IMPAIRED DRIVING RISK ASSESSMENT

A PRIMER FOR PRACTITIONERS

PROFILE AND CHARACTERISTICS OF IMPAIRED DRIVERS

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4. PROFILE AND CHARACTERISTICS OF IMPAIRED DRIVERS

A wealth of research has been conducted in the past three decades that examines the profile and characteristics of impaired driving offenders. While much of this research focuses on males and attempts to identify differences in the profile and characteristics of first versus repeat impaired drivers, some research has also included female offenders, as well as focused exclusively on female impaired drivers.

This section briefly summarizes what is known about the profiles and characteristics of adult impaired drivers and draws from the research in criminology, psychology, transportation, health, addiction medicine, and neuroscience. It first examines what is known about male offenders followed by what is known about female offenders. Key dimensions that are considered include: demographic factors, personality and psychosocial factors, substance misuse including engagement in treatment, mental health, cognitive impairment, and driver and criminal history. In all of these sub-sections, distinctions are drawn between first versus repeat offenders.

While there is also a wealth of research specific to young impaired drivers, this is beyond the scope of this report. However, individuals interested in more information on this topic should refer to *"Driving with Care Education and Treatment of the Underage Impaired Driving Offender: An Adjunct Provider's Guide"* by Wanberg, K.W., Milkman, H.B. and Timken, D.S. (2010) published by Sage, Thousand Oaks, CA.

To help place these findings in context, it is worthwhile to highlight some of the limitations of this research, aptly described in Bud Perrine's theory of "the Quick, the Caught, and the Dead" (1990) and noted by Wanberg et al. (2005) in their book entitled Driving With Care: Education and Treatment of the Impaired Driving Offender (The Provider's Guide). There are three main sources of information that can inform our understanding of impaired drivers. Much of what is currently known has been drawn from observations of samples of offenders who have been "caught" by the criminal justice system. These so-called convenience samples of offenders are more easily studied, but are not necessarily representative of the entire

offender population. Some of what is known has been learned from studies of the "dead," that is, those impaired drivers who have been killed in road crashes. Fatal road crashes are relatively rare events and arise from a confluence of factors (e.g., poor road design), so these drivers also are not necessarily representative of the entire offender population either. In sharp contrast, little is known about "the Quick," or those impaired drivers who drink and drive, sometimes repeatedly, but are not detected. At this time, it is not known if these impaired drivers share common characteristics with their counterparts who are arrested or who die in road crashes. This is a recognized gap in the field; more information about this latter group of offenders is needed to increase our understanding of impaired driver behaviour and ways it can be prevented or reduced.

4.1 Male Impaired Drivers

4.1.1 Demographic factors

Several key demographic factors of male impaired drivers have been studied by a broad cross-section of researchers from different disciplines. Factors that have been examined include age, ethnicity, education, employment, marital status, BAC, life history, and environmental factors. There are a number of comprehensive resources that provide summaries of these factors that practitioners are encouraged to review, including Simpson and Mayhew (1991), Jones and Lacey (2001), Wanberg et al. (2005), and White and Gasperin (2006). What is known about each of these factors is described briefly below.

Age. Most impaired drivers are between the ages of 20 and 45 years old with almost half of them being between the ages of 20 and 30 years old (Simpson and Mayhew 1991; Jonah and Wilson 1986; Jones and Lacey 2001; Wanberg et al. 2005). Generally speaking, drinking and driving behaviour begins to decrease substantially after the age of 45 years (Hingson and Winter 2003), though this behaviour persists in some drivers into their 60s. This "aging out" phenomenon is very consistent with patterns of behaviour exhibited by other criminal offenders (Nagin et al. 2008; PEW 2012). Hence, similar to other types of offences, a significant portion of the impaired driving problem is perpetrated by a subgroup of the population.

Sex. Research shows that between 70% and 80% of impaired drivers are male. Studies in Canada and the United States have used several approaches including studies of arrested and/or convicted impaired drivers, studies of those in remedial program or treatment settings, and studies of fatally injured drivers in alcohol-impaired crashes (Waller 1997; Simpson and Mayhew 1991; Jones and Lacey 2001).

For comparison purposes, an examination of arrest rates for all types of offences revealed similar numbers. Females accounted for only 23% of arrests for all offences in the United

States in 2004 (Schwartz and Steffensmeier 2007). Furthermore, the female share of arrests for most offences is less than 20% and is smallest for serious offences.

An examination of incarceration rates in Canada reveals a different picture. The rate of crime among females is about one-quarter the rate among males and women account for only 6% of offenders in provincial/territorial corrections and 4% of offenders in federal corrections (Kong and AuCoin 2008). Similarly, in the U.S., the male imprisonment rate is 14 times higher than that of females and males account for 93.2% of incarcerated offenders (BJS 2012).

Ethnicity. Research spanning 30 years suggests that a majority of impaired drivers are Caucasian, although there has been less research on ethnicity relative to other demographic factors such as age and sex. For example, Weisheit and Klofas (1992) compared the characteristics of impaired drivers in jail with a representative national survey of more than 5,000 jail inmates. It revealed that traffic offenders and impaired drivers were more likely to be Caucasian compared to other jail inmates.

However, while ethnicity is one of the factors that is linked to impaired driving (Ferguson et al. 2002; Jones and Lacey 2001), differences between populations studied and the ways in which questions have been posed have resulted in inconsistent evidence in relation to this factor (Caetano and McGrath 2005). There is some evidence that non-white and non-Asian subgroups are overrepresented compared to their presence in the general population (Jones and Lacey 1998; Wolf and Lund 1991). Most recently, an analysis in Minnesota prison populations revealed that approximately 15% of incarcerated felony[1] driving while intoxicated (DWI) offenders (those who have had at least four prior driving while intoxicated offences in the past ten years) are American Indian, however American Indians comprise about one percent of the state's population, indicating that this population is substantially overrepresented among felony DWI offenders (T. Roy, personal communication 2012).

Education. Most impaired drivers have completed elementary school and at least some high school, but the majority have no college or post-secondary education. Some studies suggest that as many as one-third of convicted offenders have at least some post-secondary education (Nochajski et al. 1993; Wilson 1991). A Manitoba study by Ambtman (1990) of participants in a remedial impaired driver program indicated that a minority of participants (less than one-fifth) had attained some level of post-secondary education. A 1996 TIRF study (Simpson et al.) concluded that impaired drivers have varying degrees of education, with the large majority having completed high school and a handful of them having some post-secondary education.

To put these findings in context, in comparison to the general population in the U.S., correctional inmates report lower levels of educational attainment. An estimated 40% of state prison inmates, 27% of Federal inmates, 47% of inmates in local jails, and 31% of

1 In the United States, criminal offences are categorized as misdemeanor and felony offences. In Canada, offences are categorized as summary conviction and indictable offences respectively.

those serving probation sentences had not completed high school or its equivalent while 18% of the general population failed to attain high school graduation (Harlow 2003).

Employment and income. Contrary to popular belief, the majority of impaired drivers are employed, although they are more likely to be unemployed relative to the general population (Wanberg et al. 2005). However, it is important to note that these offenders are more often in the lower-to-middle income range (Ambtman 1990; Wilson and Jonah 1985; Nochajski et al. 1993), and they are more apt to experience occupational instability.

To place these findings in context, the income of impaired drivers is infrequently reported in studies. Moreover, when such information is reported, different income categories and time periods are used. Collectively, these differences make comparison of the findings across studies challenging. Of interest, self-report studies involving non-convicted drinking drivers suggest there are differences in income relative to convicted impaired driving offenders in that more self-reported drinking drivers declare income in excess of $60,000. While some have hypothesized that this discrepancy indicates that drinking drivers with higher incomes are better able to avoid detection by driving newer vehicles and having more disposable income to afford a private attorney, others have argued that drinking drivers with higher incomes may drive at lower BACs (Beirness et al. 1997). More research is needed to increase understanding of this issue.

Marital status. Research on the marital status of impaired drivers is fairly consistent with some variations. Some studies suggest that more than two-thirds (65-75%) of impaired drivers are single, separated or divorced (Simpson et al. 1996; Wilson 1991; Nochajski et al. 1993). Thus, while approximately half of impaired drivers are in fact married (but perhaps separated), the other half are comprised of those who are currently unmarried or who have never been married. To some degree, the extent to which impaired drivers are single may also be a function of their young age, although this hypothesis has not been tested. To summarize, drivers who are either divorced or separated are overrepresented in the offender population relative to the general population.

Interestingly, while in male offenders being married or in a stable relationship represents a protective factor against future impaired driving offences, among female offenders the marital or relationship status is not a protective factor but rather an aggravating one. This may arise in part because women are more often in relationships with spouses who also have alcohol problems (Brown et al. 1995).

It is important to underscore that many of these studies were conducted two decades ago at a time when being married was more often equated with having a stable relationship, whereas today this may be less often the case. As such, it may be more useful and practical to consider the level of stability of any co-habiting relationship as opposed to focusing on the specific marital status of this population.

Blood alcohol concentration (BAC). Many impaired drivers possess BACs that are quite high relative to the legal limit in Canada of .08 (Simpson et al. 2004; NHTSA 2003). In Canada, between 1993 and 1997, the mean BAC among fatally injured drinking drivers was .17 (Mayhew et al. 1995; 1996;1997; 1998; 1999); a more recent estimate derived from TIRF's National Fatality Database[2] for 2005-2009 revealed a mean BAC of .174, so there has been little change in this measure. In the U.S., the average BAC among drivers in fatal crashes is .18 (NHTSA 2010). There is evidence to suggest that while BAC is a good measure of level of alcohol use, it is not a reliable indicator of alcohol-related problems, involvement in impaired driving or risk of recidivism (Wieczorek et al. 1992).

Repeat and/or hard core[3] impaired drivers. This segment of the impaired driver population generally has many similar characteristics to first impaired drivers, however these characteristics are often more pronounced.

Sex and age. Research shows that some 90% of recidivists are male. Repeat offenders are mostly male and between the ages of 23 and 45 years. More than half of them (70%) are under the age of 40. Similar to other criminal offenders, repeat impaired drivers appear to age out of this offending behaviour beginning at age 35 with sharp declines between 40 and 50 years of age (Simpson et al. 1996).

Ethnicity. While a majority of repeat offenders can be classified as Anglo-white (Jones and Lacey 2001; Wanberg et al. 2005), it has also been suggested that ethnicity is related to repeat impaired driver status, however this varies according to region. For example, more repeat offenders in northern parts of the U.S. are Caucasian whereas in the southwest the majority of offenders are Hispanic or Native American (Nochajski and Stasiewicz 2006). More research into ethnicity is needed to further validate these results.

Education. Studies show that repeat offenders generally have less education than non-offenders as well as first offenders (Simpson et al. 1996; Jones and Lacey 2001; Nochajski and Stasiewicz 2006).

Employment and income. Similarly, research reveals that repeat offenders represent a cross-section of income levels, however most have moderate family incomes and lower personal incomes than first offenders, and are more likely to be unemployed (Nochajski and Stasiewicz 2006; Beirness 1997).

Marital status. Repeat offenders are also more likely than first offenders to be never married, divorced, separated, or widowed (Wieczorek and Nochajski 2005; Simpson and Mayhew 1991). Also of interest, it has been reported that almost two-thirds (60%) of repeat impaired drivers have children (White and Gasperin 2006).

2 Since its inception by TIRF, the following agencies have provided funding for the Fatality Database: Health Canada (1973 to 1982); Transport Canada (1983); Transport Canada and Canadian Council of Motor Transport Administrators (1984 to 2010; their funding for the Fatality Database has been in support of the Strategy to Reduce Impaired Driving - STRID - for several years).

3 Hard core impaired drivers, also known as hard core drunk drivers are defined as drivers who drink and drive repeatedly, often at high blood alcohol concentrations, and have a history of prior convictions for impaired driving and or substance abuse problems.

BAC. Finally, among repeat offenders, arrests at higher BACs of .18 or over .20 are more common compared to first-time offenders (Wanberg et al. 2005) as is test refusal at the roadside (Robertson and Simpson 2002).

Summary. An examination of several demographic characteristics suggests that many of these characteristics are more pronounced among repeat offenders in comparison to first offenders (Wieczorek and Nochajski 2005). That is, repeat offenders are more often single, separated, or divorced, have less education, lower levels of income, and higher levels of unemployment in comparison to first offenders.

4.1.2 Personality and psychosocial factors

A wide range of personality and psychosocial factors have been examined in relation to impaired drivers including sensation-seeking, hostility, aggression, psychopathic deviance, assertiveness, antisocial personality, impulse control, risk perception, narcissistic personality, intermittent explosive disorder, external locus of control (i.e., blaming others for problems), and emotional adjustment. To illustrate, since the early 1960s, numerous studies have sought to differentiate between impaired drivers and other drivers on the basis of social, psychological, attitudinal, and behavioural characteristics including Donovan et al. (1983), Jonah and Wilson (1986), MacDonald (1989), Selzer et al. (1963), Cosper and Mozersky (1968), Yoder and Moore (1973), Meck and Baither (1980), Fine and Scoles (1974), MacDonald and Pederson (1990), Perrine (1975), and Steer and Fine (1978). These studies were reviewed and summarized in a Health Canada study (1997). The results of this review suggested that impaired drivers demonstrate higher degrees of hostility, aggression, and sensation-seeking among other factors in comparison to other groups of drivers (Beirness et al. 1997).

Similarly, since 2000, there have been a number of studies that serve to reinforce these findings (Vingilis 2000; Jones and Lacey 2001; Cavaiola et al. 2003). In particular, a comprehensive review by Wanberg et al. in 2005 reported that the "most salient personality variables associated with [DWI] behaviour include: agitation, irritability, resentment, aggression, overt and covert hostility; thrill and sensation-seeking; low levels of assertiveness, low self-esteem, feelings of inadequacy, and sensitivity to criticism and rejection; helplessness, depression, and emotional stress; impulsiveness, external locus of control (blame others for problems); social deviance and non-conformity, anti-authoritarian attitudes" (p.23).

Repeat and/or hard core impaired drivers. Studies from the early 1990s suggest there are personality differences between first and repeat offenders. For example, in a study comparing first and repeat impaired driving offenders, McMillan et al. (1992a). reported that repeat offenders demonstrated higher levels of hostility, sensation-seeking, psychopathic deviance, mania and depression as well as lower levels of assertiveness and emotional adjustment. More recently in 2005, a study by Wieczorek and Nochajski reported that repeat offenders

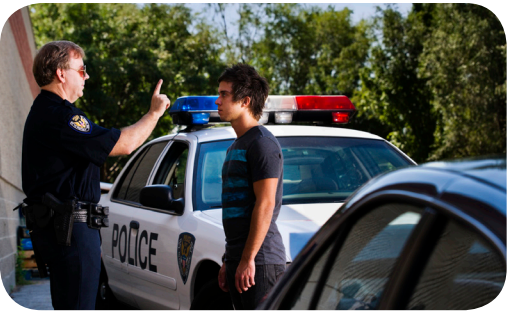
have lower levels of self-esteem, locus of control, social desirability, and higher levels of psychiatric symptoms and antisocial tendencies. A 2007 study by Cavaiola et al. based upon data derived from more indirect questions about behaviour revealed that sensation-seeking, hostility, depression, and psychopathic deviance are correlated with repeat impaired driving offences.

Conversely, a 2002 study by Cavaiola and Wuth (2002), cited in a comprehensive review of the literature by Wanberg et al. (2005), noted that a majority of studies have not identified significant personality differences between first and repeat impaired drivers. Cavaiola and Wuth (2002) further suggested that this may reflect the fact that many first offenders are, in fact, repeat offenders who just have not yet been brought to the attention of the criminal justice system. While plausible, these apparently contradictory conclusions also reveal the fact the research to date has failed to adequately disentangle the significant heterogeneity observed in the impaired driver offender population.

Some research (Schell et al. 2006) suggests that socially desirable responding among impaired drivers in self-report studies biases our understanding of personality and behavioural factors. Individuals who are high in socially desirability are less likely to admit to relevant behaviours including driving after drinking, drinking alcohol, aggressive driving, hostility, impulsivity, and sensation-seeking. Schell et al. concluded that the "fact that personality factors are very difficult to modify in conjunction with evidence that their effects on driving after drinking are small and indirect suggests that personality factors may not be a promising point of intervention" (p.39). At the same time, if reliable trait-like markers are uncovered in the future, they could serve to assist in the prediction of impaired driving recidivism and to trigger targeted selective prevention procedures.

4.1.3 Alcohol misuse

The role of alcohol misuse in relation to impaired driving behaviour has been studied more than almost any other factor. However, while older research has suggested that substance-related problems were a critical factor in impaired driving offending, more recent research has determined that, although substance use is strongly correlated with impaired driving behaviour, it is not a causal factor. This section summarizes what is known of this multi-faceted issue including: age of onset of drinking, family history, drinking patterns, substance-related diagnoses, treatment history, and failure to enroll in or complete treatment.



Age of onset of drinking. It has been well-established over the past 35 years that early onset of alcohol and other drug use are predictive of substance use and abuse in adulthood

(Hingson et al. 2003; 2002; Grant and Dawson 1997; Wanberg et al. 2005). Generally speaking, those individuals who begin drinking at an early age (under the age of 14) often consume more alcohol as compared to those who begin drinking in their late teens or at the age of 21 (the U.S. legal drinking age). While these individuals may or may not eventually become dependent, they are at higher risk for impaired driving. Equally concerning, these same individuals are more likely to believe that driving after drinking is only risky if individuals are obviously impaired, and may be less likely to believe that driving after drinking increases the risk for injury or crashes. In addition, persons who begin drinking before age 14 are more than seven times more likely to be in an alcohol-related crash than those who begin at age 21 (Hingson et al. 2002). Of concern, impaired drivers often report heavier drinking behaviour and involvement in binge drinking at a young age (Wechsler et al. 2003; Hingson et al. 2002; 2003).

Family history. Research shows that there are two characteristics related to family history that are the most strongly associated with number of impaired driving offences as an adult. These include: having a father with a drinking problem (Schuckit 1999; 2009); and having a relative who was arrested for impaired driving (McMillen et al. 1992a; Wieczorek and Nochajski 2005). The "modeling" of drinking and driving behaviour within the family appears common (Elliott et al. 2006; Gulliver and Begg 2004). What family history represents in the impaired driving literature is often vague. Both genetic predisposition to alcohol abuse (e.g., tolerance for heavy drinking, euphoria vs. sedation, externalizing personality) and the social genetics of being brought up in an alcoholic environment (e.g., greater likelihood of exposure to alcohol at an earlier, neurodevelopmentally vulnerable age) are likely involved.

Drinking patterns. Research investigating the drinking patterns of impaired driving offenders reveals that these individuals generally consumed greater amounts of alcohol per occasion and also consumed alcohol more often than the general population of drinkers (Beirness et al. 1997). Their drinking behaviours are also more likely to result in more alcohol-related problems and they may consume alcohol to cope with personal or emotional issues (Wanberg et al. 2005). There is also research to indicate that a majority of impaired drivers are, in fact, binge drinkers (Caetano and McGrath 2005; Chou et al. 2006). A study by Flowers et al. (2008) indicated that 84% of alcohol-impaired drivers were binge drinkers while 88% of impaired driving episodes involved binge drinkers. These findings challenge a popular belief that alcoholism is at the root of impaired driving behaviour.

Alcohol-related diagnoses. There are considerable discrepancies with regard to estimates of problem drinking and substance abuse problems across studies (Simpson et al. 1996; Wanberg et al. 2005; Vingilis 1983; Beirness et al. 1997; Baker et al. 2002; Kramer 1986; Maruschak 1999; Brinkmann et al. 2002). This may be a result of different procedures that studies have used to reach such estimates including:

- definitions of alcohol problems;
- data reporting practices;
- the populations sampled and sampling methods; and,
- instruments to diagnose problem drinking and substance abuse, some of which may not have items related to impaired driving behaviour.

The DSM-IV-TR identifies the criteria for two alcohol use disorders: alcohol abuse and alcohol dependence. It defines alcohol abuse as a "maladaptive pattern of alcohol use leading to clinically significant impairment or distress, as manifested by one or more criteria (including recurrent alcohol use resulting in a failure to fulfill major role obligations; recurrent alcohol use in situations in which it is physically hazardous; recurrent alcohol-related legal problems; and continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the alcohol) occurring within a 12-month period that does not meet the criteria for alcohol dependence." Alcohol abuse is most common among youth aged 15 to 24 while 17.8% of Americans meet the criteria for this disorder at some point in their lifetime (Hasin et al. 2007).

Alcohol dependence, previously referred to as alcoholism, has different symptoms than alcohol abuse, most notably tolerance and withdrawal. According to the DSM-IV-TR , it is defined as a "maladaptive pattern of alcohol use, leading to clinically significant impairment or distress as manifested by three or more of the following, occurring at any point in a 12-month period: tolerance[4]; withdrawal[5]; alcohol is often used in larger amounts or over a longer period than was intended; there is a persistent desire or unsuccessful efforts to cut down or control alcohol use; a great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects; important social, occupational, or recreational activities are given up or reduced because of alcohol use; and, alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol." During their lifetime, 12.5% of American adults meet the criteria for alcohol dependence (Hasin et al. 2007).

Nevertheless, some research suggests that a diagnosis of alcohol abuse is more common among first offenders than repeat offenders, suggesting that this group may generally have lower levels of problem severity relative to repeat offenders (Wieczorek and Nochajski 2005).

Attitudes about change and treatment. Research indicates that approximately only one-third of first offenders have a history of varying degrees of involvement in treatment (Wieczorek and Nochajski 2005). Moreover, many offenders, regardless of their number of prior offences, are assessed as being in the pre-contemplative stage in relation to the stages

4 Tolerance is defined by either 1) a need for markedly increased amounts of alcohol to achieve intoxication or desired effect, or 2) markedly diminished effect with continued use of the same amount of alcohol.
5 Withdrawal is manifested by either 1) the characteristic withdrawal syndrome for alcohol, or 2) alcohol (or a closely related drug such as valium) is used to relieve or avoid withdrawal symptoms.

of change with regard to their drinking and driving behaviour[6]. This suggests that, despite the consequences of prior impaired driving convictions, a majority of offenders still fail to recognize the need to change their behaviour, or do not begin to think about changing their behaviour, much less develop the motivation to do so (Nochajski and Stasiewicz 2006; Wieczorek and Nochajski 2005).

There is also research that demonstrates that impaired driving offenders may be more defensive of their drinking behaviour, and more resistant to self-disclose the extent of their alcohol consumption (BHRCS 2007) than the average patient that engages in alcohol treatment. Generally speaking, higher levels of resistance are most often observed during an initial screening and assessment level (Vingilis 1983; Wanberg et al. 2005, p.25; Chang et al. 2002; Owens 2001).

As a practical consequence of their repeated experiences with offenders who fail to be forthcoming about their drinking behaviour, practitioners who conduct screening and assessment of these offenders more often tend to doubt or distrust reports of alcohol consumption disclosed by impaired drivers. However, it has been argued that clinicians should not underestimate or overlook the value of self-reported drinking by offenders. In fact, self-reports provide a good indication of an offender's perceptions of their drinking behaviour. Therefore, this information may be interpreted as an indication of the offender's self-appraisal of their impaired driving behaviour as opposed to their presumed denial or resistance. In sharp contrast, impaired drivers appear to be much less defensive to disclosing use of drugs than they are to disclosing alcohol use and associated disruptive symptoms (Wanberg et al. 2005), although the reason for this is not known.

Failure to enroll in or complete remedial programs. A study by Boudreault et al. (2002) that examined 126 hard core recidivists in prison revealed that 62% had never complied with mandated remedial programs. Similarly, a Montreal study by Brown et al. (2002) reported data from Quebec that showed that just 50% of convicted impaired driving offenders had pursued participation in intervention programs that were mandated within the first year of relicensing eligibility.

A more detailed examination of those offenders who delay participation conducted in 2008 by Brown et al. further revealed that more than 50% of offenders identified key reasons for this delay as being due to having made other transportation arrangements, the cost of remedial program participation, no access to a vehicle, and no interest in driving. One-third identified no interest in and/or ability to change their alcohol usage as an obstacle.

6 The transtheoretical stages of change model posits that individuals with behaviour problems, such as substance dependence, experience several conditions and differ in their willingness to acknowledge that they have a problem and work towards change (Alexander 2000). Interventions or treatment strategies are most likely to be successful when geared toward the stage of change that the individual client is in. Adapted from Prochaska et al.'s (1992) readiness for change process stages, the various stages include: 1) Pre-contemplation (lack of awareness of a problem; no contemplation of change); 2) Contemplation (recognition of a problem; contemplation of change); 3) Preparation (consideration of behaviour change); 4) Action (taking steps to change behaviour such as participation in treatment); and, 5) Maintenance (relapse prevention).

This study further revealed that some important characteristics of non-participants in mandated remedial programs include poorer socio-economic status and disrupted neurocognitive performance in terms of memory, behavioural inhibition, and delayed reward discounting (i.e., they have lower motivation for delayed gratification and heightened attraction to immediate gratification), possibly manifested in their propensity for unlicensed driving, and reluctance to pay fines and other costs associated with relicensing and to commit to long-term behavioural change. The study further reported that the reluctance of offenders to engage in remedial impaired driving programs, was due, in part, to the fact that their personal objectives for change were inconsistent with the goal of the intervention which was to significantly reduce drinking.

A comparison between impaired driving offenders who completed mandated remedial programs versus those who were non-compliant indicated that the latter group possessed the following characteristics: older, lower income in last 30 days, less likely to be married or without a partner, unemployment, similar drinking patterns, more cocaine dependence, higher proportion of positives on axis 1 disorders (e.g., anxiety, depression), and higher proportion of antisocial personality features. Logistic regression further revealed that unemployment was the main predictor of non-compliance (Nadeau 2010), suggesting that cost may be a major obstacle to increased participation among poorer offenders.

Voas et al. (2010) also examined the propensity of first and repeat impaired drivers to delay licence reinstatement and the implications of this delay on their driving behaviours in seven U.S. states. In particular, this study revealed that:

- Fewer first offenders (42%) delayed licence reinstatement for at least one year (from the time they became eligible) in comparison to 55% of repeat offenders. At three years post-eligibility, the proportion of offenders who reinstated were 70% and 58% respectively. It was also reported that no record of reinstatement could be located for 25% of first offenders and more than one-third (35%) of repeat offenders.
- In the first year of eligibility, those offenders with prior offences were significantly less likely to reinstate their licence than first offenders. However, in the subsequent years, the length of the delay did not appear to differ between first and repeat impaired driving offenders.
- Higher recidivism rates were reported during the suspension period in relation to offenders who delayed licence reinstatement for more than one year as well as offenders who failed to reinstate at any time. Similarly, post-reinstatement, offenders who delayed reinstatement also have higher rates of recidivism.

- It appears that recidivism rates are somewhat lower post-reinstatement among those offenders who do reinstate. In addition, recidivism rates are higher among offenders who do not reinstate in comparison to those who do.

Repeat and hard core impaired drivers. Similar to first offenders, age of onset, family history, and alcohol misuse issues plays an important role in relation to repeat impaired driving offenders. It has been noted that there is a strong direct linear relationship between the total number of dependence criteria that repeat offenders present and the number of prior offences (Weiczorek and Nochajski 2005). A comprehensive review of the literature by Wanberg et al. (2005) similarly reported that repeat offenders have higher levels of disruptive alcohol use symptoms. Other studies have concluded that the incidence of problem drinking increases with the number of prior convictions (Perrine 1990; Nochajski and Stasiewicz 2006; McMillen et al. 1992a).

A study by MacDonald and Pederson (1990) that examined impaired driving arrests among male, hospitalized alcoholics showed that multiple offenders were more likely to report a higher number of "most drinks ever consumed in a day" but less frequent drinking, a pattern indicative of binge drinking.

It is estimated that more than two-thirds of second offenders and almost 90% of multiple offenders have some history of alcohol treatment involvement (i.e., alcohol education, outpatient, inpatient, or other recognized forms of treatment) (Weiczorek and Nochajski 2005). Of interest, repeat offenders appear to have a higher level of motivation for change and treatment and may be less defensive and more self-disclosing than first offenders.

4.1.4 Mental health

A broad range of mental health and psychiatric conditions have also been linked to impaired driving offenders including antisocial personality disorder, anxiety, conduct disorder, impulse control disorder, narcissism, depression, post-traumatic stress disorder (PTSD), and bipolar disorder. Recognition of and interest in these factors has grown in the past decade, and even more recently as a result of the large number of soldiers and veterans that are involved in impaired driving events either overseas or upon their return to North America.

A number of research studies suggest that psychiatric disorders are higher among impaired drivers (Shaffer et al. 2007; Lapham et al. 2001; McMillen et al. 1992a; Wieczorek and Nochajski 2005). In a study of offenders in New Mexico by Lapham et al. (2001), among offenders with alcohol use disorders, 33% of men had a least one additional psychiatric disorder, other than drug abuse or dependence. The most common conditions were major depression and post-traumatic stress disorder. This study also reported that 13% of men had a lifetime major depressive disorder (7% of men in the 12 months prior to the interview). A higher proportion of men (relative to women) in this study met criteria for

antisocial personality disorder, whereas a smaller proportion of men (relative to women) had experienced lifetime and 12-month dysthymic disorder, generalized anxiety disorder, and PTSD.

Stress is also considered an important factor in relation to impaired driving behaviour. It frequently occurs in situations that exceed an individual's ability to cope with events and/or the demands made on them. It should be underscored that stress and its resulting emotional conditions (i.e., guilt, anger, depression) can significantly influence substance use given that people often rely upon alcohol and other drugs to either cope with or relieve stress and associated unpleasant emotions. Of greater concern, these emotions are closely tied to relapse and connected to negative outcomes, including impaired driving (Wanberg et al. 2005). For example, impaired drivers may experience stress due to relationship problems, financial problems, job or employment-related problems that may contribute to their alcohol and drug use and arrests, which may further compound stress.

Research examining the effects of anxiety disorder in relation to substance use has also produced significant findings that may have important implications for impaired drivers. A study by Kushner et al. (2011) reported that the presence of an anxiety disorder affects the brain such that the transition from regular drunkenness to alcohol dependence is accelerated. An important factor in this process is the age of onset of anxiety disorder in relation to important drinking milestones. Men may experience shorter transition times relative to women, as women may not experience such "telescoping" of the development of alcohol dependence. Moreover, the study reported that the age of onset of drinking in this sample of alcohol dependent patients in a chemical dependency program was earlier for women than for men; in sharp contrast to findings from other studies of alcoholism.

Drug use (other than alcohol). Many impaired drivers have substantial histories of drug use (Beirness and Davis 2008). Rates of drug use among first and repeat offenders are not only important but also are not limited to "soft" drugs like marijuana. One study reported that more than 40% of all impaired driving offenders in the study sample had used cocaine, hallucinogens, and amphetamines (Weiczorek and Nochajski 2005). A comprehensive review of the literature by Wanberg et al. (2005) revealed that about 11-12% of impaired drivers are multiple drug users who report significant involvement in drugs other than alcohol and marijuana; close to 50% report a history of marijuana use.

A substantial percentage of impaired driving offenders reports involvement with other drugs. In a New Mexico study of these offenders, 32% of women and 38% of men had a drug use disorder (Lapham et al. 2001). Other studies of impaired driving offenders in treatment in Texas by Maxwell (2011) and Freeman et al. (2011) similarly demonstrate that a history of drug use among impaired drivers in not uncommon. To illustrate, Maxwell (2011) found that cannabis was identified as a primary problem among the youngest arrested impaired drivers

whereas alcohol and crack cocaine were more prevalent among older drivers. In addition, Caucasian arrestees more often had problems with other opiates, methamphetamines, and sedatives in contrast to Hispanics who more often had problems with powder cocaine and cannabis. The most recent U.S. roadside survey results showed that 31.8% of drivers at or over the legal BAC limit of .08 were positive for a drug. This result was twice as high as sober drivers (Lacey et al. 2009).

To place these numbers in context, the National Survey on Drug Use and Health for 2009-2010 revealed that, nationally, 7.3% of the population aged 12 or older was classified with alcohol dependence or abuse nationwide in the past year while individuals between the ages of 18 and 25 had the highest rate of alcohol dependence or abuse (15.9%). It also revealed that, 2.8% of persons aged 12 or older had past year illicit drug dependence or abuse which was unchanged from 2008-2009. Again, the highest rates for illicit drug dependence or abuse in the past year were among the 18 to 25 year age group (7.8% nationally) (SAMHSA 2012).

Repeat and/or hard core impaired drivers. Repeat offenders have significantly higher levels of psychiatric symptoms (Wieczorek and Nochajski 2005; Wanberg et al. 2005; Jones and Lacey 2001; Simpson et al. 1996). To illustrate, in a sample of 729 patients in a two-week inpatient treatment facility for court-sentenced repeat impaired driving offenders (i.e., offenders electing to participate in treatment in place of prison time), Shaffer et al. (2007) found that the offenders had higher lifetime and past-year co-morbidity rates than the general population with regards to alcohol use and drug use disorders, conduct disorder, post-traumatic stress disorder, generalized anxiety disorder, and bipolar disorder. Almost half qualified for lifetime diagnoses of both addiction (i.e., alcohol, drug, nicotine, and/or gambling) and a psychiatric disorder.

A recent Harvard Medical School study (Nelson et al. 2012) compared lifetime prevalence of substance use disorder diagnosis and lifetime prevalence of mental health disorder diagnosis among a sample of drivers enrolled in a two-week inpatient facility for repeat impaired drivers in Middlesex to results from a replication of the National Comorbidity Survey. A majority of repeat offenders in this study were male (81%) and more than half (62%) had two prior impaired driving offences; 24% had three priors. More than 30% of the sample was between the ages of 40 and 50 years. This study revealed that repeat offenders had a higher lifetime prevalence of drug dependence (16%), drug abuse (26%), alcohol dependence (42%), and alcohol abuse (56%) in comparison to the results of the replication of the National Comorbidity Survey which were 3%, 8%, 5%, and 13% respectively. Similarly, the repeat impaired driver sample had a much higher prevalence of conduct disorder (19%), bipolar disorder (8%), PTSD (14%), and generalized anxiety disorder (9%) in comparison to the replication of the National Comorbidity Survey which were 10%, 4%, 7%, and 6%

respectively. However, the repeat impaired driver sample also had a lower prevalence of major depressive disorder (12%) than reported in the survey results (17%) (Nelson et al. 2012).

To date, there have been no published studies identifying the prevalence or co-morbidity of psychiatric disorders among repeat impaired drivers (Labrie et al. 2007). It has been reported that there are significant differences in drug use by the number of prior offences and persistent offenders have higher levels of use than first offenders (Wieczorek and Nochajski 2005; Wanberg et al. 2005; White and Gasperin 2006).

Summary. Mental health issues among impaired drivers are an important consideration given that treatment is more difficult when individuals possess emotional and psychiatric problems in conjunction with substance-related problems (Lapham et al. 2001). Hence, not only can co-occurring disorders decrease the effectiveness of treatment, but they are also considered a predictor of poorer treatment outcomes (Lapham et al. 2001; Laplante et al. 2008; Shaffer et al. 2007).

4.1.5 Cognitive impairment

Executive cognitive function "involves the set of abilities that allows one to select behaviour appropriate to a situation, including the ability to inhibit inappropriate behaviours and to focus on a specific task in spite of distraction" (Brown et al. 2008, p.115). Deficits are linked to impulse control and self-regulation, capacity to learn and retain intervention content, problem solving, abstracting, and the speed of information processing, among other abilities.

Research shows that a continuum of alcohol users ranging from both social drinkers to alcoholics may possess neurocognitive deficits (Parsons 1998). It has further been shown that persons who possess varying degrees of cognitive deficits are overrepresented in substance abuse programs (Teichner et al. 2002). Preliminary studies of neurocognitive characteristics of first offenders indicate that they are more likely to suffer deficits related to executive cognitive function compared to normal drivers (Brown et al. 2010; Couture et al. 2010, August).

Generally, it is estimated that it may take a minimum of six months for individuals to begin to recover from reversible deficits in executive function due to alcohol (Zinn et al. 2004). In cases involving much heavier drinking for extended periods, it may take two to four years, and some individuals may never fully recover from all deficits (Parsons 1998).

Repeat and/or hard core impaired drivers. Research reveals that repeat offenders are more likely to possess cognitive impairments. In a study by Glass and Chan (2000) involving 134 volunteer participants that attended one of two residential alcohol education programs in Massachusetts following a repeat impaired driving conviction, 73% were reported to possess one or more clinically significant cognitive deficits; an additional 12% were identified as borderline. The tests utilized in this study measured abilities in relation to comprehending instructions, learning, sustaining attention, and completing tasks. Scores below the 50th

percentile in relation to tests of word fluency, vocabulary, sustained attention, memory, executive functioning, and impulse control were common among a majority of participants. The most prevalent impairments related to planning, foresight, and impulse control.

A study of sober recidivists by Ouimet et al. (2007) revealed that more than half (66%) of participants showed impaired performance on at least one test of a battery of tests of executive control functioning. In particular, deficits were identified in visuospatial constructional abilities, visual memory, and inhibition capacities. The study further noted that the neurocognitive functioning of impaired driving recidivists was disproportionately lower to that of the general population and that the number of past convictions was related to severity of memory difficulties. More recent investigations have revealed more disadvantageous decision-making in sober recidivists compared to normal drivers. One study (Maldonado-Bouchard et al. 2012) indicated that intractable impaired driving behaviour, as measured by frequency of past offending, was strongly associated with the propensity to exercise more disadvantageous decision-making. This involved repeatedly choosing smaller but immediate gains despite the greater risk of suffering larger, long-term losses (e.g., the decision to choose the convenience of driving to a drinking venue despite increasing the probability of having an impaired driving-related crash or citation). This relationship was independent of the severity of alcohol misuse. Another study (Brown et al. 2008) revealed that poorer executive control functioning in impaired drivers was associated to a greater tendency to delay or avoid participation in remedial relicensing programs.

Overall, these findings indicate that the most intervention-resistant offenders have a decreased ability for self-regulation, for learning and retaining intervention content, and for exercising good decision-making even when sober. Not all of these problems are attributable to alcohol abuse severity. This suggests that new strategies in the design of remedial programs and interventions directed at some offenders with the highest risk of recidivism may be needed. Effective interventions for these individuals may need to target not only a reduction in their substance misuse, but also alteration in the decisions they make prior to drinking and driving (e.g., the decision to take their car to a drinking venue).

4.1.6 Driver and criminal history

Research has demonstrated that a significant proportion of impaired driving offenders may also have a history of other driving violations as well as other criminal history. In particular, the propensity for other driving and criminal offences appears to be more pronounced among repeat offenders (Simpson et al. 1996; Jones and Lacey 2001; Syrcle and White 2006; Wieczorek and Nochajski 2005). The relevant research is described in more detail below.

Driver history. Impaired drivers are less likely to use seatbelts, have more traffic violations, more involvement in crashes, and have often been compared to high risk drivers[7] (Wilson and Jonah 1985; Wilson 1992; McMillen et al. 1992a; Gebers and Peck 2003).
Impaired driving offenders demonstrate a range of poor driving behaviours and/or involvement in road crashes (Beirness et al. 1997; Jones and Lacey 2001; Labrie et al. 2007; Taxman and Piquero 1998; McMillen et al. 1992b), which may also bring them into contact more frequently with police and increase the potential for an impaired driving arrest (Nochajski and Stasiewicz 2006).

To summarize, impaired driving is likely not an isolated high-risk driving behaviour in some offenders, meaning that some individuals who drive while impaired may also have a history of other unsafe and/or high-risk driving behaviours (Beirness et al. 1997). Nevertheless, reliance solely on driving records to identify these drivers is problematic. To illustrate, information contained in official criminal or driving records has not permitted accurate prediction of prior impaired driving offences (Simpson and Robertson 2001; Nochajski and Stasiewicz 2006).

Criminal history. The higher prevalence of criminal arrests for other offences among impaired driving offenders was first identified by Waller (1967). Later, in a study by Gould (1989) it was suggested that impaired driving is not an isolated incident of bad behaviour, but instead part of a continuing pattern of criminal activity. The research was based on an archival review of the prior criminal histories for people arrested for impaired driving in Louisiana and revealed that there is a substantial difference in the number of arrests for the group of individuals with an impaired driving arrest as compared to a random sample of all male licensed drivers in Louisiana. A 1992 study by Weisheit and Klofas examined the criminal history of impaired drivers in comparison to a large sample of other jail inmates. It revealed that impaired drivers are as likely to have prior arrests as other jail inmates, and many have substantial histories of property and violent offences.

More recently, a study was conducted to analyze the past criminal histories of first impaired driving offenders in California (CA), Florida (FL), and New York (NY) in order to gauge whether there were common prior offences. Analyses of these data consistently revealed that between 26% and 44% had been engaged in criminal activities prior to their impaired driving arrest. Two of these states (CA and FL) included traffic offences and reported that more than one in three people had a prior arrest history for other offences at the time of their first impaired driving arrest (Caldwell-Aden et al. 2009). Results of this study also revealed that drug offences, assault, and theft offences were the most common reasons for arrest prior to the impaired driving offence among those with criminal histories in these states; and between 45% and 85% of those with a prior arrest had also been arrested for at least one of these three offences (Caldwell-Aden et al. 2009).

7 High risk drivers refer to a small population of drivers who repeatedly engage in a variety of hazardous or dangerous driving behaviours such as speeding, red light running, drinking and driving and non-use of seatbelts, and who are more resistant to traditional interventions and sanctions.

Similarly, a study by Syrcle and White (2006) reported that there were also differences between first and repeat offenders in relation to previous charges for controlled substances however these differences were less pronounced (11% vs. 19%).

These studies illustrate that at least a portion of convicted impaired drivers have a history of other criminal offences and suggest that strengthening linkages between the criminal justice system and impaired driver treatment programs may be beneficial. As evidence of this, the past decade has seen a clear emergence of interventions that are working to bridge this gap, including specialty problem-solving courts[8] in which the results of alcohol and/or drug screens are made available to justice practitioners. Similarly, alcohol monitoring technologies delivered through either the criminal justice system and/or the administrative driver licensing system are also increasingly linked (albeit to varying degrees) with alcohol education programs and treatment services. This permits data from alcohol monitoring devices to be shared with both criminal justice and treatment professionals.

A comprehensive review of the literature by Wanberg et al. 2005 reported that antisocial and criminal conduct was more prevalent among impaired driving offenders compared to normal drivers. In particular, they tend to have greater involvement in the justice system for other offences than impaired driving and engage in socially acceptable behaviours less often. They further "report more psychosocial disturbed problems, reluctance to comply with court mandates and frequent under-reporting of criminal conduct, and higher rates of traffic violations than the general population" (Wanberg et al. 2005, p. 25).

Repeat and/or hard core impaired drivers. Repeat offenders are also more likely to have more traffic offences and to have been involved in crashes more frequently than drivers that are convicted of a first impaired driving offence (McMillen et al. 1992a; Nochajski and Wieczorek 2000; Wieczorek and Nochajski 2005) according to official records and/or self-report. In addition to having more driving violations and problems, repeat offenders also have a more pronounced history of involvement in road crashes, injuries, and fatalities (Simpson et al. 1996; Wanberg et al. 2005; Nochajski and Stasiewicz 2006). With regard to criminal history, involvement of repeat impaired drivers in a wide range of other criminal offences (including both property and personal injury offences that are prosecuted by both summary conviction and indictment) is also more frequent (Argeriou et al. 1986; Nochajski and Stasiewicz 2006; Syrcle and White 2006; Wanberg et al. 2005).

A study by McMillen et al. (1992a) reported that non-traffic arrests for both misdemeanours and felonies (i.e., summary conviction and indictable offences) were substantially higher among repeat offenders, with the frequency of non-traffic arrests being three times greater. Similarly, Applegate et al. (1997) found that repeat offenders are more likely to be re-arrested for other crimes, a new alcohol-related offence, or a new impaired driving offence compared

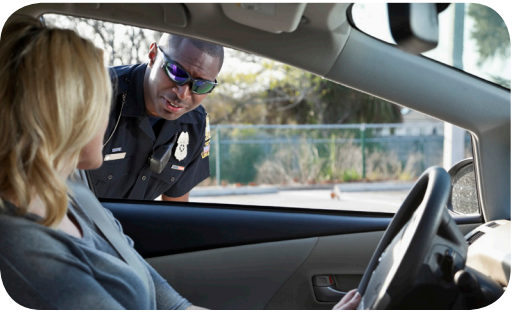
8 Specialty problem-solving courts such as DWI courts and drug courts are more widespread in the United States than in Canada. For more information about these courts please see the National Association of Drug Court Professionals and the National Center for DWI Courts at www.nadpc.org and www.dwicourts.org

to those with only one prior impaired driving conviction. A review by White and Gasperin (2006) reported that approximately 20-25% of prior convictions among repeat impaired drivers involved crimes against persons. Syrcle and White (2006) reported that a larger percentage of repeat offenders had prior sentences that involved a period of incarceration relative to first offenders, suggesting the more serious nature of their offending history.

Finally, a Massachusetts study by Labrie et al. (2007) examined 1,281 repeat offenders that opted to participate in a treatment program in lieu of a period of incarceration. It revealed that more than half (61%) of participants had criminal histories that involved substance-related crimes only and more than one-third had a more extensive criminal history. Among this one-third, almost half (45%) had committed only property crimes, one-fifth (22%) had committed only crimes against persons, and one-third had histories that involved property and person-related crimes. It further noted that more severe criminality (moving from substance-related to property crimes to crimes against persons) was related to higher levels of recidivism. Results showed that participants involved in property crime were 1.4 times more likely to be re-arrested for impaired driving, and participants involved in crimes against persons were twice as likely to recidivate relative to those participants with a history of impaired driving only. The study also found that participants with less prior involvement in crime responded better to treatment whereas those with more criminal involvement did not respond as well.

4.2 Female Impaired Drivers

For several decades, road safety research has demonstrated that fatalities and injuries related to road crashes (due to alcohol or other unsafe driving behaviours) have predominantly involved males (Mayhew et al. 1981; Beirness and Simpson 1988; Mayhew and Simpson 1990; Mayhew et al. 1990; Kelley-Baker and Romano 2010). Similarly, impaired driving has also predominantly been considered a male-based problem (Waller 1997; Simpson and Mayhew 1991; Jones and Lacey 2001). To illustrate, men and young adults are more likely than women or older age groups of drivers to self-report drinking and driving behaviour, to be arrested for impaired driving, or to be fatally injured or to fatally injure others while driving impaired (Mayhew et al. 2003; Zador et al. 2000).



In Canada, females accounted for less than 10% of fatally injured impaired drivers prior to the 1990s. This increased slightly between 1991 and 2001 and ranged from 10-12%. Since 2002, females have accounted for 13-16% of fatally injured impaired drivers, reaching a high of 16.4% in 2006 (TIRF 2012). However, this percentage seems to have stabilized in the

past four years, and, overall, females continue to account for a minority of this population. By contrast, in Canada, the impaired driving rate for females generally declined up to 1997 and remained stable through to 2005. It has increased since 2005 and in 2011, females accounted for one in every six impaired drivers, compared to 1 in 13 in 1986 (Perreault 2013).

A similar picture emerges using U.S. data. An examination of alcohol crash data from the U.S. Fatality Analysis Reporting System (FARS) indicates that the involvement of female drivers in alcohol-impaired road crashes has remained fairly stable with incremental increases. Females accounted for 12% of alcohol-impaired drivers in the 1980s, 13% in the 1990s, and 14% in the 2000s. Since 2006, the percentage of women drivers who tested positive for any amount of alcohol in fatal crashes has averaged 16% annually, while in 2008 1,837 fatalities in crashes involved an alcohol-impaired female driver (NHTSA 2009). By contrast, there is mounting evidence to suggest that impaired driving arrests for women in the U.S. have risen in the past three decades (NHTSA 2009; Schwartz and Steffensmeier 2007). To illustrate, in 1980, just 9% of those arrested for impaired driving were female; this percentage rose to nearly 15% by 1996 and 20% by 2004. The number of female impaired driving arrests in the U.S. rose nationally by 28.8% between 1998 and 2007 (Lapham et al. 2000; Schwartz and Rookey 2008). Thus, while in the 1990s it was estimated that about 10% of impaired drivers were female, as of the 2000s it has been estimated that women account for closer to 20% (Wanberg et al. 2005; Schwartz and Rookey 2008).

Since the increase in female impaired driving behaviour first garnered attention in the late 1980s (Underhill 1986; Argeriou 1986), there have been three main hypotheses regarding contributing factors. These explanations have centred on changes in female roles in society (Popkin 1991; Bergdahl 1999; Mayhew et al. 2003; Robertson et al. 2011a; Tsai et al. 2008), changes in social norms (Gudrais 2011; Popkin 1991), and changes in social control mechanisms (Farrow and Brissing 1990; Robertson et al. 2011a; Schwartz and Rookey 2008; Schwartz and Steffensmeier 2007).

One of the historical challenges associated with better understanding the characteristics of female impaired drivers has been the smaller number of them who are detected, arrested, and convicted for impaired driving, as well as the smaller number of female offenders who re-offend or recidivate (although their rate of recidivism following a first conviction is equivalent to males). Generally speaking, this has resulted in making it more difficult to conduct research on this sub-group of the impaired driver population (Moore 1994). While data on the characteristics of female impaired drivers has increased in recent years, much more research has been conducted on populations of females who consume alcohol generally, and not all of this research is specific to impaired driving offenders.

Most recently, in 2013 a series of case studies were conducted with more than 150 convicted female impaired driving offenders who participated in interview focus groups in four U.S.

states (California, Michigan, Missouri and New York) (Robertson et al. 2013). In particular, three distinct profiles of female impaired drivers emerged, and it is estimated that more than three-quarters of the study participants matched one of these three profiles which are described in more detail below.

Young women. It is estimated that at least one-quarter of the study participants were women under the age of 25, some of whom had accumulated multiple impaired driving offences in a rather short period of time. In fact, one participant had served one year in prison following her fourth offence at the age of 24.

These young women reported that they did most of their drinking in bars or at house parties and that they had attempted to drive home from those locations when they were arrested. They often reported drinking to relax, to feel comfortable, or to "fit in" in social settings. Moreover, many of them reported that they felt pressure to "keep up" with male friends or boyfriends in terms of the amount of alcohol that they consumed. Young women who had grown up in a stable home environment also reported drinking in order to cope with the high expectations of family members and what they perceived as "the pressure to succeed."

Daily alcohol consumption and binge drinking was not uncommon among this subgroup and this is consistent with research findings identifying binge drinking among college-age women as a phenomenon of growing concern (CDC 2013). These women tended to be single or had a partner who also drank heavily and facilitated and/or encouraged their use of alcohol.

Recently married women with children. This group of female impaired driving offenders reported that their drinking did not become a problem or 'take off' until after their children were born. In some instances, these women suffered symptoms of postpartum depression and drank as a coping mechanism or as a result of feelings of isolation and loneliness. Much of the alcohol consumption occurred with family or friends at home (e.g., they would drink while they did household chores, while on the phone, or with friends or their partner). If a spouse was present, more often than not, they would also drink heavily which in some cases led to incidences of domestic violence. Of note, most of the women who fit into this profile stated that they did not have a drinking problem prior to entering into the relationship with the partner who abused alcohol and/or prior to the birth of their children. The circumstances that led up to the arrest of these women were often characterized by running errands close to the home such as picking up their children from school, buying groceries, or going to get gas. Many of these women were convicted of felony impaired driving offences on account of their children being passengers in the vehicle at the time of their arrest (this was especially common in New York due to the passage of Leandra's Law[9]). While a majority of the women acknowledged that they were aware that they should not be driving after drinking with their

9 Leandra's Law was passed in 2009. This law made any DWI conviction where a child 16 years of age or under was present in the vehicle at the time of the arrest a felony. This law also provided for mandatory ignition interlocks for a minimum period of six months for all misdemeanor and felony DWI convictions.

children in the vehicle, it was often perceived as the only or the safest option (e.g., they were the more sober partner or childcare was not available).

Divorced older women and/or empty nesters. Women who were not convicted of impaired driving until later in life typically reported that they developed a drinking problem in their late 30s or early 40s. Catalysts for their drinking included divorce or failed long-term relationships, shared custody arrangements or grown children leaving home, or parental illness/death. These women most often drank at home when they were alone and reported depression or feelings of isolation. Some of these women also reported drinking to feel comfortable in social settings, such as bars, because it had been a very long time since they had engaged in social activities of this nature. In particular, the women who fit this profile reported that they had more intense feelings of embarrassment and shame as their children were old enough to appreciate the stigma associated with their offending behavior, and in some cases, were also called to bail them out of jail following the arrest.

While it is estimated that a small minority of participants did not fit into one of these three profiles, a majority of them possessed many of the characteristics frequently reported in the scientific literature including failed relationships, mental health problems, history of alcohol misuse within the family, multiple impaired driving arrests, history of trauma, and feelings of shame, guilt, and embarrassment.

This section summarizes what is known about female impaired drivers. Key characteristics that are considered include: demographic factors, substance misuse, mental health, and driver and criminal history. Given that there has been much less research on females as compared to males, what is known about female offenders generally is summarized first, and what is known specifically about female repeat offenders is summarized at the end of this section.

4.2.1. Demographic factors

Age. The average age of female first impaired driving offenders is 31 and the average age of recidivists is 30, although this fact is drawn from older research (Shore and McCoy 1987). Most recently, U.S. data from the Federal Bureau of Investigation (FBI) Uniform Crime Reports (UCR) in 2009 reveal that there were 860,689 men were arrested for impaired driving, compared to 251,695 women. Of the total impaired driving arrests for females, almost 28% were aged 18-24 and almost 18% were aged 25-29. In addition, women aged 30-34 accounted for 12% of arrests; ages 35-39 were 11%; and, ages 40-44 and 45-49 were 10% each. Finally, women aged 50 and older accounted for 11% of impaired driving arrests (FBI 2010).

Robertson et al. (2013) also found that female impaired driving offenders ranged in age from late teens to mid-60s, suggesting that women of all ages drink and drive. However a majority

of participants were an estimated 20 to 40 years of age. The authors also noted that the number of college-aged women present in each of the interview focus groups was higher than expected and accounted for perhaps one-quarter of participants. Generally, rates of involvement in alcohol-impaired motor vehicle crashes decrease with age, and the population of greatest concern is often young females (Peck et al. 2008). In particular, the increasing involvement of young women with alcohol, in combination with their inexperience driving and their growing propensity for risky driving (Lynskey et al. 2007; Tsai et al. 2010) warrants our attention and further research.

Education and employment. The literature regarding levels of education and employment among female impaired drivers is inconsistent. Some studies from the 1980s and 1990s indicate little difference in the levels of education between male and female impaired driving offenders (Chalmers et al. 1993). Conversely, a study of 274 women and 3,151 men convicted of impaired driving offences and ordered to attend a safety action program in Mississippi between 1976 and 1979 revealed that female offenders had higher levels of education and were older compared to men (Wells-Parker et al. 1991). Similarly, the study by Robertson et al. (2013) reported it was estimated that more than three-quarters of the study participants reported having completed high school or their General Equivalency Diploma (GED) and at least one-third of these women also reported having initiated and/or completed some type of post-secondary education to obtain a professional degree, licence, or certificate. Additionally, a comprehensive review of impaired driving studies focussing on females concluded "educational underachievement is part of the pattern of risk for [impaired] driving for both young men and young women" (McMurran et al. 2011, p.918).

With regard to employment, a study of the Drinking Driver Program (DDP) in New York in 1992 reported that, of 800 female impaired driving offenders aged 18-77 almost 70% were employed full-time and had at least some college education (Parks et al. 1996). Conversely, Chang et al. (1996) reported lower rates of employment for female impaired driving offenders compared to males. A 2008 study of 729 repeat impaired driving offenders participating in a residential education and treatment facility in Massachusetts reported that female offenders had more education than males though their level of income was lower (Laplante et al. 2008). In a study by Robertson et al. (2013), female impaired drivers reported a wide range of occupations such as nurses, dental assistants, paralegals, teachers, corporate employees, self-employed entrepreneurs, and bartenders. Of interest, approximately one-third of participants had worked in bars and restaurants at some point in their employment history.

To summarize, female impaired drivers are generally older than men and have higher levels of education (Peck et al. 2008) but lower paying jobs (Chalmers et al. 1993; Shore and McCoy 1987). Low academic achievement in young females represents a risk factor for impaired driving comparable to that observed in males (McMurran et al. 2011).

Marital status. Research into the marital status of female impaired drivers has produced more consistency, showing that female impaired drivers, when compared to male impaired drivers, are even more likely to be divorced or single (McMurran et al. 2011; Chang et al. 1996; Shore and McCoy 1987; Argeriou et al. 1986).

A study of the Drinking Driver Program in New York in 1992 that involved 800 female impaired driving offenders aged 18-77 reported that 44% of females had never been married. It further noted that females who were not yet diagnosed (in relation to alcohol issues) were more often married (64%) than those in the abuse group (52%) or dependent group (55%) (Parks et al.1996). In 2000, a study by Lapham et al. reported that female impaired driving offenders, when compared to male offenders, were less likely to be married, to have prior impaired driving convictions, or to be referred for treatment. In 2013, Robertson et al. reported that the lack of stable and supportive relationships among women was a common characteristic of the women in their study. It was estimated that more than one-half of women were single, separated, or divorced at the time of the study, and approximately one-quarter of women were currently in a relationship. Of those involved in a relationship, the majority of women reported having a partner or spouse who drank frequently and/or had a drinking issue whereas a minority of women reported having a sober, healthy relationship.

It has been suggested that the higher divorce rate among female impaired drivers compared to males may indicate that relationship failure has had a stronger impact on the drinking behaviour of females compared to males. This has been linked to the possibility that females have a more internalized response to stress than males, such as alcohol or drug use, which can increase their risk of other dangerous behaviour such as impaired driving. McMurran et al. (2011) concluded that females, distressed by their marital situation, may turn to alcohol as a coping mechanism. However, it should be noted that females in a relationship were most likely to be living with someone who had an alcohol problem (McMurran et al. 2011).

To summarize, a significant proportion of female impaired drivers are single, divorced, or separated, or are more likely to be living with a partner with an alcohol problem compared to women with no past impaired driving offences (McMurran et al. 2011; Chang et al. 1996; Shore and McCoy 1987; Argeriou et al. 1986). Generally speaking, female impaired drivers are more likely to be the primary caretaker of children at the time of arrest, are more likely to have experienced abuse, and are more likely to have physical and mental health needs compared to their male counterparts (Bloom et al. 2003).

4.2.2 Personality and psychosocial factors

In contrast to the availability of research examining this issue among male impaired drivers, there have been fewer studies examining the prevalence of personality and psychosocial factors among female impaired drivers. However, a few studies shed some light on this issue. A U.S. study by Moore (1994) involving 180 young women (aged 16-20) with an impaired

driving conviction revealed that antisocial females represented just 19% of the sample. However this subset reported the majority of incidents of binge drinking, intoxication, impaired driving, crash involvement, and drug use (other than alcohol). This group of females also indicated higher levels of psychosocial stress (e.g., boredom, problems at home and school), however they viewed this as a part of daily life and failed to recognize the influence of these stressors. In sharp contrast, the women in the sample who were diagnosed as neurotic experienced similar stressors but were upset by them. The results of this study illustrated that, as is the case with a population of male impaired drivers, there are also subgroups among female impaired drivers. A smaller study by Lex et al. (1994) involving female impaired drivers in prison suggested that adult onset of antisocial personality disorder in conjunction with substance abuse may manifest differently in females as compared to males.

A study of convicted female impaired drivers in New York by Parks et al. (1996) also examined this issue and reported females who were diagnosed as alcohol dependent possessed higher levels of sensation-seeking and hostility, were more anxious and depressed, had less external control, and were less interpersonally competent. In 2007, a study by Maxwell and Freeman examined differences between men and women convicted of impaired driving and who entered a public substance abuse treatment facility in Texas between 2000 and 2005. This study revealed that women were more likely to receive diagnoses of depression or bipolar disorder, and were also more likely to have prescription medication for a mood disorder in comparison to men.

In summary, a review of these studies suggests that psychosocial problems among female impaired drivers may not be uncommon and that, at least a portion of these women may experience depression, boredom, and problems at home and school that are related to their drinking (McMurran et al. 2011).

4.2.3 Alcohol misuse

Alcohol use among women is a very important factor to consider in relation to impaired driving for several reasons. Research shows that women metabolize alcohol differently than men. Women initially metabolize much less (only about one-quarter as much) alcohol in the stomach and intestines as compared to men. This means that more alcohol is absorbed into the blood as ethanol, which is then available to pass through the blood-brain barrier (Gudrais 2011; Greenfield 2002). In addition, females generally have less water in the body and a lower body mass. These factors work to intensify the effects of alcohol for women relative to men and, as a result, women become intoxicated after drinking half as much alcohol (Greenfield 2002; Waller 1997; Lex et al. 1991). Of equal concern, these physiological differences also contribute in part to the more rapid progression of alcohol dependence such

that women often require medical intervention an average of four years earlier than males who are problem drinkers (Gudrais 2011).

It is also important to note that a study by Elliott et al. (2006) found that women are more vulnerable to all types of traffic incidents following alcohol consumption. It reported that "there were significantly stronger associations between women's alcohol use/misuse and crashes, and their marijuana use and offences, than among men" (p. 259). Research has also demonstrated that women arrested for impaired driving and female drivers testing positive for alcohol in fatal crashes were less intoxicated than their male counterparts (Popkin et al. 1988; White and Hennessey 2006). Women who had a BAC over .05 were found to be twice as likely as men to be involved in a motor vehicle collision (Elliott et al. 2006). As such, it appears that at any given BAC, women have a higher crash risk than men, making alcohol use and driving an issue of particular concern in women.

Age of onset. Studies show that youth who became drunk for the first time at a younger age (as compared to those who were drunk for the first time at 19), were more likely to "drive after drinking, drive after five or more drinks, and ride with a driver who was high or drunk" (Hingson et al. 2003, p.27). Even more worrisome was that those who were first drunk at a younger age also believed that they could drink more while still driving both safely and legally (Hingson et al. 2003). While research shows that females tend to consume less alcohol than males (Jones and Lacey 2001; Greenfield 2002), more recently the onset of drinking and heavier drinking among females is occurring at an earlier age, and the gender gap between young females and young males in relation to alcohol dependence is also shrinking (Greenfield 2002; Robertson et al. 2011a).

Robertson et al. (2013) reported that the extent of substance use varied substantially across study participants. It is estimated that almost one-half of women reported early onset of drinking with many experimenting with alcohol and/or drugs in their early or mid-teen years; the lowest reported age of onset drinking was nine years old. In many cases, they indicated that their first exposure to alcohol and drugs was either in their own home, with relatives, or with friends. Conversely, it is estimated that between one-quarter and one-third of women did not begin to regularly use or develop a problem with alcohol or drugs, or begin to drive after using these substances, until they were in their 30s or 40s.

Family history. A constellation of family history factors are associated with female impaired driving offending to varying extents, however the specific influence of each factor is unclear. Many female impaired driving offenders who were admitted to addiction treatment in Illinois possessed multiple characteristics that potentially contributed to their alcohol consumption. These included a history of alcoholism within the family, experience with abuse, anxiety and depression, and family and personal relationships that encouraged heavy drinking (White and Hennessey 2006).

Past and current literature has noted that there are a range of individual, family, environmental, and social factors that can contribute to the increased risk of drinking and driving among youth. Risk of general traffic offences and collisions has been correlated to substance abuse, poor school performance, lack of parental involvement, and other risky behaviours (Elliott et al. 2006). Similarly, close contact with family members who had problems with alcohol was associated with a higher risk for alcohol problems among female impaired driving offenders, as well as an increased recidivism risk (Lapham et al. 2000). Equally concerning, when offenders in treatment return to a family environment that lacks sources of support, they are more likely to repeat their pattern of alcohol and/or drug abuse (Maxwell and Freeman 2007).

Most recently, Robertson et al. (2013) revealed that the reported family history of women who participated in their study varied considerably. It was estimated that slightly more than half of women reported a history of dysfunctional family relationships combined with prevalent alcohol and drug use and/or abuse to varying degrees.

Alcohol-related diagnoses. Estimates of alcohol diagnoses among female impaired drivers vary but are significant and comparable to males. To illustrate, a five-year follow-up study of convicted impaired driving offenders revealed that 85% of female offenders (compared to 91% of male offenders) were diagnosed with either alcohol abuse or alcohol dependence (Lapham et al. 2000).

In contrast, a study of admissions of impaired driving offenders (who were either on probation for impaired driving, were referred to treatment by probation, or had been arrested for impaired driving in the past year) to publicly funded treatment in Texas between 2000 and 2005 found that women were more impaired and experienced more problems than their male counterparts (Maxwell and Freeman 2007). In addition to the finding of dependence on sedatives and other opiates among women, this study also found that there was a shorter period of time between the first use of these drugs and admission to treatment among women compared to men, which speaks to the addictive potential of these drugs (Maxwell 2011).

Of course, sampling may introduce an important bias in interpreting these findings since individuals in alcohol treatment are often alcoholic, and these findings are consistent with the alcohol literature in relation to clinical samples. However, while some of the treatment population may be alcoholic or dependent, not all of them can be assessed as such. Differences in the populations, instrumentation, related procedures, and interpolation, along with various jurisdictional policies may explain the disparate findings.

In the study by Robertson et al. (2013) it was estimated that study participants equally reported patterns of daily drinking or binge drinking. Approximately one-quarter of participants reported drinking heavily for a brief period which was followed by an extended

period of sobriety that could last several months. A universal theme that emerged in all of the interview focus groups was that women reported that they drank for emotional reasons, or that alcohol consumption was a coping mechanism to help them manage their emotions and stress.

These studies demonstrate that a substantial proportion of female impaired driving offenders are experiencing substance abuse problems, and that the gravity and complexity of those problems are significant (White and Hennessey 2006). There is also some evidence to suggest that female alcohol consumption in general may be a result of issues specific to women such as "their tendency to act as caretakers, sometimes to the exclusion of their own needs" (Gudrais 2011, p.10).

4.2.4 Mental health

Findings indicate that there is a need to treat some female impaired drivers not only for alcohol misuse problems but mental health problems as well (McMurran et al. 2011). A recent study by Freeman et al. (2011) of impaired driving and non-impaired driving patients in substance abuse treatment in Texas between 2005 and 2008 found that both were more likely to be diagnosed with mental health problems and more likely to be placed on medications upon admission to treatment compared to males. Female impaired driving offenders have significantly higher psychiatric co-morbidity relative to their male counterparts (Laplante et al. 2008). Diagnoses of anxiety, depression, and post-traumatic stress disorder (PTSD) are common among female impaired driving offenders.

Wanberg & Milkman (2008) reported that, in a study of 10 large judicial samples including impaired driving offenders, non-impaired driving probation clients, and non-impaired driving offenders sentenced to prison (total N=15,910), in every sample, female offenders scored significantly higher (with moderate effect sizes) on the scales in the Adult Substance Use Survey-Revised (Wanberg 2006) and the Adult Substance Use and Driving Survey-Revised (Wanberg and Timken 2006) that measure mood and psychological adjustment problems. The Level of Supervision Inventory-Revised (LSI-R: Andrews and Bonta 2003) was available for eight of these samples. In all of the samples female offenders scored significantly higher than males on the LSI-R Mental Health Scale.

Mental health issues were also frequently reported by female impaired drivers in a recent U.S. study by Robertson et al. (2013). It was estimated that three-quarters of the study participants reported using one or more prescription medications for disorders such as anxiety, depression, PTSD, bi-polar disorder, and schizophrenia. A small number of participants further acknowledged sexual assaults, domestic violence or abortions as influencing their mental state, and some also indicated prior suicide attempts, suggesting that histories of trauma are not uncommon.

Drug use. While drug use among female impaired drivers is prevalent, some research suggests that involvement in drug use may be more comparable among males and females. In a study of 812 female offenders in the New York Drinking Driver Program conducted by Parks et al. (1996) in which 43% of offenders were alcohol abusers and 25% were alcohol-dependent, among these two latter groups, 19% and 50% respectively, also reported drug problems. Similarly, a study of 1,105 impaired driving offenders in New Mexico found that of those with alcohol use disorders, 32% of females (compared to 38% of males) also had a drug use disorder (Lapham et al. 2000).

However, Maxwell and Freeman (2007) reported that the use of illicit drugs was higher among females as compared to males. More recently, a study examining the characteristics of convicted impaired drivers in treatment found that females were most likely to be diagnosed with a primary problem with sedatives or opiates, whereas males were most likely to be diagnosed with a primary problem with alcohol and cannabis (Maxwell 2011). Similarly, Freeman et al. (2011) found that females were more likely than males to have problems with methamphetamines, cocaine, and opiates.

More recently, Robertson et al. (2013) reported that, although prescription drug use was common, less than one-third of female impaired drivers reported use of illicit substances. Among many of these women, marijuana and methamphetamines were the most common drugs of choice, although use of cocaine, hashish, and ecstasy was also reported. Often the drug use was connected to the presence of a partner or spouse who also used drugs. There was also a very small minority of focus group participants who reported that alcohol was not their "drug of choice" and that they did not have a problem with alcohol.

In summary, given that the use of drugs appears to be somewhat common among female impaired drivers, it is important that female offenders are appropriately screened, identified, and treated for all drug use disorders.

4.2.5 Cognitive impairment

While there has been limited research investigating cognitive deficits specifically among a female impaired driver population, a recent five-year longitudinal study related to predictive role of executive function in DWI recidivism was conducted by Brown, T. et al. (2013). This study involved a sample of 225 community-recruited first-time impaired driving offenders that included 136 males and 87 females, with a control group comprised of 79 individuals (37 males and 42 females). In particular, the study found that female offenders, not male offenders, showed more signs of poorer executive control compared to their non-offender controls, both functionally and psychometrically. Overall, it revealed a pattern of reduced executive control in female first-time impaired driving offenders with alcohol use disorder, and that, among alcoholics, females are more susceptible to alcohol's neurocognitive effects than

males. No differences were found between male and female offenders on relative measures of abuse even though males typically use and misuse alcohol more than females.

A cross-sectional analysis suggested a greater role for executive control deficits in the transition from first-time impaired driving to repeat impaired driving status in male offenders than in female offenders. However, the MMPI-Mac Scale (a measure of cognitive impairment, reward-seeking, and externalizing personality features associated with alcoholism) distinguished female first-time impaired driving offenders from controls, but not in males.

The authors further noted that executive control appears to be a feature of female first impaired driving offending and that their ability to identify goals, plan, execute, inhibit old behavior patterns, and learn from experience is reduced. These impairments worsened with alcohol intake. As such, alcohol appeared to contribute to female first impaired driving offending through acute and chronic disruption of executive control functioning (Brown et al. 2013).

4.2.6 Driver and criminal history

There are limited data to suggest that a smaller number of female impaired driving offenders relative to males have a history of other traffic offences or criminal offences, although more research into this topic is needed. Common criminal offences in females may include drug offences, theft offences, and assault (Caldwell-Aden et al. 2009). This finding was echoed in the study by Robertson et al. (2013) who estimated that less than 20% of participants reported prior involvement in other criminal activities in addition to their impaired driving arrest(s). Most often, their involvement in criminal activities was linked to an existing relationship with a male partner, or a group of friends engaged in criminal activity.

4.2.7 Repeat female impaired drivers

Female repeat impaired driving offenders often share similar characteristics to their male counterparts. Older research suggests that repeat female offenders are approximately 30 years old but more current research on this issue is needed. Similar to males, there is also evidence that this population has lower levels of education, employment, and income, and is much more likely to be single, separated, or divorced than first offenders. Like their male counterparts, repeat female offenders are more likely to drink more frequently and exhibit higher levels of impairment, more often abuse drugs, and utilize treatment services (Argeriou et al. 1986).

However, there are some differences between female and male repeat offenders. For example, repeat female impaired driving offenders have higher levels of psychiatric co-morbidity than male repeat offenders and are more likely to also use drugs (Laplante et al. 2008; Maxwell 2011).

Recidivism rates among male and female impaired drivers show some consistent patterns, depending on the studies consulted. Available data suggest recidivism risk may be higher for young males than women (Argeriou et al. 1986; Jones and Lacey 2001; McMurran et al. 2011; Webster et al. 2009; Wells-Parker et al. 1991), but it appears that risk of recidivism may converge as adults of both genders age (Lapham et al. 2000). A study in 2000 involving a five-year follow-up of 2,615 convicted first-time impaired driving offenders in New Mexico revealed that overall 26% of offenders had been re-arrested (20% of females and 33% of males according to Lapham et al. 2000). The study further reported that, after controlling for a range of factors, young males had a recidivism rate 2.5 times that of women. However, a comparison of rates among older offenders revealed few differences between sexes (Laplante et al. 2008).

A more recent population-based study (2010) in Maryland, reported that following their first conviction for impaired driving offences, the risk of recidivism is equivalent between female and male offenders. The study also noted that on average, drivers with repeat alcohol offences (as measured by violations on their driving record) were younger than drivers who did not have repeat alcohol offences on their driving record (Rauch et al. 2010). As relatively few studies have specifically examined this issue, more research is needed.

4.3 Summary of Characteristics

In the past four decades, much has been learned about the profile and characteristics of impaired drivers. Nevertheless, there is far more research about males compared to females, with much of the female research being dated. This is an important research gap. However, there are some important similarities and differences between men and women that are worthy of our attention and consideration to inform efforts to better manage this offender population. What is perhaps most important however, is that impaired drivers of both sexes represent a heterogeneous population that is comprised of many different subgroups that require closer investigation and study.

4.3.1 Similarities between male and female impaired drivers

On average, impaired drivers of both sexes are generally aged 20 to 40, with many offenders being in their 30s. Relative to the general population, impaired drivers of both sexes also are more likely to have less education and lower levels of employment and income; this finding is more pronounced among repeat offenders. Similarly, impaired drivers of both sexes are more likely to be single, separated, or divorced. Again, this finding is more pronounced among repeat offenders.

Alcohol-related diagnoses are very common among impaired drivers of both sexes. In particular, the age of onset of drinking and family history warrant attention. To reiterate, while such diagnoses are highly correlated with impaired driving offending, they are not

necessarily a causal factor. Both male and female impaired drivers have higher levels of psychiatric symptoms relative to the general population so co-occurring disorders should not be overlooked during screening and assessment of this population. Moreover, recidivism rates for impaired driving among men and women of adult age appear similar following a first alcohol-related conviction.

4.3.2 Differences between male and female impaired drivers

There are also some important differences between male and female impaired drivers. Men appear to exhibit a higher degree of antisocial attitudes and behaviours relative to women, although research comparing these populations on this dimension is sparse. Conversely, women experience more severe psychological and mental health symptoms as well as report greater involvement in drugs. Men may be more defensive about alcohol problems and, in particular, repeat male impaired drivers may demonstrate a greater readiness for change.

In addition, younger males appear to have higher recidivism rates relative to females in this age category. Male impaired drivers also have more extensive histories of driving offences and other criminal offences as well as more prior experience with impaired driving interventions.

To summarize, this research makes abundantly clear why the interventions based upon simple theoretical models that emphasize distinct aspects of behaviour, as opposed to a broader examination of the constellation of behaviours that are intimately linked to impaired driving, have failed to produce more dramatic results. This critical fact was succinctly captured in Wanberg et al. (2005) who stated "there is no simple cause and effect model that can explain, let alone predict, impaired driving conduct. Many factors - early age drinking, environmental events, problem behaviour, personality characteristics, stress and the emotional syndromes of stress, cognitive and behavioural reinforcement and the impaired control - that interact with drinking and driving to result in impaired driving behaviour" (p.20).

Of clinical importance, this highlights the need for increased collaboration across disciplines to inform the development and delivery of interventions that are better suited to both match and target the diverse characteristics of this offender population.

This document is an extracted chapter from the 'Impaired Driving Risk Assessment: A Primer for Practitioners' publication. The full report as well as a complete reference list are available online at www.tirf.ca. You may also download directly the executive summary or any other chapters of the full report.

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