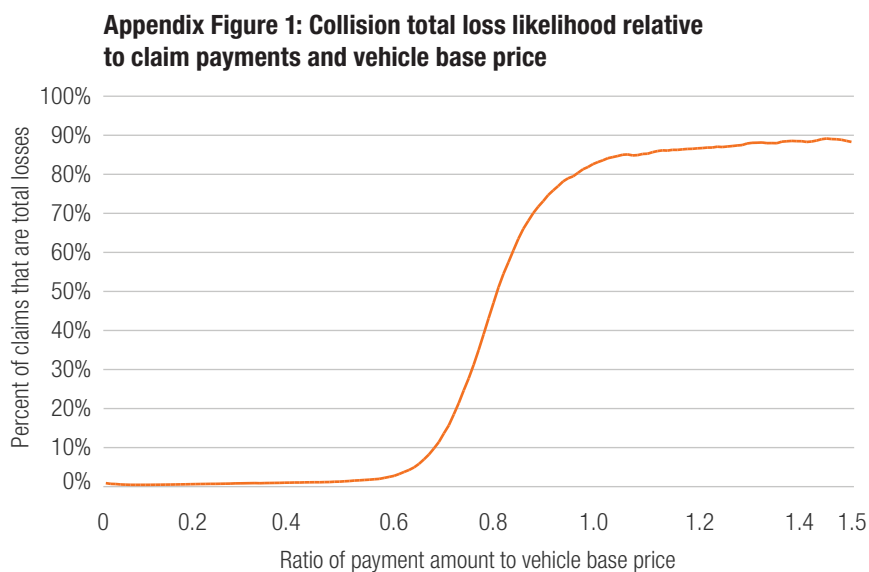
Comprehensive coverage pays for financial losses associated with any of the three types of theft claims: theft of contents from a vehicle, theft of vehicle parts, and theft of the entire vehicle. Presumably, the cost of a claim for theft of vehicle contents and/or personal valuables in a vehicle should be less than the value of the vehicle, while the theft of an entire vehicle should result in a claim that is near the residual value of the vehicle. Therefore, any theft claim that is near the residual value of the vehicle is likely to be a whole vehicle theft.

Under collision coverage, a vehicle is declared a total loss when crash damage is so severe that the cost to repair the vehicle is higher than the vehicle's residual value. Insurers then take possession of the damaged vehicle and pay the insured the residual value of the vehicle. Data on collision total loss claims are provided to HLDI. Under comprehensive coverage, when an insured vehicle is stolen, insurers pay the policyholder the residual value of the vehicle.

Therefore, it can be assumed that total loss payments under collision coverage are approximately equal to payments for whole vehicle theft under comprehensive coverage.

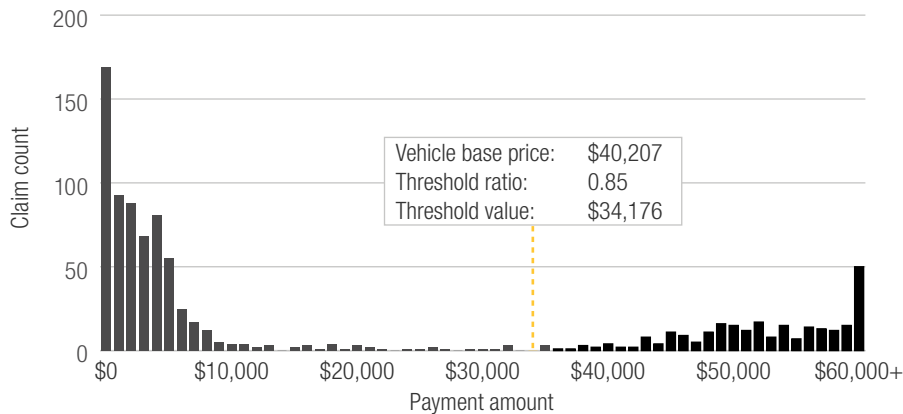
Collision claims data and information on vehicle base price were used to estimate vehicle residual values at the calendar year, model year, and make and series level. These estimates were then used as a whole vehicle theft threshold. If the payment associated with a theft claim was greater than the threshold value, then it was designated a whole vehicle theft.

Information on all collision claims for 2020–22 model year vehicles during calendar years 2019–22 was obtained, and each claim was categorized as a total loss or not a total loss. Information on vehicle base price for each vehicle was obtained, and a ratio of collision payment to vehicle base price was calculated. The relationship between the payment ratio and the likelihood that a claim resulted in a total loss was studied by comparing the percentage of total losses across different values of the payment ratio. For example, among claims with a payment ratio ranging from 0.35 to 0.36, only about 1 percent resulted in a total loss; whereas, among claims with a payment ratio ranging from 0.78 to 0.79, as much as 50 percent resulted in a total loss. A payment ratio of 0.85 was selected as a preliminary threshold amount. At this ratio, two thirds of collision claims resulted in a total loss. This ratio was selected based on the shape of the distribution curve to balance the proportions of false negatives and false positives. This curve is illustrated in **Appendix Figure 1**.

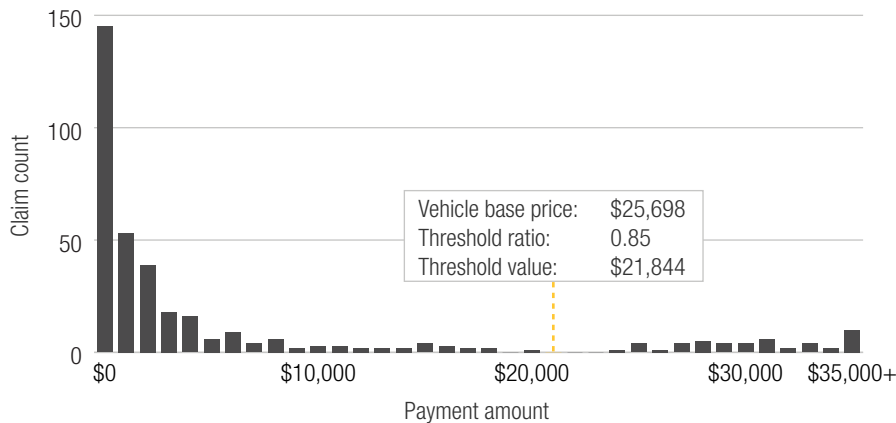


To further verify the validity of this threshold for theft claims, individual claim sizes for three popular vehicles were examined: the Chevrolet Silverado 1500 crew cab 4WD, Subaru Forester four-door 4WD with EyeSight, and Toyota Corolla. In general, claim size distributions are different for collision and theft claims. The amounts for collision claims are distributed more or less equally between claims of less than a thousand dollars and claims equalling the full price of the vehicle. For theft, losses tend to be minor (when some parts are stolen) or major (when the whole vehicle is stolen), so claims for amounts in the middle are infrequent. When the theft claim size distributions for those three vehicles were examined and base prices were taken into account, the threshold value of 0.85 fit into that “in-between” range. The theft claim size distributions for these three vehicles are illustrated in **Appendix Figures 2–4**.

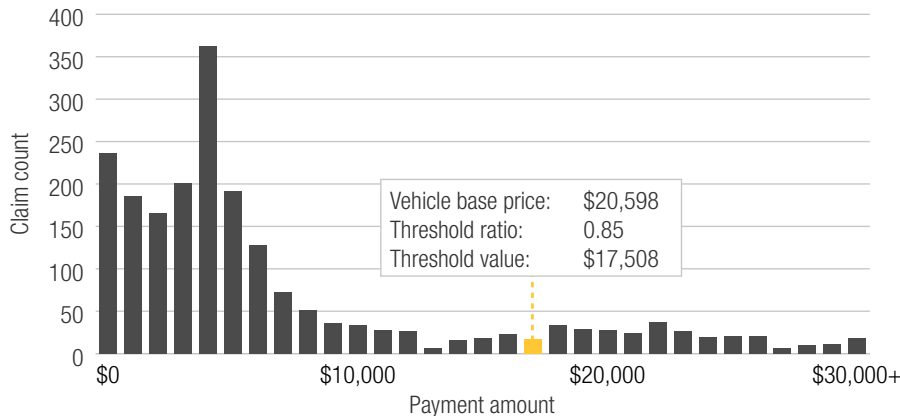
Appendix Figure 2: Chevrolet Silverado 1500 crew cab 4WD theft claim size distribution



Appendix Figure 3: Subaru Forester four-door 4WD with EyeSight theft claim size distribution



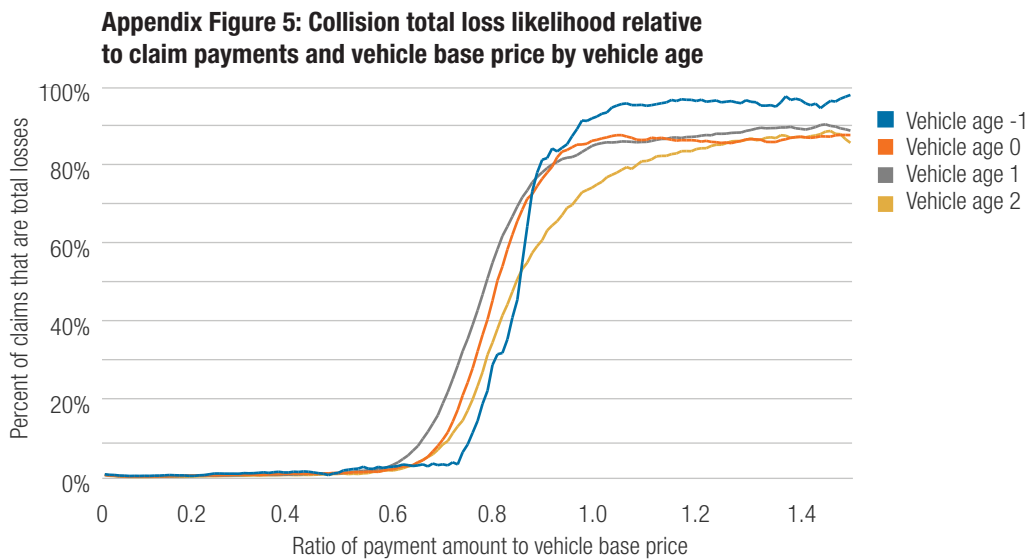
Appendix Figure 4: Toyota Corolla theft claim size distribution



Vehicles depreciate significantly as they age. Consequently, individual thresholds were calculated for each of the possible vehicle ages in the analysis. The ages ranged from -1 to 2. A negative vehicle age occurs when the model year is greater than the calendar year. Vehicles from a model year can be and often are sold in the calendar year preceding the model year. These thresholds were selected because two thirds of collision claims associated with the thresholds resulted in a total loss.

Vehicle age	Threshold
-1	0.86
0	0.84
1	0.82
2	0.92

Appendix Figure 5 illustrates the collision total loss likelihood relative to claim payment amounts and vehicle base price by vehicle age. As the vehicle age increases, the total loss threshold decreases.



After these age-level values were selected, theft claims were evaluated to determine if they were likely to be whole vehicle theft claims. For each claim, the payment amount was divided by the vehicle base price. If the resulting ratio was greater than the threshold value appropriate for the age of the vehicle, then the claim was considered a whole vehicle theft. All claims considered to be whole vehicle theft were combined with exposure data and run through HLDI’s all-variable-standardization procedure. The end result was that claim frequencies decreased and claim severities increased for the vehicles with the highest theft losses. For example, the 2021–22 Hyundai Elantra has an overall theft claim frequency of 1.7, compared with a whole vehicle theft claim frequency of 0.4. Claim severity for this vehicle increased from \$9,095 for any type of theft to \$24,787 for whole vehicle theft.

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