



Literature review on observational studies on cell phone use while driving

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Motivation

Lack of knowledge about the prevalence of distracted driving:

- „objective“ measures
 - Not biased by memory failures (surveys)
 - No selective samples (naturalistic driving studies)
- International comparisons
- Development over time

Studies estimating the prevalence of phone use

Inclusion Criteria

a) Observation from outside the vehicles

- Excluding all naturalistic driving studies (NDS)

a) Indented to estimate prevalence of secondary task engagement

- Excluding Huth, Sanchez & Brusque (2015)



Results 1

STUDIES



Studies estimating the prevalence of phone use

Overview

Country	Years of publication	N Studies
USA	2001-2016	19
Canada	2008	1
GB	2000-2015	17
Spain	2009-2014	3
Austria	2012	1
Germany	2016	1
Iran	2013-2016	2
Australia	2001-2010	5
New Zealand	2006-2012	2
Σ	2001-2016	51

Studies estimating the prevalence of phone use

America 1: USA

Study No.	Authors	Year	Country	N vehicles
1	Utter	2001	USA	/
2	Glassbrenner	Feb 05	USA	38,000
3	Glassbrenner	Dez 05	USA	43,000
4	Pickrell & Ye	2009	USA	55,199
5	Pickrell & Ye	2010	USA	49,475
6	Pickrell & Ye	2011	USA	48,331
7	Pickrell & Ye	2013	USA	38,215
8	Pickrell	2014	USA	37,813
9	Pickrell	2015	USA	37,428
10	Pickrell.& KC	2015	USA	
11	Pickrell, Li & KC	2016	USA	
12	McCartt & Geary	2004	USA	> 78.340
13	McCartt, Hellinga, Strouse & Farmer	2009	USA	50,638
14	Reinfurt, Huang, Feaganes & Hunter	2001	USA	14,059
15	Johnson, Voas, Lacey, McKnight & Lange	2004	USA	38,745
16	Eby, Vivoda & St. Louis	2006	USA	133,453
17	Wenners, Knodler, Kennedy & Fitzpatrick	2013	USA	17,677
18	Huisinigh Griffin & MCGwin Jr.	2015	USA	3,265
19	Kidd, Tison, Chaudhary, McCartt & Casanova-Powell	2016	USA	16,556
$\Sigma = 19$		2001-2016	USA	> 618.212

NOPUS

NY phone ban

Studies estimating the prevalence of phone use

America 2: Canada

Study No.	Authors	Year	Country	N vehicles
20	Burns, Lecuyer & Chouinard	2008	Canada	133,577
$\Sigma = 1$		2008	Canada	133,577



Studies estimating the prevalence of phone use

Europe 1: Great Britain

Study No.	Authors	Year	Country	N vehicles
21	Broughton & Hill	2005	GB	138,000
22	Hill	2005	GB	138,566
23	Broughton & Hill	2005	GB	100,000
24	Broughton & Hill	2006	GB	100,000
25	Broughton & Hill	2007	GB	100,000
26	Broughton & Hill	2008	GB	100,000
27	Broughton & Buckle	2006	GB	33,844
28	Walter, Broughton & Buckle	2007	GB	38,159
29	Knowles, Walter, & Buckle	2008	GB	36,164
30	Narine, Walter & Charman	2010	GB	14,261
31	Scoons	2012	GB	7,834
32	Johal, Napier, Britt-Compton, & Marshall	2005	GB	12,334 / 11,493
33	Hussain, Al-Shakarchi, Mahmoudi, Al-Mawkawi & Marshall	2006	GB	8,537
34	Gras, Planes, Font-Mayolas, Sullman, Jiménez & Prat	2006	GB	6,672
35	Sullman	2010	GB	12,214
36	Sullman	2012	GB	7,168
37	Sullman, Prat & Kuzu Tasci	2015	GB	10,984
$\Sigma = 17$		2000-2015	GB	> 837.194

TRL Seatbelt use

Studies estimating the prevalence of phone use

Europe 2: Continental Europe

Study No.	Authors	Year	Country	N vehicles
38	Astrain, Bernaus, Claverol, Escobar & Godoy	2003	Spain	1,536
39	Gras, Planes, Font-Mayolas, Sullman, Jimenez & Prat	2012	Spain	6,672
40	Prat, Gras, Planes, Font-Mayolas. & Sullman,	2013	Spain	6,578
41	Sullman & Metzger	2012	Austria	10,766
42	Vollrath, Huemer, Teller, Likhacheva. & Fricke	2016	Germany	11,837
$\Sigma = 5$		2001-2016		37,389

Studies estimating the prevalence of phone use

Asia: Iran

Study No.	Authors	Year	Country	N vehicles
43	Sabzevari, Nabipour, Khanjani, Tajkooh & Sullman	2016	Iran	7,979
44	Asgharabad, Tahami & Khanjani	2013	Iran	30,733
$\Sigma = 2$		2013-2016		38,712

Studies estimating the prevalence of phone use

Australia & New Zealand

Study No.	Authors	Year	Country	N vehicles
45	Horberry, Bubnich, Hartley & Lamble	2001	Australia	/
46	Taylor, Bennett, Carter & Garewal	2003	Australia	17,023
47	Taylor, MacBean, Das & Rosli	2007	Australia	20,207
48	Young, Rudin-Brown & Lenne	2010	Australia	5,813
49	Wundersitz	2014	Australia	11,524
50	Townsend	2006	New Zealand	8,700
51	Drury, Abussaud, Allison, Bhindi, Bustard, Chamberlain, Fujino, Green, Harding, Ironside, Judge, Kerse, Laing & Liu	2012	New Zealand	17,855
$\Sigma = 7$		2001-2014		>81,122

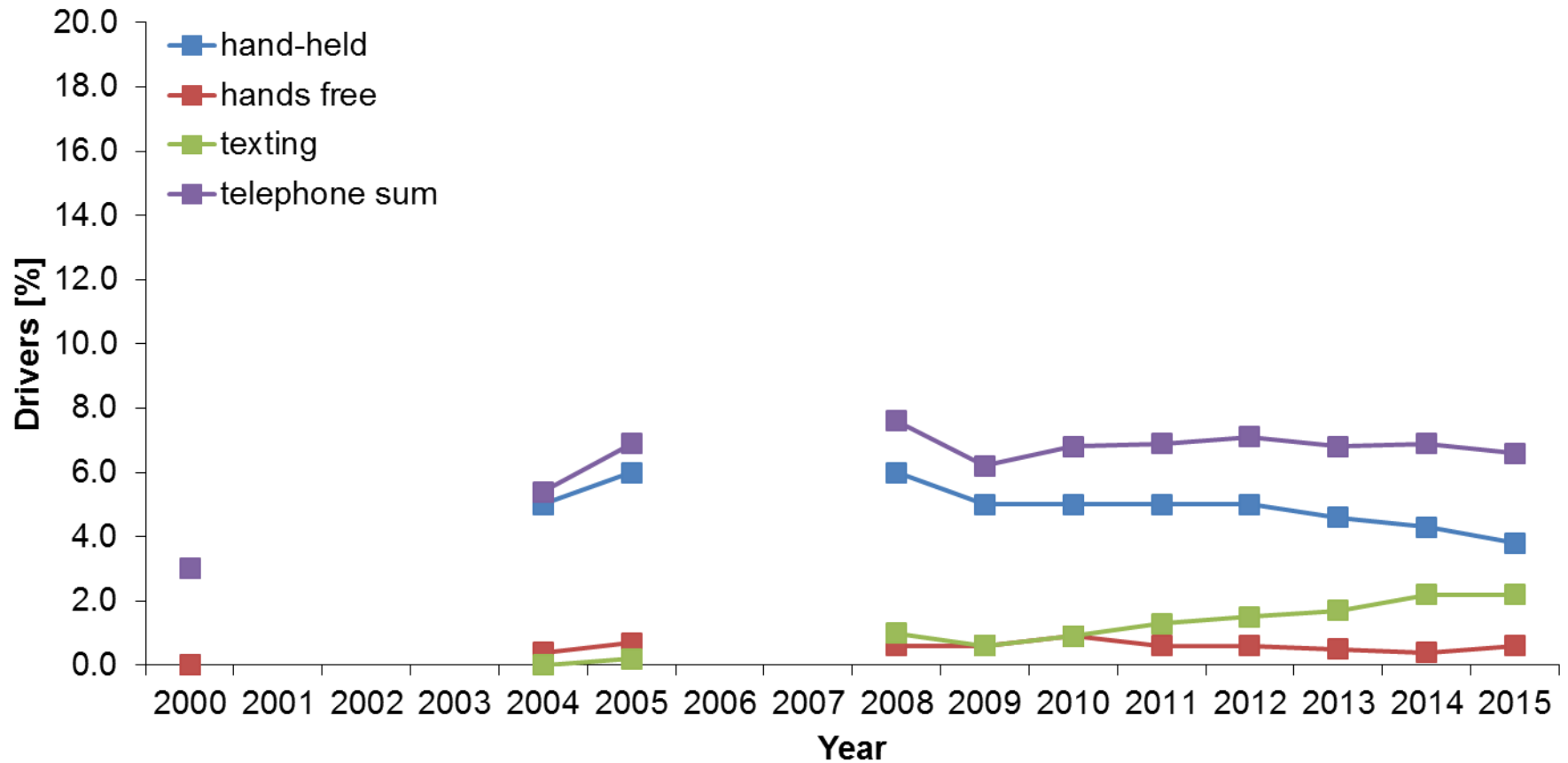


Results 2

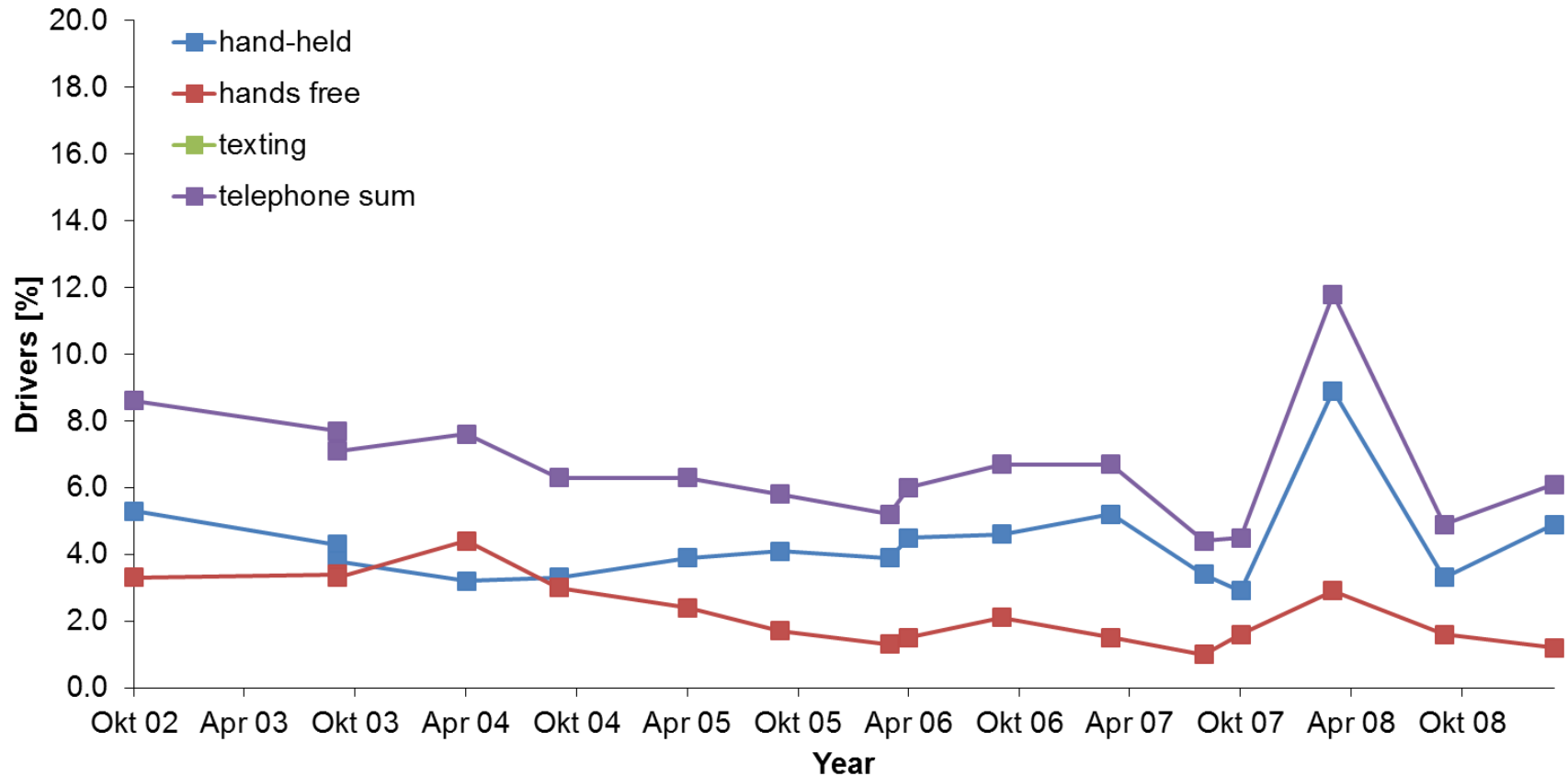
PREVALENCE



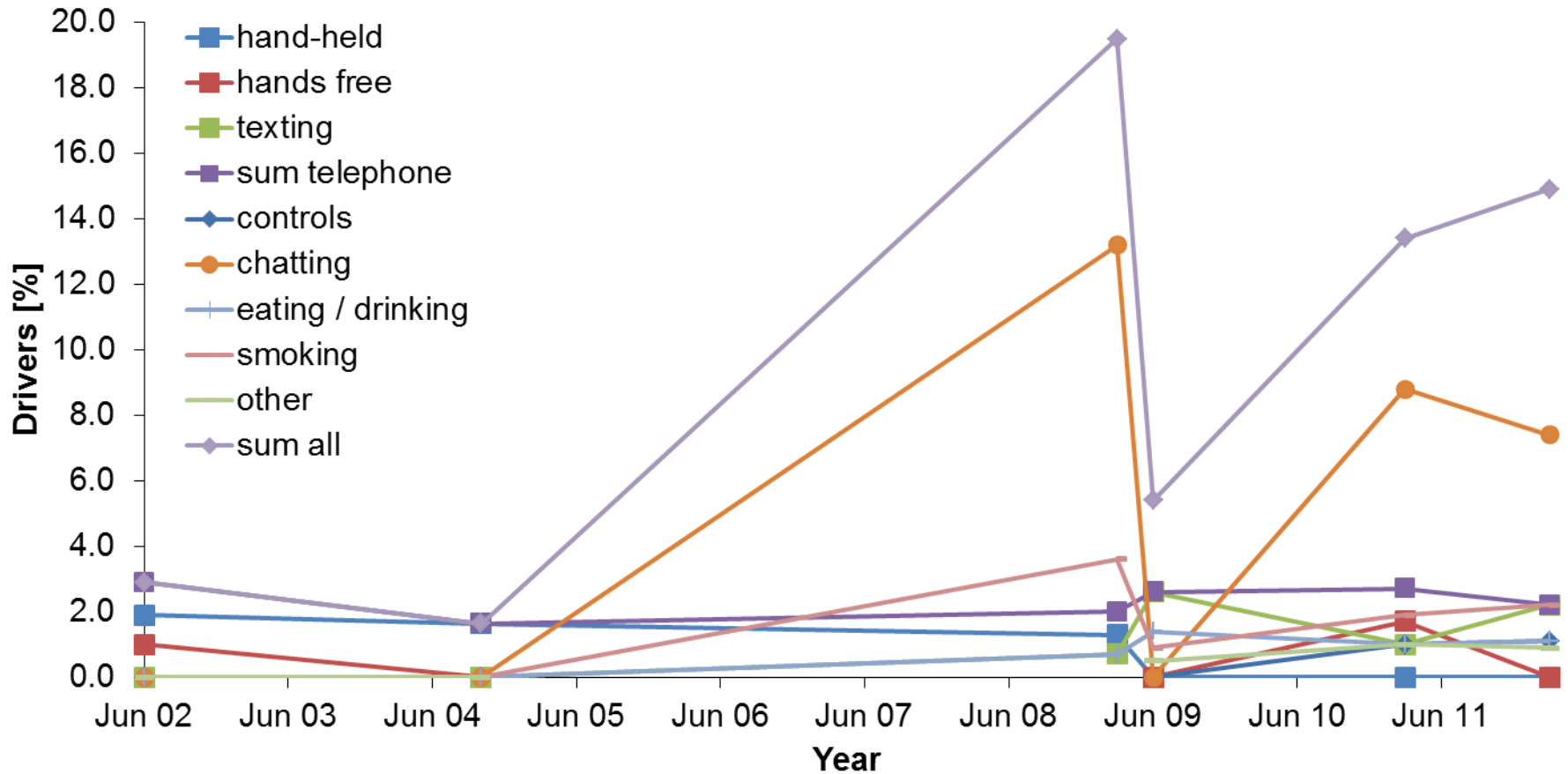
USA 1: Nopus



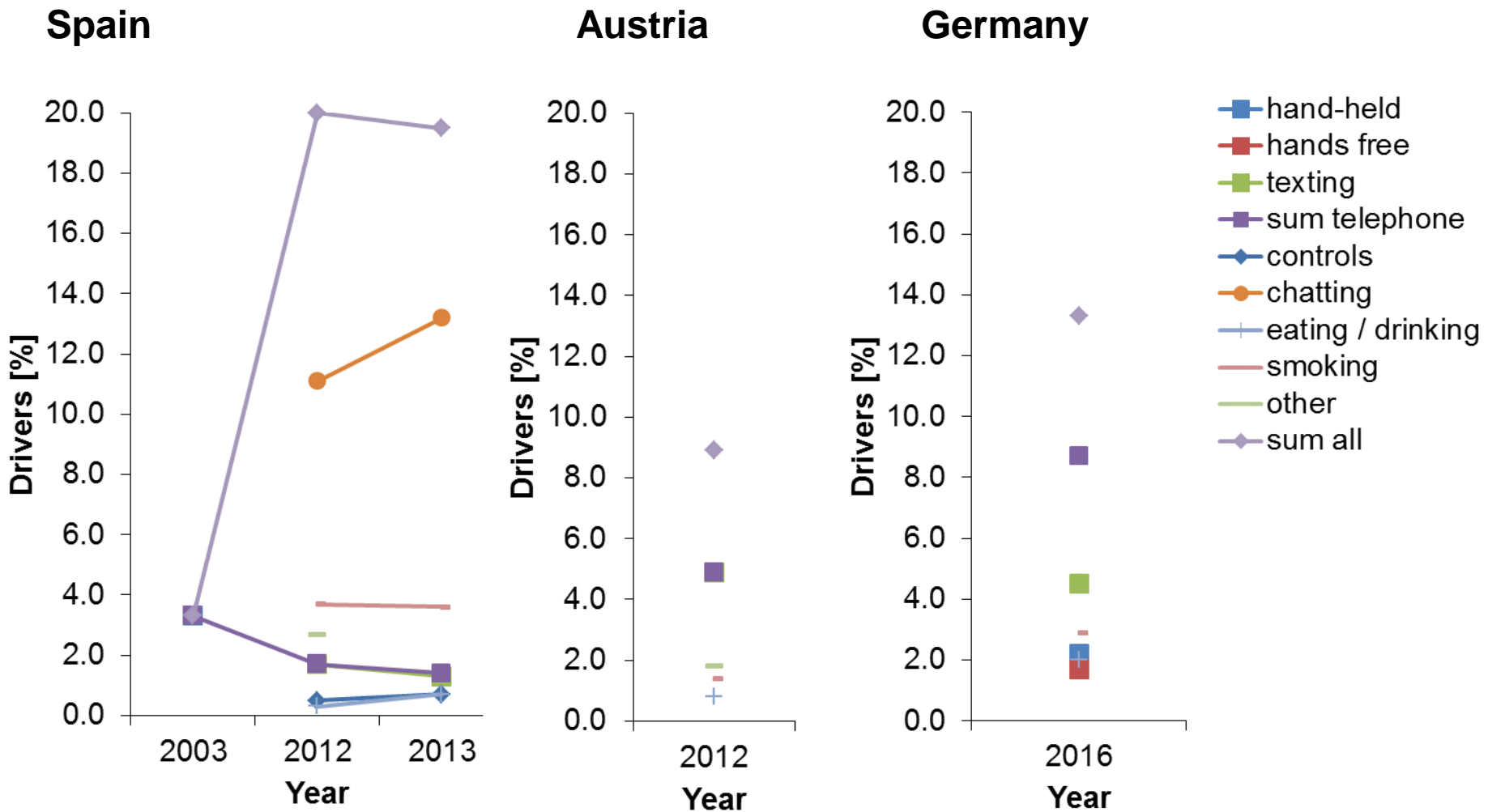
UK: TRL



UK 2: other studies

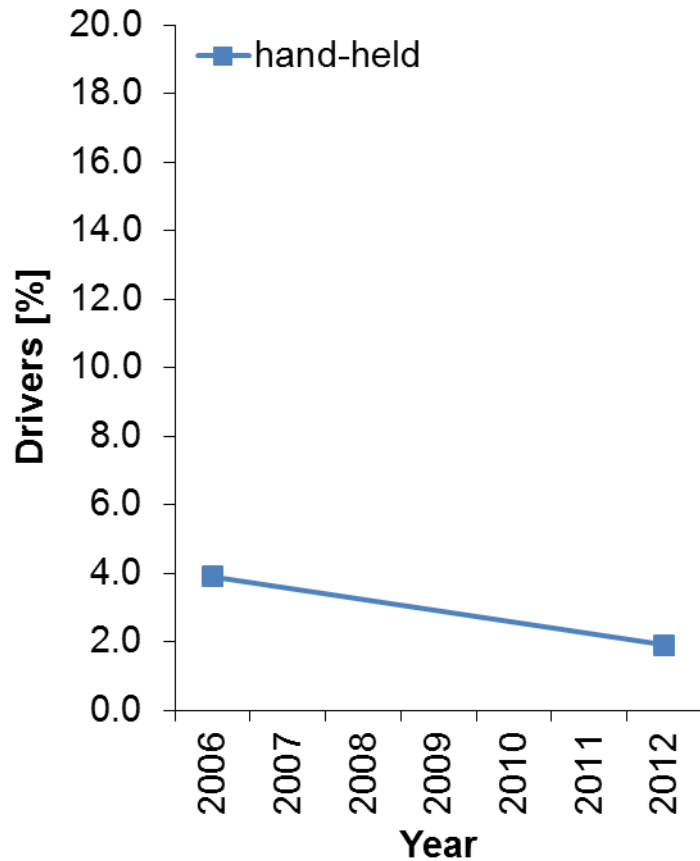


Spain, Austria & Germany

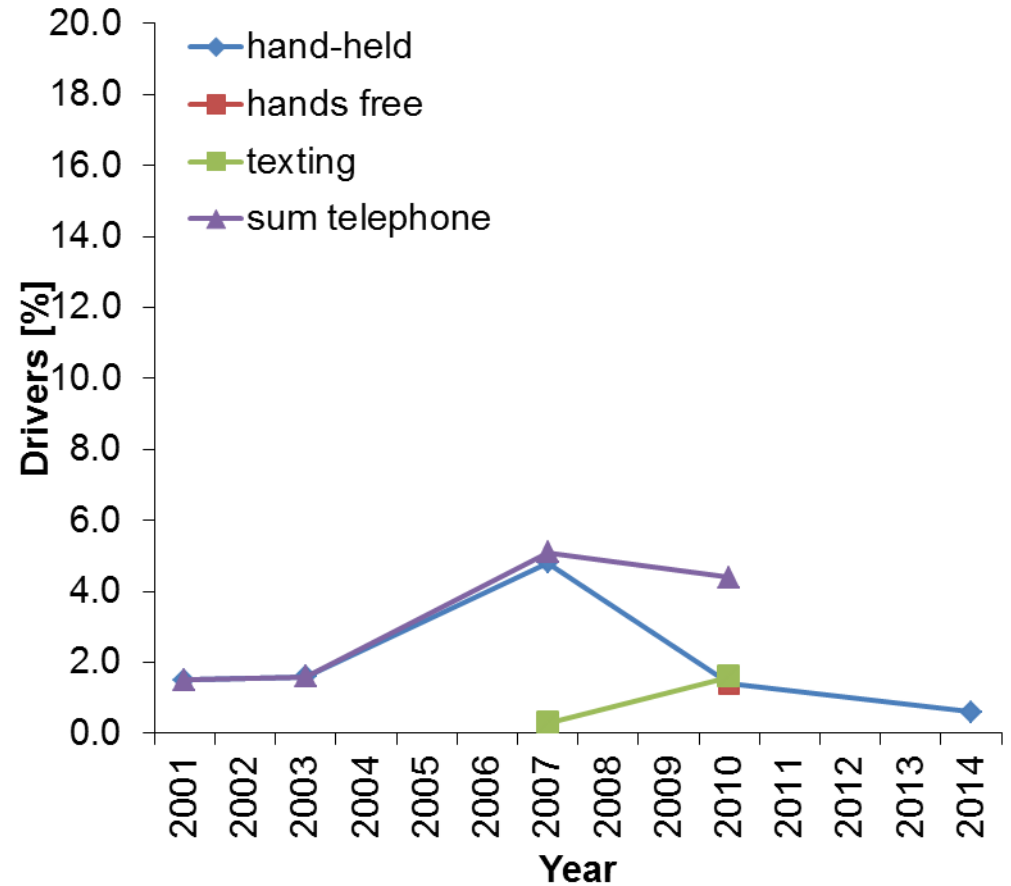


New Zealand & Australia

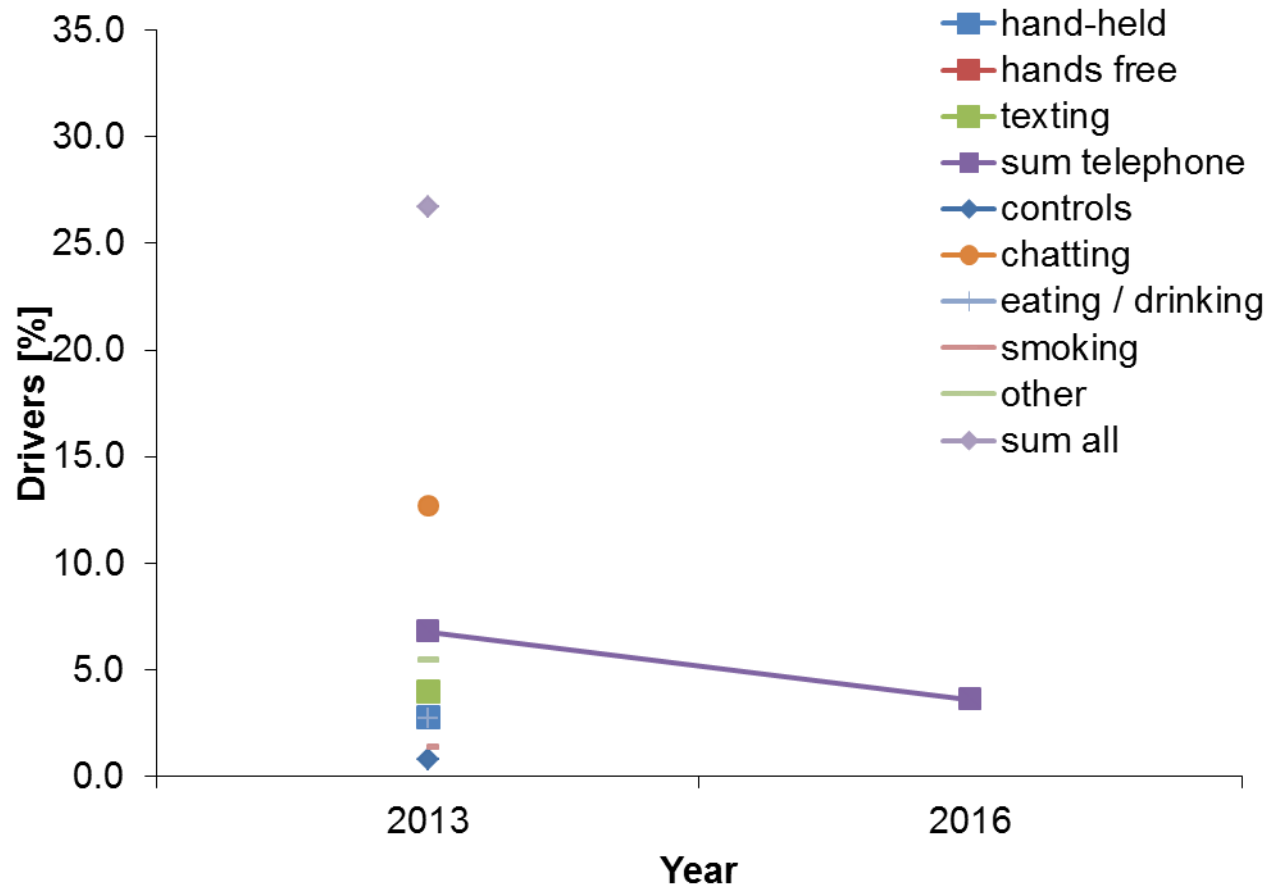
New Zealand



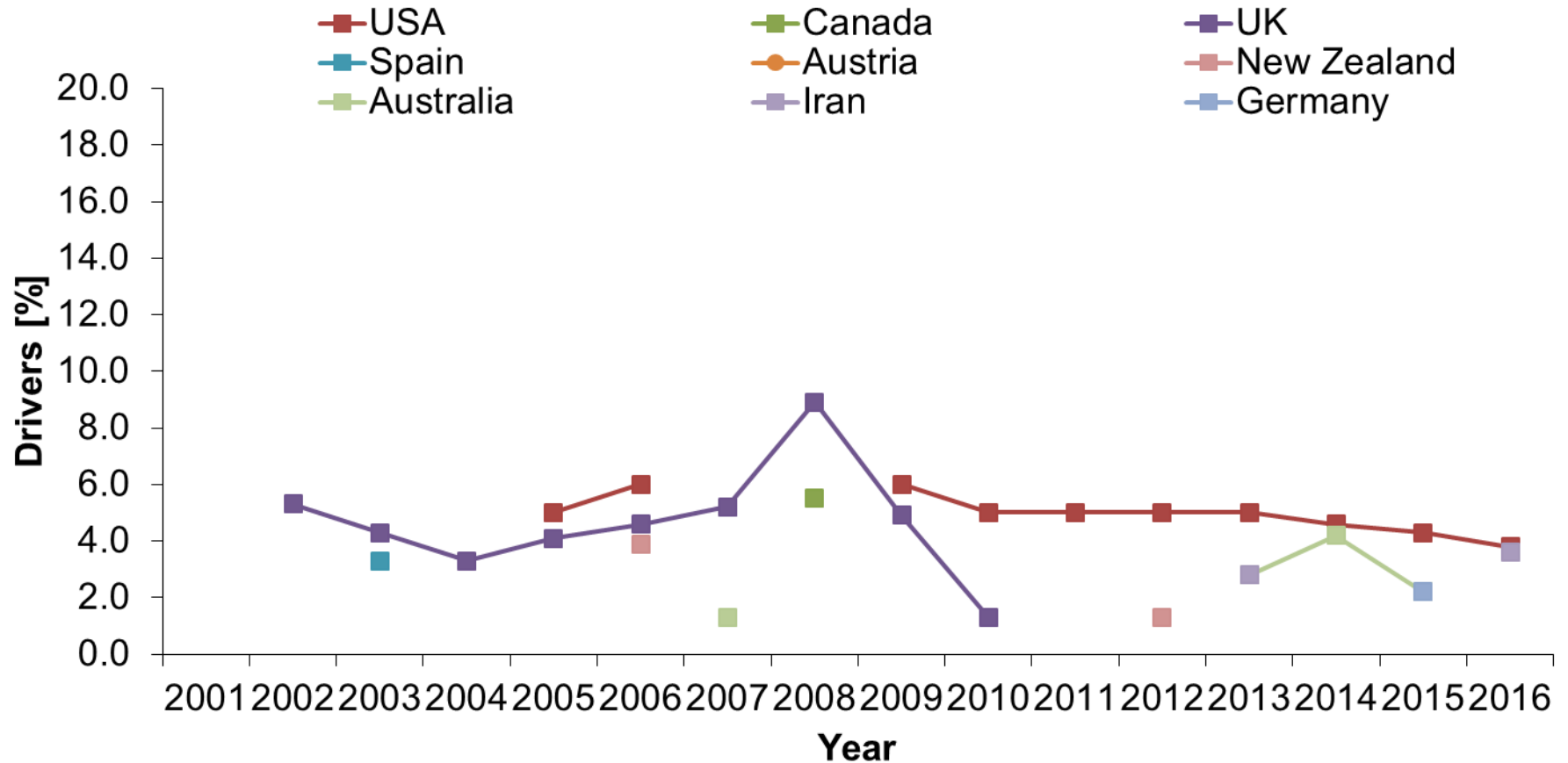
Australia



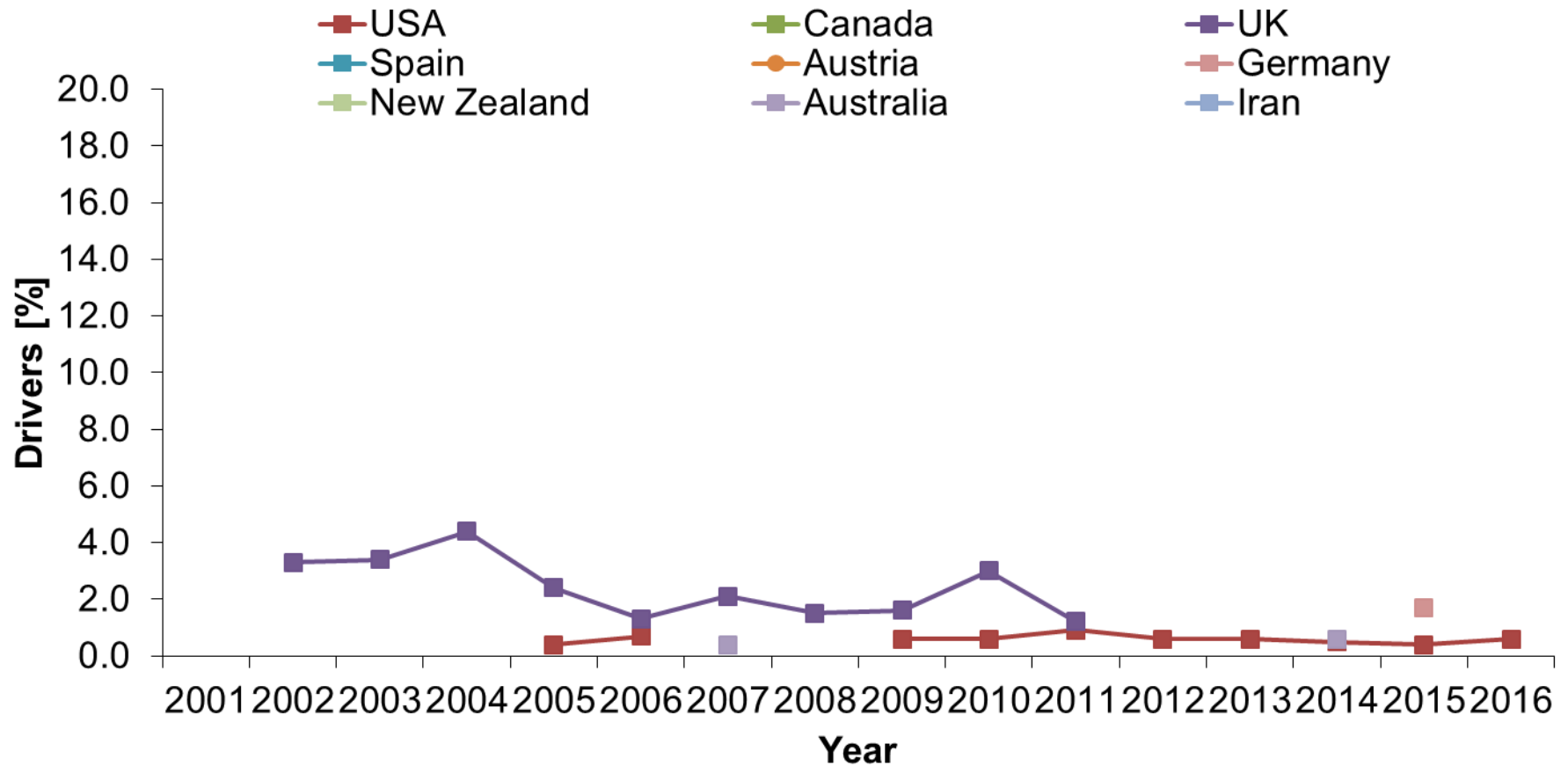
Iran



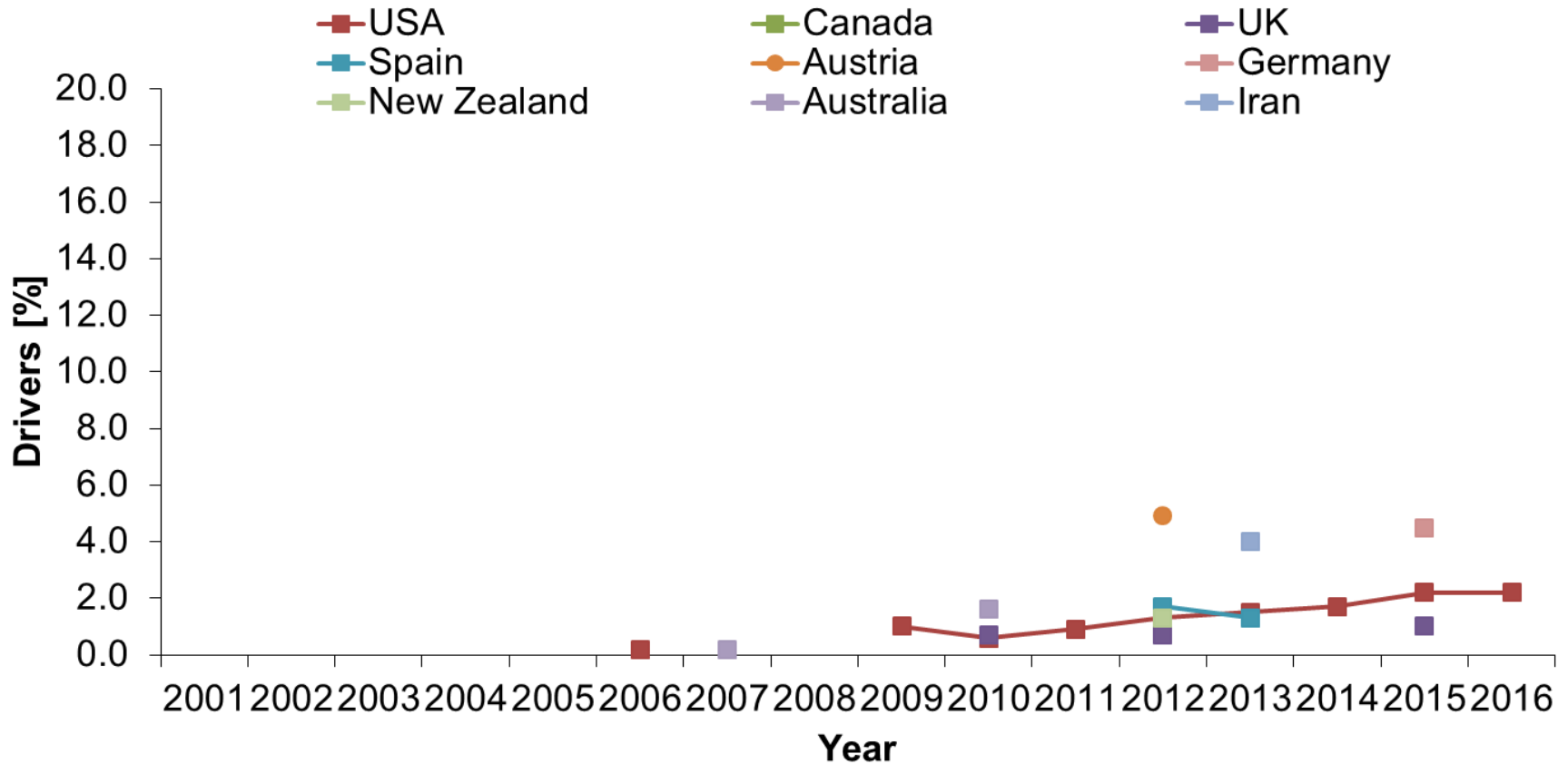
Hand-held phone use



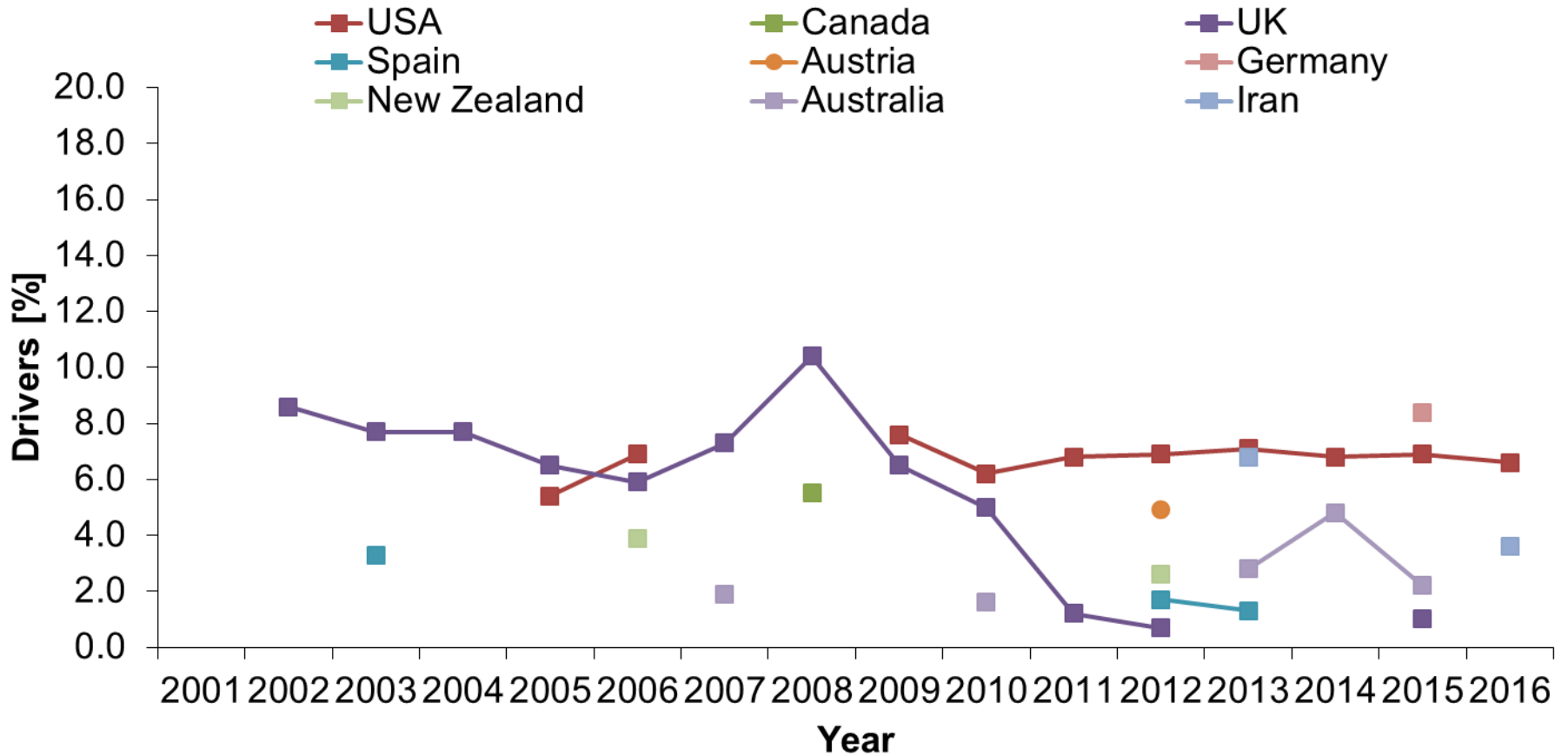
Hands-free phone use



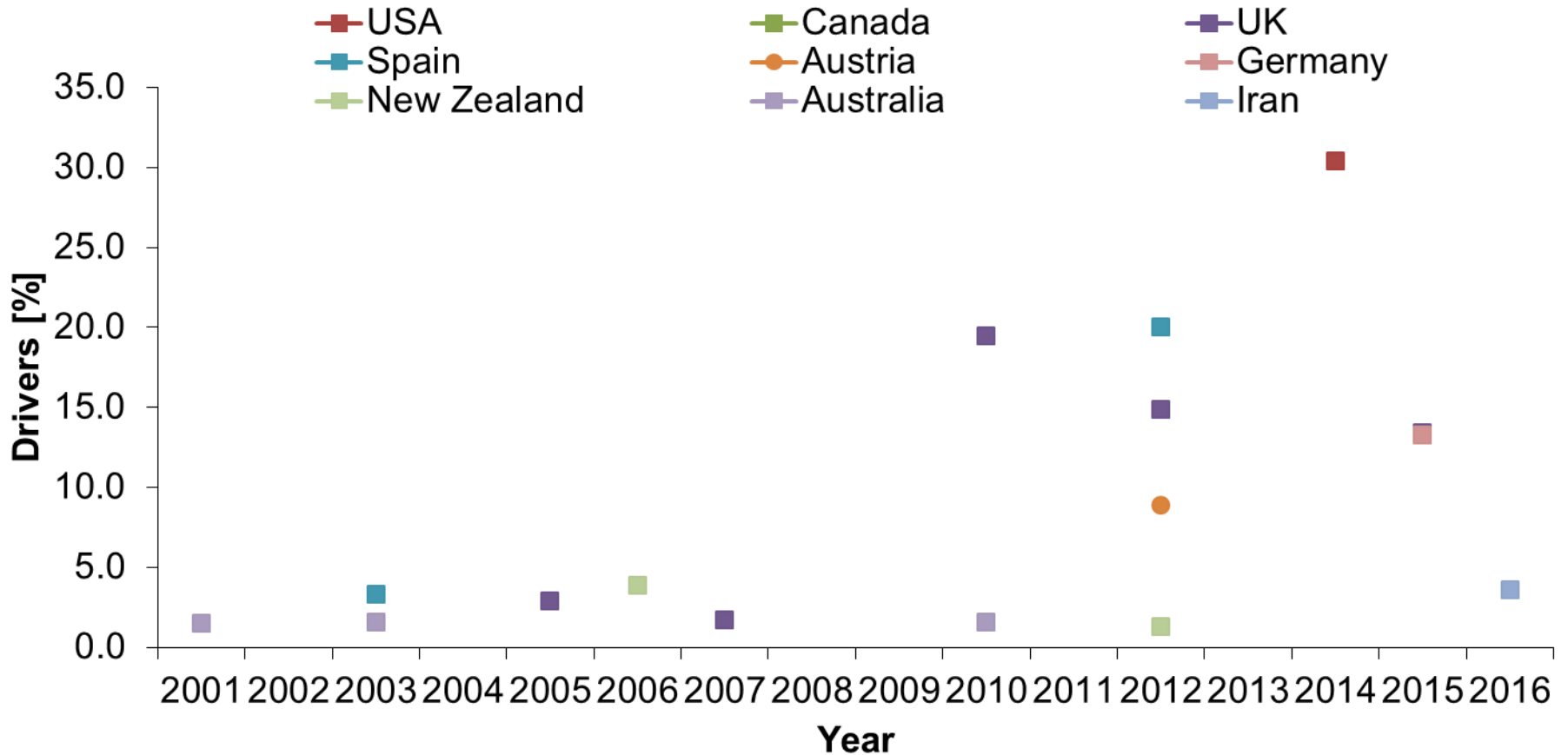
Texting



All phone tasks



Non-technical tasks





Results 3

INFLUENCES ON SECONDARY TASK ENGAGEMENT



Influences on secondary task engagement

when observed and reported

Age

- Youngest of three age groups does more

Gender

- No differences in Australia, New Zealand and in Europe
- Mixed results in the UK
- In the US: females more, both in phone use and texting

Passengers

- Less phone use with passengers present

Influences on secondary task engagement

when observed and reported

Weekday

- Mixed results

Time of day

- More phone use in the morning, more eating in the afternoon

Weather

- Less in dark & rain

Vehicle movement

- Less handheld when moving
- Less handheld on highway
- but more overall secondary tasks in urban areas

Summary & Conclusions

Observation is an efficient method for data gathering

Variations in observational methods & reporting

- Number of observations,
- Areas, locations, street types
- Stopped vs. moving vehicles, vehicle types included
- Observation protocol: definition of tasks, presence of passengers

...allow only for a very coarse picture.

But: traffic environment, culture, and age seem to be the most influencing variables



Thank you for your attention!

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