

Talking and crash risk

Conversational cognitive load meets lateral hazard exposure

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Is talking while driving risky?

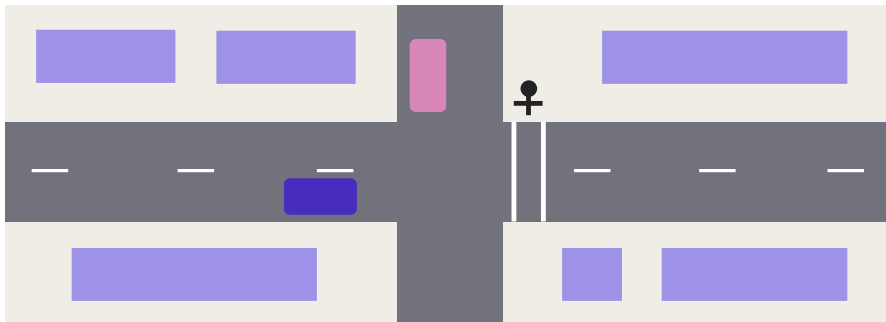
- *Visual-manual phone* use clearly raises crash risk
- Talking: little or no increase in naturalistic data
 - Talking keeps the eyes on the road ahead
 - This helps against hazards ahead, but may hurt against hazards from the side
- Study hypothesis: Higher talking risk in *Urban*, with higher lateral interaction, than *Highway*, with lower lateral interaction.

Data: SHRP2 crashes in two kinds of environment

SHRP2: about 3,400 drivers; crashes (severity I–III) and normal-driving baselines

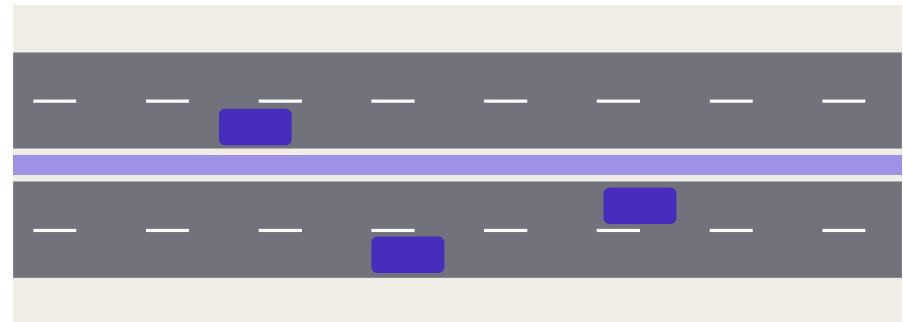
Urban - high lateral interaction

City, residential and school areas



Highway - low lateral interaction

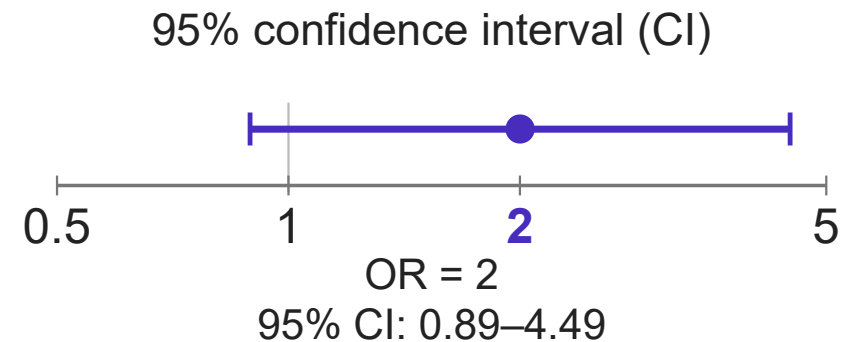
Divided highways and open country



Methodology: Odds Ratios (ORs)

Sample data for demonstration

Group	Crashes	Normal-driving baselines
Talking	20	100
No Talking	10	100



$$\text{OR} = (20 / 100) \div (10 / 100) = 2$$

Talking has twice the crash-to-baseline ratio of No Talking.

Wider Confidence Interval (CI) = less precision

CI includes 1: no clear evidence of a difference in crash odds.

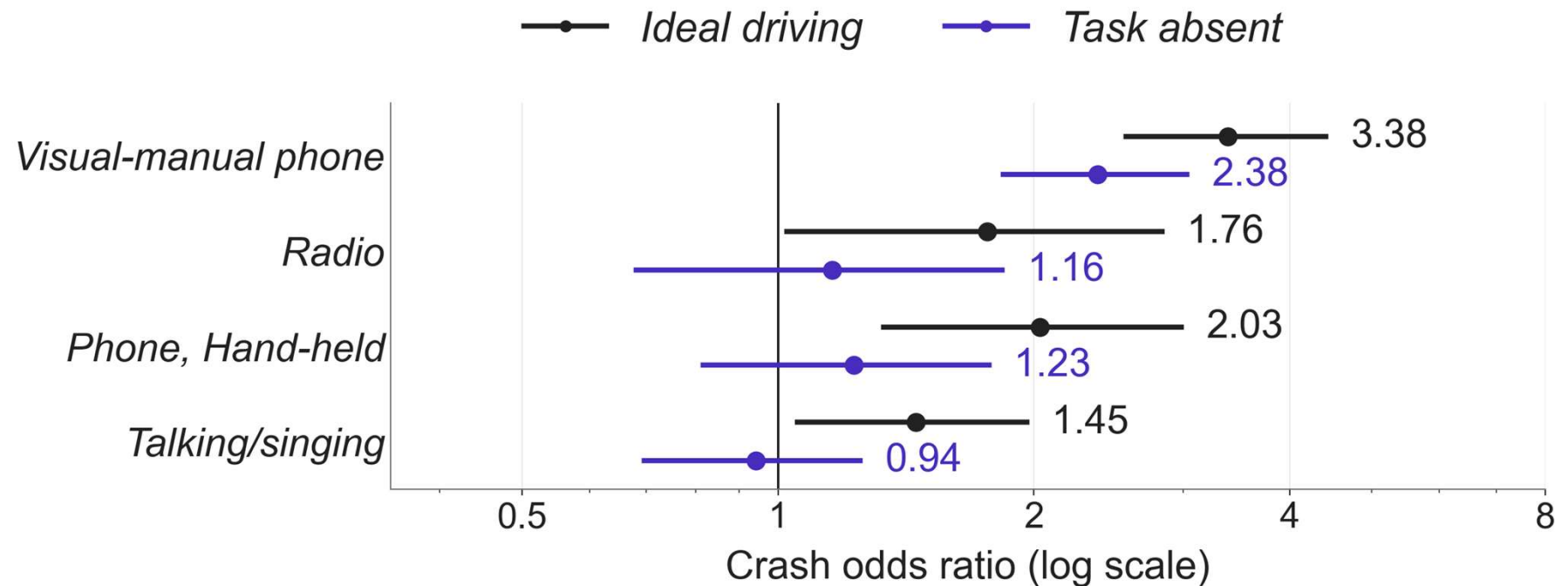
Two different baselines

Comparison group	What is included
<i>Ideal driving</i>	<i>No secondary task</i>

Task absent

Target task not coded; other tasks allowed

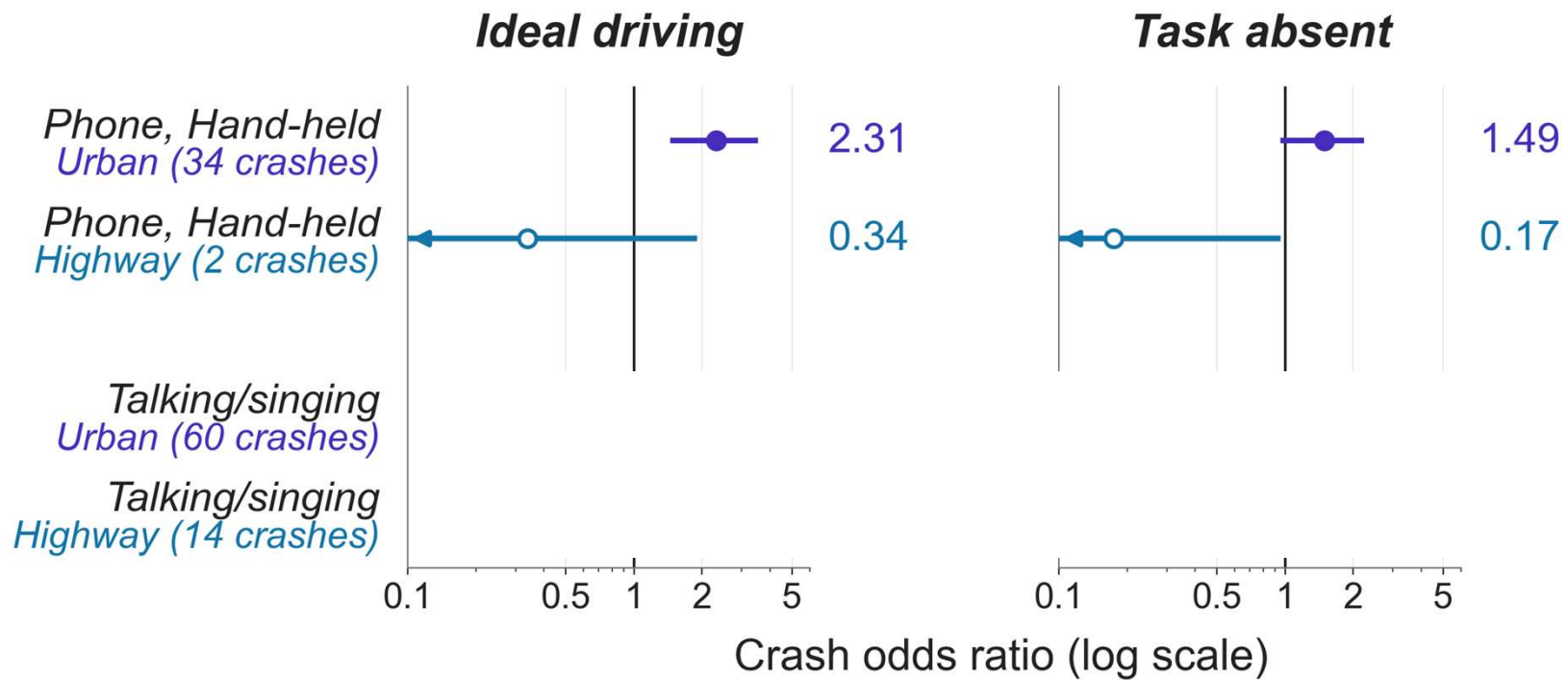
The baseline decides how large the odds ratio is



Tasks as coded; all localities; 95% profile intervals.

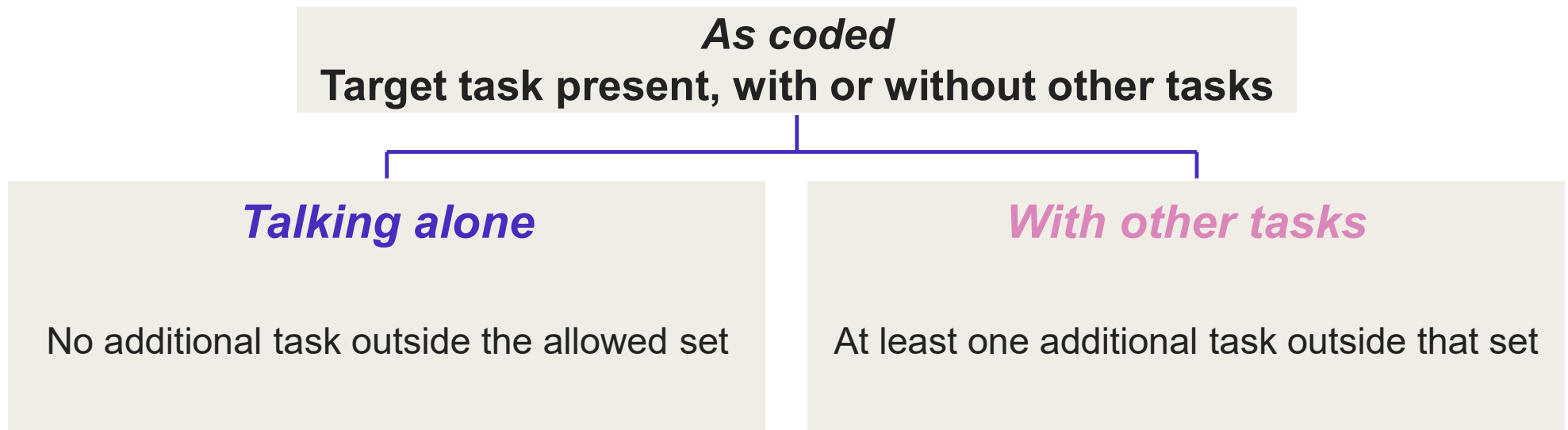
Ideal driving = no secondary task. *Task absent* = target task not coded.

As coded: Phone, Hand-held elevated in urban traffic



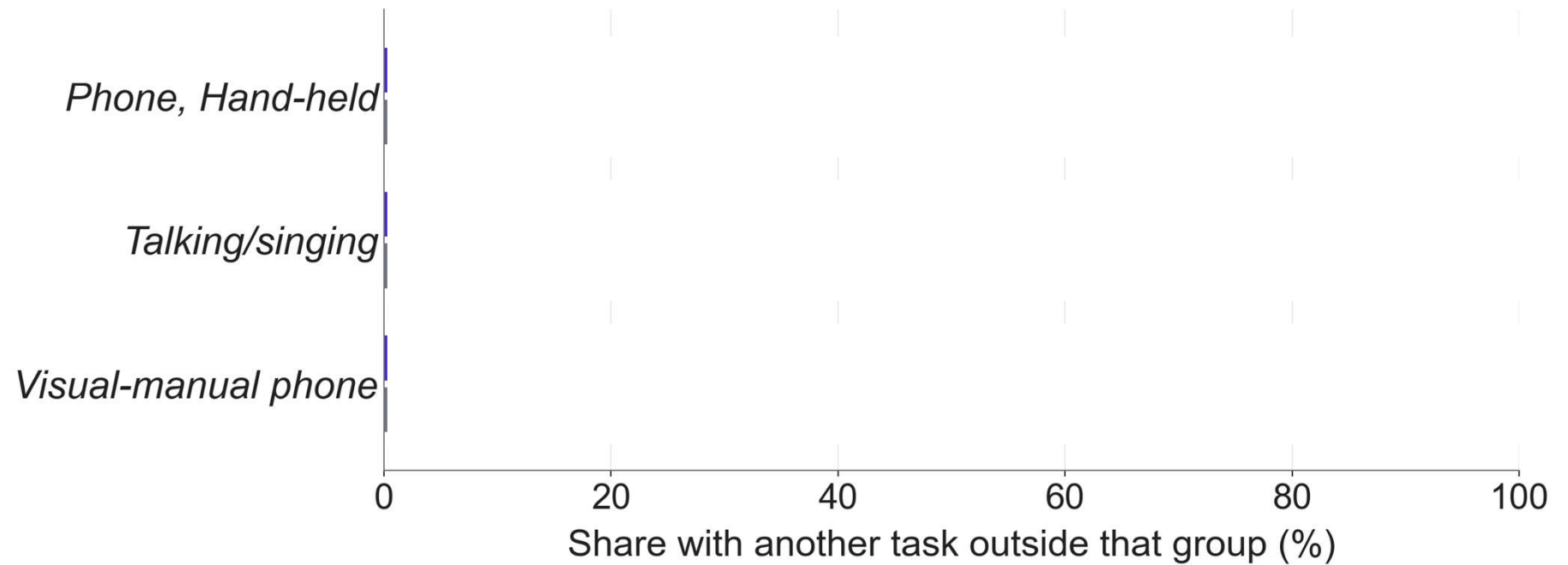
One task label can cover different coded episodes

Each six-second epoch can carry up to three secondary-task codes

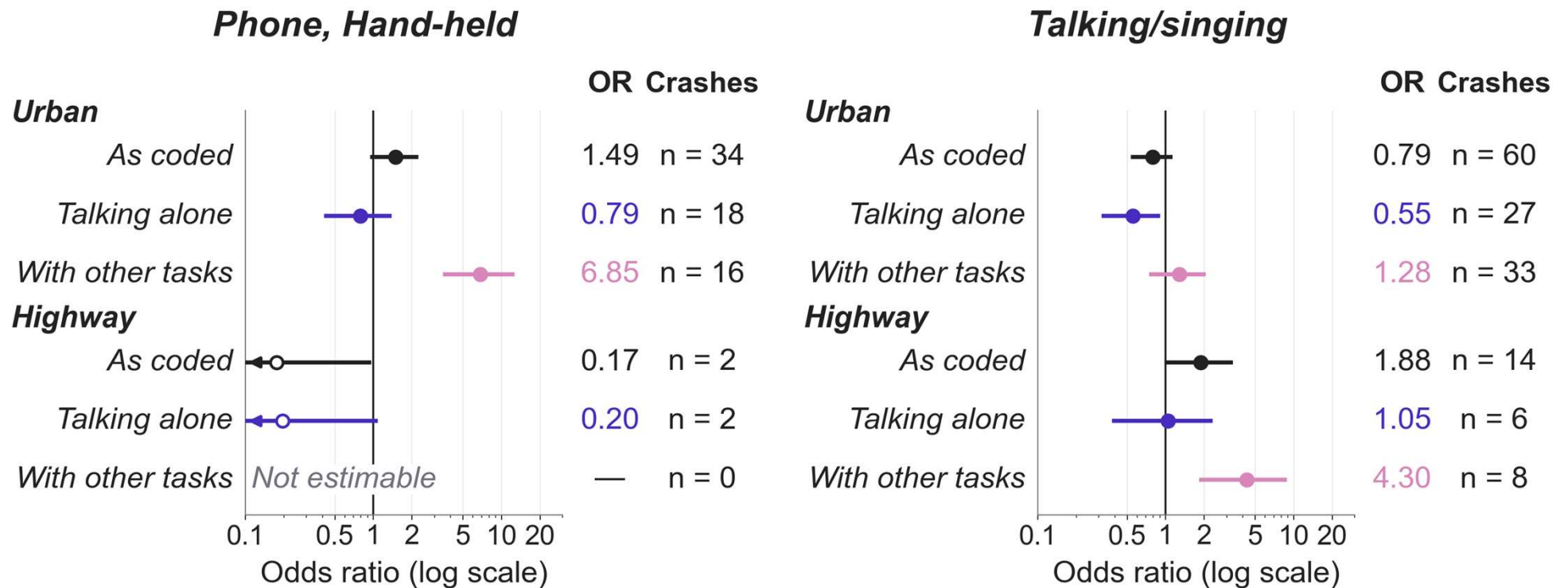


Codes need not occur simultaneously within the epoch.

About half of call crashes include another task



Talking alone: no clear increase; higher odds with other tasks



Comparison group: *Task absent*

Limitations and methodological challenges

- Few crashes: only two "*Phone, Hand-held*" crashes in *Highway*
- Location is only a proxy for where hazards come from
- We assume independent samples – a few drivers can impact the risk estimation
- The baseline changes estimated odds ratios for talking
- Task coding also changes estimated odds ratios

Conclusions

Talking alone

No clear increase in crash odds
in *Urban* or *Highway*

Talking with other tasks

Higher crash odds overall

Clearest elevations:

- *Phone, Hand-held in Urban*
- *Talking/singing in Highway*

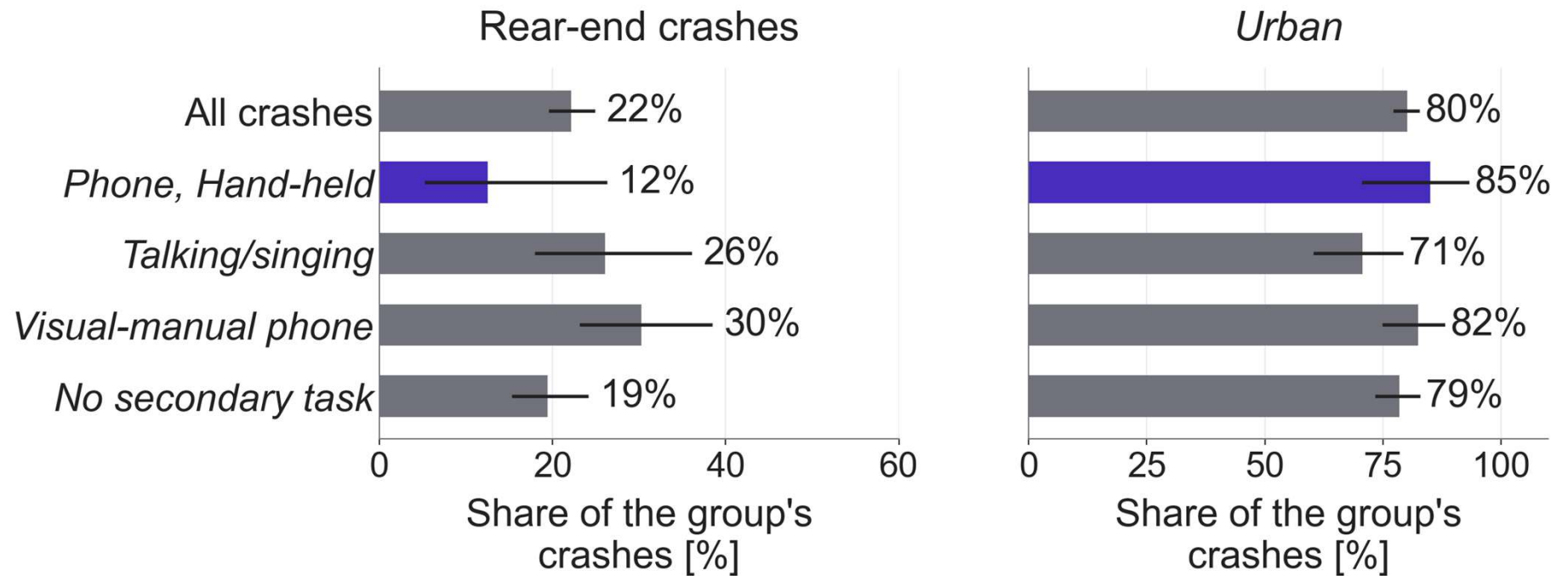
Thank you

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Zhao, Bärghman & Flannagan, DDI2026 extended abstract
SHRP2 data under license SHRP2-DUL-A-3-19-432



***Phone, Hand-held* crashes are rarely rear-end crashes**



Descriptive shares among crashes, not estimates of crash risk.
Full descriptive sample; lines show 95% intervals.