Using Perception to Manage Risk

Identifying Factors-Traps-Escapes

Since 1973

What do you see here?

Old Woman … Or Young Girl?
Hint: The old woman's nose is the young girl's chin.

SMART

Perception for Responding

PERCEPTION → *RESPOND* → MORE TIME & SPACE

RISKY

Perception for Reacting

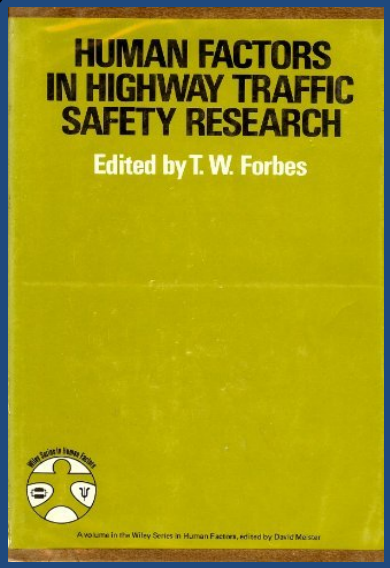
PERCEPTION → *REACT* → BRAKE OR SWERVE

Literature Review

What assurance do we have that more skilled drivers will use their skills to avoid accidents, rather than slice the margin of safety more closely?

T. J. Forbes, Editor

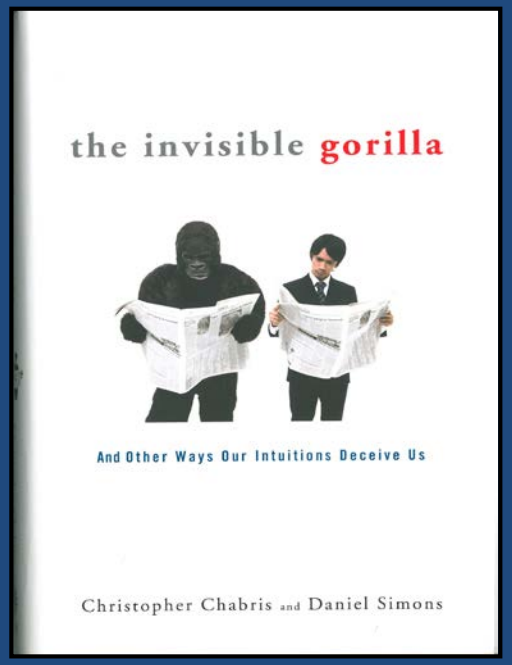
Human Factors in Highway Traffic Safety Research



Literature Review

The problem is not with
the limitations on motor control,
but with limitations on
attention resources and awareness.

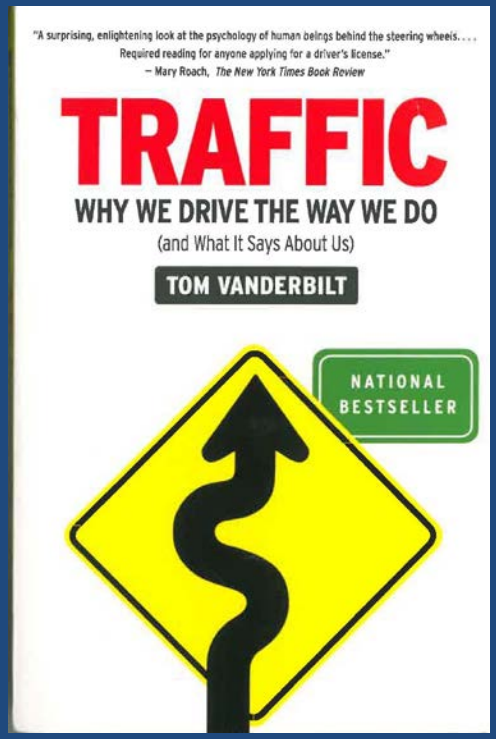
Chabris and Simons
the invisible gorilla



Literature Review

Not only was the driver unaware of the real hazards he was subjecting himself and others to in the way he was driving, he was not even aware that he was unaware.

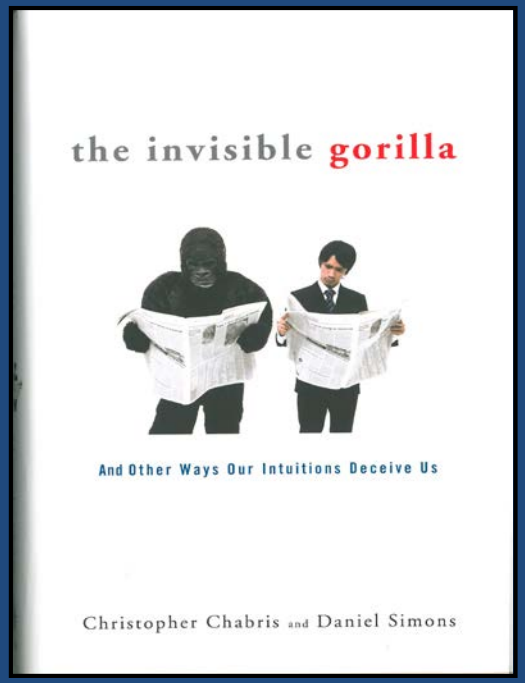
Tom Vanderbilt
Traffic: Why We Drive the Way We Do



Literature Review

We truly are arguing that directing our eyes at something does not guarantee that we will consciously see it.

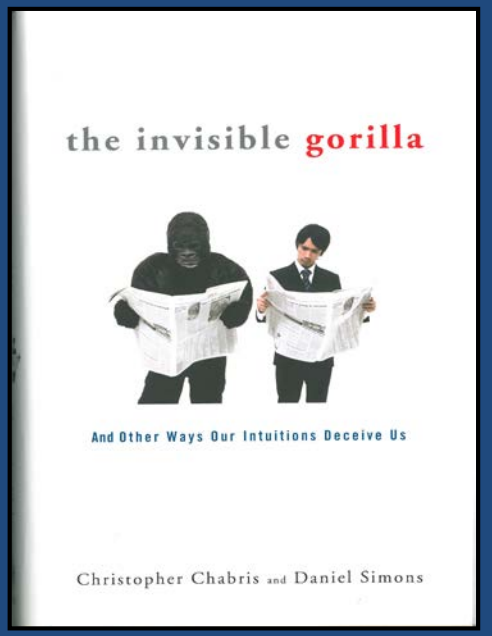
Chabris and Simons
the invisible gorilla



Literature Review

…we get into more accidents when we talk on a phone while driving both because our attention is limited and because we don't notice this limitation while it's happening.

Chabris and Simons
the invisible gorilla

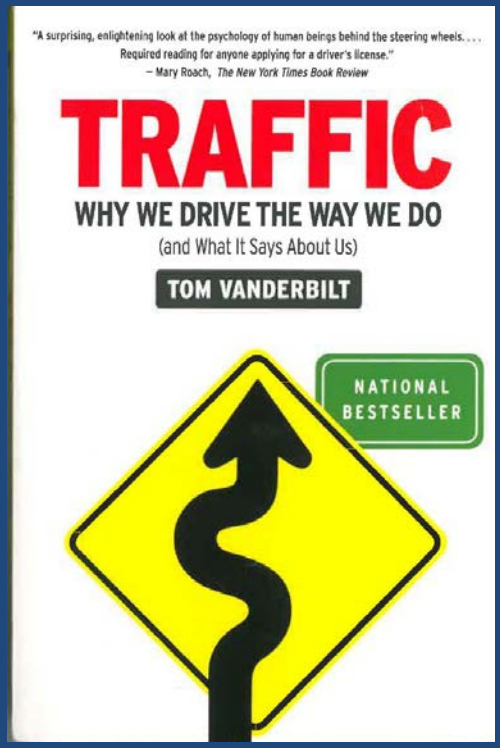


Literature Review

But keeping one's eyes on the road is not necessarily the same thing as keeping one's mind on the road.

Tom Vanderbilt

Traffic: Why We Drive the Way We Do

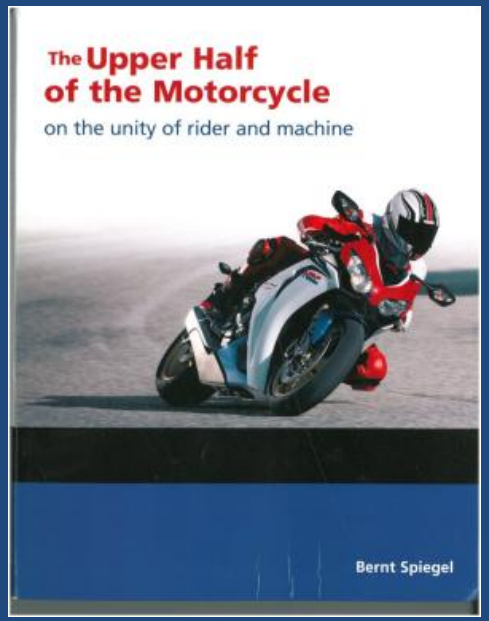


Literature Review

Gazing far ahead does not mean staring *fixedly* off as far as possible into the distance. Instead, it means letting the focus swing easily between far and near, to "read" the road.

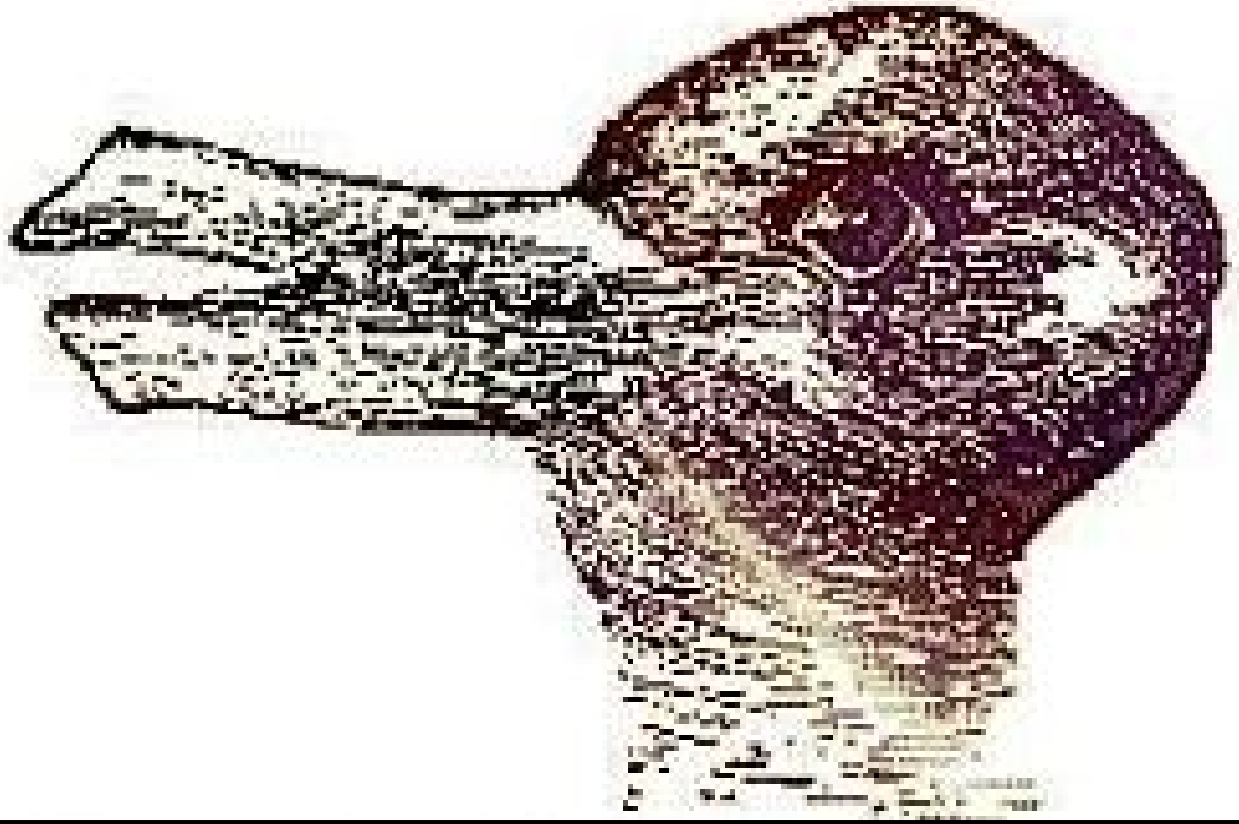
Bernt Spiegel

The Upper Half of the Motorcycle

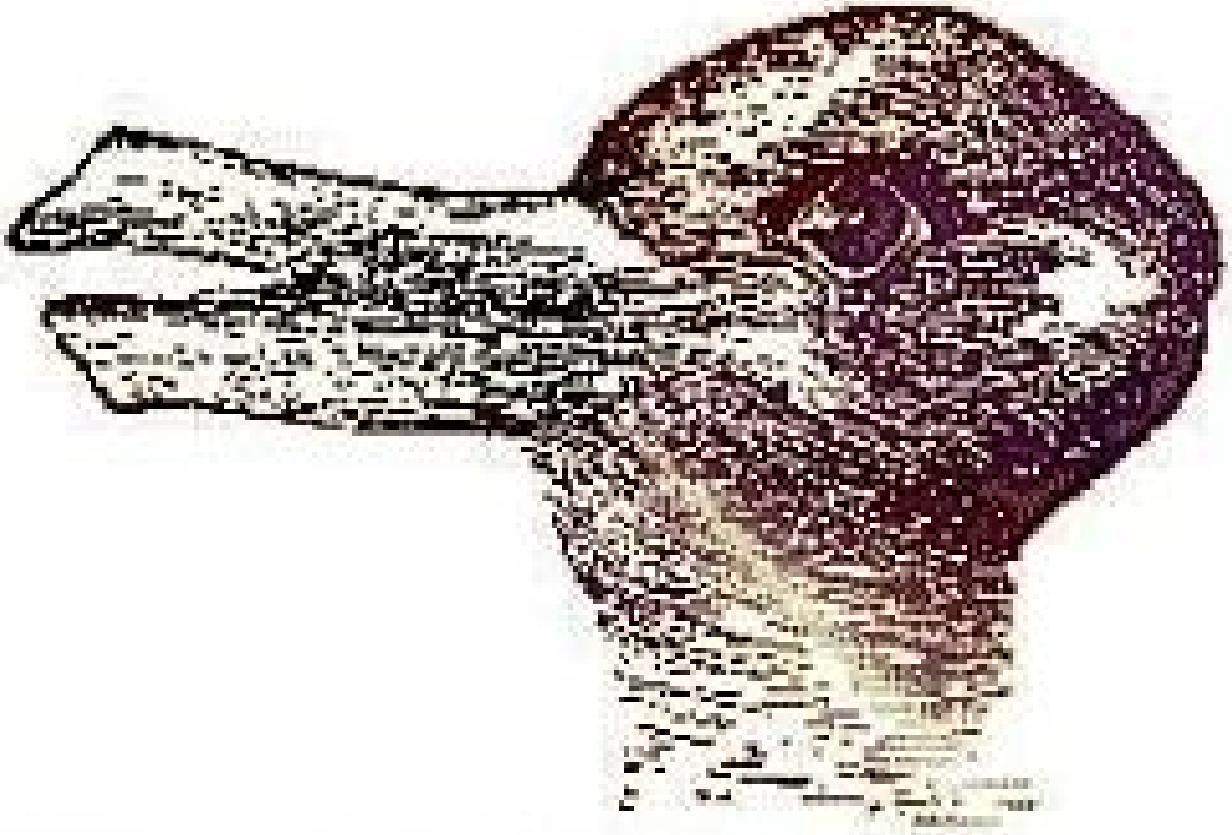


Agree or Disagree?

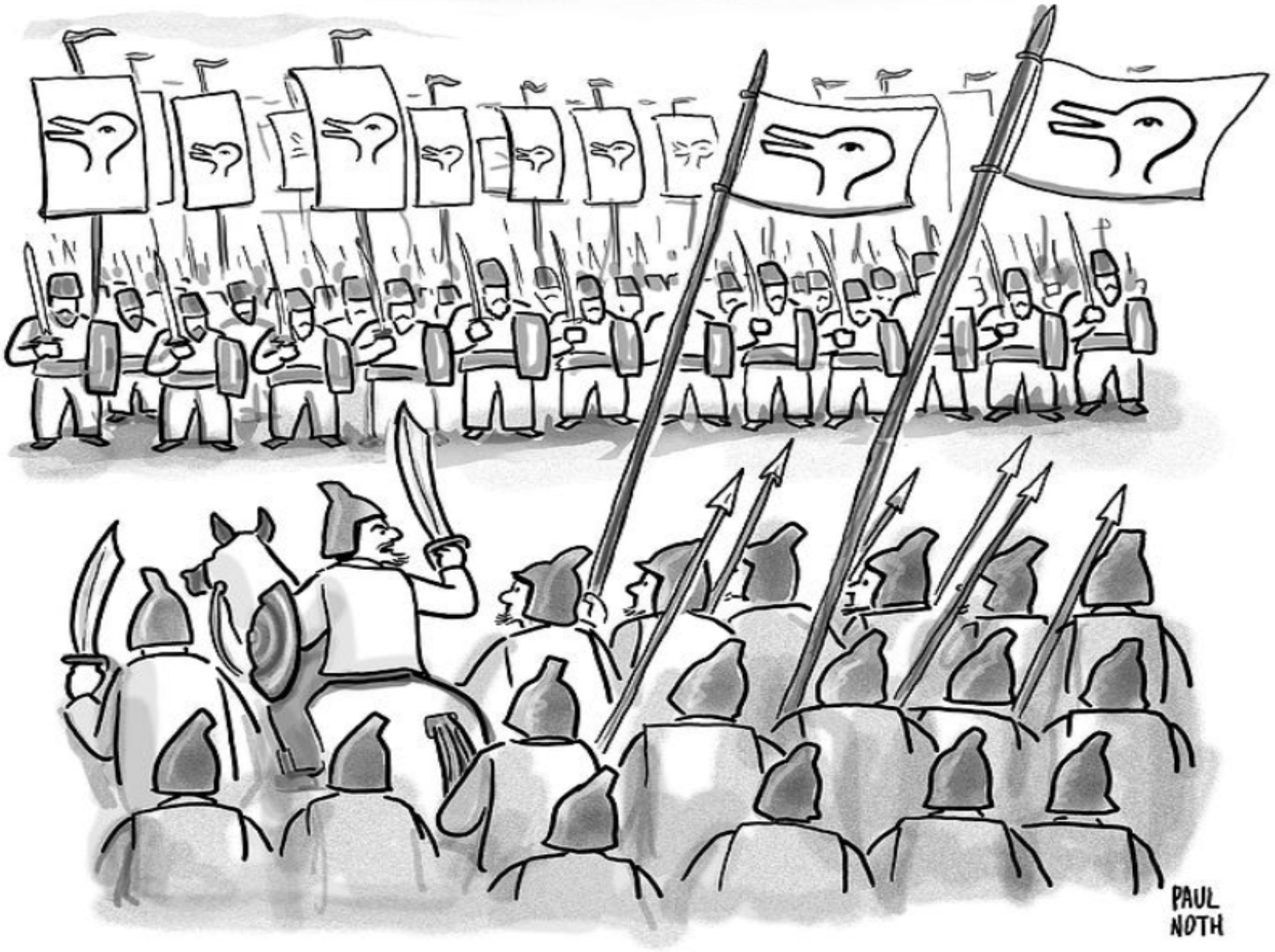
Our eyes don’t necessarily tell our brain what we see; rather our brain tells our eyes what to look for.



What do you see here?



A Rabbit … Or a Duck?
Hint: The duck is looking left; the rabbit is looking right.



"There can be no peace until they renounce their Rabbit God and accept our Duck God."

In your groups,

determine the best answer.

What do you see?

You are on your motorcycle and observe this...

#1


CENTER
LANE
ONLY

1) The center lane on this road is used for:

a. Passing vehicles.

b. Making left turns from both directions.

c. Protected left turns.

1) The center lane on this road is used for:

a. Passing vehicles.

b. Making left turns from both directions.

c. Protected left turns.


CENTER
LANE
ONLY

#2

2) **The trap here is:**

a. **A pedestrian in the crosswalk.**

b. **The van is blocking your view.**

c. **Oncoming car is poised to turn left in front of you.**

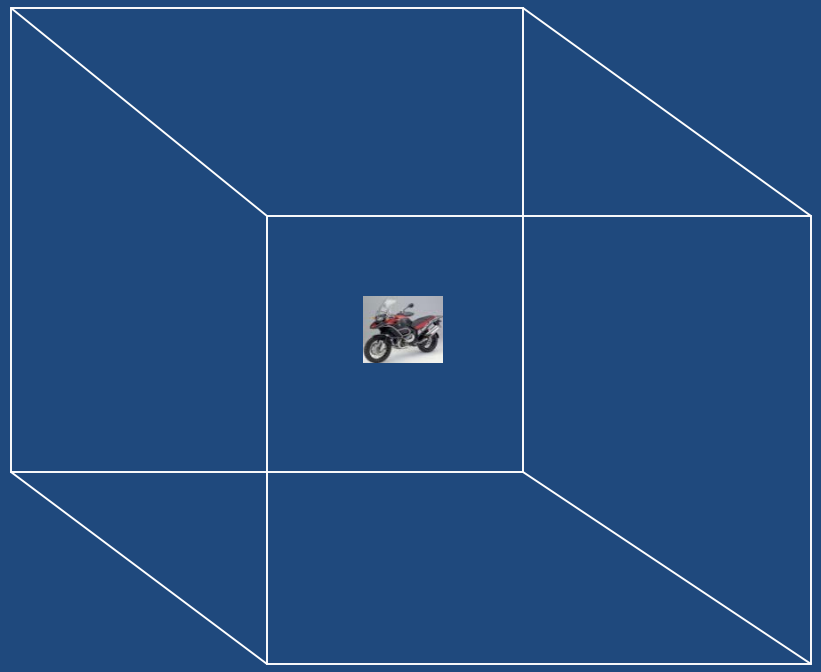
2) The trap here is:

a. A pedestrian in the crosswalk.

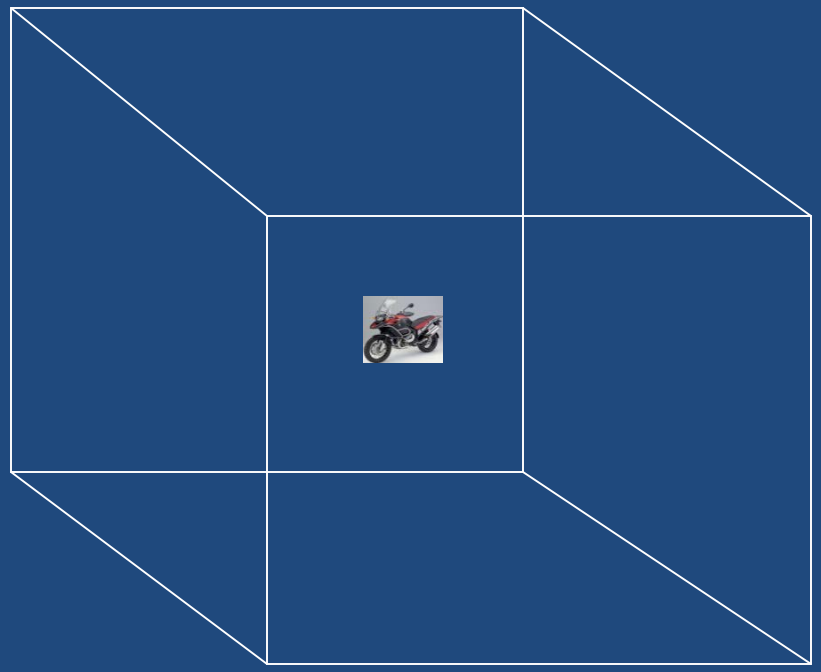
b. The van is blocking your view.

c. Oncoming car is poised to turn left in front of you.

What side of the cube is the motorcycle on?

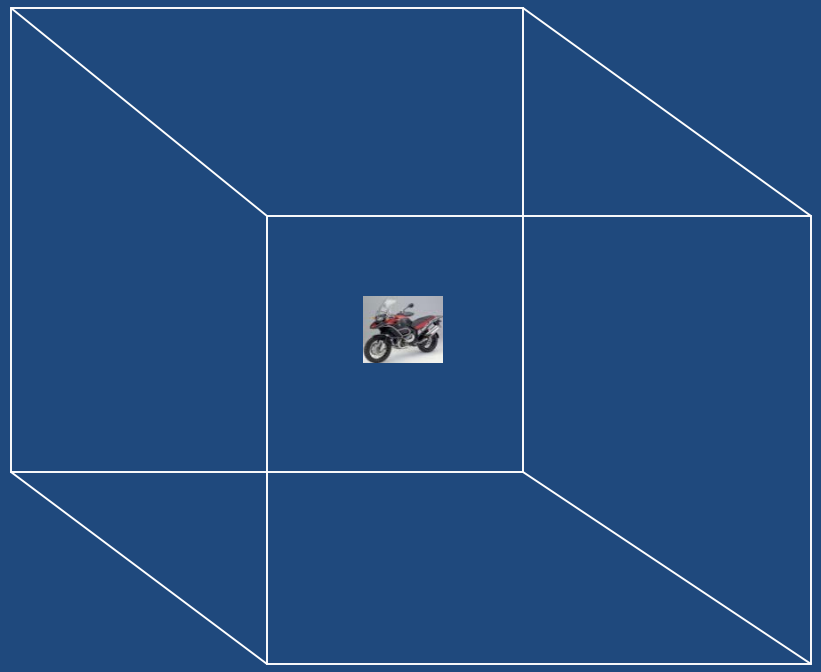


Front lower right surface?



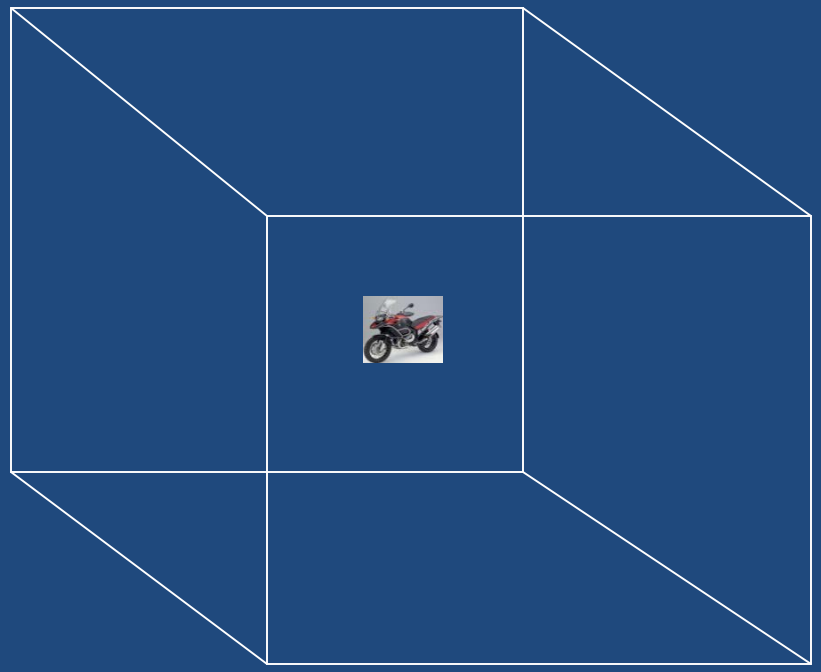
Front lower right surface?

Back upper left surface?



Front lower right surface?

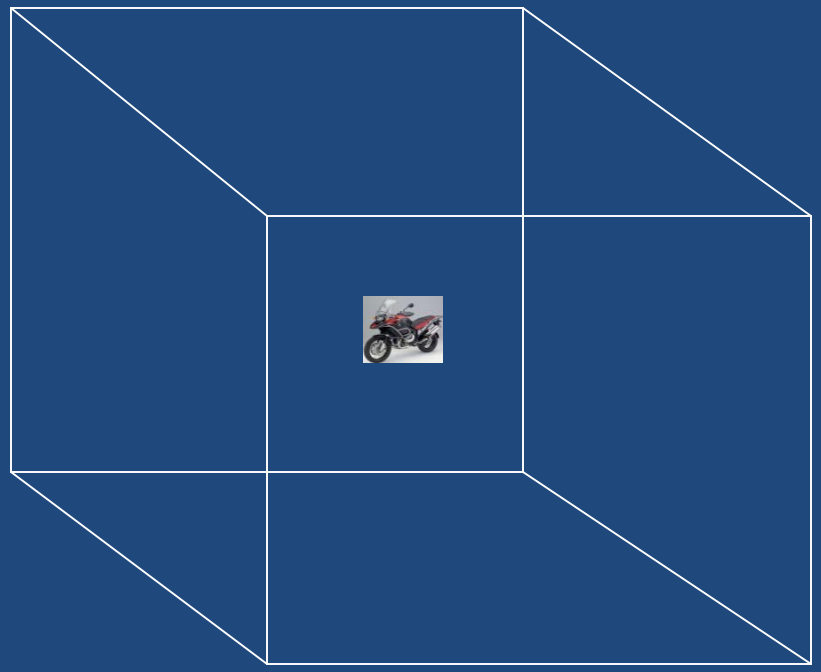
Back upper left surface?



Front upper left surface?

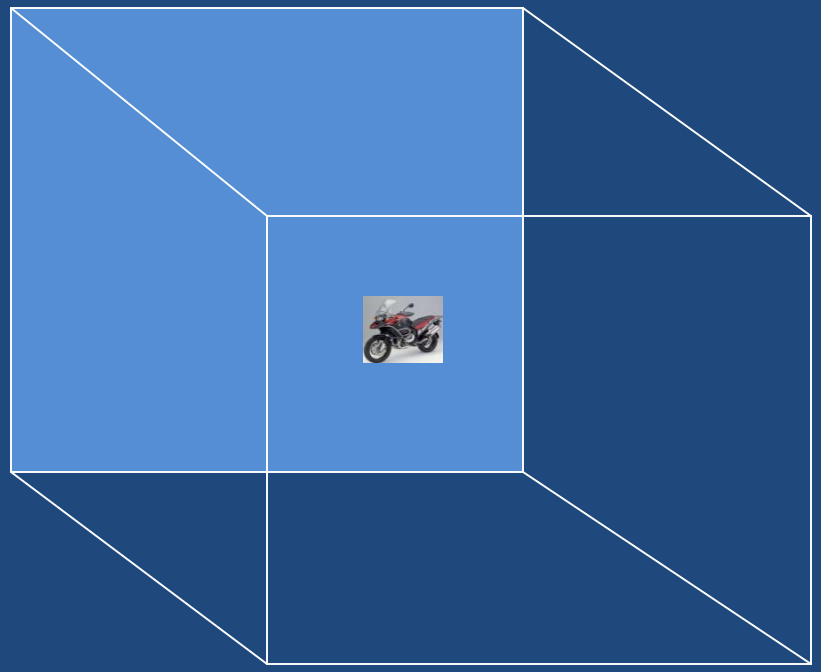
Front lower right surface?

Back upper left surface?

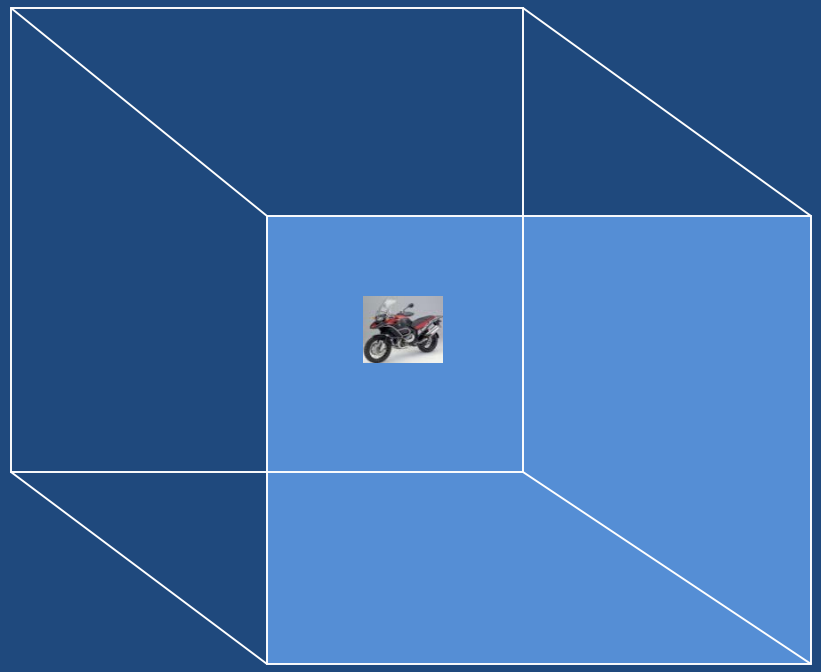


Front upper left surface?

Back lower right surface?



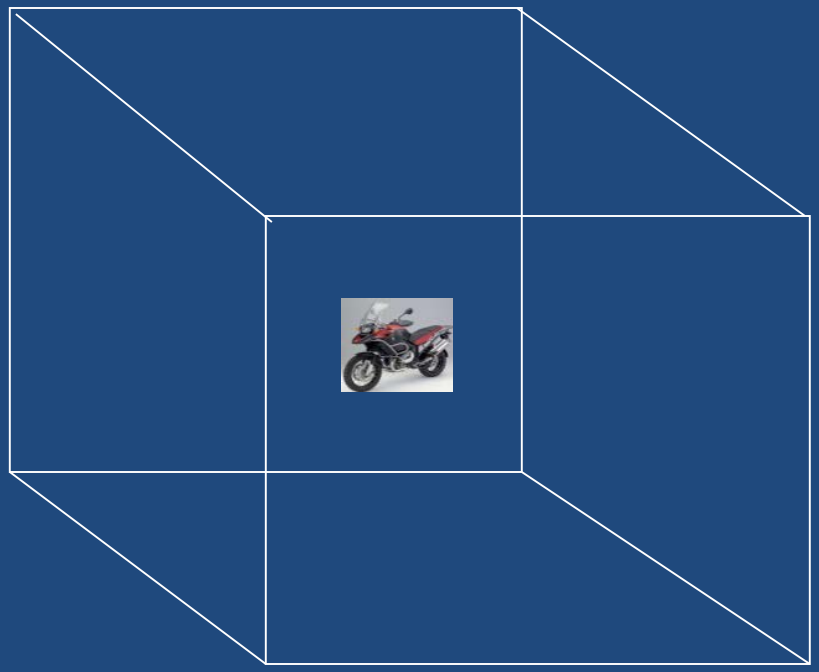
If the shaded area is the front of the cube, it can be seen on the front lower right surface or the back upper left surface.



If the shaded area is the front of the cube, it can be seen on the front upper left surface or the back lower right surface.

Conclusion

**Looking at the same image,
one person may not see a certain location when another person perceives it clearly.**



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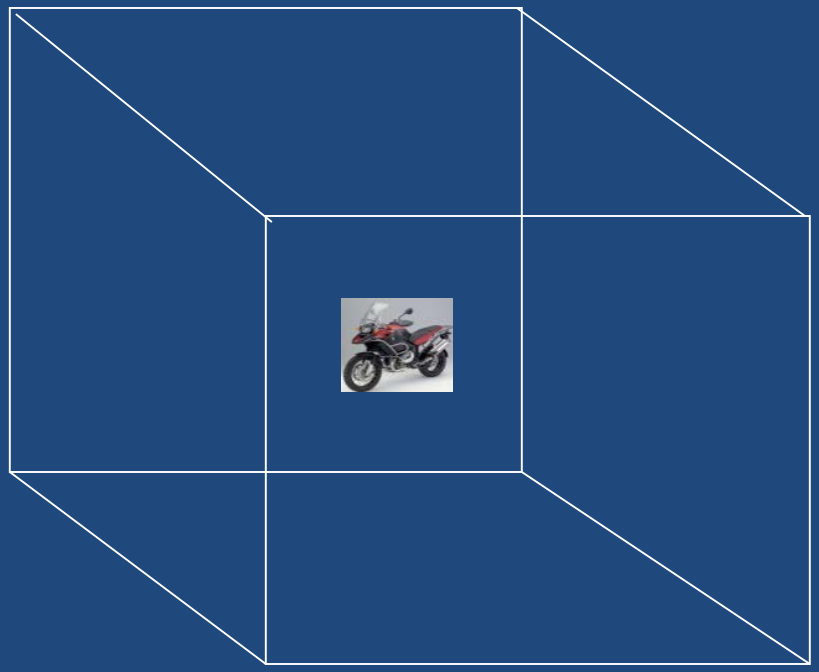
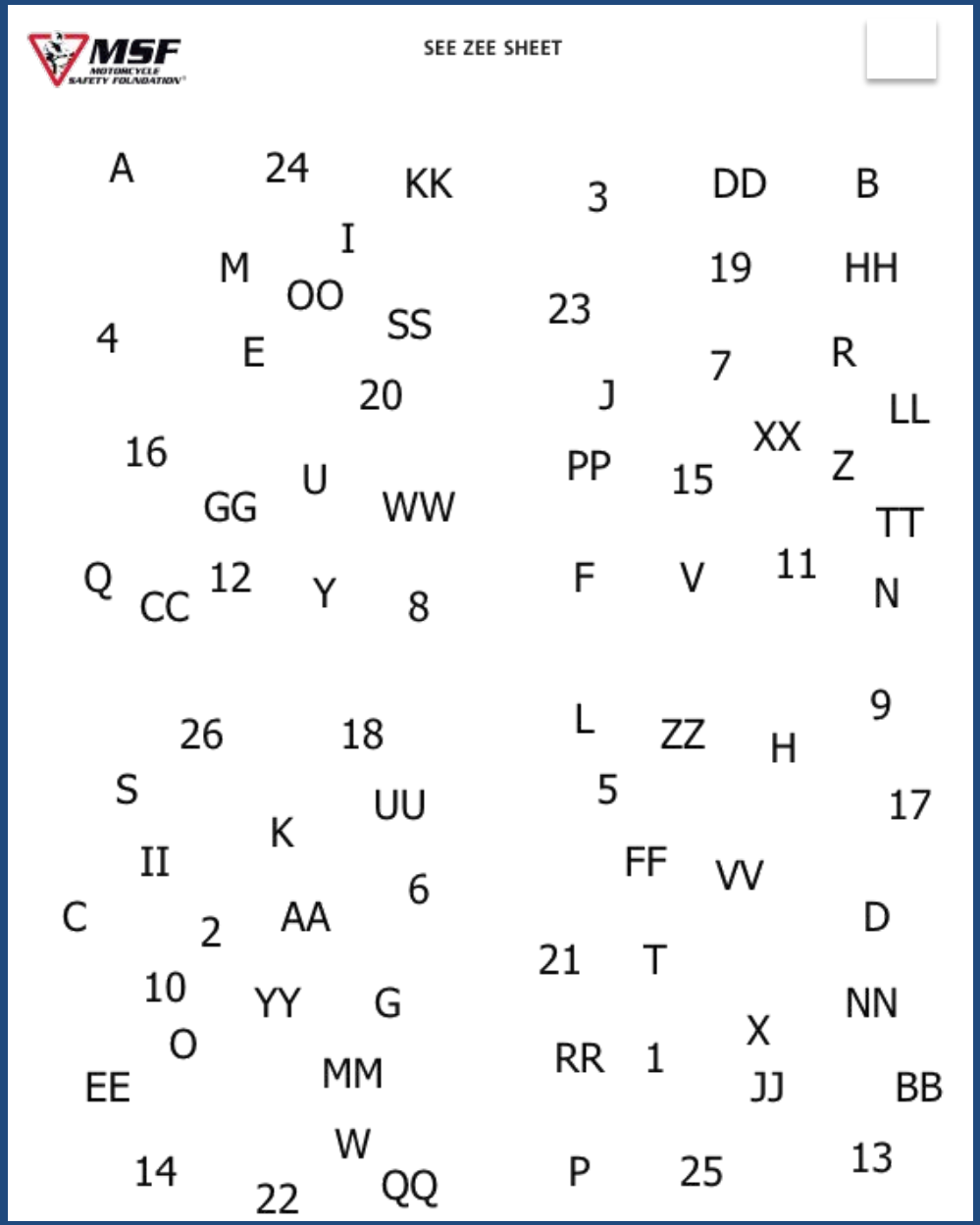


**For an identical traffic situation,
one rider may not see a problem when another rider perceives a collision trap.**

See Zee Sheet



Ready?

Ready?

Go!

Stop: How far did you get?

Notice a pattern?

Conclusion

We do better if we:

1. Have an organized strategy.
2. Search aggressively.
3. Pay attention to what is important.

Central Vision

vs.

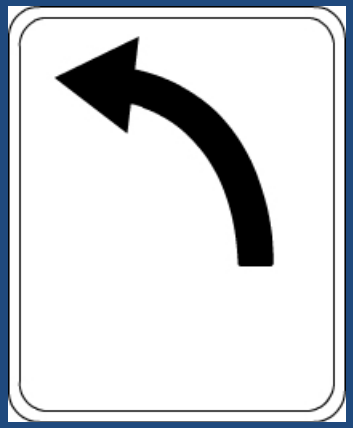
Peripheral Vision

Let’s see how fast our eyes and mind can work...

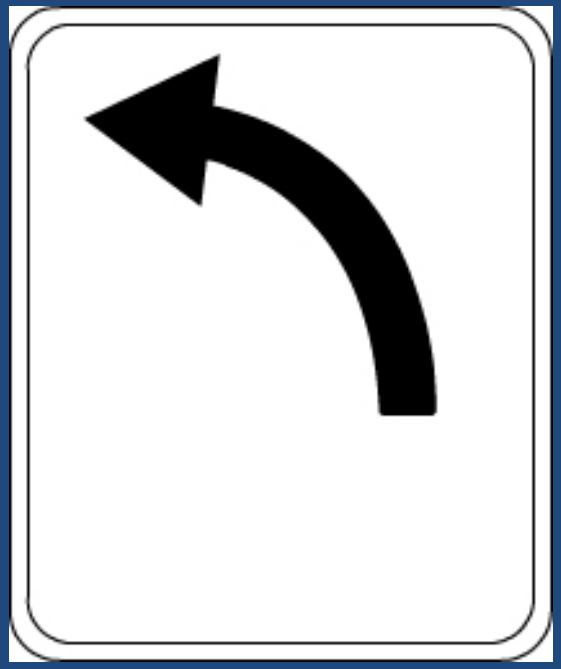
In your groups, see if you agree on the meaning of these signs.

They will appear for only a fraction of a second.

1 Sign



Left Turn Only



Next Sign

Sharp Left Turn

Next Sign

No Right Turn

Next Sign

Reverse Turns

Next Sign

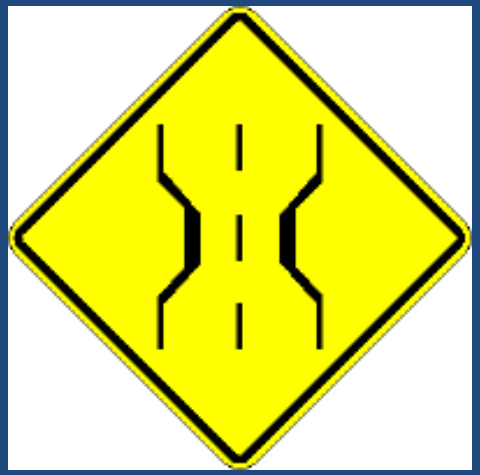
Flagger Ahead

2 signs

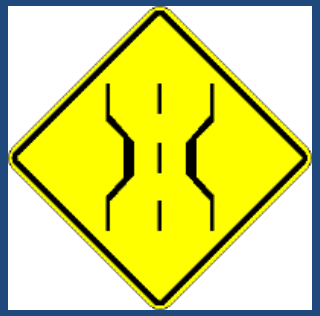
Winding Road

No U-turn

Next 2 signs



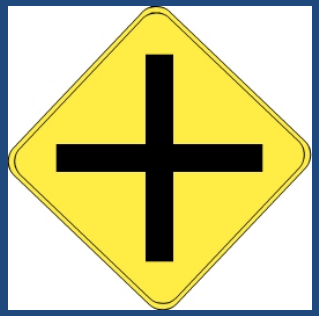
Sharp Right Turn



Narrow Bridge

Next 2 signs

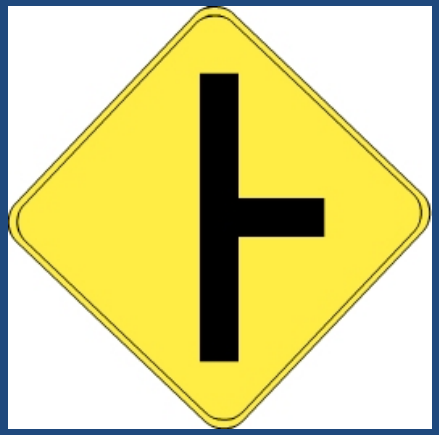

ONLY



Intersection Ahead

Double Right Turn

Next 2 signs




35

Side Road Ahead

Tip-over Advisory Speed

Last 2 signs

Divided Highway Ends

Lane Added

Conclusion

See how quickly the eyes and mind can work if attention and safety are conscious priorities!

Motorcycle Safety Foundation
Factors-Traps-Escapes Program: Rider Perception Fact Sheet

1. Having good visual perception is to see and understand accurately. It is identifying clues in traffic that could affect speed, lane position or path of travel.
2. Safe riding is a skill more of the eyes and mind (mental) than the hands and feet (physical), but having good physical skills is important.
3. Having 20/20 visual acuity is important, but since the eyes cannot perceive everything at once, we have to choose what is important.
4. Our central vision is merely a three-degree cone, and typical peripheral vision is around 180 degrees.
5. Besides central vision and peripheral vision, there is useful field of view (UFOV). Research shows that people with good UFOV do not crash as often, and that UFOV deteriorates with age.
6. Key aspects of our vision:
    a. Visual Acuity (clarity).
    b. Field of Vision (ability to see to the sides while focusing straight ahead).
    c. Depth Perception (ability to judge distances).
    d. Night Vision (ability to see clearly at night).
    e. Color Vision (ability to see colors accurately).
7. Using the eyes well when riding means to search using a sweeping far-and-near and side-to-side pattern.
8. Target fixation (focusing on one object or area for more than a second or so) may be harmful.
9. Perception improves with knowledge and experience, and influenced by our values and priorities.
10. People tend to see what they expect to see.
11. *Inattentional blindness* occurs when a person fails to see what should have been plainly visible, and occurs with factors such as low conspicuity, divided attention, high expectation of seeing something specifically, and low arousal for seeing something in particular.
12. Factors can be put into four search categories:
    a. Traffic controls and roadway features.
    b. Highway users.
    c. Surface conditions.

Factors – Traps – Escapes

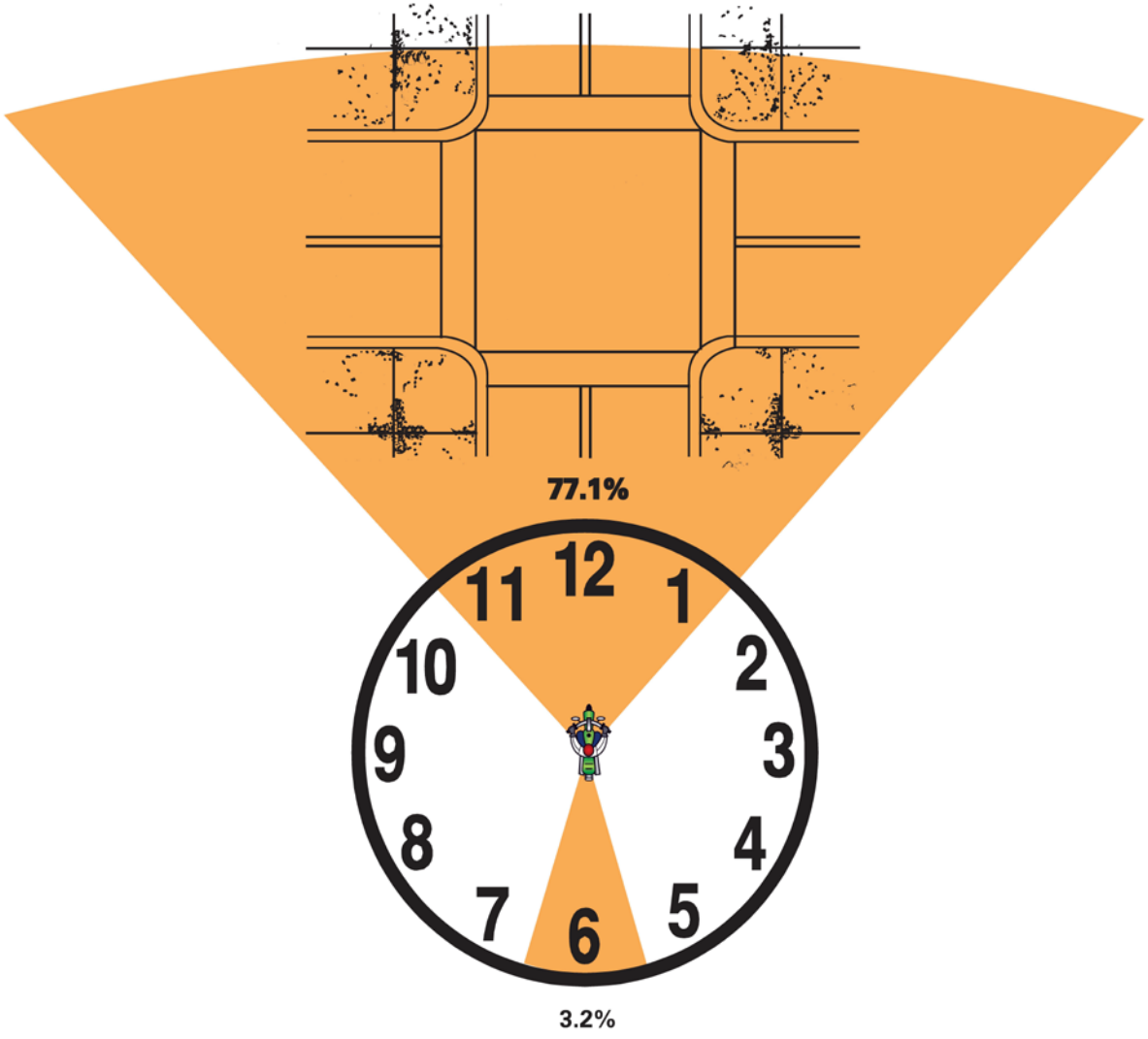
SEEing Clues as We Ride

Four Search Categories:

- Traffic Controls & Roadway Features
- Highway Users
- Surface Conditions
- Escape Paths

CLOCK FACE OF FACTORS

77.1 vs 3.2%



Factors – Traps – Escapes

1. Check the 4-second urgent path areas.
2. Speed is typical based on the situation.
3. Areas behind and blind spots are not shown.
4. Dashed highlights indicate a blocked view of potential factors.
5. The three escape paths are generally:
   - Directly ahead.
   - To the right.
   - To the left.
6. Not always shown is a highlight for an escape path directly in front (per total stopping distance).

C-2

Project Gateway

C-3

Project Gateway


ELEVATION
6000 FT

C-4

Project Gateway

C-5

Project Gateway

I-2

Project Gateway


15 NORTH
Cheyenne Ave
15 SOUTH
RIGHT LANE
MUST
TURN RIGHT
4X4

I-8

Project Gateway


SPEED
LIMIT
35
ANY TIME
ONE WAY
South
15
North
15

BI-7

Project Gateway

Using Perception to Manage Risk

Identifying Factors-Traps-Escapes

Since 1973