



Hail-related claims under comprehensive coverage

Claims for hail damage more than doubled in 2011 compared with the previous three years. Hail claims are primarily concentrated in the Midwest, with states such as South Dakota, Nebraska, Kansas, and Oklahoma having consistently high rates. However, hail claims occur almost everywhere, and in some states the frequency varies greatly from year to year.

► Introduction

Damage caused to vehicles by weather is insured under comprehensive coverage. Various types of weather can cause damage to vehicles. One weather peril is hail which can cause damage to both the vehicle body and glass. The purpose of this Highway Loss Data Institute (HLDI) bulletin is to quantify the extent to which hail losses vary by calendar year, state and county. Information on the date and location of hail storms and tornados was collected from the National Oceanic and Atmospheric Administration (NOAA) and merged with HLDI weather claim data for the analysis.

► Methods

Insurance data

Comprehensive coverage insures against theft or physical damage to insured vehicles that occurs for reasons other than crashes. Comprehensive loss data included calendar years 2008 through 2011. Only companies that specify weather as a cause of loss in the data they supply to HLDI were included in this analysis. The exposure from those companies represents 67 percent of the comprehensive coverage exposure in the HLDI database. Results were based on more than 219 million insured vehicle years and more than 748,000 claims.

External data source

Hail and tornado data at the county level were obtained from NOAA for January 2008 through September 2011. The weather data obtained from NOAA is not subject to copyright protection.

Analysis method

Currently, no company that supplies data to HLDI identifies the type of weather that caused a loss. In order to conduct this study, information on the date and location of hail storms and tornados collected from NOAA was merged with HLDI weather claim data on state, county, and date. Therefore if a weather claim occurred on a date and in a county with a corresponding NOAA record for a hail storm, that claim was considered hail-related. Hail storms are often accompanied by tornados. In order to limit this study to hail damage only, any weather claim matching a NOAA hail event that also matched a tornado was excluded from this analysis.

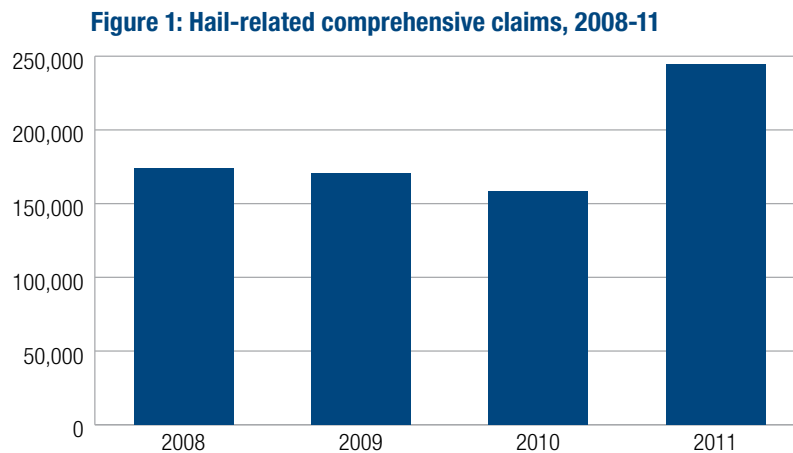
Passenger vehicle comprehensive claim frequencies were calculated by state and county for each calendar year. Vehicles from the 10 most current model years were included for each calendar year. Motorcycles were excluded from the study. Hail and tornado data from NOAA was only available through September 2011. Consequently, the loss results for 2011 are for a partial year. During the study period there were 1,532,864 HLDI weather claims, 961,844 of which matched NOAA hail storm or tornado events. There were 748,037 claims related to hail-only storms, while 213,807 claims were related to tornado events.

► Results

Table 1 lists hail losses by calendar year. The 2008-11 calendar years combined had a hail claim frequency of 3.4 claims per 1,000 insured vehicle years, a hail claim severity of \$3,118, and a hail overall loss of \$11. Among the four years, 2011 had the highest claim frequency (5.9) and overall loss (\$19), while 2010 had the highest claim severity (\$3,389).

Table 1: Hail losses by calendar year						
Calendar year	Exposure	Claims	Payments	Claim frequency	Claim severity	Overall losses
2008	60,590,413	174,138	\$471,005,424	2.9	\$2,705	\$8
2009	59,249,355	170,842	\$527,728,743	2.9	\$3,089	\$9
2010	57,790,052	158,239	\$536,237,740	2.7	\$3,389	\$9
2011	41,714,259	244,818	\$797,193,435	5.9	\$3,256	\$19
Total	219,344,079	748,037	\$2,332,165,342	3.4	\$3,118	\$11

Figure 1 displays the total number of hail-related comprehensive claims by calendar year. Although it's a partial year, 2011 had the most claims related to hail (244,818). The number of hail-related claims in the prior three years was fairly consistent with claims ranging from 158,239 to 174,138 claims.



Figures 2-4 show hail claim frequencies, claim severities, and overall losses by calendar year, based on the 10 most current model years. The hail losses presented in the figures have not been standardized.

Figure 2: Comprehensive frequencies for hail-related claims, 2008-11

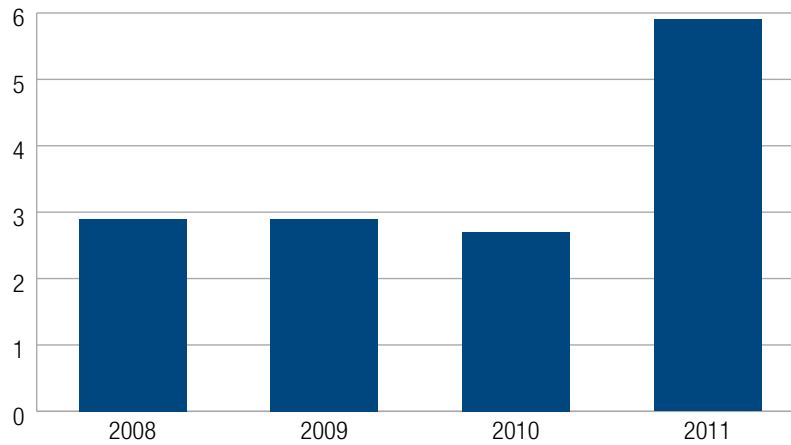


Figure 3: Comprehensive severities for hail-related claims, 2008-11

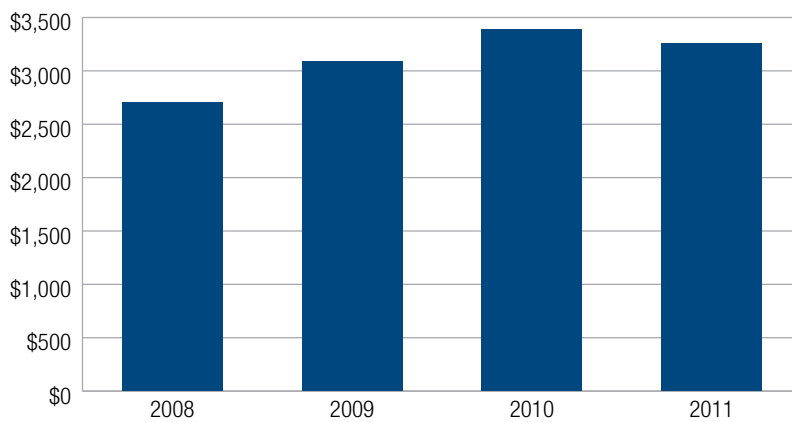


Figure 4: Comprehensive overall losses for hail-related claims, 2008-11

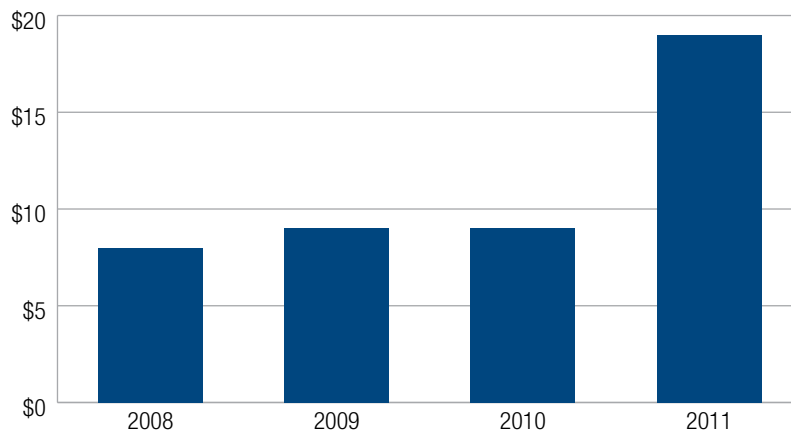


Table 2 lists hail losses by state. The states with the highest claim frequencies are South Dakota (21.8), Oklahoma (20.4), Wyoming (20.2) and Kansas (19.7). There were no hail claims in Alaska or Hawaii during the study period. Claim frequencies by state are also shown in [Figure 5](#).

Table 2: Hail losses by state 2008-11

State	Exposure	Claims	Payments	Claim frequency	Claim severity	Overall losses
South Dakota	523,025	11,417	\$41,583,910	21.8	\$3,642	\$80
Oklahoma	2,697,436	55,058	\$187,752,910	20.4	\$3,410	\$70
Wyoming	430,593	8,682	\$46,811,783	20.2	\$5,392	\$109
Kansas	2,492,539	49,070	\$140,009,078	19.7	\$2,853	\$56
Nebraska	1,430,855	24,410	\$70,834,637	17.1	\$2,902	\$50
Montana	588,229	7,106	\$27,208,572	12.1	\$3,829	\$46
Arkansas	1,819,862	20,453	\$67,384,232	11.2	\$3,295	\$37
Iowa	1,902,360	18,697	\$61,014,925	9.8	\$3,263	\$32
Colorado	4,308,038	39,008	\$152,622,082	9.1	\$3,913	\$35
Missouri	4,651,229	38,718	\$84,980,437	8.3	\$2,195	\$18
Texas	18,237,852	134,410	\$399,306,172	7.4	\$2,971	\$22
Arizona	4,874,378	35,675	\$148,616,714	7.3	\$4,166	\$30
Minnesota	4,508,566	32,668	\$88,677,400	7.2	\$2,715	\$20
North Dakota	391,339	2,603	\$5,848,426	6.7	\$2,247	\$15
South Carolina	3,637,320	24,042	\$56,476,778	6.6	\$2,349	\$16
New Mexico	1,525,779	7,553	\$29,396,894	5.0	\$3,892	\$19
Georgia	6,595,385	22,550	\$56,872,648	3.4	\$2,522	\$9
Tennessee	5,534,591	18,181	\$57,313,082	3.3	\$3,152	\$10
Louisiana	3,174,393	10,248	\$35,977,214	3.2	\$3,511	\$11
Wisconsin	4,146,029	13,183	\$34,909,950	3.2	\$2,648	\$8
Indiana	3,842,087	11,893	\$31,786,474	3.1	\$2,673	\$8
Alabama	3,382,836	10,464	\$25,202,614	3.1	\$2,409	\$7
Illinois	11,041,909	32,049	\$106,357,622	2.9	\$3,319	\$10
North Carolina	7,540,860	20,284	\$51,346,012	2.7	\$2,531	\$7
West Virginia	1,716,766	4,428	\$9,590,056	2.6	\$2,166	\$6
New York	11,671,293	23,861	\$98,866,980	2.0	\$4,143	\$8
Pennsylvania	11,595,875	22,714	\$61,634,299	2.0	\$2,713	\$5
Ohio	7,637,435	13,736	\$39,605,116	1.8	\$2,883	\$5
Maryland	6,120,319	9,757	\$34,269,085	1.6	\$3,512	\$6
Kentucky	3,053,319	4,612	\$17,717,447	1.5	\$3,842	\$6
Vermont	362,715	389	\$1,277,505	1.1	\$3,284	\$4
Mississippi	1,656,517	1,734	\$4,357,931	1.0	\$2,513	\$3
Virginia	8,120,210	6,036	\$14,752,859	0.7	\$2,444	\$2
Rhode Island	695,307	490	\$2,185,972	0.7	\$4,461	\$3
Michigan	4,227,429	2,516	\$6,647,947	0.6	\$2,642	\$2
Maine	681,883	291	\$867,762	0.4	\$2,982	\$1
Delaware	870,028	355	\$832,140	0.4	\$2,344	\$1
Massachusetts	8,563,238	3,411	\$10,108,610	0.4	\$2,964	\$1
New Hampshire	965,447	353	\$847,613	0.4	\$2,401	\$1
New Jersey	5,038,794	1,048	\$3,519,350	0.2	\$3,358	\$1
Connecticut	2,462,760	489	\$1,797,818	0.2	\$3,677	\$1
Florida	14,730,820	2,841	\$13,258,181	0.2	\$4,667	\$1
Idaho	879,807	111	\$380,139	0.1	\$3,425	<\$1
Oregon	2,577,850	234	\$648,818	0.1	\$2,773	<\$1
Utah	1,804,581	24	\$52,549	<0.1	\$2,190	<\$1
District of Columbia	397,747	5	\$17,402	<0.1	\$3,480	<\$1
Nevada	1,840,025	20	\$69,238	<0.1	\$3,462	<\$1
California	16,428,417	145	\$518,638	<0.1	\$3,577	<\$1
Washington	4,539,962	15	\$51,321	<0.1	\$3,421	<\$1
Alaska	527,217					
Hawaii	900,829					
National	219,344,079	748,037	\$2,332,165,342	3.4	\$3,118	\$11

Figure 5: Comprehensive frequencies for hail-related claims by state, 2008-11

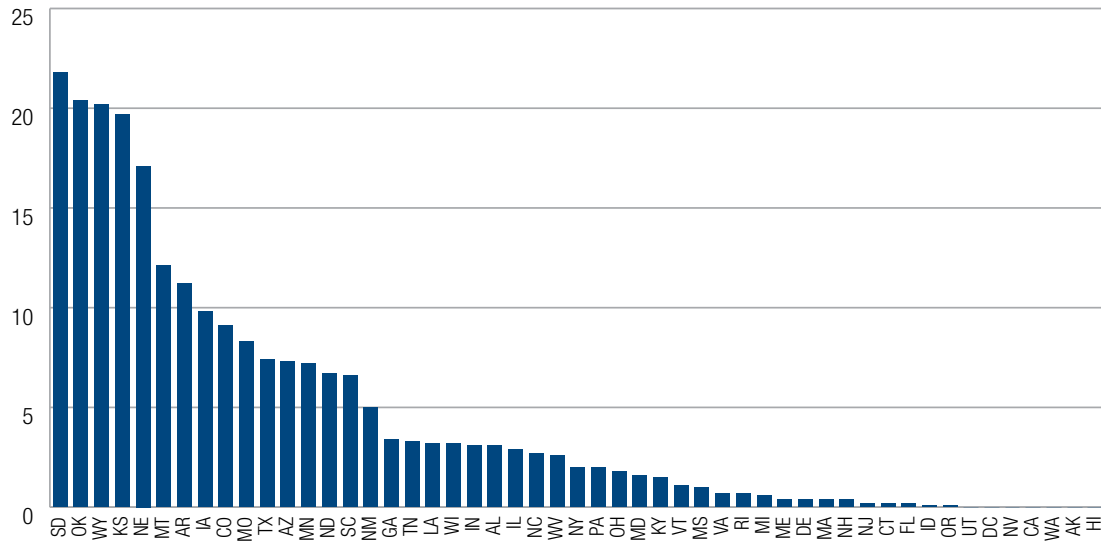


Table 3 lists the state claim frequency rankings for each calendar year. States that have consistently remained in the top 10 are South Dakota, Nebraska and Oklahoma. The ranking for several states have changed dramatically over time. For example, Wyoming had the highest frequency in 2011, was third on the list in 2010 but did not rank in the top 10 for 2008 or 2009. Additionally, Iowa was 12th in 2008 and 2009 but ranked eighth in 2010 and fifth in 2011. Alaska, the District of Columbia, Hawaii, Idaho, and Washington consistently have claim frequencies that are very low. Detailed state results by calendar year are listed in [Appendixes A-D](#).

Table 3: Hail claim frequency losses and rank by state, 2008-11

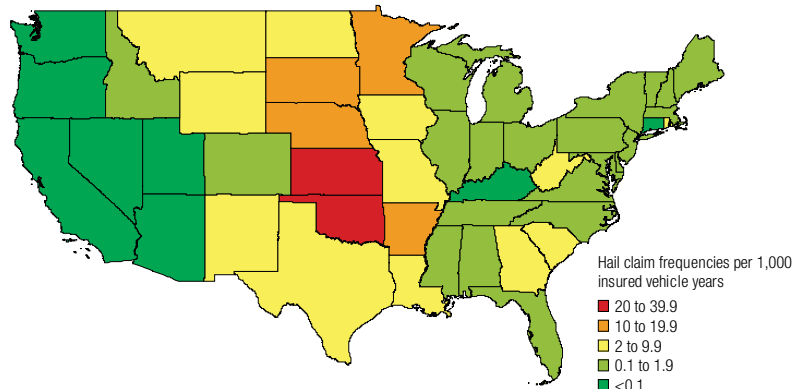
State	Claim frequency 2008	Claim frequency 2009	Claim frequency 2010	Claim frequency 2011	Rank 2008	Rank 2009	Rank 2010	Rank 2011
Wyoming	2.0	3.2	23.6	65.9	18	14	3	1
South Dakota	15.2	15.4	15.8	48.9	5	4	5	2
Nebraska	15.7	11.5	11.9	34.2	4	6	6	3
Kansas	28.6	18.4	5.1	29.2	1	1	12	4
Iowa	4.2	4.5	9.6	25.4	12	12	8	5
South Carolina	3.2	0.5	3.6	24.5	13	28	16	6
Missouri	5.9	2.6	6.3	23.5	10	15	10	7
Arkansas	17.6	7.4	2.8	19.2	3	7	18	8
Oklahoma	24.2	16.7	21.8	18.5	2	3	4	9
Tennessee	0.5	0.8	1.3	13.7	32	24	24	10
Louisiana	2.4	0.2	0.6	12.1	17	35	31	11
North Carolina	1.5	0.5	0.8	10.4	21	27	29	12
Colorado	0.6	16.8	9.2	10.3	31	2	9	13
Illinois	0.8	1.4	2.5	8.7	28	20	19	14
Minnesota	14.7	2.5	4.2	7.3	6	16	15	15
Wisconsin	1.1	1.4	4.4	7.2	26	19	13	16
New York	1.7	0.8	0.1	6.8	19	21	39	17
West Virginia	2.9	0.5	1.9	6.0	15	26	20	18
Texas	8.3	13.1	1.7	5.9	8	5	23	19
Indiana	1.7	5.1	0.9	5.5	20	11	28	20

Table 3: Hail claim frequency losses and rank by state, 2008-11

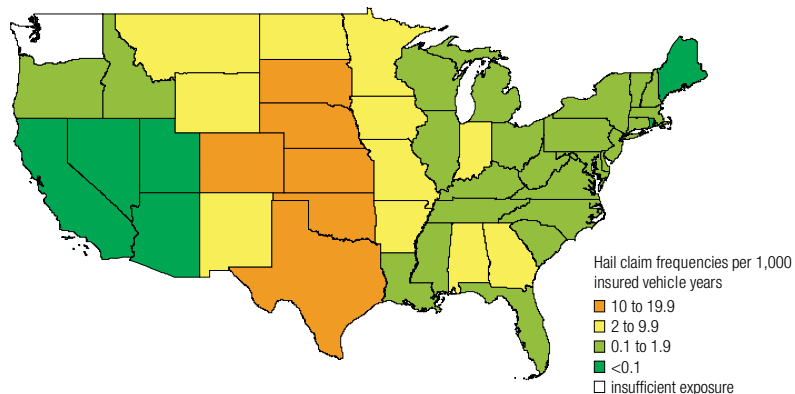
State	Claim frequency 2008	Claim frequency 2009	Claim frequency 2010	Claim frequency 2011	Rank 2008	Rank 2009	Rank 2010	Rank 2011
Ohio	1.5	0.4	1.2	5.1	22	29	26	21
Montana	4.3	2.0	35.9	4.7	11	17	1	22
North Dakota	9.7	5.7	6.1	4.5	7	9	11	23
Kentucky	0.1	1.7	0.5	4.4	41	18	32	24
Pennsylvania	1.2	0.8	2.8	3.5	25	22	17	25
Alabama	1.4	6.3	1.7	2.9	24	8	22	26
Georgia	6.2	4.5	0.2	2.6	9	13	35	27
Mississippi	0.4	0.3	1.8	2.1	34	32	21	28
Vermont	1.4	0.8	0.4	1.9	23	23	33	29
Maine	0.2	<0.1	0.0	1.9	38	42	48	30
Virginia	0.5	0.3	1.2	1.0	33	30	25	31
New Hampshire	0.2	0.3	0.3	0.9	37	33	34	32
Massachusetts	0.1	0.7	0.1	0.8	40	25	40	33
Michigan	0.6	0.1	0.9	0.8	30	38	27	34
Maryland	0.9	0.2	4.3	0.7	27	36	14	35
Connecticut	0.1	0.1	0.1	0.7	42	41	38	36
Florida	0.2	<0.1	<0.1	0.4	36	39	41	37
Arizona	0.0	0.0	28.0	0.4	47	47	2	38
Rhode Island	2.4	0.0	<0.1	0.2	16	45	45	39
New Jersey	0.3	0.3	0.1	0.2	35	31	37	40
New Mexico	3.2	5.6	9.7	0.1	14	10	7	41
Delaware	0.7	0.1	0.6	0.1	29	40	30	42
Nevada	<0.1	<0.1	<0.1	<0.1	46	46	46	43
California	<0.1	<0.1	<0.1	<0.1	48	48	42	44
Utah	<0.1	<0.1	<0.1	<0.1	45	44	44	45
Oregon	<0.1	0.3	<0.1	<0.1	43	34	43	46
Alaska	0.0	0.0	0.0		51	51	50	47
Idaho	0.2	0.2	0.1		39	37	36	48
Hawaii	0.0	0.0	0.0		50	50	51	49
District of Columbia	0.0	<0.1	0.0		49	43	49	50
Washington	<0.1	0.0	<0.1		44	49	47	51

Maps 1-4 depict the data detailed in the appendixes and show the hail claim frequency distribution by state and calendar year. Alaska and Hawaii are not shown as they did not have any hail claims in any calendar year. **Map 5** summarizes the 2008-11 claim frequencies.

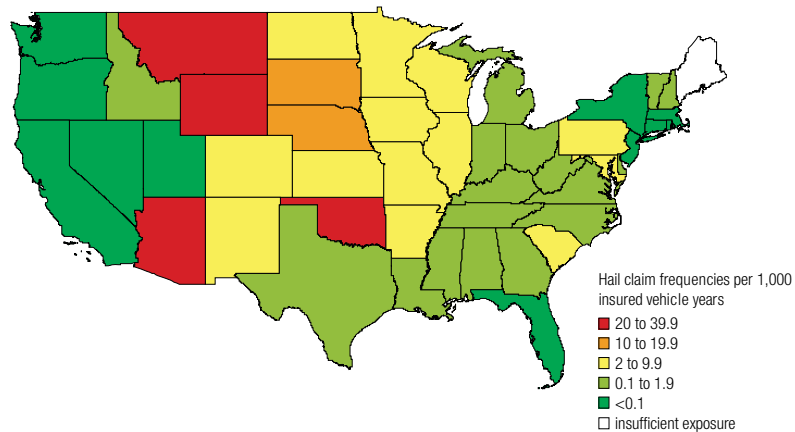
Map 1: Comprehensive frequencies for hail-related claims, 2008



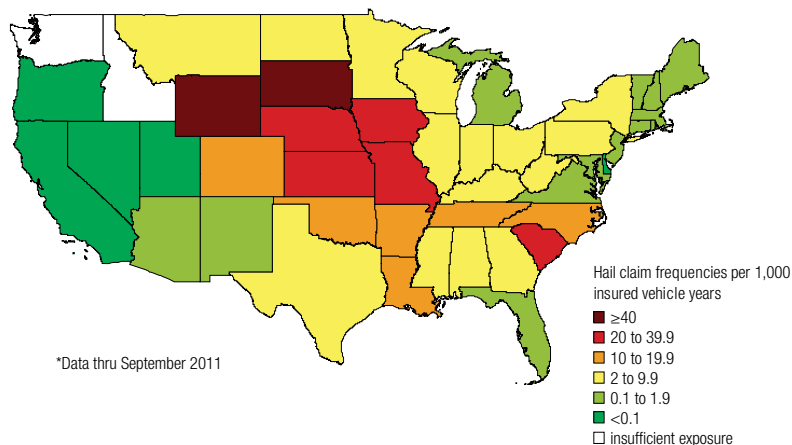
Map 2: Comprehensive frequencies for hail-related claims, 2009



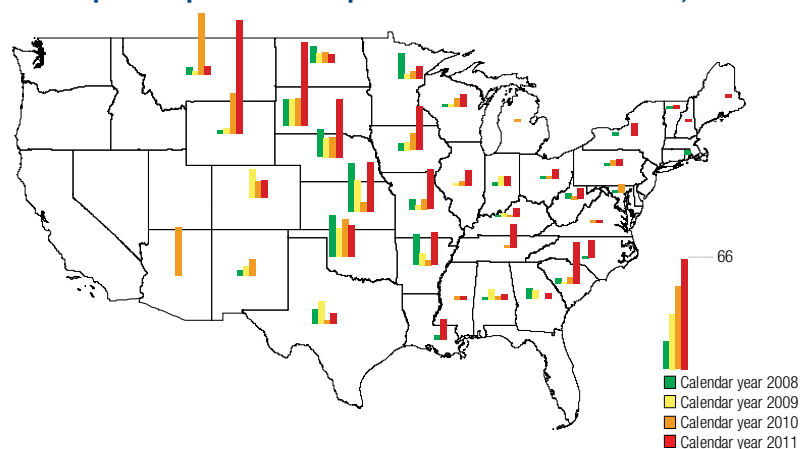
Map 3: Comprehensive frequencies for hail-related claims, 2010



Map 4: Comprehensive frequencies for hail-related claims, 2011

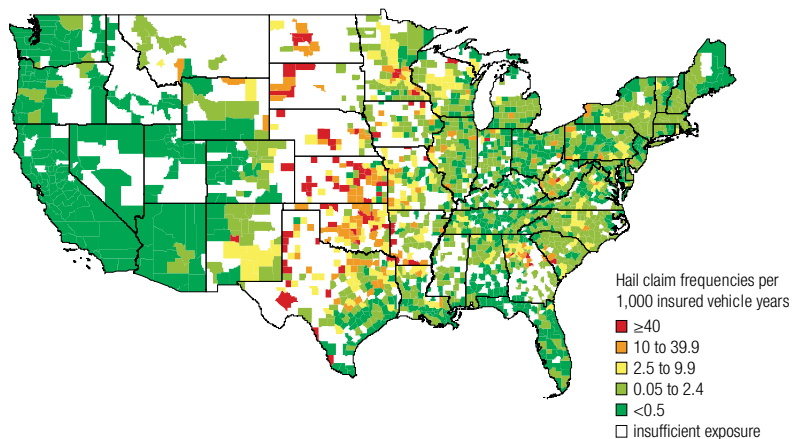


Map 5: Comprehensive frequencies for hail-related claims, 2008-11

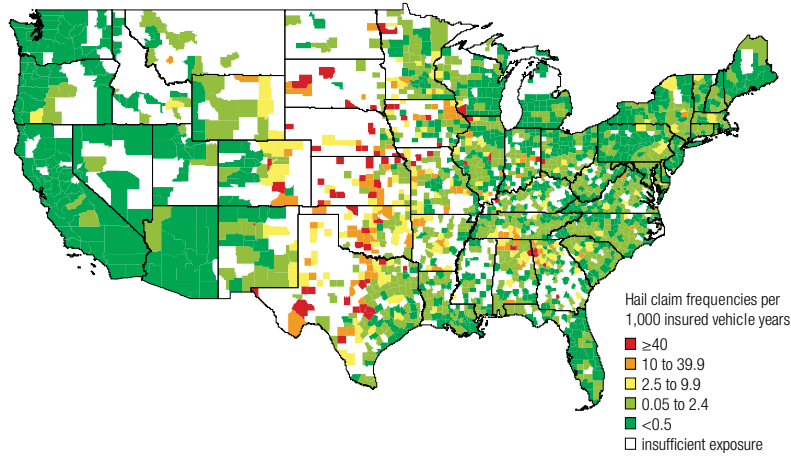


Maps 6-9 show hail-related claim frequencies by county for 2008-2011. Only counties with at least 2,500 insured vehicle years or 50 claims are shown. In general, claim frequencies are higher in the central United States, with both coasts having lower claim frequencies.

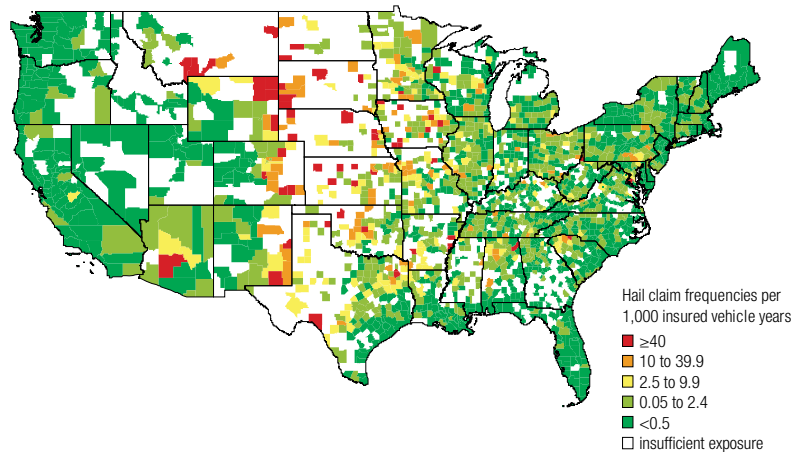
Map 6: Comprehensive frequencies for hail-related claims by county, 2008



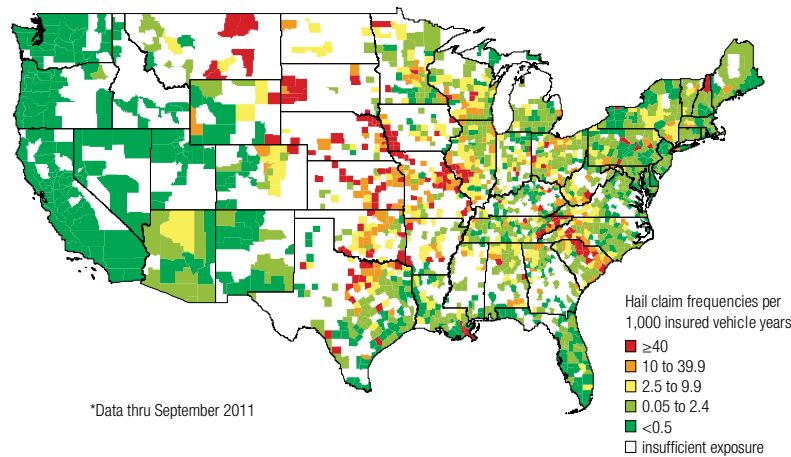
Map 7: Comprehensive frequencies for hail-related claims by county, 2009



Map 8: Comprehensive frequencies for hail-related claims by county, 2010

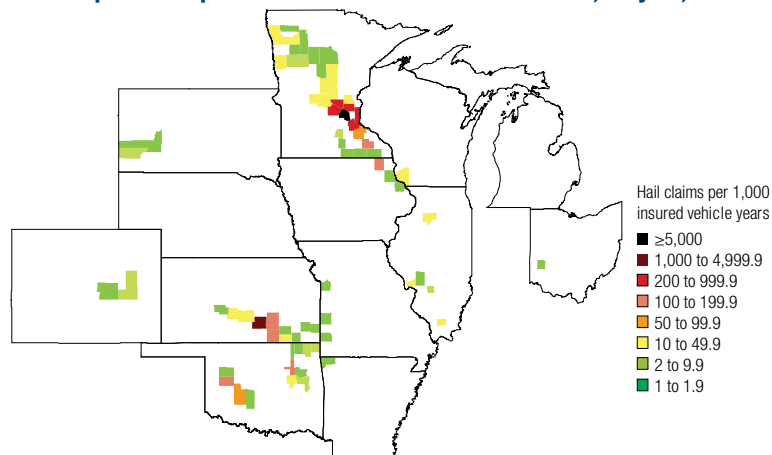


Map 9: Comprehensive frequencies for hail-related claims by county, 2011



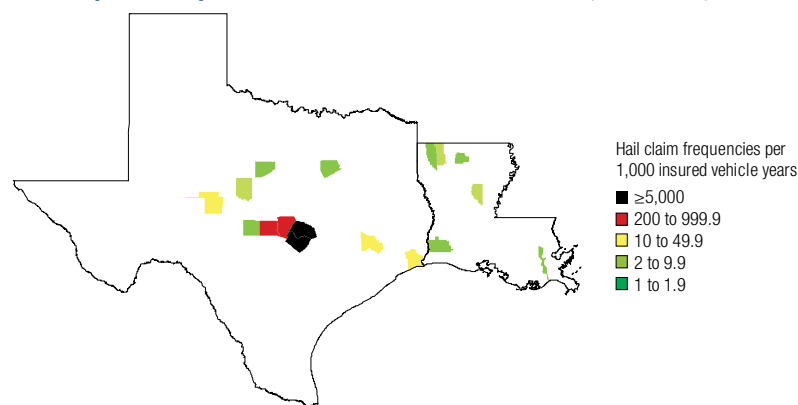
Map 10 shows the claim frequencies by county for the day in 2008 with the highest hail claims and payments (May 31). The storms were concentrated in Minnesota and Kansas. On that day, Hennepin County, Minnesota, had the highest number of hail claims with more than 7,000 and more than \$25.5 million in payments.

Map 10: Comprehensive hail-related claim counts, May 31, 2008



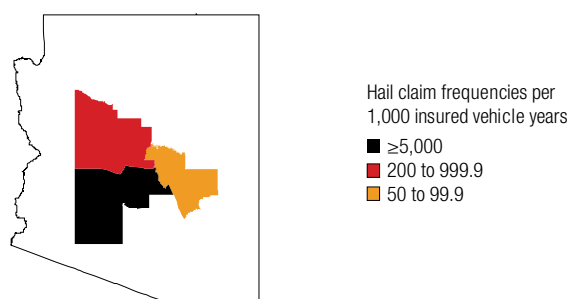
Map 11 shows the claim frequencies by county for the day in 2009 with the highest hail claims and payments (March 25). The storms occurred in Texas and Louisiana. On that day, Williamson County, Texas, had the highest number of hail claims with nearly 11,000 claims and \$40 million in payments. Travis County, Texas, also had nearly as many claims and \$41 million in payments.

Map 11: Comprehensive hail-related claim counts, March 25, 2009



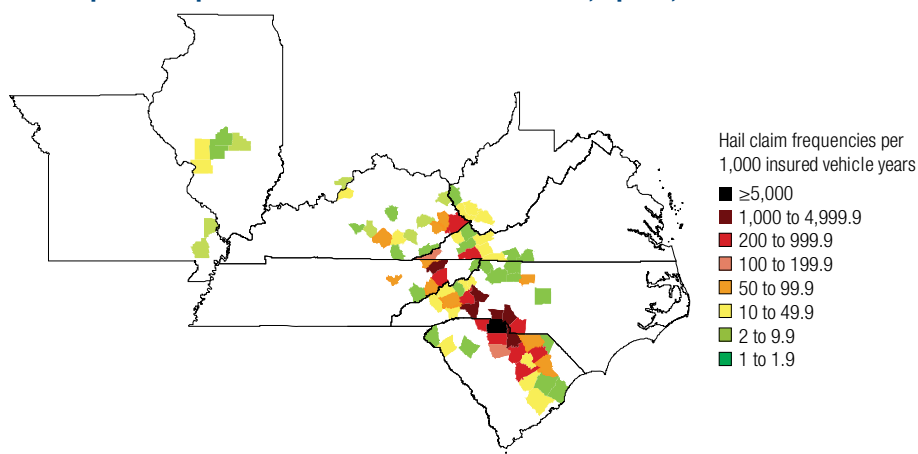
Map 12 shows the claim frequencies by county for the day in 2010 with the highest hail claims and payments (October 5). The storm was centered in Arizona. Maricopa County, Arizona, had the highest number of hail claims with nearly 34,000 claims and over \$141 million in payments.

Map 12: Comprehensive hail-related claim counts, October 3, 2010



Map 13 shows the claim frequencies by county for the day in 2011 with the highest hail claims and payments (April 9). The storms affected South Carolina, North Carolina, Tennessee, Kentucky, West Virginia, Illinois, and Virginia. York County, South Carolina, had the highest number of hail claims with more than 6,000 claims and nearly \$18 million in payments.

Map 13: Comprehensive hail-related claim counts, April 9, 2011



► Discussion

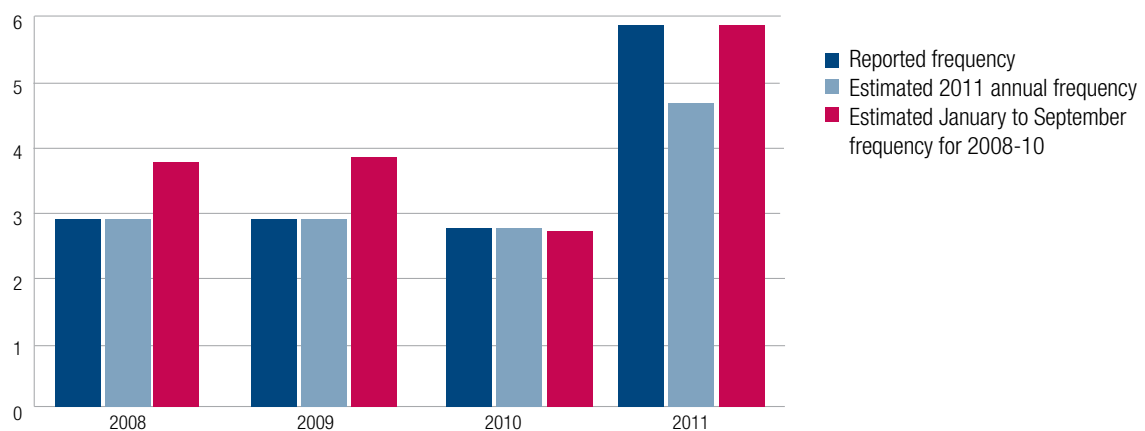
Payments for hail-related vehicle damage make up a sizable portion of comprehensive losses but can vary from year to year. In this analysis overall losses for hail claims more than doubled in 2011 compared with the relatively consistent losses for the three prior years. The locations of these hail claims are mostly concentrated in the Midwest, but hail claims can occur almost everywhere. States such as South Dakota, Nebraska, Kansas and Oklahoma routinely have some of the highest hail claim frequencies, while other states may have varying losses year to year.

► Limitations

The data in this report contains four calendar years (2008-2011), but the 2011 data do not include the last three months of the year. The reason for this is twofold. The comprehensive data obtained by HLDI is complete only through November 2011. Additionally, at the time this project began the NOAA weather data was only available through the end of September. Based on 2008 – 2010, the missing months (October-December) typically have few hail-related claims. When the 2011 data is complete, it is expected that the total number of hail-related claims would increase slightly. However, the claim frequency would decline due to the additional three months of exposure.

To further explore this, an additional analysis was performed, and the results are shown in **Figure 6**. The hail-related claim frequencies reported above are displayed alongside estimated frequencies that were calculated two different ways. The estimated 2011 annual frequency was obtained by imputing exposure based on the nine months of data already included in the study. The number of claims for October to December 2011 were imputed by averaging the October to December claims from 2008-2010, which resulted in a 2011 hail-related claim frequency of 4.7, a 20 percent decline from the 5.9 claim frequency reported in the bulletin. The second estimation method involved recalculating the claim frequencies for calendar years 2008-2010 based on January to September data only. This additional analysis confirmed that 2011 had the highest hail-related claim frequency of the four years studied.

Figure 6: Comparison of Estimated Hail-Related Claim Frequencies, 2008-11



Appendix A: Hail losses by state, 2008

State	Exposure	Claims	Payment	Claim frequency	Claim severity	Overall losses
Kansas	672,340	19,254	\$44,868,737	28.6	\$2,330	\$67
Oklahoma	727,518	17,598	\$48,631,226	24.2	\$2,763	\$67
Arkansas	502,082	8,838	\$30,225,452	17.6	\$3,420	\$60
Nebraska	382,487	6,011	\$15,461,969	15.7	\$2,572	\$40
South Dakota	142,140	2,160	\$8,044,092	15.2	\$3,724	\$57
Minnesota	1,265,013	18,579	\$55,953,207	14.7	\$3,012	\$44
North Dakota	105,551	1,029	\$1,911,672	9.7	\$1,858	\$18
Texas	4,921,215	41,042	\$112,554,194	8.3	\$2,742	\$23
Georgia	1,781,948	11,011	\$27,940,003	6.2	\$2,537	\$16
Missouri	1,315,049	7,724	\$15,136,453	5.9	\$1,960	\$12
Montana	161,031	691	\$2,641,774	4.3	\$3,823	\$16
Iowa	501,857	2,115	\$5,140,485	4.2	\$2,430	\$10
South Carolina	1,010,939	3,211	\$6,441,696	3.2	\$2,006	\$6
New Mexico	417,941	1,321	\$5,446,889	3.2	\$4,123	\$13
West Virginia	467,036	1,333	\$3,173,721	2.9	\$2,381	\$7
Rhode Island	189,869	461	\$1,994,137	2.4	\$4,326	\$11
Louisiana	860,688	2,082	\$6,513,635	2.4	\$3,129	\$8
Wyoming	117,924	237	\$718,470	2.0	\$3,032	\$6
New York	3,133,062	5,328	\$16,104,316	1.7	\$3,023	\$5
Indiana	1,089,853	1,819	\$4,331,071	1.7	\$2,381	\$4
North Carolina	2,125,282	3,104	\$6,940,200	1.5	\$2,236	\$3
Ohio	2,133,789	3,101	\$7,421,423	1.5	\$2,393	\$3
Vermont	98,099	139	\$446,133	1.4	\$3,210	\$5
Alabama	930,133	1,294	\$3,352,028	1.4	\$2,590	\$4
Pennsylvania	3,191,590	3,767	\$9,036,652	1.2	\$2,399	\$3
Wisconsin	1,155,207	1,289	\$3,253,396	1.1	\$2,524	\$3
Maryland	1,695,650	1,553	\$5,357,630	0.9	\$3,450	\$3
Illinois	3,058,615	2,444	\$4,232,507	0.8	\$1,732	\$1
Delaware	241,790	173	\$490,754	0.7	\$2,837	\$2
Michigan	1,138,932	673	\$1,989,554	0.6	\$2,956	\$2
Colorado	1,208,865	681	\$2,121,023	0.6	\$3,115	\$2
Tennessee	1,533,541	765	\$2,201,682	0.5	\$2,878	\$1
Virginia	2,281,428	1,111	\$2,565,697	0.5	\$2,309	\$1
Mississippi	460,339	180	\$777,893	0.4	\$4,322	\$2
New Jersey	1,285,470	354	\$1,093,014	0.3	\$3,088	\$1
Florida	4,229,829	1,025	\$4,117,909	0.2	\$4,017	\$1
New Hampshire	271,149	59	\$190,780	0.2	\$3,234	\$1
Maine	184,644	35	\$96,902	0.2	\$2,769	\$1
Idaho	248,724	39	\$128,102	0.2	\$3,285	\$1
Massachusetts	2,396,134	318	\$1,267,076	0.1	\$3,985	\$1
Kentucky	808,832	76	\$232,472	0.1	\$3,059	<\$1
Connecticut	674,660	50	\$278,525	0.1	\$5,571	<\$1
Oregon	734,705	36	\$80,183	<0.1	\$2,227	<\$1
Washington	1,262,252	13	\$50,200	<0.1	\$3,862	<\$1
Utah	502,921	4	\$7,169	<0.1	\$1,792	<\$1
Nevada	531,235	4	\$31,972	<0.1	\$7,993	<\$1
Arizona	1,383,960	6	\$10,243	<0.1	\$1,707	<\$1
California	4,564,381	1	\$1,106	<0.1	\$1,106	<\$1
District of Columbia	109,828					
Hawaii	243,394					
Alaska	139,494					
National	60,590,413	174,138	\$471,005,424	2.9	\$2,705	\$8

Appendix B: Hail losses by state, 2009

State	Exposure	Claims	Payment	Claim frequency	Claim severity	Overall losses
Kansas	685,240	12,622	\$40,637,986	18.4	\$3,220	\$59
Colorado	1,171,614	19,723	\$79,537,946	16.8	\$4,033	\$68
Oklahoma	727,318	12,153	\$28,615,374	16.7	\$2,355	\$39
South Dakota	141,986	2,181	\$6,594,874	15.4	\$3,024	\$46
Texas	4,880,664	64,155	\$206,511,979	13.1	\$3,219	\$42
Nebraska	391,466	4,507	\$9,752,336	11.5	\$2,164	\$25
Arkansas	493,019	3,632	\$11,196,944	7.4	\$3,083	\$23
Alabama	912,969	5,784	\$12,382,624	6.3	\$2,141	\$14
North Dakota	105,779	598	\$838,421	5.7	\$1,402	\$8
New Mexico	412,631	2,324	\$11,654,489	5.6	\$5,015	\$28
Indiana	1,048,090	5,324	\$15,486,285	5.1	\$2,909	\$15
Iowa	521,507	2,352	\$8,442,835	4.5	\$3,590	\$16
Georgia	1,789,067	7,973	\$19,231,499	4.5	\$2,412	\$11
Wyoming	117,574	371	\$1,190,047	3.2	\$3,208	\$10
Missouri	1,272,574	3,270	\$7,233,421	2.6	\$2,212	\$6
Minnesota	1,231,032	3,079	\$5,683,203	2.5	\$1,846	\$5
Montana	160,317	324	\$1,491,007	2.0	\$4,602	\$9
Kentucky	810,155	1,388	\$7,199,496	1.7	\$5,187	\$9
Wisconsin	1,125,786	1,549	\$4,109,734	1.4	\$2,653	\$4
Illinois	2,997,154	4,120	\$11,848,017	1.4	\$2,876	\$4
New York	3,109,912	2,634	\$8,395,659	0.8	\$3,187	\$3
Pennsylvania	3,135,889	2,511	\$6,150,758	0.8	\$2,450	\$2
Vermont	98,442	76	\$207,450	0.8	\$2,730	\$2
Tennessee	1,494,075	1,126	\$2,464,460	0.8	\$2,189	\$2
Massachusetts	2,283,452	1,584	\$4,663,916	0.7	\$2,944	\$2
West Virginia	463,554	237	\$429,779	0.5	\$1,813	\$1
North Carolina	2,049,211	961	\$2,120,127	0.5	\$2,206	\$1
South Carolina	980,712	443	\$970,640	0.5	\$2,191	\$1
Ohio	2,071,956	852	\$1,890,586	0.4	\$2,219	\$1
Virginia	2,194,780	768	\$1,732,614	0.3	\$2,256	\$1
New Jersey	1,340,538	436	\$1,333,191	0.3	\$3,058	\$1
Mississippi	446,995	121	\$429,202	0.3	\$3,547	\$1
New Hampshire	261,523	68	\$146,611	0.3	\$2,156	\$1
Oregon	703,457	181	\$521,807	0.3	\$2,883	\$1
Louisiana	857,065	194	\$430,089	0.2	\$2,217	\$1
Maryland	1,649,356	347	\$828,122	0.2	\$2,387	\$1
Idaho	243,096	49	\$186,644	0.2	\$3,809	\$1
Michigan	1,144,732	169	\$408,631	0.1	\$2,418	<\$1
Florida	3,959,960	509	\$4,425,405	0.1	\$8,694	\$1
Delaware	234,748	29	\$36,236	0.1	\$1,250	<\$1
Connecticut	671,264	68	\$193,015	0.1	\$2,838	<\$1
Maine	184,652	9	\$28,238	<0.1	\$3,138	<\$1
District of Columbia	106,983	5	\$17,402	<0.1	\$3,480	<\$1
Utah	496,273	10	\$20,676	<0.1	\$2,068	<\$1
Rhode Island	186,411	3	\$21,757	<0.1	\$7,252	<\$1
Nevada	497,248	6	\$16,028	<0.1	\$2,671	<\$1
Arizona	1,326,892	9	\$11,160	<0.1	\$1,240	<\$1
California	4,447,007	8	\$10,023	<0.1	\$1,253	<\$1
Washington	1,229,571					
Hawaii	241,691					
Alaska	141,964					
National	59,249,355	170,842	\$527,728,743	2.9	\$3,089	\$9

Appendix C: Hail losses by state, 2010

State	Exposure	Claims	Payment	Claim frequency	Claim severity	Overall losses
Montana	154,925	5,564	\$20,938,894	35.9	\$3,763	\$135
Arizona	1,260,076	35,329	\$147,200,190	28.0	\$4,167	\$117
Wyoming	113,139	2,674	\$12,297,139	23.6	\$4,599	\$109
Oklahoma	716,832	15,596	\$81,627,178	21.8	\$5,234	\$114
South Dakota	139,009	2,190	\$6,154,891	15.8	\$2,810	\$44
Nebraska	383,905	4,564	\$9,869,726	11.9	\$2,163	\$26
New Mexico	400,687	3,869	\$12,185,259	9.7	\$3,149	\$30
Iowa	511,841	4,920	\$12,592,659	9.6	\$2,559	\$25
Colorado	1,124,719	10,308	\$36,519,387	9.2	\$3,543	\$32
Missouri	1,207,484	7,569	\$16,770,496	6.3	\$2,216	\$14
North Dakota	104,097	634	\$1,884,348	6.1	\$2,972	\$18
Kansas	662,695	3,395	\$8,266,782	5.1	\$2,435	\$12
Wisconsin	1,094,005	4,804	\$14,705,807	4.4	\$3,061	\$13
Maryland	1,608,420	6,990	\$25,775,683	4.3	\$3,688	\$16
Minnesota	1,179,862	4,952	\$13,590,004	4.2	\$2,744	\$12
South Carolina	954,478	3,423	\$7,015,337	3.6	\$2,049	\$7
Pennsylvania	3,060,918	8,677	\$26,470,543	2.8	\$3,051	\$9
Arkansas	478,367	1,324	\$3,080,436	2.8	\$2,327	\$6
Illinois	2,906,804	7,360	\$20,022,760	2.5	\$2,720	\$7
West Virginia	454,949	866	\$1,734,298	1.9	\$2,003	\$4
Mississippi	434,307	786	\$1,237,529	1.8	\$1,574	\$3
Alabama	890,390	1,522	\$4,423,063	1.7	\$2,906	\$5
Texas	4,887,157	8,209	\$18,683,914	1.7	\$2,276	\$4
Tennessee	1,457,474	1,951	\$5,969,333	1.3	\$3,060	\$4
Virginia	2,118,641	2,617	\$6,797,240	1.2	\$2,597	\$3
Ohio	2,002,104	2,450	\$6,429,465	1.2	\$2,624	\$3
Michigan	1,133,043	1,003	\$2,459,785	0.9	\$2,452	\$2
Indiana	997,473	848	\$2,011,698	0.9	\$2,372	\$2
North Carolina	1,964,065	1,637	\$4,108,604	0.8	\$2,510	\$2
Delaware	228,406	144	\$287,510	0.6	\$1,997	\$1
Louisiana	843,583	526	\$826,504	0.6	\$1,571	\$1
Kentucky	817,442	439	\$941,796	0.5	\$2,145	\$1
Vermont	96,135	41	\$121,367	0.4	\$2,960	\$1
New Hampshire	251,546	63	\$134,833	0.3	\$2,140	\$1
Georgia	1,753,955	275	\$471,191	0.2	\$1,713	<\$1
Idaho	227,749	23	\$65,393	0.1	\$2,843	<\$1
New Jersey	1,402,749	102	\$303,701	0.1	\$2,977	<\$1
Connecticut	649,100	44	\$90,993	0.1	\$2,068	<\$1
New York	3,112,648	204	\$1,057,194	0.1	\$5,182	<\$1
Massachusetts	2,253,736	143	\$443,634	0.1	\$3,102	<\$1
Florida	3,792,630	83	\$234,697	<0.1	\$2,828	<\$1
California	4,304,010	94	\$367,684	<0.1	\$3,912	<\$1
Oregon	668,077	13	\$29,188	<0.1	\$2,245	<\$1
Utah	471,021	7	\$18,612	<0.1	\$2,659	<\$1
Rhode Island	183,365	2	\$12,330	<0.1	\$6,165	<\$1
Nevada	471,433	3	\$7,544	<0.1	\$2,515	<\$1
Washington	1,192,674	2	\$1,121	<0.1	\$561	<\$1
Maine	181,603					
District of Columbia	104,593					
Alaska	142,091					
Hawaii	239,641					
National	59,249,355	170,842	\$527,728,743	2.9	\$3,089	\$9

Appendix D: Hail losses by state, 2011

State	Exposure	Claims	Payment	Claim frequency	Claim severity	Overall losses
Wyoming	81,956	5,400	\$32,606,127	65.9	\$6,038	\$398
South Dakota	99,889	4,886	\$20,790,053	48.9	\$4,255	\$208
Nebraska	272,998	9,328	\$35,750,606	34.2	\$3,833	\$131
Kansas	472,263	13,799	\$46,235,573	29.2	\$3,351	\$98
Iowa	367,155	9,310	\$34,838,946	25.4	\$3,742	\$95
South Carolina	691,190	16,965	\$42,049,105	24.5	\$2,479	\$61
Missouri	856,123	20,155	\$45,840,067	23.5	\$2,274	\$54
Arkansas	346,394	6,659	\$22,881,400	19.2	\$3,436	\$66
Oklahoma	525,767	9,711	\$28,879,132	18.5	\$2,974	\$55
Tennessee	1,049,501	14,339	\$46,677,607	13.7	\$3,255	\$44
Louisiana	613,058	7,446	\$28,206,986	12.1	\$3,788	\$46
North Carolina	1,402,302	14,582	\$38,177,081	10.4	\$2,618	\$27
Colorado	802,840	8,296	\$34,443,726	10.3	\$4,152	\$43
Illinois	2,079,335	18,125	\$70,254,338	8.7	\$3,876	\$34
Minnesota	832,660	6,058	\$13,450,986	7.3	\$2,220	\$16
Wisconsin	771,032	5,541	\$12,841,013	7.2	\$2,317	\$17
New York	2,315,671	15,695	\$73,309,811	6.8	\$4,671	\$32
West Virginia	331,227	1,992	\$4,252,258	6.0	\$2,135	\$13
Texas	3,548,817	21,004	\$61,556,085	5.9	\$2,931	\$17
Indiana	706,672	3,902	\$9,957,420	5.5	\$2,552	\$14
Ohio	1,429,586	7,333	\$23,863,642	5.1	\$3,254	\$17
Montana	111,955	527	\$2,136,897	4.7	\$4,055	\$19
North Dakota	75,912	342	\$1,213,985	4.5	\$3,550	\$16
Kentucky	616,890	2,709	\$9,343,683	4.4	\$3,449	\$15
Pennsylvania	2,207,479	7,759	\$19,976,346	3.5	\$2,575	\$9
Alabama	649,344	1,864	\$5,044,899	2.9	\$2,706	\$8
Georgia	1,270,415	3,291	\$9,229,955	2.6	\$2,805	\$7
Mississippi	314,877	647	\$1,913,307	2.1	\$2,957	\$6
Vermont	70,039	133	\$502,555	1.9	\$3,779	\$7
Maine	130,985	247	\$742,622	1.9	\$3,007	\$6
Virginia	1,525,360	1,540	\$3,657,308	1.0	\$2,375	\$2
New Hampshire	181,228	163	\$375,389	0.9	\$2,303	\$2
Massachusetts	1,629,915	1,366	\$3,733,984	0.8	\$2,734	\$2
Michigan	810,721	671	\$1,789,977	0.8	\$2,668	\$2
Maryland	1,166,892	867	\$2,307,650	0.7	\$2,662	\$2
Connecticut	467,737	327	\$1,235,285	0.7	\$3,778	\$3
Florida	2,748,401	1,224	\$4,480,170	0.4	\$3,660	\$2
Arizona	903,449	331	\$1,395,121	0.4	\$4,215	\$2
Rhode Island	135,662	24	\$157,748	0.2	\$6,573	\$1
New Jersey	1,010,036	156	\$789,444	0.2	\$5,061	\$1
New Mexico	294,520	39	\$110,257	0.1	\$2,827	<\$1
Delaware	165,084	9	\$17,640	0.1	\$1,960	<\$1
Nevada	340,109	7	\$13,694	<0.1	\$1,956	<\$1
California	3,113,020	42	\$139,825	<0.1	\$3,329	<\$1
Utah	334,365	3	\$6,092	<0.1	\$2,031	<\$1
Oregon	471,610	4	\$17,640	<0.1	\$4,410	<\$1
Alaska	103,668					
Idaho	160,238					
Hawaii	176,103					
District of Columbia	76,343					
Washington	855,466					
National	41,714,259	244,818	\$797,193,435	5.9	\$3,256	\$19

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