

Developing a simplified model for safety management system in African transport companies

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Background:

1.35 million people die each year

LMIC have 93% of the fatalities

Europe: about 40% of fatalities are work-related

We know that organisational safety management is effective for reducing accidents (up to 60% of accident reduction)

Companies do however little on this = big potential

Drivers at work are susceptible to paternalistic measures, as they are in an employment relationship

But why aren't companies doing more?

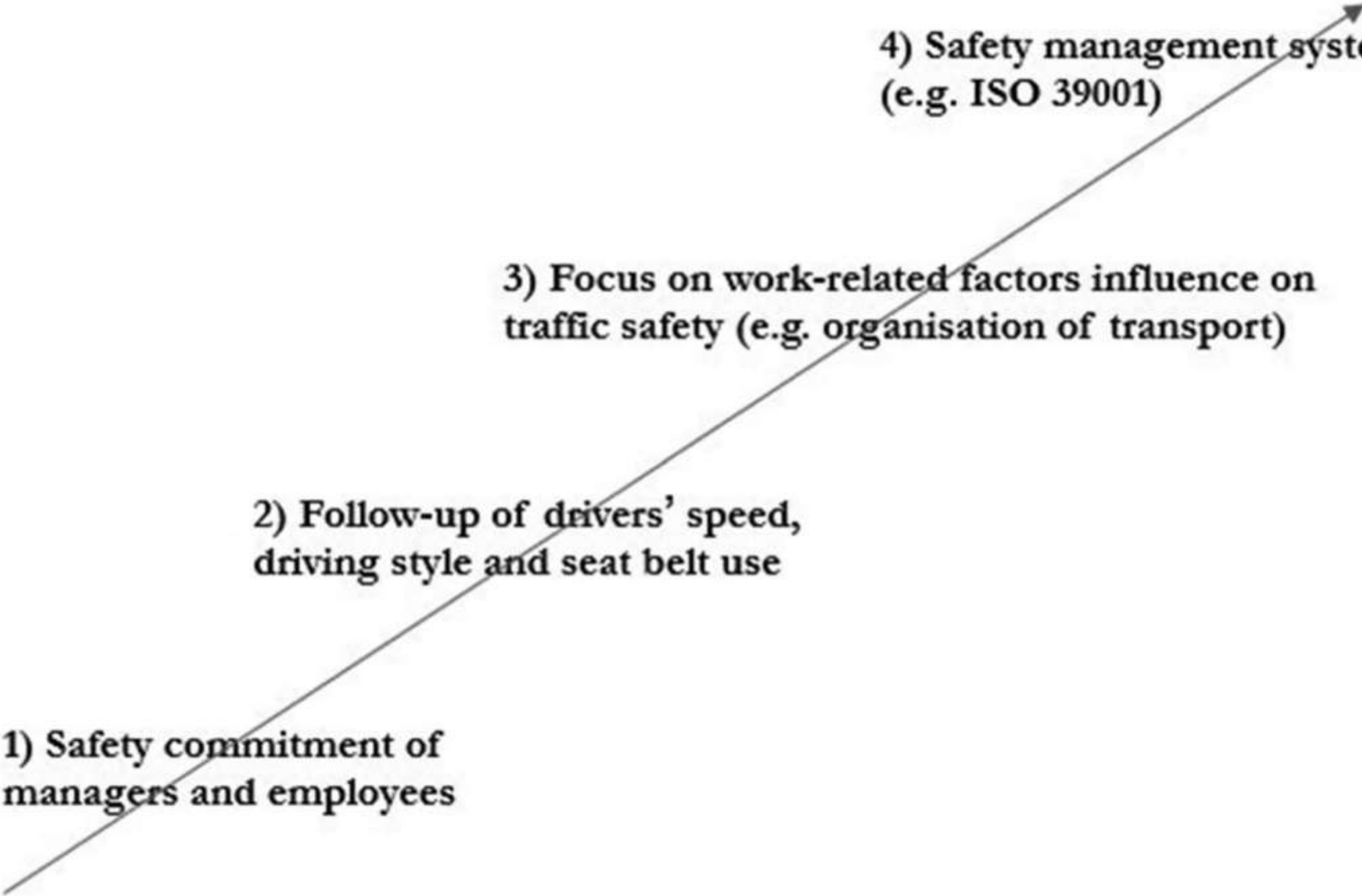
Most of them are small (86% <5 employees)

They are likely to have few resources, with regard to money, time and competence.

The solution is a stepwise approach, where companies start with measures that address the most important risk factors, and which are effective: the Safety ladder.

They can gradually move upwards in the Safety ladder.

Based on systematic literature review, and part of the Norwegian action plan for road safety, examined in several journal papers.

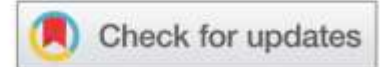


1) Safety commitment of managers and employees

2) Follow-up of drivers' speed, driving style and seat belt use

3) Focus on work-related factors influence on traffic safety (e.g. organisation of transport)

4) Safety management system (e.g. ISO 39001)



The safety ladder: developing an evidence-based safety management strategy for small road transport companies

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ABSTRACT

Traffic accidents account for between 20% and 40% of work-related accidents in industrial countries, and research indicates that road transport companies often have little focus on organisational safety management (OSM). There is thus a huge and largely untapped road safety potential in improving the safety of people who drive in their work, by focusing on OSM. Road transport

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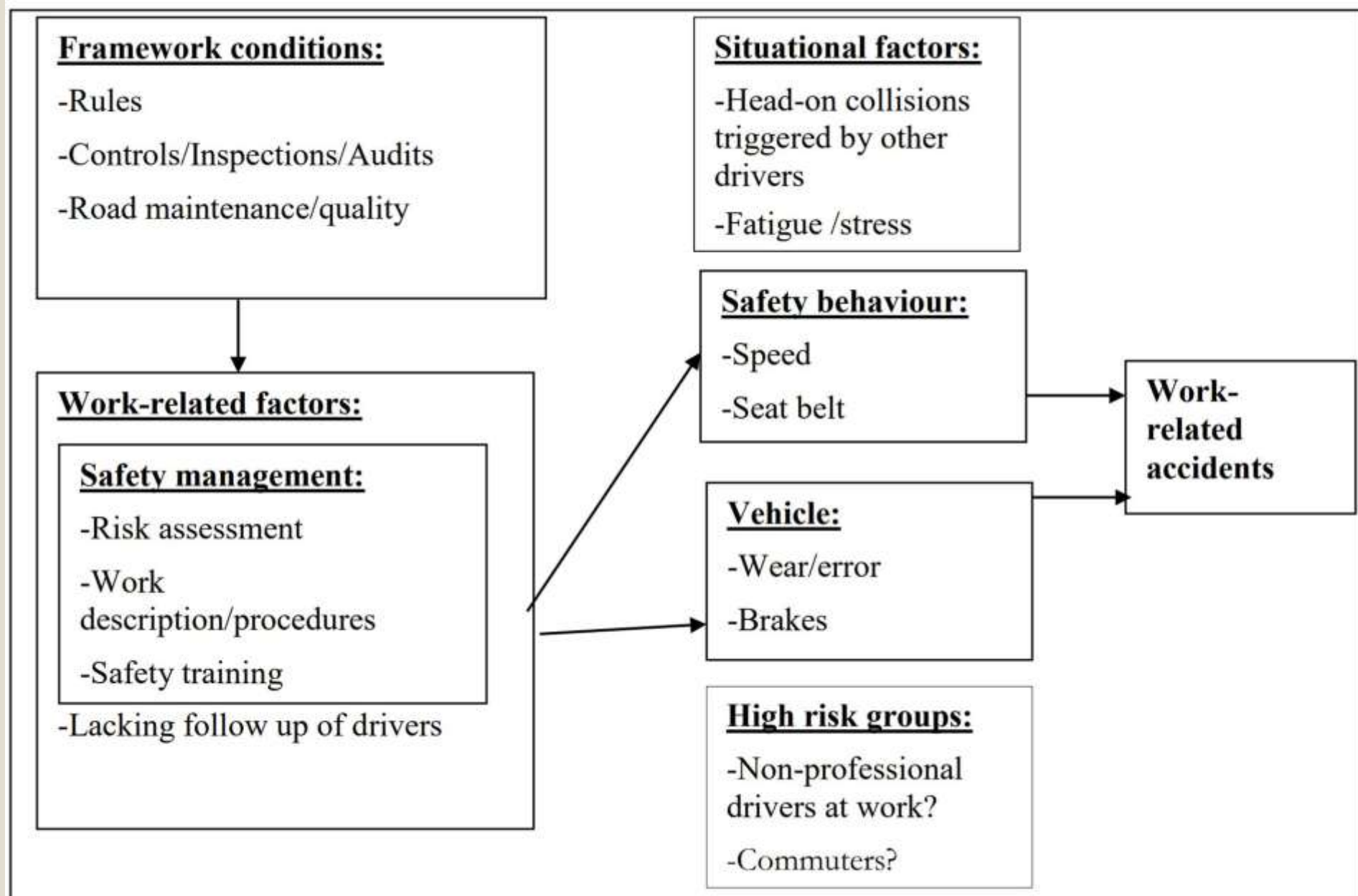
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Aims and methods:

Aims: to adapt the Safety Ladder for safety management to the African context.

- 1) Literature review of safety culture and safety management, safety challenges and framework conditions of African transport companies.
- 2) Interviews with stakeholders in African transport companies.
- 3) Survey comparing safety management practices, safety culture and accident risk in transport companies in Norway and Ghana.

Preliminary results from the literature review:



Preliminary thoughts based on our literature search so far:

There are examples of studies of organisational safety management interventions in African companies (SA).

These show reductions in accident risk.

But how important are the framework conditions in the African context? For instance:

- 1) Are rules on driving hours and rest enforced?
- 2) Is the level of economic competition among companies «too hard» for prioritizing org. road safety management?
- 3) Are companies «rewarded» economically for focusing on road safety?

Preliminary results based on our interviews so far:

Transport companies have few measures on organisational safety management.

Examples of exceptions: government owned companies, international companies transporting dangerous goods.

Enforcement of rules for professional transport can be improved.

Preliminary results from the survey:

Descriptive variables of bus drivers in Ghana and Norway.

	Ghana <i>n</i> = 281	Norway <i>n</i> = 285
Male	99.6%	91.6%
Age	45	54
Bus driving experience, years	17	19
Distance driven last 2 years	93k km (65.7)	71k km (69.5)
Work hours per day	11 (2.9)	8 (1.6)
Company size	6 (14)	1083 (1944)
Share of company size = 1	49%	1%
Self-owned bus	35%	0.35%

Overview of the employment status:

Overview of the employment status between bus drivers.

Employment status	Ghana $n = 281$	Norway $n = 285$
Full-time employee	46%	86%
Part-time employee	12%	13%
Self-employed	28%	0%
Work and pay	14%	0%
Other	0%	1%

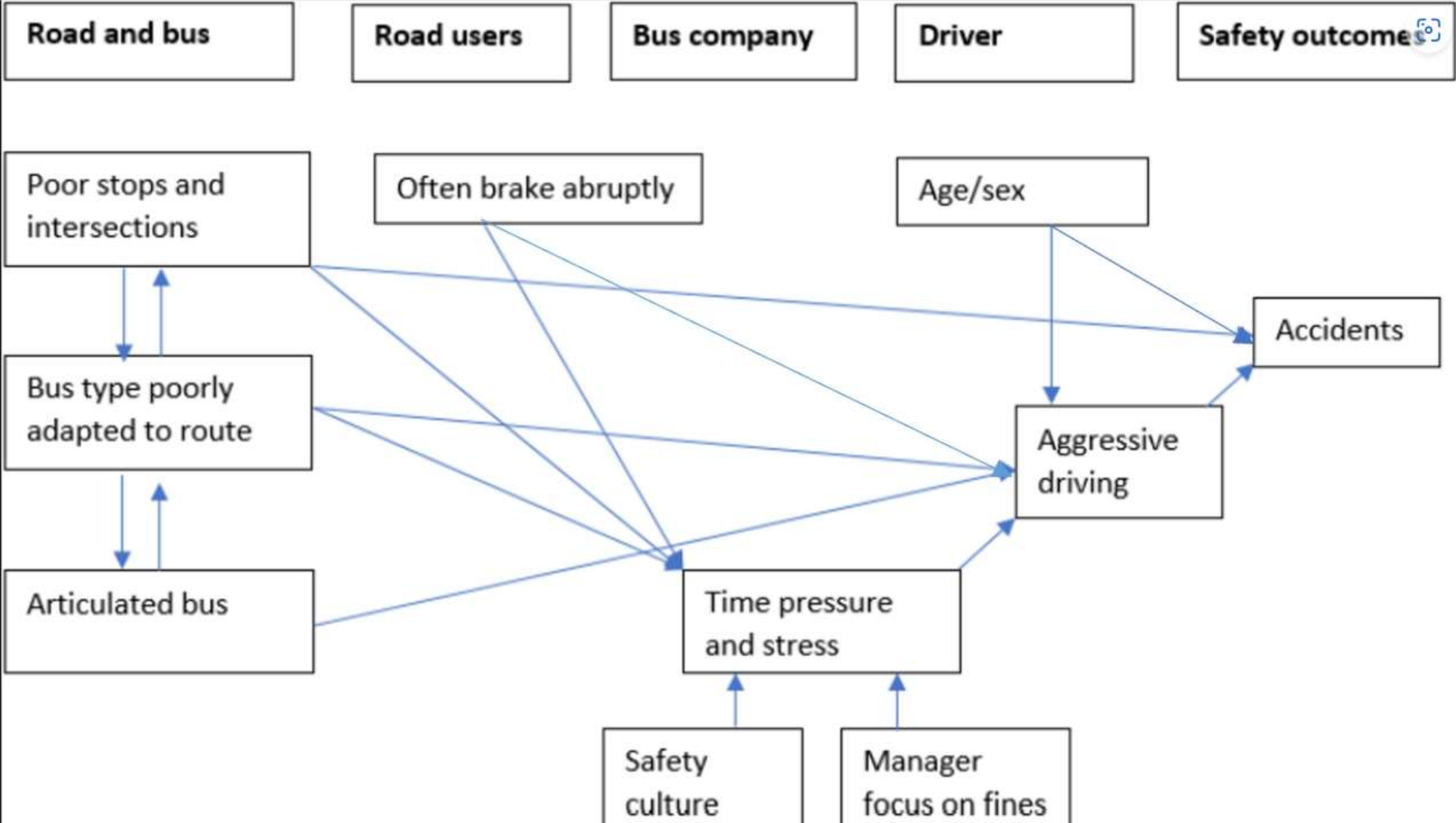
Overview of bus types:

Overview of the type of bus driving between bus drivers.

Type of bus transport	Ghana $n = 281$	Norway $n = 285$
City bus (intra city)	29%	27%
Regional bus (<u>inter city</u>)	46%	27%
School bus	14%	13%
Long distance bus (<u>inter city</u>)	10%	5%
Express bus	1%	6%
<u>Air port</u> express bus	0%	2%
Tour bus	0%	3%
Several different types	1%	15%
Other	0%	2%

Overview of wage arrangements:

Wage arrangement	Ghana <i>n</i> = 281	Norway <i>n</i> = 145
Fixed pay	49%	89%
Fixed pay combined with bonus arrangements	37%	3%
Pay per assignment only	6%	5%
Other	8%	3%



Which factors predict accident involvement among the drivers?

Accident involvement last 2 yrs: 40% GH, 20% NO.

Logistic regression analysis -accident involvement is predicted by:

- 1) Road safety behaviours,
- 2) Stress/pressure
- 3) Dangerous situations due to poorly adapted intersections and stops

Road safety behaviours among Ghanaian and Norwegian bus drivers:

- 1) Become angered by a certain type of driver and indicate your hostility by whatever means you can
- 2) Sound your horn to indicate your annoyance to another road user
- 3) Pull out of a junction so far that the driver with right of way has to stop and let you out
- 4) Drive when you suspect you might be over the legal blood alcohol limit
- 5) Drive without using a seat belt

Sum score index (min: 5, max: 35 points, CA: .688).

Mean: NO: 7.3, GH: 12.8 points.

Then which factors predict road safety behaviours?

Survey measures of the Safety ladder:

- 1) The management emphasizes that all drivers should wear seat belts
- 2) The management emphasizes that drivers should not drive faster than the speed limits and the conditions allow
- 3) In my company, we have clear and well-known guidelines for speed and driving style
- 4) In my company, we have a strong focus on how the drivers' private life (e.g. little sleep, stressful life situation) may affect traffic safety
- 5) My manager is genuinely concerned about my well-being, both at work and in my private life
- 6) In my company, it is common for drivers to postpone assignments if they feel tired or unfit
- 7) In my company, we have a functioning system for reporting non-conformities
- 8) In my company, risk analyzes of potentially dangerous work assignments and activities are carried out
- 9) In my company, we have work descriptions/procedures that describe the hazards related to the different job activities

Which factors influence road safety behaviours:

The following variables explain 33% of the variation:

- 1) Age above 56 years
- 2) Fixed pay with bonus arrangements
- 3) Country
- 4) Safety ladder practices
- 5) Poorly developed intersections and bus stop

Further analyses of factors influencing road safety behaviours:

Only Ghana sample: 18% and not bonus.

Only Norway: 7% and only age (>56 and stress/pressure) Not Safety Ladder, due to low variation.

Ghana sample: Strongest correlation with behaviours:
«in my comp. it is common to postpone if tired or unfit»

Norway sample: Strongest correlation with behaviours:
«management emph. all drivers should wear seat belts»

Conclusions:

We know that the Safety Ladder practices influence road safety behaviours

And that road safety behaviours influence accident involvement.

(But why do Ghanaian bus drivers score higher on the Safety ladder scale?)

Road infrastructure, bonus payment, age also important.

Conclusions:

What does the «country variable» measure besides descriptive norms

Then what to do next?

How can we apply this knowledge to increase road safety?