

# Cycling collisions in Germany. Alcohol use, helmet use and head injuries

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# Background

- ✓ Cycling is becoming one of the most common modes of transportation
- ✓ Cyclists are among the most vulnerable road users
- ✓ Alcohol consumption is a risk factor for being involved in a crash and for the consequences of a crash
- ✓ Not many studies have analyzed the role of alcohol in bicycle crashes

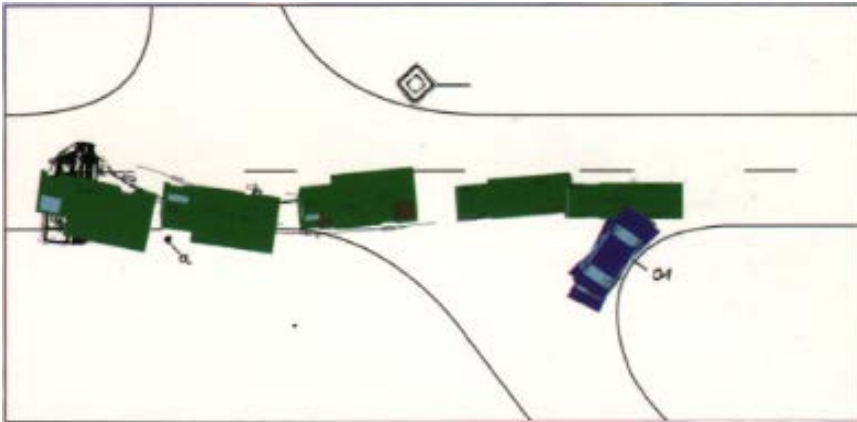
To evaluate which characteristics of cyclists and crashes are associated with alcohol consumption among bicycle riders who have been involved in a crash



# Methods

## German In Depth Accident Study (GIDAS)

- ✓ Data on accidents occurring in the areas of Hannover and Dresden are collected
- ✓ In-depth approach and reconstruction methodologies



# Methods

## Study areas

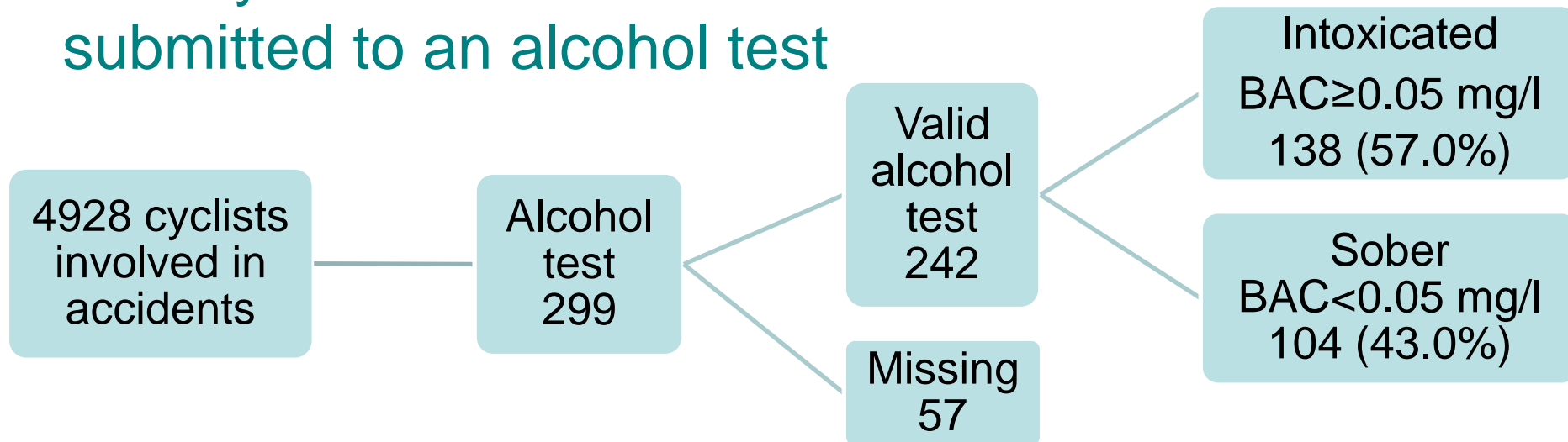


International cycling safety conference 2014  
November 18-19, Gothenburg, Sweden

# Methods

## Study population

All the bicycle riders involved in a road accident in the years 2000-2010 and submitted to an alcohol test



# Methods

## Injuries analysis

- ✓ AIS: Scientific Abbreviated Injury Scale

AIS code	Injury
0	Not injured
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Maximum

- ✓ Head injuries
- ✓ MAIS: Maximum AIS of all injuries of the body

Non injured  
MAIS=0

Injured  
MAIS=1-6

Light injured  
MAIS=1-2

Severe injured  
MAIS≥3<sub>7</sub>

# Methods

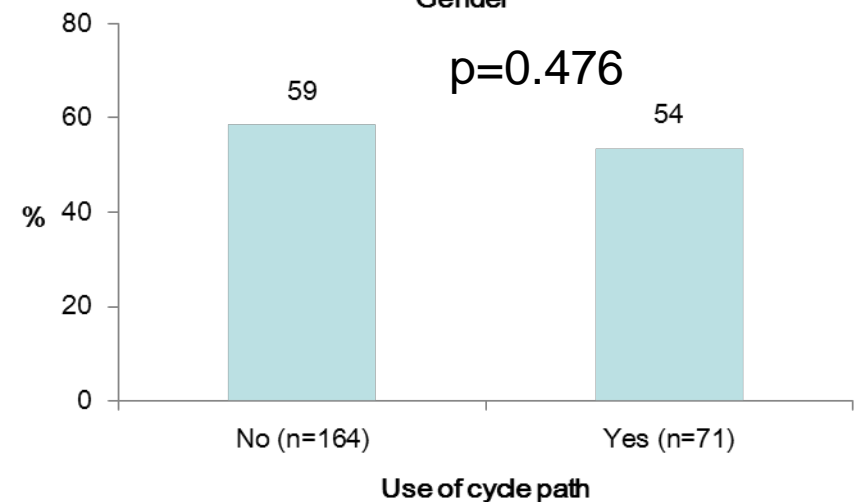
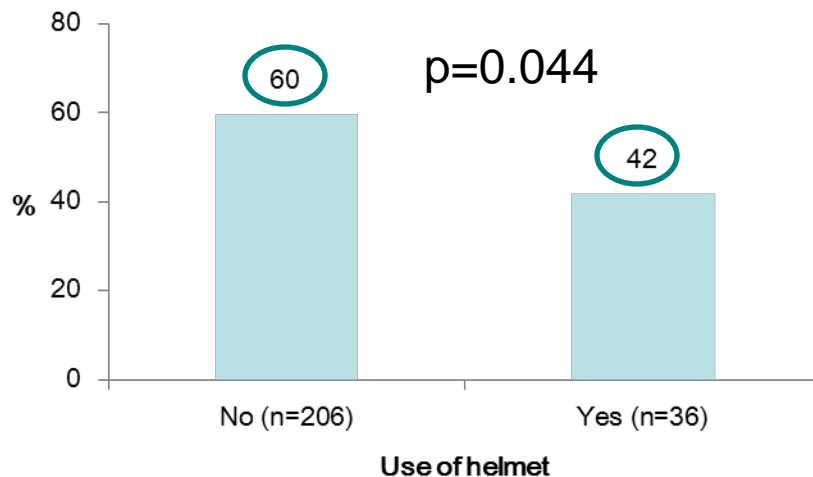
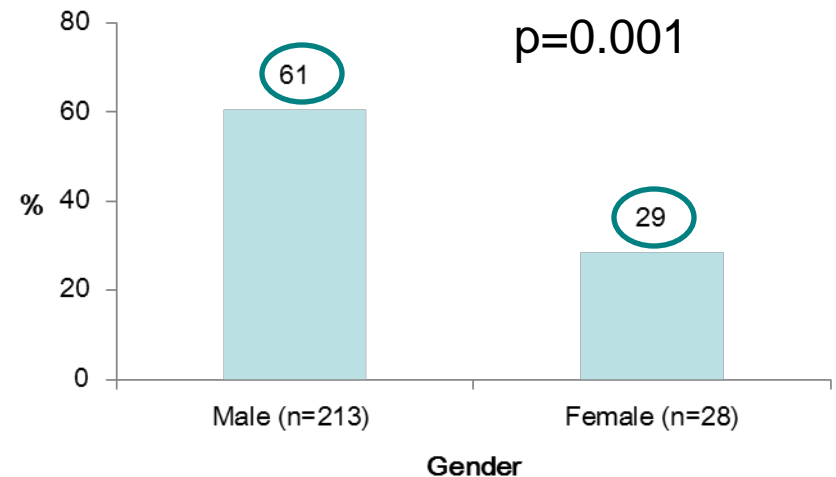
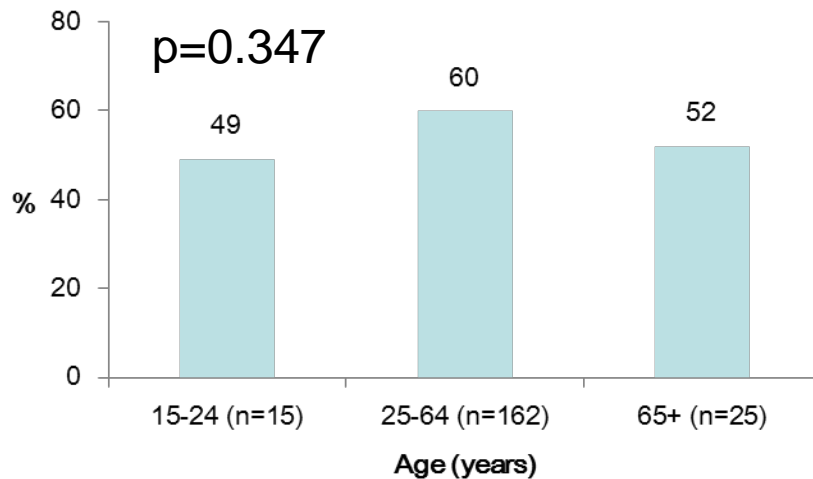
## Statistical analysis

- ✓ Characteristics description: absolute and relative frequencies
- ✓ Comparisons:  $\chi^2$  (or Fisher) test
- ✓ Association between BAC and the other characteristics: logistic regression



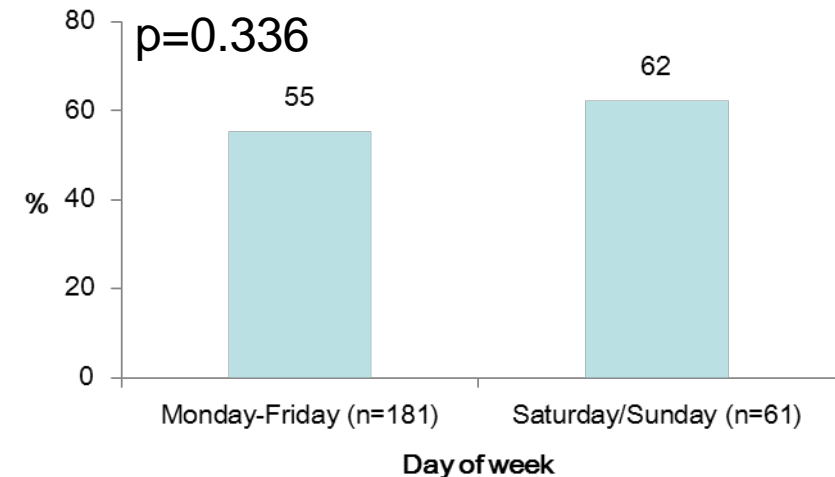
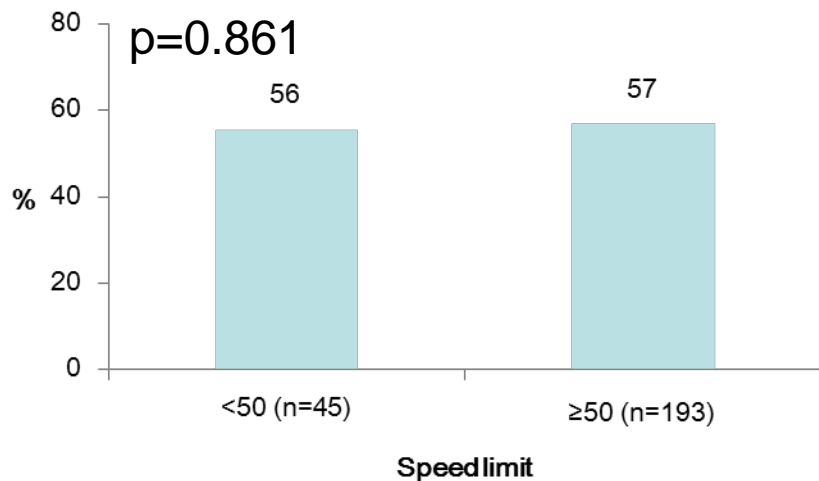
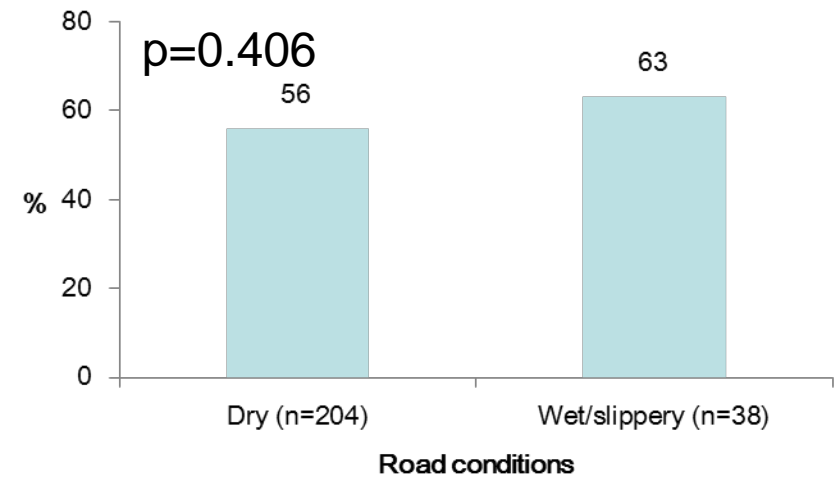
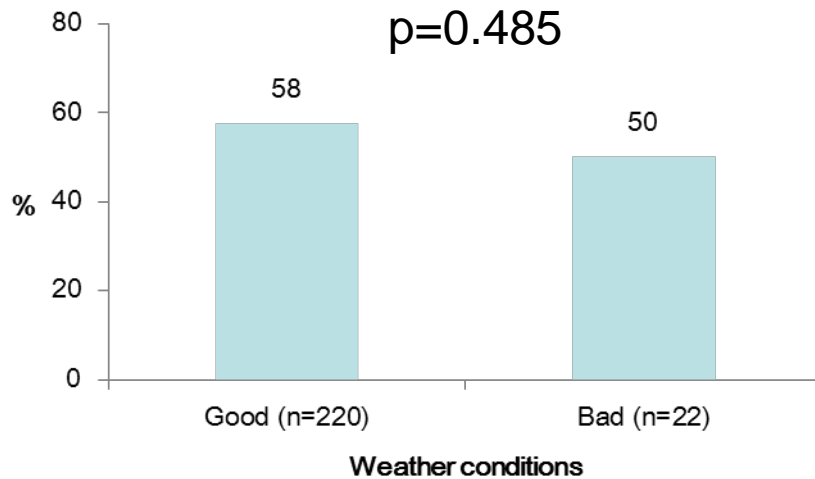
# Results

## Alcohol use by other characteristics



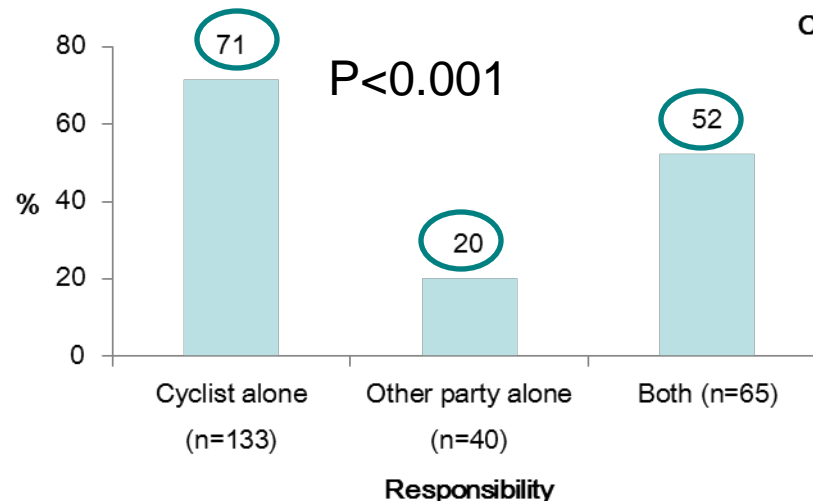
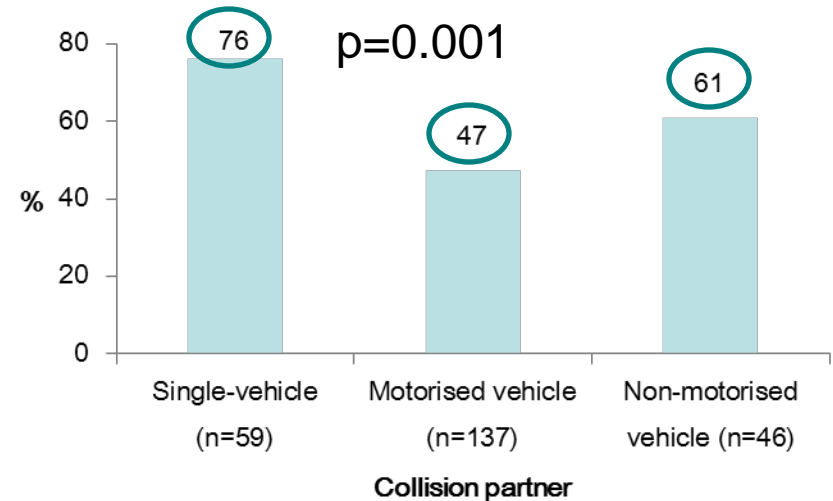
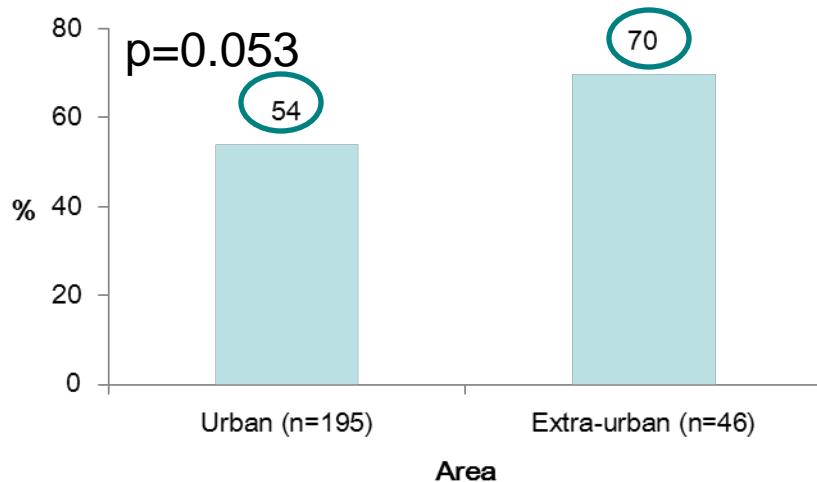
# Results

## Alcohol use by other characteristics



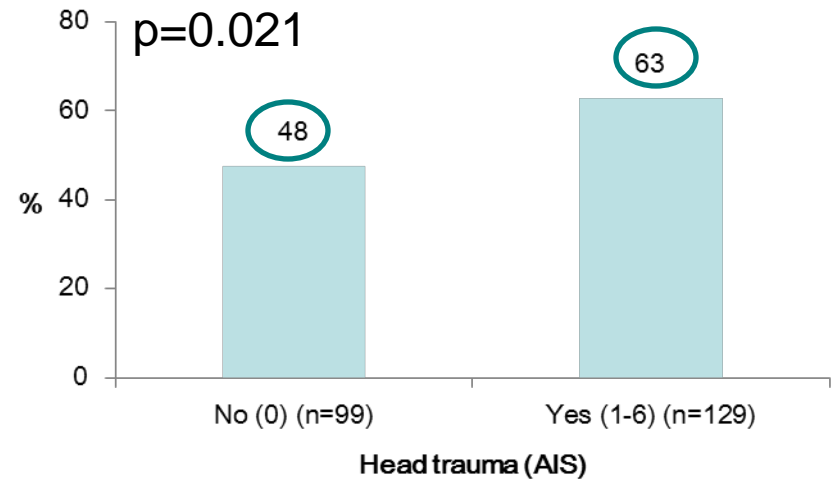
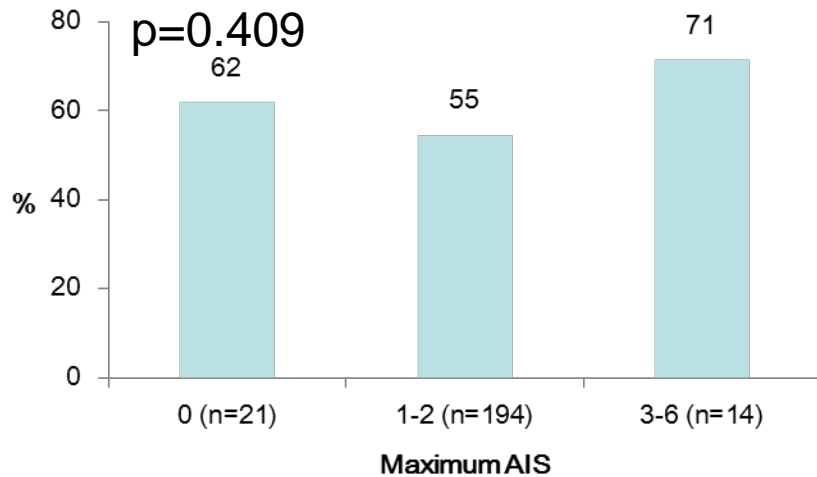
# Results

## Alcohol use by other characteristics



# Results

## Alcohol use by other characteristics



# Results

## Association BAC and other characteristics

Variable		OR	CI	
Use of helmet	No vs Yes	2.45	1.20	4.97
Age	25-64 vs 11-24	1.90	0.92	3.92
Age	65+ vs 11-24	0.83	0.30	2.31
Gender	Female vs Male	0.24	0.08	0.66
Fault	Cyclist vs Both	1.84	0.90	3.78
Fault	Other vs Both	0.12	0.05	0.34
Type of accident	Motorised vehicle vs single-vehicle	0.54	0.22	1.30
Type of accident	Non-motorised vehicle vs single-vehicle	0.57	0.21	1.52
Road conditions	Wet/slippy vs Dry	2.44	1.03	5.80

# Evidence

Alcohol is more common in:

- ✓ Non-helmeted cyclists
- ✓ Cyclists responsible for the accident
- ✓ Male riders
- ✓ Accidents occurred on road in bad conditions

# Conclusions

- ✓ Alcohol consume should be a concern also for bicycle riders
- ✓ Need to further examine alcohol in bicycle crashes
- ✓ Need to improve legislation, enforcement and testing
- ✓ Need to promote injury prevention

Thank you!

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