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Fitness-to-Drive Screening Measure©: Patterns and Trends for Canadian Users

Sherrilene Classen

University of Western Ontario - Canada, sclassen@uwo.ca

Shabnam Medhizadah

University of Western Ontario - Canada, smedhiza@uwo.ca

Liliana Alvarez

University of Western Ontario - Canada, lalvare2@uwo.ca

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Fitness-to-Drive Screening Measure[®]: Patterns and Trends for Canadian Users

Abstract

Background: The Fitness-to-Drive Screening Measure[®] (FTDS) is an online screening tool that enables proxy raters (caregivers, family members, and friends) to identify at-risk older adult drivers via 54 driving-related items. This study aimed to identify areas in need of improvement for the FTDS by identifying the patterns and trends of Canadian users and providing recommendations to increase the *usage*, *reach*, and *potential impact* of the FTDS as a health promotion tool.

Methods: We used monthly Google Analytics reports to calculate descriptive statistics for web page and session specific variables. Variables were separated into Year 1 and Year 2 and were compared using the independent sample t-test.

Results: Patterns were identified for session and web page specific variables; for example, users spent less than the recommended 20 min to complete the FTDS. There was only a significant decrease in the number of French speaking users ($t(22) = .01, p < .05$) from Year 1 to Year 2.

Conclusion: Canadians across the country are able to easily access and use the FTDS for screening older adult drivers in its current format. However, implementing suggested recommendations (e.g., short form FTDS) may increase the overall usage, utility, and/or reach of the FTDS, and, as such, may yield additional benefits to potential users.

Keywords

Automobile Driving, Canada, Caregiving, Family, Friends

Cover Page Footnote

The University of Western Ontario's i-Mobile Research Lab provided infrastructure and support for this research and manuscript preparation.

Credentials Display

Sherrilene Classen, PhD, MPH, OT Reg. (Ont.), FAOTA; Shabnam Medhizadah, HBSc; Liliana Alvarez, PhD, MSc, OT

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Canada's population is aging. Over the next 50 years, individuals 65 years of age and older will represent the fastest growing segment of the Canadian population (Employment and Social Development Canada, 2015). Inevitable visual, cognitive, physical, and functional age-related declines will continue to impact older adults' fitness to drive (Classen, 2010). Age-related driving cessation can affect an older adult driver's sense of autonomy (Dickerson, Meuel, Ridenour, & Cooper, 2014) and quality of life (Marottoli et al., 2000). Therefore, it is imperative to screen for at-risk older adult drivers to ensure that they can stay on the road longer and safer, or to consider timely driving cessation and community mobility options (Classen et al., 2010; Dickerson et al., 2007). Proxy rater screening tools developed for identifying at-risk older adult drivers, such as the Fitness-to-Drive Screening Measure[®] (FTDS), can serve as a preliminary screening tool for identifying drivers in need of interventions, such as a driving evaluation.

About 88% of caregivers who have access to the Internet use it to get online health information about diagnoses and treatment options and to manage their loved one's daily activities, behaviors, and emotions (Fox & Brenner, 2012). Furthermore, caregivers who search for online health information are more often than not doing so on behalf of a loved one (Fox & Brenner, 2012). A study by Lorence, Park, and Fox (2006) also indicated that over 50% of users who seek health information do so for somebody else. Online health information tools have been shown to successfully improve older adults' health outcomes (Bolle et al., 2015). Specifically, for adults 65 years of age and older,

online health information tools are effective in improving health outcomes by enhancing information exchange and/or promoting self-management (Bolle et al., 2015).

To gain insight into how online health information tools, such as the FTDS, are being used, paradata—data that provide information about the process of interactions between users and the online tool—is employed (Couper et al., 2010). Paradata provides information about user behaviors, such as the amount of time spent on web pages, the most or least popular web pages, and the frequency of visits. Although paradata do not uncover why user behaviors are seen, they do provide opportunities for identifying areas of the online information tool that need improvement (Couper et al., 2010). Few studies have investigated online health information tools using paradata. A study by Kay-Lambkin et al. (2011) did use such data to examine how individuals accessed online alcohol or other drug resources. The results indicated patterns and trends that led to conclusions regarding valued aspects of the online tools, such as alignment between user website expectations and presented content, availability of geographically-relevant information and resources, clear and easy to read text, clear website affiliations, and logical flow of information.

Fitness-to-Drive-Screening Measure[®]

The FTDS is a free, online screening tool developed with resources and recommendations appropriate for two countries: the USA and Canada. It is available at www.fitnessdrivescreening.com. The tool allows proxy raters (caregivers, family members, and friends) to identify at-risk older adult drivers through 54 driving-related items. Each

driving-related item is rated on a 5-point scale ranging from 1 (*cannot do*) to 5 (*not difficult*) (Classen et al., 2013; Classen, Winter, Velozo, Hannold, & Rogers, 2013). Once the proxy rater completes all of the items, the FTDS categorizes the driver (as per recommendations from user focus groups) as an accomplished (i.e., driving is overall good), routine (i.e., early signs of needing intervention are present), or at-risk (i.e., safety concerns need immediate attention) driver (Winter et al., 2011). In addition, the FTDS provides specific resources (e.g., names and locations of driving assessment centers) and recommendations (e.g., referral to a certified driver rehabilitation specialist) appropriate for the driver. The online version also has integrated introductory and instructional videos to serve as training materials for proxy raters.

Studies evaluating the psychometrics of the FTDS have identified the tool as having good face and content validity (Classen, Velozo, et al., 2015). Initial exploratory factor analysis identified a 2-factor model (Classen, Velozo, et al., 2015). Removing the “pre-driving” (vs. actual driving) items resulted in the existing 54 items fitting a one-factor model for proxy raters and certified driving evaluators. Meeting two of the three criteria for unidimensionality, the FTDS showed good unidimensionality for proxy raters and driving evaluators (Classen, Velozo, et al., 2015). Interrater reliability indicated moderate ($ICC = .394, p < .001$) correlations between the driving evaluator and proxy raters (Classen, Velozo, et al., 2015; Portney & Watkins, 2008). Furthermore, rater effects

(leniency vs. severity among raters) indicated driving evaluators, as expected, were more severe in their ratings compared to the drivers or proxy raters (Classen, Velozo, et al., 2015). The FTDS also demonstrated concurrent validity with the gold standard, on-road assessment (Classen, Velozo, et al., 2015). Based on cut-points, sensitivity and specificity are established. For example, cut-point 1 (52.63 logits) yields the best specificity (98.2%) with the least number ($n = 28$) of driver misclassifications and cut-point 5 (73.47 logits) yields the best sensitivity (80.6%) but more ($n = 73$) driver misclassifications (Classen, Velozo, et al., 2015). Overall, the FTDS is a valid and reliable tool with good predictive validity for on-road outcomes.

Different screening tools for older adult drivers are currently available online. Some of these tools are the Close Call Quiz, SAFER Driving, Test Your Driver IQ, and the Roadwise Review (Mevius, 2015). All of these tools are free, online assessments that take between 5 (e.g., the Close Call Quiz) to 60 min (e.g., SAFER Driving) to complete. Compared to the FTDS, these tools are self-assessments, which may result in users rating themselves as better drivers (self-report bias) (Marottoli & Richardson, 1998). Self-rating is not occurring in the FTDS because caregivers rate the drivers. Furthermore, little evidence has been established for the reliability and validity of the tools except for the Roadwise Review, which consists of visual, visual attention, cognitive, and motor tasks developed from its predecessor, the DrivingHealth Inventory (Bédard, Riendeau,

Weaver, & Clarkson, 2011). However, the DrivingHealth Inventory lacks predictive validity for at-risk drivers (Bédard et al., 2011; Myers, Blanchard, MacDonald, & Porter, 2008). On the one hand, Bédard et al. (2011) found “limited convergence between findings obtained with the RR [Roadwise Review] and actual performance on standardized approaches,” such as road evaluations, causing further concern for inferring predictive validity of the Roadwise Review (p. 2209). On the other hand, with established validity and reliability for screening older adult drivers, users are assured that as a screening tool, the FTDS has predictive validity. Specifically, as a public health screening tool (Christoffel & Gallagher, 2006), the FTDS holds promise to be used to

- help identify at-risk older adult drivers in communities (early detection);
- steer them in the direction of obtaining help (primary intervention);
- prevent adverse events, such as crashes or crash-related injuries or death, in which older adult drivers are overrepresented (primary prevention); and
- provide options for at-risk drivers, such as continued driving with specific recommendations (health promotion) or driving cessation (secondary prevention).

Of interest is that the FTDS has quite an extensive reach. For example, from January 2012 to August 2015, more than 18,000 users worldwide accessed the FTDS, including users from the USA, Canada, England, Europe, and Japan (Google Inc., 2014). As such, the tool has the potential to be adopted as a health promotion measure in many areas around the world.

Google Analytics

Google Analytics software (Google Inc., 2014) was used in this study to collect Canadian user activity on the American version of the FTDS (the Canadian FTDS was launched in September 2015). Google Analytics is one of the most sophisticated web analytics tools available. It provides real-time data and statistics about site users and their activities, such as the time users spent on the site and the web pages they visited (Dyrli, 2006; McGuckin, Crowley, & Couns, 2012; Ledford, Tyler, & Teixeira, 2010). The software collects raw data and displays the information as metrics, such as the number of times a site is accessed, the duration of the visit, and the user’s country of origin (Ledford et al., 2010). The metrics provided can be used to inform and assist site administrators to strategize and implement changes to increase the usability of the site, and, ultimately, the use, reach, or potential impact of the tool.

Identifying the trends and patterns of Canadian users of the FTDS is important in order to understand its uptake (defined as the taking up or making use of something that is available [The Oxford English Dictionary, 2015]) and potential impact (i.e., the potential effect on, change, or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life beyond academia) (Research Excellence Framework, 2011). Specifically, software programs, such as Google Analytics, can allow researchers to collect domain-specific data. As such, it renders a plausible opportunity for researchers to better understand the reach and

uptake and lay the foundation for determining the potential impact of a publicly available online screening measure, such as the FTDS.

Purpose

As a potential public health screening tool, the web-based FTDS has the ability to reach millions of people and help them identify at-risk older adult drivers. However, to make a real impact on older adult driver safety, its uptake needs to be better understood. To better understand the uptake of the FTDS, we used Google Analytics software (Google Inc., 2014). As such, our research question is: “What are the patterns and trends of FTDS use among Canadians?” Therefore, the purpose of this study was to employ Google Analytics software to determine the usage patterns of Canadian users on the FTDS website by

- tracking user activity,
- identifying trends and patterns of use, and
- using the information to determine areas for improvement on the FTDS and/or the website where it is located.

This study provides unique insight into the use and reach of the FTDS (a health information and promotion tool). Contributing to the evidence base of online health information tools, such as the FTDS, is important because of the rapidly expanding availability of online health information tools and their potential to reach millions of health consumers all over the world (Lovett, Mackey, & Liang, 2012). By first revealing users’ patterns and trends, we can identify the needs of FTDS users and

other potentially similar health information tools. Likewise, indicating ways to develop and present health information tools can help maximize the potential benefits of online tools (Kay-Lambkin et al., 2011).

Occupational therapists are participating in the screening, comprehensive assessments, and retraining of older adult drivers (Korner-Bitensky, Menon, von Zweck, & Van Benthem, 2010). As more health information tools become available online to aid in driver screening, occupational therapists may strengthen their leadership roles in these aspects of clinical practice while educating drivers on and/or increasing awareness of fitness-to-drive issues among older adults and their loved ones.

Methods

Access and management of unidentifiable data was conducted at the University of Western Ontario, Canada, under exception certified by the Research Ethics Board (May 7, 2015) in accordance with articles 2.4 and 2.5 of Canada’s Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS-2).

Design

This descriptive study was conducted using data reports provided by Google Analytics software (Google Inc., 2014) on Canadian users accessing the FTDS between January 2013 and December 2014.

Variables

A description of the variables by category, definition, and significance or relevance for this study is displayed in Table 1.

Table 1*Variables by Category, Definition, and Significance and/or Relevance*

Category	Variable	Definition (Google Inc., 2014)	Significance and/or relevance of the variable
Session specific variables (Session: a group of visitor interactions that take place on the FTDS website in the specified time frame)	Average session time	Average duration of a session (in min) in the selected time frame	Reflects whether users are watching instructional videos (which requires approximately 20 min to complete the FTDS)
	New users	Number of first time visitors to the site	Reflects increased interest and/or awareness of the site
	Average web page depth	The average number of web pages viewed in a session	Can help identify web pages in which users are losing interest
	New English speaking users (en)	The number of new users with browser language settings set to English	Indicates the access and interest of English speaking users to the tool
	New French speaking users (fr)	The number of new users with browser language settings set to French	Indicates the access and interest of French speaking users to the tool
	Session bounce rate	Percentage of sessions where the visitor left the site from the home page without interacting with the rest of site	Reflects whether users are interacting with the site beyond the home page
	Provinces	The province(s) the session originated from within the selected date range	Identifies from which provinces and territories users are accessing the tool, indicating provinces showing interest in the tool
Web page specific variables (Web page specific: a group of visitor interactions that take place on specific FTDS web pages in the specified one-time frame)	Unique web page views	The total number of visits during which the specified web pages were viewed at least once	Identifies the web page(s) that most attract users' interests
	Average time on web page	The average amount of time (in min) spent viewing the web page	Identifies web pages in which users are most/least interested; or that provide greater amounts of information
	Web page bounce rate	The percentage of visits in which the visitor left the site from the specified web page without interacting with the web page	Identifies whether users are exiting before interacting with the tool and from what web page
	Entrances	The number of times users enter the site through the specified web pages	Identifies whether users are skipping web pages as they enter (consider the web page less important and/or interesting)
	Exits	The percentage of users who exit the site from the specified web pages after interacting with the web page	Identifies whether users are exiting before completing the tool and from what web pages

Procedure

The research assistant was registered as the site administrator for the FTDS Google Analytics account. The team's systems support specialist trained the research assistant on the use of the

software and display of variables. Possible variables of interest and date ranges were discussed during weekly team meetings. The meetings took place from fall 2014 to winter 2015. The team determined the final list of variables for analysis,

the date ranges (January 2013 to December 2014), and the monthly summary data as per Google Analytics reports of Canadian users. The specific steps to extract, collect, and manage the data are discussed in detail below.

Data Collection and Data Management

Only FTDS site administrators had access to the password-protected reports available from www.google.com/analytics. The site administrator used Google Analytics software (Google Inc., 2014) to extract data reporting Canadian user activities on the FTDS site. The team divided Google Analytics reports into monthly sessions, defined as the group of interactions that took place on the FTDS in a 1-month period (e.g., September 1, 2014 to September 30, 2014). They included Google Analytics reports of users accessing the FTDS measure with a Canadian Internet Protocol (IP) address, a logical binary address that identifies a computer and its location on the Internet (Doyle, 2010). For data analysis purposes, they classified all variables in one of two categories: session specific variables (i.e.,

the group of interactions that took place on the FTDS site in a 1-month period) and web page specific variables (i.e., the group of interactions that took place on specific FTDS web pages in a 1-month period). The trained research assistant transferred all the data to a password-protected excel spreadsheet.

Data Analysis

The team members imported the metrics of interest from the excel spreadsheet to SPSS version 22.0 (IBM Corp., 2013). They calculated descriptive statistics for each of the variables, separated the variables into Year 1 (January 2013 to December 2013) and Year 2 (January 2014 to December 2014), and compared the variables between the 2 years using independent sample t-tests.

Results

Table 2 presents the results for overall session specific variables from January 2013 to December 2014.

Table 2

Descriptive Statistics of Session Specific Variables (January 2013 to December 2014)

Session specific variables	Mean	Minimum	Maximum	Standard Deviation
Average session time (min)	5.44	1.22	12.51	2.80
New users	39.92	8.00	159.00	34.50
Average web page depth	4.08	2.41	7.60	1.24
New English speaking users	36.37	7.00	147.00	33.02
New French speaking users	3.21	0.00	13.00	3.81
Bounce rate (%)	42.52	19.17	68.86	12.57

Canadian users spent an average of 5.44 min on the site. The highest average time spent on the site in a month was only 12.51 min (of the expected 20 min.). On average, 40 new Canadian users

visited the FTDS tool in a month, with October 2013 being the month with the highest number of new users (159). The users viewed an average of four web pages out of nine per visit. As expected,

the majority of the users accessing the FTDS have browser settings set to the English language. However, an average of three users with French language browser settings visited the site each month. In terms of the session bounce rates,

42.52% of Canadian users left from the tool's home page without interacting with it.

Table 3 presents the results for new Canadian users (January 2013 to December 2014) and per capita of each province or territory (2015).

Table 3

Number of New Canadian FTDS users Expressed as a Ratio per Population of each Province or Territory

Province or territory	Canadians, ages 15 and over (Statistics Canada, 2015)	New Canadian FTDS users	Ratio (New user/ Population)
Alberta	3,425,600	80	1/42,820
British Columbia	4,000,900	91	1/43,966
Manitoba	1,052,600	31	1/33,955
New Brunswick	644,800	30	1/21,493
Newfoundland and Labrador	452,200	6	1/75,367
Northwest Territories	34,600	2	1/17,300
Nova Scotia	810,700	11	1/73,700
Nunavut	25,500	0	0
Ontario	11,599,100	509	1/22,788
Prince Edward Island	120,200	5	1/24,040
Quebec	6,984,100	131	1/53,314
Saskatchewan	917,800	46	1/19,952
Yukon	31,100	0	0

Note. The population includes males and females. Canadian census data only provided population data per province by age group beginning at 15 years of age.

Except for Yukon and Nunavut, new Canadian users accessed the FTDS from all of the provinces or territories in Canada. The most frequent new users accessed the FTDS from Ontario, followed by Quebec and British Columbia.

However, per capita, the most frequent number of new users accessed the FTDS from the Northwest Territories, followed by Saskatchewan and New Brunswick. Table 4 presents the results of the web page specific variables.

Table 4

Descriptive Statistics of Web Page Specific Variables (January 2013 to December 2014)

Web page specific variables	Mean	Minimum	Maximum	Standard Deviation
Home page/End user agreement web pages				
Unique web page views	48.38	9.00	174.00	38.24
Average time (min)	1.66	0.13	3.60	0.89
Bounce rate (%)	42.17	22.00	70.00	13.13
Entrance	47.71	9.00	172.00	37.74
Exit (%)	43.44	13.00	68.00	12.43

Questionnaire web pages				
Unique web page views	83.58	17.00	362.00	78.69
Average time (min)	1.52	0.52	2.53	0.56
Bounce rate (%)	28.13	0.00	100.00	29.52
Entrance	7.08	0.00	28.00	7.15
Exit (%)	20.03	7.00	100.00	18.48
Results web page				
Unique web page views	11.38	1.00	59.00	11.89
Average time (min)	2.72	0.00	9.50	2.18
Bounce rate (%)	7.08	0.00	50.00	15.39
Entrance	0.67	0.00	4.00	1.01
Exit (%)	53.28	0.00	100.00	29.22
Key form web page				
Unique web page views	2.58	0.00	19.00	3.98
Average time (min)	2.73	0.00	24.50	5.16
Bounce rate (%)	0.00	0.00	0.00	0.00
Entrance	0.04	0.00	1.00	0.20
Exit (%)	13.49	0.00	100.00	23.41

Note. Home page/ End user agreement web pages = includes the FTDS introductory home page and end user agreement; Questionnaire web pages = includes section A.1 proxy rater demographics, A.2 driver demographics, B. Driver history, and C. the 54 driving skill questions; Results web page = displays FTDS results, indicating whether the driver is an at-risk driver, routine driver, or accomplished driver and context-specific resources and recommendations; Key form web page = displays proxy ratings and items that present difficulty for the driver.

Unique Web Page Views

As expected, the FTDS questionnaire web pages (proxy rater and driver demographics, driver history, and 54 driving skill items) were the most viewed with 79.56 web page views. The end user agreement web page, which had to be signed to further proceed, was the second most popular web page to be viewed. The results (average of 11.38 web page views) and key form web pages (average of 2.58 unique views), the very last steps in completing the FTDS and the most important part for user follow-up information, were the least viewed web pages.

Average Time on Web Page

Users spent an average of 1.52 min on the questionnaire web pages, making them the web pages on which users spent the least amount of time. On the contrary, the highest amount of time spent on a web page (average of 2.72 and 2.73 min) occurred for the results and key form web pages.

Web Page Bounce Rate

The end user agreement web page had a bounce rate of 42.17% (users left the web page without interacting with it), the highest bounce rate among all of the web pages. The results and key form web pages had the lowest bounce rates.

Entrance

On average, 47.71 users entered the FTDS through the end user agreement web page, skipping the tool's home page. Seven users on average entered through the first questionnaire web page every month without going through the previous web pages (i.e., end user agreement, introduction video, etc.). As expected, almost no users entered the site via the results or key form web pages.

Exit

After interacting with the web page, 20.03% of all of the users exited the site from one of the questionnaire web pages, while 43.44% of users exited the site from the end user agreement web

page. As expected, the highest number of exits were from the results and key form web pages at the end of the questionnaire. Table 5 presents the results of the independent sample t-tests for each variable, between Year 1 and Year 2, as previously described. Results of the independent sample t-tests

(significance $p < .05$) indicated only a significant difference for the average number of new French speaking users accessing the FTDS. New users per month decreased from 5.00 new users per month in Year 1 to 1.42 new users per month in Year 2.

Table 5

Independent Samples t-test Results of Differences in the Session Specific and Web Page Specific Variables from Year 1 and Year 2

Category	Year 1 Mean	SD	Year 2 Mean	SD	t	Significance (2-tailed)*
Site specific variables						
Average session time (min)	5.46	3.00	5.42	2.70	0.03	0.20
Bounce rate (%)	40.10	13.35	42.93	12.16	-0.54	0.59
New users	36.58	41.57	43.25	27.13	-0.47	0.65
Average web page depth	4.12	1.25	4.05	1.28	0.14	0.89
New English speaking users	31.58	38.43	41.67	27.44	-0.70	0.50
New French speaking users	5.00	4.61	1.42	1.44	2.57	0.02
New sessions	36.58	41.57	43.25	27.13	-1.86	0.65
Returning sessions	12.17	13.80	22.25	12.81	-0.47	0.08
Home page/ End user agreement web page						
Unique web page views	41.25	45.01	55.50	30.35	-0.91	0.37
Average time (min)	1.99	1.03	1.33	0.59	1.92	0.07
Bounce rate (%)	39.61	13.32	44.74	12.99	-0.95	0.35
Entrance	40.75	44.52	54.67	29.83	0.90	0.38
Exit (%)	40.47	13.26	46.41	11.30	-1.81	0.25
Questionnaire web pages						
Unique web page views	75.00	96.22	92.17	59.38	-0.53	0.60
Average time (min)	1.47	0.59	1.57	0.54	-0.43	0.67
Bounce rate (%)	34.45	37.88	21.81	17.33	1.05	0.30
Entrance	6.59	9.64	7.58	4.67	-0.32	0.75
Exit (%)	24.46	24.80	15.61	7.50	1.18	0.25
Results web page						
Unique web page views	10.42	16.00	12.33	6.25	-0.39	0.70
Average time (min)	2.05	1.70	3.38	2.46	-1.54	0.14
Bounce rate (%)	5.83	15.05	08.33	16.28	-0.40	0.70
Entrance	0.67	1.15	0.67	0.89	0.00	1.00
Exit (%)	52.78	32.93	53.78	27.68	-0.08	0.94
Key form web page						
Unique web page views	2.92	5.30	2.25	2.18	0.40	0.69
Average Time (min)	0.92	1.09	4.54	6.88	-1.80	0.09
Bounce Rate (%)	0.00	0.00	0.00	0.00	0.00 ^a	1.00 ^a
Entrance	0.08	0.29	0.00	0.00	1.00	0.33
Exit (%)	19.73	29.76	0.24	13.22	1.33	0.20

Note. a. and 2-tailed significance cannot be computed because the Standard Deviation (SD) of both groups is 0. * $p < 0.05$.

Discussion

Employing Google Analytics software, we identified and analyzed the patterns of use of the FTDS among Canadian users. The results of this analysis reflect the need for several improvements in order to increase the usage, reach, and potential impact of the FTDS.

Session Specific Results

Canadian users are spending considerably less time than the recommended 20 min on the site (Classen & Winter, 2013). The longest average time spent on the site was 12.51 min. The least amount of time on average was spent on the questionnaire web pages (1.52 min), and the most time was spent on the results and key form web pages (2.72 and 2.73 min, respectively). Given that only American-based resources and recommendations were available, the team expected that users would spend more time on actually completing the questionnaire and less time on the results web page (where driver classification and resources are available). However, the results revealed the opposite trend, indicating that Canadians may desire to spend less time on the questionnaire and more time on finding resources and recommendations for their concerns. Furthermore, these findings have important implications for further decision making for the FTDS, as no Canadian user is spending the recommended time (20 min) on the site (Classen & Winter, 2013). Likewise, the results indicated that introductory and instructional videos, which take approximately 11.50 min to complete, are not being

watched. This pattern is similar to the process evaluation of the Roadwise Review study, where users would begin to watch the explanatory/instructional videos but would then skip through them because the videos were too lengthy and the users believed they did not need the videos (Myers et al., 2008). Videos may be skipped due to a lack of time (video length too long), a lack of interest, and/or perceived importance, signifying an area in need of improvement.

More than 50% of Canadian users who visited the site did not leave from the main web page, indicating that the home page attracts the attention of one out of two users that access the site. The FTDS may catch users' attention because clear website affiliations are present. Likewise, the home page content may have matched the users' expectations of the FTDS, aligning with the valuable aspects of an online tool found by Kay-Lambkin et al. (2011). On average, the Canadian user visits four web pages out of nine per visit. Due to the linear structure and flow of the web-based site, it can be assumed that the user is exiting the site when they have to complete the demographics of the proxy rater. The end user agreement does not seem to deter users from using the tool, but having proxy raters enter information about themselves may be resulting in users leaving the site before completing it. This pattern may be similar to the phenomenon seen in the Roadwise Review study, in which if users did not find the items (or information) in the task relevant, they did not complete the tasks (Myers et al., 2008). As such, the research team will have to consider if obtaining

demographic data about drivers and proxy raters is adequately beneficial, given that they are losing potential users of the site due to perceived relevance to proxy raters.

In the last 2 years, an average of 40 new Canadian users have visited the tool every month, perhaps indicating that there is a continued growth in the interest of using a tool that can help identify at-risk older adult drivers. However, this number must be interpreted with caution, as Google Analytics identifies new users as a “never before seen IP address within a specified session” (Ledford et al., 2010, p. 84). Therefore, if a user visits the site with the same IP address but during two different months, then he or she is considered a new user each month. However, if he or she visits the site in the same month, then the second visit is not considered a new visit. The results indicated that site traffic is steady and that there is continued interest in the tool.

As expected, the majority of users had browser settings set to the English language. It is interesting that although Quebec had the second largest total of new users, there were only a small number of French speaking users. Quebec is officially unilingual in French and a screening tool only available in English could have acted as a barrier for many Quebecois. Therefore, this finding indicates there may be potential interest for developing a French version of the tool for French speaking Canadians.

Researchers need to be cautious when interpreting and comparing new users to the province’s population. Two different patterns were

identified when the top three provinces with the highest number of new users (Ontario, Quebec, and British Columbia) were compared to the top three provinces with the highest per capita of new users (Northwest Territories, Saskatchewan, and New Brunswick). Specifically, results indicated that the Northwest Territories had the highest number of new users per capita. However, because the Northwest Territories have one of the smallest populations, the two new users in 2 years resulted in a high ratio of new users. Overall, national interest in the tool was observed, with users representing 11 of the 13 provinces and territories. The national interest in the screening tool may be indicative of the rising interest in older adult driver safety.

Web Page Specific Variables

The questionnaire web pages were the most viewed, indicating that many users are skipping the home page and end user agreement, and that the questionnaire web pages are of most interest. Still, the number of views for the results and key form web pages being lower than expected suggests that despite having a high interest in the tool, users are not following through to the results and key form web pages. This may be an indication that the questionnaire has cumbersome time demands. Furthermore, despite questionnaire web pages being the most viewed, Canadian users are spending the least amount of time on such web pages, and the most time on the results and key form web pages. This indicates that users may be rushing through the questionnaire portion of the tool but spending more time understanding and interpreting the results and driver classification sections. This may have

occurred because users may be more inclined to view results pages in search of an outcome or decision (Myers et al., 2008). This also suggests that proxy raters visiting the FTDS may be already aware of driver difficulties and are, therefore, more inclined to complete the FTDS in search of a result, such as the classification of a driver. Of particular concern is the fact that users are not viewing the videos as required and, therefore, they are not receiving the instructions to complete the ratings accurately.

Entrance and bounce rates of the tool were as expected, with most individuals entering and choosing to leave right away from the home page (or end user agreement web page), than the questionnaire web pages and with nearly no users entering or bouncing from the results or key form web pages. As anticipated, most users who engage with the tool exit it after receiving the results. In turn, it is not surprising that the highest exit rates occurred from the results web page. Likewise, users who are leaving the site from the end user agreement web page (43.44%) might do so as a result of too much text on the web page or not agreeing with the terms of use. Focus group findings in the Kay-Lambkin et al. (2011) study suggested that a key feature of users viewing a website is the use of more images in place of text. The end user agreement is an all-text web page, which may have hindered users' inclination to move forward in the tool.

Overall, the importance of the occupation of driving for older adults may have influenced the way users have used the tool. Driving is an

essential activity of daily living in Canada and the United States (Stav, 2008; Zur & Vrkljan, 2014). Driving is not only a means of mobility for older adults but also an occupation enabler that allows for engagement in other important occupations, such as work or leisure (Stav, 2008; Zur & Vrkljan, 2014). One implication pertains to the ratings of proxies who are dependent on the driver for their own transportation. In this case, proxy raters may have not spent adequate time completing the questionnaire, but instead spent time on the available resources for drivers to seek solutions for potential continued driving (Stav, 2008).

Comparison of Usage Patterns Between Year 1 and Year 2

A significant decrease in the number of new French speaking users from Year 1 to Year 2 existed. This decrease indicates that the FTDS may be losing potential users because of the unavailability of a French version. Thus, developing the tool in both of Canada's official languages may expand the use of and interest in the tool. No other significant differences between Year 1 and Year 2 existed. The team was surprised that the number of new users was not significantly greater than the previous year. Likewise, although there was no change in the number of new users, user numbers did not drop, indicating that continued interest and consistent use of the FTDS are still present.

Limitations

During the study period, only the American version of the FTDS was available online (the Canadian version of the FTDS was launched

September 2015), which limited the generalizability of our findings (Classen, Medhizadah, & Alvarez, 2015). Specifically, only American resources and recommendations were available to Canadian users of the FTDS, which could have influenced the patterns revealed in this study. However, now that the Canadian version of the FTDS has been launched, future research can investigate the trends and patterns of this version in the Canadian context. By presenting information about the FTDS at Canadian conferences or workshops, the team could have sparked the interest of many participants to complete the FTDS. We did not control for the resulting increase in the number of users after conference presentations, and, as such, the data may be positively skewed.

In addition, Google Analytics has data latency and collection limits (Google Inc., 2014). Google Analytics requires 24 to 48 hr to process session information, refreshing once daily. By retrieving data 3 days after the end of each month, we ensured that we collected the most up-to-date data and controlled for data latency. Furthermore, Google Analytics interprets users who enter the FTDS in different time periods as a new user, even though the user is actually returning to the site. This occurrence compromises the count of users, and, as such, the independence of groups over two time periods. In our study, we have assumed group independence, but may have an over estimate in the results of our t-test. Unfortunately, with the software used, there is no way to control for this confounder and we acknowledge this as a limitation.

Conclusion

This study identified the patterns and trends of use of the FTDS tool by Canadian users as well as the ways in which the FTDS needs improvement. Although users across Canada are generally accessing and using the FTDS in its current format, the following changes are recommended to increase the future usage, reach, and potential impact of the FTDS as a health promotion tool: (a) The 54 driving-related items of the tool need to be shortened because users do not spend the recommended time to complete the FTDS; (b) the demographics of the proxy rater and the driver must be shortened, or even omitted, as these data do not figure into the scoring algorithm and, as such, has no value-added benefit to the end user; (c) the visual presentation of the text on the end user agreement web page may need to be reviewed to ensure we are not losing a large percentage of potential users as demonstrated by the high exit rates on the end user agreement web page; (d) the time commitment in watching the videos must be reduced without sacrificing core messages due to users not spending the recommended time on the site; and (e) as the number of new French users has significantly decreased from Year 1 to Year 2, developing a French version of the tool is a consideration.

Taken together, a short form of the FTDS, in English and French, may address many of the above concerns and is, therefore, an important next step in the research process. Furthermore, identifying such methods that may contribute to increased use of this health promotion tool may help increase awareness

of drivers' deficits and/or allow for timely intervention. However, these assertions must be tested empirically. Future study directions may also be extended to identifying the patterns and trends of Canadians using the Canadian version of the FTDS.

Dr. Sherrilene Classen is Professor (with tenure) and Director of the School of Occupational Therapy, Faculty of Health Sciences, University of Western Ontario (Western), London, Ontario, Canada; Founding Director of Western's international, post-professional distance learning Master of Clinical Science in Driving Rehabilitation Therapy (MCIsc DRT) program; and an Extraordinary Professor at Stellenbosch University, Cape Town, South Africa. Dr. Classen is an internationally funded prevention-oriented rehabilitation scientist who studies fitness to drive issues in at-risk drivers through the lifespan. Her scholarly work targets understanding driving from the person-vehicle-environment interactions, to enhance occupational performance, societal participation, and well-being.

Ms. Shabnam Medhizadah is a second year Masters student in the Health and Rehabilitation Sciences program at the University of Western Ontario, Canada, working under the supervision of Dr. Classen. Ms. Medhizadah's current area of study focuses on fitness to drive screening for Canadian older drivers. Specifically, for her Master's thesis she is constructing and validating a short form of the Fitness-to-Drive Screening Measure[©]. Ms. Medhizadah is an active member of Dr. Classen's i-Mobile Research Lab, a lab focusing on fitness to drive screening, assessments, and interventions for medically at-risk drivers across the life span.

Dr. Liliana Alvarez is assistant professor in the School of Occupational Therapy, Faculty of Health Sciences, University of Western Ontario (Western), London, Ontario, Canada. Prior to her appointment, she completed a two-year postdoctoral fellowship working with Dr. Classen, and was the manager of the i-Mobile Research Lab at Western. Dr. Alvarez is an emerging scholar in occupational therapy whose research is motivated by the potential of technology to facilitate participation. Her unfolding research program centers on the role, implications, efficacy and effectiveness of vehicle automation and driving simulation on the health and well-being of at-risk drivers across the life span.

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