The Road to Safety: Licensing Policy for Older Drivers in British Columbia

by

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in the School of Public Policy Faculty of Arts and Social Sciences

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or

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Abstract

As individuals age they are more likely to develop medical conditions that may affect their ability to drive safely. British Columbia’s population is aging and the increasing proportion of older drivers pose a risk to their own individual and public safety. Descriptive statistics for British Columbia illustrate the risks older drivers present. Policies instituted in three other provinces provide examples of the various policy tools available for managing this issue, and interviews with regulators and researchers supplement the information. Analysis of four policy options concludes that British Columbia should adopt an older driver licensing regime similar to Ontario’s, with in-person screening sessions for individuals at the age of 80, and every two years after.

Keywords: aging drivers; older drivers; road safety; safety policy; senior drivers
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<th>Description</th>
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<tbody>
<tr>
<td>CARP</td>
<td>Canadian Association of Retired Persons</td>
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<tr>
<td>CCMTA</td>
<td>Canadian Council of Motor Transport Administrators</td>
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<tr>
<td>CDR</td>
<td>Clinical Dementia Rating</td>
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<tr>
<td>DCAT</td>
<td>DriveABLE Cognitive Assessment Tool</td>
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<tr>
<td>DMER</td>
<td>Driver Medical Examination Report</td>
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<td>DORE</td>
<td>DriveABLE On-Road Evaluation</td>
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<tr>
<td>ICBC</td>
<td>Insurance Corporation of British Columbia</td>
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<tr>
<td>MRU</td>
<td>Medical Review Unit (Saskatchewan)</td>
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<td>MTO</td>
<td>Ministry of Transportation (Ontario)</td>
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<tr>
<td>MVA</td>
<td>Motor Vehicles Act (British Columbia)</td>
</tr>
<tr>
<td>SAAQ</td>
<td>Société de l’assurance automobile du Québec</td>
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<tr>
<td>SGI</td>
<td>Saskatchewan Government Insurance</td>
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**Glossary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Older drivers</td>
<td>This group is defined as licensed drivers age 65 and older.</td>
</tr>
<tr>
<td>Crashes</td>
<td>Crashes are defined as any motor vehicle incident involving at least one motor vehicle. As is the norm in road safety research, the term “accident” is not used as it implies crashes are not preventable.</td>
</tr>
<tr>
<td>Casualty crashes</td>
<td>Motor vehicle crashes resulting in one or more injuries.</td>
</tr>
<tr>
<td>Injuries</td>
<td>This study uses ICBC’s definition of injury. Injuries are classified in three ways: non-serious injury, serious injury, and fatality. A non-serious injury refers to a road user who sustained minor injury but was not killed or seriously injured. Serious injury refers to a road user who spent a minimum of one night in hospital. Fatal victim refers to a road user who died within 30 days after the date when an injury was sustained in a crash involving as least one motor vehicle.</td>
</tr>
<tr>
<td>Fatal crash</td>
<td>A motor vehicle crash where a road user died within 30 days of the crash.</td>
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Executive Summary

Driving is an important part of many older people's lives, yet driving is an earned privilege in Canada, not a right, meaning all drivers must qualify for a licence to drive a car. In 2014, older drivers (defined as those with a driver’s licence age 65 and older) in British Columbia held approximately 18% of all active driver’s licences in the Province. In ten years, this percentage is expected to rise to 22% of all licences. As individuals age, they are more likely to develop medical conditions that affect the sensory, cognitive, and motor skills necessary for driving and thus pose an increasing risk to their own personal and public safety. This research examines and assesses reform of British Columbia’s licensing regime for older drivers.

In British Columbia, RoadSafetyBC and the Insurance Corporation British Columbia (ICBC) are the most relevant agencies responsible for older driver licensing policies. RoadSafetyBC is responsible for the Driver Medical Fitness Program and designs policies for older drivers, and ICBC implements the licensing policies. Regulatory regimes in Canada must make fitness-to-drive decisions based on functional capacity and not an individual's medical condition alone, as ruled by a Supreme Court decision in 1999. In British Columbia, at age 80 and every two years after, all drivers have to submit a completed Driver Medical Evaluation Report (DMER). The individual bears the cost of the DMER. Under the MVA all qualified and registered psychologists, optometrists, medical practitioners, and nurse practitioners must report a patient they think is medical unfit to drive if the patient continues to drive after warning from the medical professional. DriveABLE is a privately operated tool used by RoadSafetyBC to assess cognitive impairments and make fitness-to-drive decisions. The assessment involves an in-office test, and referral to an on-road test if the individual does not pass the in-office test. All costs are covered by RoadSafetyBC. The licensing decision is dependent on the initial DMER, or the individual is required to provide more information or tests, including DriveABLE for cognitive impairments or a road test.

My research uses a mixed method approach to investigate the policy problem, policy options, and considerations. The approach consists of a literature review, descriptive statistics, cases studies and interviews with road safety regulators, academics,
and researchers. The case studies are of jurisdictions in Canada, including Québec, Ontario, and Saskatchewan.

Descriptive statistics in British Columbia indicate that overall older drivers are relatively safe, as demonstrated by a lower total crash rate per 10,000 licensed drivers compared to younger drivers. The proportion of injuries for drivers resulting in fatality is higher for older drivers than for younger drivers, which indicates an increased threat to the personal safety of older drivers. Older drivers are much more likely to be involved in a crash with a medical fitness issue as a contributing factor, and this likelihood increases with age, starting around age 55. Statistics from the United States suggest that on a per-mile basis, drivers age 65 and older have an increasing fatal crash risk, with the age group 85 and older having a fatal crash risk almost double the 16 to 19-year old age group. Data from a Canadian and Australian study suggest that older drivers who drive the fewest kilometers have the highest number of crashes per million kilometers driven.

Ontario is among the safest jurisdictions in North America, and the Province has the most extensive older driver licensing policy in Canada. Ontario’s Senior Driver’s Licence Renewal Program requires individuals at the age of 80 and every two years after to participate in an in-person session involving a vision test, a record review, a 45-minute group education session, and two on-paper cognitive screening tests. Failing to meet these requirements can lead to medical review or an on-road test. Through preliminary evaluation of this program, the Province has found indicators that the program is effective in screening for unfit older drivers.

Québec’s older driver program is similar to British Columbia’s but it is more extensive. Québec requires medical reports from both a physician and optometrist from drivers at age 75, 80, and every two years after.

Saskatchewan has the highest rate of road fatalities of all the case studies, and does not have an explicit program for older drivers. Saskatchewan does not use age-based testing, but rather relies on mandatory reporting for any physician, nurse practitioner, occupational therapist, psychiatrist, and optometrist who believes a patient is unfit to drive. The Province has received negative feedback from senior drivers regarding
its use of DriveABLE, and many physicians want age-based policy to reduce the mandatory reporting burden.

Although there is no conclusive evidence supporting the link between provinces policies and safety, more stringent regulations appear to be correlated with lower fatality rates, and other indicators of success.

There is significant disagreement in the literature about the most appropriate screening tool for older drivers; a policy framework of multiple tools is thus likely the best approach. There is no single policy tool shown to be effective on its own, with the exception of in-person licence renewal for people over the age of 85. Assuming in-person screening works in the same manner as in-person licence renewal, this method is likely the most effective for determining fitness-to-drive.

I explored four policy options. The policies are: 1) status quo; 2) status quo plus strengthened mandatory medical reporting law, increased use of restricted licences, and a public education campaign; 3) decentralized policy similar to Saskatchewan’s with no age-based testing but strengthened mandatory medical reporting law, increased education for medical professionals, increased use of restricted licences, and a public education campaign, and; 4) centralized policy similar to Ontario’s with an in-person screening program including cognitive tests, vision test, declaration of medical problems, a mandatory education session during the in-person session, and increased use of restricted licences. If British Columbia pursues the status quo or status quo plus options, the Province should remove the user-pay requirement for DMER completion because it is unfair and discriminatory. I also recommend the discontinuation of DriveABLE and its replacement with pencil-and-paper cognitive tests regardless of the option selected, because research indicates it is unfair and ineffective.

Using an evaluation framework including the objectives of protection and safety; administrative ease, and; stakeholder acceptability, each option is analyzed and ranked. Based on the framework and analysis, I recommend British Columbia adopt the centralized policy option. This option provides the most protection and safety for the Province, and is the most acceptable to stakeholders. Although the option is
administratively complex, the safety benefits are the highest of all options, and the program should not face any legal challenges.
Chapter 1. Introduction

Driving is an essential part of many people’s lives. Driving allows people to travel to work, shop for food, access their doctor, and visit friends and family. For many older individuals with years of experience, driving means more than mobility; driving is synonymous with freedom. Despite the importance Canadian culture places on driving, it is still an earned privilege and not a right. All drivers must qualify for a licence to drive a car, and must continue to abide by driving laws and regulations to maintain this privilege.

1.1. Policy Problem

As individuals age, they are more likely to develop medical conditions that affect the skills necessary for driving. With British Columbia’s aging population, an increasing proportion of the population will be older drivers who pose a risk to their own personal and public safety, especially after the age of 80. British Columbia’s current older driver licensing regime requires medical reports from drivers age 80 and every two years after. The Province can request more medical information, send the driver for cognitive testing, on-road testing, or make the licensing decision based on the medical report. There are a number of problems with British Columbia’s system, meaning some unfit drivers continue to drive. This research examines and assesses reform of British Columbia’s licensing regime for older drivers.
Chapter 2. Background

Older driver licensing policy is a complex issue, involving a number of sensitivities. This section provides background information, sets the context for British Columbia, and outlines the approach used for this project. I define key terms, examine the reason older drivers pose a problem to safety, and review the relevant government agencies, case law, legislation and policies involved in this policy area.

2.1. Older Drivers

In the context of this analysis, “older drivers” are individuals with a driver’s licence who are age 65 and older because demographic information often uses ages 65 and older as a category and people as seen as “seniors”. Some studies have found that crashes per mile driven begin to increase at age 70, so using an age of 65+ ensures that potential relationships between age and safety are incorporated (IIHS, 2013).

2.2. Aging Population and Increasing Proportion of Older Drivers

Individuals age 65 and older are 18% of British Columbia’s current population. Projections of their proportion rise to 22% in ten years and 25% in twenty years. Those 80 and older will also rise steadily (BC Stats Population Projections 2015-2041, Table 5).

In 2014, 75% of individuals age 65 and older in British Columbia (approximately 594,000) held active driver’s licences, or about 18% of all active driver’s licences in the Province (ICBC, 2015). Using this percentage of individuals 65 and over with licences, it can be expected that in ten years there will be approximately 877,000 individuals (22% of all licence holders) over the age of 65 with active driver’s licences (BC Stats, 2015).
2.3. Safe System Approach

This capstone and its focus on older driver licencing policies is one component of a comprehensive view of road safety called the ‘Safe System’ approach. The Safe System approach to road safety emphasizes the need for a holistic strategy to prevent serious injuries and fatalities (Arason, 2014). This approach, however, recognizes that crashes will still occur, so safe systems work to reduce the severity of injuries that do occur. The Safe System approach involves promoting four elements of road safety—safe roads, safe speeds, safe vehicles and safe road users—(Arason, 2014). Sweden, the Netherlands, the U.K., and Canada have adopted this approach.

I focus on one element of the Safe System approach—safe road users. Safe road users are individuals who have the sensory, cognitive and motor skills necessary for driving. The focus on safe road users, however, does not negate the importance of the other three elements of the approach in improving road safety for British Columbia citizens, including older adults, nor place responsibility for road safety solely on an individual's behaviour.

2.4. Skills Necessary for Driving

Driving is a very complex activity that requires a number of skills and abilities. Sensory, cognitive, and motor skills all must interact to complete even basic driving tasks, such as stopping at a stop sign (Government of BC, 2010). The functioning and interaction of sensory (visual), cognitive, and motor skills is even more imperative in situations requiring quick responses, such as a vehicle stopping suddenly ahead. Even in the absence of major illnesses, biological changes occur as people age that can impair necessary functions for driving (Dobbs, 2005). Sensory (most importantly for driving—visual), cognitive and motor functions all commonly decline with age (National Institute on Aging, 2015). The following highlights the skills that are necessary for safe driving.
2.4.1. **Sensory Skills**

The sensory functions necessary for driving relate to vision. They include visual acuity, the visual field, contrast sensitivity, and perception. Visual acuity, for example, can affect the smallest size of detail that a person can see. A standard eye-test, where the individual tries to read a chart with gradually decreasing sizes of letters and numbers tests visual acuity. The visual field is the area that a person can see without moving their eyes. Contrast sensitivity is the degree of contrast needed to see an object. Perception is the “process of acquiring, interpreting, selecting, and organizing sensory information.”

2.4.2. **Cognitive Skills**

Cognitive abilities are necessary to interpret, process stimuli, and make decisions while driving. The cognitive functions relevant to driving include visuospatial skills, attention, judgement, memory, and executive functioning. Visuospatial skills are perhaps the most important cognitive skills for driving and are required for many tasks involving the perception of spatial relationships, such as manoeuvring a vehicle, judging distances and predicting how traffic situations will unfold (Lundberg et al., 1997; Brown and Ott, 2004.). Attention includes the ability to divide attention to more than one object, the ability to maintain selective focus on certain stimuli while ignoring others, and sustained attention is the ability to maintain focus for a period of time, for example on longer driving trips (Government of BC, 2010; Lundberg et al., 2005). Judgement is important to driving in two ways; judgement is necessary both for making decisions about driving and for having an awareness of one’s own abilities and deficits (Lundberg et al., 2005).

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2.4.3. Motor Skills

Motor skills are essential for physical control and safe handling of a vehicle. Motor skills include coordination, dexterity, gross motor abilities, range of motion, flexibility, strength, reaction time, and sensorimotor skills. Coordination involves control and smooth movements essential for example, for turning a vehicle’s wheel. Dexterity particularly relates to the hands and the ability to make precise movements. Gross motor ability involves range of motion, strength, and the interactions between finer movements. Range of motion relates to flexibility and is the degree of movement in a joint, for example, can the person turn to check for blind spots. Strength relates to muscle exertion and is necessary for many basic driving duties. Reaction time is essential for driving, as it is the time required for a physical response to a stimulus, for example to brake quickly. Sensorimotor skills involve the interaction between sensory and motor skills: for example, when seeing someone run into the street, the driver must respond by braking.

2.5. Age-related Medical Conditions that Can Impact the Ability to Drive Safety

Age itself does not determine an individual’s ability to drive safely. However, a number of age-related conditions and illnesses have symptoms that impair the sensory, cognitive, and motor functions necessary for driving. Age-related health conditions can also increase an older person’s frailty, making them more likely to die or sustain injury in a car crash (National Institute on Aging, 2015). Age-related illnesses include diabetes, macular degeneration, arthritis, dementia, stroke, heart disease, and Parkinson’s disease (National Institute on Aging, 2015).

2.6. Self-regulation and Decreased Mileage

There is evidence that some older individuals with compromised driving ability self-regulate by driving less; avoiding activities, such as eating while driving; and by avoiding certain driving situations, such as driving at night (Molnar et al., 2015). However, studies of self-regulation typically use self-reported driving mileage that can be unreliable, making the true prevalence of self-regulation unclear (Molnar et al., 2015). Older drivers drive less for many reasons including self-regulation, general discomfort with driving, and/or changed lifestyle needs (Molnar et al., 2015).

There is no evidence that individuals with cognitive impairments self-regulate (Kowalski et al., 2011). Self-awareness of driving abilities likely plays a role in decision-making about self-regulation or driving cessation (Rapoport et al., 2013). Individuals with cognitive impairments may lack the insight to understand their own limitations, and thus do not take steps to compensate for their shortcomings (Kowalski et al., 2011; older driver researcher, personal communication, December 1, 2015).

2.7. Impact of De-Licensing Older Drivers

Losing a licence can be traumatic for older drivers, as it often means a loss of independence, increased difficulty in accessing volunteer and paid work, difficulty seeing friends and family, getting to appointments, and a partial loss of identity (Fonda et al., 2001; Whitehead et al., 2006). Driving cessation can have negative impacts on older adults’ social wellbeing, mental health, physical health (Edwards et al., 2009) and quality of life (Windsor et al., 2006; Edwards et al., 2009). Freeman et al. (2006) found that older drivers in the United States who lose a license are five times more likely to enter a long-term care facility. In particular, this loss can lead to depression (Fonda et al., 2001), social isolation (Marottoli et al., 2000), and general physical decline (Edwards et al., 2009).

De-licensing older drivers results in a modal shift, meaning that older adults must use alternative transportation such as public transit, walking to maintain mobility, and help from friends and family. Unprotected modes of transport can be less safe than driving for older individuals, because they tend to be more susceptible to injury (Siren et al., 2013).
2.8. Context of the Problem in British Columbia

2.8.1. Government Agencies

The federal, provincial, and municipal governments share responsibility for road safety in Canada. Transport Canada has a role in road safety in Canada, but does not have policies or programs related to older driver licencing. The Department of Justice manages road safety issues related to Criminal Code violations but also does not have policies or programs directly related to older driver licencing, unless a Criminal Code violation occurs.

Four primary agencies in British Columbia are responsible for road safety. The most relevant agencies for older driver licencing policies in British Columbia are RoadSafetyBC, which is responsible for the Driver Medical Fitness Program and policies relating to older drivers, and ICBC who are responsible for implementing RoadSafetyBC’s licensing policies. RoadSafetyBC, in the Ministry of Justice, develops and implements policies and programs covering all aspects of road safety, and has partial responsibility for British Columbia’s Motor Vehicle Act (MVA). The Ministry of Transportation and Infrastructure (MoTI) handles provincial roads and highways, transportation policies and programs, and shares responsibility with RoadSafetyBC for the MVA. The Insurance Corporation of British Columbia (ICBC) is responsible for driver and vehicle licencing, driver training, testing, and vehicle insurance. The Police Services Division handles all policing and enforcement issues related to road safety policies and laws in the Province. Municipal governments have the ability under the MVA to make safety improvements to infrastructure, but do not have an impact on older driver licencing policies.

The Canadian Council of Motor Transport Administrators (CCMTA) is an organization that includes representatives of all road safety regulators in Canada, at the provincial and federal level, and coordinates road safety matters across Canada (CCMTA, 2013).

2.8.2. **British Columbia (Superintendent of Motor Vehicles) v. British Columbia (Council of Human Rights)**

More commonly called the Grismer Estate Case, British Columbia v. British Columbia is a Supreme Court of Canada decision in 1999 on human rights law, which has major implications for decisions over medical fitness to drive. The case involved Terry Grismer, a truck driver who had a stroke, causing a visual condition called homonymous hemianopia. In line with policy at the time, the British Columbia Superintendent of Motor Vehicles cancelled his licence on the grounds that individuals with homonymous hemianopia have compromised peripheral vision and thus do not have the minimum visual abilities required for driving. The Supreme Court of Canada ruled that cancelling Grismer’s licence was discrimination based on disability and in violation of provincial Human Rights Code. In their decision, the Supreme Court determined that the Superintendent of Motor Vehicles did not provide enough evidence that individual testing would cause undue hardship. The ruling means that governments across Canada must make fitness-to-drive decisions based on functional capacity, and not the condition alone. Discriminatory standards based on disability can only exist if government proves the discrimination has a bona fide and reasonable justification. If there is reasonable possibility the individual could compensate for their condition, governments must test the individual to determine fitness-to-drive.

2.8.3. **Legislation and Policies**

British Columbia’s Motor Vehicle Act governs the operation of motor vehicles throughout the Province and includes driving offences and sanctions (RoadSafetyBC, 2015). The MVA also mandates the role of the Superintendent of Motor Vehicles (the Superintendent) in making many road safety decisions, including supporting the law, regulating driver behaviour, and upholding administrative justice (RoadSafetyBC, 2015).

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Under the MVA the Superintendent is responsible for making decisions about medical fitness to drive. The Driver Medical Fitness Program is a team of RoadSafetyBC employees, including adjudicators and case managers who assess each medical fitness case and make a decision on behalf of the Superintendent (RoadSafetyBC, 2015). The Driver Medical Fitness Program requires all individuals who have medical conditions that can affect driving to have a physician complete a Driver Medical Examination Report (DMER) and submit it to RoadSafetyBC. At age 80 and every two years after all drivers have to submit a completed DMER (RoadSafetyBC, 2015). The individual, not the Province pays for the cost of the DMER for older drivers.

Under the MVA section 230, all qualified and registered psychologists, optometrists, medical practitioners, and nurse practitioners must report a patient they think is medically unfit to drive to the Superintendent if the patient continues to drive after warning by the medical professional (RoadSafetyBC, 2015).

DriveABLE is a tool to assess cognitive impairments used by RoadSafetyBC to aid the Superintendent in medical fitness-to-drive decisions. DriveABLE is privately operated and RoadSafetyBC pays the costs of any driver sent for assessment. The assessment consists of an in-office test at locations throughout the Province, and referral for a DriveABLE on-road test if individuals do not pass the in-office test.

The licensing decision is dependent on the initial DMER, or the individual is required to provide more information or tests, including DriveABLE for cognitive impairments or a road test. Individuals who have had their licences revoked due to a medical fitness decision can request a review of the decision.
Chapter 3. Methodology

My research uses a mixed method approach to allow a fulsome investigation of the policy problem and its potential policy options and considerations. The methodology consisted of a literature review, descriptive statistics, case studies, and interviews.

3.1. Literature Review

A literature review provides information about the issues facing older drivers, the scope of the problem, and potential older driver licensing policies. The literature review also helps determine the appropriate methodological approach for this research. I found academic articles through searching the Simon Fraser University library databases, and through Google Scholar. Other sources such as government and organization websites were accessed using Google searches.

3.2. Descriptive Statistics

I include descriptive statistics to illustrate the scope of the older driver problem in British Columbia. There is some debate in the literature about the true scope of the problem due to measurement issues, and so this method attempts to clarify some of the issues and illustrate the scope in the British Columbia context. For this section, I accessed data through a request made to the Insurance Corporation of British Columbia (ICBC) for publically available police-collected crash data from the Traffic Accident System database. Research reports found in the literature supplement data that I could not access from ICBC.

3.3. Case Studies

I conducted case studies of other jurisdictions to understand the challenges and successes of older driver licensing policies in other areas. Quantitative data evaluating the effectiveness of older driver licensing policies is not readily available and policies often
involve many different elements that are difficult to isolate and understand with numbers. Case studies provide data to help explore the policies within the real-world context. Criteria for case study selection include:

- The jurisdiction has a similar licensing, government, and demographic context to British Columbia
- The jurisdiction has readily available information on policies and/or obtaining interviews with relevant individuals in these jurisdictions is not excessively difficult
- The jurisdiction has unique elements to their older driver licensing policies that could be options for British Columbia

I conducted a preliminary scan of policies throughout Canada and the United States and applied the criteria. I did not include jurisdictions outside of Canada and the United States because the context is significantly different to British Columbia, and information is less readily accessible. Based on the criteria, I selected the jurisdictions of Québec, Ontario, and Saskatchewan for the case studies. I did not select a jurisdiction in the United States because there is no particularly unique policy beyond those in Canada, and the policy context of the Unites States is less comparable to British Columbia than other Canadian provinces.

I conducted the case studies following Yin’s (2014) case study methodology. First, I determined the definition of a ‘case’ to be a jurisdiction’s entire older driver regime (including non-licensing policies such as mandatory physician reporting). Next, I determined the research required a ‘multiple-case design’, due to my intention to examine more than one case. Each case contains ‘embedded units’ meaning the case studies are not holistic but rather each contain smaller policy components, such as age-based testing, or restricted licences. I designed and followed a case study protocol during the data collection stage of the case studies, which included a set of questions to serve as a framework to ensure consistency.

3.4. Interviews

I conducted semi-structured interviews with road safety regulators in British Columbia and jurisdictions used in the case studies, academics, and researchers.
Interviews with road safety regulators provided missing information that was not available from public sources. Additionally, the road safety regulators, academics, and researchers provided insight on older driver policy options and the benefits and challenges of these policies. I conducted the interviews over the phone, primarily in a semi-structured fashion to allow the interviewee to cover all aspects within the topic area. In total, I conducted nine interviews which took approximately 45 minutes each.

I obtained the contact information of interviewees from public websites including government and organization websites, and through meeting older driver researchers at a research panel presentation in Victoria, British Columbia. Researchers at the panel presentation also provided referrals to other individuals who they thought would be interested in providing interviews, by forwarding my initial contact email. I emailed a list of topics and a consent form to interviewees to allow for the option of preparing for the interview.

Topics addressed in the interviews included; the interviewees’ assessment of older driver risk; older driver policies in their jurisdiction (if relevant); benefits, challenges and opinions of older driver licensing policies in their jurisdiction (if relevant); barriers and challenges of determining/implementing older driver licensing policies, and; view of efficacy, fairness and other characteristics of specific policy options.
Chapter 4. Descriptive Statistics

This chapter discusses measurement issues for determining older driver crash risk and attempts to illustrate the scope and characteristics of the older driver issue in British Columbia. ICBC’s Business Information Warehouse provided the majority of the information.

4.1. Methods of Measuring Older Driver Crash Risk

There is no straightforward measure of older driver crash risk. Absolute crash rates for older drivers require adjustment for distance driven and the population of licensed drivers to illustrate the actual crash risk of older drivers. The following section examines two common methods for evaluating older driver crash risk, and the advantages and disadvantages of each.

4.1.1. Crashes per Kilometer

Calculating older driver crash risk by controlling for distance driven is the most common method in the literature, and uses the actual driving records of older individuals. There is significant research (Langford et al., 2008) suggesting that older individuals, especially those with medical conditions that compromise fitness-to-drive, drive fewer kilometers. This method accounts for the older individuals who drive shorter distances.

One of the disadvantages of this method is the difficulty obtaining accurate distances driven by older individuals. Self-reported mileage is relatively inaccurate (Langford et al., 2008; Staplin et al., 2008), and no jurisdiction regularly collects this information. There are studies, however, that use technologies installed in the cars of older drivers to obtain accurate distances driven.

4.1.2. Crashes per Licensed Driver

Calculating older driver risk by controlling for the number of licensed drivers is an alternative method to controlling for distance. This method has the advantage of using
accessible information on the number of licensed drivers by age group that jurisdictions regularly collect. One disadvantage of this method is that not all licensed drivers are active drivers, so this method of calculating risk includes some individuals who do not actually drive and may thus understate crash rates for older drivers.

4.2. Older Driver Statistics as a Function of Number of Licensed Drivers

Figure 1. Number of Licensed Drivers Age 65 and Older in British Columbia from 2005 to 2014

The number of drivers age 65 and older in British Columbia increased steadily from 2004-2014. As discussed earlier, the number of older drivers as a proportion of all drivers is also increasing, as illustrated in the table below.
Table 1. Percent of All British Columbia Licensed Drivers Over Age 65 from 2005 to 2014

<table>
<thead>
<tr>
<th>Percent of Licensed Drivers Over Age 65</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14%</td>
<td>14%</td>
<td>14%</td>
<td>15%</td>
<td>15%</td>
<td>15%</td>
<td>16%</td>
<td>17%</td>
<td>17%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Table 2. Rate of Drivers Injured or Killed in Crashes by Injury Classification in 2013

<table>
<thead>
<tr>
<th></th>
<th>Non-Serious</th>
<th>Serious</th>
<th>Fatal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 and Older Driver Rate (per 10,000 licensed drivers over the age of 65)</td>
<td>30</td>
<td>3.1</td>
<td>0.77</td>
<td>34</td>
</tr>
<tr>
<td>All Other Driver Rate (per 10,000 licensed drivers)</td>
<td>57</td>
<td>3.8</td>
<td>0.58</td>
<td>61</td>
</tr>
</tbody>
</table>

The rate of crashes per 10,000 licensed drivers resulting in a non-serious injury for the driver is higher for drivers under the age of 65, than for older drivers. The rate of serious injuries is closer for drivers under 65 and over 65, with the rate still being higher for those under 65. The rate of fatal crashes for those over the age of 65, however, is higher than for those under 65. Drivers over 65 in 2013 were involved in fewer casualty crashes\(^5\) per licensed driver than drivers under the age of 65, but a higher proportion of older driver crashes resulted in serious injuries or fatalities to the driver. This trend could be the result of the frailty bias discussed below; that older individuals are more susceptible to injuries causing death. It is important to note that this data details injury to the driver only, not to other individuals involved.

\(^5\) A casualty crash is a crash where one or more injuries are sustained.
Figure 2. Rate of Drivers Injured or Killed in Crashes by Age Group in 2013

The rate of driver injuries and deaths resulting from crashes in 2013 was highest for the youngest drivers and mostly decreases until the age group of 75 to 79, and 80 and older, where the rate increases slightly.

Figure 2 demonstrates the relative safety of older drivers. Although there is a slight increase in the rate of drivers injured or killed in crashes at the ages of 75 and above, the rate is still low in comparison to drivers of a number of other age groups.
Figure 3. Rate of Driver Fatalities per 10,000 Drivers by Age Group in 2013

Figure 3 shows the rate of driver fatalities per 10,000 drivers in that age group in 2013. The figure demonstrates that the fatality rate increases dramatically for the 80 and older age group. This fatality rate surpasses the rates of the youngest age groups, usually those deemed the riskiest drivers.
Figure 4. Drivers Involved in a Crash with Select Contributing Factors Assigned per 10,000 Licensed Drivers in British Columbia in 2013

Figure 4 shows crashes per 10,000 licensed drivers with the contributing factors of illness, sudden loss of consciousness, pre-existing physical disability, and/or deceased prior to collision, assigned by police at the scene of the crash. These contributing factors indicate that the driver was medically unfit to drive and that this contributed to the crash.

The figure shows that the rate of crashes per 10,000 licensed drivers with medical fitness issues as a contributing factor generally increases with age, starting around age 55. The increase in rate of crashes for drivers with medical issues reaches its peak for the

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6 Police can assign up to 4 contributing factors and therefore an incident may be included more than once. Excludes roads where the Motor Vehicle Act does not apply, such as forest-service roads, industrial roads and private driveways. Also excludes off-road snowmobile crashes, homicides and suicides. A casualty crash is a motor vehicle crash resulting in an injury or fatality. Select contributing factors include illness, sudden loss of consciousness, pre-existing physical disability, and deceased prior to collision.
age group 80+, with a rate that is double the rate for the 55-59 age group. This finding aligns with the positive relationship between age and the likelihood of developing medical conditions that can impact safe driving.

4.3. Older Driver Crashes as a Function of Distance Driven

The following information is from research papers on older drivers, and not from data provided by ICBC. This section is illustrative of the potential situation in British Columbia, although direct inferences are not possible.

![Graph showing fatal crash rate per 100 million miles traveled by driver age.]

**Figure 5. United States Passenger Vehicle Fatal Crash Involvements per 100 Million Miles Traveled by Driver Age in 2008 from Insurance Institute for Highway Safety**

Figure 5 provides data from the United States on fatal crash involvement per 100 million miles traveled by driver age groups in 2008 (IIHS, 2013). The rate of fatal crash involvement starts higher at the younger age groups, decreases and mostly plateaus around age groups 35 to 64, and increases steadily after these ages, to the highest rate
at age group 85 and higher. The fatal crash involvement rate for the age group 85 and greater is almost double the rate of the 16-19-year-old age group.

This finding helps illustrate potential trends in British Columbia, however, direct comparability is limited. The context in the United States is different from British Columbia, with different factors such as access to health care and access to alternative transportation that can influence outcomes.

A five-year longitudinal study tracking older drivers in Canada and Australia collected data from 900 and 300 drivers over the age of 70, respectively. The study used in-vehicle devices to track driving exposure and patterns and compared this to crashes (Langford et al., 2013). One preliminary sub-study examined the relationship between self-reported distance driven and crashes. The drivers were divided into three groups; low mileage drivers (<5001 km); middle mileage drivers (>5000 and <15,000 km) and; high mileage drivers (15,000 km or greater). The authors calculated the crash risk of drivers in each mileage group per million kilometres driven as shown in Table 3.

**Table 3. Candrive/OzCandrive Crashes per Million Kilometers Driven**

<table>
<thead>
<tr>
<th>Driver Group</th>
<th>Crashes per Million Kilometers Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Mileage Drivers</td>
<td>21.6</td>
</tr>
<tr>
<td>Middle Mileage Drivers</td>
<td>14.3</td>
</tr>
<tr>
<td>High Mileage Drivers</td>
<td>8.3</td>
</tr>
</tbody>
</table>

Table 3 shows that the drivers who drove the fewest kilometers in the study have the highest crash rates. The authors of the study conclude that the problem with older drivers is likely a small group of older low mileage drivers with fitness-to-drive issues (Langford et al., 2013).
4.4. Limitations

The following section notes a number of limitations of the preceding descriptive statistics. First, police-collected data on crashes has some shortcomings. Not all drivers report car crashes to the police. In 2008, legislation changed so that police are no longer required to attend all crashes and attendance is at their discretion. For this reason, there has been a marked decrease in the number of police-attended reports submitted to ICBC.

Second, attending officers complete a form indicating their perception of the contributing factor to the crash, but this is a subjective activity. Third, the use of licensed driver statistics as an indicator of active drivers is problematic because not all licensed drivers drive. Fourth, due to data limitations I used licenced driver statistics, as older driver mileage statistics were inaccessible. I included research studies examining older driver risk using distance based measures as an illustration of another method to examine risk.

4.4.1. Frailty Bias

Statistics illustrating older driver risk can appear high because older individuals are more vulnerable to injury when a crash occurs. Any crash rate that uses fatalities or injury severity will be susceptible to this bias. This means that older driver risk calculations may imply that this risk is to public safety, when some risk is just to the individual themselves (Langford and Koppel, 2006).

4.4.2. Low-mileage Bias

Data illustrating older driver risk using measures of distance driven are potentially misleading due to the ‘low-mileage bias’. This bias occurs because all drivers who drive more miles have lower crash rates per mile than to those who drive fewer miles (Langford et al., 2008). This might occur because people who drive more use highways as opposed to driving within the city, which has more potential for crashing. Hence, the bias results when failing to take into account annual driving exposure when calculating crash risk (Langford et al., 2008).
4.5. Descriptive Statistics Summary

- The number of older drivers in British Columbia is increasing, and the proportion of older drivers as a part of the entire driver population is increasing.

- Overall, older drivers in British Columbia are relatively safe, as demonstrated by the lower total crash rate per 10,000 licensed drivers compared to younger drivers.

- The proportion of injuries for drivers resulting in fatality is higher for older drivers than for younger drivers, which is possibly due to the frailty bias, but regardless of the cause indicates an increased threat to personal safety of older drivers.

- Older drivers are much more likely to be involved in a crash with a medical fitness issue as a contributing factor, and this likelihood increases with age starting around age 55.

- Statistics from the United States suggest that on a per-mile basis, drivers age 65 and older have an increasing fatal crash risk, with the age group 85 and older having a fatal crash risk almost double the 16 to 19-year age group.

- Data from a Canadian and Australian study suggests that older drivers who drive the fewest kilometers have the highest number of crashes per million kilometers driven.
Chapter 5. Policies Governing Older Drivers in Canada: Case Study Findings from Three Provinces

All provinces in Canada are concerned about the personal and public safety issues surrounding older drivers. The following table provides an overview of older driver demographics and road safety statistics for drivers of all ages in British Columbia, Ontario, Québec, and Saskatchewan to illustrate the context of the problem in these provinces.

Table 4. Road Fatalities for Drivers of All Ages and Older Driver Population Statistics by Province in 2012

<table>
<thead>
<tr>
<th></th>
<th>British Columbia</th>
<th>Saskatchewan</th>
<th>Ontario</th>
<th>Québec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>4,623,000</td>
<td>1,089,800</td>
<td>13,410,000</td>
<td>8,055,000</td>
</tr>
<tr>
<td>Fatalities per 100,000 Licensed Drivers (All Ages)</td>
<td>8.8</td>
<td>24</td>
<td>5.9</td>
<td>8.1</td>
</tr>
<tr>
<td>Fatalities per 100,000 Population (All Ages)</td>
<td>6.2</td>
<td>16.8</td>
<td>4.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Percent of Population Age 65 and Older</td>
<td>15.9%</td>
<td>14.7%</td>
<td>14.6%</td>
<td>16.2%</td>
</tr>
<tr>
<td>Percent of Population Age 65 and Older with Driver’s Licences</td>
<td>75%</td>
<td>73%</td>
<td>74%</td>
<td>N/A</td>
</tr>
<tr>
<td>Percent of All Licensed Drivers Over the Age of 65</td>
<td>18%</td>
<td>15%</td>
<td>15%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The following section details the older driver licensing policies in Ontario, Québec, and Saskatchewan.

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5.1. Ontario

Ontario is among the safest jurisdictions in North America (Ontario Road Safety Annual Report, 2012). The Province has the most extensive older driver licensing policy in Canada. The program changed in April 2014, but still requires an in-person renewal session, although the screening tests have changed and the session is shorter (MTO, personal communication, December 4, 2015). Ontario is the only jurisdiction in North America that requires an education session for licence renewal (MTO, personal communication, December 4, 2015). In 2012, the rate of collisions\(^8\) for licensed drivers age 65 and over was 22 (MTO, 2012).

5.1.1. Legislation

Ontario’s Highway Traffic Act provides the rules and regulations for all transportation issues in the Province including licensing and traffic offences. Included in this Act are regulations relating to fitness to drive, stating that a holder of a driver’s licence must not have any mental, emotional, nervous or physical disability that is likely to interfere with the ability to drive a motor vehicle (Ontario Regulation 340/94, s. 14). A regulation also outlines the minimal vision requirements for drivers, including visual acuity and horizontal visual field results (Ontario Regulation 340/94 s. 18).

Under section 203 of the Highway Traffic Act, it is mandatory for physicians and optometrists to report individuals they believe are unfit to drive for medical reasons. Nurse practitioners and police are not legally required to report unfit drivers.

5.1.2. Government Agencies and Policies\(^9\)

The Ministry of Transportation is the primary road safety agency in Ontario. The Driver Improvement Office in the Ministry contains the Medical Review Section, which is

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\(^8\) Rate of collisions is calculated by dividing the number of collisions per age group by the number of licensed drivers in that age group, multiplied by 1000.

\(^9\) Unless otherwise noted, the following information is taken from Ministry of Transportation Ontario (2015). Retrieved from Ministry of Transportation website http://www.mto.gov.on.ca/english/.
responsible for driver safety through medical review programs. The Medical Review Section has the ability to suspend driver’s licences for those found to have medical conditions that make them unfit to drive. Based on a report from a physician and guidelines in the CCMTA’s Medical Standards for Driver’s document, the Medical Review Office can immediately suspend an individual’s licence. The Office considers reinstating the licence if the driver provides requested medical information.

In Ontario, individuals at the age of 80 and every two years after must participate in the Senior Driver’s Licence Renewal Program. The program requires participants to complete a vision test, undergo a record review, take part in a 45-minute group education session, and complete two on-paper cognitive screening tests. The total program takes about 90 minutes. The group education session involves lessons about new traffic laws, a review of road signs, and information on how aging can impact driving. The screening assessments test for cognitive impairments that can affect the ability to drive safely. The clock drawing test measures visuospatial ability, and the letter cancellation test measures psychomotor speed.

Failing to meet these requirements can result in referral to medical review or an on-road test. In the case of medical review, the individual must provide a medical report from a physician. If the medical report indicates the individual does not meet medical fitness requirements or the individual fails to submit the required documents, the reviewer can suspend the licence. Based on medical review the individual may have to complete a functional assessment with an occupational therapist.

The functional assessment involves an on-road driving test with an occupational therapist and driving instructor, and an in-clinic medical assessment. The in-clinic portion is tailored to the individual’s medical condition and can include a vision assessment, physical evaluation and cognitive and visual attention assessment. The entire functional assessment takes around 3-4 hours and must take place at an approved Functional Assessment Centre. The Ministry does not pay for functional assessments, and individual

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10 The following information was provided in a communication with the Ministry of Transportation Ontario, December 4, 2015.
centres set the cost, ranging in price from $400-$800. The Ministry takes the results of the functional assessment into consideration in its decision.

5.1.3. Program Results

Under Ontario’s prior senior driver program (pre-2014), following initial screening, approximately 80% of drivers referred to a road test passed the test. This suggests that the former program was not successfully screening unfit older drivers in the sense that there were a number of false positives (type 1 error). Preliminary findings provided by the MTO suggest the new program is 2.5 times more effective in identifying drivers with deficits. This evaluation is on the first six-months of the program in which 93% of individuals passed the screening tests and renewed their licences without further testing. The MTO referred a majority of the remaining 7% for road tests; only 5% actually scheduled and completed a road test, and; of these individuals, 43% failed one or more attempts at the road test and were unable to renew their licences as a result. Of the original group of older drivers, the MTO referred 0.2% to a physician for further reports, and about half failed to submit reports or had their licence suspended. Of those completing Ontario’s senior driver program, 2.3% of individuals were unable to renew their licences. Approximately 18% of drivers 80 and older did not attend the program between April 2014 and April 2015 and allowed their licences to expire (MTO, personal communication, February 18, 2015).

Stakeholder acceptance of the program has been positive. The program has received positive support from medical and road safety stakeholders, senior advocacy groups (such as the Canadian Association of Retired Persons), and older drivers.

5.2. Québec

Québec has a relatively large population of seniors, with 16.2% of citizens over the age of 65 in 2012 (Statistics Canada, 2015). In terms of overall road safety, Québec’s

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11 The Ministry of Transportation Ontario provided the following information in a communication on December 4, 2015.
rates of fatalities are lower than British Columbia, but higher than Ontario. Québec's older driver program is similar to British Columbia’s, as Québec also requires medical reports at certain ages, however Québec uses this program and other tools more extensively.

5.2.1. Legislation\textsuperscript{12}

The Highway Safety Code is the primary legislation in Québec containing rules and regulations relating to the use of vehicles, driver’s licences, transportation and road safety. The Regulation respecting the health of drivers is a regulation made under the Highway Safety Code that establishes the health standards necessary for driving in Québec. These health standards include: visual requirements; restrictions on those with psychiatric or substance abuse disorders; and restrictions for those with cardiovascular, musculoskeletal, nervous system, cognitive, metabolic, and respiratory illness or deficiencies. The Regulation respecting the health of drivers also includes the basis for adding conditions to licences for individuals with medical conditions. Under the Code, drivers have to report a change in their medical condition that might affect their ability to drive safely within 30 days.

5.2.2. Government Agencies and Policies

The Ministry of Transport of Québec, or Ministère des transports, is a government agency that focuses on the transportation of goods and people throughout the Province. The Ministry's scope includes infrastructure development and maintenance, public transportation and transportation safety programs. The Société de l'assurance automobile du Québec (SAAQ) is a crown corporation in Québec responsible for user safety issues in the Province, including providing public automobile insurance, driver licensing and vehicle registration (SAAQ, 2015).

The SAAQ requires individuals at ages 75, 80, and every two years after to submit medical assessments from both a physician and an optometrist, six months before their birthday. The SAAQ can also require assessments from any individual with conditions or driving behavior that indicate there might be a problem, any individual who is 70 years or older, and anyone who has not had an eye or medical exam in 10 years. Individuals who do not send the assessments may have their licences suspended.

The SAAQ can add conditions to the licence if the individual has a physical problem solved by adapting the vehicle or restricting its use. Québec no longer uses geographic conditions such as driving only within certain distances from home, or restrictions from driving on highways, because the SAAQ determined there was no justification for issuing geographic restrictions. The SAAQ used to issue geographic restrictions but had a number of instances of individuals with cognitive impairments who were unable to remember the conditions on the licence and violated the restrictions. The SAAQ’s philosophy on restricted licences is that individuals with cognitive problems should be able to drive everywhere or nowhere; if the individual is unfit in certain circumstances then they should not have a licence. Conditions used currently in Québec depend on the physical impairment, but can include only driving in the daytime, wearing corrective lenses, and having to drive a vehicle with an automatic transmission.

Based on medical review, an individual may have to complete an on-road test. Québec has a special on-road test for individuals with medical problems that may impact their ability to drive safely. The ‘Competency Re-evaluation Exam’ is different from the on-road test designed for novice drivers; it does not test specific driving techniques, such as those learned in driving school, but rather focuses on the safety of the driver, regardless of the technique used.

Québec has a relatively extensive program for educating medical professionals by training them to recognize people with problems, and to make decisions about reporting

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14 The following information was provided in an interview with Dr. Jamie Dow, Medical Advisor for Road Safety with the SAAQ, November 24, 2015.
them to the SAAQ. This program started in 2004, and has now extended beyond physicians and nurses to include education at universities for doctors in training and occupational therapists. It is not mandatory for medical professionals to report those who are unfit to drive, and the SAAQ is not considering mandatory reporting because they determined that whether reporting is voluntary or mandatory is irrelevant once medical professionals are educated and feel comfortable making these decisions. In Québec, all medical professionals, including nurses, can report individuals they think are unfit to drive.

5.2.3. Program Results

In 2014, Québec conducted approximately 120,000 reviews of medical reports for individuals over the age of 75. Of that group, there were approximately 900 suspensions based on the report, and around 3,500 had to complete a road test, of which 60% failed. This finding means that last year the SAAQ referred approximately 3.5% of individuals screened through their older driver program for further testing (compared to Ontario’s 7%). Approximately 5000 individuals, or 4% of drivers age 75 and older did not submit the required medical forms to the SAAQ, and had their licences suspended as a result (compared to Ontario’s 18% of older individuals allowing licenses to expire).

5.3. Saskatchewan

Saskatchewan has the highest rate of road fatalities of all the case studies, with almost 17 fatalities per 100,000 people in 2012 (Statistics Canada, 2015). Saskatchewan does not have an explicit program covering older drivers, but rather treats older drivers the same as other drivers (Nixon, L., personal communication, November 24, 2015). In 2012, the rate of collisions for licensed drivers over the age of 65 was 29 (SGI, 2012).

15 The following information was provided in an interview with Dr. Jamie Dow, Medical Advisor for Road Safety with the SAAQ. November 24, 2015.
5.3.1. Legislation

The Traffic Safety Act provides the rules and regulations for traffic safety and all vehicle operators in Saskatchewan. Under the Traffic Safety Act, all medical practitioners, including physicians, optometrists, nurse practitioners, and occupational therapists must report individuals they believe are unsafe to drive to SGI (section 283). The Act also allows for suspensions and restrictions of licences based on the failure to submit required medical reports (section 48) and the decision that a medical report indicates an individual is unfit to drive in some capacity (section 51).

5.3.2. Government Agencies and Policies

The Saskatchewan Auto Fund is the Province’s mandatory insurance program, in operation by Saskatchewan Government Insurance (SGI). The Fund is responsible for driver licensing and vehicle registration (SGI, 2015). The SGI also has a Medical Review Unit (MRU) that is responsible for ensuring that individuals are medically fit to drive, regardless of age. Medical review standards stem from the Canadian Medical Association and CCMTA medical standards for driving.17

Saskatchewan does not use age based testing as they, “don’t want to paint everyone with the same brush (Nixon, L., personal communication, December 24, 2015).” Instead, the Province relies on mandatory medical reporting, attempting to increase reporting through education. The SGI has a program for educating health professionals that it is currently extending to all health regions in the Province.

Saskatchewan has mandatory reporting for any physician, nurse practitioner, occupational therapist, psychiatrist, and optometrist who believe a patient is unfit to drive. The Province also accepts reports from law enforcement officers, driver examiners, and confidential reports from concerned citizens and family members. The MRU reviews

17 The following information is from an interview with Leann Nixon, Supervisor of the SGI Medical Review Unit. November 24, 2015.
mandatory and voluntary reports, and requests a medical report from the driver. If the driver does not provide a medical report, the MRU suspends the licence. Once the MRU receives the medical report, the nurses make a decision based on CCMTA and Canadian Medical Association guidelines. The MRU can approve the licence; request further medical reports; require the driver to attend a day-long (user-pay) driver evaluation program administered by a driver educator and occupational therapist; require an in-car assessment with an SGI examiner or; send the individual for cognitive testing using the DriveABLE tool. The driver can appeal the decision to the Highway Traffic Board.

The SGI uses an in-car assessment similar to Québec’s for drivers with medical conditions (Dow, J., personal communication, November 24, 2015). The evaluator watches for symptoms the individual is experiencing to determine if they are able to compensate and drive safely. Following an in-car assessment, the evaluator can recommend certain restrictions for the licence. The SGI regularly uses restricted licences for older individuals, including geographic restrictions such as only driving into town.

5.3.3. Program Results

In recent years the number of mandatory reports has increased, which the SGI attributes to the education program for medical professionals. In 2014, the SGI issued 929 suspensions based on medical information. I was unable to locate information on the proportion of suspensions that were for drivers over the age of 65.

The SGI has not evaluated DriveABLE, but has received negative stakeholder feedback from senior drivers who are not comfortable with the computer format of the test. The SGI has received requests from physicians in Saskatchewan who want a policy requiring age-based mandatory medical reports to reduce the burden of being fully responsible for identifying individuals who are unfit to drive.

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\(^{18}\) The following information is from an interview with Leann Nixon, Supervisor of the SGI Medical Review Unit. November 24, 2015.
5.4. Case Study Summary

The approach to older driver safety is different in each of the provinces examined. Ontario takes the most stringent and comprehensive approach, requiring age-based, in-person screening, and an education session. Rather than requiring the submission of medical reports or relying on the judgement of medical professionals, Ontario takes a more centralized approach to the issue. Québec has a similar system to British Columbia, but requires medical reports submitted at the earlier age of 75, and provides relatively extensive education for medical professionals. Saskatchewan takes the least stringent approach to older driver safety, by avoiding age-based testing and relying heavily on mandatory reporting for medical professionals.

Jamie Dow, the interviewee from the SAAQ in Québec discussed the difficulty in determining older driver program effectiveness, and is currently working on a method to evaluate Québec’s program (personal communication, November 24, 2015). He has contacted representatives from other provinces and determined that no province fully evaluates their program. The inability to determine a program’s effectiveness is a theme throughout the case studies and the information provided in the interviews.

Using the rate of collisions per licensed older driver provides a sign that some programs are working better than others, but this is insufficient on its own to evaluate program effectiveness. There are many other variables to consider such as; the overall road safety context in these provinces, which affects older drivers in the same ways it impacts all drivers; and the different reporting procedures and requirements in each province. Saskatchewan’s moderate rate of older driver collisions could be misleading because the Province has no older driver licensing requirements, meaning there will be older drivers with licences who do not drive; the rate of collisions thus will seem low compared to other provinces, which may not truly be the case.

There are indicators that the provinces use, such as pass/fail rates for on-road tests, number of individuals screened into the system, and stakeholder feedback to judge the programs, but none can show conclusive evidence of the link between their policies and safety. Nevertheless, there appears to be a correlation between more stringent requirements and lower fatality rates.
<table>
<thead>
<tr>
<th>Category</th>
<th>Tool</th>
<th>B.C.</th>
<th>S.K.</th>
<th>O.N.</th>
<th>Q.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Triggers into the system</td>
<td>Age-based policy</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Mandatory reporting</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td>2) Initial screening procedures</td>
<td>In-person screening</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Mandatory medicals</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Cognitive tests</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>On-road tests</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>3) Secondary assessments</td>
<td>Medical tests</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td></td>
<td>Cognitive tests</td>
<td>✔</td>
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<tr>
<td></td>
<td>On-road tests</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
</tr>
<tr>
<td>4) Intervention tools</td>
<td>Mandatory retaining or education</td>
<td>✗</td>
<td>✗</td>
<td>✔</td>
<td>✗</td>
</tr>
<tr>
<td></td>
<td>Restricted licences</td>
<td>✔</td>
<td>✔</td>
<td>✗</td>
<td>✔</td>
</tr>
</tbody>
</table>
Chapter 6. Policy Tools

There is no single policy tool that is shown to been effective on its own, with the exception of in-person licence renewal for people over the age of 85 (Tefft, 2008; Dugan et al., 2013; Grabowski et al., 2004). There is significant disagreement in the literature about the most appropriate screening methods for older drivers, which makes it difficult to draw conclusions about effectiveness (Leproust et al., 2008). The policy framework thus consists of multiple policy tools employed to address the issues pertaining to older driver licensing and public safety. I divided the tools into three categories; triggers into the system; screening procedures, and; intervention tools. All older driver licensing frameworks examined in the case studies have tools from each category.

“Triggers into the system” covers the tools and rules for determining which older drivers enter the system for screening. Once triggered, “screening procedures” consist of the policy tools used as a first evaluation and the secondary procedures required based on the initial screening. Initial screening procedures do not determine licensing decisions in any of the jurisdictions examined; they all incorporate secondary assessments when necessary. The final category is “intervention tools” which are used to change behaviours and/or to help compensate for deficits while maintaining some driving access. I examine each component in detail below.

6.1. Triggers into the System

The following section details the two main options for triggering older drivers into the system for assessment. The main options are; age-based policies; and/or mandatory or voluntary reporting systems.

6.1.1. Age-based Policy

Saskatchewan is the only province in the case studies that does not have age-based policy. The other provinces in the case studies, Ontario, Québec, and British Columbia, have age-based triggers. The two common age-based policies are; a shorter
licence renewal period for older drivers, and; requiring the submission of medical assessments based on age. Ontario has a shorter licence renewal period for older drivers, and Québec and British Columbia require medical assessments at certain ages.

Age-based policy is controversial because it is inherently discriminatory to older drivers. Two issues debated by researchers of road safety are whether this discrimination is justified and what specific age should trigger individuals into the system.

Two studies comparing Australian jurisdictions found that there was no difference in crash rates in jurisdictions with and without age-based testing, and hence, the authors conclude that age-based testing is ineffective (Langford, Fitzharris et al., 2003; Langford, Fitzharris et al., 2010). There are, however, a number of limitations with the studies primarily associated with the data such as the quality of crash records, data issues, and difficulties controlling for all the possible variables that can impact outcomes. The applicability of these studies to British Columbia is limited due to different road safety contexts and policies, and there are no known studies on the effectiveness age-based testing in Canada.

Given the lack of consensus on the effectiveness of age-based policy and the lack of consensus on the scope of older driver risk, debate centres on the age at which to trigger drivers into the system. In British Columbia and Ontario, the trigger age is 80, and is 75 in Québec. Some road safety researchers and other interviewees suggested a lower age might be more appropriate given the increased risk for drivers starting at age 70 (older driver researcher, personal communication, December 1, 2015; Dow, J., personal communication, November 24, 2015). However, there are many researchers who question the validity of age-based testing, or think it is unfair and discriminatory (Langford and Koppel, 2006; Tuokko and Hunter, 2002).

6.1.2. Mandatory Medical Reporting

Mandatory medical reporting uses legislation to require certain medical professionals to report individuals they believe are unfit to drive to a licensing agency. Legislation requiring physicians to report patients varies by province. As discussed before, in British Columbia medical professionals are only required to report after they have
informed the patient they should not be driving, and if they have evidence that the patient has continued to drive. In Saskatchewan, medical professionals are subject to mandatory reporting, whereas reporting is voluntary in Québec. The literature generally finds more problems with mandatory medical reporting than benefits.

Physicians in Canada use a range of tools in making assessments about fitness to drive, but many physicians are unaware of, or do not use the Canadian Medical Association’s guide for determining fitness to drive (Jang et al., 2007). Their lack of knowledge may affect their accuracy in assessing fitness to drive (Dugan et al., 2013). A 2005 study compared clinician’s ratings of patients with mild dementia in terms of their predicted driving ability, with the results of a standard on-road test. The study found that clinician’s ratings of safety ranged from 62%-78% accuracy in identifying those who are fit or unfit to drive (Ott et al., 2005). A Canadian survey found that over 45% of physicians are not confident in their ability to determine the fitness-to-drive of their patients (Jang et al., 2007).

Some interviewees suggested that the difference between mandatory or voluntary reporting is irrelevant because physicians do not feel properly educated about determining fitness to drive (older driver research, personal communication, December 1, 2015; Dow, J., personal communication November 24, 2015). Thus, better fitness-to-drive education for physicians could improve the accuracy of the physician’s assessments (Ott et al., 2005; Jang et al., 2007). Québec and Saskatchewan both have programs for educating medical professionals and believe this is the best way to ensure individuals are properly screened (Dow, J., personal communication, November 24, 2015; Nixon, L., personal communication, November 24, 2015).

A further issue with mandatory reporting is that many physicians feel that mandatory reporting creates a conflict of interest that can affect their relationship with the patient (Jang et al., 2007; Bédard, M., personal communication, December 3, 2015). Involving another specialist who can inform the patient they are unfit to drive might mitigate the conflict with one’s primary physician (older driver researcher, personal communication, December 1, 2015).
Despite these issues, 72% of physicians surveyed in Canada believe that mandatory reporting should be required (Jang et al., 2007).

6.2. Screening Procedures

There are a number of ways to screen for unfit drivers, each with advantages and disadvantages. Most agencies use a combination of approaches.

6.2.1. In-person Screening

Ontario is the only jurisdiction in North America that uses in-person screening for older drivers, meaning individuals must attend a session with certain testing requirements to renew their licence. There is no literature on in-person screening programs, however there is significant literature on in-person licence renewal that I cover below to illustrate the impact of the “in-person” element of the program.

In-person licence renewal gives the opportunity to re-evaluate drivers in some capacity and screen older drivers for potential safety issues (NHTSA, 2013). A number of studies in the United States have found that a policy of in-person licence renewal is associated with a reduction in fatal crash involvement for individuals age 85 and older (Tefft, 2008; Dugan et al., 2013; Grabowski et al., 2004). Jamie Dow of the SAAQ supported this finding in his interview (personal communication, November 24, 2015). The literature offers two reasons why in-person licence renewal can reduce fatalities. First, in-person renewal gives the opportunity for licensing agents to detect impaired individuals and either refuse their licence or refer them for medical testing (Tefft, 2004). Second, researchers hypothesize that in-person licence renewal may serve as a deterrent for individuals with impairments who think they are unlikely to have their licence renewed (Tefft, 2004).

6.2.2. Mandatory Medical Assessments

Requiring older drivers to obtain medical assessments from a physician is a policy tool used in British Columbia and Québec. In British Columbia individuals at the age of 80
and every two years after have to submit a form (DMER), and in Québec at age 75, 80, and every two years after individuals must submit a medical and vision assessment. Some of the issues with mandatory medical assessments are related to the physician’s ability to assess fitness-to-drive, discussed in the ‘mandatory medical reporting’ section above. The Canadian Association of Retired Persons (CARP) critiques this method because there is variability in doctors’ assessment of fitness-to-drive and doctors are more likely to ‘pass’ a patient they know well (CARP, 2015). CARP also asserts that medical assessments cannot determine fitness-to-drive.

6.2.3. Cognitive Tests

Ontario is the only province examined in the case studies that uses cognitive tests as a part of its initial screening procedures. British Columbia and Saskatchewan use cognitive tests as a secondary assessment when there is a referral. There are many methods to test for cognitive impairment; none of them are directly predictive of fitness to drive, however some methods are preferable to others. The following section outlines three main types of cognitive tests with examples of each; medical rating tests; paper-and-pencil tests and; computer based tests.

Medical Rating Tools

The Clinical Dementia Rating (CDR) is the most popular tool used by physicians to determine severity of cognitive impairment in patients with dementia. Health professionals determine a CDR rating from 0 to 3 based on interviews with the patients and their caregivers. In the literature, there is agreement that patients who have a diagnosis of moderate to severe dementia, which corresponds to a score of 2 to 3 on the CDR, should not be driving. Many studies have concluded that CDR does correlate with driving ability (Brown and Ott, 2004; Iverson et al., 2010) However, the CDR is usually not viewed as a sufficient determination of dementia severity and researchers recommend additional assessments by a doctor or specialist (Lundberg et al., 1997; Iverson et al., 2010).

Critiques of the CDR include subjectivity in rating and that dementia severity is a continuum but CDR measures divide people into artificial categories (Tractenberg et al.,
Studies suggest that the rating instructions and individual's judgements bias results toward higher severity rating (Tractenberg et al., 2001). However, a 1997 American Academy of Neurology study of individuals trained to use the CDR found 83% agreement in decisions of severity of dementia using the CDR, suggesting the CDR is reasonably reliable and consistent when used by well-trained individuals (Morris et al., 1997).

**Paper-and-Pencil Tests**

Paper-and-pencil tests typically attempt to investigate one or two neuropsychological functions mentioned previously including visuospatial skills, attention, judgement, memory, and executive functioning. Doctors and specialists sometimes use cognitive tests to help diagnose dementia and to further assess the severity of the disease. There are many cognitive tests explored in the literature; Ontario currently uses the ‘clock-drawing’ test and ‘letter cancellation’ test.

Overall, studies on cognitive tests have found contradictory evidence of usefulness in predicting driving ability. None of the studies reviewed recommend using cognitive tests as the sole determinant of driving fitness, but rather most recommend their use as a part of the decision (BPS, 2001; Lundberg et al, 1997; Brown and Ott, 2004; Boets et al., 2005). In general, the literature suggests there is no single test that is sufficient, but rather that the use of cognitive tests as tools can help screen for cognitive impairments and detect those in need of further assessment (Rizzo, 2011; BPS, 2001).

Criticalisms of using paper-and-pencil tests to predict driving ability are that they are too simple to predict the complex behaviour as they tend to measure individual cognitive skills and do not account for factors important to driving such as impulse control and judgement (Lundberg et al., 1997; Boets et al., 2005).

**Computer Based Tests**

The most popular computer-based cognitive test is the DriveABLE Cognitive Assessment Tool (DCAT) used in British Columbia and Saskatchewan. DriveABLE is a private company that administers the DCAT and another test used in British Columbia called the DriveABLE On-Road Evaluation (DRE). The test requires individuals to complete a series of touch-screen tasks, but requires no computer skills. Based on the
outcome of the test individuals can be referred for further testing; in the case of British Columbia the DORE; in the Saskatchewan the in-car assessment by the SGI.

The DCAT is controversial and opposed by both senior advocacy groups and road safety researchers. They challenge the test because it is based on flawed research findings from one paper, written by the individuals who created the test (Bédard, Gagnon et al., 2013; older driver researcher, personal communication, December 1, 2015). A review by multiple road safety researchers found the test returned a number of false-positives, meaning individuals referred for an on-road test subsequently pass the on-road test, indicating the test is too sensitive (Bédard, Gagnon et al., 2013). The DriveABLE company has also come under scrutiny because it profits from individuals taking the test, and further in British Columbia when individuals fail the DCAT and have to take the DORE.

6.2.4. On-Road Tests

On-road testing is the ‘gold standard’ for assessing fitness-to-drive. On-road tests provide a base case in research evaluating the reliability of other types of driving assessments, by comparing the outcome of these other assessments with the outcome of an on-road test. On-road testing assesses an individual’s driving skills while they are actually driving. The examiner is usually a trained driving instructor, and in some cases, an occupational therapist is present. Best practices include the following: (1) starting in a closed course to assess basic skills; (2) continuing the test on the open road if the examiner deems it safe; (3) using a standardized route and scoring system (Mazer et al., 2004); (4) testing pre-determined maneuvers, and (5) having a well-defined set of steps that should be taken for each maneuver to limit subjectivity in rating (Fox et al., 1998).

The main advantage to on-road testing is that it provides the opportunity to assess the driver in real-life driving situations. On-road tests also provide the opportunity to try vehicle modifications for individuals with specific disabilities, or for the examiner to recommend certain licence restrictions (Tuokko et al., 2007). There are a number of disadvantages to on-road testing. On-road tests can vary widely in terms of location, duration, and route characteristics that may affect the outcome of the test (Tuokko et al., 2007). Traffic situations and weather can be variable and each testing scenario can be
different from the next, so some individuals may not experience high-demand situations that occur with regular driving (Mazer et al., 2004). There is also strong consensus among Canadian older driver researchers that on-road tests are unable to assess an individual’s entire driving ability (Tuokko et al., 2007). There are issues with subjectivity in scoring the driver’s test, including both issues with the examiner and the rating system (Tuokko et al., 2007). Individuals might also behave differently under examination than in real life (Tuokko et al., 2007). In-car assessments are expensive, time consuming, and require trained examiners (Mazer et al., 2004). Finally, on-road testing can be dangerous for the participant, the examiner, and other road users if the individual is truly unfit to drive (Tuokko et al., 2007).

6.3. Intervention Tools

Intervention tools focus on methods to allow older individuals to continue driving safely. Intervention tools include driver retraining and education programs, and restricted/conditional licences.

6.3.1. Mandatory Driver Retraining and Education Programs

Driver retraining and education programs aim to refresh and enhance the knowledge, skills, and behaviours of older drivers. These programs can include practical on-road lessons, education sessions about traffic laws, sessions designed to increase awareness of one’s own behaviour and skills, and other physical training programs (for example an exercise program focused on physical skills needed for driving, like flexibility, coordination and speed) (Tuokko et al., 2007).

British Columbia, Saskatchewan, Québec, and Ontario have voluntarily driver retraining and education programs. Examples include Living Well, Driving Well offered by the British Columbia branch of the Canadian Automobile Association (CAA), and 55 Alive in Saskatchewan, offered by the Saskatchewan Safety Council and sponsored by SGI and the CAA. Similar voluntary refresher courses exist in Ontario and Québec. In Ontario, there is also mandatory driver education program as a part of the licence renewal program for those 80 years and older, and every two years after.
A systematic review of studies on driver retraining and education programs examined the effectiveness of these programs for driving awareness, driving behaviour and reducing crashes (Korner-Bitensky et al., 2009). The study found strong evidence that education programs improve driving awareness and driving behaviour, and moderate evidence that education programs are ineffective in improving crash rates (Korner-Bitensky et al., 2009). There is moderate evidence that education programs in combination with on-road training improves driving knowledge, strong evidence that the combination program improves on-road driving behaviour, but there are no studies examining the impact of this combination program on crash rates (Korner-Bitensky et al., 2009). Finally, there is moderate evidence that physical training improves driving knowledge and on-road behaviours, but no studies examining the role of physical intervention on crash risk (Korner-Bitensky et al., 2009). The authors conclude that although there are insufficient studies to determine that the programs reduce crash risk, an older driver program including physical training and education combined with on-road training would help increase skills and behaviours of older drivers, which suggests there might be real impacts on crash rates (Korner-Bitensky et al., 2009).

A study in Alabama examined the impact of an education program on 365 older drivers with vision problems (Owsley et al., 2003). The program focused on intervention. The goal was to change drivers’ self-perceptions about their vision quality and to encourage them to self-regulate and reduce their driving. The study found that compared to the control group, drivers who participated in the education program were more likely to acknowledge their limited vision, and more likely to report avoidant and adaptive behaviour in difficult driving situations (Owsley et al., 2003). Drivers in the education group also reported taking fewer trips, and driving shorter distances than those in the control group. Although the study did not examine whether this program resulted in a change in crash risk, the results do suggest the program is successful in producing self-regulating behaviours in older drivers (Owsley et al., 2003). Researchers believe encouraging self-regulation rather than mandating ceased driving leads to greater feelings of control for the individual, which can lead to voluntary self-regulation and easier acceptance of driving cessation (Mazer et al., 2004).
6.3.2. **Restricted/Conditional Licences**

Restricted or conditional licences are licences with specific limits for their use. Agencies can restrict licences in a variety of ways, including restrictions on the distance driven from home, limits on the speed the driver can travel, restrictions to certain road types (i.e. not highways), and restrictions on the time of day (Dugan et al., 2013). Conditions can also include the requirement to use functional aides, such as eyeglasses.

For people with reduced functional driving ability, the most dangerous situations are those with high-environmental demands, such as unknown roads, areas with dim-lighting, complicated intersections, or speeds requiring quick decisions (Nasvadi and Wister, 2009). Restricted licences can limit drivers to simpler driving situations, with the goal of avoiding situations with high-environmental demands and reducing driver risk. Advocates of restricted licences suggest that they can help extend the length of time that older people with minor or moderate conditions can drive safely (Dugan et al., 2013; Stutts et al., 2000).

British Columbia typically applies driving restrictions during licence renewal. A study of licensing and insurance claims crash records of all drivers age 66 and older in British Columbia from 1999-2006 found that restricted licences can result in an overall 11% reduction in at-fault crash risk (Nasvadi and Wister, 2009). The risk of causing a crash was 87% lower for drivers with restricted licences compared to drivers with non-restricted licences, controlled for both gender and age. In British Columbia the most common restriction is day-light driving combined with maximum speeds of 80 km/h. The most effective restriction was the day-light only restriction which reduced crash risk to half of those without the restriction, suggesting a greater role for this restriction and testing for older drivers in low-light situations could further decrease crash risk (Nasvadi and Wister, 2009).

A study of restricted licensing in Saskatchewan had similar conclusions to the British Columbia study. The study examined drivers in Saskatchewan of all ages, both before and after licence restrictions were imposed. The authors found that at-fault crash rates decreased by 12.8% after placing licensing restrictions on the drivers (Marshall et
The authors conclude that restricted licensing results in crash and traffic violation reductions.

The impact of restricted licences may not be solely due to the environmental driving restrictions they create, but might be due to the effect of reducing the distance driven (Nasvadi and Wister, 2009). Drivers with restricted licences may also self-monitor and further reduce their driving exposure or change their behaviour in other ways (Marshall et al., 2002). A study in Iowa supports this suggestion, and found that restricted licences result in a 36% reduction in miles driven per week (Braitman et al., 2010).

Some issues can occur with restricted licences including difficulty enforcing the restrictions and compliance issues, especially for drivers with some cognitive impairment (Dugan et al., 2013).

A study in Ontario examined the acceptability of licence restrictions to drivers age 65 and older. The study found that out of the 11 restrictions proposed to the drivers, 6 restrictions had high ratings in terms of acceptability, meaning the drivers thought the restrictions would impose minimal inconvenience (Marshall et al., 2007). The 6 restrictions were rated in the following order of preference: corrective lenses required; driving with specific vehicle adaptations; permitted to drive only if has regular Ministry of Transportation of Ontario assessments; permitted to drive during daylight hours only; avoiding driving on major highways, and; avoiding driving during rush hour (Marshall et al., 2007). In general, older drivers rated restrictions that maintain maximum driver autonomy highest, and the results were similar among men and women, and urban and rural drivers (Marshall et al., 2007).
6.4. **Policy Tools Summary**

- There is significant disagreement in the literature about the most appropriate screening tool for older drivers; a policy framework of multiple tools is thus likely the best approach.

- There is no single policy tool shown to been effective on its own, with the exception of in-person licence renewal for people over the age of 85.

- There are two main methods to trigger older drivers into the system: age-based policy and mandatory medical reporting. There are benefits and drawbacks to both approaches.

- Screening procedures include: in-person screening, mandatory medical assessments, cognitive testing, and on-road testing. Assuming in-person screening works in the same manner as in-person licence renewal, this method is likely the most effective for screening fitness-to-drive. There is debate about other screening methods.

- Intervention tools include: mandatory driver retraining and education programs, and restricted/conditional licences. Both intervention tools have some evidence of effectiveness.
Chapter 7. Framework for Evaluation: Policy Criteria and Measures

The following section provides the framework for analysing each policy option. Evaluation of each policy depends on their ability to meet three objectives: protection and safety; administrative ease, and; stakeholder acceptability. The first objective is a societal objective, and the remaining two are government objectives.

7.1. Protection and Safety

Protection and safety is the main societal goal of older driver licensing policy, and thus this is the primary objective used to evaluate each option. This objective explores whether and to what degree each policy improves road safety, thereby reducing the risk of crashes that lead to injuries and fatalities. Protection and safety focuses on the improvement of individual and public safety, through reduction in risk of older driver injury and deaths, and at-fault older driver crashes. Three measures help determine the degree of protection and safety offered by the options. The first measure examines the number of older drivers de-licensed due to the policy, because fewer older drivers will result in fewer crashes. The second measure is public awareness of the potential limitations of aging that affect driving, because with increased awareness friends and family may encourage older drivers to stop or reduce driving. The final measure is self-reduced mileage, because the shorter distances older drivers drive, the less opportunity for crashing.
Table 6. Protection and Safety Measures

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Measures</th>
<th>Method</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement of individual and public safety: degree of reduction in risk of older driver injury and deaths, and at-fault older driver crashes</td>
<td>1. Number of older drivers de-licensed as a result of policy</td>
<td>Relative ranking determined from assessment of case studies</td>
<td>High: all three measures are high relative to other policies</td>
</tr>
<tr>
<td></td>
<td>2. Public awareness of potential limitations of aging</td>
<td>Rankings gleaned from literature and interviews</td>
<td>Moderately high: two measures are high/moderately high relative to other policies</td>
</tr>
<tr>
<td></td>
<td>3. Self-reduced older driver mileage</td>
<td>Relative ranking determined from literature and interviews</td>
<td>Moderate: a mix of moderate, high, and low measures</td>
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</tbody>
</table>

7.2. Administrative Ease

Administrative ease is a government objective that examines institutional complexity, coordination, and relative costs.

There are three criteria; one explores the degree to which each policy is difficult to implement; another explores the complexity of operation once the policy is in place; and the final criteria looks at relative costs of the program. I rank a policy ‘high’ if it requires little administrative change and is not overly complex, as measured by few steps taken and few people required to implement and administer. A policy that is low in relative costs scores high on the administrative ease objective.
Table 7. Administrative Ease Measures

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measures</th>
<th>Method</th>
<th>Index</th>
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</thead>
<tbody>
<tr>
<td>Ease of implementation</td>
<td>1. Steps involved in implementation</td>
<td>Relative score and description for each measure determined from case</td>
<td>High: the policy scores very few/low on at least three measures and</td>
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<tr>
<td></td>
<td>2. Number of individuals involved in</td>
<td>studies and interviews</td>
<td>few/low on the rest</td>
</tr>
<tr>
<td></td>
<td>implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease of operation</td>
<td>3. Steps involved in operation</td>
<td></td>
<td>Moderately high: the policy scores very few/low on two measures and</td>
</tr>
<tr>
<td></td>
<td>4. Number of individuals involved in operation</td>
<td></td>
<td>few/low on two others; or very few/low on one measure and few/low on</td>
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<td></td>
<td></td>
<td></td>
<td>three others</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Moderate: the policy scores few/low on three measures</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Moderately low: the policy scores many/high on two measures</td>
</tr>
<tr>
<td>Ease of cost</td>
<td>5. Relative costs and savings of the program</td>
<td></td>
<td>Low: the policy scores many/high on three or more measures</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Low: the policy has the fewest/lowest on one or none of the measures</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>relative to the other policies</td>
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7.3. Stakeholder Acceptability

Stakeholder acceptability is a government objective that explores whether or not important stakeholders will accept the policy. I explore two groups of stakeholders: senior advocacy groups, and medical professionals including physicians. Stakeholder acceptability is an important objective because groups must support the policy enough to allow for successful implementation, ongoing operation, and compliance. There is not assessment of public acceptability because research indicates that the public is not well
educated on older driver issues and is not particularly concerned about this issue (TIRF, 2007).

**Table 8. Stakeholder Acceptability Measures**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Measures</th>
<th>Method</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability by senior advocates</td>
<td>1. Canadian Association of Retired Persons (CARP) response to similar programs</td>
<td>Degree of acceptability determined though interviews, case studies, and literature</td>
<td>High: both senior advocates and medical professionals accept the policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Moderate</strong>: either senior advocates or medical professionals accept the policy</td>
</tr>
<tr>
<td>Acceptability by medical professionals</td>
<td>2. Studies of medical professional acceptability of policies and interview findings</td>
<td></td>
<td>Low: neither senior advocates nor medical professionals accept the policy</td>
</tr>
</tbody>
</table>
Chapter 8. Policy Options

The following section outlines the policy options for older driver licensing in British Columbia. Each policy option is a “package” of the multiple policy tools derived from the literature review, case studies, and interviews.

The options are a continuum of decentralized to centralized policies. The decentralized policy requires little state involvement but relies more heavily on individuals or other parties to self-regulate. The centralized policy requires more state involvement and coordination, and does not rely on self-regulation.

| decentralized policy | status quo | status quo plus | centralized policy |

Figure 6. Policy Options Continuum

The Necessity of Discontinuing DriveABLE

The DriveABLE cognitive assessment tool is not part of the framework because it fails on every criterion, and its removal should be the highest priority, regardless of the other policies adopted. Through findings in the literature review and interviews, it is clear that the DriveABLE tool is not evidence-based, is costly, and places an unnecessary burden on individuals referred to this test. DriveABLE is unfair to older individuals because it is computer-based which is a barrier to older drivers who are not comfortable with the technology. The test delivers a significant number of false-positives, meaning individuals who may be fit to drive take and pass an on-road test (Bédard, Gagnon et al., 2013). The DriveABLE on-road test is administered by the same company as the in-office cognitive screening tool, and the SIMARD-MD screening tool recommended for use by physicians was developed by the spouse of the DriveABLE founder, raising questions regarding conflict-of-interest (older driver researcher, personal communication, December 1, 2015). Senior advocacy groups and many medical professionals oppose SIMARD-MD and DriveABLE (CARP, 2015; Bédard et al., 2013; older driver researcher, personal communication, December 1, 2015). In 2015, 1000 people total were required to complete 1200 DriveABLE tests (either the DCAT, DORE or both) (RoadSafetyBC, personal...
communication, April 13, 2015). At a cost of $270 for the DCAT, and $230 for the DORE, DriveABLE cost the Province around $300,000. The Province should replace DriveABLE with pencil-and-paper cognitive tests which researchers have found to have the same validity as DriveABLE, cost significantly less, are not computer-based, and physicians and/or road safety agencies can administer the tests rather than a private company. All off the options below include paper-and-pencil cognitive tests and not DriveABLE.

8.1. Option 1: Status Quo

The status quo policy in British Columbia uses the following policy tools:

1. *Triggers into the system*: age-based policy (age 80 and every two years after) and mandatory medical professional reporting

2. *Initial screening procedures*: mandatory Driver Medical Examination Reports (DMER) completed by a physician, based on age

3. *Secondary assessments*: further medical tests, cognitive tests, and/or on-road tests if deemed necessary

4. *Intervention tools*: infrequently used restricted licences

These policy tools make British Columbia’s overall older driver policies somewhat decentralized compared to the options explored below. This policy largely relies on physicians to complete medical forms and to report individuals they believe are unfit to drive. The Province however, is still required to review the forms of all drivers age 80 and every two years after, and sometimes refer individuals for secondary assessments. The use of restricted licences is also a decentralized intervention tool as it requires little involvement from the Government except in choosing the restriction. Restricted licences largely depend on the driver’s self-regulation and compliance with restrictions.

8.2. Option 2: Status Quo Plus

1. *Triggers into the system*: age-based policy (age 80 and every two years after), and strengthened mandatory medical professional reporting law
2. *Initial screening procedures:* mandatory DMER completed by a physician, based on age

3. *Secondary assessments:* further medical tests, cognitive tests, and/or on-road tests if deemed necessary

4. *Intervention tools:* moderately used restricted licences, public education campaign

This option uses British Columbia’s status quo policy, but strengthens the mandatory medical professional reporting law, so they no longer have to issue a warning before reporting patients, uses restricted licences more regularly, and includes a public education campaign. The public education campaign includes internet-based resources and pamphlets placed in locations that older drivers and family are likely to see them. Locations include doctor’s officers, optometrists, clinics, and ICBC licensing locations. Partners including TransLink, CARP, and ICBC can assist in distributing pamphlets. The campaign aims to inform drivers and families of the limits associated with aging to encourage people to self-restrict mileage.

### 8.3. Option 3: Decentralized Policy

1. *Triggers into the system:* strengthened mandatory medical professional reporting law, with increased education for medical professionals

2. *Initial screening procedures:* medical tests, cognitive tests, and/or on-road tests if deemed necessary

3. *Secondary assessments:* further medical tests, cognitive tests, and/or on-road tests if deemed necessary

4. *Intervention tools:* moderately used restricted licences, and a public education campaign

This policy option includes the most decentralized policy tools. The decentralized policy requires the least amount of Provincial involvement but relies instead on medical professionals to report individuals they believe are unfit to drive, and for individuals to self-regulate. The Province is only involved in a public education campaign, when receiving medical reports from medical professionals and referring drivers for further testing. This policy option is similar to Saskatchewan’s approach in that there is no age-based
requirement but relies rather on medical professionals to report individuals. This option includes an increase in restricted licences that focuses on self-regulation of drivers and a public education campaign (as detailed above) to inform drivers and families of the impact of aging on driving.

8.4. Option 4: Centralized Policy

1. *Triggers into the system*: age-based policy (age 80 and every two years after) and mandatory medical professional reporting (kept the status quo)

2. *Initial screening procedures*: in-person screening, cognitive tests, vision test, declaration of medical problems

3. *Secondary assessments*: medical tests and/or on-road tests if deemed necessary

4. *Intervention tools*: moderately used restricted licences, and mandatory education session during in-person screening

This policy is the most centralized option, as it requires the most involvement from the Province. Every driver age 80 and every two years after must attend a session for in-person screening, which includes a mandatory education session. Staff administer the tests and education session, and act as an additional screening mechanism if they think an individual should have further medical testing. Based on the outcome of the screening tests, a person may be referred for further medical tests or an on-road test. This policy is similar to Ontario’s with the added tool of restricted licences for those who the Province would otherwise license but could be safer with restrictions.

*The Necessity of Paying for DMER Completion*

The current user-pay requirement for older driver DMER completion is unfair and discriminatory. The Province should remove the user-pay requirement if it pursues the status quo or status quo plus options. Currently in British Columbia, the Province pays up to $75 for physicians to complete DMERs for patients with known or suspected medical conditions, but does not pay for the DMERs of older drivers at trigger ages. This practice is unnecessarily discriminatory to older drivers and unfairly impacts low-income seniors.
The status quo and status quo plus options above include Provincial payment for older driver DMERs.
Chapter 9. Evaluation of Policy Options

The following section applies the evaluation framework from Chapter 7 to each of the policy options outlined in Chapter 8. Given that the primary objective of this research is protection and safety, I weight this objective higher than the other objectives. Equal weights apply to the other two objectives. I organize the evaluation by objective, with an analysis of the performance of each option underneath to allow for comparison.

9.1. Protection and Safety Evaluation

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<th>Evaluation Summary: Protection and Safety</th>
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<td>Status Quo</td>
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Option 1: Status Quo

The status quo de-licenses a moderate number of older drivers. Research indicates that the risk for older drivers starts increasing slowly around the age of 70, and sharply at the age of 80, meaning the current mandatory medical reports screen the highest risk individuals.

Although it is mandatory for physicians in British Columbia to report patients they believe are unfit to drive, there are many issues with reporting that limit its effectiveness. In British Columbia, medical professionals must first warn patients that they should not be driving; only if the patient continues to drive must the medical professional report the individual. This is problematic because patients might not disclose that they continue to drive, or might see another physician instead. Further, there is a conflict of interest for medical professionals who fear violating the trust of patients and their role as a patient advocate, meaning some medical professionals might under-report.
Literature and researcher interviews, as summarized in Chapter 6, indicate that most physicians in Canada do not feel comfortable or sufficiently informed to make fitness-to-drive decisions. Although reporting is mandatory, if physicians do not know what conditions and symptoms can impact driving, they will not report. At the age of 80 and every two years after, the Ministry requires medical reports, which relieves physicians of making a decision about reporting, but they still must complete the DMER.

The status quo is low in fostering public awareness of the potential limitations of aging. In British Columbia, no mandatory education sessions or public awareness campaigns about the impact that aging can have on fitness-to-drive exist.

The status quo should result in low reduced older driver mileage. The Ministry uses restricted licensing sparingly, meaning individuals with questionable driving ability are more likely to be at the two end points: de-licensed or maintain full privileges. The lack of education sessions also means older drivers will be less likely to self-restrict mileage.

In terms of the framework measures, status quo should lead to:

1) A moderate number of older drivers de-licensed
2) Low public awareness
3) Low self-reduced mileage

Therefore, the status quo scores ‘moderately low’ on the protection and safety objective.

**Option 2: Status Quo Plus**

Status quo plus should de-license a moderately high number of older drivers. The trigger age is the same as status quo and thus also screens the highest risk drivers. The intention of the strengthened mandatory reporting law is to reduce ambiguity in reporting and increase the number of unfit older drivers brought into the system, which will result in more drivers de-licensed. Status quo plus did not receive a high for the first measure because it still relies on medical professionals.

Status quo plus should result in moderately high public awareness. The public education campaign will improve public awareness of the potential limitations of aging,
which will result in some families and friends encouraging older drivers to reduce mileage or stop driving. Public education campaigns can never reach all individuals though, so status quo plus does not receive a high rating for this measure.

Status quo plus should result in a moderate reduction in older driver mileage. This option uses restricted licences moderately. Restricted licences are a debated policy tool for older drivers, which surfaced in researcher interviews. There is some evidence that restricted licences can increase safety by reducing the mileage of drivers, however some interviewees suggest individuals who need restrictions should be completely de-licensed. There are also potential compliance issues for drivers with restrictions, particularly those with mild cognitive impairments. Research suggests that educating older drivers on the limitations that can arise from aging can result in self-regulation and decreased mileage. The public education campaign thus will contribute to some self-reduced mileage.

In terms of the framework measures, status quo plus should lead to:

1) A moderately high number of older driver de-licensed
2) Moderately high public awareness
3) Moderate self-reduced mileage

Overall, the status quo plus option scores ‘moderately high’ on the protection and safety objective.

**Option 3: Decentralized Policy**

The decentralized policy option should de-license a low number of older drivers. Despite strengthened mandatory reporting laws and education, the number of reports received will be much lower than policy with age-based testing.

Like in status quo plus, the decentralized policy has a public awareness campaign, meaning public awareness of the potential limitations of aging should be moderately high.

This option should result in moderately low reduced older driver mileage. The public education campaign will result in some reduced mileage, but the smaller number of screened drivers will mean fewer restricted licences.
In terms of the framework measures, the decentralized policy should lead to:

1) A low number of older drivers de-licensed
2) Moderately high public awareness
3) Low self-reduced mileage

Therefore, the decentralized policy scores ‘moderately low’ on the protection and safety objective.

**Option 4: Centralized Policy**

The centralized policy should de-license a high number of individuals, because it is the most effective policy for identifying individuals who are unfit to drive. Research indicates that in-person licence renewal is one of the only tools proven to reduce older driver crash risk (Tefft, 2008; Dugan et al., 2013; Grabowski et al., 2004). Due to the more demanding in-person screening requirement, many individuals choose not to renew their licence. For example, 18% of older drivers in Ontario chose not to attend the in-person session, and instead allow their licenses to expire (MTO, personal communication, December 4, 2015).

Public awareness of the potential limitations of aging is likely moderately high with the centralized policy. The mandatory education session will result in older driver awareness, and publication of policy changes will require the government to justify its decision, thus educating some of the public.

This option should lead to a high reduction of older driver mileage because of the mandatory education session and moderately used restricted licences.

In terms of the framework measures, the centralized policy should lead to:

1) A high number of older drivers de-licensed
2) Moderately high public awareness
3) High self-reduced mileage

Overall, the centralized policy option scores ‘high’ on the protection and safety objective.
9.2. Administrative Ease Evaluation

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<th>Evaluation Summary: Administrative Ease</th>
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**Option 1: Status Quo**

The status quo option involves no implementation steps or individuals, other than to meet the necessary recommendations for all options—to remove DriveABLE for paper-and-pencil tests and to begin paying for older driver DMERs.

The steps required in operation include:

- mailing DMER requests to all individuals age 80 and every two years after;
- receiving completed DMERs; an intake agent provides initial review of the DMER, and either makes a decision, requests more information, and in most cases passes the DMER on to an adjudicator;
- the adjudicator makes a decision, requests more information, or in complex cases passes the file onto a case manager;
- case manager makes final decision.

At any point in the process, referral of the individual for an on-road test or other medical testing can occur and the case will be re-examined. This process requires a moderate number of individuals to manage the DMERs, including intake agents to examine the DMERs, adjudicators who examine most of the DMERs, and case managers for some.

Status quo has no implementation costs, and operation costs should be moderate. RoadSafetyBC must pay intake staff, adjudicators, and case managers in the Driver Medical Fitness team to review medical forms from all individuals at trigger ages, and reports from physicians at other non-trigger ages. In line with the modification explained before, the Province will pay for DMER completion for individuals at trigger ages, and continue to pay for on-road tests deemed necessary. The Province reviewed 60,100
DMERs for older drivers in 2015 (personal communication, March 9, 2016). Using the $75 fee the Province pays for other DMERs, costs will increase approximately $4.5 million with implementation of payment for older driver DMERs. The removal of DriveABLE would partially offset this cost.

In terms of the framework measures, relative to the other policies status quo has:

1) Very few steps involved in implementation
2) Very few individuals involved in implementation
3) Few steps involved in operation
4) Few individuals involved in operation
5) Moderately low costs

Therefore, status quo scores ‘moderately high’ on the administrative ease objective.

**Option 2: Status Quo Plus**

Status quo plus scores moderately high for ease of implementation. Like the status quo, this option requires implementation of paper-and-pencil tests to replace DriveABLE and to pay for older driver DMERs. It requires few individuals and steps to strengthen the mandatory reporting law; and individuals and steps involved in hiring more staff to manage the increased DMERs. A small number of individuals and steps are necessary to design and implement the public education campaign. Although implementation is more complex than status quo, this option is still relatively simple to implement.

Status quo plus scores moderate for ease of operation. The number of steps involved in status quo plus operation is similar to status quo. A very small number of individuals are required for operation to manage the increased DME volume expected from the strengthened reporting law. Although more staff are involved in status quo plus, the impact is only moderate because there is not any additional coordination involved for individuals, just increased volume. The education campaign is temporary and therefore requires no ongoing operational capacity.

Status quo plus scores moderate for cost. Implementation costs are moderate and include paying additional staff explained above, and funding the education campaign.
Costs for the education campaign can be kept reasonably low by focusing on internet-based resources and distributing pamphlets for a limited time. The operating costs in this option are the same as in the status quo option except to pay a small number of extra staff to accommodate the increase in medical reporting for all drivers due to the strengthened law.

In terms of the framework measures, relative to the other policies status quo plus has:

1) Few steps involved in implementation
2) Few individuals involved in implementation
3) Few steps involved in operation
4) Few individuals involved in operation
5) Moderate costs

Therefore, status quo plus scores ‘moderate’ on the administrative ease objective.

**Option 3: Decentralized Policy**

The decentralized policy is moderately high in terms of implementation ease; it involves moving from status quo to a simplified program. The Province must lay off a number of Driver Medical Fitness staff to reflect the reduced number of older drivers brought into the system. Some staff and steps are involved in strengthening the mandatory reporting law, and designing and education program/resources for medical professionals regarding evaluating fitness to drive. The Province must design and implement a public education campaign.

This policy is high in terms of operational ease. Once implemented, the decentralized policy relies heavily on self-regulation and medical professionals report people they think are unfit to drive. This policy requires significantly fewer staff to manage the reduced incoming number of reports, and does not involve mailing DMERs to drivers.

The decentralized policy is high in ease of cost. Implementation costs include staffing cost for the steps as explained above. The Province can keep costs of physician and public education low by using internet-based resources, and maintaining the programs for a limited time. The policy requires little costs for ongoing operation. As in the
other options, the Province will save money with the removal of DriveABLE, and this option results in fewer payments for older driver DMERs.

In terms of the framework measures, relative to the other policies the decentralized policy has:

1) Few steps involved in implementation
2) Very few individuals involved in implementation
3) Very few steps involved in operation
4) Very few individuals involved in operation
5) Low costs

Therefore, the decentralized policy scores ‘high’ on the administrative ease objective.

**Option 4: Centralized Policy**

The centralized policy option is the most administratively complex, in both implementation and operation. Implementation involves steps and staff to design the in-person screening session, to secure a location and staff for in-person sessions throughout the Province, to train staff, to lay off some intake staff and adjudicators in Victoria, and to advertise publically the new program.

Operation is also complex, as it involves the coordination of many new staff with different positions (such as driver fitness evaluators at the in-person sessions, and adjudicators) in new locations rather than a centralized location. In-person sessions must be consistent throughout the Province; ensuring this involves occasional auditing of the sessions.

Implementation costs of the centralized policy are the highest of all options, because the system requires major changes. Implementation costs include staffing and program design steps outlined above; the program design will follow Ontario’s program which makes designing the program simpler. Operating costs are moderately high, and includes ongoing staff at various locations for in-person screening sessions. However, discontinuation of DriveABLE saves approximately $300,000/year and with the removal of the DMER system, the Province will not need to comply with the costly recommendation
to pay an additional $4.5 million/year for older driver DMERs. These savings can offset some costs of the program.

In terms of the framework measures, relative to the other policies the centralized policy has:

1) Many steps involved in implementation  
2) Many individuals involved in implementation  
3) Many steps involved in operation  
4) Moderate individuals involved in operation  
5) High costs

Overall, the centralized policy scores ‘low’ on the administrative ease objective.

9.3. Stakeholder Acceptability Evaluation

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Option 1: Status Quo

Without DriveABLE and Provincial payment for older driver DMERs, there should be less stakeholder opposition to the status quo.

The Canadian Association of Retired Persons (CARP), a senior advocacy group, opposes any age-based testing, suggesting this practice is discriminatory to older drivers. They also oppose the process of completing DMERs because they claim doctors are not qualified to make fitness-to-drive decisions, the practice results in inconsistent treatment of older drivers, and medical assessments do not determine driving competence (CARP, 2015). In the current state, without the removal of DriveABLE and payment for DMERs, status quo would score low for senior group acceptability. However, in the modified state,
the status quo should receive moderately low stakeholder acceptability from senior groups.

A questionnaire sent to a sample of Canadian family physicians found that over 45% of physicians feel uncomfortable making fitness-to-drive decisions, and almost 89% feel they would benefit from education in this area (Jang et al., 2006). About three-quarters believe reporting patients can create a negative relationship with their patient, but around 72% still believe physicians should be legally responsible for reporting unsafe drivers. This finding suggests that medical professionals in British Columbia likely do not highly support the status quo because the system relies on physicians to complete DMERs, and provides little education regarding fitness-to-drive. This option receives a moderately low rating for medical professional acceptability.

In terms of the framework measures, the status quo should lead to:

1) Moderately low support from senior advocates
2) Low support from medical professionals

Therefore, status quo scores ‘low’ on the stakeholder acceptability objective.

**Option 2: Status Quo Plus**

Although not directly addressed by CARP, the Association would likely support increased use of restricted licences in status quo plus because restricted licences can be issued for drivers who might otherwise be de-licensed. CARP opposes reliance on physicians, so despite the removal of DriveABLE and payment for DMERs, this option would likely receive moderately low support from CARP.

Like in status quo, physicians would not highly support this option because they are uncomfortable assessing fitness-to-drive and this option requires they complete DMERs more frequently. Physicians generally support mandatory reporting however, and may prefer the law strengthened to remove ambiguity and the need to warn patients before reporting. Despite the strengthened reporting laws, the increase in DMERs would likely result in low acceptability from medical professionals.

In terms of the framework measures, status quo plus should lead to:
1) Moderately low support from senior advocates
2) Low support from medical professionals

Therefore, status quo plus scores 'low' on the stakeholder acceptability objective.

**Option 3: Decentralized Policy**

The decentralized policy would likely receive the most support from senior advocates because there is no age-based testing or discrimination involved. Older drivers are treated the same as any driver, which is the position CARP advocates. The increased use of restricted licences would also likely receive support from senior advocates because they help extend the period of driving; the use of adaptive tools to help prolong driving is a point included in CARP's letter to Ontario's Transport Minister (CARP, 2013). Older drivers in general support the use restricted licences (Marshall et al, 2007). The decentralized policy would likely receive high stakeholder acceptability from senior advocates.

This option would likely receive the lowest acceptability of medical professionals. Although medical professionals support increased education on assessing fitness-to-drive, they would likely reject the sole responsibility for determining and reporting on fitness-to-drive.

In terms of the framework measures, the decentralized policy should lead to:

1) High support from senior advocates
2) Low from medical professionals

Therefore, the two groups balance the stakeholder acceptability objective, and the decentralized policy therefore scores 'moderate'.

**Option 4: Centralized Policy**

The centralized policy involves more intensive requirements for older drivers, but would likely receive increased support from senior advocate groups compared the status quo. Ontario's system that is similar to the centralized policy, receives moderate support from CARP despite the age-based requirement, because it is evidence-based and the process is simpler than Ontario's former system.
This option would likely receive the most support from physicians, who are no longer responsible for determining the fitness to drive of their older patients. The centralized policy allows physicians to maintain a positive relationship with patients and avoids the conflict of interest and discomfort many feel with reporting. Mandatory reporting legislation still allows physicians to report individuals who are not at trigger ages who might be unfit to drive, but removes the burden for reporting older drivers.

In terms of the framework measures, the centralized policy should lead to:

1) Moderately high support from senior advocates
2) High support from medical professionals

Therefore, the centralized policy scores ‘high’ on the stakeholder acceptability objective.

9.4. Evaluation Summary

Table 9. Policy Option Evaluation Summary

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<thead>
<tr>
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<th>Status Quo</th>
<th>Status Quo Plus</th>
<th>Decentralized Policy</th>
<th>Centralized Policy</th>
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<td><strong>Stakeholder Acceptability</strong></td>
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Chapter 10. Recommendation

Based on the framework and analysis, I recommend British Columbia adopt the centralized policy option. With its in-person screening session, this option offers the most individual and public safety, and is the policy best able to deal with the increasing absolute and relative number of older drivers. Although the option involves age-based discrimination, this discrimination can be justified based on its effectiveness in reducing older driver crash risk, the fairness of the in-person screening program, and opportunity for restricted licences. This option will stand up in court because it is consistent with the Supreme Court ruling in British Columbia v. British Columbia, as the program does not discriminate on the sole basis of a person’s medical condition. CARP’s support of Ontario’s program suggests this policy is likely acceptable to older drivers and senior advocates in British Columbia. Medical professionals will be relieved of their role in determining fitness-to-drive for older adults, eliminating discomfort and inconsistency in reporting and issues with the erosion of patient trust. This policy is the most administratively complex of all options, however the savings resulting from decreased older driver crashes and the removal of DriveABLE would offset some of the costs, and the program could be modeled after Ontario’s which would reduce some of the burden of designing the program.

Adoption of the recommendation requires adjustment of other policies in British Columbia. An increasing number of seniors will lose their license due to the risk their driving poses. The most pressing issue will be the need to provide additional transportation options for those seniors. Demand for long-term care facilities and home-care will increase with de-licensing due to the associated mobility limitations and health decline. These will require more funding as a result. Other programs to address the psycho-social impacts of losing a licence, including community programs and counseling will be necessary, with sensitivity to the devastating impacts that de-licensing can have on older people.
10.1. Future Research

Future research should focus on a method to evaluate the effectiveness of older driver licensing policy. There are serious shortcomings in road safety data that need to be addressed in order to draw firm conclusions about effectiveness. In British Columbia, ICBC manages road safety data, which as an insurance provider that does not have a complete monopoly on all insurance coverage, may cite competitive factors as a reason for withholding data. Road safety researchers thus face a major data barrier in determining if policies link to desired outcomes.\textsuperscript{19} Improved access to road safety data would assist policy research.

Regardless of data limitations, methods for program evaluation should be developed. None of the jurisdictions explored in this report have a method to evaluate programs, which makes comparability and policy decisions difficult.

The CanDrive project is currently conducting a cohort study throughout Canada extensively monitoring older drivers and their patterns. The project’s researchers hope to develop a tool to help physicians assess fitness-to-drive. Once this research is complete, the Province may wish to revisit its policies governing older drivers.

\textsuperscript{19} I submitted a request for more comprehensive data on driver accidents and injuries by age for this project, but ICBC denied my request.
References.


Tuokko, H. & Hunter, F. (2002). Using “Age” as a Fitness-to-Drive Criterion for Older Adults.


