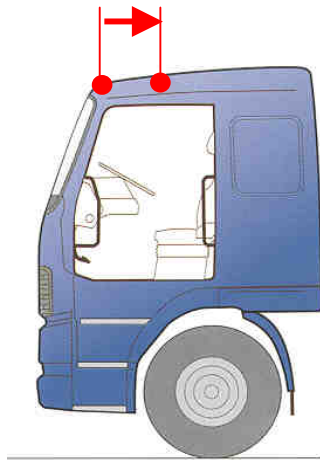


## Analysis of accident statistics:

- The sample contains of 455 traffic accidents, all with injured truck drivers
- Seatbelt usage less than 10%
- Accidents mainly occurred in Sweden
- Volvo Trucks, i.e. cabs tested according to Swedish pendulum test
- Analysis and break down of:
  - 1) Accident type
  - 2) Rollover frequency (rollover= turnover 90 degrees or rollover > 90 degrees)
  - 3) Cab deformation; frequency of longitudinal deformation of upper a-pillar any side



**Accidents with injured truck driver  
all Volvo cabs- all pendulum tested  
455**

Main type

1st sequence

Driver injury

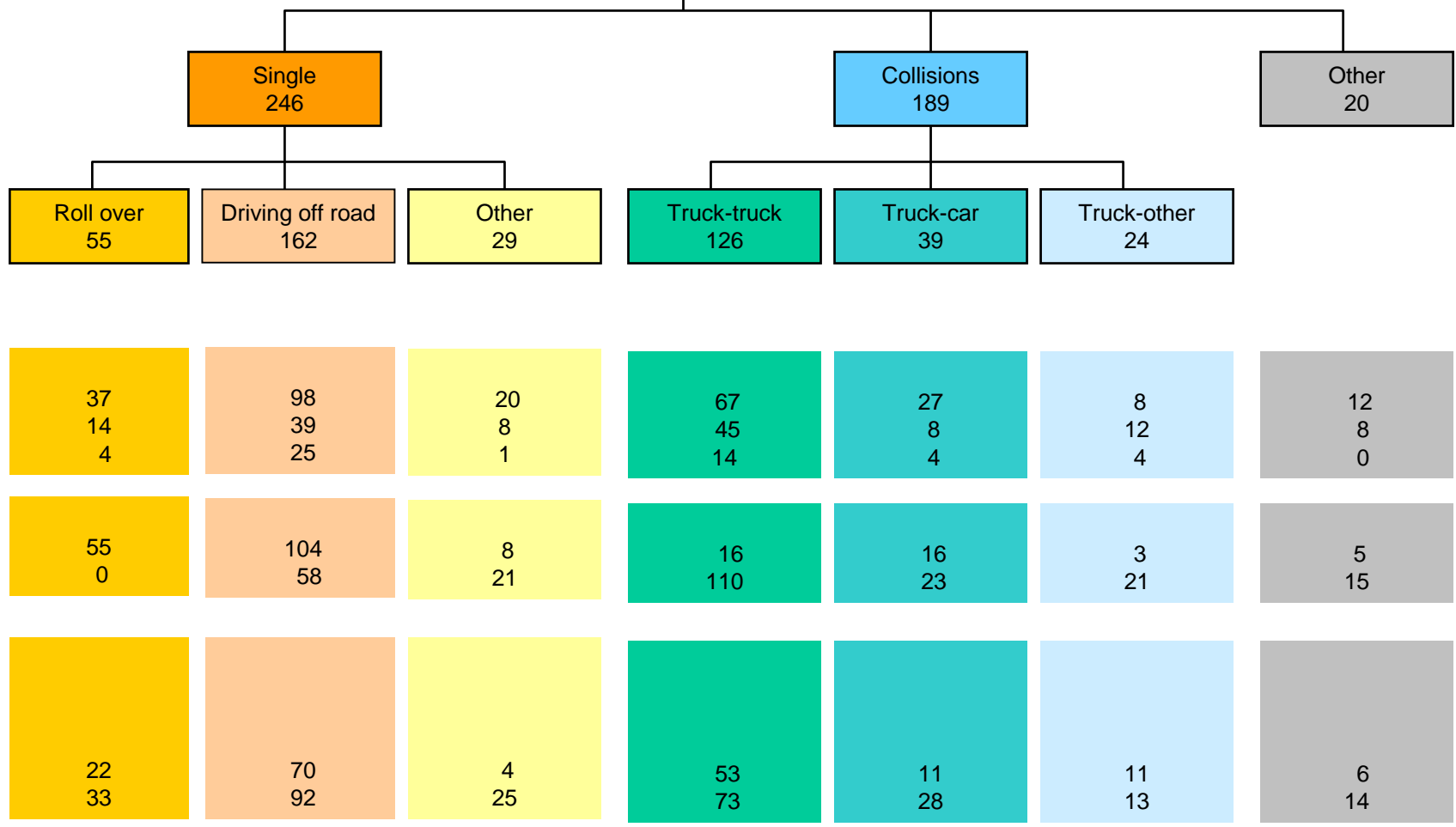
Rollover

Longitudinal deformation

upper A-pillar,  
any side

- yes

- no



**Accidents with injured truck driver  
all Volvo cabs- all pendulum tested  
455**

Main type

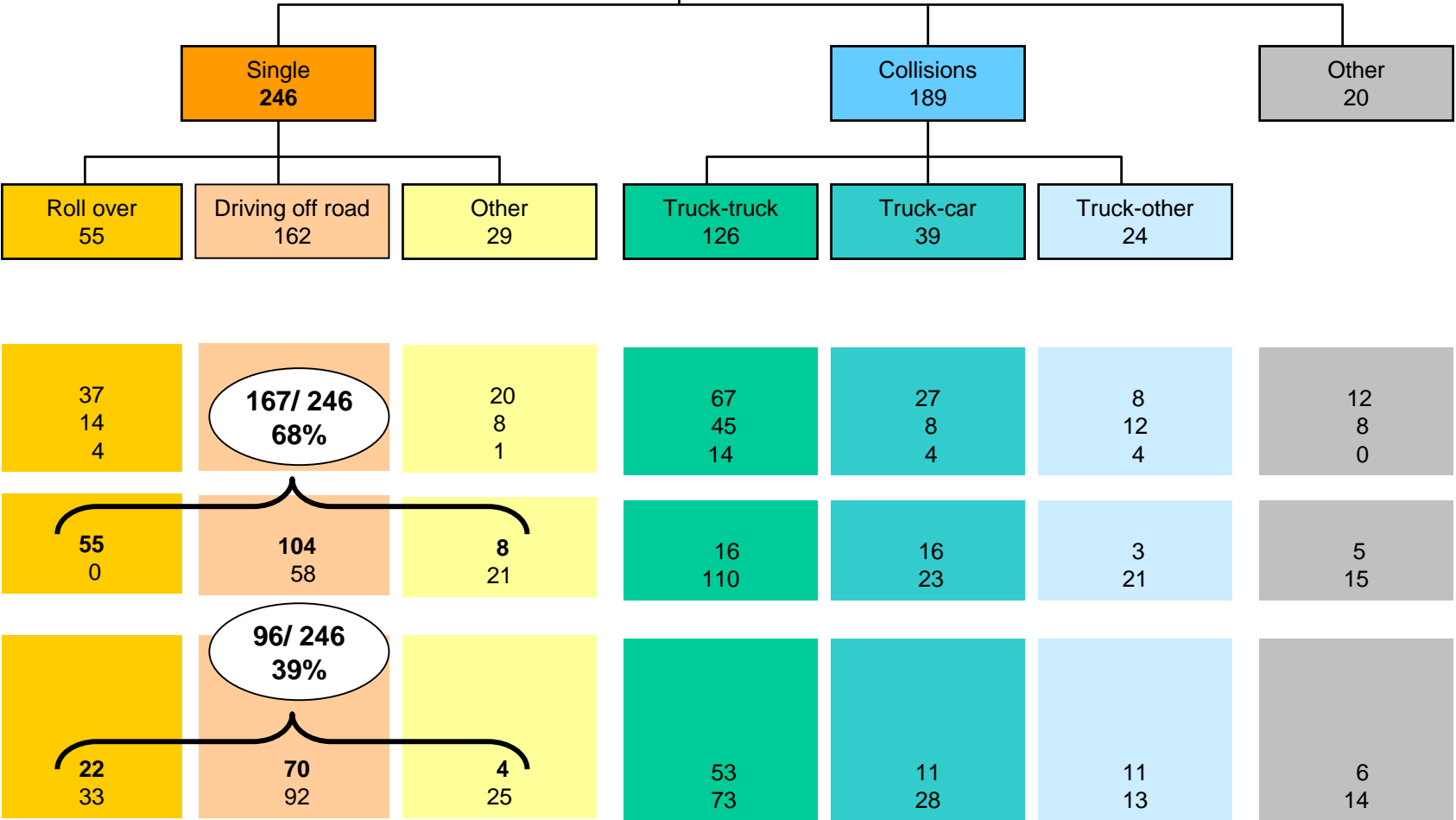
1st sequence

Driver injury

Rollover

Longitudinal deformation

upper A-pillar,  
any side



**Accidents with injured truck driver  
all Volvo cabs- all pendulum tested  
455**

Main type

Single  
246

Collisions  
189

Other  
20

1st sequence

Roll over  
55

Driving off road  
162

Other  
29

Truck-truck  
126

Truck-car  
39

Truck-other  
24

Driver injury

- mildly
- badly
- killed

37  
14  
4

98  
39  
25

20  
8  
1

67  
45  
14

**35/ 189**  
**19%**

8  
12  
4

12  
8  
0

Rollover

- yes
- no

55  
0

104  
58

8  
21

16  
110

16  
23

3  
21

5  
15

Longitudinal deformation

- upper A-pillar, any side
- yes
- no

22  
33

70  
92

4  
25

53  
73

**75/ 189**  
**39%**

11  
28

6  
14

**Accidents with injured truck driver  
all Volvo cabs- all pendulum tested  
455**

Main type

Single  
246

Collisions  
189

Other  
20

1st sequence

Roll over  
55

Driving off road  
162

Other  
29

Truck-truck  
126

Truck-car  
39

Truck-other  
24

Driver injury

- mildly	37	98	20	67	27	8	12
- badly	14	39	8	45	8	12	8
- killed	4	25	1	14	4	4	0

Rollover

- yes	55	104	8	16	16	3	5
- no	0	58	21	110	23	21	15

Longitudinal deformation

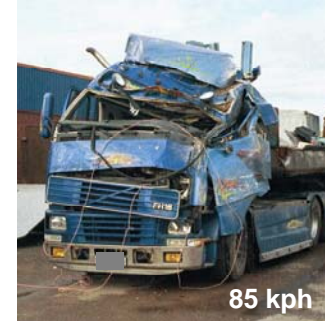
upper A-pillar, any side	96/ 455 21%			75/ 455 16%			
- yes	22	70	4	53	11	11	6
- no	33	92	25	73	28	13	14

# Deformation of cab in single vehicle accidents- some severe examples:

Rollover+ collision with guard rail



Rollover+ collision with earthen bank



## Deformation of cab in truck to truck collisions- severe example:

Collision truck front vs truck rear

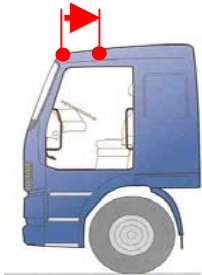


## Conclusions:

- Single vehicle accidents

54% of the accidents resulting in truck driver injuries are single vehicle accidents. There is a rollover as first sequence or as a later sequence in 68% of these accidents.

Mainly as a result of impact against ground, earthen bank, guard rail, rock, tree, etc. after the rollover there is a deformation of upper a-pillar in 39% of the single vehicle accidents, i.e. 21% of all accidents in sample.



> Longitudinal strength in roof structure and upper a-pillar is needed to protect driver in a single vehicle accident.

- Collisions

42% of the accidents resulting in truck driver injuries are collisions. There is a deformation of upper a-pillar in 39% of all collisions, i.e. 16% of all accidents in database.

This deformation is in most cases a result of the 1st collision to other vehicle. In only 6 of the car truck collisions with deformed a-pillar, the deformation is a result of impact against ground after a rollover, i.e. ~1% of all accidents in sample.

> Longitudinal strength in roof structure and upper a-pillar is needed to protect driver in a collision.