Road Traffic Injuries among people of older age

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Adults ages 65 years and older constitute the fastest-growing segment of the population.

This age group is projected to constitute 19.3% of the population by the year 2030, and trauma systems are already seeing a disproportionate increase in geriatric trauma patients, since 23.7% of patients in the National Trauma Data Bank of 2011 were 65 years and older.

The rate of population aging in middle and lower income countries is more rapid than the developed.

- Continuing advancements in the management of chronic diseases have resulted in a more active lifestyle in elderly individuals, predisposing them to **injury.**

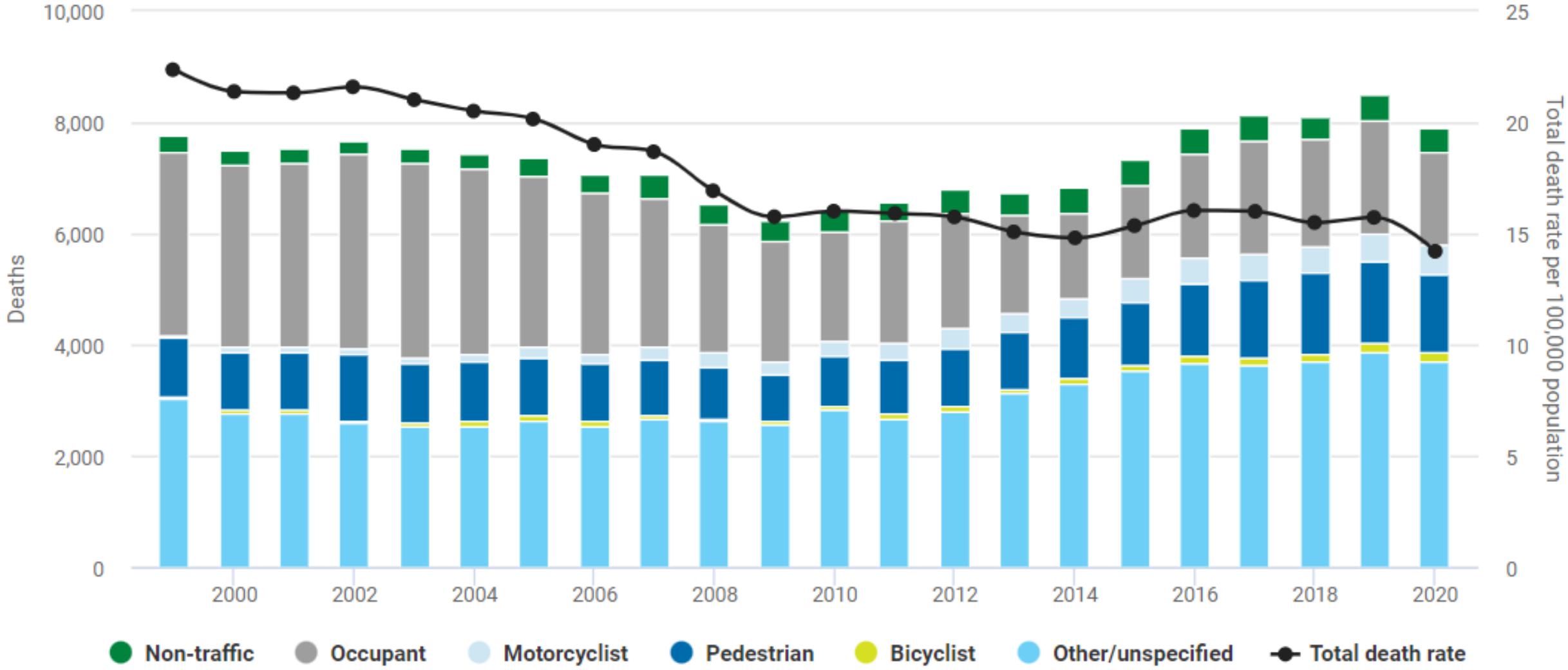
- Elderly trauma patients differ significantly from their younger counterparts, having a greater number of preexisting comorbidities, a greater risk of complications, and an increased probability of mortality.

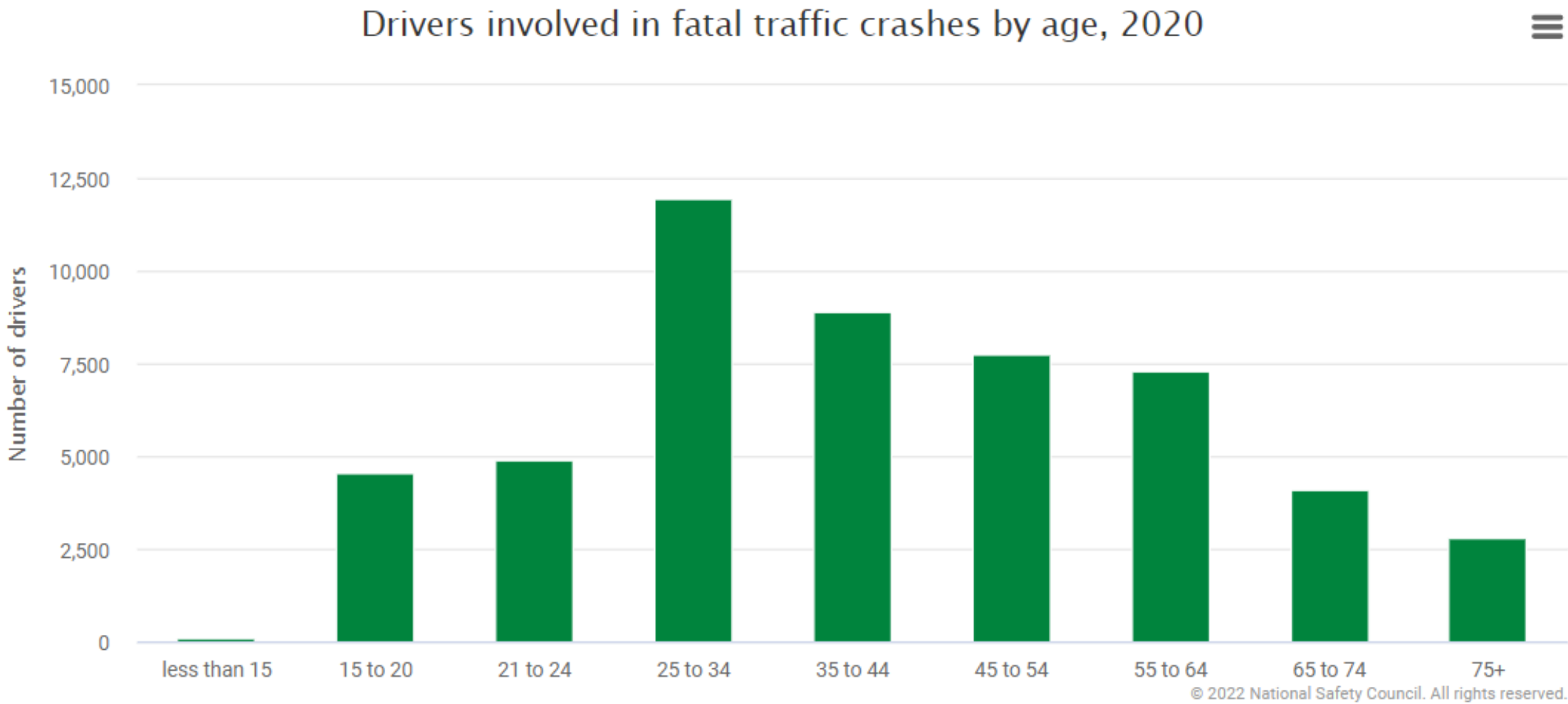
- **Elderly patients** have several distinct characteristics from other trauma victims.
- Geriatric patients have different mechanisms of injury, with falls making up a large proportion of severe trauma.

- Road Traffic Injuries are a major cause in Iran

- The number of co-morbidities generally is higher in the geriatric population, and this appears to contribute directly to poorer outcomes.
- Current triage criteria demonstrate insufficient sensitivity with respect to identifying older patients with trauma who require greater level trauma care and, thus, exhibit a tendency to be undertriaged.
- Thus, it is imperative that we develop models that can easily identify risk factors for the death of the elderly due to trauma and use these factors to triage these patients.

65 and older fatalities in motor vehicle crashes by person type, 1999–2020




Drivers involved in fatal traffic crashes by age, 2020
Number of drivers
15,000
12,500
10,000
7,500
5,000
2,500
0
less than 15
15 to 20
21 to 24
25 to 34
35 to 44
45 to 54
55 to 64
65 to 74
75+
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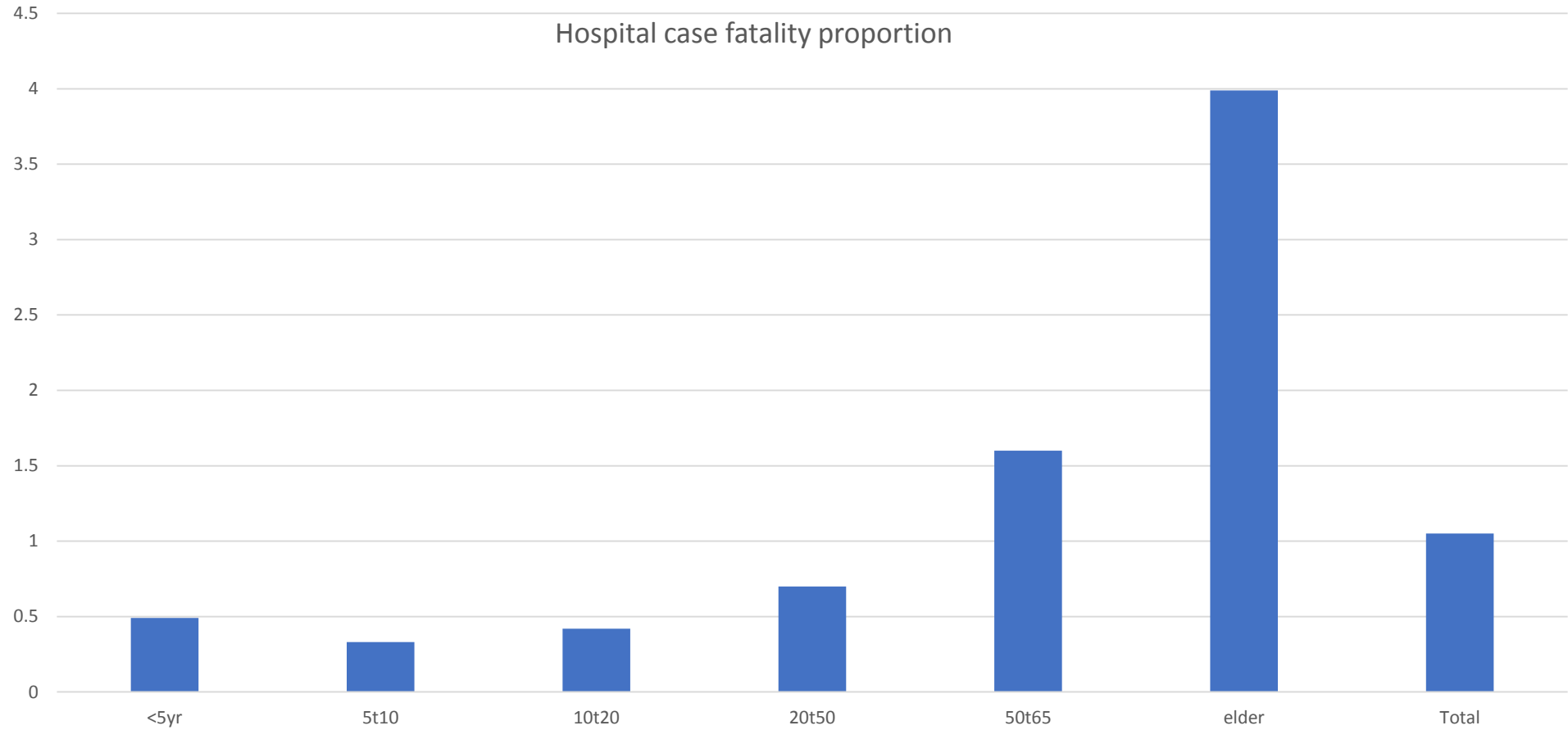
Tabriz Studies

- Fatalities:

The elderly comprised 14.4% of the casualties

- Hospitalizations

The elderly comprised 9.2% of the hospitalizations



diehosp	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
agegrp1						
<5yr	.7044475	.1134217	−2.18	0.030	.513805	.9658262
5t10	.4732389	.0706936	−5.01	0.000	.3531228	.6342129
10t20	.5926451	.0594688	−5.21	0.000	.4868342	.7214533
50t65	2.314239	.1448126	13.41	0.000	2.047126	2.616205
elder	5.904637	.3140857	33.38	0.000	5.320044	6.553469
_cons	.0070402	.0002646	−131.88	0.000	.0065403	.0075784

diehosp	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
agegrp1						
<5yr	1.488566	.3172217	1.87	0.062	.9803305	2.260289
10t20	1.252317	.215309	1.31	0.191	.8940637	1.754123
20t50	2.113098	.3156599	5.01	0.000	1.576758	2.831876
50t65	4.890213	.7481534	10.37	0.000	3.623285	6.600138
elder	12.47708	1.864054	16.89	0.000	9.309895	16.72172
_cons	.0033317	.0004817	−39.45	0.000	.0025096	.0044232

Figure 2. Distribution of pedestrian fatalities adjusted by age and gender, East Azerbaijan, Iran

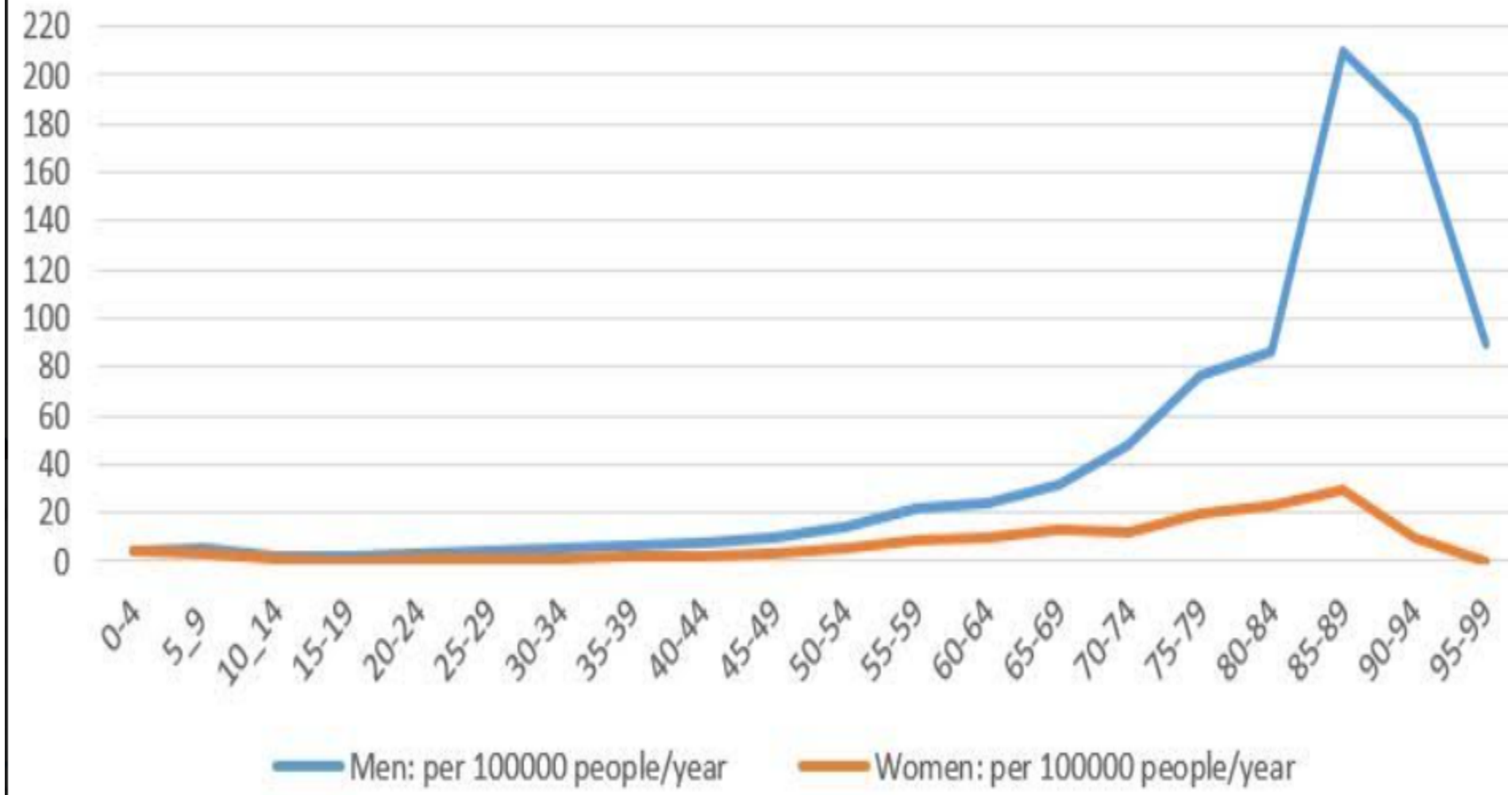


Table 1 Distribution of the traffic injury victims according to the type of vehicle used for transport comparing the elderly victims with other age groups

From: A decade of road traffic fatalities among the elderly in north-West Iran

Type of vehicle used	Elderly fatalities	Other age fatalities	Total
No vehicle used(Pedestrian)	823 (60.7%)	1471 (18.3%)	2294 (24.4%)
Car	306 (22.6%)	3453 (4%)	3759 (40%)
Bus or minibus	31 (2.3%)	196 (2.4%)	227 (2.4%)
Pickup truck	54 (4%)	640 (8%)	694 (7.4%)
Other trucks and trailers	5 (0.37%)	276 (3.4%)	281 (3%)
Motorcycles	85 (6.3%)	1751 (21.8%)	1836 (19.5%)
Bikes	30 (2.2%)	74 (0.9%)	104 (1.1%)
Other vehicles	14 (1%)	100 (1.3%)	114 (1.2%)
Unknown or missing	9 (0.7%)	78 (1%)	87 (0.9%)
Total	1357 (100%)	8039 (100%)	9396

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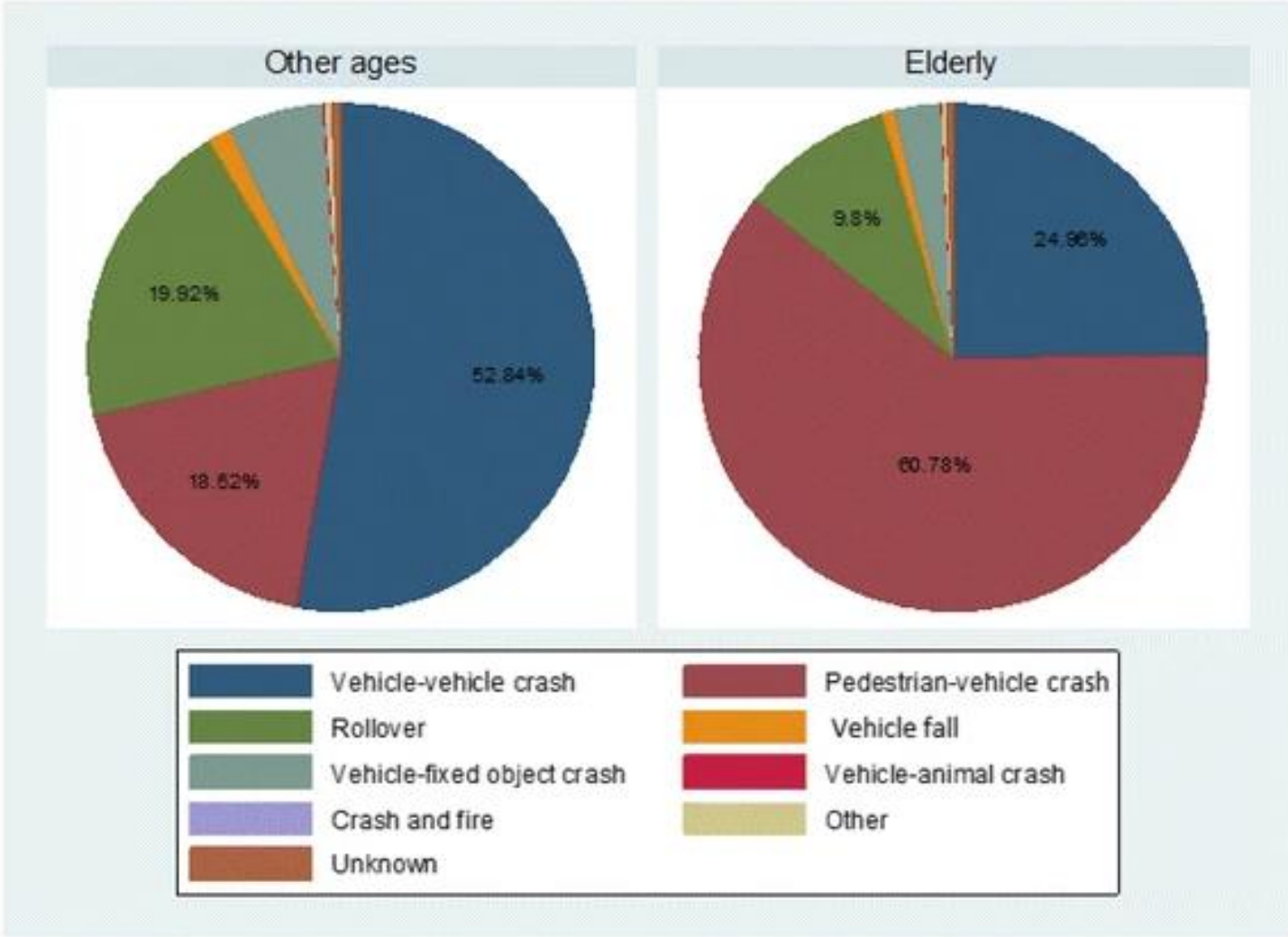
- By exclusively analyzing pedestrians, it was found that motorcycles were responsible for pedestrian deaths in 9.1% of the fatalities while this figure was 5.5% for pedestrians in other age groups killed in a traffic accident ($P < 0.05$)
- and the likelihood of an elderly pedestrian dying after a motorcycle crash was nearly 1.7 times more than similar casualties in other ages (OR = 1.72; 95% CI: 1.24–2.39).
- About half of the elderly victims (51.1%) died due to an inner-city crash, while about a quarter of the other age victims (26.3%) died after inner city crashes.

- About 56% of the elderly died in hospital which was higher than the proportion for other age groups (39%).

- According to the results of logistic regression analysis, the elderly deaths were twice as likely to happen in hospital compared to fatalities in other age groups (OR = 2.1; 95% CI: 1.8–2.3).

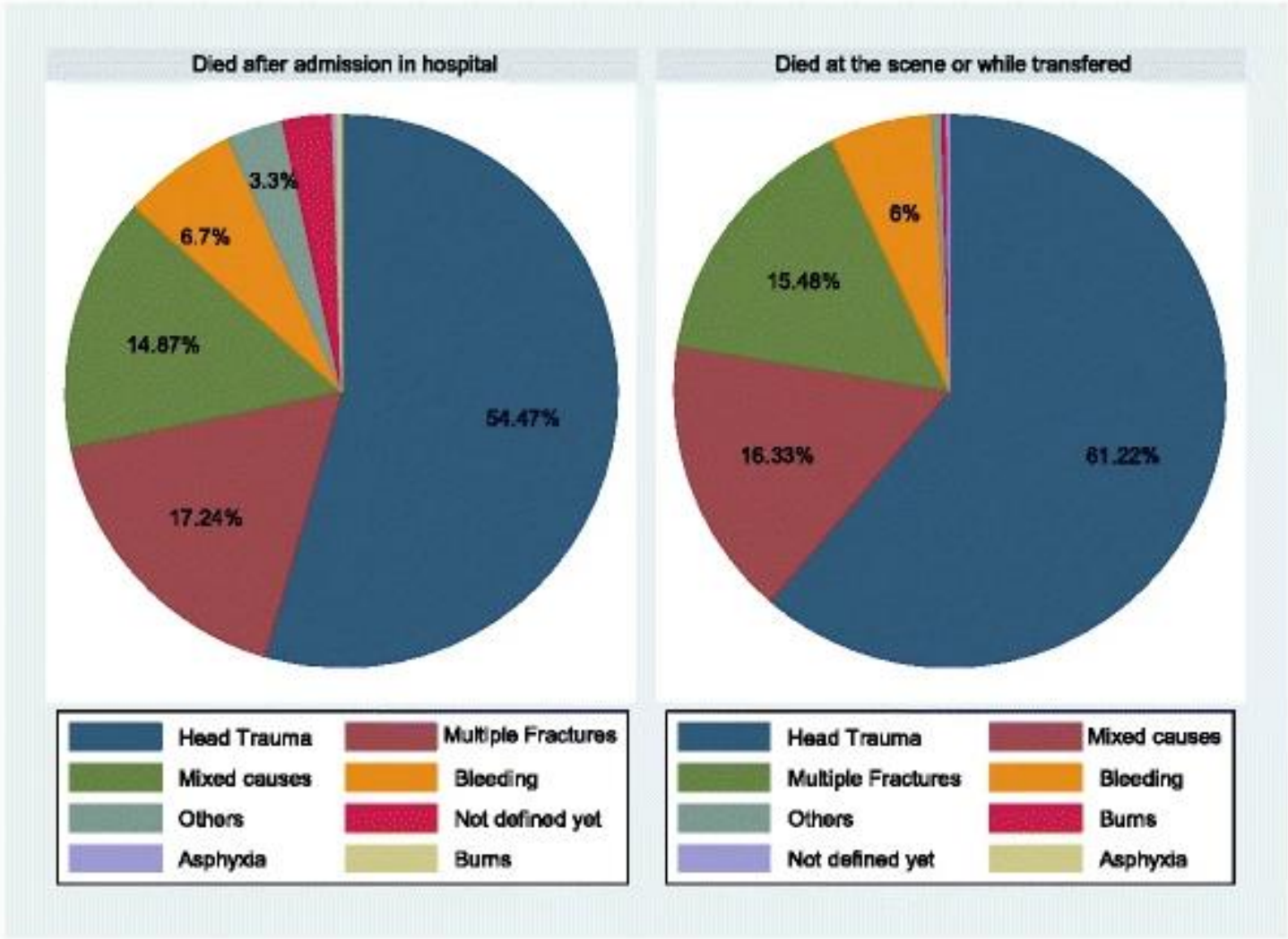
- The odds ratio decreased to 1.5 (95% CI: 1.3–1.7) after adjusting for place of accident (inner city vs. outer city) and the victim's role in the traffic (pedestrian vs. vehicle users).

Fig. 2



Crash mechanism in fatal traffic injuries compared for the elderly and other age groups in East Azerbaijan (March 2006–March 2016)

Fig. 3



Distribution of elderly mortalities by cause of death before and after hospitalization in East Azerbaijan (March 2006–March 2016)

Discussion

- Vulnerable road users including pedestrians account for half of all road traffic deaths globally.
- More than 60% of the elderly victims are pedestrians in Iran in contrast with other age groups who are mostly vehicle occupants.
- Previous studies in US have found that death among the elderly mainly happened to motor vehicle occupants rather than pedestrians.
- higher proportion of the elderly being able and willing to drive in American vs. the Iranian population.
- a lower level of elderly-oriented traffic safety thinking in Iran
- lower quality of medical care delivered for the elderly,
- lower coverage of EMS transfer for inner city areas and pedestrians.

Higher age adjusted mortality rate

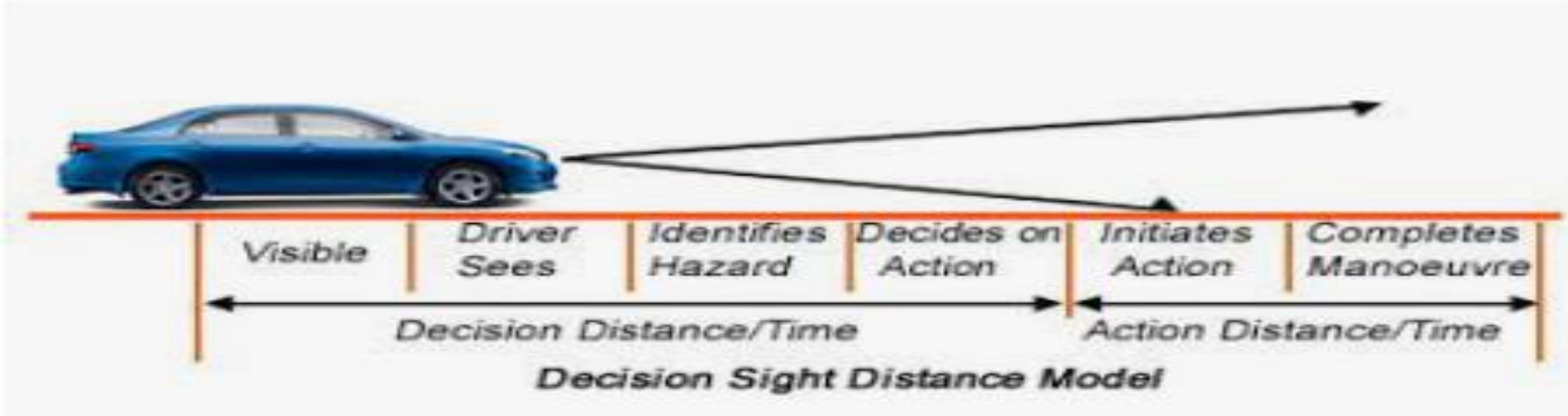
- The elderly are at a higher risk of traffic mortality even without considering the hypothesis that they are less frequently in the traffic environment than others.

- 1.5 times higher mortality rate in Iran VS. 3 times in Australia

Higher hospital case fatality rate

- Pure age effect
- Comorbidities
- The appropriateness and quality of the delivered
- Triage criteria sensitivity
- Ageism

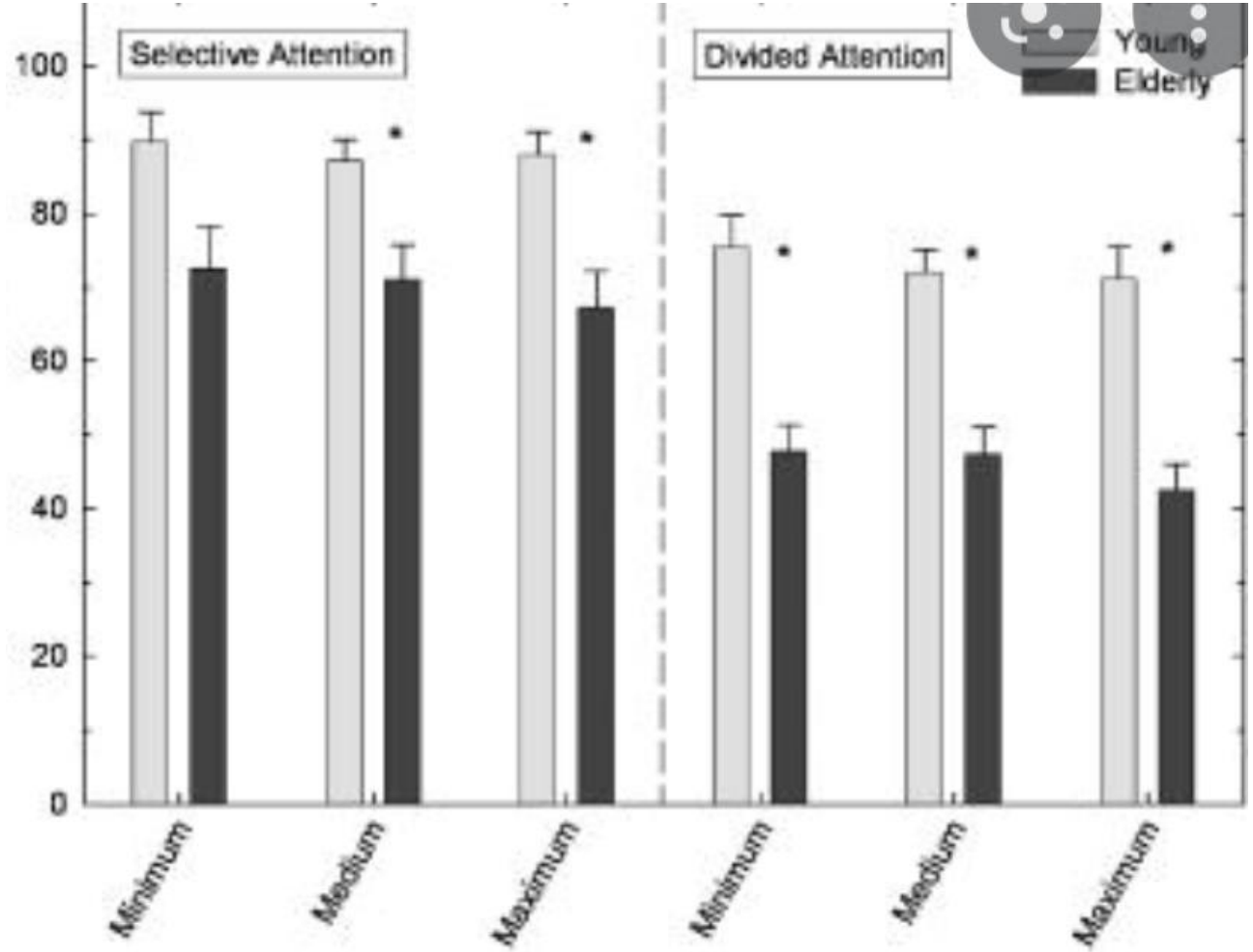
Reaction time



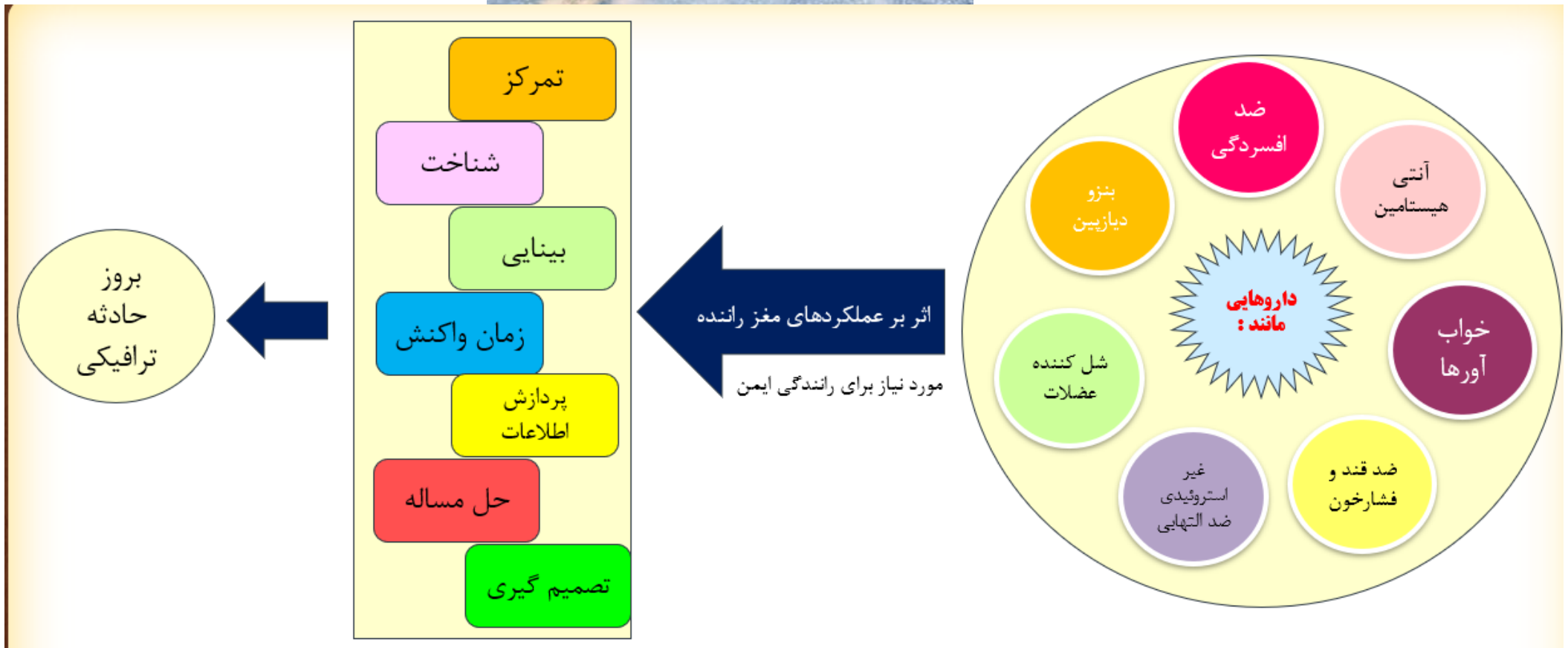
Weak vision & hearing loss

Cognitive decline

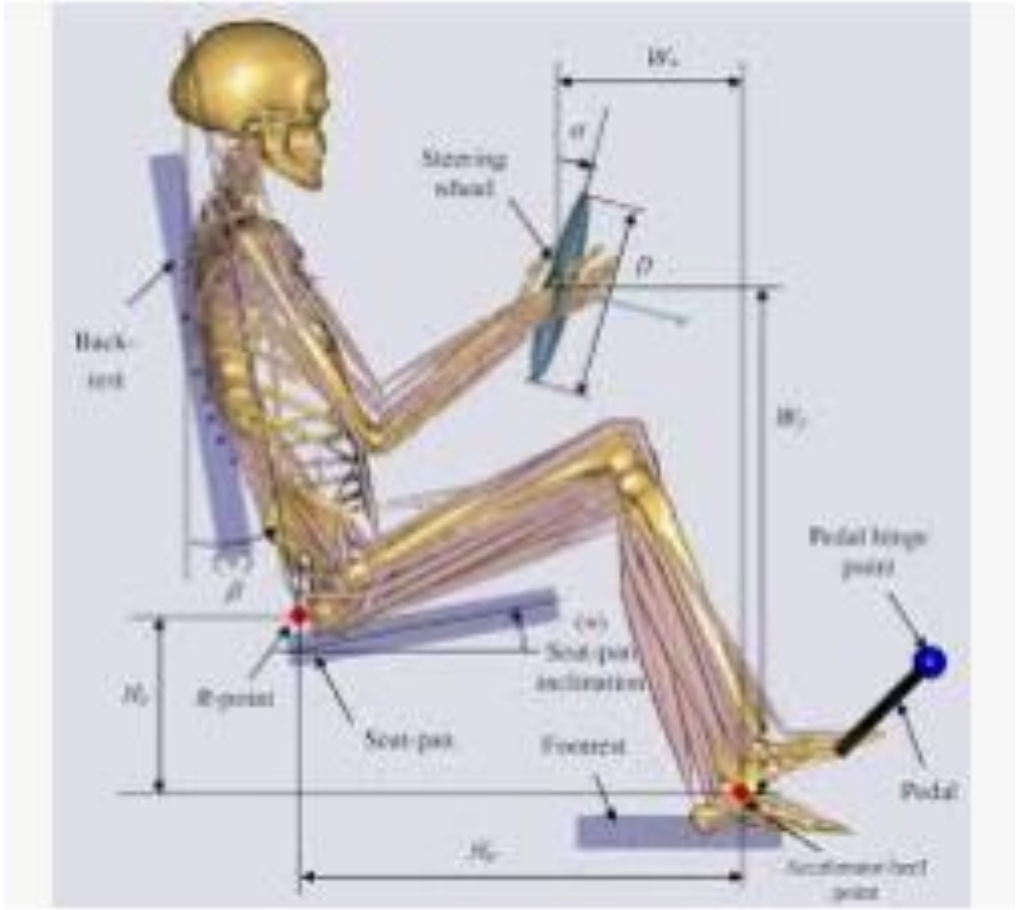
Divided attention



Medicinal drugs and driving



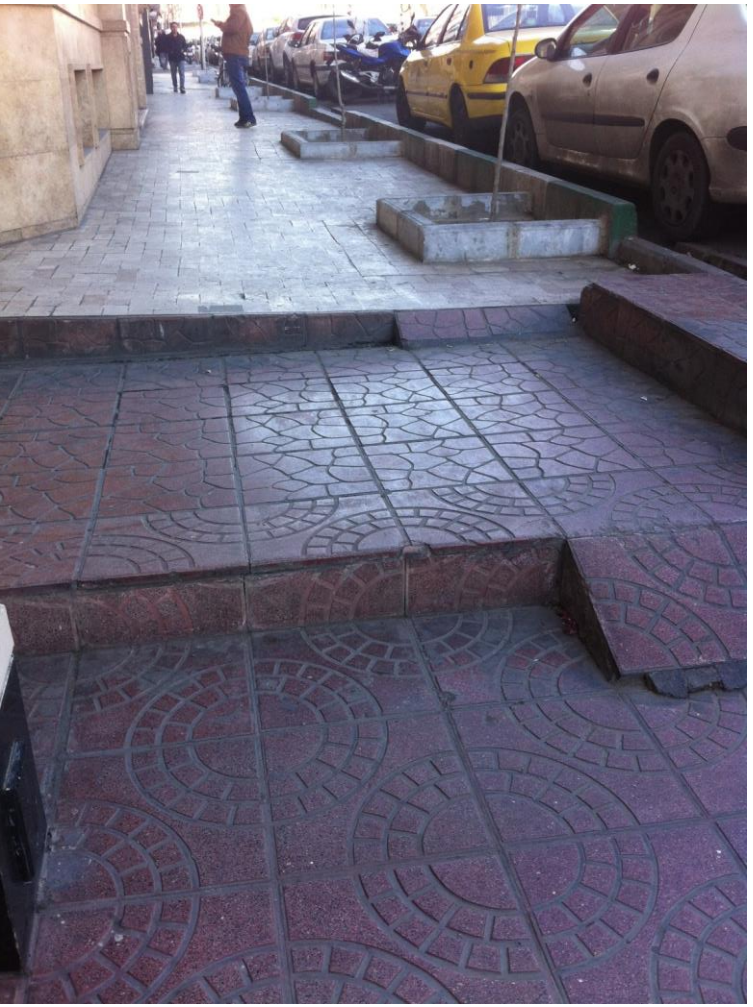
Musculoskeletal problems

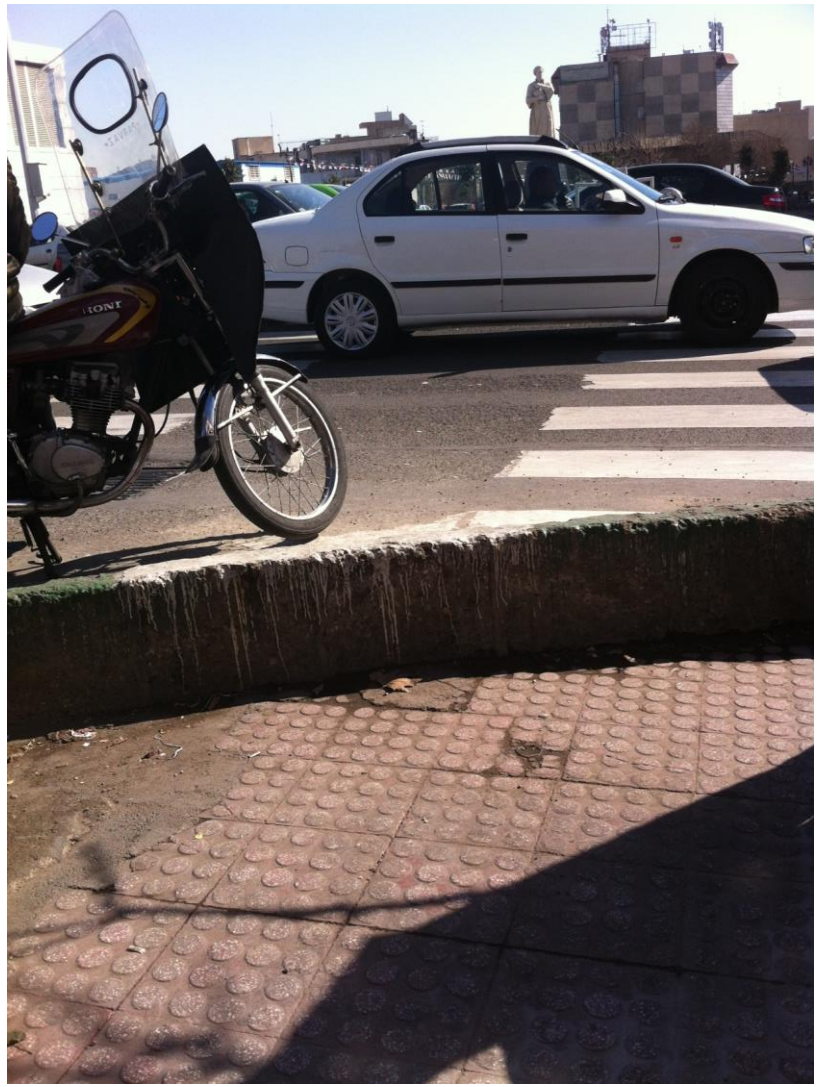


Diseases & traffic injuries

- Diabetes
- Stroke
- Parkinson
- Dementia
- IHD
- Psychiatric disorders

Environment



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