



Bridge Strike Statistics

University of Cambridge

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April 13, 2015

by Country

1 United Kingdom

- Network Rail

- London Underground

- Transport for Scotland

- Transport for Ireland

2 United States

- Bridge owners by state

- Bridge strike problem across country

3 Australia

- Transport and Main Roads

- Sydney Harbour Tunnel

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Reported incidents

Year	Underline bridges	Overline bridges
2000/01	1613	111
2001/02	1678	100
2002/03	1914	122
2003/04	1898	142
2004/05	2020	152
2005/06	1890	146
2006/07	2020	126

Source: Network Rail



Reported incidents

Year	Underline Bridges	Overline Bridges
2007/08	2161	143
2008/09	1736	115
2009/10	1439	113
2010/11	1593	98
2011/12	1541	80
2012/13	1544	101
2013/14	1708	101

Source: Network Rail



Repeated bridge strikes (10 or more strikes)

Route	Bridge ID	Number of strikes reported
LNW	TTA1/106	20
South East	BTH1/1205	20
Anglia	DWW2/227	17
Scotland	STR3/164/207	16
Anglia	BGK/1568	15
South East	CKL/17 (L1)	15

Source: Network Rail



Repeated bridge strikes (10 or more strikes)

Route	Bridge ID	Number of strikes reported
LNE	ECM1/243	14
South East	XTD/134	14
Anglia	ETN/1601	12
LNW	BWJ3/90	12
East Midlands	GSM3/2	11
LNW	WNS/3	10

Source: Network Rail



Performance Loss

	2005/06	2007/08	2010/11
Number of Reported Bridge Strikes	1930	2355	1704
Annual Delay (minutes)	335,500 minutes	220,465 minutes	162,348 minutes
Average Delay per Bridge Strike	174 minutes	130 minutes	132 minutes
Annual Cost of Delay	£9.6 m	£6.82 m	£4.81m
Average Cost per Bridge Strike	£4,975	£3,900	£3,918

Source: Network Rail



Network Rail

- 32,000 bridges and tunnels
- The number of bridge strikes reported at the end of 31 March 2014 was 1708. This is an increase (9.9%) compared to the previous year.
- Two or more bridge strikes were reported at 337 bridges in the year ending 31 March 2014.
- **Link:** *List of bridges struck between 1 April 2013 - 31 March 2014*

Source: Network Rail



Prevention of bridge strikes good practice guide

- **Link:** *Prevention of bridge strikes: a good practice guide for passenger transport operational staff*
- **Link:** *Prevention of bridge strikes: a good practice guide for professional drivers*
- **Link:** *Prevention of bridge strikes: a good practice guide for transport managers*
- **Link:** *Prevention of bridge strikes: a good practice guide for professional drivers of passenger vehicles*
- **Link:** *Prevention of strikes on bridges over highways: a protocol for highway managers and bridge owners*



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London Underground

Reported incidents

Year	Number of bridge strikes
2003	13
2004	10
2005	6
2006	24
2007	26
2008	26
2009	30
2010	39



London Underground

Reported incidents

Year	Number of bridge strikes
2011	31
2012	32
2013	20
Total	257

Average starting cost per bridge strike : £5,000

Source: London Underground

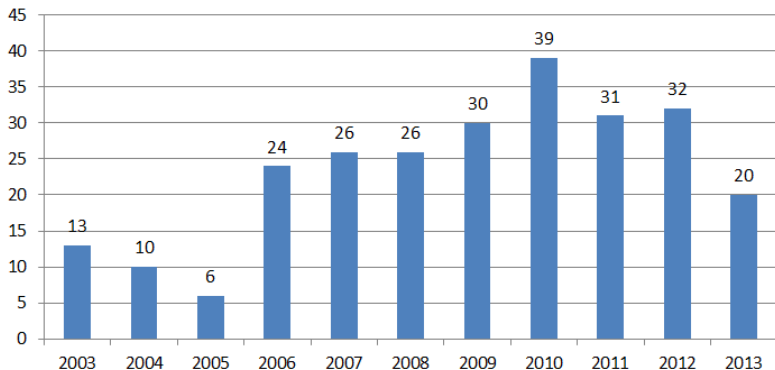


Repeated bridge strikes

Bridge ID	Location	Strikes
MR100	Chorleywood	5
D73	Turnham Green	6
O87	Epping to Theydon Bois	7
HC3	Ladbroke Grove Stn	8
O71	Debden to Loughton	8
MR111	Amersham to Chalfont and Latimer	10
MR114A	Amersham Station	11
N14	Fairlop	14
MR106	Chalfont and Latimer	16
MR76	Moor Park to Rickmansworth	16
R43	South Ruislip	32



Annual bridge strikes (2003-2013)



Source: London Underground



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Link to campaign



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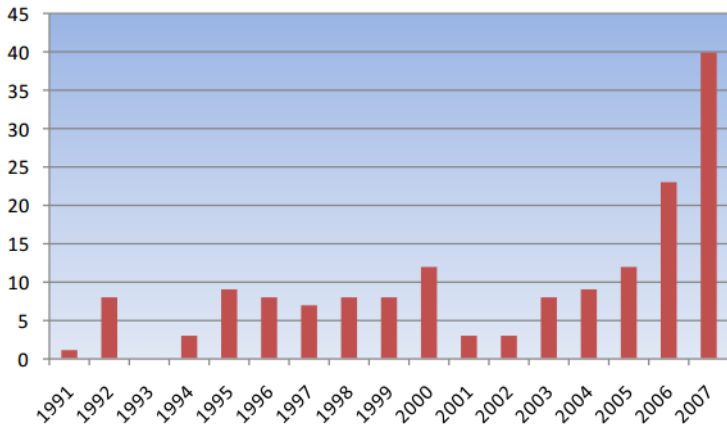
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Transport for Ireland

Number of over-bridge strikes by year, 1991-2007



Source: Railway bridge in Ireland and bridge strike trends



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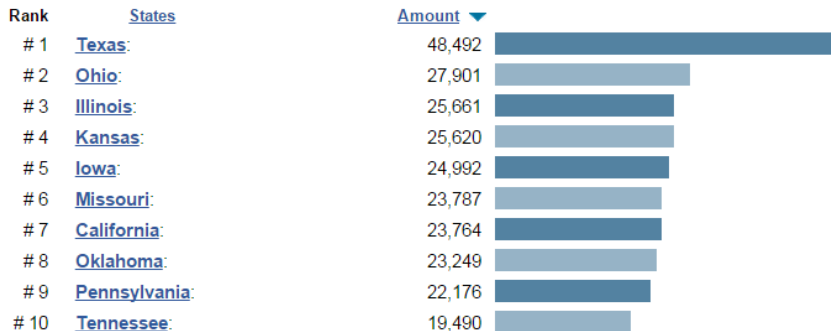
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Bridge owners by state



Bridge owners by state

Rank	States	Amount	
# 11	Indiana:	18,138	
# 12	New York:	17,382	
# 13	North Carolina:	17,193	
# 14	Mississippi:	16,830	
# 15	Alabama:	15,715	
# 16	Nebraska:	15,455	
# 17	Georgia:	14,456	
# 18	Wisconsin:	13,651	
# 19	Kentucky:	13,523	
# 20	Louisiana:	13,394	













Bridge owners by state

Rank	States	Amount	
# 21	Virginia:	13,055	
# 22	Minnesota:	12,975	
# 23	Arkansas:	12,451	
# 24	Florida:	11,451	
# 25	Michigan:	10,654	
# 26	South Carolina:	9,149	
# 27	Colorado:	8,097	
# 28	Washington:	7,427	
# 29	Oregon:	7,202	
# 30	Arizona:	6,955	















Bridge owners by state

Rank	States	Amount	
# 31	<u>West Virginia:</u>	6,862	
# 32	<u>New Jersey:</u>	6,377	
# 33	<u>South Dakota:</u>	5,966	
# 34	<u>Montana:</u>	5,098	
# 35	<u>Massachusetts:</u>	4,999	
# 36	<u>Maryland:</u>	4,994	
# 37	<u>North Dakota:</u>	4,518	
# 38	<u>Connecticut:</u>	4,172	
# 39	<u>Idaho:</u>	4,053	
# 40	<u>New Mexico:</u>	3,835	



Bridge owners by state

Rank	States	Amount	
# 41	<u>Wyoming:</u>	3,038	
# 42	<u>Utah:</u>	2,793	
# 43	<u>Vermont:</u>	2,686	
# 44	<u>Maine:</u>	2,364	
# 45	<u>New Hampshire:</u>	2,352	
# 46	<u>Nevada:</u>	1,612	
# 47	<u>Alaska:</u>	1,174	
# 48	<u>Hawaii:</u>	1,097	
# 49	<u>Delaware:</u>	841	
# 50	<u>Rhode Island:</u>	748	
# 51	<u>District of Columbia:</u>	247	
Total:		590,111	
Weighted average:		11,570.8	

Source: U.S. Department of Transportation, Federal Highway Administration
National Bridge Inventory: Deficient Bridges by State and Highway System,
Washington, DC: 2004



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Bridge strike problem across country

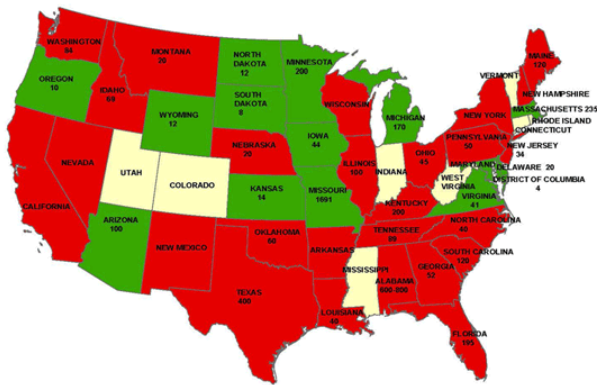
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Bridge strike problem across country



RED: Bridge strike problem **YELLOW:** No response **GREEN:** No bridge strike problem

Source: United States Department of Transportation, Anil K. Agrawal, Ph.D.



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Transport and Main Roads

in the news... (Published July 26, 2013)

- *"In the 12 months to June 30, the number of rail bridge strikes almost doubled - jumping from 33 the previous year to 60 - resulting in more than 200 train service delays or cancellations."*
- *"More than 60,000 city network passengers have been delayed by bridge strikes in the past year with 203 services delayed or cancelled due to these incidents," Mr Emerson said.*
- *"The amount of money being recovered from drivers involved in bridge strikes increased in the last financial year to more than \$330,000, up from \$125,000 in 2011-12."*

Source: Courier Mail Australia



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Extreme measures!

See video!



Source: Laser Vision Australia

