



Virtual Reality Driving Training Program

Team Dubai

Introduction

- Almost half of all road accidents that took place between 2009 and 2012 were caused by those aged 18-30.
- Human error accounts for 90% of all road accidents (Olarde, 2011).
- High prevalence of traffic accidents due to unfamiliar driving conditions within the UAE.



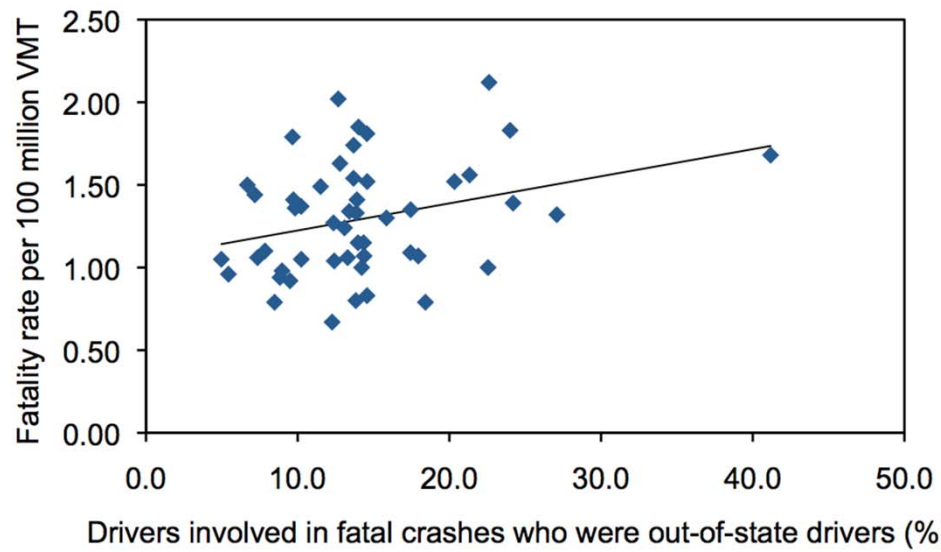


Figure 2. The relationship between the states' percentages of all drivers involved in fatal crashes who were out-of-state drivers and the corresponding fatality rates per distance driven. (The line represents the best fitting linear-regression equation.)

(Michael Sivak and Brandon Schoettle, 2010)



Statistics

- 34% of fatal accidents were caused by the youth in the past nine months. (Khaleej Times, 2013).
- Causes: Speeding, running red lights, not paying attention and failure to leave sufficient distance (The National, 2016).
- Over 53.5% of Abu Dhabi's driving population is aged between 18 and 30 years. (Khaleej Times, 2015)



Risk Factors

Behavioral:

- Lack of judgment / attention
- Sudden swerving or lane changing
- Entering the road without checking if its clear
- Speeding
- Entering unfamiliar roads / Sudden incidents
- Not enough distance to the car in front
- Jumping red light

Environmental:

- Rain
- Fog
- Sand Storms
- Entering unfamiliar roads

(Ministry of Interior, UAE)



Does Virtual Reality Work?

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N. Morina et al. / Social interactions in virtual reality exposure therapy

Table 1
Pre-treatment and 3-month follow-up mean and standard deviation (SD) scores of social anxiety and self-efficacy in individuals with low social anxiety (LSA) and high social anxiety (HSA)

	SIAS				SESS			
	Pre-assessment		Follow-up		Pre-assessment		Follow-up	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
LSA (<i>n</i> = 18)	12.8	5.1	14.5	5.0	60.8	5.8	73.5	8.3
HSA (<i>n</i> = 16)	29.4	7.3	22.8	13.1	54.1	9.9	65.8	13.6

Note. SIAS = Social Interaction Anxiety Scale; SESS = Self-efficacy for Social Situations.



Hazard Perception Training = Hazard anticipation?

Evaluation of the Effect of a Novice Driver Training Program on Citations and Crashes. [Tingru Zhang](#)



Hazard Perception Training: How?

Driving in Virtual Reality

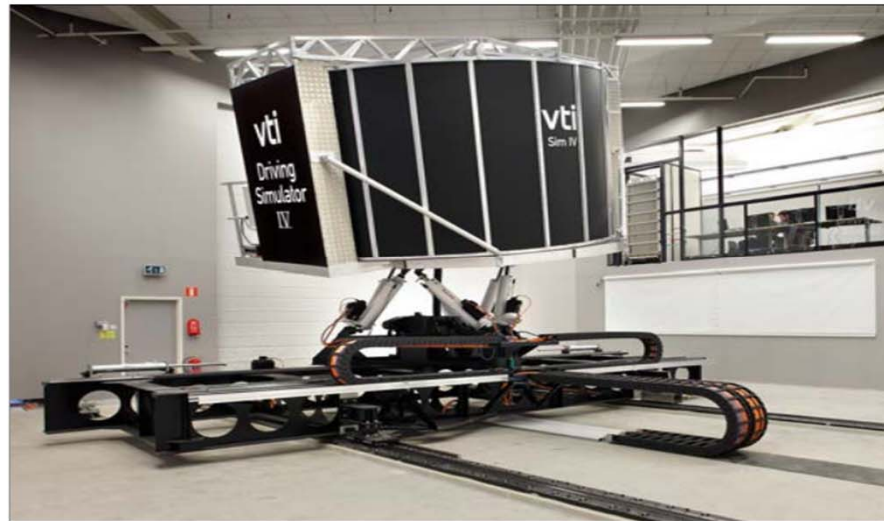
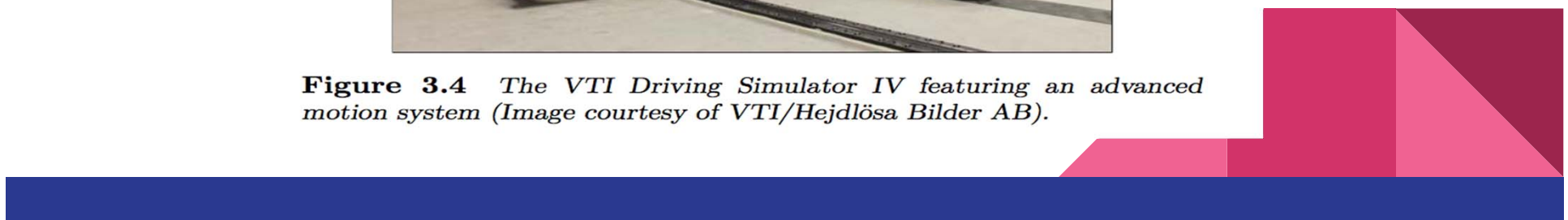


Figure 3.4 *The VTI Driving Simulator IV featuring an advanced motion system (Image courtesy of VTI/Hejdlösa Bilder AB).*



Hazard Perception Training: How?



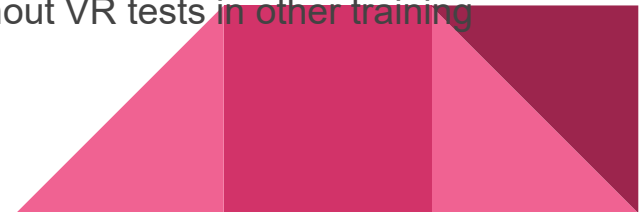
Risk Factors

- Studies show that rainfall increases traffic accidents by usually several fold.
- Increase of likelihood of collision by 75% in rainy weather conditions.
- Just this month 23 people in 4 accidents were injured on Abu-Dhabi-Al Ain road this month due to low visibility because of fog.

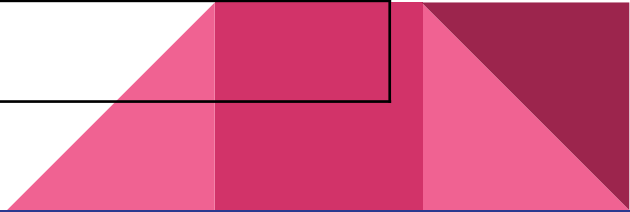


Implementation and Evaluation

- Target group: First-time drivers
- Targeted Emirate: Dubai
- Implementation: Part of the driver's licensing system (1 year long for first-time drivers) in one of the driving institute in Dubai.
- Evaluation:
 - Pre and post training surveys
 - Comparison of new drivers trained by VR tests vs drivers trained without VR tests in other training institutes.



Advantages	Disadvantages
Earlier initiation of the learning curve	High initial cost for installation – requires the installation of new hardware.
Obtain necessary experience without the associated consequences which could be fatal	Differing accessibility in different emirates
Environmentally friendly approach with decreased CO ₂ emissions	Differing rules and boards of licensing in different emirates
Cost effective in the long run	-
Appealing to the youth	-





Thank you