

Social and Demographic Aspects of Human Road use in the context of Technological Vehicles Advancements

המכון לחקר הגורם האנושי

לתאונות דרכים



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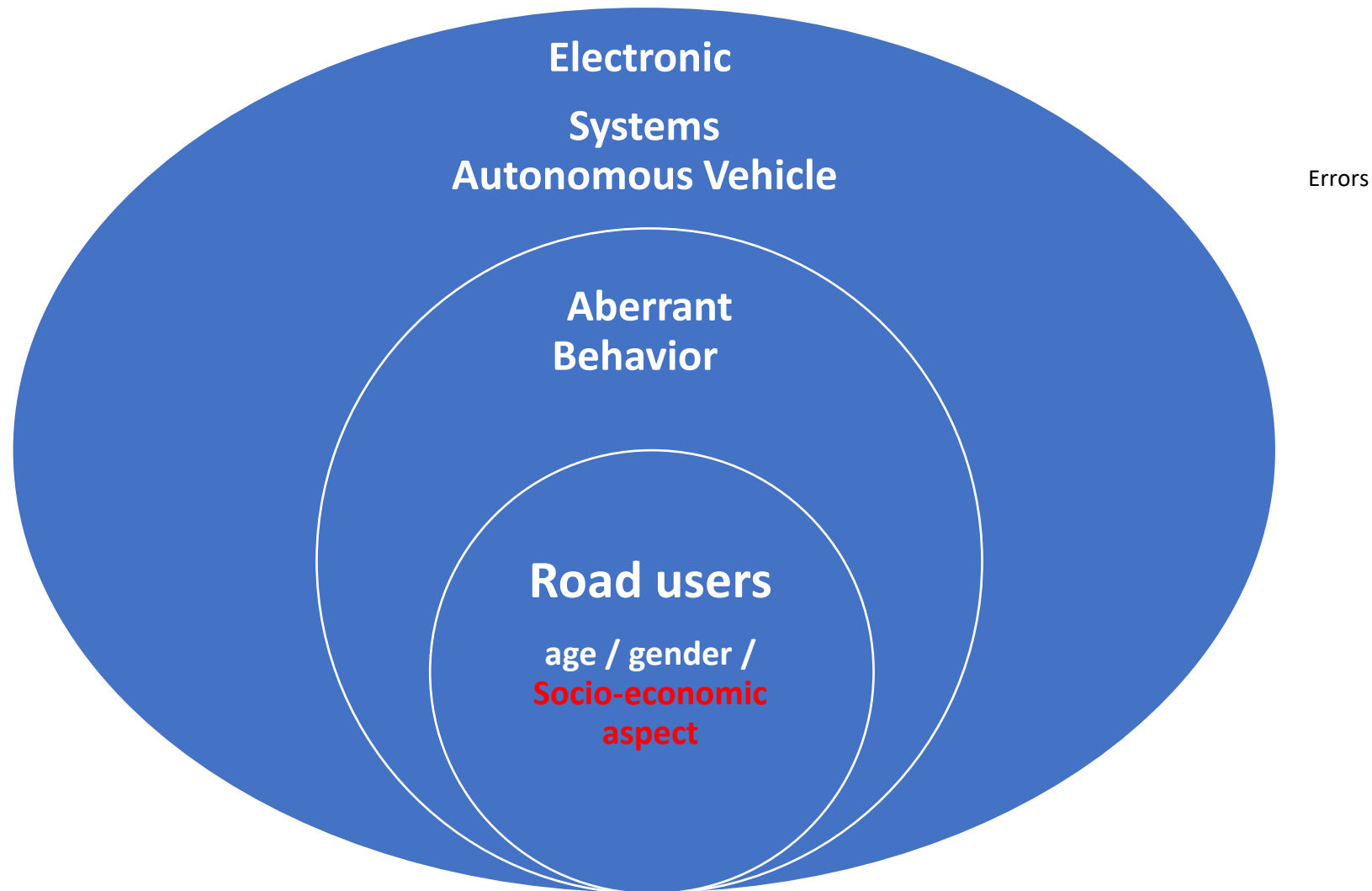
It's all about us on the road

Global Forum 87th Session, Monday 25 September — Friday 29
September 2023.

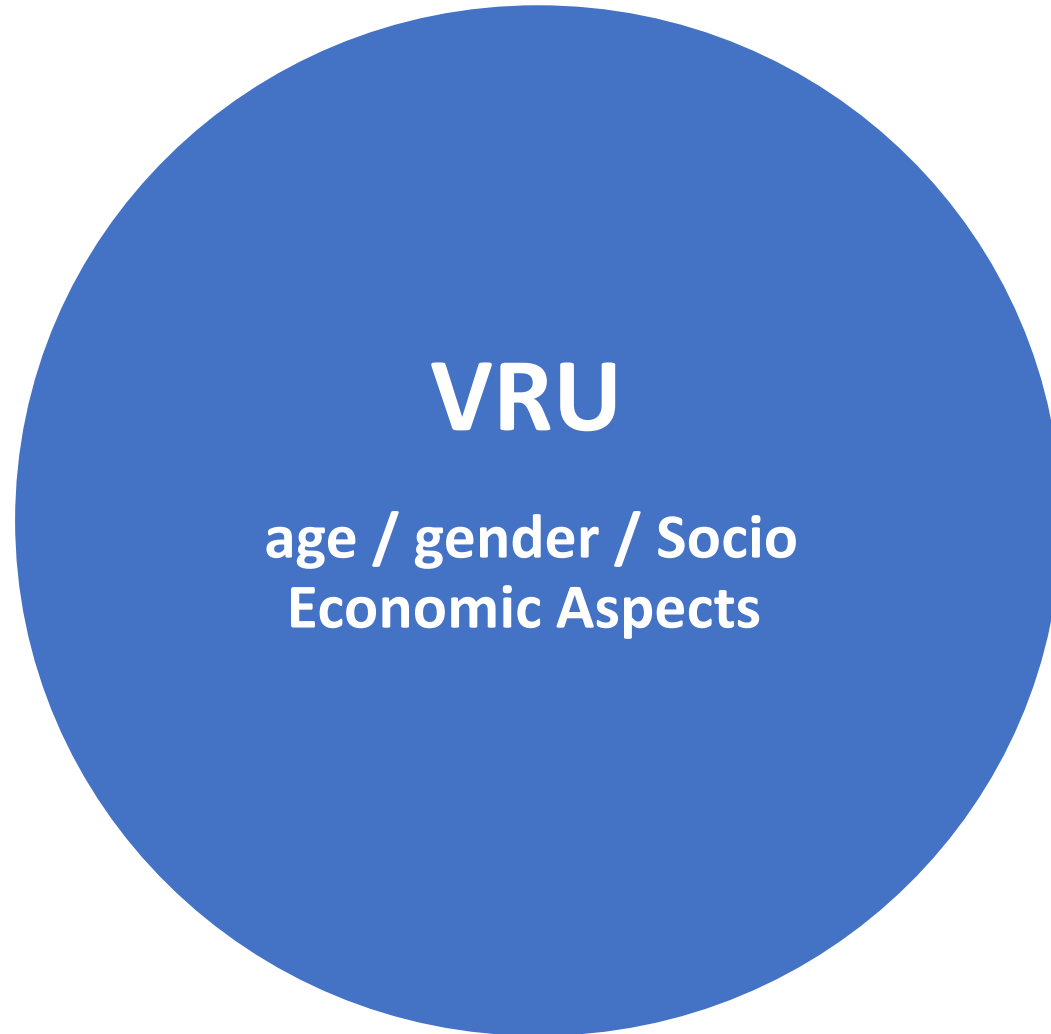
Palais des Nations, Geneva, Switzerland.
for Road Traffic Safety (WP.1)



Vulnerable Road Users (VRU) – Machine Interfaces



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Errors

- Age – road users behave more cautiously as they get older
- Gender – males take more risks I roads than females
- Socio economic aspects - 93% of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have only 60% of the world's vehicles

No. of deaths per 100,000 inhabitants per year (WHO, 2019)

Africa	26.6
South –East Asia	20.7
Eastern Mediterranean	18
Western Pacific	16.9
Americas	15.6
Europe	9.3

Thailand	32.7	
Brazil	23.4	
Israel	4.2	
Norway	2	

Some explanations are possible for this situation:



Macro
Level

The Macro explanations include (in a case study of Brazil)

- Poor Road Infrastructure (Martinez et al., 2019)
- Lack of inputs from the side of the authorities such as
 - Driving schools
 - Novice driver's accompanying
 - Refreshment of knowledge in safety 5 years after acceptance of driving license
 - Studying road safety from kindergarten till the end of high school
 - Training sites for bicycle riding for young childrens
 - Safety Campaigns in the media
 - Safety officers in companies and in municipalities

This approach is known also as Top - Down
approach

Other explanation may refer to



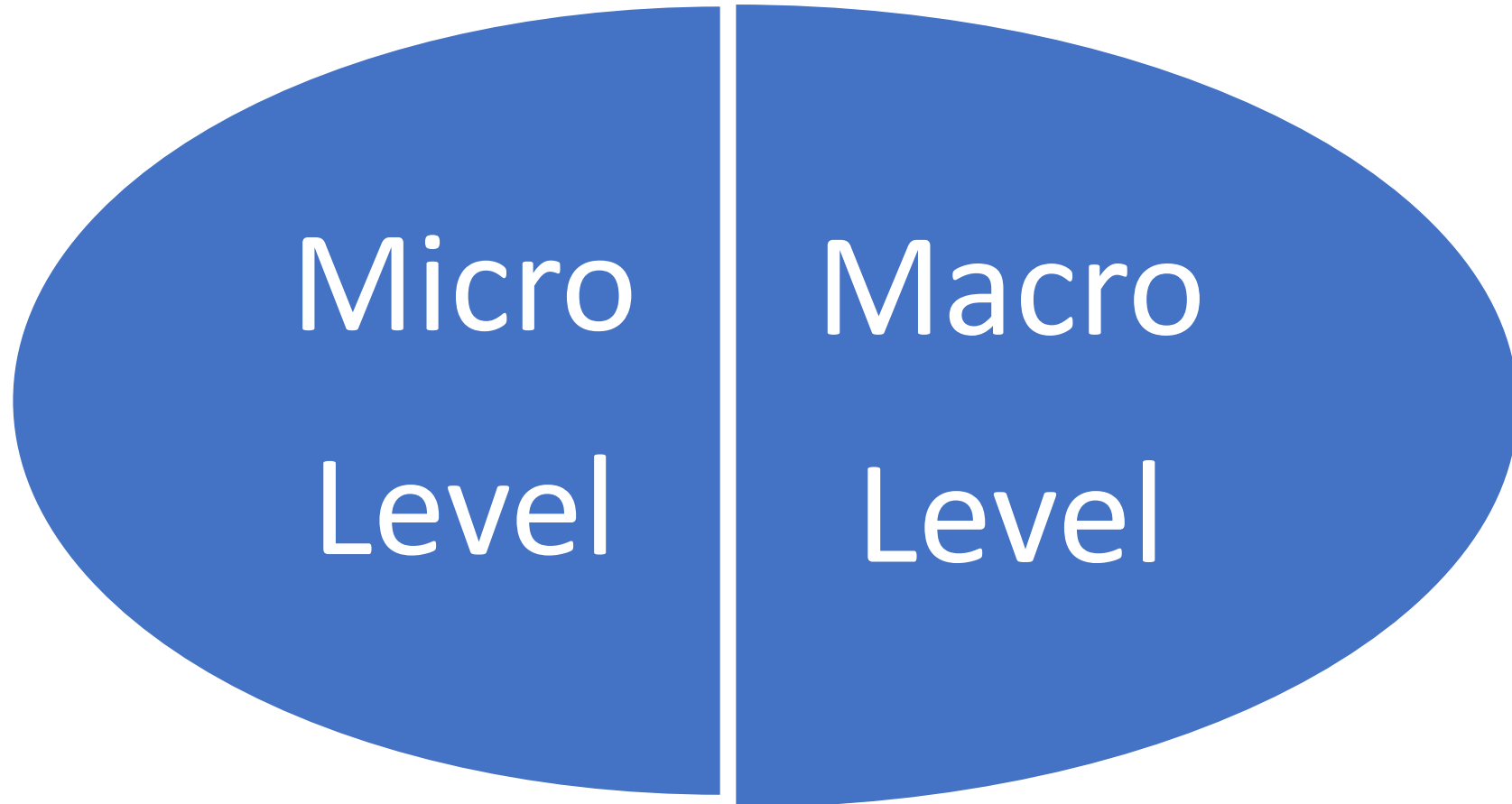
Micro
Level

Talking about the human factors (the individuals) may deal with

- People that experience discrimination, lack of identification with the country's values and alienation, are more involved in risky behavior and crime as an indirect reaction toward the normative society (Factor, Mahalel & Yair, 2008).
- There has been found a direct negative correlation between the level of education and involvement in road accident (Ashkan et al, 2013)
- Variables such as higher income, higher education, apartments' ownership and marriage are in correlation with lower rates of delinquency and incompliance to rules (Weisbord, 2018).

This approach is known also as Bottom-Up approach

Both levels interact with each other



Perceptions of AV safety were surveyed across 41,932 individuals in 51 countries (Moody et al., 2020)

Young, high-income, employed, and highly-educated males are the most optimistic about AV safety

Western European countries are aware of AV technology, but are pessimistic about its safety

Conversely, developing countries in Asia are the most optimistic about current and future AV safety

AV safety optimism in risk-taking individuals and developing countries may reduce global disparity in road safety

Perceptions of AV safety were surveyed across 41,932 individuals in 51 countries

(Moody et al., 2020)

Western European countries (Germany, Sweden, Austria, the UK, and the Netherlands) as well as Canada report **moderately above-average awareness** of AVs, **low perceptions** of AVs' current safety, and the **greatest number of years** until AVs are safe enough to use.

Developing countries in Asia (including much of Southeast Asia, China, and India), along with Brazil, Portugal, and the United Arab Emirates, report **high awareness** of AVs and have **high perceptions** of current and future AV safety.

The Latin American countries in the sample besides Brazil all rank in the **bottom** line of **awareness** of AVs and have **high perceptions** of current safety and predict **low-to-moderate number of years** until AVs are safe enough to use.

Russia, Ukraine, and Turkey have very **low perceptions** of current AV safety, but they do not exhibit significant differences from many other countries (**moderately below-average** awareness and moderately **above-average** years until AVs are safe).

- The US and Singapore, where the bulk of current autonomous vehicle development and testing is being conducted, report **high awareness** of AVs, yet ranked with many other countries around **average in both current and future perceptions of AV safety**.

Some points regarding AV

- The penetration of AV to the transport system will be spread upon some decades
- Till a full automation there will be a transfer phase that will require separate infrastructure
- It is quite complicated to rely on previous studies as most of them were not based on empirical research design

The big data that underlines the base of the AV must conclude a deep understanding of the perceptual and cognitive aspects of the human being as described in highlights before

It is required to understand how road users from developed versus developing countries will communicate with the technology, and what possible benefits or difficulties or even dangers they perceive.

This information is needed when designing the interfaces and interior of autonomous cars (Chaloupka & Risser, 2020).

Thank You!

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