



**4th International Conference on
Road Safety and Simulation
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***Road Safety Audit: A comparative Review of Current
Guidelines and Designers' Approach***

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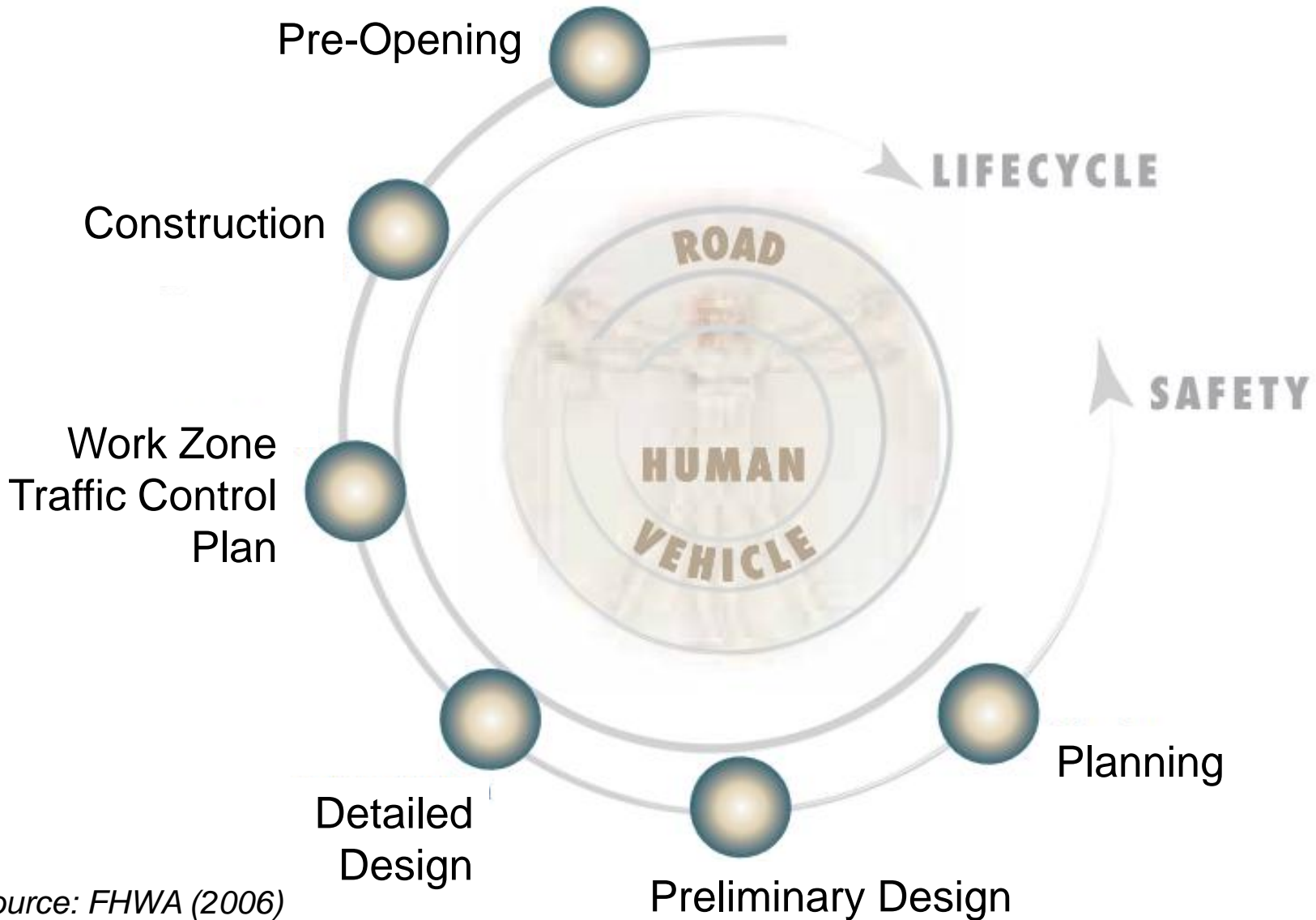
Presentation outline

- Definition of a Road Safety Audit (RSA)
- How RSAs were launched and evolved in the UK, Australia and the USA; the corresponding Guidelines published.
- Comparative Review of three Guidelines; description of the criteria used for comparison.
- RSAs in Greece:
 - Application, legislation, awareness
 - Greek Designers' Approach to RSA; description of the survey carried out
 - Results obtained from:
 - Descriptive statistical analysis
 - Exploratory Factor Analysis
- Conclusions

Road Safety Audit

- A proactive measure for preventing road crashes.
- A formal and systematic examination of a future road or traffic project or an existing road
- Conducted by a qualified team, independent of the design team.
- It reports on the project's crash potential and safety performance (Austroads, 2009) (IHT, 2008).
- Not an assessment of the technical competence of a design
- Considers the safety of all road users –not only motorized traffic– with a focus on the most vulnerable user groups.

Opportunities for an RSA to be conducted within the design, construction and management process



RSA launch and progress

1980: RSAs are introduced as a process in the UK

Reason: poor safety performance of roads that were built to what were then “modern” technical standards.

1990: RSAs are conducted in Australia and New Zealand after several exchanges and visits of road safety engineers in the UK.

1996: FHWA sponsors a scanning tour in Australia and New Zealand to get an insight into RSAs.

Guidelines published

- UK: IHT (1990, 1996, 2008)
- Australia: Austroads (1994, 2002, 2009)
- USA: FHWA (2006)

Comparative Review of RSA Guidelines

Consensus regarding some basic elements of RSA:

- Formal examination, systematic assessment
- Must address the safety issues and performance of a road / not a technical check of the design.
- Independency of audit team from the designer
- Considering the needs of all road users

Differences in the approach of each guide:

- FHWA Guide focuses more on the audit process
- Austroads Guide focuses on safety principles
- IHT: both policy related guidance & safety principles

Comparative Review/Five criteria

I. The defining philosophy of each guide

IHT: “prevention is better than cure”

FHWA: road authorities must “make the RSA work for them”

Austrroads: based on Safe System Approach; also the quality assurance principle: “getting it right the first time”

II. Vulnerable road users

All guidelines: focusing only on motorized traffic should be avoided (all users should be taken into account).

Austrroads: provides more detailed guidance for the needs and limitations of vulnerable user groups (old road users, motorcyclists, pedestrians). Beneficial for auditors and designers.

Comparative Review/Five Criteria

III. Relation of each guide with road design standards.

Designing to standards does not guarantee a safe design

Austrroads: “standards are an important starting point for any design”

FHWA: “in an RSA, standards compliance should be checked if non-compliance is a relevant road safety issue”

UK: RSA has been integrated in the DMRB (along with the design and other standards for Roads)

IV. Each guide’s approach to RSA “checklists”.

All guidelines: checklists are a **memory aid**; use critically; not as ‘tick sheets’.

Austrroads & IHT: **general and detailed** checklists provided

FHWA: only general ‘**prompt lists**’ provided

Comparative Review/Five Criteria

V. The benefits of the RSA process to the designer.

Austrroads:

- **Feeding back** the experience/knowledge gained from each audit into the existing project; other projects; to standards committees; **within the profession.**
- Explicit advice: “**checklists can be used by designers too**”.

FHWA:

- Last step of process: “**Incorporate RSA findings into the project**”.
- Making sure that the audit is a “**learning experience**” for all parties

IHT:

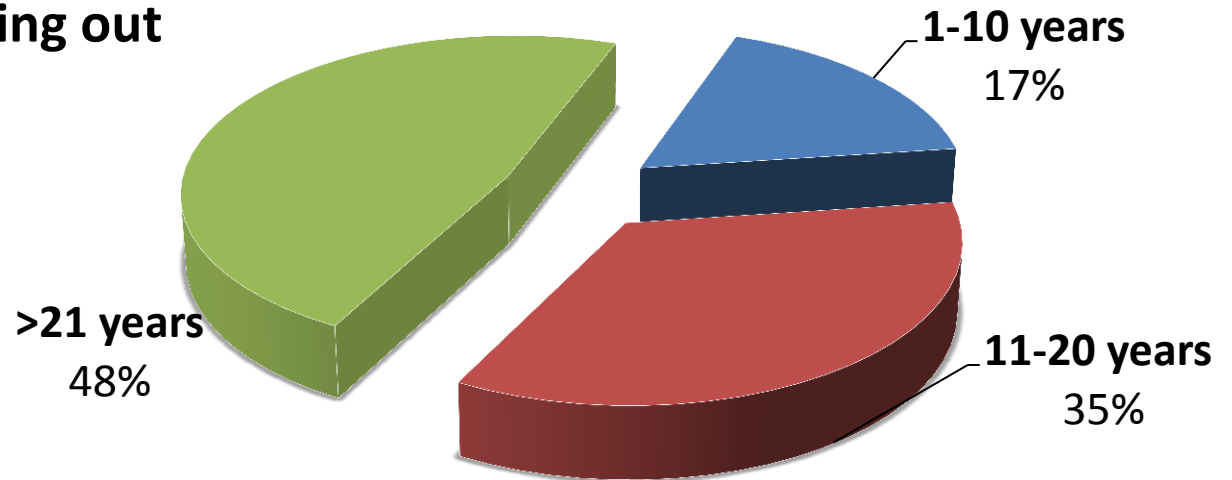
- Designers must have **access to RSAs conducted in the past.**
- As more and more projects of a designer are being audited, the less safety issues are encountered. “**Designers anticipate safety issues and design in safety features from the start**”.

Greek designers' Approach to RSA

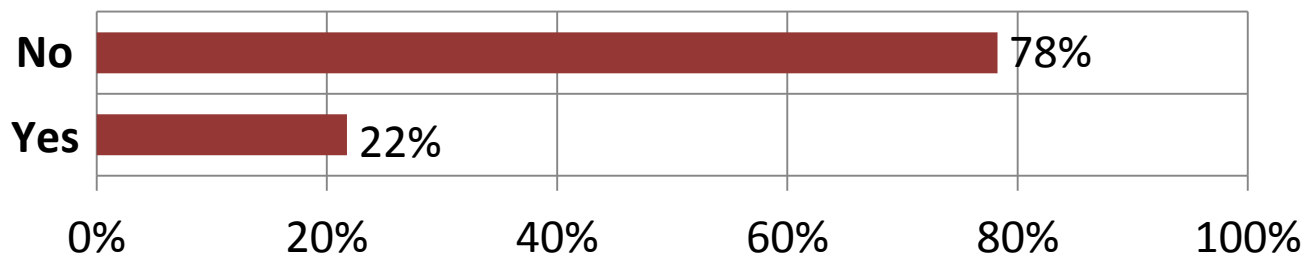
- Description of the survey carried out
 - **Sample:** 23 highway designers
 - **Method:** personal interviews with designers
 - **Data collected** in March-May 2011 (i.e. before the formal integration of the EU Directive 2008/96/EC into national law).
- **Limitations**
 - Small sample size (but also small population size).
 - Transitional period for the RSA in Greece: not a well established practice at that time, designers sometimes not properly informed of the process.

Descriptive Survey Results/ Characteristics

Experience in carrying out road designs

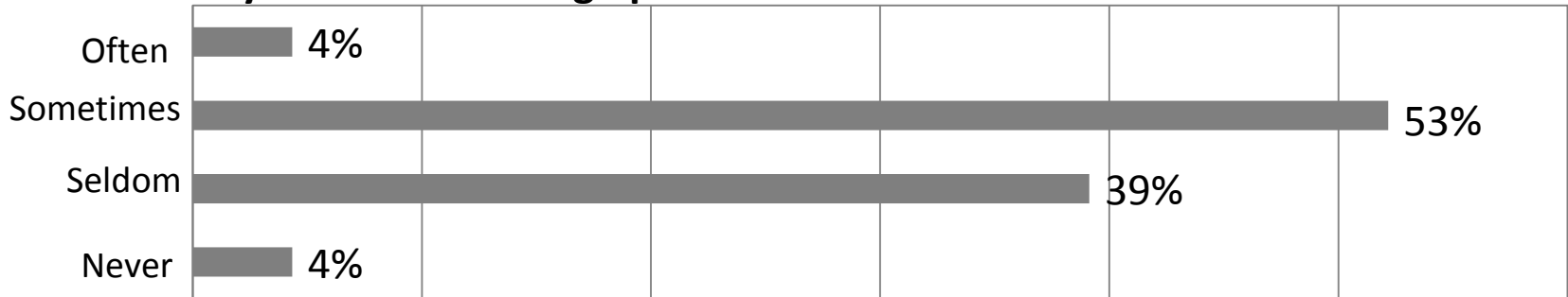


Have you ever taken part in a Road Safety Audit, as an Audit Team member?

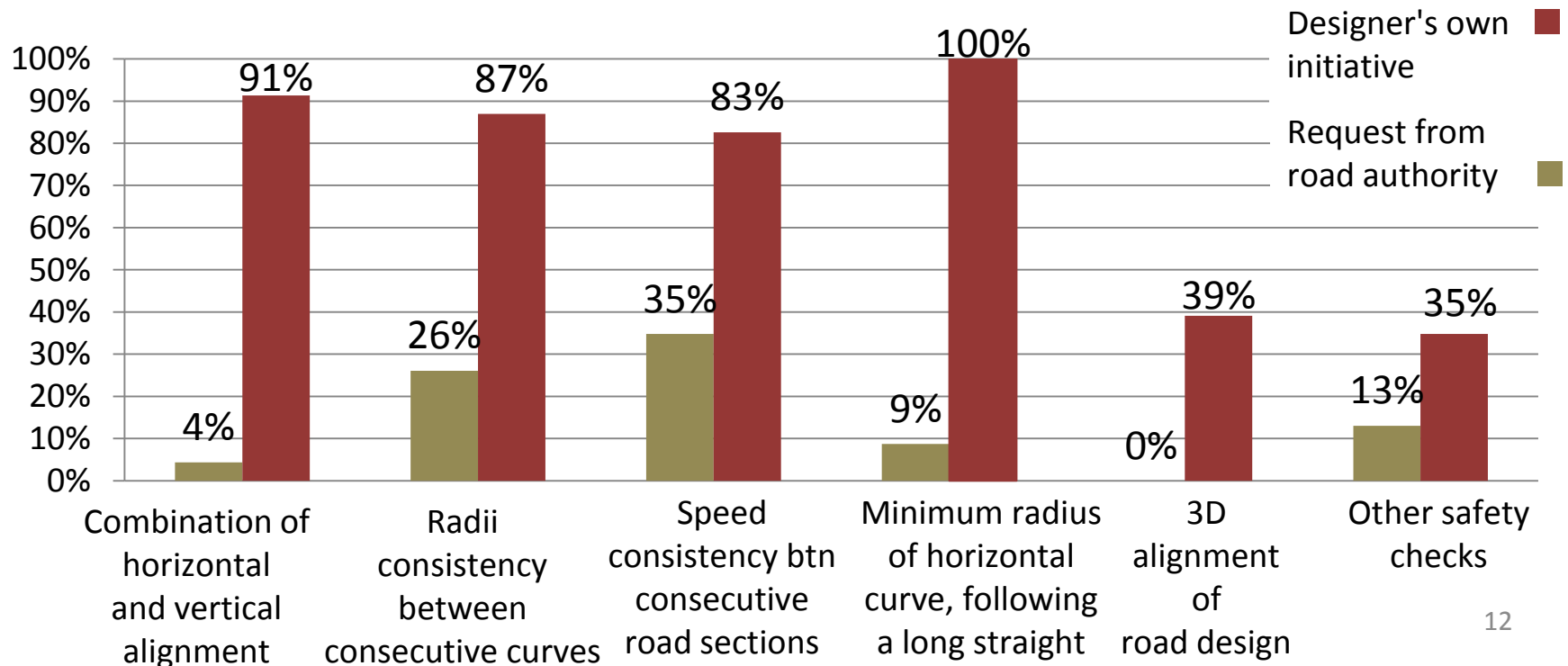


Survey Results / Reported behaviours

How often do you choose a design parameter that is substandard?



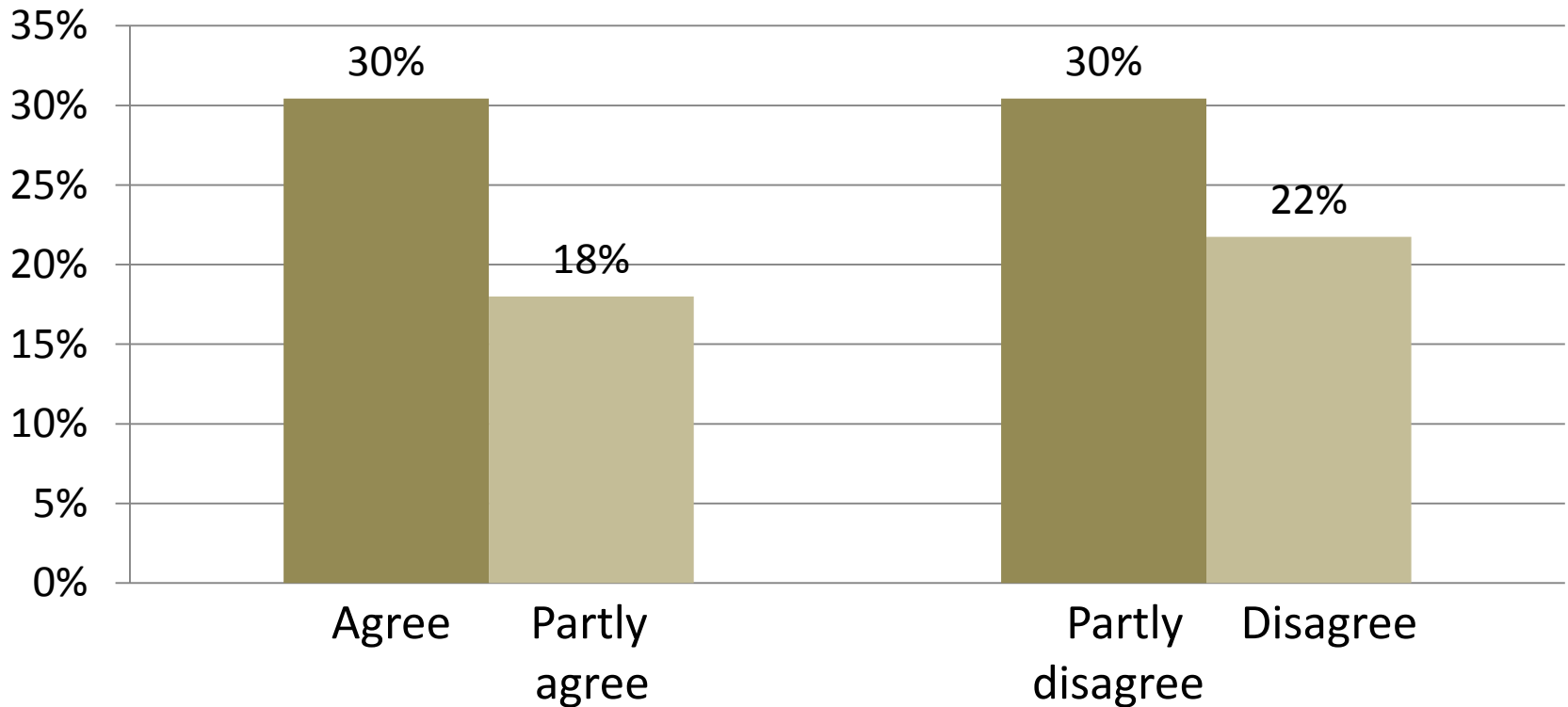
Which safety checks, if any, do you usually apply during the design process?



Survey Results / Approach to safety

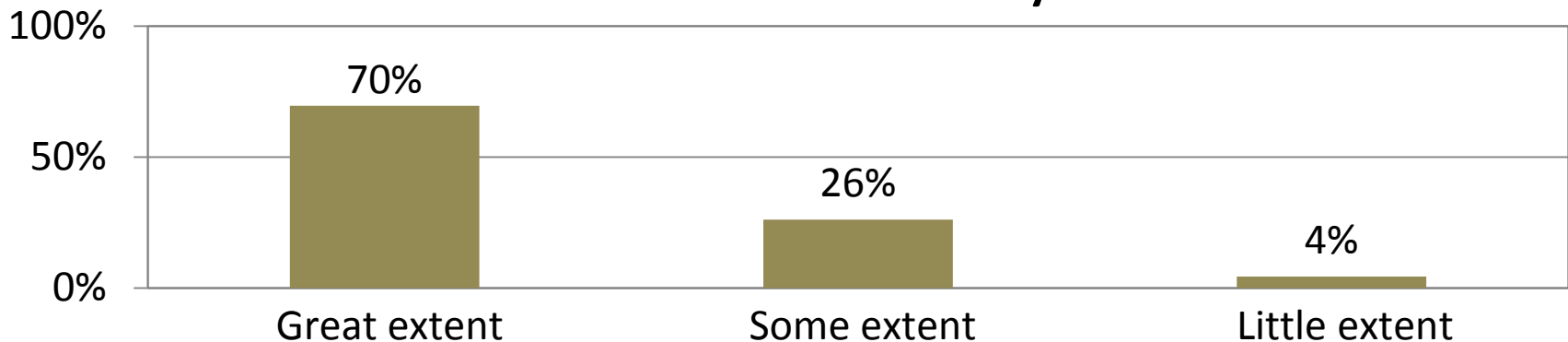
Please indicate to what extent you agree or disagree with this phrase:

"If design standards are met then the road design is technically complete hence safe for its users"

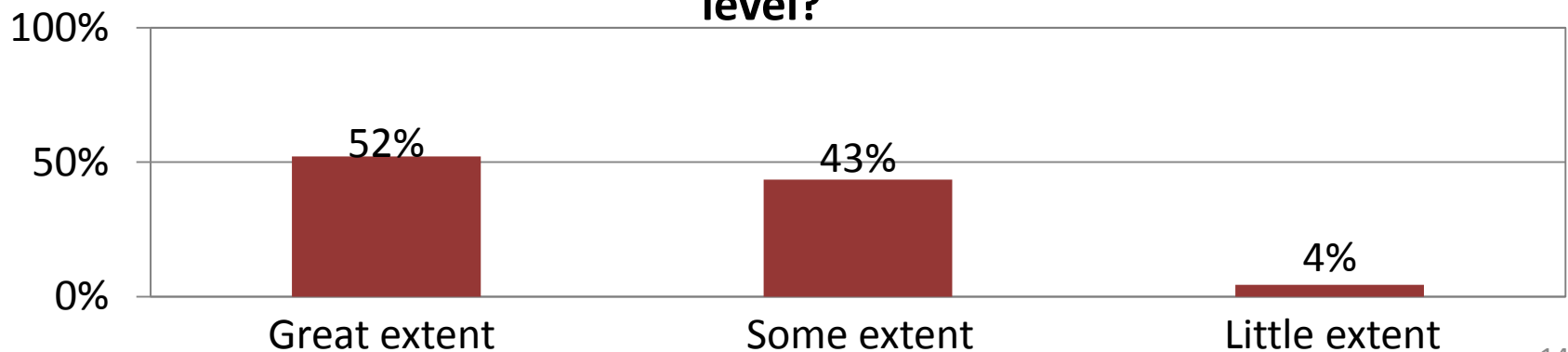


Survey Results / Approach to RSA

To what extent do you believe that the RSA is an effective measure to enhance road safety?

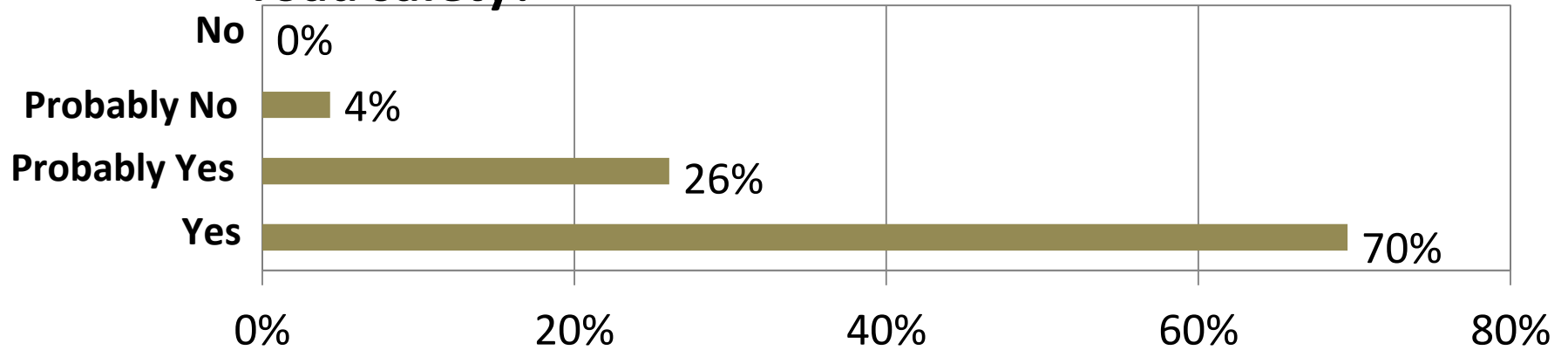


To what extent do you believe that conducting RSAs on the Greek road network will improve the country's road safety level?

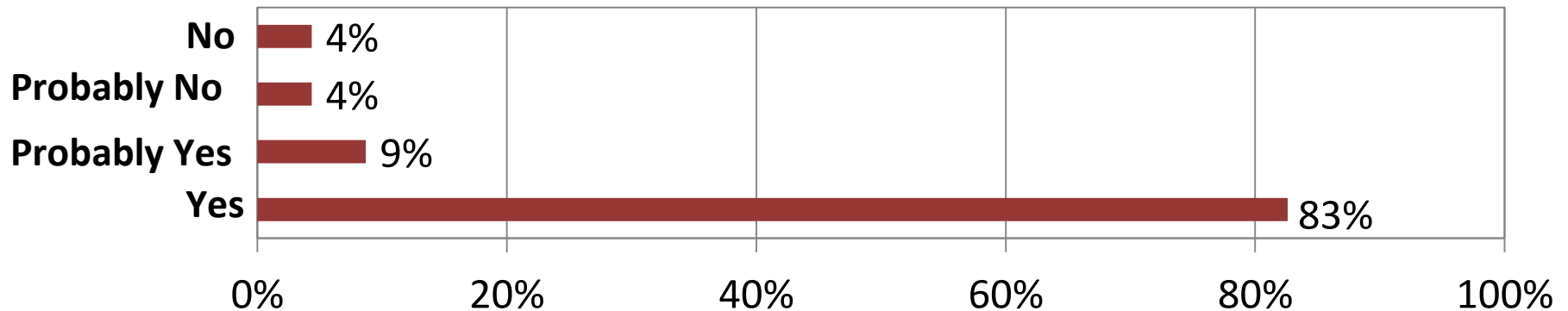


Survey Results / Approach to safety

Do you believe that the work of a highway designer can significantly contribute to the improvement of road safety?



Do you believe that road design standards should include a separate chapter devoted to road safety principles?



Results / Exploratory Factor Analysis

Variable	Factor	
	1	2
DA2	0.839	
DA3	0.730	0.315
DA5	0.809	
DC3		0.906
DC9		0.856

To what extent do you believe that the RSA is an effective measure to enhance road safety?

Factor 1:
Designers' attitudes to RSA and road safety

To what extent do you believe that the country's road safety network will improve the country's road safety?

Do you believe that road design standards should include a separate chapter devoted to road safety principles?

Have you ever taken part in a Road Safety Audit, or an Audit Team member?

Factor 2:
Designers' involvement in the RSA process

Have you ever used RSA handbooks when carrying out an Audit or design?

Conclusions from comparative review of RSA Guidelines

- Should not only focus on the audit process.
- Must include safety principles from road safety research and related experience.
- Should be a “reference manual” not only for auditors but for designers too (eg checklists).
- Flexibility; “Make the RSA work for you” (FHWA, 2006).

Conclusions from the survey in Greece

Greek highway designers' approach:

- Positive approach towards RSA in general
- “RSA is an effective process towards improving the safety of a design”
- “The implementation of this process will have a positive impact on the country's safety level”
- Designers aware of their own role/share of “responsibility” in building a safe road network

Conclusions from the survey in Greece (cont.)

...However:

- Half of the designers agree with the prevalent view that
“compliance with standards → safe design”
- Need for further training to raise awareness.
- Need to update design standards / add road safety-related material.
- Need for a national RSA handbook to be published.
- Involvement with RSAs is expected to improve the designers' safety culture.



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Thank you

Any questions?

