

Work package: *Video analysis, qualitative interviews and analysis using Tobii Pro Glasses 3 (eye-tracking glasses)*

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Disse ringene skal redde liv

Ny veioppmerking skal hjelpe motorsykkelførere å velge trygt spor gjennom krappe svinger.

Before and after road markings

- Tobii Pro Glasses 3
- Insta360
- Qualitative interviews



Q interviews

Experiences of curve riding and experimental road markings

Theme	Example question	What we can learn
Riding experience	How did you experience today's ride and the curves?	Riders' sense of comfort, uncertainty and challenge.
Awareness and interpretation	What stood out, and how did you interpret what you noticed?	Whether riders noticed the markings and how they understood them.
Perceived influence on riding	Did anything affect your speed, road position or gaze?	Reported adjustments and the reasons behind them.
Perceived safety and usefulness	What benefits or drawbacks do you see for motorcyclists?	Perceived safety benefits, concerns and acceptance of the measure.
Prior experience and improvements	How does this compare with previous rides, and what would you change?	The role of familiarity, suggestions for refinement and unexpected insights.

Research value

Interviews help explain gaze and riding patterns. They capture riders' accounts, not proof of safety effects.

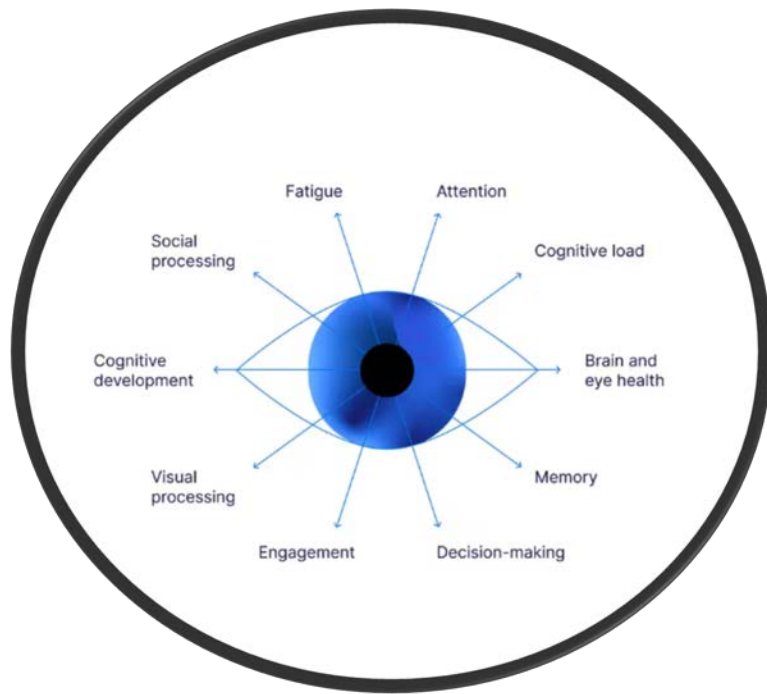


Insta360 camera

What you can investigate	How the video can contribute
Riding line through the curve	Observe road position at entry, throughout the curve and at exit
Response to road markings	Identify where the rider changes position
Oncoming traffic	Examine whether the riding line changes when other vehicles approach
Head movements and body position	Observe visible movements if the rider is in the frame
Specific events discussed in the interview	Show clips and ask: “What were you considering here?”

Eyetracking





How eye tracking works

At its center, eye tracking technology measures where someone is looking by capturing gaze data. By using eye trackers with cameras to detect eye movements, eye tracking reveals a range of core signals including:

- **Fixations:** when the eyes stop to focus.
- **Saccades:** quick movements between fixations.
- **Blinks:** temporary closing and reopening of the eyelids.
- **Pupillometry:** measurement of pupil size and response.

Eye tracking converts core signals into a data stream that can expose areas of human behavior often expressed subconsciously like decision-making, fatigue, attention, memory and much more.

Gaze behaviour in motorcycle riding

Fixations and saccades describe eye movements. Peripheral vision extends beyond the point of gaze.

Fixations



Holding the gaze

Gaze stays briefly on a point or area, allowing detailed visual information to be gathered.

Riders look towards the curve exit.

Key point for eye tracking

Saccades



Shifting the gaze

Rapid eye movements between fixations. Limited detail is taken in during the movement.

Riders shifts gaze from the road markings to the next curve.

Peripheral vision

Sensing the surroundings

Vision outside the point of gaze. Helps detect movement and changes, with less detail.

You notice the road edge while looking ahead through the curve.

No fixation does not necessarily mean the rider has not perceived something.

Before and after road marking

Gaze samples and participants, combined data from glasses A and B

GAZE SAMPLES

Median

93.5%

Before road marking

50 recordings · minimum 44% · maximum 99%

92%

After road marking

48 recordings · minimum 43% · maximum 99%

PARTICIPANTS

38

rode both before and after

48

before

46

after

Eyemovements and fixations



Areas of Interest (AOIs)



Analysis done with eye-tracking glasses and AOIs



AOI map for eye-tracking analysis

An example workflow for investigating gaze behaviour in motorcycle curves

SELECT AREAS OF INTEREST

Experimental markings

Numbers of fixation in the polygon

Furthest visible road

"Road vanishing point" in the guide

Oncoming vehicles

Optional AOI when traffic is present

MEASURE GAZE

Timing

First fixation after AOI visibility

Allocation

Fixation count and duration
Share of valid gaze samples

Sequence

Transitions between AOIs

EXPLORE RESEARCH QUESTIONS

Attention to markings

When and for how long?

Looking ahead

How does gaze shift towards the visible road ahead?

Traffic context

How does traffic affect gaze?

ALIGN WITH ROAD EVENTS

Marking visible

Marking start / end

Next curve visible

Ego- or the alosentric gaze

Illustrative event sequence. Compare equivalent road sections before and after marking, then interpret with video and interviews.

Thank you for your attention!

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