

Distractions in Everyday Driving



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Phase I – Analysis of National Crash Data

THE ROLE OF DRIVER DISTRACTION IN TRAFFIC CRASHES

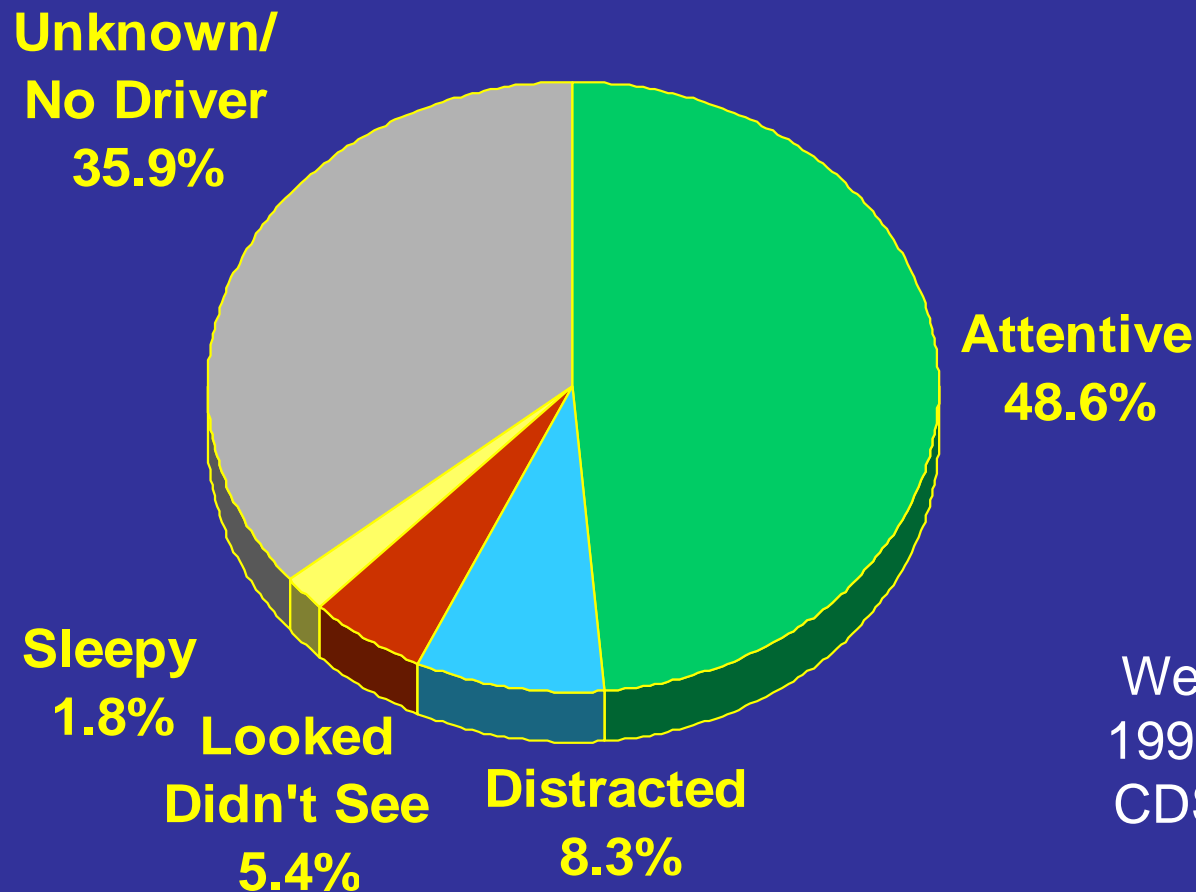


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Driver Attention Status of Crash-involved Vehicles



Weighted
1995-1999
CDS Data

Sources of Driver Distraction

Outside object, person, event	29.4%
Adjusting radio, cassette, CD	11.4
Other occupant in vehicle	10.9
Moving object in vehicle	4.3
Using other device or object	2.9
Vehicle / climate controls	2.8
Eating / drinking	1.7
Using/dialing cell phone	1.5
Smoking related	0.9
Other	25.6
Unknown distraction	8.6

Phase II - On-road Driving Data

- Installed video recording equipment in cars of volunteer subjects
- 2 sites - North Carolina, Pennsylvania
- 70 subjects total
- 5 age categories, equal male and female
- Coded 3 hours of data per subject using VideoPro software





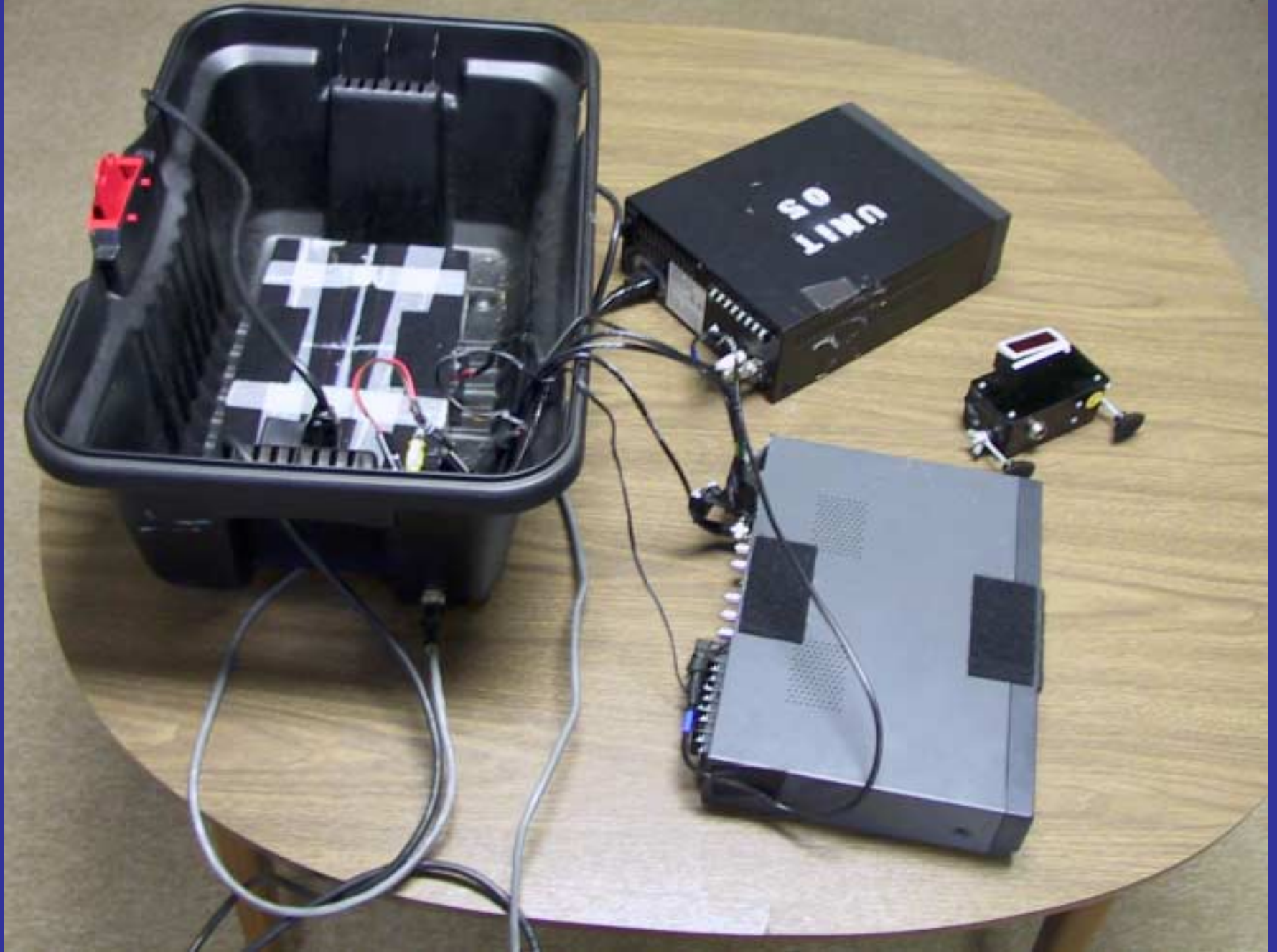


Figure 5. Photo of recording unit.





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Taxonomy of Driver Distractions

Cell phone / pager

Eating / drinking

Radio / tape / CD

Smoking

Other occupants

Reading

Grooming

External events

Internal events

Contextual Variables

Occupants in vehicle (number, age)

Light conditions (light, gray, dark)

Weather conditions (good, bad)

Travel lanes

Traffic level (light, moderate, heavy)

Intersection

Vehicle movement (stopped, moving)

Vehicle turning

Outcome Measures

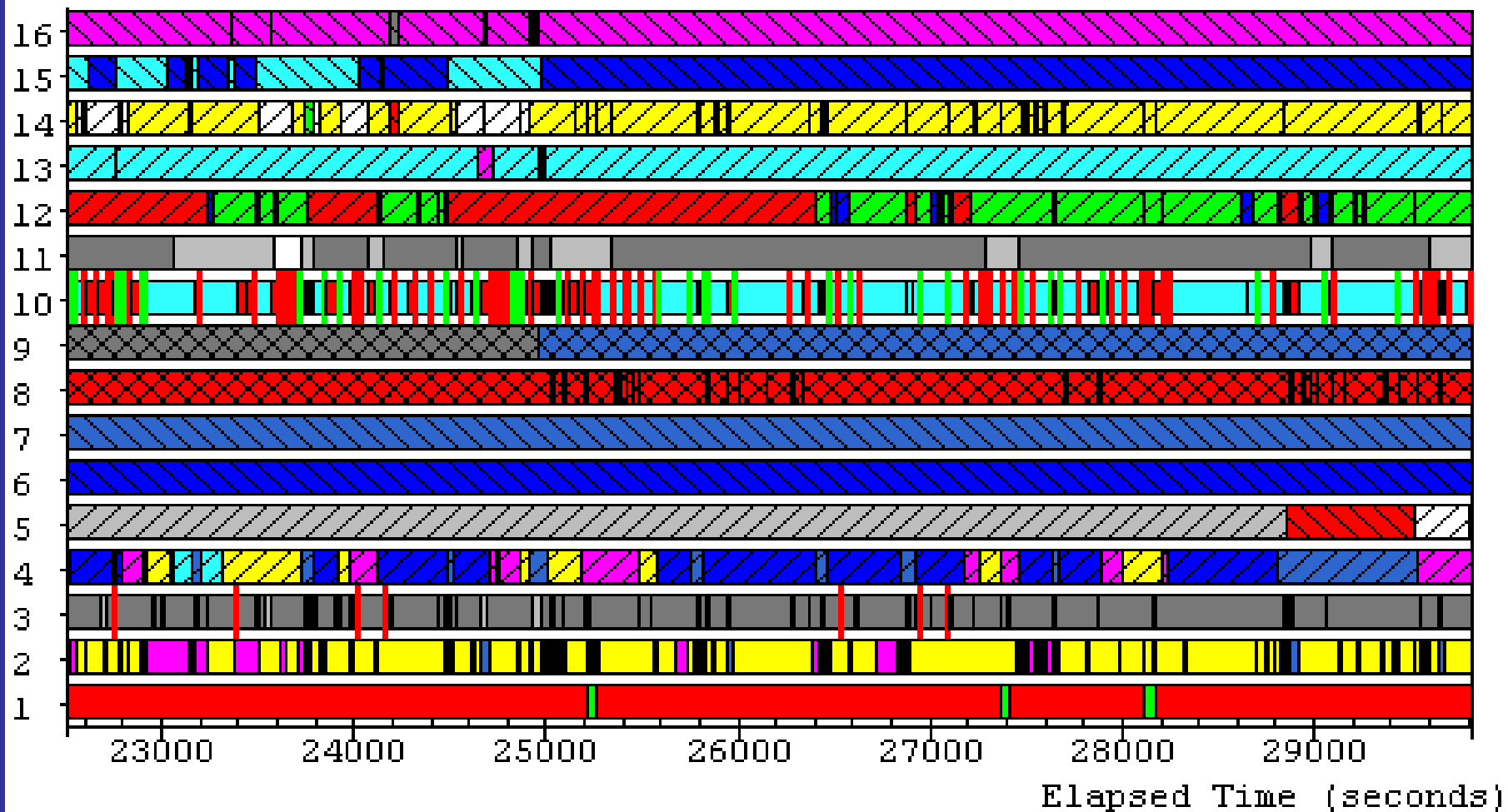
Hands on steering wheel

Eyes on roadway / driving task

Vehicle position in travel lane

Sudden braking

. . . But no measure of cognitive demand

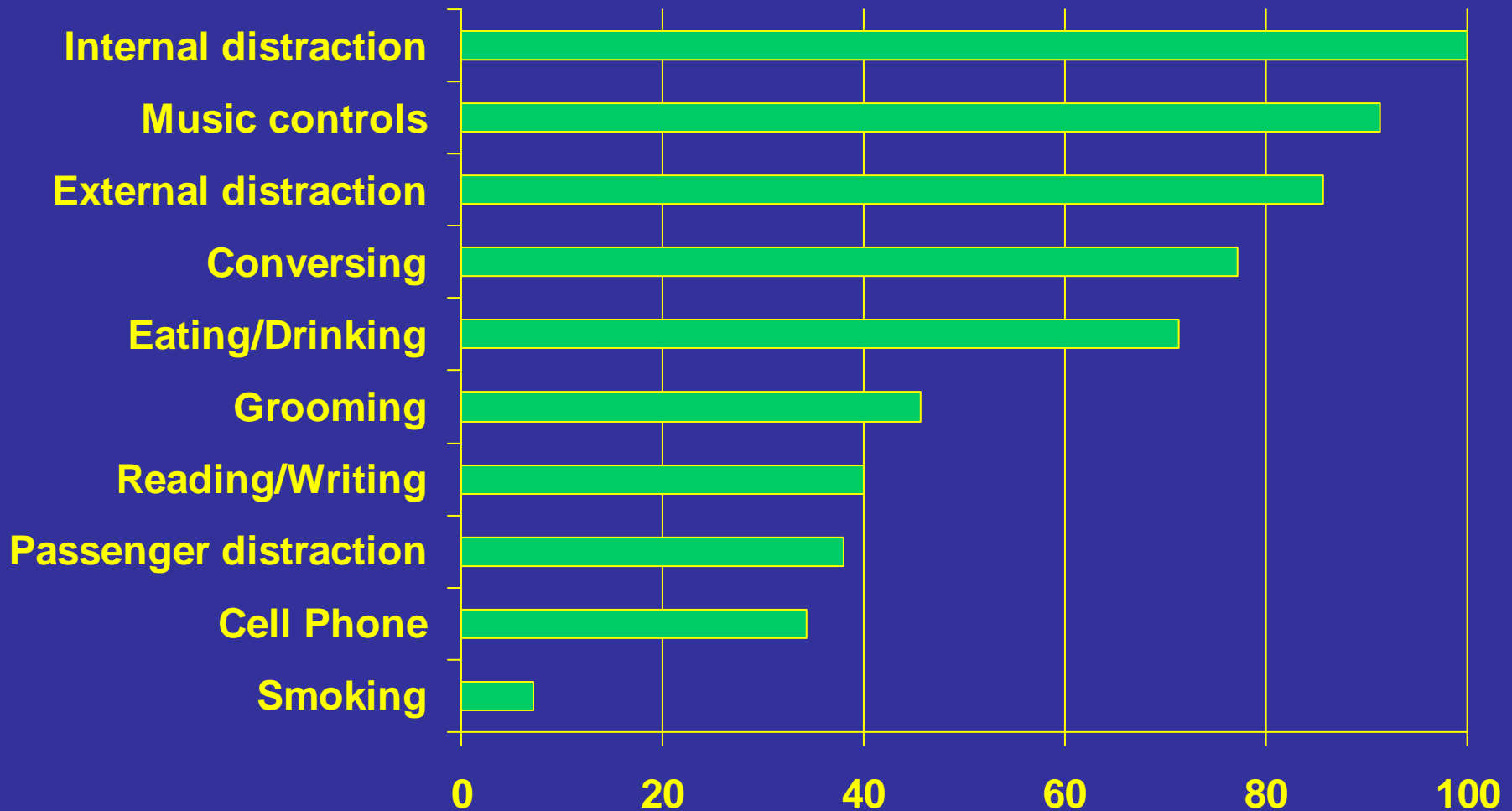


Sample Coding Output

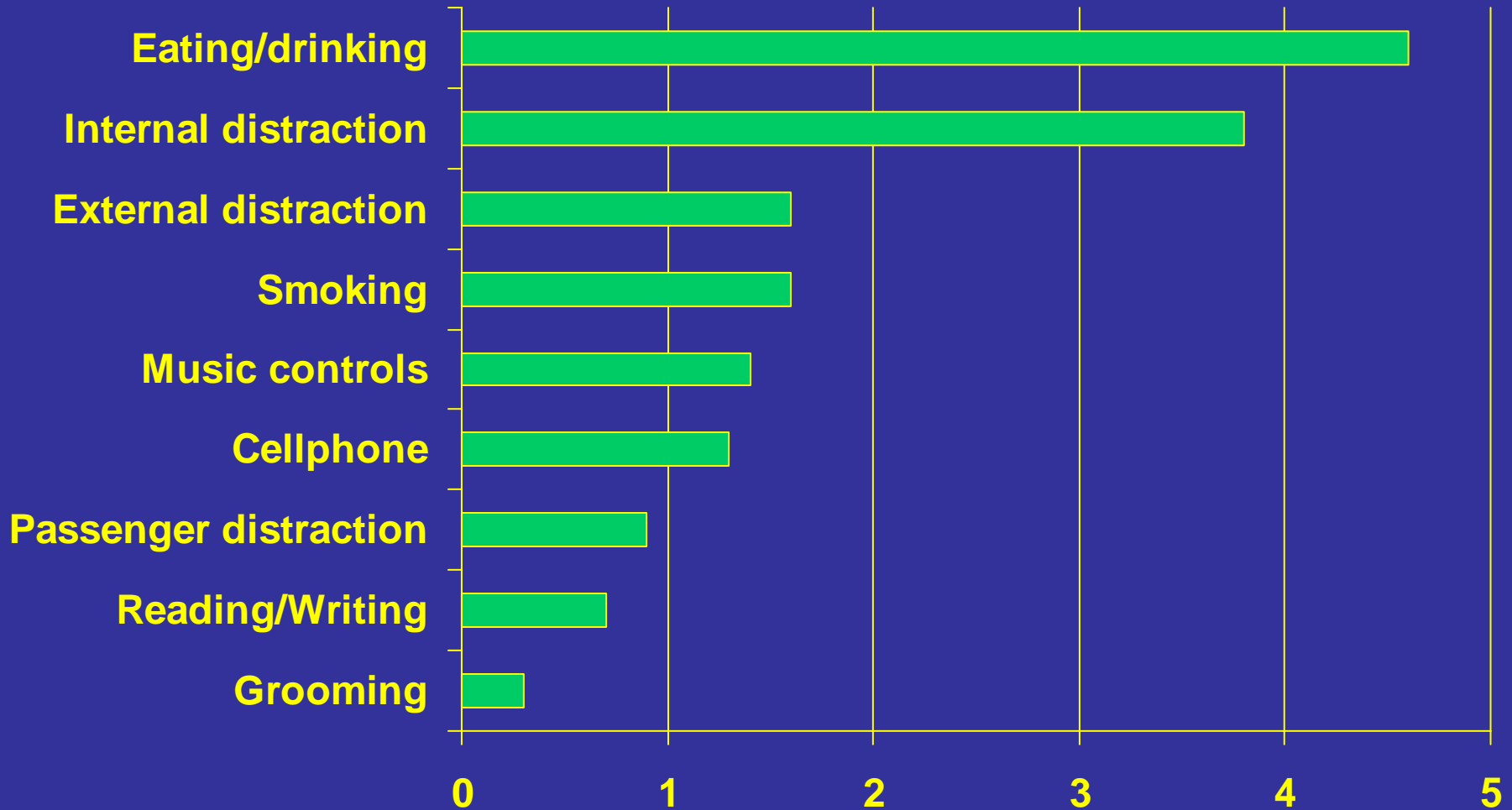
Research Questions

- How often drivers engage in behaviors that might be distracting
- Under what conditions drivers engage in such behaviors
- Differences among drivers by age and gender
- Relative severity of consequences of these behaviors

% of Subjects Affected by a Potential Distraction When Vehicle Was Moving



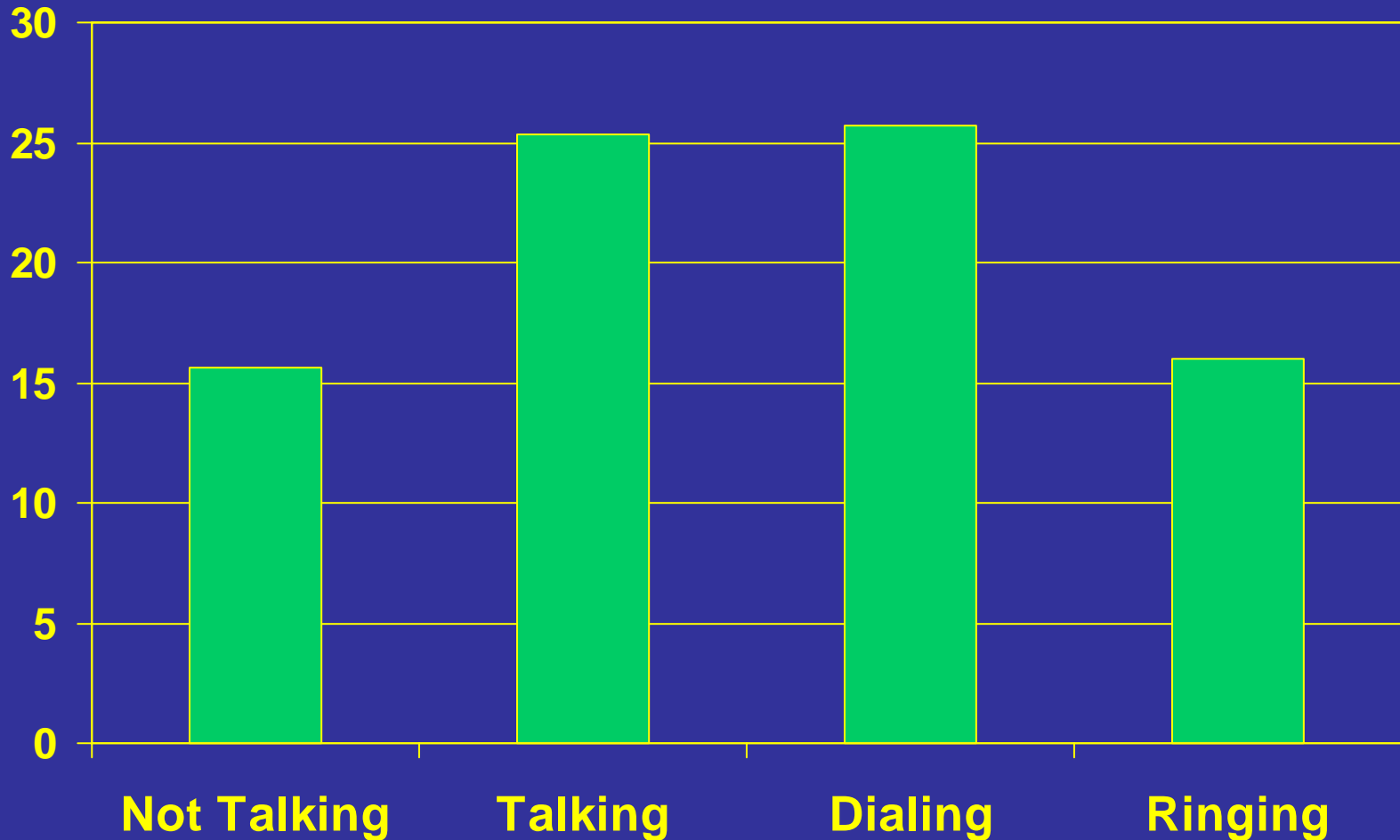
% of Total Time While Driving Engaged in a Potentially Distracting Activity



Descriptive Results - Cell Phone Use

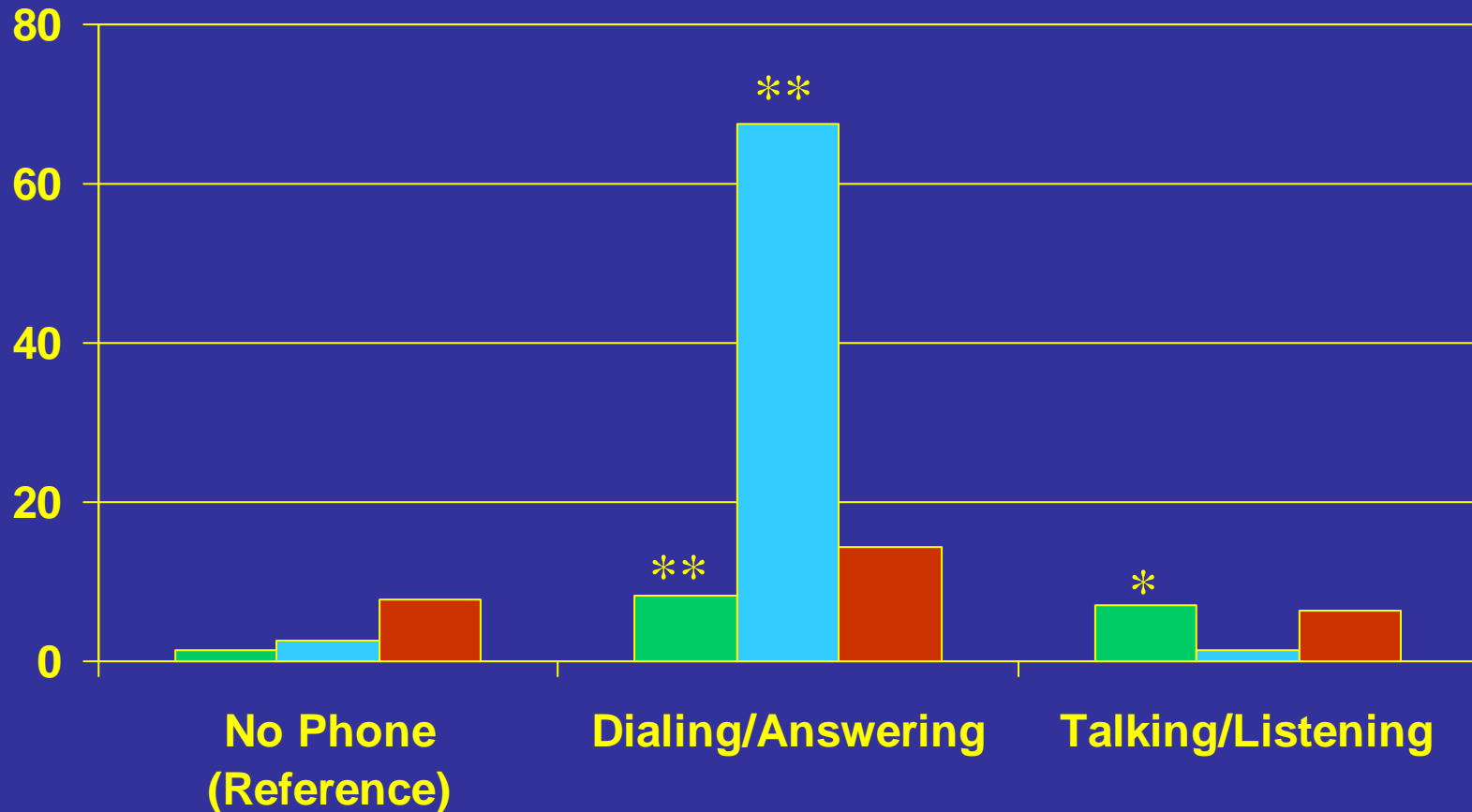
	# Events	Total Duration (min.)	Average Duration (sec.)	Min. Duration (sec.)	Max. Duration (sec.)
Talking	100	154.4	92.7	1.2	1264.2
Dialing	122	26.1	12.9	1.0	65.7
Ringling	15	2.0	7.9	1.3	19.7

% of Time Vehicle Stopped When Using Cell Phone



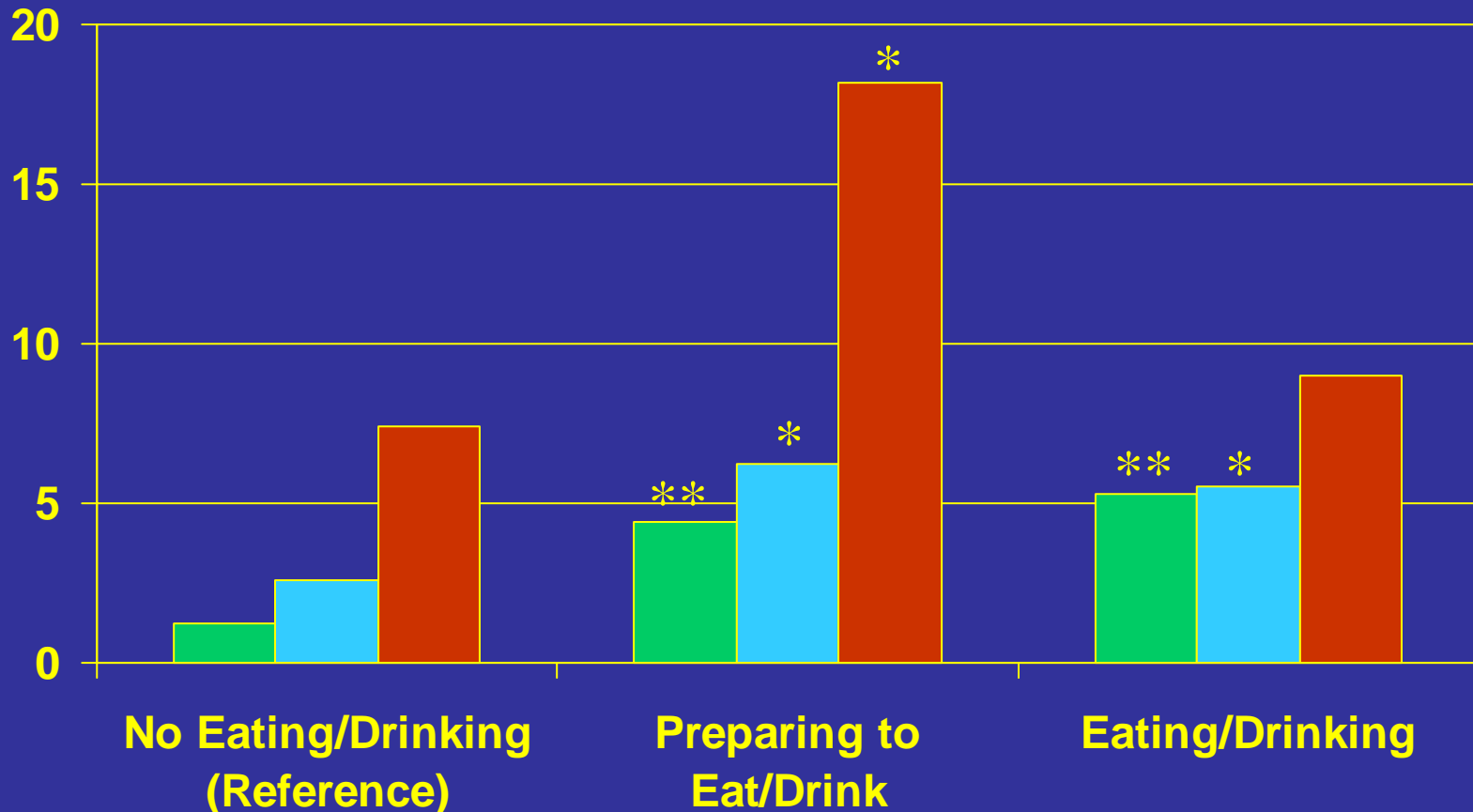
Cell Phone Use Effects on Driving Performance

■ % No Hands ■ % Eyes In ■ Adverse Events / Hour



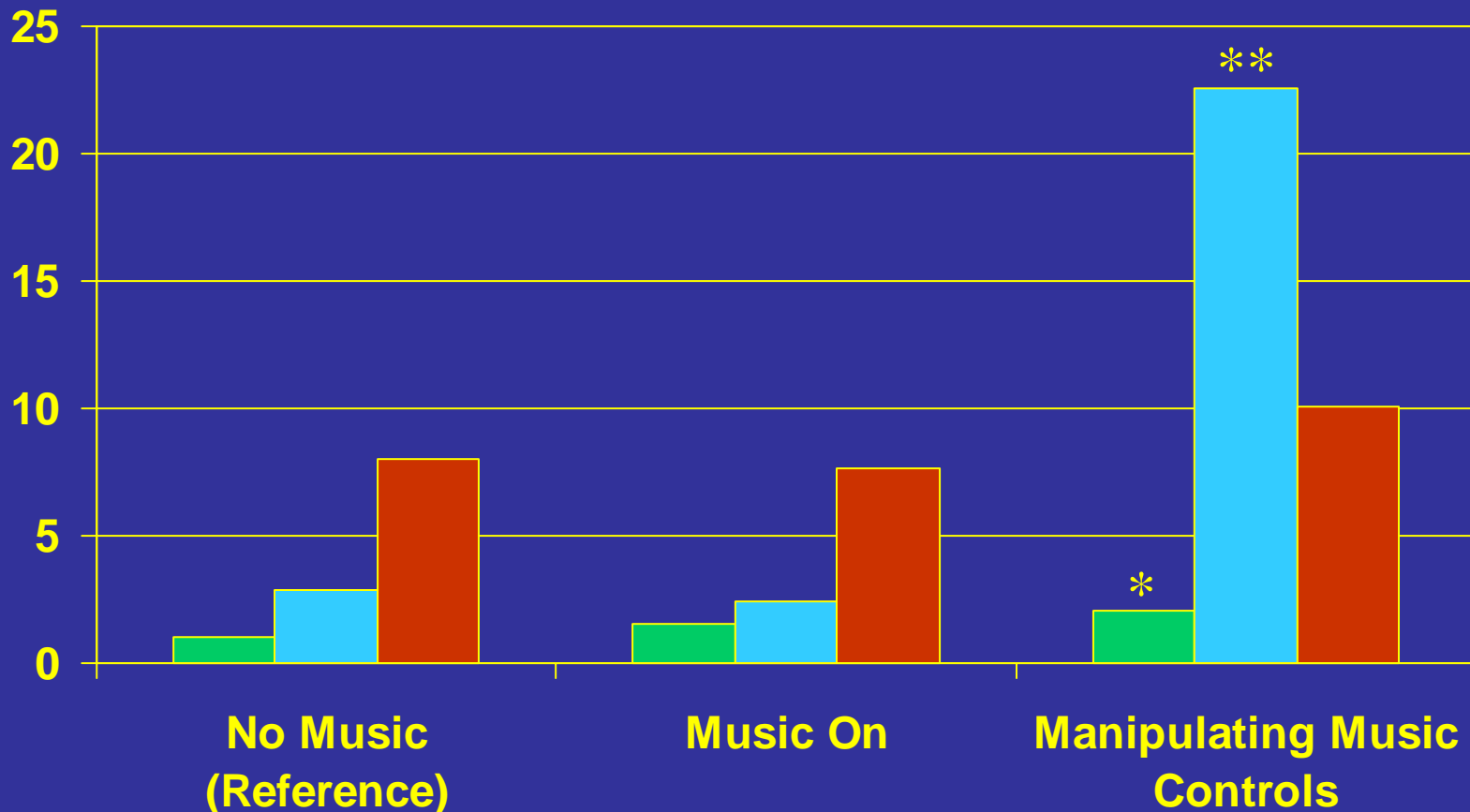
Eating and Drinking Effects on Driving Performance

■ % No Hands ■ % Eyes In ■ Adverse Events / Hour



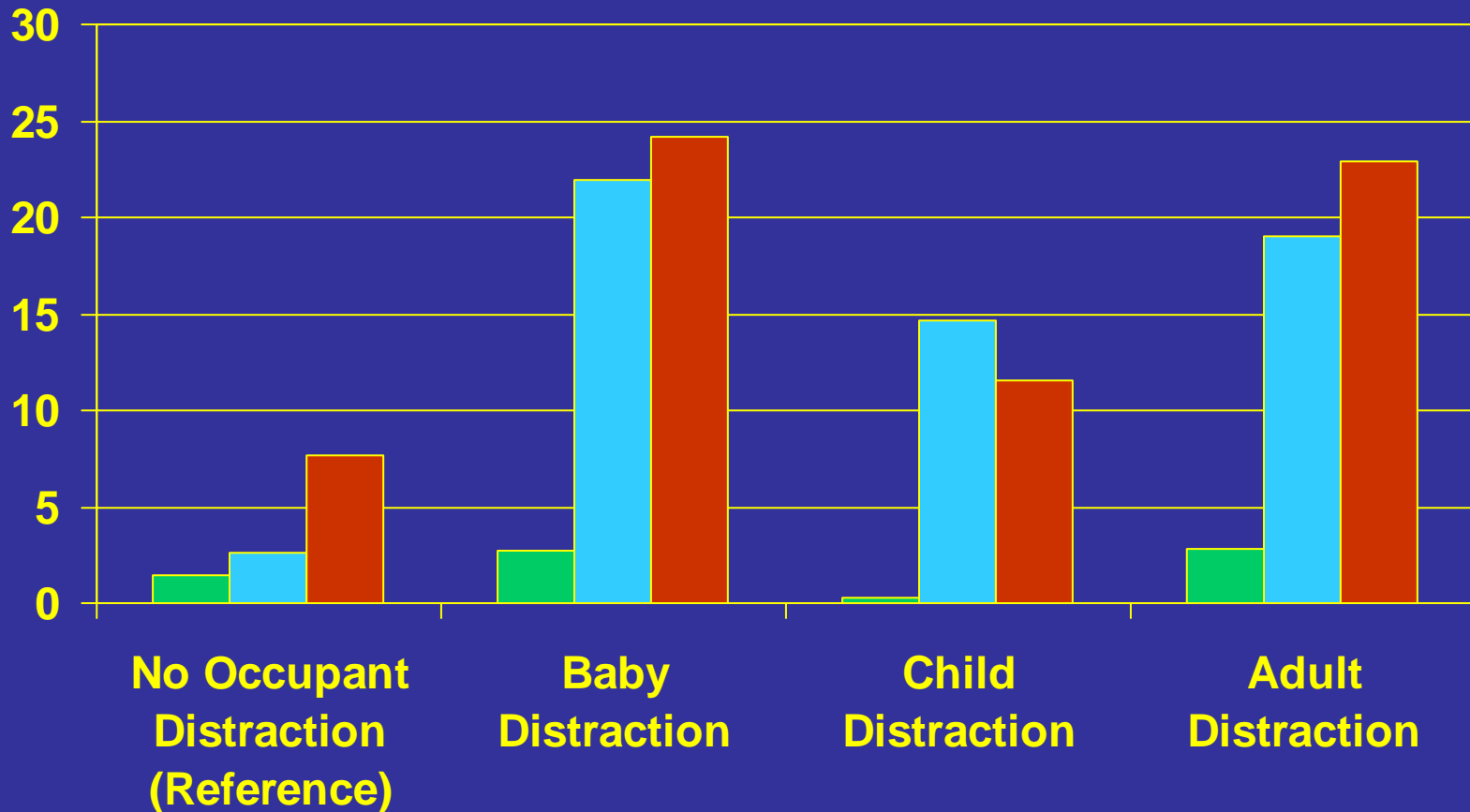
Music/audio Effects on Driving Performance

■ % No Hands ■ % Eyes In ■ Adverse Events / Hour



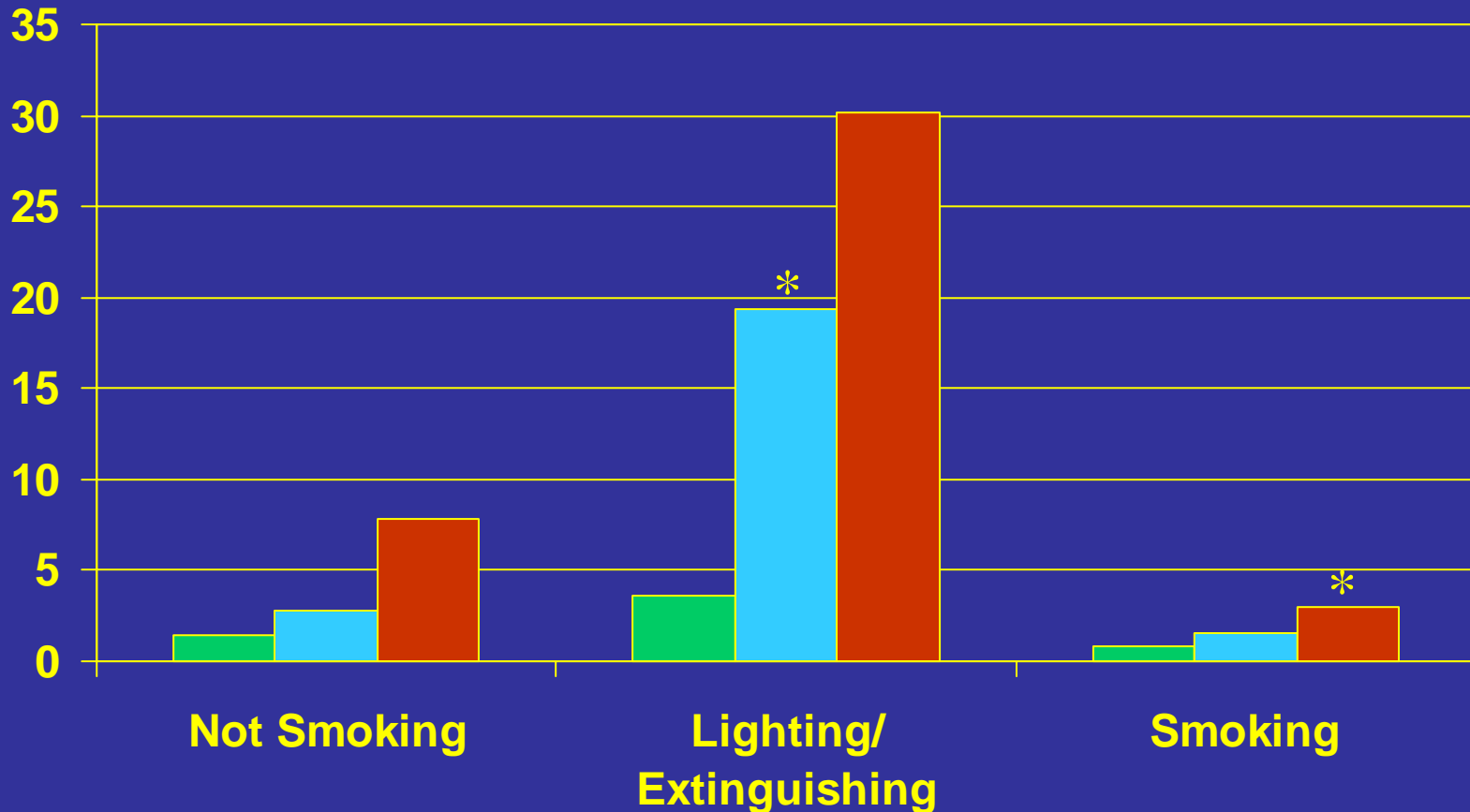
Other Occupant Effects on Driving Performance

% No Hands **% Eyes In** **Adverse Events / Hour**



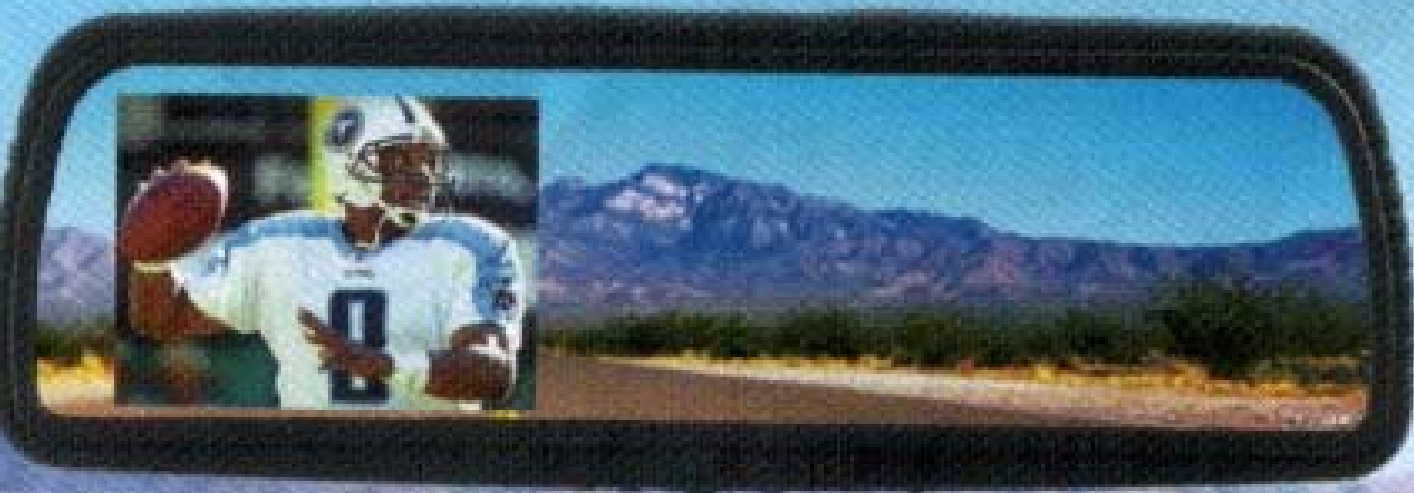
Smoking Effects on Driving Performance

■ % No Hands ■ % Eyes In ■ Adverse Events / Hour



Conclusion

As estimated 1.2 million crashes occur each year in the U.S. because of distracted or inattentive drivers. With all of the many new technologies that future vehicles will afford, learning how to safely manage current everyday distractions is of critical importance to the safety of our roadways.



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