Characteristics of Occupational Injuries among US Workers with and without Disabilities

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Healthy People 2020 Objectives:

DH-19: (Developmental) Reduce the proportion of people with disabilities who experience nonfatal unintentional injuries that require medical care.

Estimated # of U.S. Workers with Disability:

4.5-8.5 millions adults (16-64 years old)

- Kruse D, Schur L, Ali M. Disability and occupational projections. Monthly Labor Review Online. 12/5/2011 2010;133(10)

Promoting the Health and Safety of Individuals with Developmental Disabilities Employed in Mainstream Settings

Report and Recommendations to the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services

Robin Dewey, MPH
Labor Occupational Health Program
University of California, Berkeley

October 2006

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"…Very few researchers, agencies or organizations in the country has examined the occupational safety and health experiences and needs of workers with developmental disabilities."

- *Robin Dewey (2006): Promoting the Health and Safety of Individuals with Developmental Disabilities Employed in Mainstream Settings*

"Lack of scientific literature on occupational abilities and risks of workers with disabilities makes it difficult for health care providers to provide input on employability and to recommend accommodations "

- *Blanck P and Pransky G(1999): Workers with disabilities. Occupational Medicine: State of the Art Review, 14(3): 581-593*

My Primary Research Interest

Injury Epidemiology and Safety Research
Among Individuals With Disabilities

Our long-term goal is to help prevent injuries to workers with disabilities by improving understanding of *patterns and risk factors* for occupational injuries in this vulnerable population.

Two Important Research Questions:

Research Q1 – Do workers with disability have a significantly higher risk of injuries (non-occupational and occupational) than workers without disability?

Research Q2 – What are the characteristics (e.g. leading causes of injuries and where do these injuries often occur) of occupational injuries in U.S. workers with disability

Zwerling C, Whitten PS, Davis CS, Sprince NL. Occupational injuries among workers with disabilities: the National Health Interview Survey, 1985-1994. JAMA. 1997;278(24):2163-2166.

1) Data: 1985-1994 NHIS

2) Sample size: 459,827 adults

3) Disability measurement: self-reported limitations and conditions

	OR 95% CI		OR 95% CI
Male vs female	1.78	**Disability**	
Age Groups		Disabled	1.32
18-31	1.25	Blind	2.92
32-43	1.24	Visual impairment	1.39
44-65	Ref	Deaf	2.42
Race		Hearing impairment	1.64
White	Ref	Back impairment	1.09
Black	1.07	U extremity impairment	1.58
Other	0.74	L extremity impairment	1.21
		Diabetes	1.41
		Epilepsy	1.57
		Arthritis	1.21
		All others	Ref

Nonoccupational and Occupational Injuries to US Workers With Disabilities

James Price, BS, Junxin Shi, MD, PhD, Bo Lu, PhD, Gary A. Smith, MD, DrPH, Lorann Stallones, PhD, MPH, Krista K. Wheeler, MS, and Huiyun Xiang, MD, PhD, MPH

Objectives. We examined medically treated injuries among US workers with disability.

Methods. Using 2006–2010 National Health Interview Survey data, we compared 3-month rates of nonoccupational and occupational injuries to workers with disability (n = 7729) and without disability (n = 175 947). We fitted multivariable logistic regression models to calculate odds ratios and 95% confidence intervals of injuries by disability status, controlling for sociodemographic variables. We also compared leading causes of injuries by disability status.

Results. In the 3-month period prior to the survey, workers with disability were more likely than other workers to have nonoccupational injuries (odds ratio [OR] = 2.35; 95% confidence interval [CI] = 2.04, 2.71) and occupational injuries (OR = 2.39; 95% CI = 1.89, 3.01). For both groups, the leading cause was falls.

Conclusions. Disability status was strongly associated with risk of nonoccupational and occupational injuries among US workers. The safety issues facing US workers with disability in the workplace warrant future research. Federal agencies with an interest in the employment of workers with disability and their safety in the workplace should take a lead in further assessing injury risk and in promoting a safe working environment for workers with disability. (*Am J Public Health.* 2012;102:e38–e46. doi:10.2105/AJPH.2012.300888)

In the United States, persons with disabilities constitute 12.0% of the population.[1] Both the World Health Organization and the US surgeon general have released reports addressing disparities in the health of persons with disabilities.[2,3] These reports identify community participation and health promotion as societal priorities. According to the 2008 American Community Survey, about 4.6 million adults (aged 16–64 years) with disabilities are employed in the United States, and the number of workers with disabilities is expected to increase in the coming years as the workforce ages.[4] A public health concern is that workers with disabilities may be at high risk of occupational injuries.[5–8] Reducing the proportion of individuals with disabilities who report nonfatal injuries is among the objectives of *US Healthy People 2020*.[9]

TABLE 2—Three-Month Rate of Nonoccupational Injuries Among US Workers, by Disability Status: National Health Interview Survey, United States, 2006–2010

	Without Disabilities		With Disabilities			
	Injured, No.	Injured, Weighted %[a] (95% CI)	Injured, No.	Injured, Weighted %[a] (95% CI)	Rate Ratio	*P*[b]
Total	2426	1.5 (1.5, 1.6)	274	3.9 (3.3, 4.4)	2.5	< .001
Gender						
Male	1289	1.6 (1.5, 1.6)	113	3.2 (2.6, 3.8)	2.1	< .001
Female	1137	1.5 (1.4, 1.6)	161	4.6 (3.8, 5.3)	3.0	< .001
Age, y						
18–34	958	1.8 (1.7, 1.9)	50	3.6 (2.6, 4.6)	2.0	< .001
35–54	1053	1.4 (1.3, 1.4)	135	4.0 (3.3, 4.8)	3.0	< .001
≥ 55	415	1.5 (1.3, 1.7)	89	3.8 (3.0, 4.7)	2.6	< .001
Marriage status						
Married	1231	1.3 (1.2, 1.4)	123	3.7 (3.0, 4.4)	2.8	< .001
Single or never married	768	1.9 (1.8, 2.1)	59	3.5 (2.6, 4.5)	1.8	< .001
Separated, divorced, or widowed	422	1.9 (1.7, 2.1)	92	4.6 (3.6, 5.6)	2.4	< .001
Race/ethnicity						
Non-Hispanic White	1704	1.8 (1.7, 1.9)	204	4.1 (3.5, 4.7)	2.3	< .001
Non-Hispanic Black	302	1.3 (1.2, 1.5)	37	3.4 (2.1, 4.6)	2.5	< .001
Hispanic	304	0.8 (0.7, 0.9)	21	2.5 (1.3, 3.6)	3.0	< .001
Others	116	1.0 (0.8, 1.2)	12	. . .[c]		
Education						
< 12 y (no diploma)	189	1.1 (0.9, 1.2)	19	2.4 (1.2, 3.6)	2.2	.002
High school graduate or GED	1374	1.5 (1.5, 1.6)	172	3.5 (3.0, 4.0)	2.3	< .001
≥ bachelor's degree	848	1.8 (1.7, 1.9)	81	5.7 (4.3, 7.0)	3.2	< .001

TABLE 3—Three-Month Rate of Occupational Injuries Among US Workers, by Disability Status: National Health Interview Survey, United States, 2006–2010

	Without Disabilities		With Disabilities			
	Injured, No.	Injured, Weighted %[a](95% CI)	Injured, No.	Injured, Weighted %[a](95% CI)	Rate Ratio	*P*[b]
Total	944	0.6 (0.5, 0.6)	101	1.4 (1.1, 1.6)	2.4	< .001
Gender						
Male	613	0.7 (0.7, 0.8)	57	1.5 (1.1, 2.0)	2.1	< .001
Female	331	0.4 (0.4, 0.4)	44	1.2 (0.8, 1.6)	3.0	< .001
Age, y						
18–34	366	0.7 (0.6, 0.7)	22	1.6 (0.9, 2.3)	2.4	< .001
35–54	450	0.6 (0.5, 0.6)	43	1.4 (1.0, 1.8)	2.5	< .001
≥ 55	128	0.5 (0.4, 0.6)	36	1.3 (0.9, 1.7)	2.7	< .001
Marriage status						
Married	493	0.5 (0.4, 0.6)	47	1.3 (0.9, 1.7)	2.6	< .001
Single or never married	276	0.7 (0.6, 0.8)	21	1.3 (0.7, 1.9)	2.0	.003
Separated, divorced, or widowed	175	0.7 (0.6, 0.9)	32	1.6 (1.0, 2.1)	2.1	< .001
Race/ethnicity						
Non-Hispanic White	579	0.6 (0.5, 0.6)	69	1.4 (1.0, 1.7)	2.3	< .001
Non-Hispanic Black	136	0.6 (0.5, 0.7)	11	. . .[c]		
Hispanic	194	0.5 (0.5, 0.6)	17	2.1 (1.0, 3.3)	3.9	< .001
Others	35	0.3 (0.2, 0.5)	4	. . .[c]		
Education						
< 12 y (no diploma)	132	0.6 (0.5, 0.8)	11	. . .[c]		
High school graduate or GED	649	0.7 (0.7, 0.8)	74	1.6 (1.2, 2.0)	2.2	< .001
≥ bachelor's degree	156	0.3 (0.3, 0.4)	16	1.0 (0.5, 1.6)	3.2	< .001
Occupation						
Not labor-related	244	0.5 (0.4, 0.5)	35	1.2 (0.8, 1.5)	2.4	< .001
Labor-related	184	1.3 (1.1, 1.5)	21	2.4 (1.3, 3.6)	1.9	.011
Hours worked last wk						
Part-time (1–31)	121	0.4 (0.3, 0.5)	34	1.4 (0.9, 1.8)	3.1	< .001
Full-time (≥ 32)	802	0.6 (0.6, 0.7)	64	1.4 (1.0, 1.8)	2.3	< .001
Self-employment income						
Yes	97	0.5 (0.4, 0.6)	11	. . .[c]		
No	842	0.6 (0.5, 0.6)	90	1.5 (1.1, 1.8)	2.5	< .001

Two Important Research Questions:

Research Q1 – Do workers with disability have a significantly higher risk of injuries (non-occupational and occupational) than workers without disability?

Research Q2 – What are the characteristics (e.g. leading causes of injuries and where do these injuries often occur) of occupational injuries in U.S. workers with disability

Current Study

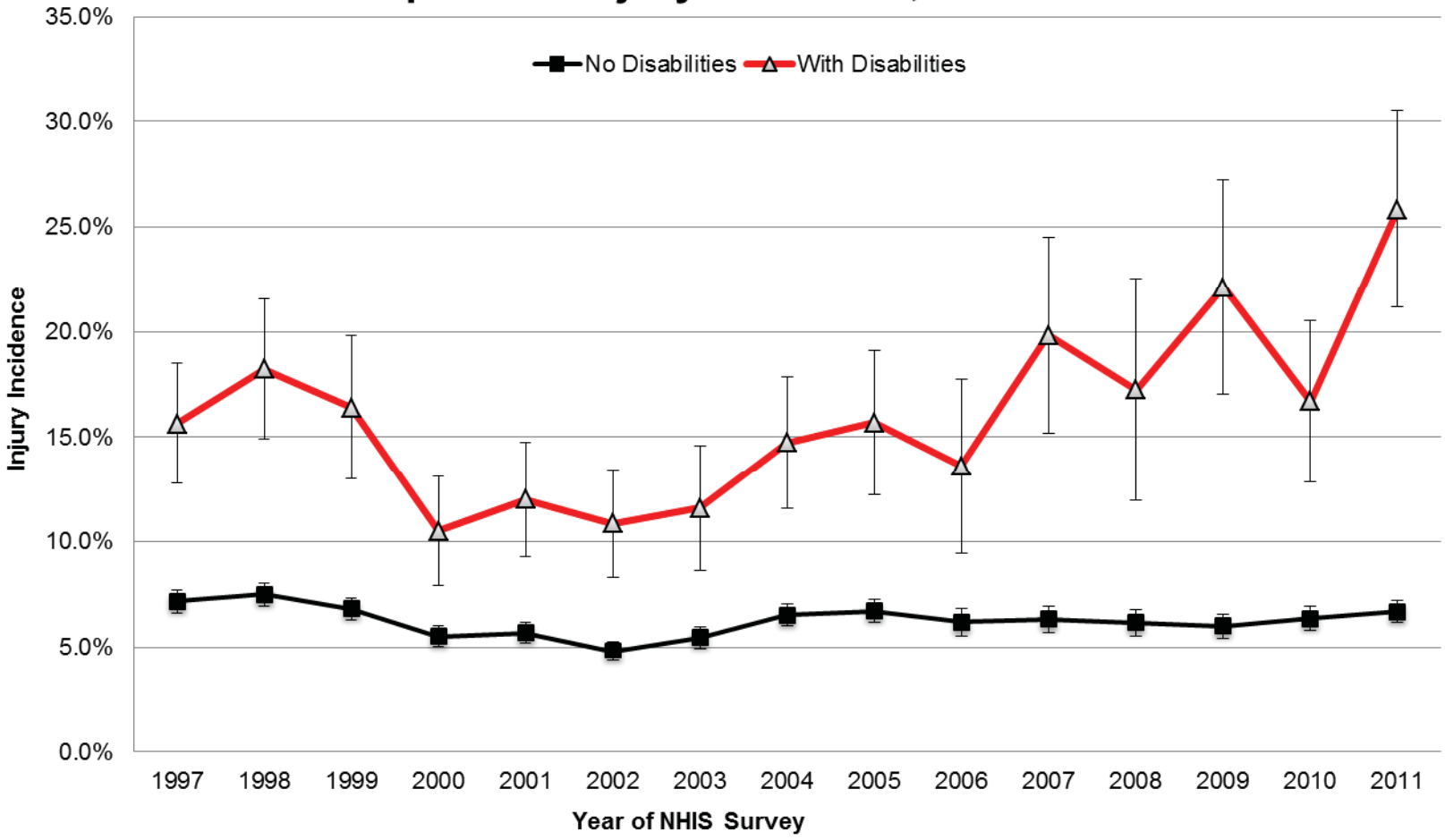
NHIS 1997-2011		
Total records	1,385,355	
Workers	635,556	
Without disability	604,134	
With disability	29,576	(4.7%)

Three month rate of occupational injury

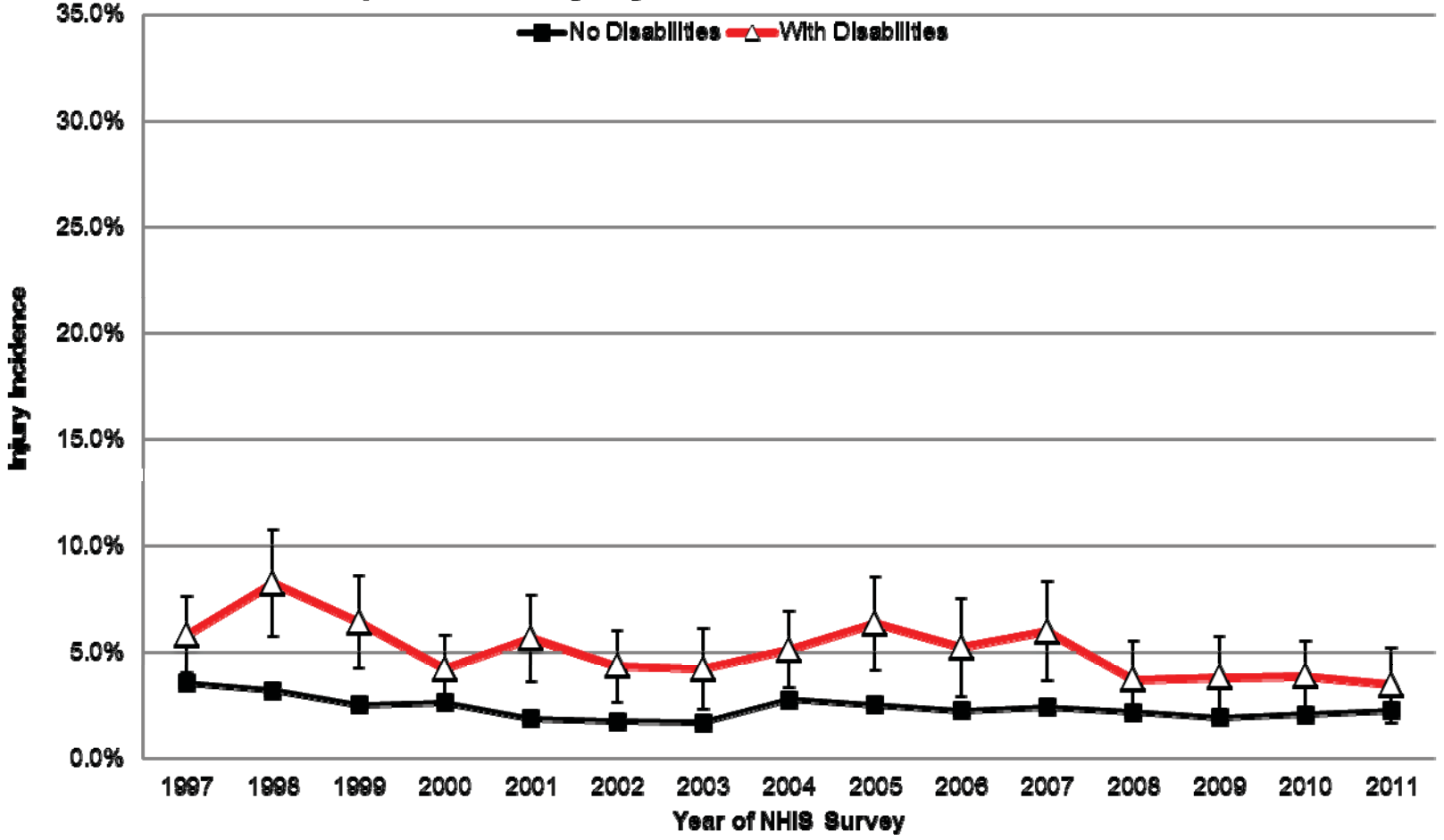
– Workers without disabilities--- **0.62%**

– Workers with disabilities------- **1.51%**

Non-Occupational Injury Incidence, NHIS 1997-2011



Occupational Injury Incidence, NHIS 1997-2011



External cause of occupational injuries

	Without Disabilities		With Disabilities	
	%	95% CI	%	95% CI
1.Overexertion/strenuous movements	**24.7**	**(23.2 - 26.2)**	**29.6**	**(24.8 - 34.5)**
2.Fall	**20.9**	**(19.4 - 22.4)**	**27.1**	**(22.5 - 31.6)**
3.Struck by object or person	12.8	(11.6 - 14.0)	13.9	(10.4 - 17.4)
4.Cut/pierce	**14.8**	(13.6 - 16.0)	**8.7**	(5.9 - 11.5)
5.Transportation	3.4	(2.7 - 4.0)	3.2	(1.7 - 4.7)
6.Other causes ‡	23.3	(21.8 - 24.8)	17.5	(13.9 - 21.1)

‡ other causes include machinery, fire/burn/scald related, animal or insect bite, poisoning, and other

Injured body region

	Without Disabilities		With Disabilities	
	%	95% CI	%	95% CI
1.Extremities, Lower	26.6	(24.9 - 28.3)	32.3	(27.2 - 37.3)
2.Extremities, Upper	40.1	(38.3 - 42.0)	31.1	(26.1 - 36.0)
3.Torso	16.9	(15.5 - 18.3)	22.9	(18.6 - 27.2)
4.Other Head, Face and Neck (excluding TBIs)	8.5	(7.5 - 9.6)	6.4	(4.1 - 8.7)
5.Vertebral Column Injury	5.1	(4.3 - 5.8)	5.3	(3.4 - 7.2)
6.Other body regions &	2.8	(2.2 - 3.4)	2.1	(0.7 - 3.4)

& other body regions include traumatic brain injury, spinal cord injury, and other and unspecified body regions

Injury nature

	Without Disabilities		With Disabilities	
	%	95% CI	%	95% CI
1.Sprains and strains	**38.6**	**(36.8 - 40.4)**	**37.4**	**(32.3 - 42.4)**
2.Open wound	**24.2**	(22.7 - 25.6)	**15.7**	(12.0 - 19.4)
3.Contusions/superficial	11.7	(10.5 - 12.9)	14.2	(10.4 - 18.0)
4.Unspecified	7.9	(7.0 - 8.8)	13.5	(10.1 - 16.9)
5.Fracture	9.1	(8.0 - 10.2)	10.5	(7.3 - 13.7)
6.Other injury types ‡	8.6	(7.6 - 9.5)	8.8	(6.2 - 11.3)

‡ other injury nature include burns, internal injury, amputation, nerves injury, and blood vessels injury

Some Observations

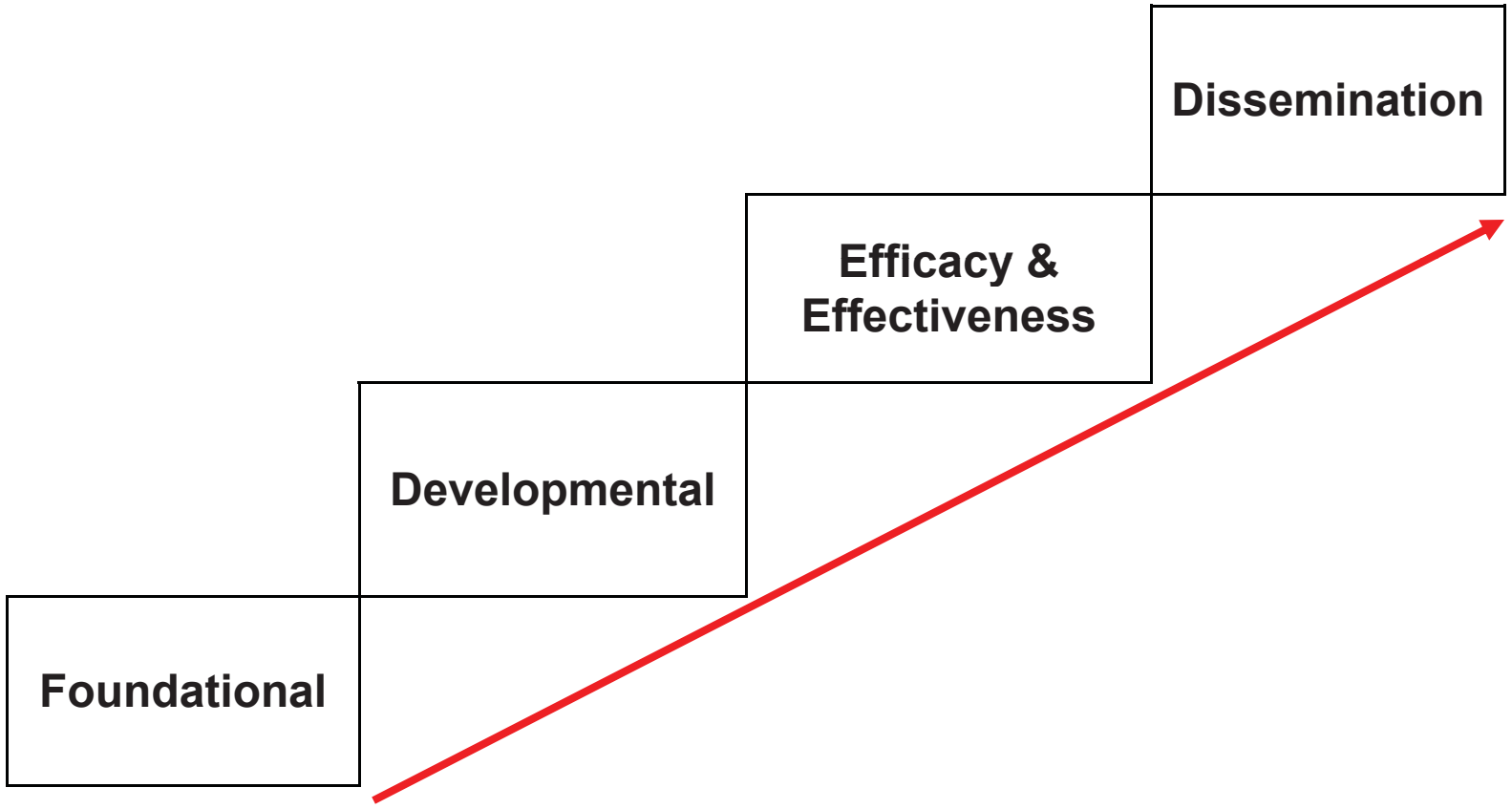
- U.S. workers were at significantly higher risk of non-occupational and occupational injuries

- Prevalence of non-occupational injuries in U.S. workers with disability might have increased in recent years

- In the same time, prevalence of occupational injuries in U.S. workers with disability appeared to be declining

- Higher proportion of occupational injuries in workers with disabilities were caused by falls and overexertion

Phases of Injury Research: CDC Injury Research Framework



Phases of Injury Research:

- **Foundational Research**

  Determines injury risk, identifies patterns, establishes the causes of injuries, creates causal models for injury prevention

- **Developmental Research**

  Supports the design and preliminary testing of potential strategies to prevent and control injuries, including risk-factors analysis and feasibility studies that measure how interventions affect key variables in the causal chain

Phases of Injury Research:

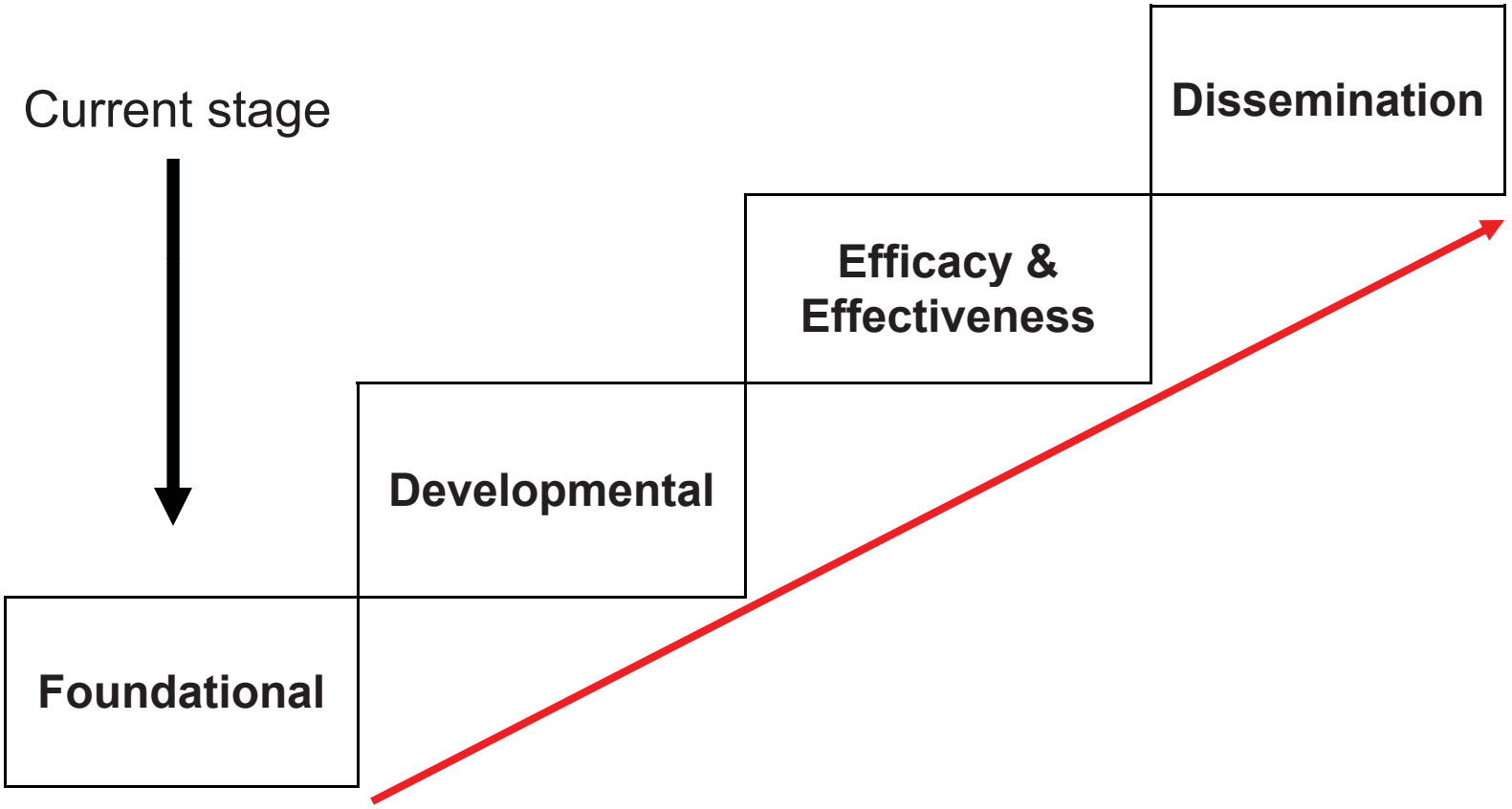
- **Efficacy & Effectiveness Research**

  Assesses whether a given intervention actually reduces injuries

- **Dissemination (Translational) Research**

  Examines the robustness of intervention effectiveness given variations in implementation and/or acceptance of the intervention

Secondary Injuries Among Individuals With Disabilities



Acknowledgements

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2013 National Meeting of the Safe States

Alliance & SAVIR

The Safe States Alliance and the Society for Advancement of Violence and Injury Research (SAVIR) joined forces to host a dynamic and collaborative national meeting experience. The 2013 National Meeting was also hosted by the Johns Hopkins Center for Injury Research and Policy, and was held at the Sheraton Baltimore City Center Hotel from June 5-7, 2013, in Baltimore, MD. During the National Meeting, we celebrated the accomplishments that have increased the safety of communities in the present day, while also building on these achievements to create a safer and healthier future. We also celebrated the 20th Anniversary of the Safe States Alliance.