

## What are Australian drivers doing behind the wheel? An overview of secondary task data from the Australian Naturalistic Driving Study

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### Abstract

Using data from the Australian Naturalistic Driving Study (ANDS), this study examined patterns of secondary task engagement during everyday driving trips to determine the type and duration of secondary task engagement and the number and type of incidents associated with secondary task engagement. Results revealed that driver engagement in secondary tasks is frequent, with drivers engaging in one or more secondary tasks every 1.6 minutes, on average. Many of these secondary tasks involved short, discrete button presses and interactions with vehicle controls that lasted less than 5 seconds total duration.

### Background

Distracted driving is the main contributing factor in almost 16% of serious casualty road crashes resulting in hospital attendance in Australia (Beanland, Fitzharris, Young & Lenné, 2013). To date, much of our knowledge of Australian drivers' engagement in distracted driving has been informed by self-report surveys and crash data, both of which are subject to reporting bias (Shinar, 2017). The Australian Naturalistic Driving Study (ANDS) offers a unique opportunity to examine driver engagement in secondary tasks not essential to driving, under real-world driving conditions.

Using data from ANDS, this study examined patterns of secondary task engagement during everyday trips to determine the type and duration of secondary task engagement and the number and type of incidents (i.e. errors, violations or safety-related events) associated with secondary task engagement.

### Method

This study used data collected as part of ANDS (Regan et al., 2013). Three hundred and fifty-two privately owned vehicles (n = 191 from New South Wales; n = 161 from Victoria) were equipped with Data Acquisition Systems (DAS) and driven for a period of four months. The DAS comprised sensors and data-loggers, allowing continuous recording of vehicle data and video while the vehicle ignition was on.

The data used in this paper comprised randomly selected trips from the available data set. Two analysts (KY, RO) viewed entire trips and coded sections where drivers were observed engaging in at least one secondary task. A preliminary dataset of 100 trips (i.e., 1,396 minutes of driving) has been coded.

### Results

A total of 892 secondary task events were identified from the coded trips. On average, drivers engaged in a secondary task every 1.6 minutes of driving. Table 1 displays an overview of driver engagement in secondary tasks. Many commonly performed tasks involved short, discrete presses of the steering wheel and/or center stack controls that lasted a total duration of less than 5 seconds. Almost one quarter (23.9%) of the secondary task events involved the driver engaging in multiple tasks at once. When multiple tasks were engaged in, this typically included drivers interacting with passengers while also performing other tasks. Only 5% of the secondary tasks events were

associated with a driving incident. Many of these incidents involved a delay in drivers detecting that the traffic lights had turned green or that vehicles in front had moved away; however, several incidents were more serious, with drivers veering out of their lane or failing to detect the vehicle ahead braking suddenly.

## Conclusions

ANDS data revealed that driver engagement in secondary tasks is frequent, with drivers engaging in a secondary task every 1.6 minutes, on average. It was also not unusual for drivers to engage in multiple tasks at once. Many secondary tasks involved short, discrete button presses and interactions with non-essential buttons and controls lasting less than 5 seconds total duration. While many tasks were fairly short in duration, as a next step it is important to examine if drivers can effectively share even short secondary tasks with driving using short (< 2 sec) eye glances.

**Table 1. Number, percentage and mean (SD) total task duration (s) of secondary tasks in each category**

Secondary Task	n (%)	Duration (s)	Secondary Task	n (%)	Duration (ms)
Adjusting/Monitoring devices integral to vehicle	184 (20.6)	3.9 (15.5)	Reaching for phone (includes moving)	15 (1.7)	5.1 (3.7)
Adjusting/Monitoring centre stack controls	141 (15.8)	3.6 (7.2)	Manipulating Object (other than phone)	14 (1.6)	61.4 (148.3)
Looking at object/event OUTSIDE the vehicle	105 (11.8)	32.5 (236.5)	Mobile phone, holding	11 (1.2)	40.7 (78.6)
Interacting with passenger	81 (9.1)	222.9 (409.9)	Talking/listening phone (hands-free)	10 (1.1)	306.2 (323.9)
Personal Hygiene	62 (7.0)	82.0 (574.7)	Eating	10 (1.1)	123.4 (17.7)
Reaching for object (includes moving object)	51 (5.7)	4.4 (4.7)	Manipulating phone (hands-free)	9 (1.0)	32.4 (52.6)
Talking/Singing to self	43 (4.8)	23.2 (50.1)	Pet in vehicle	4 (0.4)	5.8 (3.6)
Adjusting steering wheel buttons	42 (4.7)	2.1 (2.6)	Talking/listening phone (hand-held)	2 (0.2)	52.1 (35.8)
Looking at/for object INSIDE vehicle	31 (3.5)	3.3 (4.9)	Inserting/retrieving CD	1 (0.1)	15.5 (-)
Manipulating phone (hand-held)	25 (2.8)	18.5 (21.4)	Writing	1 (0.1)	36.8 (-)
Holding object (other than phone)	19 (2.1)	31.7 (54.9)	Other	12 (1.3)	16.2 (17.5)
Drinking	19 (2.1)	88.9 (13.0)			

## References

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