

cast



Do road safety campaigns work? Effects of campaigns on behaviour and accidents.

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Questions we want to answer

- **Do road safety campaigns work?**
- **How well do they work?**
- **What factors influence this?**

Meta-analysis of evidence

- **An effect**
 - = change in accident counts or % behaviour coinciding with campaign
- **Meta-analysis:**
 - takes weighted average of effects
- **E.g.**
 1. 1000 accidents before, 900 after (- 10%)
 2. 10 accidents before 5 after (- 50%)

1. receives greater weight

Questions we want to answer

- Do road safety campaigns work? ✓
- How well do they work? ✓
- **What factors influence this?**

Meta-analysis of evidence

- **Bivariate analysis (test one factor at a time)**
 - E.g. Which is best, television or leaflets?
 - Simplistic
 - Useful when multivariate analysis not possible
 - Tells us about the size of effects for campaigns of a certain type
- **Multivariate analysis (several factors at a time)**
 - Accounts for overlapping influences
 - Tests unique influence when other factors controlled for
 - Demanding requirements placed on data

History and background

- GADGET 1997-1999

- INFOEFFEKT 2000-2004

Used meta-regression: 30 studies - 86 effects

- EU-project CAST 2006-2009

Extend database: 221 studies - 433 effects

Approach

What is a campaign?

“ Purposive attempt to **inform, persuade, and motivate behaviour** changes in a relatively **well-defined and larger audience** in order to improve road safety, typically within a given time period, by means of organized communication activities involving specific media channels often complemented by interpersonal support and/or other supportive activities as enforcement, education, legislation, commitment, rewards, etc. ”

Broad – not limited to mass-media campaigns

Approach

- **Retrieve campaign evaluation studies**
- **Extract data in structured way**
 - Change in outcome measure (effect)
 - Type of outcome measure
 - Campaign delivery
 - Campaign content
 - Background
- **Conservative meta-analysis**
 - Publication bias
 - In terms of statistical model used
- **Meta-regression**

CAST database – a broad sample

<i>Outcome measure</i>	campaign effects	observed	self-reported
seatbelt use	133	119	14
accidents	115	114	1
attitudes	39	0	39
speeding behaviour	28	21	7
perception of risk	24	0	24
drink-driving behaviour	23	4	19
recall	23	0	23
knowledge	17	0	17
driver behaviour towards pedestrian	13	11	2
Other	18	7	11
TOTAL	433	276	157

CAST database – a broad sample

- **Decade**
1980s (213), 1990s (137), 2000s (70), other (13)
- **Publication source**
Refereed article (161), Institute report (156), Other (116)
- **Scale**
Local (178), Regional (166), National (67), Other (22)
- **Groups targeted**
- **Duration**
- **Country**
Europe (168), USA (175), Au/NZ (86), Other (4)

CAST database – a broad sample

Delivery

+/- Enforcement
+/- Law change

method of delivery	effects
television	274
newspapers	260
radio	220
leaflets	220
posters	196
personal	128
reward	51
numerous minor elements*	49
video / DVD	36
cinema	32
variable message sign (feedback)	25
billboards	24
website	21
fixed message sign	17
competitions	14
pledge cards	12

CAST database – a broad sample

Content

- **Basis**
 - Theory
 - Previous campaigns
 - Target consultation
- **Treatment of risk (detection, harm)**
- **Rational, emotive or incentive**
- **Use of humour (or shock)**
- **Addressing the social norm**

Results – overall effects

Outcome measure	effect (%)	95% confidence interval (%)	Significant? (p < 0.05)
Number of accidents (n = 115)	- 6	(-10, -1)	yes
% using seatbelts (n = 133)	+25	(+18, +31)	yes
% speeding (n = 28)	-16	(- 25, -6)	yes
% drink-driving (n = 23)	- 17	(- 46, +28)	no
% yielding to pedestrians (n = 13)	+37	(+14, +65)	yes
% expressing favourable attitude (n = 39)	+5	(-0, +11)	no
% subjective perception of risk (n = 24)	+16	(+4, +30)	yes
% correct knowledge (n = 17)	+44	(-10, +132)	no
% recalling campaign (n = 23)	+120	(+30, +273)	yes

Results – bivariate analyses

- Accidents and seatbelt use
- Indications that campaign effects improve where a campaign
 - Has **drink-drive** theme
 - Identifies a **target group**
 - Uses **personal communication**
 - Combines **rational and emotional** content
 - Addresses **social norm**
 - Focuses on **detection risk** rather than risk of harm (only where risk is addressed)
- No evidence of a link to
 - Campaign scale
 - Enforcement
 - Humour (not assessed for accidents)

Results – bivariate analyses

- **Report includes effects exclusively for mass-media campaigns**
- **Effect sizes same or reduced**

Results – multivariate analysis: accidents

- Background

decade, theme, scale, duration

- Delivery

combined mass-media, personal influence, on-road, dvd-video-cinema, target identification, enforcement

- Content

emotional and rational, non-shocking consequences, social norm, previous campaign, risk of detection, risk of harm, target group consulted

Approach

Demands on data →

**Results of
bivariate
analysis** →

**Theoretical
considerations** →

History →

Model of factors
for testing
by
metaregression

Results – multivariate analysis: accidents

Variable	Beta coefficient	t-value	p-value	Semi-partial correlation
(constant)	--	1,18	.241	--
[duration - 0 to 29 days]	-.21	2.06	.0042	-.17
[after 2000]	+.21	4.27	<.001	+.35
[theme-drink-driving]	-.11	2.90	.005	-.24
[personal influence]	-.07	1.55	.125	-.13
[on-road]	-.12	3.15	.002	-.26
[enforcement]	-.09	1.93	.057	-.16
[combined mass-media]	+.12	3.31	.001	+.27
<i>Number effects: 111; Number of variables: 7; Total degrees of freedom: 104</i>				
<i>$R^2 = 0.30$; Model test $F(7, 111) = 6.31, p < 0.001$</i>				

Results – multivariate analysis: accidents

+

- drink-drive theme
- short campaign duration
- on-road delivery
- (personal influence)
- (enforcement)

—

- recent campaigns, since 2000
- use of combined mass-media

Results – multivariate analysis: seatbelt use

- Background

initial seatbelt use, duration, paid media, scale

- Delivery

combined mass-media, personal influence, on-road, dvd-video-cinema, target identification, enforcement, reward, limited area

- Content

emotional and rational, humour, shocking consequences, non-shocking consequences, social norm, previous campaign, risk of detection, risk of harm, target group consulted

Results – multivariate analysis: seatbelt use

Variable	Beta coefficient	t-value	p-value	Semi-partial correlation
(constant)	--	+6.42	<.001	--
[duration - 0 to 29 days]	+1.10	+1.00	.319	.06
[initial seatbelt use]	-.56	+6.87	<.001	-.41
[personal influence]	+1.11	+1.31	.191	.08
[on-road]	+2.21	+2.13	.035	.13
[non-shocking consequences shown]	-.15	-1.68	.096	-.10
[risk of harm]	+1.18	+2.28	.024	+1.14
[enforcement]	+0.03	+0.36	.718	.02
[humour]	-.33	-3.13	.002	-.19
[limited area]	+0.45	+5.71	<.001	+0.34
[combined mass-media]	+0.08	+0.77	.441	+0.05

Number effects: 122; Number of variables:10; Total degrees of freedom: 112

R² = 0.59; Model test F (10, 112) = 16.30, p < 0.001

Results – multivariate analysis: seatbelt use

+

- low initial seatbelt use
- on-road delivery
- limited area
- addressing risk of harm
- (personal influence)

–

- using humour
- non-shocking consequences

neutral

- use of enforcement
- short duration
- use of combined mass media

Some limitations

- **Broad**
- **Not all studies / countries represented**
- **Use of non-controlled effects**
- **Assumptions inherent in tools used**
- **Not measuring long-term societal change**

Theoretical implications

- **Immediacy (delivery in context of behaviour)**
 - Availability of message (reminder)
 - Reinforcement / learning theory
 - Theory of Interpersonal Personal Behaviour
 - Driver behaviour theories

About unlocking habits while behaviour ongoing?

Theoretical implications

- **Intimacy (of message delivery)**
 - Elaboration likelihood model
 - Tailor-made message (content, time, place)

More info available in Deliverable 1.4

Practical implications

- **Road safety campaigns work**
- **Several factors are associated with their effect**
- **Achieve intimacy and immediacy**
- **Mass media methods still important**
- **Humour (and fear) should not detract from message**

Practical implications

- **Reconsider enforcement**
- **Link between initial behaviour level and outcome: why?**
- **Further explore on-road methods**
- **Addressing social norms, emotional + rational content, target group also important**

THANK YOU!