

Fatal and non-fatal accidents in tunnel construction work in Japan in 1999-2021

tunnel construction work industry Code No.030102

Type of accidents in tunnel construction work in 1999-2021

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	total	Type of accidents
fall from height	24	18	30	20	14	22	21	15	22	20	13	8	6	12	10	10	5	10	10	7	13	9	9	328	fall from height
falling to same level	6	7	12	9	7	2	4	8	5	5	7	3	4	4	4	4	8	4	6	6	9	7	3	134	falling to same level
crash	3	8	7	9	3	4	3	8	3	5	3		4	2	1	3	3	9	5	4	3		2	92	crash
struck by flying or falling object	32	24	26	25	14	13	25	22	9	15	12	14	9	14	9	3	13	13	13	12	10	14	7	348	struck by flying or falling object
collapse	17	17	11	18	10	6	8	10	7	7	10	5	4	8	4	8	7	11	9	8	4	2	9	200	collapse
crashed by	12	20	16	6	14	6	14	6	7	12	7	5	10	8	7	6	6	5	3	7	7	7	10	201	crashed by
caught in/between	34	32	27	17	22	20	16	17	25	19	18	12	13	12	18	9	22	12	12	15	16	23	10	421	caught in/between
cut	2	3	2	2	4	4	3	3	1	1	2	2	1	1	1	2	1	1	4			1		41	cut
injury to the sole of the foot			2										1				1							4	injury to the sole of the foot
drown																					1		1	2	drown
contact to high/low-temperature	1	2	1	1	1	1	1		3	2		2	1	4	1			1	1	2	2			27	contact to high/low-temperature









engine												1												1	engine	
power transmission mechanism							1					1													2	power transmission mechanism
circular sawing machine			1		2		2	1	1	1					1			2	2						13	circular sawing machine
band sawing machine																										band sawing machine
wood planer machine													1												1	wood planer machine
hollow chisel mortiser, wood borer																										hollow chisel mortiser, wood borer
chamfering machine, router, woodworking milling machine																										chamfering machine, router, woodworking milling machine
chain saw																										chain saw
other woodworking machines													1												1	other woodworking machines
leveling, transporting or loading machine					3		1	1	2	1	1	1		1		1	2	5		1		1			21	leveling, transporting or loading machine
excavating machine			12		4		6	5	1	6	2		3	3	5	4	6		2	5	3	1	2		70	excavating machine
foundation work machine					3					1							1			1		2	1		9	foundation work machine











facilities			5		1		4	3	1			1				3	1	2	4	2	1	2	2	32	facilities
scaffolding			4		3		2	2	2	4	1	1	5	3		2		2	2		2		1	36	scaffolding
timbering			9		2		3	2	2		1		1	6	3		5	1	2	2	1		3	43	timbering
stairs, landing stage			2				1	2	1	3			2	1		2	1	1					1	17	stairs, landing stage
opening			2				2	1	1	1			2		1			2	2	1	1			16	opening
roof, beam, haze, crossbeam, principal rafter									1		1													2	roof, beam, haze, crossbeam, principal rafter
working platform, boot board			4		4		2	3	1		2	1	1				2				2	2		24	working platform, boot board
passage			4		1		3	1		4	3	3	3		1	2		2	1	4	2	1		38	passage
building, establishment			7		3		4	5	5	6	2	3	2	2	6	1	1	2	4	1	4	5	3	66	building, establishment
other temporary buildings, establishments			5				1	5	3	2	1	2	1	2	3	5	2	2			3	4	1	42	other temporary buildings, establishments
explosive substance					1					2													1	4	explosive substance
inflammable substance														1										1	inflammable substance
inflammable gas									2				5											7	inflammable gas
harmful substance			1				4			1			1					1						8	harmful substance
radiation																									radiation
other hazards, harmful substances			3				1	1	2	1	1	2									2	2	2	17	other hazards, harmful substances

metal material			9		8		11	5	4	6	2	1	3	2	4	4	4	3	5	7	6	6	3	93	metal material
lumber, bamboo					1			1	1					1		2	1				2			9	lumber, bamboo
stone, sand, substance			1		2		1	2	2		1	2	1			1	1			1	1		1	17	stone, sand, substance
other materials			3				3	2		3	3	2	3		1		1		1		6			28	other materials
load			3				1	1	5		1		1	1				2		2	2			19	load
machine/equipment as load							1										2						1	4	machine/equipment as load
natural ground, rock			17		14		11	11	8	12	13	9	4	6	7	4	8	14	10	9	4	6	5	172	natural ground, rock
standing tree			1						1	1	1					2	1		3		1	1		12	standing tree
water																					1	1		2	water
abnormal environment													1			1							1	3	abnormal environment
high/cold temperature environment							1		1	1		2		3	1			1		1	1			12	high/cold temperature environment
other environments					1		1	22	1				2						1	2	2			32	other environments
other causal agent								1			1	1						2	9		2	15	27	58	other causal agent
no causal agent					2				2	1	1		1	1			2	2		1	4	1		18	no causal agent
unclassifiable					1				1						1				2					5	unclassifiable
total			149		109		114	118	87	95	79	64	61	72	59	48	68	74	79	68	79	86	86	1,595	total

Workers age of fatal and non-fatal accidents in tunnel construction work in 1999-2021

Age	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Age
19 years old or less	1	1	2	1	1		1	2		2	1	2	1						1	1	1	1	1	20	19 years old or less
20-29	20	22	17	17	17	7	18	12	3	7	6	6	5	5	7	3	7	8	8	3	8	12	14	232	20-29
30-39	28	33	29	20	25	23	35	34	25	27	21	13	16	13	8	18	12	16	8	11	11	10	8	444	30-39
40-49	35	32	42	41	23	18	27	26	16	16	21	15	16	21	18	9	18	15	26	21	20	24	23	523	40-49
50-59	42	48	43	42	32	35	27	34	30	32	22	16	19	22	16	13	15	23	20	19	22	16	24	612	50-59
60 years old or more	15	15	16	9	11	9	6	10	13	11	8	12	4	11	10	5	16	12	16	13	17	23	16	278	60 years old or more
total	141	151	149	130	109	92	114	118	87	95	79	64	61	72	59	48	68	74	79	68	79	86	86	2,109	total

Workers' number of workplace of fatal and non-fatal accidents in tunnel construction work in 1999-2021

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	total	Workers scale
9 workers or less	27	32	31	28	34	19	18	33	21	20	19	17	14	18	15	10	17	13	24	13	18	26	16	483	9 workers or less
10-29	70	79	73	63	43	47	57	55	49	53	36	29	22	26	28	24	34	32	32	30	31	35	37	985	10-29
30-49	32	34	28	20	16	20	24	14	13	14	21	13	14	18	8	4	11	15	17	15	12	17	19	399	30-49
50-99	8	5	11	14	13	4	13	15	2	4	1	1	6	9	6	4	5	11	4	7	12	6	12	173	50-99
100-299	3	1	5	5	3	2	2	1	2	3	2	4	5	1	2	6	1	1	2	1	5	2	2	61	100-299
300 workers or more	1		1							1								2		2	1			8	300 workers or more
total	141	151	149	130	109	92	114	118	87	95	79	64	61	72	59	48	68	74	79	68	79	86	86	2,109	total

Month of fatal and non-fatal accidents in tunnel construction work in 1999-2021

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Month
January	14	6	13	9	10	6	13	10	8	10	15	1	7	7	4	4	7	8	5	4	5	5	10	181	January
February	11	15	10	5	13	8	7	8	10	7	9	6	4	11	7	2	4	9	8	4	3	8	2	171	February
March	10	8	27	20	16	8	8	13	9	9	5	6	7	11	4	6	4	5	12	7	3	9	13	220	March
April	8	15	12	4	4	6	8	6	4	8	7	3	7	6	7	2	3	4	2	4	12	5	4	141	April
May	12	18	7	7	3	8	15	3	7	9	4	5	2	10	8	5	4	5	6	6	6	8	8	166	May
June	9	10	16	13	5	8	8	5	7	13	8	3	5	3	6	5	6	8	8	7	8	5	6	172	June
July	6	11	8	14	7	8	6	10	5	8	5	8	4	3	4	2	9	9	9	8	7	4	3	158	July
August	10	7	7	9	5	8	9	9	11	6	9	4	2	7	3	2	4	6	7	5	5	4	13	152	August
September	20	16	9	21	13	11	18	5	10	7	3	3	7	2	3	2	6	6	3	5	6	4	14	194	September
October	13	14	15	8	13	6	6	8	4	6	3	8	10	2	4	11	5	4	8	4	13	14	7	186	October
November	16	12	18	9	7	10	6	32	5	6	5	8	1	2	6	4	11	3	6	10	4	16	4	201	November
December	12	19	7	11	13	5	10	9	7	6	6	9	5	8	3	3	5	7	5	4	7	4	2	167	December
total	141	151	149	130	109	92	114	118	87	95	79	64	61	72	59	48	68	74	79	68	79	86	86	2,109	total

Prefecture of fatal and non-fatal accidents in tunnel construction work in 1999-2021

Prefecture	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Prefecture
Hokkaido	5	12	7		12		7	30	9	7	8	3	1	2	6	2	4	1	3	6	5	16	12	158	Hokkaido
Aomori		3			1		2		2	1			1	1				1	1		1		1	15	Aomori
Iwate	10	5	7				1	3		1	3				1	5	6	8	4	4	5	3	4	70	Iwate



Osaka	5	1	2		2		2	3	3	4	7	1	3	3	1	2	1	2	4	2	3			51	Osaka
Hyogo	5	13	5		1		2	4	2	6	1	1		3		4	2	6	1	1	2	1	1	61	Hyogo
Nara	1	4			3		1				3		1	1				1		1				16	Nara
Wakayama	1	1			2		1	3	1	2			1		2	2	1	2			1	14	1	35	Wakayama
Tottori			1							2			1				1	3	2	3	1			14	Tottori
Shimane	1	1	4				2	1	2		3	5	1	1			1		1		1			24	Shimane
Okayama		4	2		1		1	1	1	2	3		2	6	2					1				26	Okayama
Hiroshima	1	6	3		2		3	2	3	2	1	2	2		2	1			2		1		2	35	Hiroshima
Yamaguchi	1	3	2				1	1		1	3							1	1					14	Yamaguchi
Tokushima	3	1	1				1	2	1		1	1		1				2			3			17	Tokushima
Kagawa											2						1		1				2	6	Kagawa
Ehime			3		3		4	4	2		1					1			3	2		1	4	28	Ehime
Kochi	4	4	3		1			1	3		3			1				2	1		1	1	4	29	Kochi
Fukuoka	2	8	4				6	2	4	2	1	2				1	2	1		1		2	1	39	Fukuoka
Saga		1						1			1				1	1	2	1	2	1				11	Saga
Nagasaki	5	1	2		2		1		1	1							3	3	5	5	2		5	36	Nagasaki
Kumamoto	2	4	7		4			5		1			1		1		1		1	1	2	2		32	Kumamoto
Oita	4	4	3		1			1	2	1	2		1	2	4		1	2	2	1	2	3		36	Oita
Miyazaki	2	6	3		6		1	2	3	4	1	2	2	2	3		1			1	1	3	1	44	Miyazaki
Kagoshima	7	5	4		1		4		3			4	2	4		1	3	1	1		1			41	Kagoshima
Okinawa	1		1				3	1	1		2						1	1			2	1	1	15	Okinawa
total	141	151	149		109		114	118	87	95	79	64	61	72	59	48	68	74	79	68	79	86	86	1,887	total































100-299		1	1	1	1		1			1		1		4		1	1			1		1		15	100-299	
300 workers or more																										300 workers or more
total	11	13	10	8	10	3	2	15	7	7	5	3	3	12	4	4	4	6	7	6	2	7	3	152	total	

Month of fatal accidents in tunnel construction work in 1999-2021

Month	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	total	Month
January	1	1				1		1	1	1	1					1		1	1	1		1		12	January
February		1		1	3				1		1			5	1			1		1		1		16	February
March	1		2	2	2		2	1								1			1	1	1	2	1	17	March
April			2	2					1	1				1	1		1		1					10	April
May		2			1					2		1		2	1	1		1	1			1		13	May
June	1		1		1			3	1			1		1		1			1					11	June
July		2			2					3			1				1			1				10	July
August	1	1	2	1		1		1			1												1	9	August
September	2		2			1			1		1		2							1				10	September
October	2	2		1							1			2				1			1	1	1	12	October
November	1	1	1	1	1			9				1			1		1		1	1		1		20	November
December	2	3							2					1			1	2	1					12	December
total	11	13	10	8	10	3	2	15	7	7	5	3	3	12	4	4	4	6	7	6	2	7	3	152	total

Prefecture of fatal accidents in tunnel construction work in 1999-2021







Miyazaki					2	1									1		1								5	Miyazaki	
Kagoshima	1									1																2	Kagoshima
Okinawa				1																						1	Okinawa
total	11	13	10	8	10	3	2	15	7	7	5	3	3	12	4	4	4	6	7	6	2	7	3	152	total		

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

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