# The Effect of Post-license Advanced Driver Training on Traffic Offences

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# Training framework: the GDE Matrix - *Goals for Drivers Education*

- GDE matrix proposed within EC funded project GADGET (*Guarding Automobile Drivers through Guidance, Education and Technology*) to define objectives and contents of driving training courses

- The first dimension of the matrix refers on a **hierarchical model** of driver behaviour where a higher level controls and guides behaviour on a lower level

# The Hierarchical Model

**4°	level**: *Goals for life and skills for living*

**3°	Level**: *Goals and context of driving*

**2°	Level**: *Mastery of traffic Situations*
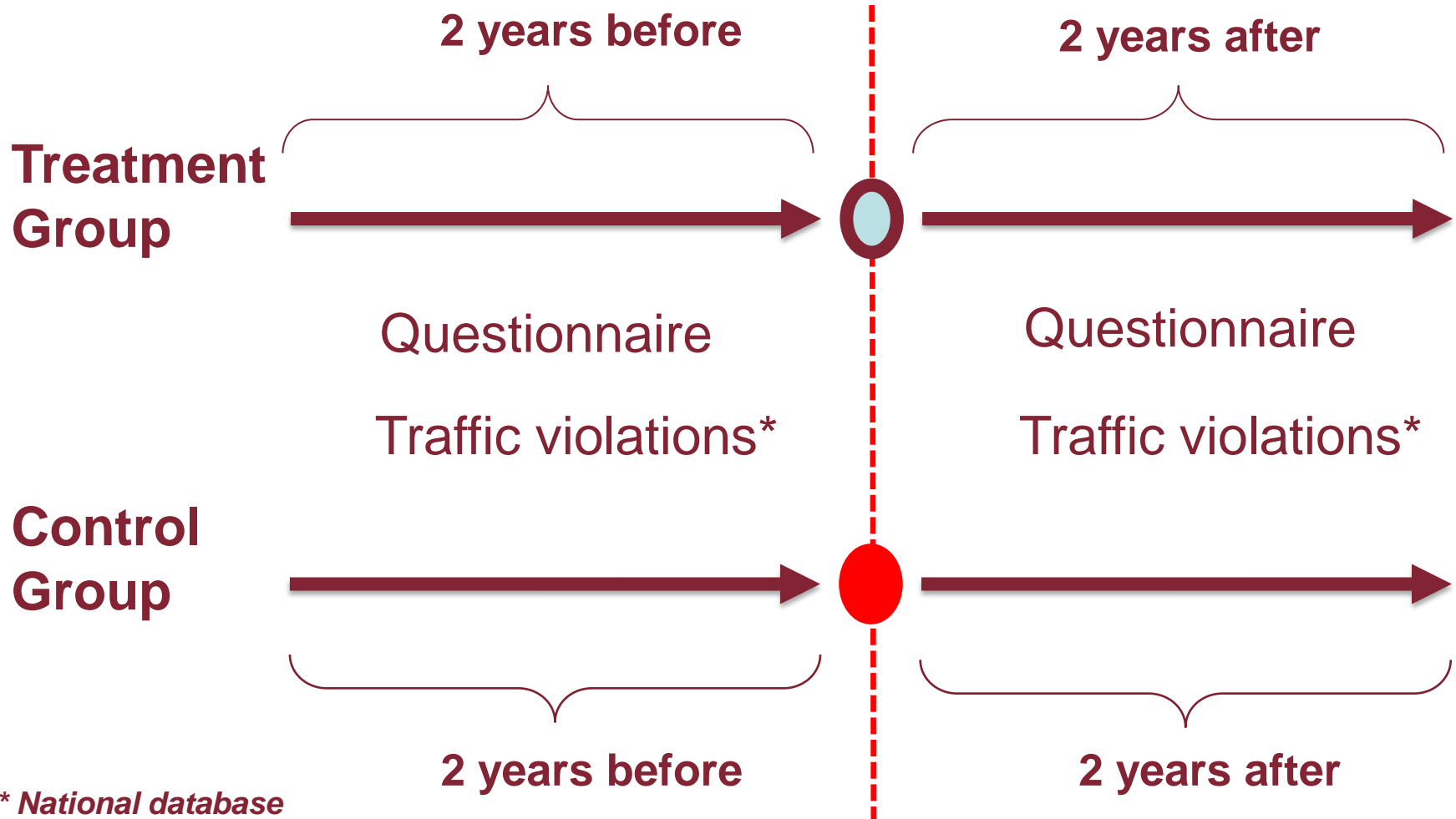
**1°	Level**: *Vehicle manoeuvring*

# The 3 training targets

- A safe driver should not only be skilled but also aware of potential risk factors and his/her own abilities and motives as a driver.
- The second dimension of the matrix represent 3 training targets:
  - *Knowledge and skills (*driver needs to know at each level in order to drive a vehicle and cope in normal traffic circumstances*)*
  - *Risk factors (*knowledge of factors increasing risk*)*
  - *Self evaluation (*becoming aware of personal preconditions and tendencies as well as skills and abilities regarding driving*)*

# Post-license advanced driver training (ADT)

- Different categories of road users addressed: *novice drivers, professional drivers, company employers and recidivists*.

- Training On-track or On the road

- Study promoted by the Italian Ministry of Infrastructure and Transport in 2010

- ADT targeted by the study:
  - Theoretical session (2 hours) + Practical session (5 hours) on-track
  - Addressed users: Car drivers, PTW riders and Truck drivers

# Monitoring approach

**Treatment Group**

2 years before

2 years after

Questionnaire

Traffic violations*

Questionnaire

Traffic violations*

**Control Group**

2 years before

2 years after

* National database

# Objectives

- Evaluate the effects of post-license Advanced Driver Training (ADT) on driving behavior, in particular in terms of the number and type of violations.

- 2 cases investigated:
  - The effects on drivers participating to an ADT course
  - The effects on drivers charged with a traffic violation in the 6-12 months before undertaking the ADT course.

# Methodology

- Before-After comparison in treatment and control group (through Wilcoxon signed-rank test). 3 cases considered:
  - *Case 1*: Drivers participating to an ADT course.
  - *Case 2*: Drivers who have committed a traffic violation before participating to an ADT course.
  - *Case 3*: Drivers who have committed a traffic violation before participating to an ADT course with similar violation rate in treatment and control group (*As number of violations per 100 drivers was found to be higher in treatment group*)

# Dataset used

1. Datasets of all drivers participating to the evaluation study (over 13,000),

2. Dataset of 10,000 random selected drivers extracted from the national database of licensed drivers

3. Dataset of 10,000 random selected drivers who committed a traffic violation during period 2010-2012 extracted from the national database of licensed drivers.

# Main results

| Case | Test | Treatment group (size) | p-value | Control group (size) | p-value |
|------|------|------------------------|---------|----------------------|---------|
| Case 1 | Before > After | 6,932 | 0.0018 | 8,469 | 0.1259 |
| | Before < After | | 0.9982 | | 0.8741 |
| Case 2 | Before > After | 491 | 0.9397 | 9,216 | 3.395e-05 |
| | Before < After | | 0.0605 | | 1 |
| Case 3 | Before > After | 491 | 0.9397 | 3,686 | 2.2e-16 |
| | Before < After | | 0.0605 | | 1 |

Significant at 95% level

# Case 1 - Drivers participating/not participating to an ADT course

- In both groups it is observed a decrease in the number of violations per 100 drivers
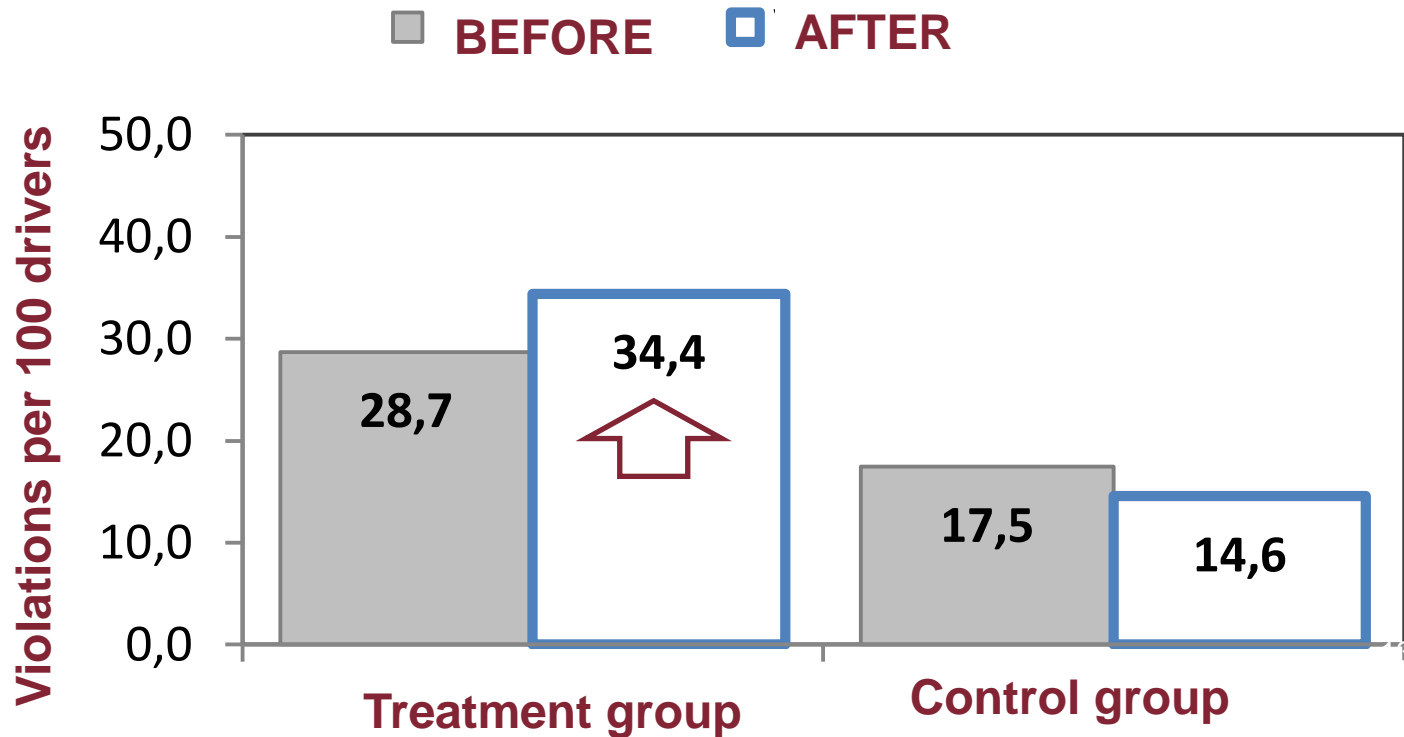- The decrease is higher in the treatment group (-10,5%) than in the control group (-5,6%)
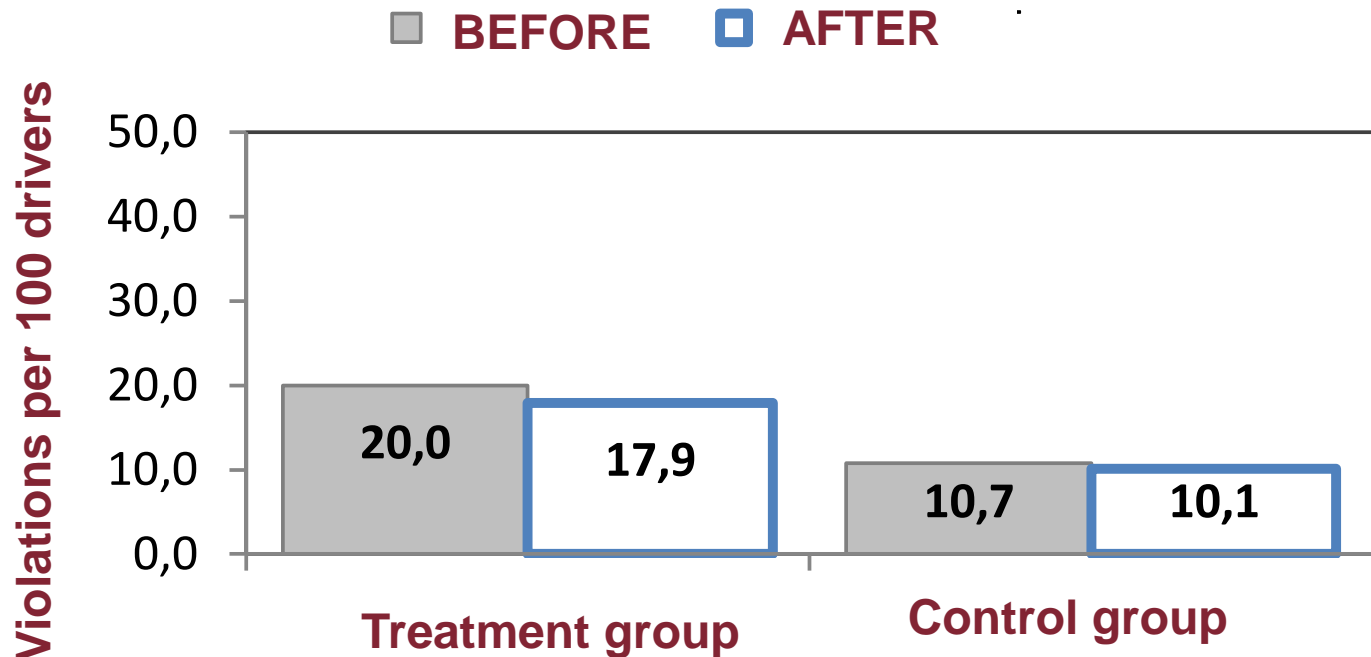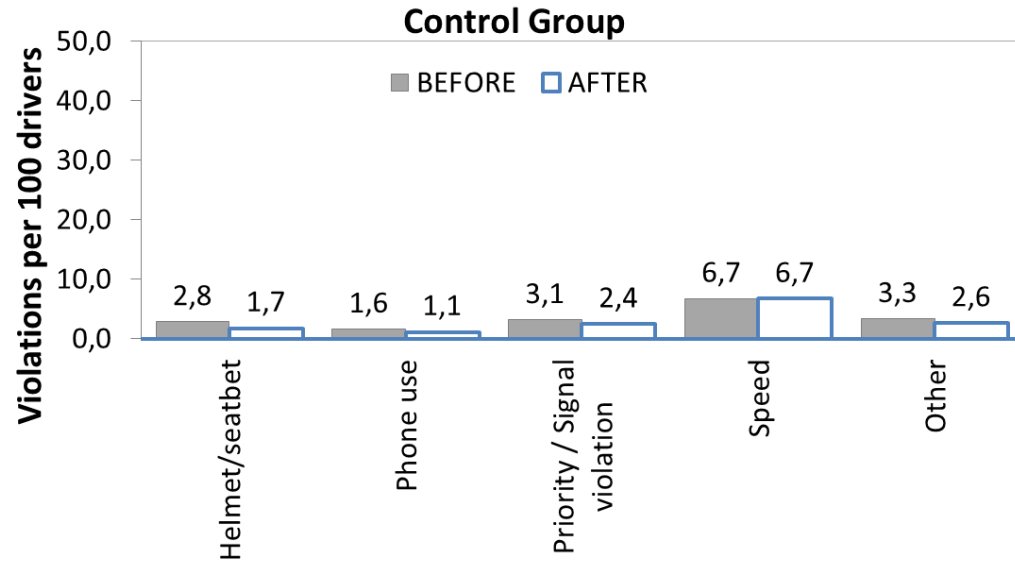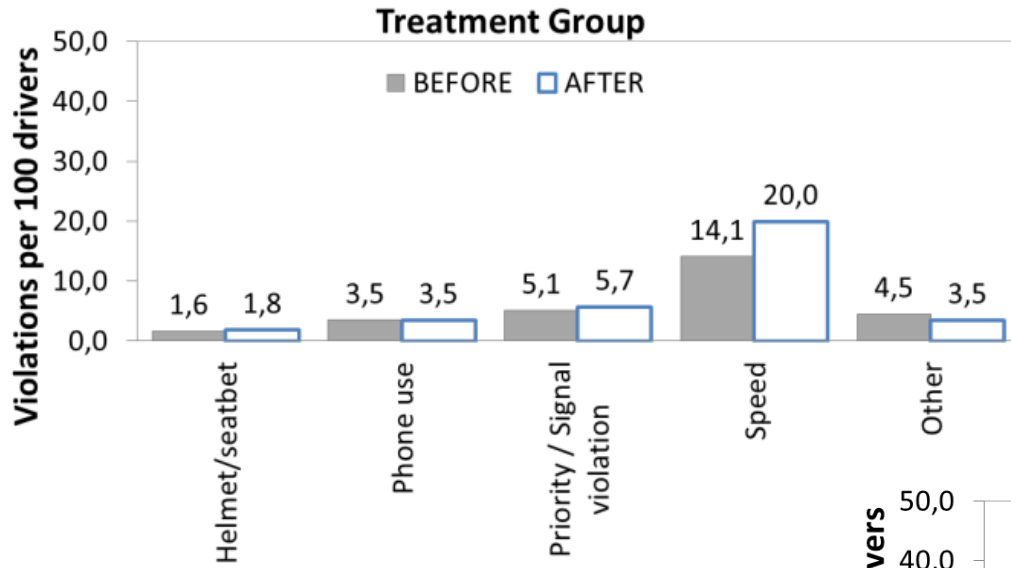
# Case 1 – Type of traffic violation
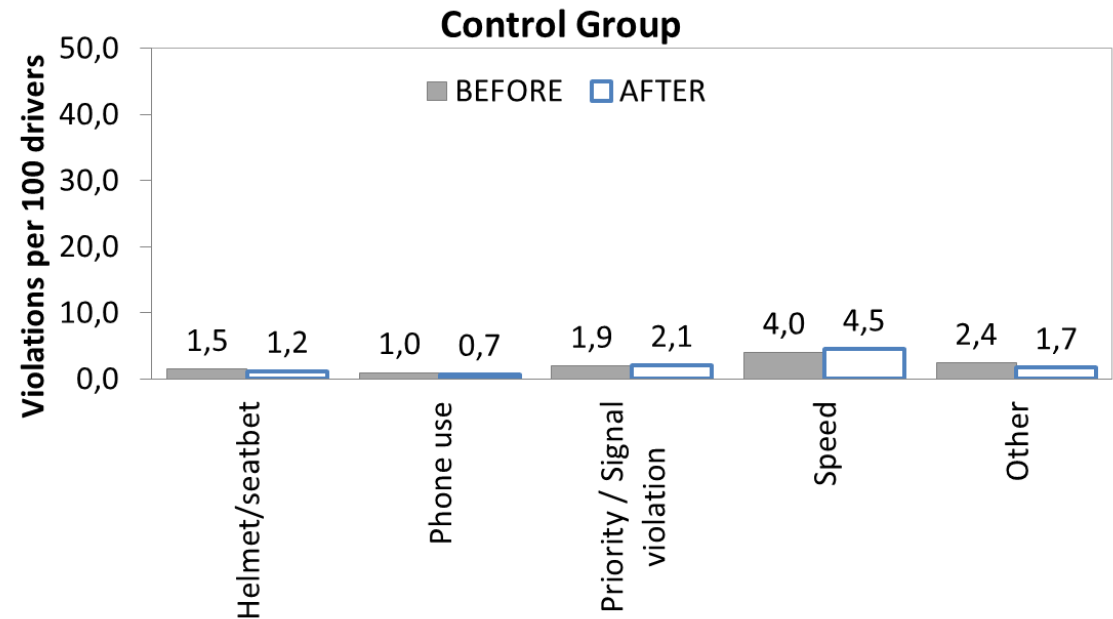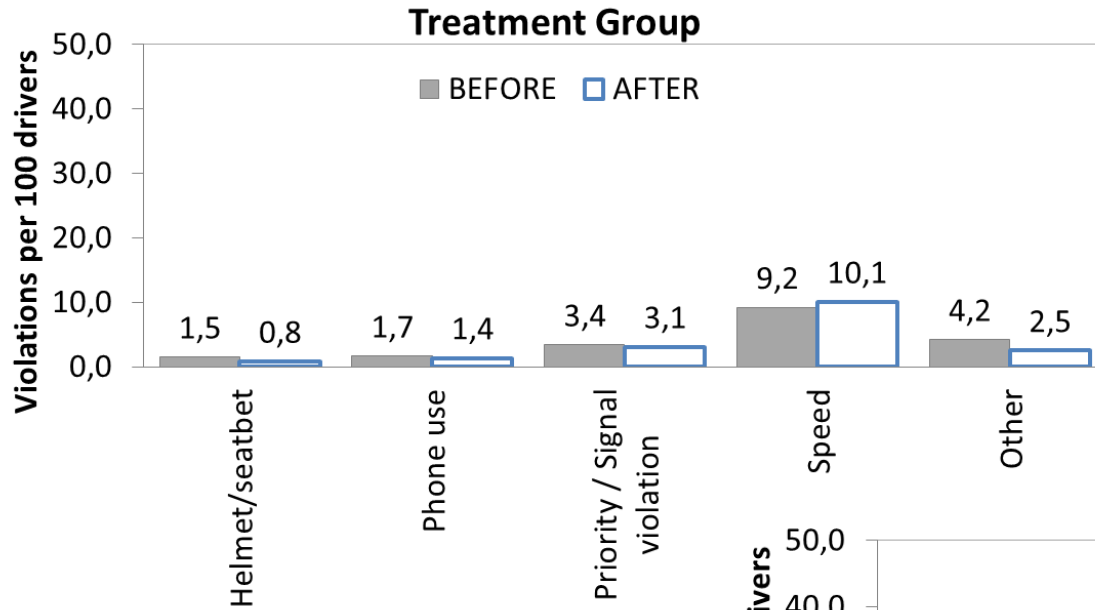
# Case 2 - Traffic violation committed before ADT

- In the treatment group there is an increase in the number of violations per 100 drivers while in the control group a decrease is observed
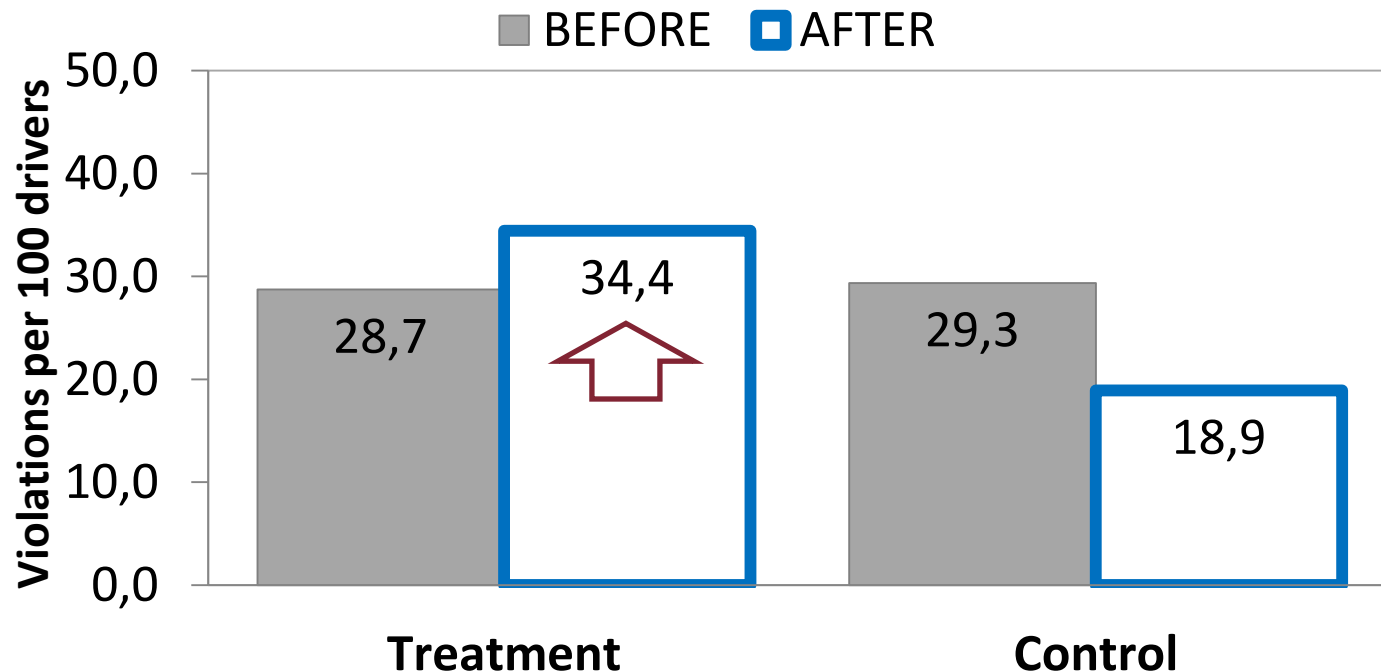
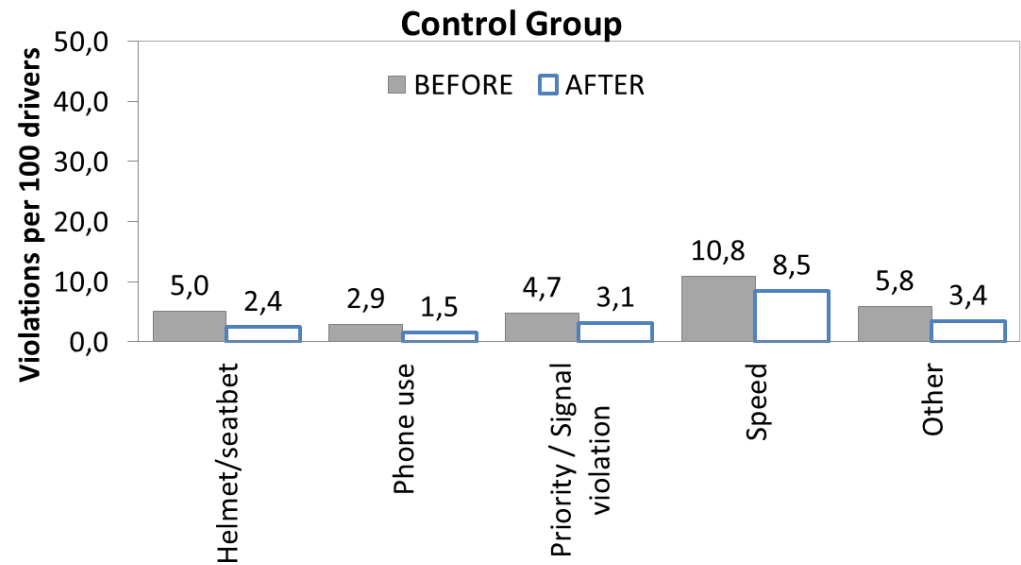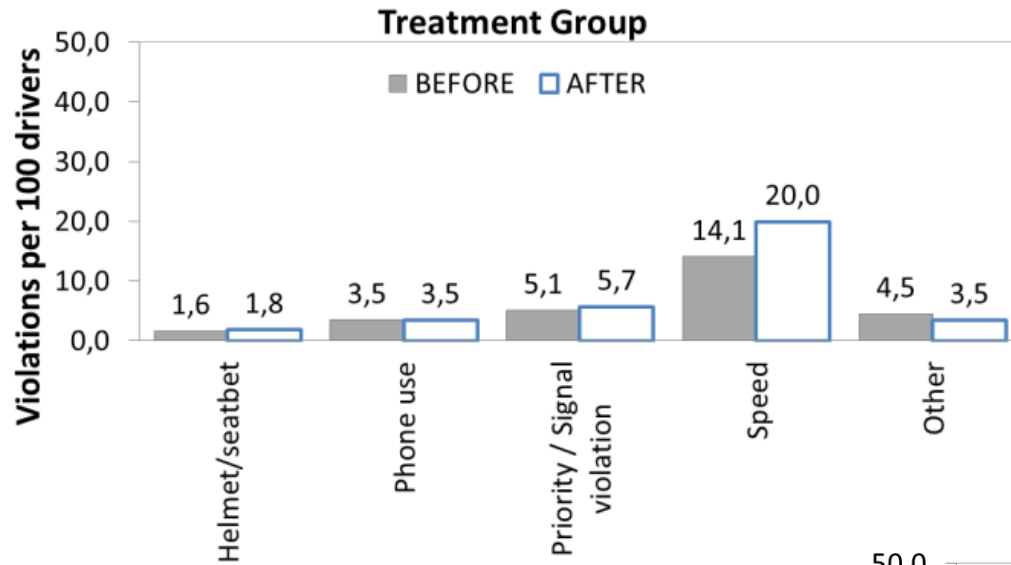# Case 2 – Type of traffic violation

# Case 3 – Similar violation rate in treatment and control groups

- Also in this case, in the treatment group there is an increase in the number of violations per 100 drivers while in the control group a decrease is observed
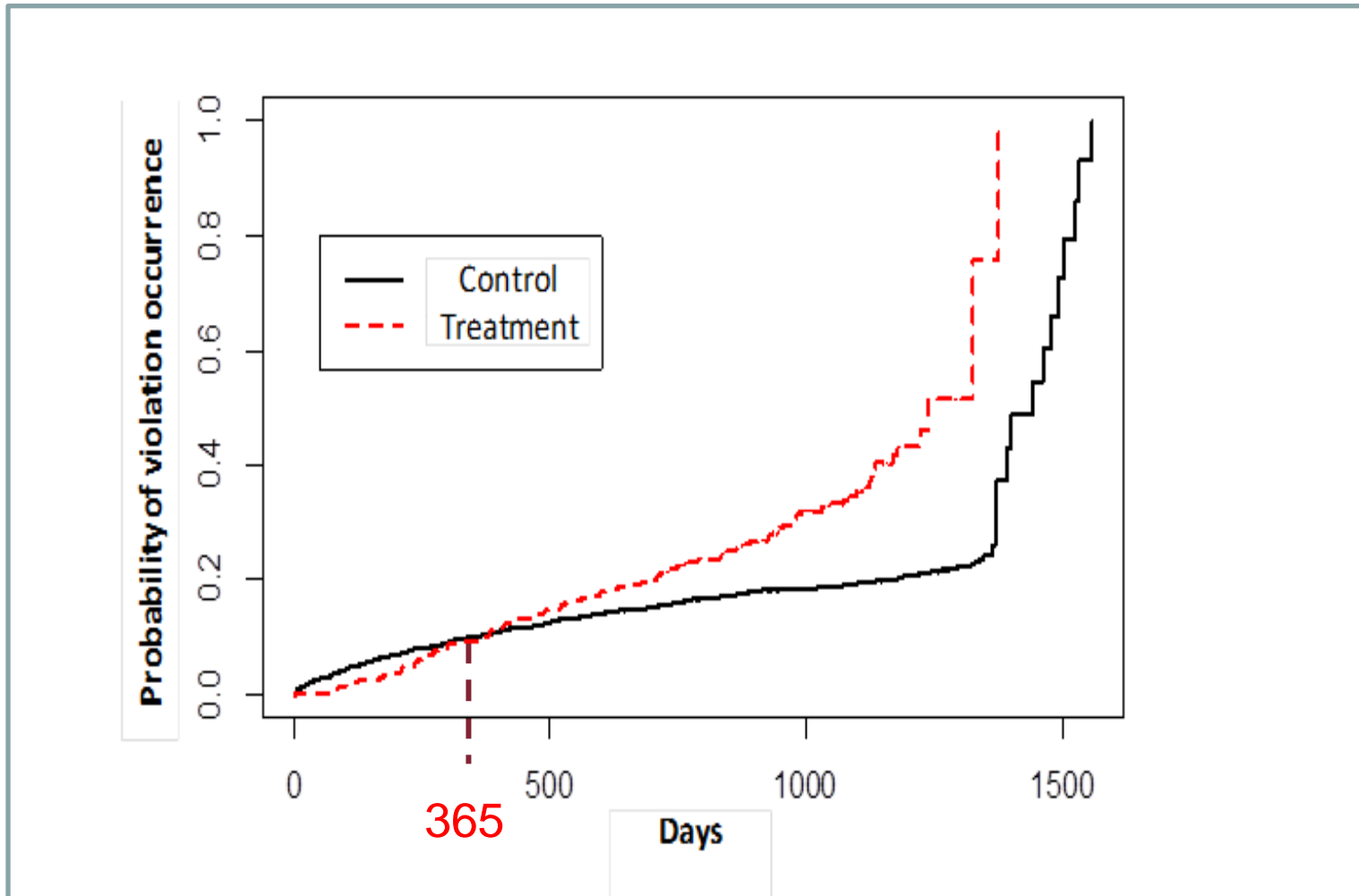
# Case 3 – Type of traffic violation

# Case 3 - Number of days until first conviction

# Survival analysis

- Significative difference between the two curves (applying a *log-rank test*)
- During the first year the probability of committing a second traffic violation is higher in the control group
- In the following years the probability of committing a second traffic violation is higher for those who attended an ADT course

# Effect on accident (preliminary analysis)

**1.342 drivers**

**24 months Before**

**24 months After**

**ADT**
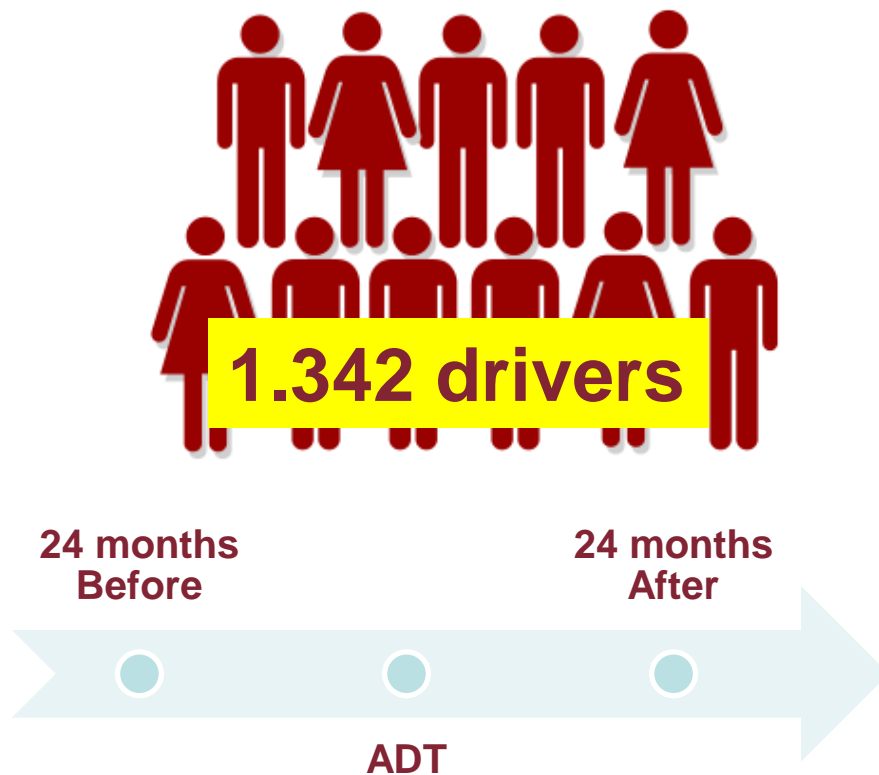
- Monitoring of self reported accidents in treatment group in the previous 24 months and after the ADT

- Before-After Comparison

# Results
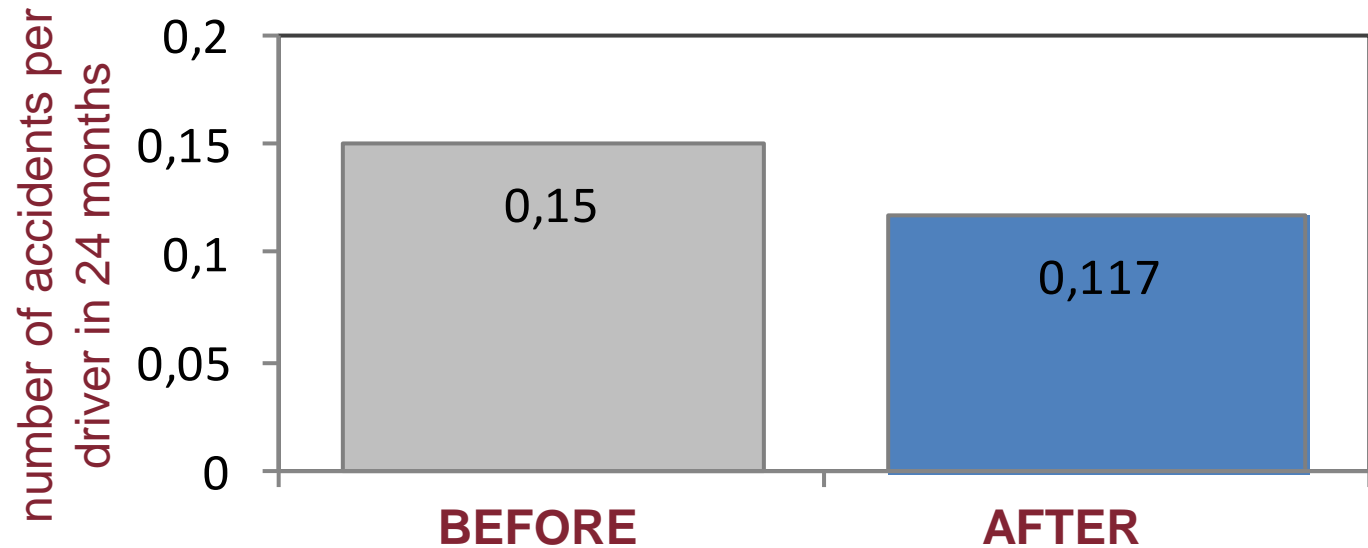


- Significant decrease in number of accidents after the ADT (t-*test for matched pairs*)
- Evaluation with limitations (e.g. confounders)

# Conclusions

- Results showed a higher propensity to commit traffic violations after attending an ADT course

- Research reinforces the idea that some forms of driver education and training can lead to overconfidence

- Results show the necessity to highlight in the training classes, not only aspects aimed at mastering traffic situations, but also goals and context of driving, the goals for life and exercises improving self-evaluation skills