Fatal and non-fatal accidents in railway construction work in Japan in 1999-2022

railway construction work industry Code No.030104

Type of accidents in railway construction work in 1999-2022

Type of accidents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
fall from height	18	25	16	19	10	19	14	16	11	13	17	13	9	10	9	12	9	12	13	8	20	16	17	11	337
falling to same level	13	12	9	16	9	7	8	7	11	15	8	9	9	10	10	16	8	11	10	3	18	16	24	13	272
crash	3	5	5	3	6	2	6	7	3	3	5	2	1	1	2	1	5	3	6	1	4	1	2	2	79
struck by flying or falling object	11	13	24	17	14	14	13	16	7	13	12	16	8	12	9	11	8	11	14	18	14	6	13	9	303
collapse	5	2	5	2	4		1	5	6	5	2	1	4	2	3	4	4	2	4	1	3	5	3	5	78
crashed by	19	11	11	8	11	10	11	4	8	8	5	7	8	2	7	4	6	6	4	7	7	5	5	2	176
caught in/between	31	31	29	25	28	22	16	19	18	23	14	10	10	15	20	15	17	12	24	12	17	16	20	17	461
cut	9	4	1	7	1	4	5	4	4	8	1	4	1	1	2	6	2	5	3	2	3	5		3	85
injury to the sole of the foot					1								1					1		1	1	1			6
drown													1												1
contact to high/low-			2	1	3	2			3		1	1	1	4	1	1	1		2	2		1			26

temperature																									
contact to harmful substance							1	2				1	1		1						1				7
electric shock	1	2		2	2	3				1		1		1											13
explosion																									
burst					1						1										1				3
fire											1				1						1	1			4
traffic accident (public road)	12	6	12	21	17	9	23	13	20	12	8	10	8	28	21	9	19	25	15	9	10	12	10	6	335
traffic accident (others)		1		2		1	2	1	1		2						1						2		13
reaction to motion/improper motion	3	3	3	4	4	5	5	7		4	4	4	3	3	5	12	9	9	5	5	8	4	9	6	124
others				2		1	1	2	1		1	1	3	1		1	2	2	1	1	1	3	19		43
unclassifiable				2			1						1								1				5
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Causal agents (large) of fatal and non-fatal accidents in railway construction work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine	23	15	17	14	8	10	10	14	11	15	4	10	5	7	7	14	7	7	16	9	7	12	10	8	260

crane, conveying machine	27	32	21	48	25	30	38	28	28	25	24	22	15	32	36	17	33	35	25	18	24	22	31	15	651
other equipment	16	14	14	16	23	11	11	14	15	19	13	11	13	10	14	12	15	16	16	7	28	9	12	12	341
temporary buildings, establishments	21	24	28	24	22	18	19	18	17	24	21	13	13	15	17	23	7	17	18	12	24	27	28	20	470
substance, material	26	21	23	18	20	12	18	14	14	16	15	19	15	10	10	12	13	12	19	14	14	9	16	11	371
load	1	5	8	2	7	6	4	6	3	3	2	2		3	2	6	8	5		5	6	3	3	4	94
environment	8	3	3	4	4	9	1	4	5	2	3	3	5	10	2	4	4	5	4	2	4	6	2	3	100
others	3	1	3	5	2	3	6	5		1			3	3	3	4	4	2	3	3	3	4	22	1	84
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Causal agents (middle) of fatal and non-fatal accidents in railway construction work in 1999-2022

Causal (M) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine																									
power transmission mechanism	1									1															2
woodworking machine	5	1	1	1	1	2	1	3	2	5		2				2		1	1			1		1	30

construction machine	11	6	13	7	3	5	6	8	4	5		6	3	6	4	4	6	3	10	3	5	7	8	4	137
metal manufacturing machine	1	3	1	1	2	1	2	1	2	1	1	2				5	1		2	2	1	2	1		32
general machine	5	5	2	5	2	2	1	2	3	3	3		2	1	3	3		3	3	4	1	2	1	3	59
mobile silviculture machine																									
crane	2	10	3	14	5	7	5	4	3	7	4	5	4	2	9	7	3	2	3	1	5	4	7	4	120
conveying machine	14	14	6	9	4	17	19	11	15	10	8	6	6	10	9	3	9	19	16	11	10	4	17	6	253
vehicle	11	8	12	25	16	6	14	13	10	8	12	11	5	20	18	7	21	14	6	6	9	14	7	5	278
pressure vessel	1																1								2
chemical facilities																									
welding equipment					1					1											1				3
kiln, caldron																									
electric equipment	1		1		2			1		2	1	1		1		1	1		1		1				14
human power machine, tools	11	6	8	8	15	6	5	5	4	11	7	4	9	4	10	7	6	11	12	2	13	2	5	8	179
tools	3	6	4	5	4	4	4	6	9	5	5	4	1	3	4	2	7	5	2	3	9	5	6	4	110
other equipments,																									

facilities		2	1	3	1	1	2	2	2			2	3	2		2			1	2	4	2	1		33
temporary buildings, establishments	21	24	28	24	22	18	19	18	17	24	21	13	13	15	17	23	7	17	18	12	24	27	28	20	470
hazards, harmful substances			1	1			1	1			1	2	2		1						1	1			12
materials	26	21	22	17	20	12	17	13	14	16	14	17	13	10	9	12	13	12	19	14	13	8	16	11	359
load	1	5	8	2	7	6	4	6	3	3	2	2		3	2	6	8	5		5	6	3	3	4	94
natural environment	8	3	3	4	4	9	1	4	5	2	3	3	5	10	2	4	4	5	4	2	4	6	2	3	100
other causal agent	1					2	1	3		1			1		1		3	1		2	1	2	19		38
no causal agent	2	1	3	3	2	1	3	2					1	3	1	4	1	1	3	1	2	2	3	1	40
unclassifiable				2			2						1		1										6
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Causal agents (small) of fatal and non-fatal accidents in railway construction work in 1999-2022

Causal (S) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine																									
power transmission mechanism										1															1

circular sawing machine			1				1		1	4		2				1			1			1		1	13
band sawing machine																									
wood planer machine																									
hollow chisel mortiser, wood borer																									
chamfering machine, router, woodworking milling machine								1																	1
chain saw								1	1									1							3
other woodworking machines					1			1		1						1									4
leveling, transporting or loading machine							1			1		1	1	1	1					1	1		1		9
excavating machine			2		2		1	4	1	1		2	1	1	1	3	2	2	4	2	2	3	2	2	38
foundation work machine								1		2				1			1				1	1			7
hardening machine			1														1						1		3

demolition machine			2				1	2				1		1	1			1	1			1	1	1	13
vehicle for high lift work			1						1										2				1		5
other construction machines			7		1		3	1	2	1		2	1	2	1	1	2		3		1	2	2	1	33
lathe																									
drill press, milling machine																									
grinding machine, buffing machine					1		1		1	1	1	1				5	1			2	1				15
power press																									
forging pressure hammer																									
shearing machine																									
other metal manufacturing machines			1		1		1	1	1			1							2			2	1		11
centrifugal machine																									
mixer, grinder					1																				1
roll machine (except printingroll machine)																									

injection molding machine																									
food manufacturing machine																									
printing machine																									
industrial robot																									
other general power machines			2		1		1	2	3	3	3		2	1	3	3		3	3	4	1	2	1	3	41
felling machine																									
mobile logging machine																									
skyline yarding machine																									
other mobile silviculture machine																									
crane					2				2	1	1	1			2						2		2	2	15
mobile crane			3		3		5	2	1	6	2	3	3	2	6	6	2	2	2	1	3	4	4	2	62
derrick crane																									
elevator, lift											1														1
cargo lifting appliance																									
gondola																									

lumberyard equipment, logging cableway																									
simple skyline yarding equipment																									
other powered crane								2				1	1		1	1	1		1				1		9
truck			3		2		16	8	13	7	6	4	5	7	7	2	4	15	14	10	9	3	12	5	152
forklift								1		1	1					1	1		1						6
railway equipment			3		1			1	1	2	1	1		2	2		4	1		1	1		2		23
conveyor													1												1
loader																									
straddle carrier																									
rough terrain hauler																							1		1
other powered conveying machines					1		3	1	1			1		1				3	1			1	2	1	16
cars, bus, motorcycle			10		15		11	9	9	6	9	9	5	19	15	7	17	11	2	5	6	13	5	5	188
railway vehicle			2				3	1	1	2	3	1		1	2		3	3	4	1	3	1	1		32
other vehicles					1			3				1			1		1						1		8
boiler																									

pressure vessel																									
other pressure vessels																	1								1
chemical facilities																									
gas welding equipment					1					1															2
arc welding equipment																					1				1
other welding equipment																									
kiln, caldron																									
industrial dryer																									
other kiln, caldron																									
transmission					1			1		1				1		1			1						6
electric power facilities												1									1				2
other electrical equipment			1		1					1	1						1								5
human power cranes			1		3					1		1	7	1	3	2		2	4		1		1	2	29
human power hauling equipment			2		2			1		3	2		1		3	1			4	2	6			1	28

human power machine			2		2		1	1	1									1			2				10
hand tool			3		8		4	3	3	7	5	3	1	3	4	4	6	8	4		4	2	4	5	81
ladder			1				2	3	1	3	2	1		1	1	1	3	2	2		4			1	28
slinging tool			2		3		1	1	2		1	2		1				2		1		1	1		18
other tools			1		1		1	2	6	2	2	1	1	1	3	1	4	1		2	5	4	5	3	46
other equipment, facilities			1		1		2	2	2			2	3	2		2			1	2	4	2	1		27
scaffolding			7		4		3		5		3	1	2	1	2	1			1	1	1	1	1	1	35
timbering					1			1		1		1			1										5
stairs, landing stage			2				1	1				1		3	2	2		1	1			2	1	3	20
opening							1		1	1		1		1				2	3		2				12
roof, beam, haze, crossbeam, principal rafter										1					1	1									3
working platform, boot board			1		2		2	2	1	3	5	2	1		3	5			2	2	2	3	3		39
passage			3		3		2		4	6	5	2	4	3	4	9	3	8	5	2	4	10	13	8	98
building, establishment			10		7		6	6	4	7	4	3	3	5	2	2	1	4	3	2	9	4	4	4	90
other temporary buildings,			5		5		4	8	2	5	4	2	3	2	2	3	3	2	3	5	6	7	6	4	81

establishments																									
explosive substance																									
inflammable substance			1																						1
inflammable gas											1											1			2
harmful substance								1				1	1								1				4
radiation																									
other hazards, harmful substances							1					1	1		1										4
metal material			10		9		13	9	10	12	5	12	9	5	4	6	5	9	12	8	10	4	11	6	169
lumber, bamboo			7		4		2	2	1	4	6	4	2	4	1	3	7	1	4	1		3	2	2	60
stone, sand, substance			2		2		1	1			2	1	1	1	3	2		1	1	3	1	1	1	2	26
other materials			3		5		1	1	3		1		1		1	1	1	1	2	2	2		2	1	28
load			6		3		3	4	3	1	2	2		2	2	6	5	3		2	2	3	3	4	56
machine/equipment as load			2		4		1	2		2				1			3	2		3	4				24
natural ground, rock			1		1		1	2	1	1	1		1	1	1	1	2				2	1		1	18
standing tree								1			1	1	1	1			1	1	1					1	9
water								1					3												4
abnormal																									

environment																									
high/cold temperature environment			1		3				3		1	1		5	1	1			2	2		2			22
other environments			1						1	1		1		3		2	1	4	1		2	3	2	1	23
other causal agent							1	3		1			1		1		3	1		2	1	2	19		35
no causal agent			3		2		3	2					1	3	1	4	1	1	3	1	2	2	3	1	33
unclassifiable							2						1		1										4
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Workers age of fatal and non-fatal accidents in railway construction work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
19 years old or less	3	5	3	1	4	2	4		6	2	2		1	6	3	2	2	1	3	2	3	1			56
20-29	30	18	22	19	22	19	20	21	21	17	9	23	12	17	16	12	10	9	17	11	16	9	20	15	405
30-39	26	24	16	28	19	19	25	23	25	25	17	21	11	17	24	20	28	29	30	18	21	25	32	13	536
40-49	27	21	19	28	18	17	13	15	9	20	14	14	13	19	19	17	20	26	23	22	31	22	33	17	477
50-59	21	31	40	32	32	24	26	31	27	22	23	12	19	14	16	11	18	19	17	10	19	15	20	15	514
60 years old or more	18	16	17	23	16	18	19	13	5	19	17	10	13	17	13	30	13	15	11	7	20	20	19	14	383
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Workers' number of workplace of fatal and non-fatal accidents in railway construction work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less	26	28	27	37	28	34	25	19	24	31	17	21	11	16	25	26	25	23	27	17	38	15	23	17	580
10-29	62	54	53	50	54	37	57	44	33	50	30	32	28	32	37	37	41	38	45	27	40	45	63	31	1,020
30-49	18	15	21	19	16	16	17	26	16	15	20	14	19	25	18	16	15	17	14	19	14	10	24	14	418
50-99	16	11	14	23	8	9	5	12	16	3	13	10	7	8	4	8	8	12	12	4	12	15	13	10	253
100-299	3	5	1	2	4	3	1	2	4	5	2	3	3	7	7	4	2	9	3	3	5	6	1	2	87
300 workers or more		2	1		1		2			1			1	2		1					1	1			13
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Month of fatal and non-fatal accidents in railway construction work in 1999-2022

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
January	22	10	15	10	6	10	6	8	4	4	9	7	4	6	7	6	9	12	7	5	6	5	8	12	198
February	7	8	9	12	6	10	3	7	6	7	8	7	6	8	4	7	7	5	11	9	3	14	11	9	184
March	9	12	12	8	5	12	9	8	4	17	8	9	9	8	9	11	9	2	6	3	10	10	7	9	206
April	8	5	4	8	4	5	11	15	3	6	6	7	1	3	4	2	7	11	3	3	16	10	4	3	149
May	3	6	6	5	8	6	16	3	6	6	7	5	2	1	2	14	7	4	7	3	6	4	12	5	144
June	13	7	12	18	13	9	16	10	11	9	4	3	4	6	8	5	12	6	13	7	12	6	10	2	216

July	9	14	8	12	11	7	7	13	6	6	12	7	8	10	10	11	7	16	11	6	13	6	14	4	228
August	10	10	6	11	15	9	10	9	12	10	3	5	3	8	4	6	6	5	6	9	6	9	12	3	187
September	14	8	11	9	13	8	4	6	9	10	5	10	11	16	7	9	8	10	6	8	12	8	11	4	217
October	9	12	11	16	9	14	9	7	10	7	8	7	2	3	17	6	9	15	7	9	8	7	15	9	226
November	11	10	11	13	11	2	9	9	11	11	5	7	11	5	6	7	7	9	9	5	5	9	8	8	199
December	10	13	12	9	10	7	7	8	11	12	7	6	8	16	13	8	3	4	15	3	13	4	12	6	217
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Prefecture of fatal and non-fatal accidents in railway construction work in 1999-2022

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Hokkaido	4	2			2		1	1		2	4	1	1	14	9	6	12	10	7	5	13	15	11	7	127
Aomori	1	2	1					1	1		1	2	2	5	1	2		1	3	1	1	1		1	27
Iwate	6	4	4		2		4	3		1		2	3	5	2	3	2	8	5	1	5		6	2	68
Miyagi	4	2	3		3		1	2	9	5	4	5	3	3	3	7	7	2		2	5	1	5	1	77
Akita	1		1		1		2	2	1	2		1									2				13
Yamagata	4		3		1		1			3		5	2			1	2			1					23
Fukushima		3	2		1		9	4	5	1	3		2		4	5	4	2	4		5	2	11	1	68
Ibaraki	3	1	1		2		1		2	1		2	1	1			3	6		2	1		4		31
Tochigi	1	2	2		6		1	1		1	1	1	2		2	2	1	2	1	2	2		4	2	36
Gunma	3	1	2				1			1	2	2	2		1	2		2	1	1	1			1	23

Saitama	2	6	6		8		6	1	1	6	4	8		4	3	4	5	2	5	5	3	2	6	1	88
Chiba	9	4	5		9		1	2	2	1	6	5	1	4	2	1	3	4	5	2	2	3		5	76
Tokyo	20	22	16		19		25	24	19	23	15	11	11	14	14	9	9	13	19	12	17	8	15	8	343
Kanagawa	11	12	14		8		2	10	4	6	4	6	6	3	3	3	5	7	15	7	10	12	8	5	161
Niigata		2							1	4	2	1	1	1	4	2	3	2	1		1	5	1	2	33
Toyama	1		2						1	1	5	3	3	4	2	2	1	1		1	2	4	1	1	35
Ishikawa	1	3												2				1		3	1	2	4	1	18
Fukui		1	1					1		1					1	1			1	2	4	7	7	1	28
Yamanashi	1	2					1				1		1			2	2								10
Nagano	1	3	1					1	2		1	1	3	2		4	2	2	1		2	3	1	2	32
Gifu	5	1	3					2		4	4	1	2	1	2	2	1	1	4	3	2	1	2	6	47
Shizuoka	3	5	5		3			6	2	3	3	2	3		6	6	6	7		1	3	4	3	1	72
Aichi	3	4	2		7		4	1	10	7	1	3	2	2	4	2	4	3	2	3	2	1	1	1	69
Mie	2				1		1							3		1	1	1	1		4				15
Shiga		1						1	1	1	1	1	1	1	1	3	3	1	1				1	1	19
Kyoto	4	3	1		2		3	1	3	3	1	1	1	1		3	1		3	2	2	2	2	2	41
Osaka	6	5	7		7		15	5	6	3	7		4	6	2	7	5	3	3	4	2	3	3	4	107
Hyogo	8	4	7		10		3	6	3	8	2	3	1	3	12	4	1	2	6		3	1	4	2	93
Nara	1	1					2	1								1	2				1		1	1	11
Wakayama								3		1								1		2				2	9
Tottori		1	2					1	2	1			2												9

Shimane	1	1	2				1	1				1				1								1	9
Okayama	5		4		2		4	1	2	1	2		1					1	1				1	3	28
Hiroshima	1	3	2				6	1						1	1		2	2	3	3	1	3	9	1	39
Yamaguchi	2	1	1		2		2	5	1	3	3	1	4	3	2		2	4	2		3	4		2	47
Tokushima		2	1				2			1								1	1					1	9
Kagawa	1		2		3		1	2	1	1		1			1			1				3			17
Ehime	1		1		1		2			1		1					1	1	1						10
Kochi	2	4	1					1	2	1									1	1	1	1	1		16
Fukuoka	6	4	7		6		3	4	3	4	2	1	3	2	4	5		5	1	1	1	2	8	2	74
Saga	1	1			2			1	1		1		1	1							3	1		1	14
Nagasaki		1	2		1		1	2		1	1	2			3				1	3	4	1	1	1	25
Kumamoto		1						4	3	2	1	1			1								1		14
Oita									2			4		1										1	8
Miyazaki							1	1	2					2											6
Kagoshima			3		2				1			1		1	1	1	1		2		1		2		16
Okinawa																									
total	125	115	117	131	111	99	107	103	93	105	82	80	69	90	91	92	91	99	101	70	110	92	124	74	2,371

Fatal and non-fatal accidents mean fatal and non-fatal injuries and occupational diseases with work absence of 4 days and more.

Data of 2022 year do not include Covid-19 cases. Data of 2020 & 2021 year include Covid-19 cases. Fatal and non-fatal data are same situation.

Data of 2011 year include fatal and non-fatal accidents caused by Great East Japan Earthquake in 2011.

Data sources: https://anzeninfo.mhlw.go.jp/user/anzen/tok/anst00.html (MHLW, Japan)

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Fatal accidents in railway construction work in Japan in 1999-2022

railway construction work industry Code No.030104

Type of fatal accidents in railway construction work in 1999-2022

Type of accidents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
fall from height			1	1				1														1			4
falling to same level														1											1
crash																									
struck by flying or falling object	1										1														2
collapse	1		1										1									1			4
crashed by	1	2			1		1								1			1							7
caught in/between	1	1		2													1								5
cut																									
injury to the sole of the foot																									

drown													1												1
contact to high/low-temperature																									
contact to harmful substance								1																	1
electric shock				1		1																			2
explosion																									
burst																									
fire																									
traffic accident (public road)	1			1	1	4	1	2	1					2		2	2	1				2	2		22
traffic accident (others)						1	2	2			2														7
reaction to motion/improper motion																									
others	1					2							2												5
unclassifiable																									
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Causal agents (large) of fatal accidents in railway construction work in 1999-2022

Causal (L) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
machine	1	1		1				1																	4
crane, conveying machine	2	2		3	1	6	4	4	1		3			2	1	2	3	2				2	2		40
other equipment					1								1												2
temporary buildings, establishments	2		1	1				1						1								1			7
substance, material																									
load																									
environment	1		1										3									1			6
others						2																			2
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Causal agents (middle) of fatal accidents in railway construction work in 1999-2022

Causal (M) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine								1																	1
power transmission mechanism																									

woodworking machine																									
construction machine	1	1		1																					3
metal manufacturing machine																									
general machine																									
mobile silviculture machine																									
crane				1	1	1					1					1									5
conveying machine						3	1		1									2					2		9
vehicle	2	2		2		2	3	4			2			2	1	1	3					2			26
pressure vessel																									
chemical facilities																									
welding equipment																									
kiln, caldron																									
electric equipment																									
human power machine, tools					1								1												2
tools																									
other equipments,																									

facilities																									
temporary buildings, establishments	2		1	1				1						1								1			7
hazards, harmful substances																									
materials																									
load																									
natural environment	1		1										3									1			6
other causal agent						1																			1
no causal agent						1																			1
unclassifiable																									
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Causal agents (small) of fatal accidents in railway construction work in 1999-2022

Causal (S) agents	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
engine								1																	1
power transmission mechanism																									

circular sawing machine																									
band sawing machine																									
wood planer machine																									
hollow chisel mortiser, wood borer																									
chamfering machine, router, woodworking milling machine																									
chain saw																									
other woodworking machines																									
leveling, transporting or loading machine																									
excavating machine																									
foundation work machine	1			1																					2
hardening machine																									

demolition machine																									
vehicle for high lift work		1																							1
other construction machines																									
lathe																									
drill press, milling machine																									
grinding machine, buffing machine																									
power press																									
forging pressure hammer																									
shearing machine																									
other metal manufacturing machines																									
centrifugal machine																									
mixer, grinder																									
roll machine (except printingroll machine)																									

injection molding machine																									
food manufacturing machine																									
printing machine																									
industrial robot																									
other general power machines																									
felling machine																									
mobile logging machine																									
skyline yarding machine																									
other mobile silviculture machine																									
crane																									
mobile crane				1	1	1										1									4
derrick crane																									
elevator, lift											1														1
cargo lifting appliance																									
gondola																									

lumberyard equipment, logging cableway																									
simple skyline yarding equipment																									
other powered crane																									
truck						3	1		1									2					2		9
forklift																									
railway equipment																									
conveyor																									
loader																									
straddle carrier																									
rough terrain hauler																									
other powered conveying machines																									
cars, bus, motorcycle	1	1		1		1		2						2		1	2					2			13
railway vehicle	1	1		1		1	3	2			2				1		1								13
other vehicles																									
boiler																									

pressure vessel																									
other pressure vessels																									
chemical facilities																									
gas welding equipment																									
arc welding equipment																									
other welding equipment																									
kiln, caldron																									
industrial dryer																									
other kiln, caldron																									
transmission																									
electric power facilities																									
other electrical equipment																									
human power cranes													1												1
human power hauling equipment					1																				1

human power machine																									
hand tool																									
ladder																									
slinging tool																									
other tools																									
other equipment, facilities																									
scaffolding								1																	1
timbering																									
stairs, landing stage																									
opening				1																					1
roof, beam, haze, crossbeam, principal rafter																									
working platform, boot board																									
passage																									
building, establishment	2		1											1								1			5
other temporary buildings,																									

establishments																									
explosive substance			1																						
inflammable substance																									
inflammable gas																									
harmful substance																									
radiation																									
other hazards, harmful substances																									
metal material																									
lumber, bamboo																									
stone, sand, substance																									
other materials																									
load																									
machine/equipment as load																									
natural ground, rock			1																			1			2
standing tree																									
water													3												3
abnormal																									

environment																									
high/cold temperature environment																									
other environments	1																								1
other causal agent						1																			1
no causal agent						1																			1
unclassifiable																									
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Workers age of fatal accidents in railway construction work in 1999-2022

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
19 years old or less						1																			1
20-29	3		1	1		1		2			1											1	1		11
30-39				1	1	1	1						2	2		1		1					1		11
40-49	3		1	1		3		1					1									1			11
50-59		2				1	1	2	1		1			1		1	2								12
60 years old or more		1		2	1	1	2	1			1		1		1		1	1				2			15
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Workers' number of workplace of fatal accidents in railway construction work in 1999-2022

Workers scale	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
9 workers or less	2	1		2	2	4					1						2	1				1			16
10-29	1	1	2	1		4	1	1	1		2		1	3	1	2		1				2	2		26
30-49	3			2			3	3					1				1					1			14
50-99		1						1																	2
100-299								1					2												3
300 workers or more																									
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Month of fatal accidents in railway construction work in 1999-2022

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
January	2		1					1																	4
February	2			1							1			1											5
March						2	1						3									2			8
April	1	1						2										1							5
May					1																				1
June	1			1			1	1	1						1										6

July								1			1					1		1				1			5
August		1					1	1														1			4
September		1																							1
October			1	2		4											2						2		11
November							1									1	1								3
December				1	1	2					1		1	2											8
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Prefecture of fatal accidents in railway construction work in 1999-2022

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	total
Hokkaido							1							2	1	1									5
Aomori																									
Iwate				1									2												3
Miyagi													1												1
Akita																									
Yamagata						1																			1
Fukushima			1														1					1			3
Ibaraki																	2	1							3
Tochigi				1		3																			4
Gunma																									

Saitama																		1							1
Chiba						1																			1
Tokyo	1			2				1	1		1		1												7
Kanagawa		1			1	1																2			5
Niigata																									
Toyama																									
Ishikawa																									
Fukui																							2		2
Yamanashi																1									1
Nagano																									
Gifu																									
Shizuoka								2			1														3
Aichi																									
Mie																									
Shiga																									
Kyoto	1																								1
Osaka		1																							1
Hyogo	2	1									1														4
Nara																									
Wakayama																									
Tottori			1																						1

Shimane	1																								1
Okayama	1			1			1																		3
Hiroshima																									
Yamaguchi								2						1											3
Tokushima							1																		1
Kagawa																						1			1
Ehime																									
Kochi																									
Fukuoka					1	1	1																		3
Saga								1																	1
Nagasaki																									
Kumamoto																									
Oita																									
Miyazaki																									
Kagoshima						1																			1
Okinawa																									
total	6	3	2	5	2	8	4	6	1		3		4	3	1	2	3	2				4	2		61

Data sources: https://anzeninfo.mhlw.go.jp/user/anzen/tok/anst00.html (MHLW, Japan)

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