

Framework conditions, driving style, and passenger falls among bus drivers in Ghana and Norway



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Outline



Previous
research



Methods



Results



Questions for
future research

A background of out-of-focus city lights in various colors (yellow, white, red, blue) against a dark night sky.

What do we know regarding passenger falls on buses?

Characteristics of passenger falls in Norway

Passenger injuries from falls in buses are the type of incident with:

- The highest number of injuries
- The highest proportion of injuries

Occur due to:

- Injuries from falls inside the bus
- Falls during boarding on or of the bus

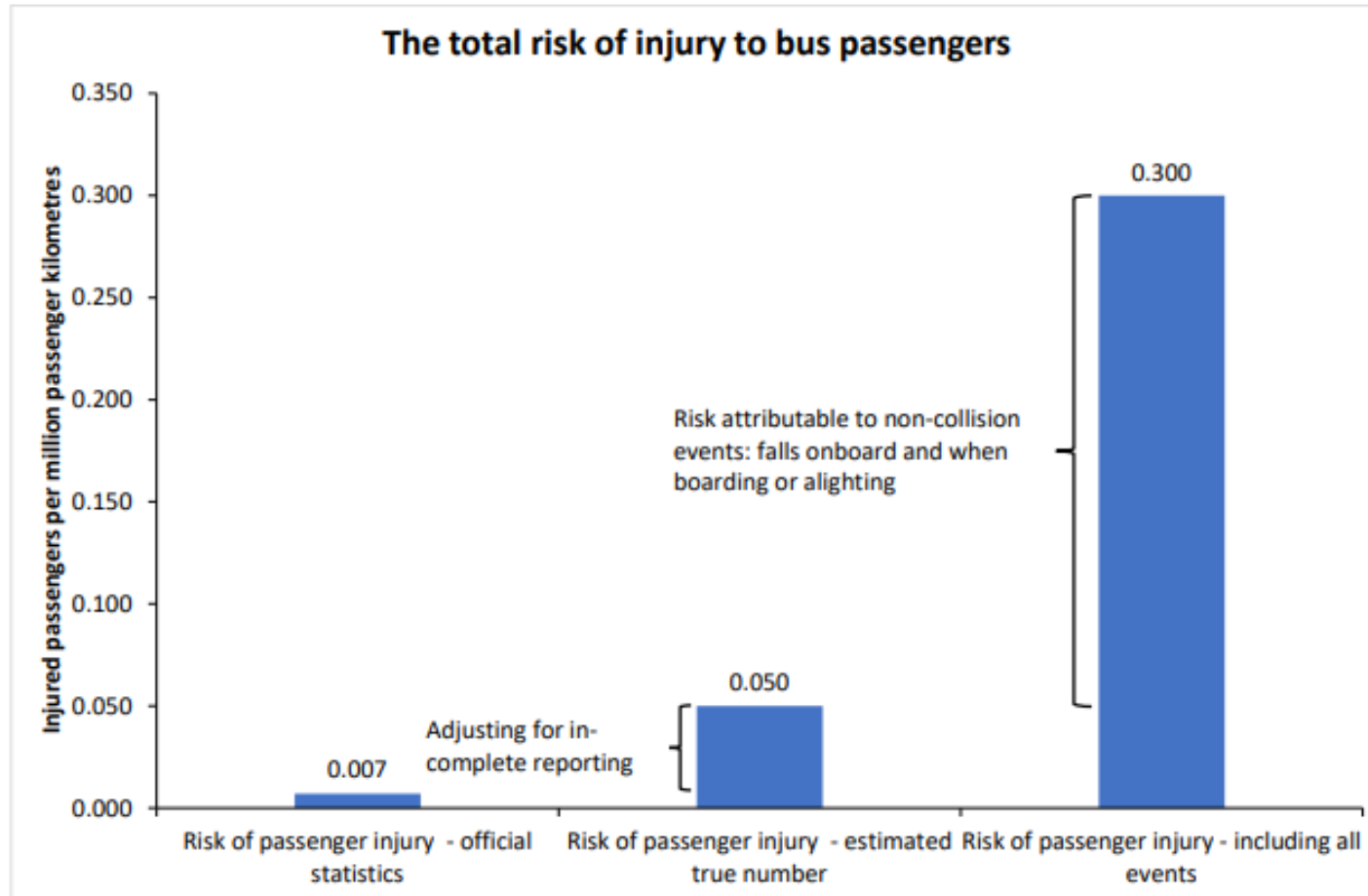
Nævestad, T. O., Høye, A. K., & Elvik, R. (2023). *Status of safety and discussion of measures benefitting drivers, passengers and other road users.*

Elvik, R. (2019). Risk of non-collision injuries to public transport passengers: Synthesis of evidence from eleven studies. *Journal of transport & health, 13*, 128-136.

Nævestad, T.-O., Elvik, R., Milch, V., Karlsen, K., & Phillips, R. O. (2020). *Traffic safety in bus transport: An analysis of Ruter's requirements to bus companies in contracts*

Findings from Norway

Nævestad et al. 2023*



Methods



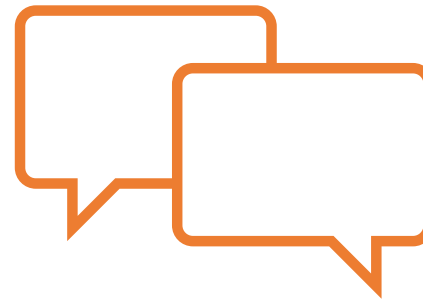
Methods

Survey



Ghana (n=281) and Norway (n=285)

Interviews



Norway (n=10) and in Ghana (n=19)

The image shows the interior of a bus, looking down the aisle. The seats are blue with a colorful pattern. Yellow handrails are visible on both sides. The text "What influences passenger falls in buses?" is overlaid in the center in white, bold font.

What influences passenger falls in buses?

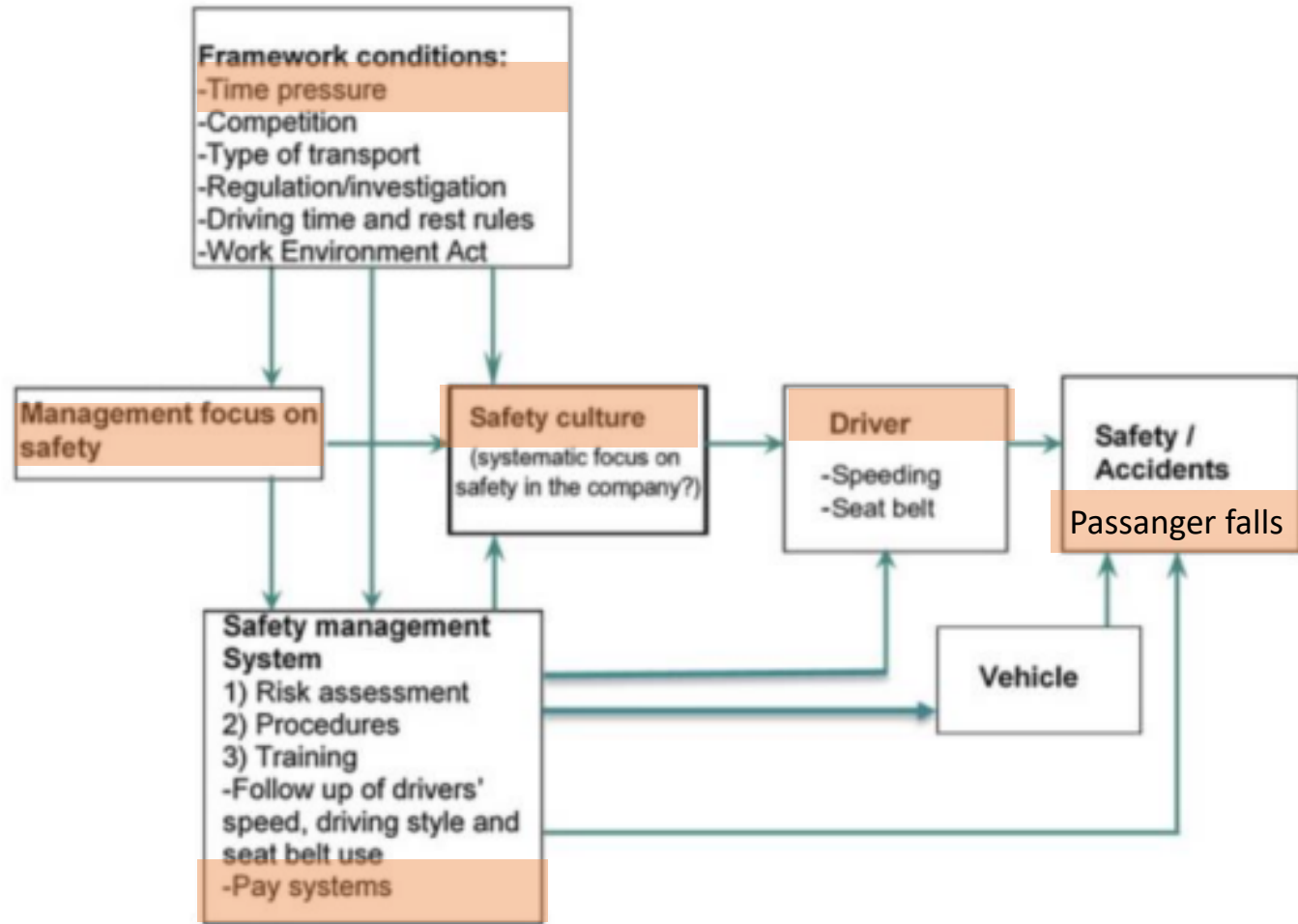


Figure 2: Factors influencing road safety among drivers at work, based on analysis of fatal road accident statistics and in-depth analyses of fatal accidents (Source: Nævestad et al 2015).

Hypothesis

Hypothesis 1

- we hypothesize passenger falls are more frequent in Ghana than in Norway

Hypothesis 2

- we also expect a relationship between framework conditions and individual driving style, that might be related to passenger falls

The image shows the interior of a bus, viewed from the back of the cabin looking towards the front. The seats are blue with a colorful pattern of red, green, and orange. Yellow handrails are visible throughout the cabin. The word "Results" is overlaid in the center in a large, white, sans-serif font.

Results

Table 1. Overview of background variables of the two samples from Ghana and Norway.
Numbers in brackets represent standard deviations

Variable		Ghana n = 281	Norway n = 285
Passenger falls	None	72%	93%
	Yes, 1-5	24%	6%
	Yes, 6-10	2%	0%
	Yes, 11-15	0%	0%
	Yes, 16-20	1%	0%
	Yes, more than 20	1%	0%
Older than 46		53%	80%
More than 15 years' experience		54%	58%
Weekly 1000km driven		1,8 (1.3)	1,4 (1.3)
Daily working hours		11,0 (2.9)	8,0 (2.1)
Has fixed pay		49%	89%
Self-employed		28%	0%

Table 3: Negative binominal regression models modelling reported number of passenger falls. Coefficients are incidence rate ratios. The range column indicates the range of the variable. * = $p < .05$

Variable	Range	Mod. 1	Mod. 2	Mod. 3	Mod. 4	Mod. 5
R ²		0,06	0,09	0,11	0,17	0,24
Norwegian	0-1	0,23*	0,15*	0,19*	0,27*	0,53
Older than 46 years	0-1		1,63*	1,66*	1,47	1,17
More than 15 years' experience	0-1		0,58*	0,6*	0,49*	0,53*
Weekly 1000km driven	-		0,93	0,91	0,73*	0,76*
Daily working hours	-		0,89*	0,88*	0,88*	0,91
Dangerous intersection and stops	1-5			1,43*	1,58*	1,26
National road safety culture	1-5				0,89	0,81
Safety ladder index	1-5				1,59*	1,35
Work stress and time pressure index	1-5					2,35*
Individual driving style	1-7					1,16
Constant		0,35	1,31	0,36	0,06	0,01

Interview results

- Bus driving in Norway and Ghana are substantially different things.
- The qualitative data indicates crucial differences in national framework conditions influencing fatigue bus drivers' work situation
- We found that the most important framework condition for bus drivers in Ghana is type of employer (commercial or institutional)

Main findings

Results show differences in passenger fall frequency between countries

Work stress and time pressure, as well as experience and mileage have a statistically significant impact on passenger falls.

We found that the most important framework condition for bus drivers in Ghana is type of employer (commercial or institutional)

Measures to prevent stress and time pressure

Organizational measures *

- Formal safety measures

Framework conditions

- Wage arrangements
- Authorities' responsibility to change framework conditions

Future research

Learn more about the total risk of injury to buss passenger

Learn more about the severity of injuries caused by passenger falls

Relevance of organizational measures that can reduce stress and time pressure

Authorities can do to change framework conditions and evaluate results over time

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Thank you for your attention!

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