

# FITNESS-TO-DRIVE SCREENING MEASURE (FTDS) USER MANUAL

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## INTRODUCTION

The approaching “Gray Tsunami”—the rapidly growing population of aging Baby Boomers—has placed renewed importance on the identification of at-risk older drivers. The Comprehensive Driving Evaluation (CDE), the gold standard for assessment, is expensive and is often unavailable to drivers in this age group. Additionally, family members, friends, or caregivers who share lived experiences with older individuals have valuable information to contribute regarding fitness-to-drive. To overcome the limitations of the CDE and to better involve the public in identifying at-risk drivers, researchers, led by Dr. Sherrilene Classen at the University of Florida’s [Institute for Mobility, Activity, and Participation](#), have developed and validated the Fitness-to-Drive Screening Measure (FTDS; formerly known as the Safe Driving Behavior Measure).

## OVERVIEW

The FTDS has three sections: Section A.1., Demographics or general information about the rater; Section A.2., Demographics or general information about the driver; Section B, Driving history profile; and Section C, Ratings of driving difficulty pertaining to 54 driving skills. Informed by [Item Response Theory \(IRT\)](#) principles, the driving skills included in the FTDS range from easy to challenging items.

## **CHANGES TO FTDS**

Since becoming available online in 2012, the FTDS has provided resources and recommendations specific to the United States of America (U.S.) only. On September 1, 2015 a Canadian version of the FTDS also became available online at <http://www.fitnessdrivescreening.com/>. The Canadian version of the FTDS is specific to the Canadian context and provides Canadian resources and recommendations.

The Canadian version of the FTDS has the following changes:

### **SECTIONS A.1 AND A.2**

Race and ethnicity items of Section A.1 and A.2 (Demographics or general information about the rater or driver) of the U.S. version of the FTDS were modified to fit the Canadian context.

The following items were modified:

- a) Items A.1.3 and A.2.3 (What is your ethnicity? Do you consider yourself to be?) and its corresponding options were replaced with (Which population group(s) do you the caregiver, family member or friend identify with) and its corresponding options.
- b) Items A.1.4 and A.2.4 (What is the driver's race? (Choose one)) were removed from Sections A.1 and A.2.

### **SECTION B**

14 Items were removed from Section B (Driving History Profile) of the FTDS.

- a) Items B.14 to B.29 were removed from the FTDS

### **SECTION C**

The Canadian resources and recommendation sections were added to the Canadian FTDS site. Resultant Canadian resources were obtained through a study conducted by Dr. Sherrilene Classen and team at the University of Western Ontario. The study investigated relevant Canadian resources for at-risk drivers from the perspective of key stakeholders such as occupational therapists, doctors, certified driving rehabilitation specialists, and advocacy organizations. Resulting Canadian resources were matched

to its equivalent U.S. resource and added as a Canadian resource on the Canadian FTDS.

## **CUSTOMER SATISFACTION SURVEY**

3 items were added to the customer satisfaction survey.

- a) 2.0 Did you watch the videos?
- b) If no, 2.1 indicate the main reason for not watching the videos.
- c) 2.3 Indicate the main reason for dissatisfaction

## **THEORETICAL MODELS**

Three theoretical models formed the basis for the instrument: the [Precede-Proceed Model of Health Promotion \(PPMHP\)](#) (Green & Kreuter, 2005), [Haddon's matrix for injury prevention](#) (1972), and [Michon's model of driving behavior](#) (1985). The PPMHP guides assessment of both personal and environmental factors influencing health and planning targeted interventions. Haddon's matrix provides a framework for crash prevention and injury reduction focusing on interactions among the person, their car and the physical and social environment. Michon's model categorizes driving behaviors as operational (on sub-conscious level), tactical (car handling and maneuvers) and strategic (driving decisions and planning). Informed by these models, the researchers established the following domains for item generation: Person-Vehicle (PV), Person-Environment (PE), and Person-Vehicle-Environment (PVE). The PV domain includes behaviors related to use of car controls or features, such as driver's use of emergency brake. The PE domain includes behaviors in response to physical factors such as terrain or weather, or social factors such as interactions with passengers. The PVE domain includes behaviors combining a person's skills, attitudes, and behaviors in the use of vehicle features or controls, and a response to environmental factors such as controlling one's car on an icy road.

## DESCRIPTION

The FTDS Measure is a user-friendly web-based tool that proxy raters (family members, friends, or caregivers) and occupational therapy (OT) practitioners can use to identify potentially at-risk older drivers. Located online at <http://fitnesstodrive.php.ufl.edu/>, the measure is freely available to anyone with internet access. The tool enables a proxy rater who has observed an older adult's driving during the past three months, to rate the driver's difficulties on any of 54 driving skills. Upon completion of the screening, the FTDS generates a keyform which displays the proxy ratings and includes a classification of the driver into one of three categories, namely at-risk driver, routine driver, or accomplished driver. The definitions for each classification are:

- *At-risk driver: Although the driver can perform some basic driving skills, there are safety concerns that need immediate attention.*
- *Routine driver: The driver shows early signs of needing intervention. There are driving skills that are causing concern.*
- *Accomplished driver: Driving is overall good, but difficulty may be experienced with some challenging driving situations.*

Included in the keyform are examples, taken from the proxy ratings, of items that present difficulty for the driver. Depending on the driver classification, recommendations are suggested for the driver. Recommendations include evaluations by a physician and an occupational therapist who is also a certified driver rehabilitation specialist (OT-CDRS) for At-risk or Routine drivers. For Accomplished drivers we provide guidelines for maintaining fitness-to-drive such as receiving regular health care check-ups and taking a class for mature drivers. In addition to recommendations, we also provide resources to assist in the transition to driving retirement, such as how to locate Eldercare and local transportation options.

## COMPLETING THE FTDS

Follow the next steps to complete the FTDS.

1) Rater selection. Before using the FTDS, decide who will complete the rating. The FTDS must be completed by a proxy rater, a family member, friend, or caregiver who has observed the driver's driving in the last three months and is able to answer questions about difficulty the driver may have with everyday driving skills.

2) Review and accept the liability statement, which reads:

*The Fitness-to-Drive Screening (FTDS) Measure is not a diagnostic instrument and is intended to be used by caregivers and/or family members of the driver to assist with identification of driving difficulty and next steps for addressing driving fitness. Completion of the FTDS may take place in a home or community setting, or during a visit with a health care provider. The University of Florida disclaims any liability, loss, or risk incurred as a consequence, directly or indirectly, from the use and application of any of this material. The FTDS is provided for educational or health screening as described above, any other use requires the explicit permission of the University. Except for as outlined above, no production, distribution, or reverse engineering (process of discovering the technological principles of a device, object, or system through analysis of its structure, function, and operation) is permitted without written permission from University of Florida. Questions or requests for permission should be sent to [ftds@p.php.ufl.edu](mailto:ftds@p.php.ufl.edu).*

3) Duration. Completing the web-based FTDS generally takes about 20 minutes.

4) Instruction. The web-based FTDS includes both instructional text and video instruction for the proxy rater.

5) Administration.

a) All ratings should be based on the proxy rater's best judgment of the driver's skills.

b) General history and driving habits information can be obtained directly from the driver.

c) Test environment. To complete the FTDS the proxy rater needs to have a computer with internet access and a printer. A color printer is preferable as it will display the color-coded ratings of the keyform.

d) The FTDS has three sections:

Section A – Section A.1 (Demographics for the Proxy Rater) and A.2 (Demographics for the Driver): Information about the person completing the rating is important to us – so we ask a set of general information questions about the proxy rater in addition to questions we ask about the driver.

Section B – Driving History profile: The proxy rater will provide information about the driver's history. For example, one of the questions asks how many days a week they drive, and what (if any) types of driving they avoid.

Section C – Rating of Driving Skills: The proxy rater will use their best judgment and use the driver’s past experiences to rate the level of difficulty the driver has with 54 driving skills. The rating scale is:

**Very Difficult** – the driving skill presents a major challenge

**Somewhat Difficult** – the driving skill presents a moderate challenge

**A Little Difficult** – the driving skill presents a minor challenge

**Not Difficult** – the driving skill presents little or no challenge

e) Data collection. The information collected during completion of the FTDS does not identify the driver or the proxy rater.

f) User Satisfaction Survey. After completing the FTDS, we request that end users give feedback following the link for the User Satisfaction Survey.

g) Support. Live support is not available, but questions can be e-mailed to [ftds@phhp.ufl.edu](mailto:ftds@phhp.ufl.edu).

h) Keyform. Recommendations are given based on the driver profile. When difficulties with skills are identified, or if you have concerns about driving not addressed by this screening, seek the assistance of an OT-CDRS. A link to find an occupational therapist who is a CDRS is shown on the recommendations page after you complete your rating of the driver.

i) Scoring. Scoring is completed automatically using an algorithm and software built into the website. FTDS ratings are based on the difficulty of the driving skill. A rating for each driver: a) assigns an overall number between 1 and 100, and b) categorizes the driver in one of the three driver categories. Our research has shown that most drivers fall in the Accomplished driver category (54.5%), then the Routine driver category (36.5%) and next the At-risk driver category (6%). The remaining 3% are uncategorized as explained below in “Rationale for Driver Classification”.

## **RATIONALE FOR DRIVER CLASSIFICATION**

This research was based on 200 drivers from Florida and Ontario, Canada, aged 65-85 years who were healthy community dwelling licensed drivers, representing a variety of ethnic and racial groups, economic and educational levels, and who were actively driving in the three months prior to being rated. Each driver was rated by a proxy rater, who was a caregiver, family member, or friend.

The researchers examined patterns of driving difficulty and developed characteristics of drivers who fit each of the three driver groups: accomplished driver (fit to drive), routine driver (some difficulty with driving skills), and at-risk driver (at risk and potentially unfit to drive). In some cases the ratings for the driver do not match these patterns, and therefore the researchers could not accurately assign the driver to a group. Yet, based on the driver's score, he/she still receives a profile and a set of tailored recommendations.

## RESEARCH STUDIES

This measure was developed since 2007, with initial testing at the University of Florida in Gainesville Florida, and the Centre for Safe Driving at Lakehead University in Thunder Bay, Ontario, Canada. In consecutive studies through 2012, the researchers conducted 200 [comprehensive driving evaluations](#) on older drivers and collected data from 200 proxy raters (family members or friends) to determine measurement properties for the FTDS, including face, content, construct and criterion validity, factor structure, dimensionality, and item/person-level psychometrics [1-3; 5]. We determined the rater reliability and rater severity of the three rater groups (older driver, caregiver/family member, and driving evaluator) [4]. More details on results of these studies and psychometric properties of the FTDS can be found in the references listed below.

## IMPLICATIONS

Our findings suggest that this measure may be useful in: (1) helping family members/caregivers identify at-risk older drivers and providing logical next steps based on key form recommendations; (2) aiding OT practitioners in identifying an entry point for further general intervention or referrals; and (3) allowing a CDRS to develop realistic and targeted intervention goals to promote driver fitness.

## PSYCHOMETRICS

Psychometrics were established as follows. Through focus groups, we have established *face validity*. We established *content validity* by achieving 84% on a final content validity index completed by four expert reviewers. We determined the *construct validity* via Rasch analysis, identifying the person-and-item fit hierarchy of the items, structure of the rating scale, and homogeneity of the fitness to drive construct. We determined *unidimensionality* with factor analysis. We also determined *rater reliability* among three rater groups (older drivers, family members/caregivers, and the driving evaluator), and *rater effects* (level of leniency or severity in rating the driver on the items) among these



groups. We have showed through *concurrent criterion validity* that the older drivers showed statistically significant, yet poor, concurrent criterion validity compared to the family members/caregivers, who showed good concurrent criterion validity to the on-road driving test.

## **FIELD TESTING**

We tested the usability, appearance, and acceptance of the web-based FTDS through focus groups with occupational therapists, certified driver rehabilitation specialists, and family members/ caregivers. Lastly, we developed a keyform, or visual output summary of the caregiver ratings. Based on their ratings, this output summary (i) classifies a driver in one of four main groups; (ii) provides personalized examples of real world driving challenges; (iii) recommends logical next steps for the caregiver; and (iv) suggests general health and fit-to-drive strategies.

## **FINDINGS MEETINGS**

Three findings meetings were conducted with proxy raters between October 2012 and January 2013, to test the web-based FTDS. In the findings meetings, raters completed the FTDS, guided by on-line video instruction, and received scoring and recommendations for the driver they rated. Raters then provided feedback via a visual analog scale (VAS) on the FTDS formatting, instructions, wording, appropriateness of web features, clarity, and understandability. The researchers captured raters' comments and suggestions for further enhancements and obtained a mean VAS score of 9.13,  $SD=\pm 0.52$ , suggesting excellent ratings for the current version of the FTDS. Based on the ratings, we concluded that FTDS revisions and modifications led to a more user-friendly, useful, and acceptable screening tool.

## **FEEDBACK FROM AAA and the AARP**

In evaluating the use of the FTDS, our partners at AARP and AAA provided feedback to improve wording of the FTDS, clarify concepts, and suggest additional features to make the FTDS user-friendly for older adults and caregivers.

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