



# *The Dangers and Consequences of Marijuana Abuse*

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# THE MYTH OF MARIJUANA FOR MEDICINAL USE

## *SMOKED MARIJUANA IS NOT MEDICINE*

In 1970, Congress enacted laws against marijuana based in part on its conclusion that marijuana has no scientifically proven medical value. Likewise, the Food and Drug Administration (FDA), which is responsible for approving drugs as safe and effective medicine, has thus far declined to approve smoked marijuana for any condition or disease. Indeed, the FDA has noted that “there is currently sound evidence that smoked marijuana is harmful,” and “that no sound scientific studies support medical use of marijuana for treatment in the United States, and no animal or human data support the safety or efficacy of marijuana for general medical use.”<sup>1</sup>

### *Voices in the medical community likewise do not accept smoked marijuana as medicine:*

- The **American Medical Association (AMA)** has always endorsed “well-controlled studies of marijuana and related cannabinoids in patients with serious conditions for which preclinical, anecdotal, or controlled evidence suggests possible efficacy and the application of such results to the understanding and treatment of disease.” In November 2009, the AMA amended its policy, urging that marijuana’s status as a Schedule I controlled substance be reviewed “with the goal of facilitating the conduct of clinical research and development of cannabinoid-based medicines, and alternate delivery methods.” The AMA also stated that “this should not be viewed as an endorsement of state-based medical cannabis programs, the legalization of marijuana, or that scientific evidence on the therapeutic use of cannabis meets the current standards for prescription drug product.”<sup>2</sup>
- The **American Society of Addiction Medicine’s (ASAM)** public policy statement on “Medical Marijuana,” clearly rejects smoking as a means of drug delivery. ASAM further recommends that “all cannabis, cannabis-based products and cannabis delivery devices should be subject to the same standards applicable to all other prescription medication and medical devices, and should not be distributed or otherwise provided to patients ...” without FDA approval. ASAM also “discourages state interference in the federal medication approval process.”<sup>3</sup> ASAM continues to support these policies, and has also stated that they do not “support proposals to legalize marijuana anywhere in the United States.”<sup>4</sup>
- The **American Cancer Society (ACS)** “is supportive of more research into the benefits of cannabinoids. Better and more effective treatments are needed to overcome the side effects of cancer and its treatment. However, the ACS does not advocate the use of inhaled marijuana or the legalization of marijuana.”<sup>5</sup>
- The **American Glaucoma Society (AGS)** has stated that “although marijuana can lower the intraocular pressure, the side effects and short duration of action, coupled with the lack of evidence that its use alters the course of glaucoma, preclude recommending this drug in any form for the treatment of glaucoma at the present time.”<sup>6</sup>
- The **Glaucoma Research Foundation (GRF)** states that “the high dose of marijuana necessary to produce a clinically relevant effect on intraocular pressure in people with

glaucoma in the short term requires constant inhalation, as much as every three hours. The number of significant side effects generated by long-term use of marijuana or long-term inhalation of marijuana smoke make marijuana a poor choice in the treatment of glaucoma. To date, no studies have shown that marijuana – or any of its approximately 400 chemical components – can safely and effectively lower intraocular pressure better than the variety of drugs currently on the market.”<sup>7</sup>

- The **American Academy of Pediatrics (AAP)** believes that “[a]ny change in the legal status of marijuana, even if limited to adults, could affect the prevalence of use among adolescents.” While it supports scientific research on the possible medical use of cannabinoids as opposed to smoked marijuana, it opposes the legalization of marijuana.<sup>8</sup>
- The **American Academy of Child and Adolescent Psychiatry (AACAP)** “is concerned about the negative impact of medical marijuana on youth. Adolescents are especially vulnerable to the many adverse development, cognitive, medical, psychiatric, and addictive effects of marijuana.” Of greater concern to the AACAP is that “adolescent marijuana users are more likely than adult users to develop marijuana dependence, and their heavy use is associated with increased incidence and worsened course of psychotic, mood, and anxiety disorders.” “The “medicalization” of smoked marijuana has distorted the perception of the known risks and purposed benefits of this drug.” Based upon these concerns, the “AACAP opposes medical marijuana dispensing to adolescents.”<sup>9</sup>
- The **National Multiple Sclerosis Society (NMSS)** has stated that “based on studies to date – and the fact that long-term use of marijuana may be associated with significant, serious side effects – it is the opinion of the National Multiple Sclerosis Society’s Medical Advisory Board that there are currently insufficient data to recommend marijuana or its derivatives as a treatment for MS symptoms. Research is continuing to determine if there is a possible role for marijuana or its derivatives in the treatment of MS. In the meantime, other well tested, FDA-approved drugs are available to reduce spasticity.”<sup>10</sup>

## **DANGERS OF MARIJUANA**

### *MARIJUANA IS DANGEROUS TO THE USER AND OTHERS*

Without a clear understanding of the mental and physical effects of marijuana, its use on our youth, our families, and our society, we will never understand the ramifications it will have on the lives of our younger generation, the impact on their future, and its costs to our society.

Legalization of marijuana, no matter how it begins, will come at the expense of our children and public safety. It will create dependency and treatment issues, and open the door to use of other drugs, impaired health, delinquent behavior, and drugged drivers.

This is not the marijuana of the 1970s; today’s marijuana is far more powerful. On May 14, 2009, analysis from the National Institute on Drug Abuse (NIDA)-funded University of Mississippi’s Potency Monitoring Project revealed that marijuana potency levels in the U.S. are the highest ever reported since the scientific analysis of the drug began.<sup>11</sup> This trend continues.

- According to the latest data, the average amount of THC in seized samples has reached 15.1 percent. This compares to an average of just under four percent reported in 1983 and represents more than a tripling of the potency of the drug since that time.<sup>12</sup>
- “We are increasingly concerned that regular or daily use of marijuana is robbing many young people of their potential to achieve and excel in school or other aspects of life,” said NIDA Director Nora D. Volkow, MD. “THC, a key ingredient in marijuana, alters the ability of the hippocampus, a brain area related to learning and memory, to communicate effectively with other brain regions. In addition, we know from recent research that marijuana use that begins during adolescence can lower IQ and impair other measures of mental function in adulthood.”<sup>13</sup>
- “We should also point out that marijuana use that begins in adolescence increases the risk they will become addicted to the drug,” said Volkow. “The risk of addiction goes from about 1 in 11 overall to 1 in 6 for those who start using in their teens, and even higher among daily smokers.”<sup>14</sup>

The most recent statistics on the use of marijuana in the United States shows that marijuana use continues to rise.

- In 2011, an estimated 22.5 million American’s aged 12 and older were current (past month) illicit drug users. This represents 8.7 percent of the population 12 and older. Marijuana was the most commonly used illicit drug with 18.1 million past month users.<sup>15</sup>
- The use of illicit drug use among young adults aged 18 to 25 increased from 19.7 percent in 2008 to 21.4 percent in 2011, driven largely by an increase in marijuana use (from 16.6 percent in 2008 to 19 percent in 2011).<sup>16</sup>
- In 2011, an estimated 3.1 million persons aged 12 and older used an illicit drug for the first time within the past 12 months. That equals about 8,400 initiates per day. The largest number of new initiates (7,200) used marijuana (2.6 million).<sup>17</sup>
- Among 12 and 13 year olds, 1.3 percent used marijuana; for 14 and 15 year olds, it was 6.7 percent; and for 16 and 17 year olds, it climbed to 15.1 percent.<sup>18</sup>
- Nearly 23 percent of high school seniors say they smoked marijuana in the month prior to the survey, and just over 36 percent say they smoked within the previous year. More than 11 percent of eighth graders said they used marijuana during the past year.<sup>19</sup>
- An estimated 16.7 percent of past year marijuana users aged 12 and older used marijuana on 300 or more days within the past 12 months. This means that almost 5 million persons used marijuana on a daily or almost daily basis over a 12 month period.<sup>20</sup>
- An estimated 39.1 percent (7.1 million) of current marijuana users aged 12 and older used marijuana on 20 or more days in the past month.<sup>21</sup>
- Among persons 12 or older, an estimated 1.5 million first-time past year marijuana users initiated use prior to age 18.<sup>22</sup>

- According to the 2012 Monitoring the Future Survey, one in every 15 high school seniors (16.5 percent) is a daily or near-daily marijuana user.<sup>23</sup>
- The 2011 Partnership Attitude Tracking Study found that nine percent of teens (nearly 1.5 million) smoked marijuana heavily (at least 20 times) in the past month. Overall, past-month teen use was up 80 percent from 2008.<sup>24</sup>
  - Nearly half of teens (47 percent) have ever used marijuana – a 21 percent increase from 2008.<sup>25</sup>
  - Two out of every five teens (39 percent) have tried marijuana during the past year, an increase from 31 percent in 2008.<sup>26</sup>
  - Past-month use increased 42 percent, from 19 percent in 2008 to 27 percent in 2011 (an increase of 4 million teens).<sup>27</sup>
  - Past-year use is up 26 percent from 31 percent in 2008 to 39 percent in 2011 (an increase of 6 million teens).<sup>28</sup>
  - Lifetime use is up 21 percent, from 39 percent in 2008 to 47 percent in 2011 (an increase of 8 million teens).<sup>29</sup>

Increasingly, the international community is joining the United States in recognizing the fallacy of arguments claiming marijuana use is a harmless activity with no consequences to others.

- Antonio Maria Costa, then Executive Director of the United Nations Office on Drugs and Crime, noted in an article published in *The Independent on Sunday* “The debate over the drug is no longer about liberty; it’s about health.” He continued, “Evidence of the damage to mental health caused by cannabis use—from loss of concentration to paranoia, aggressiveness and outright psychosis—is mounting and cannot be ignored. Emergency-room admissions involving cannabis is rising, as is demand for rehabilitation treatment. ...It is time to explode the myth of cannabis as a ‘soft’ drug.”<sup>30</sup>
- The President of the International Narcotics Control Board (INCB), Raymond Yars, voiced grave concern about the recent referenda in the United States that would allow the recreational use of cannabis by adults. “Legalization of cannabis within these states would send wrong and confusing signals to youth and society in general, giving the false impression that drug abuse might be considered normal and even, most disturbingly, safe. Such a development could result in the expansion of drug abuse, especially among young people, and we must remember that all young people have a right to be protected from drug abuse and drug dependency.”<sup>31</sup>

“The concern with marijuana is not born out of any culture war mentality, but out of what science tells us about the drug’s effects.”<sup>32</sup>

## MENTAL HEALTH ISSUES RELATED TO MARIJUANA

There is mounting evidence that use of marijuana, particularly by adolescents, can lead to serious mental health problems.

- According to Nora Volkow, the Director of the National Institute of Drug Abuse, “Regular marijuana use in adolescence is known to be a part of a cluster of behaviors that can produce enduring detrimental effects and alter the trajectory of a young person’s life – thwarting his or her potential. Beyond potentially lower IQ, teen marijuana use is linked to school dropout, other drug use, mental health problems, etc. Given the current number of regular marijuana users (1 in 15 high school seniors) and the possibility of this increasing with marijuana legalization, we cannot afford to divert our focus from the central point: regular marijuana use stands to jeopardize a young person’s chances of success – in school and in life.”<sup>33</sup>
- A major study published in the Proceedings of the National Academy of Sciences in August 2012 provides finding that long-term marijuana use started in teen years does have a negative effect on intellectual function. The more dependent the person becomes on marijuana, the more significant the impairment. The impairment was significant in five different cognitive areas, especially executive function and processing speed. Participants who used cannabis heavily in their teens and continued through adulthood showed a significant drop in their intelligence quotient (IQ) - an average of eight points. Those who started using marijuana regularly after age 18 showed minor declines. Those who never used marijuana showed no decline. Even after stopping cannabis use, neuropsychological deficits were never recovered among those who started smoking during their teen years.<sup>34</sup>
- “Nearly one in ten first-year college students at a mid-Atlantic university have a cannabis use disorder (CUD) according to a NIDA-funded study of drug use conducted by investigators from the Center for Substance Abuse Research at the University of Maryland.” “Students who had used cannabis five or more times in the past year – regardless of whether or not they met the criteria for CUD – reported problems related to their cannabis use, such as concentration problems (40.1 percent), regularly putting themselves in physical danger (24.3 percent), and driving after using marijuana (18.6 percent).”<sup>35</sup>
- According to a recent report by the Office of National Drug Control Policy on teens, depression and marijuana use:<sup>36</sup>
  - Depressed teens are twice as likely as non-depressed teens to use marijuana and other illicit drugs.
  - Depressed teens are more than twice as likely as their peers to abuse or become dependent on marijuana.
  - Marijuana use can worsen depression and lead to more serious mental illness such as schizophrenia, anxiety, and even suicide.
  - Teens who smoke marijuana at least once a month are three times more likely to have suicidal thoughts than non-users.

- The percentage of depressed teens is equal to the percentage of depressed adults, but depressed teens are more likely than depressed adults to use marijuana than other drugs.
- Researchers from the University of Oulu in Finland interviewed over 6,000 youth ages 15 and 16 and found that “teenage cannabis users are more likely to suffer psychotic symptoms and have a greater risk of developing schizophrenia in later life.”<sup>37</sup>
- John Walters, then the Director of the Office of National Drug Control Policy, Charles G. Curie, then the Administrator of the Substance Abuse and Mental Health Services Administration, and experts and scientists from leading mental health organizations joined together in May 2005 to warn parents about the mental health dangers marijuana poses to teens. According to several recent studies, marijuana use has been linked with depression and suicidal thoughts, in addition to schizophrenia. These studies report that weekly marijuana use among teens doubles the risk of developing depression and triples the incidence of suicidal thoughts.<sup>38</sup>
- Dr. Andrew Campbell, a member of the New South Wales (Australia) Mental Health Review Tribunal, published a study in 2005 which revealed that four out of five individuals with schizophrenia were regular cannabis users when they were teenagers. Between 75-80 percent of the patients involved in the study used cannabis habitually between the ages of 12 and 21.<sup>39</sup> In addition, a laboratory-controlled study by Yale scientists, published in 2004, found that THC “transiently induced a range of schizophrenia-like effects in healthy people.”<sup>40</sup>
- In a presentation on “Neuroimaging Marijuana Use and Effects on Cognitive Function” Professor Krista Lisdahl Medina suggests that chronic heavy marijuana use during adolescence is associated with poorer performance on thinking tasks, including slower psychomotor speed and poorer complex attention, verbal memory and planning ability. “While recent findings suggest partial recovery of verbal memory functioning within the first three weeks of adolescent abstinence from marijuana, complex attention skills continue to be affected. Not only are their thinking abilities worse, their brain activation to cognitive task is abnormal.”<sup>41</sup>

Many of these effects of using marijuana affect all ages, not just youth.

- Memory, speed of thinking, and other cognitive abilities get worse over time with marijuana use, according to a study published in the March 14, 2006 issue of *Neurology*, the scientific journal of the American Academy of Neurology. The study found that frequent marijuana users performed worse than non-users on tests of cognitive abilities, including divided attention and verbal fluency. Those who had used marijuana for 10 years or more had more problems with their thinking abilities than those who had used marijuana for 5-to-10 years. All of the marijuana users were heavy users, which was defined as smoking four or more joints per week.<sup>42</sup>
- Australian researchers report that long-term, heavy cannabis use may be associated with structural abnormalities in areas of the brain which govern memory, emotion, and aggression. Brain scans showed that the hippocampus was 12 percent smaller and the amygdale 7 percent smaller in men who smoked at least 5 cigarettes daily for almost 10 years. Dr. Mura Yucel, the lead researcher stated that “this new evidence plays an important role in further understanding the effects of marijuana and its impact on brain functions. The study is the first to show that

long-term cannabis use can adversely affect all users, not just those in the high-risk categories such as the young, or those susceptible to mental illness, as previously thought.”<sup>43</sup>

- A two-year study by the National Cannabis Prevention and Information Centre, at the University of New South Wales in Sydney, Australia found that cannabis users can be as aggressive as crystal methamphetamine users, with almost one in four men and one in three women being violent toward hospital staff or injuring themselves after acting aggressively. Almost 12 percent were considered a suicide risk. The head of the Emergency Department at St. Vincent’s Hospital, Gordian Fulde, said “that most people still believed marijuana was a soft drug, but the old image of feeling sleepy and having the munchies after you’ve smoked is entirely inappropriate for modern-day marijuana. With hydroponic cannabis, the levels of THC can be tenfold what they are in normal cannabis so we are seeing some very, very serious fallout.”<sup>44</sup>
- Carleton University researchers published a study in 2005 showing that current marijuana users who smoke at least five “joints” per week did significantly worse than non-users when tested on neurocognition tests such as processing speed, memory, and overall IQ.<sup>45</sup>
- U.S. scientists have discovered that the active ingredient in marijuana interferes with synchronized activity between neurons in the hippocampus of rats. The authors of this November 2006 study suggest that action of tetrahydrocannabinol, or THC, might explain why marijuana impairs memory.<sup>46</sup>
- According to an Australian study, there is now conclusive evidence that smoking cannabis hastens the appearance of psychotic illnesses by up to three years. Dr. Mathew Large from the University of New South Wales reports that “...in addition to early cannabis smoking bringing on schizophrenia it brings it on early by an average of 2.7 years early – earlier than you would have otherwise developed it had you not been a cannabis smoker. The risks for older people is about a doubling of the risk.” “For young people who smoke cannabis regularly, instead of having around a one percent chance of developing schizophrenia during their life they will end up with something like a five percent chance of developing schizophrenia.” Philip Mitchell, head of Psychiatry at the University stated that while “this research can’t distinguish about whether cannabis causes schizophrenia or brings it out in vulnerable people...it makes it very clear that cannabis is playing a significant role in psychosis.”<sup>47</sup>
- Doctors at Yale University documented marijuana’s damaging effect on the brain after nearly half of 150 healthy volunteers experienced psychotic symptoms, including hallucinations and paranoid delusions, when given THC, the drug’s primary active ingredient. The findings were released during a May 2007 international health conference in London.<sup>48</sup>
- According to Margaret Trudeau, “Marijuana can trigger psychosis.” “Quitting cannabis has been an important part of my recovery from mental illness,” Margaret Trudeau, ex-wife of former Canadian prime Minister Pierre Trudeau, reported at a press conference at the Canadian Mental Health Conference in Vancouver on February 15, 2007. “Every time I was hospitalized it was preceded by heavy marijuana use.”<sup>49</sup>

- A pair of articles in the *Canadian Journal of Psychiatry* reflects that cannabis use can trigger schizophrenia in people already vulnerable to the mental illness and assert that this fact should shape marijuana policy.<sup>50</sup>
- Robin Murray, a professor of psychiatry at London's Institute of Psychiatry and consultant at the Maudsley Hospital in London, wrote an editorial which appeared in *The Independence on Sunday*, on March 18, 2007, in which he states that the British Government's "mistake was rather to give the impression that cannabis was harmless and that there was no link to psychosis." Based on the fact that "...in the late 1980s and 1990s psychiatrists like me began to see growing numbers of young people with schizophrenia who were taking large amounts of cannabis" Murray claims that "...at least 10 percent of all people with schizophrenia in the UK would not have developed the illness if they had not smoked cannabis." By his estimates, 25,000 individuals have ruined their lives because they smoked cannabis. He also points out that the "skunk" variety of cannabis, which is very popular among young people in Great Britain, contains "15 to 20 percent THC, and new resin preparations have up to 30 percent."<sup>51</sup>
- Dr. John MacLeod, a prominent British psychiatrist states: "If you assume such a link (to schizophrenia with cannabis) then the number of cases of schizophrenia will increase significantly in line with increased use of the drug." He predicts that cannabis use may account for a quarter of all new cases of schizophrenia in three years' time.<sup>52</sup>
- A study by Scientists at the Queensland Brain Institute in Australia on long-term marijuana use and the increased risk of psychosis confirms earlier findings. "Compared with those who had never used cannabis, young adults who had six or more years since first use of cannabis were twice as likely to develop a non-affective psychosis (such as schizophrenia)," McGrath wrote in a study published in the *Archives of General Psychiatry Journal*. "They were also four times as likely to have high scores in clinical tests of delusion."<sup>53</sup>
- A study published in the March 2008 *Journal of the American Academy of Child and Adolescent Psychiatry* cited the harm of smoking marijuana during pregnancy. The study found a significant relationship between marijuana exposure and child intelligence. Researchers concluded that "prenatal marijuana exposure has a significant effect on school-age intellectual development."<sup>54</sup>
- A study by doctors from the National Institute of Drug Abuse found that people who smoked marijuana had changes in the blood flow in their brains even after a month of not smoking. The marijuana users had PI (pulsatility index) values somewhat higher than people with chronic high blood pressure and diabetes, which suggests that marijuana use leads to abnormalities in the small blood vessels in the brain. These findings could explain in part the problems with thinking and remembering found in other studies of marijuana users.<sup>55</sup>

#### *PHYSICAL HEALTH ISSUES RELATED TO MARIJUANA*

Marijuana use also affects the physical health of users, both short and long term.

- In 2011, according to the Drug Abuse Warning Network (DAWN), there were 1,252,000 emergency department (ED) visits involving an illicit drug. Marijuana was involved in 455,668 of these visits, second only to cocaine.<sup>56</sup>

- ED visits for marijuana increased 19 percent between 2009 and 2011.<sup>57</sup>
- Among ED visits made by patients aged 20 or younger resulting in drug misuse or abuse, marijuana was the most commonly involved illicit drug (143.9 visits per 100,000).<sup>58</sup>
- On an average day in 2008 there were 723 drug related ED visits for youth 12 to 17 years of age. Of those visits, 129 involved marijuana.<sup>59</sup>
- Under the Safe Drinking Water and Toxic Enforcement Act of 1986, the Governor of California is required to revise and republish at least once a year the list of chemicals known to the state to cause cancer or reproductive toxicity. On September 11, 2009, the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, published the latest list. The list includes a new chemical added in June, marijuana smoke, and lists cancer as the type of toxicity.<sup>60</sup>
- A study by researchers at the Erasmus University Medical Center in Rotterdam, Netherlands found women who smoked pot during pregnancy may impair their baby's growth and development in the womb. The babies born to marijuana users tended to weigh less and have smaller heads than other infants, both of which are linked to increased risk of problems with thinking, memory, and behavioral problems in childhood.<sup>61</sup>
- A long-term study of over 900 New Zealanders by the University of Otago, New Zealand School of Dentistry has found that "heavy marijuana use has been found to contribute to gum disease, apart from the known effects that tobacco smoke was already known to have."<sup>62</sup>
- A study from Monash University and the Alfred Hospital in Australia has found that "bullous lung disease occurs in marijuana smokers 20 years earlier than tobacco smokers. Often caused by exposure to toxic chemicals or long-term exposure to tobacco smoke, bullae is a condition where air trapped in the lungs causes obstruction to breathing and eventual destruction of the lungs." Dr. Matthew Naughton explains that "marijuana is inhaled as extremely hot fumes to the peak inspiration and held for as long as possible before slow exhalation. This predisposes to greater damage to the lungs and makes marijuana smokers more prone to bullous disease as compared to cigarette smokers."<sup>63</sup>
- In December 2007 researchers in Canada reported that "marijuana smoke contains significantly higher levels of toxic compounds -- including ammonia and hydrogen cyanide -- than tobacco smoke and may therefore pose similar health risks." "Ammonia levels were 20 times higher in the marijuana smoke than in the tobacco smoke, while hydrogen cyanide, nitric oxide and certain aromatic amines occurred at levels 3-5 times higher in the marijuana smoke."<sup>64</sup>
- Marijuana worsens breathing problems in current smokers with chronic obstructive pulmonary disease (COPD), according to a study released by the American Thoracic Society in May 2007. Among people age 40 and older, smoking cigarettes and marijuana together boosted the odds of developing COPD to 3.5 times the risk of someone who smoked neither.<sup>65</sup>

- Scientists at Sweden’s Karolinska Institute, a medical university, have advanced their understanding of how smoking marijuana during pregnancy may damage the fetal brain. Findings from their study, released in May 2007, explain how endogenous cannabinoids exert adverse effects on nerve cells, potentially imposing life-long cognitive and motor deficits in afflicted new born babies.<sup>66</sup>
- A study from New Zealand reports that cannabis smoking may cause five percent of lung cancer cases in that country. Dr. Sarah Aldington of the Medical Research Institute in Wellington presented her study results at the Thoracic Society conference in Auckland on March 26, 2007.<sup>67</sup>
- Researchers at the Fred Hutchinson Cancer Research Center in Seattle found that frequent or long-term marijuana use may significantly increase a man’s risk of developing the most aggressive type of testicular cancer, nonseminoma. Nonseminoma is a fast-growing testicular malignancy that tends to strike early, between the ages of 20 and 35, and accounts for about 40 percent of all testicular-cancer cases. Dr. Stephen Schwartz stated that researchers are still studying the long-term health consequences of marijuana smoking, especially heavy marijuana smoking and “in the absence of more certain information, a decision to smoke marijuana recreationally means that one is taking a chance on one’s future health.”<sup>68</sup>
- According to researchers at the Yale School of Medicine, long-term exposure to marijuana smoke is linked to many of the same kinds of health problems as those experienced by long-term cigarette smokers. “[C]linicians should advise their patients of the potential negative impact of marijuana smoking on overall lung health.”<sup>69</sup>
- While smoking cigarettes is known to be a major risk factor for the bladder cancer most common among people age 60 and older, researchers are now finding a correlation between smoking marijuana and bladder cancer. In a study of younger patients with transitional cell bladder cancer, Dr. Martha Terriss found that 88.5 percent had a history of smoking marijuana. Marijuana smoke has many of the same carcinogen-containing tars as cigarettes and may get even more into the body because marijuana cigarettes are unfiltered and users tend to hold the smoke in their lungs for prolonged periods. Dr. Terriss notes that more research is needed, but does recommend that when doctors find blood in a young patient’s urine sample, they may want to include questions about marijuana use in their follow-up.<sup>70</sup>
- Smoking marijuana can cause changes in lung tissue that may promote cancer growth, according to a review of decades of research on marijuana smoking and lung cancer. However, it is not possible to directly link pot use to lung cancer based on existing evidence. Nevertheless, researchers indicate that the precancerous changes seen in studies included in their analysis, as well as the fact that marijuana smokers generally inhale more deeply and hold smoke in their lungs longer than cigarette smokers, and that marijuana is smoked without a filter, do suggest that smoking pot could indeed boost lung cancer risk. It is known, they add, that marijuana smoking deposits more tar in the lungs than cigarette smoking does.<sup>71</sup>
- Smoking three cannabis joints will cause you to inhale the same amount of toxic chemicals as a whole pack of cigarettes according to researchers from the French National Consumers’ Institute. Cannabis smoke contains seven times more tar and carbon monoxide than cigarette smoke. Someone smoking a joint of cannabis resin rolled with tobacco will inhale twice the

amount of benzene and three times as much toluene as if they were smoking a regular cigarette.<sup>72</sup>

- According to research, the use of marijuana by women trying to conceive or those recently becoming pregnant is not recommended, as it endangers the passage of the embryo from the ovary to the uterus and can result in a failed pregnancy. The researchers from Vanderbilt University say a study with mice has shown that marijuana exposure may compromise the pregnancy outcome because an active ingredient in marijuana, tetrahydrocannabinol (THC), interferes with a fertilized egg's ability to implant in the lining of the uterus.<sup>73</sup>
- Infants exposed to marijuana in the womb show subtle behavioral changes in their first days of life, according to researchers in Brazil. The newborns were more irritable than non-exposed infants, less responsive, and more difficult to calm. They also cried more, startled more easily, and were jitterier. Such changes have the potential to interfere with the mother-child bonding process. "It is necessary to counter the misconception that marijuana is a 'benign drug' and to educate women regarding the risks and possible consequences related to its use during pregnancy," Dr. Marina Carvahlo de Moraes Barros and her colleagues concluded.<sup>74</sup>
- Marijuana smoking has been implicated as a causative factor in tumors of the head and neck and of the lung. The marijuana smokers in whom these tumors occur are usually much younger than the tobacco smokers who are the usual victims of these malignancies. Although a recent study published by the Medical College of Georgia and Stanford University suggests a causal relationship between marijuana exposure and bladder cancer, larger scale epidemiologic and basic science studies are needed to confirm the role of marijuana smoking as an etiologic agent in the development of transitional cell carcinoma.<sup>75</sup>
- According to a 2005 study of marijuana's long-term pulmonary effects by Dr. Donald Tashkin at the University of California, Los Angeles, marijuana smoking deposits significantly more tar and known carcinogens within the tar, such as polycyclic aromatic hydrocarbons, into the airways. In addition to precancerous changes, marijuana smoking is associated with impaired function of the immune system components in the lungs.<sup>76</sup>
- Smoked marijuana has also been associated with an increased risk of the same respiratory symptoms as tobacco, including coughing, phlegm production, chronic bronchitis, shortness of breath and wheezing. Because cannabis plants are contaminated with a range of fungal spores, smoking marijuana may also increase the risk of respiratory exposure by infectious organisms (i.e., molds and fungi).<sup>77</sup>
- Marijuana takes the risks of tobacco and raises them. Marijuana smoke contains more than 400 chemicals and increases the risk of serious health consequences, including lung damage.<sup>78</sup>
- An April 2007 article published by the *Harm Reduction Journal*, and funded by the pro-legalization Marijuana Policy Project, argues that the use of a vaporizer has the potential to reduce the danger of cannabis as far as respiratory symptoms are concerned. While these claims remain scientifically unproven, serious negative consequences still remain. For example, driving skills are still impaired, heavy adolescent use may create deviant brain structure, and 9-12 percent of cannabis users develop symptoms of dependence. A vaporizer offers no protection against these consequences.<sup>79</sup>

- According to two studies, marijuana use narrows arteries in the brain, “similar to patients with high blood pressure and dementia,” and may explain why memory tests are difficult for marijuana users. In addition, “chronic consumers of cannabis lose molecules called CB1 receptors in the brain’s arteries,” leading to blood flow problems in the brain which can cause memory loss, attention deficits, and impaired learning ability.<sup>80</sup>
- A small study (50 patients) was conducted by the University of California San Francisco from 2003 to 2005, leading researchers to find that smoked marijuana eased HIV-related foot pain. This pain, known as peripheral neuropathy, was relieved for 52 percent of the patients in the controlled experiment. Dr. Donald Abrams, director of the study said that while subjects’ pain was reduced he and his colleagues “found that adverse events, such as sedation, dizziness and confusion were significantly higher among the cannabis smokers.”<sup>81</sup>
- In response to this study, critics of smoked marijuana were quick to point out that while THC does have some medicinal benefits, smoked marijuana is a poor delivery mechanism. Citing evidence that marijuana smoke is harmful, Dr. David Murray, then chief scientist at the Office of National Drug Control Policy, noted that “People who smoke marijuana are subject to bacterial infections in the lungs... Is this really what a physician who is treating someone with a compromised immune system wants to prescribe?”<sup>82</sup>
  - Dr. Murray also said that the findings are "not particularly persuasive" because of the small number of subjects and the possibility that subjects knew they were smoking marijuana and had an increased expectation of efficacy. He expressed the government's support for pain relief for HIV-affected individuals and said that while "We're very much supportive of any effort to ameliorate the suffering of AIDs patients, the delivery mechanism for THC should be pills, and not smoked marijuana, which can cause lung damage and deliver varying dosages of THC."<sup>83</sup>
  - Researchers involved with the University of California San Francisco project admitted that there may be a problem with efforts to gauge the effects of marijuana vs. the effects of a placebo. Some users were immediately able to acknowledge that their sample was indeed cannabis because of the effects of that substance. One participant, Diana Dodson said, "I knew immediately [that I received cannabis] because I could feel the effects."<sup>84</sup>
- Pro-marijuana advocates were encouraged by a medical study published in *Cancer Epidemiology, Biomarkers & Prevention*. The study, published in October 2006, was based on interviews with people in Los Angeles (611 who developed lung cancer, 601 who developed cancer of the head or neck regions, and 1,040 people without cancer who were matched [to other subjects] on age, gender, and neighborhoods). The study found that people who smoke marijuana do not appear to be at increased risk of developing lung cancer.<sup>85</sup> While this study’s findings differed from previous studies and researchers’ expectations, “[o]ther experts are warning that the study should not be viewed as a green light to smoke pot, as smoking marijuana has been associated with problems such as cognitive impairment and chronic bronchitis.”<sup>86</sup> The National Institute on Drug Abuse (NIDA) continues to maintain that smoking marijuana is detrimental to pulmonary functions.

- In its October, 2006, issue of *NIDA Notes*, mention is made of the most recent Tashkin study. "Biopsies of bronchial tissue provide evidence that regular marijuana smoking injures airway epithelial cells, leading to dysregulation of bronchial epithelial cell growth and eventually to possible malignant changes." Moreover, he adds, because marijuana smokers typically hold their breath four times as long as tobacco smokers after inhaling, marijuana smoking deposits significantly more tar and known carcinogens within the tar, such as polycyclic aromatic hydrocarbons, in the airways. In addition to precancerous changes, Dr. Tashkin found that marijuana smoking is associated with a range of damaging pulmonary effects, including inhibition of the tumor-killing and bactericidal activity of alveolar macrophages, the primary immune cells within the lung."
  - NIDA also comments on the Tashkin study in the *Director's Notes* from February 2007. While acknowledging that the study concluded "that the association of these cancers with marijuana, even long-term or heavy use, is not strong and may be below practically detectable limits... these results may have been affected by selection bias or error in measuring lifetime exposure and confounder histories."<sup>87</sup>
  - In October 2006, one of the study's authors, Dr. Hal Morgenstern, Chair of Epidemiology at the University of Michigan School of Public Health, said although the risk of cancer did not prove to be large in the recent study, "I wouldn't go so far as to say there is no increased cancer risk from smoking marijuana."<sup>88</sup>
- The British Lung Foundation's 2012 survey of 1,000 adults found that a third wrongly believed that cannabis did not harm your health. The survey also revealed that 88 percent thought tobacco cigarettes were more harmful than cannabis ones, although the risk of lung cancer is actually 20 times higher from a cannabis cigarette than a tobacco cigarette. Part of the reason for this is that people smoking cannabis take deeper puffs and hold them for longer than tobacco smokers. This means that a person smoking a cannabis cigarette inhales four times as much tar and five times as much carbon monoxide as someone smoking a tobacco cigarette. The Foundation warned that smoking one cannabis cigarette increase the chances of developing lung cancer by as much as an entire packet of 20 cigarettes. "It is alarming that, while new research continues to reveal the multiple health consequences of smoking cannabis, there is still a dangerous lack of public awareness of quite how harmful this drug can be," said Dame Helena Shovelton, Chief Executive of the British Lung Foundation. "We therefore need a serious public health campaign – of the kind that helped raise awareness of the dangers of eating fatty food or smoking tobacco – to finally dispel the myth that smoking cannabis is somehow a safe pastime."<sup>89</sup>
- A large international study by researchers from the University of Adelaide found that women who use marijuana during pregnancy double the risk of giving birth prematurely. Preterm or premature births, which is at least three weeks prior to the due date, can result in serious and life-threatening health problems for the baby, and increased health problems in later life, such as heart disease and diabetes.<sup>90</sup>

## MARIJUANA AS A PRECURSOR TO ABUSE OF OTHER DRUGS

- Teens who experiment with marijuana may be making themselves more vulnerable to heroin addiction later in life, if the findings from experiments with rats are any indication. “Cannabis has very long-term, enduring effects on the brain,” according to Dr. Yamin Hurd of the Mount Sinai School of Medicine in New York, the study’s lead author.<sup>91</sup>
- Marijuana is a frequent precursor to the use of more dangerous drugs and signals a significantly enhanced likelihood of drug problems in adult life. The *Journal of the American Medical Association* reported, based on a study of 300 sets of twins, “that marijuana-using twins were four times more likely than their siblings to use cocaine and crack cocaine, and five times more likely to use hallucinogens such as LSD.”<sup>92</sup>
- Long-term studies on patterns of drug usage among young people show that very few of them use other drugs without first starting with marijuana. For example, one study found that among adults (age 26 and older) who had used cocaine, 62 percent had initiated marijuana use before age 15. By contrast, less than one percent of adults who never tried marijuana went on to use cocaine.<sup>93</sup>
- Columbia University’s National Center on Addiction and Substance Abuse (CASA) reports that teens who used marijuana at least once in the last month are 13 times likelier than other teens to use another drug like cocaine, heroin, or methamphetamine and almost 26 times likelier than those teens who have never used marijuana to use another drug.<sup>94</sup>
- Marijuana use in early adolescence is particularly ominous. Adults who were early marijuana users were found to be five times more likely to become dependent on any drug, eight times more likely to use cocaine in the future, and fifteen times more likely to use heroin later in life.<sup>95</sup>
- Healthcare workers, legal counsel, police and judges indicate that marijuana is a typical precursor to methamphetamine. For instance, Nancy Kneeland, a substance abuse counselor in Idaho, pointed out that “in almost all cases meth users began with alcohol and pot.”<sup>96</sup>
- An estimated 3.1 million persons aged 12 or older – an average of approximately 8,400 per day - used a drug other than alcohol for the first time in the past year according to the 2011 National Survey on Drug Use and Health. More than two-thirds (68 percent) of these new users reported that marijuana was the first drug they tried.<sup>97</sup>
- Nearly one in ten high school students (9 percent) report using marijuana 20 times or more in the past month according to the findings of the 2011 Partnership Attitude Tracking Survey.<sup>98</sup>
- Teens past month heavy marijuana users are significantly more likely than teens that have not used marijuana in the past to: use cocaine/crack (30 times more likely); use Ecstasy (20 times more likely); abuse prescription pain relievers (15 times more likely); and abuse over the counter medications (14 times more likely). This clearly denotes that teens that use marijuana regularly are using other substances at a much higher rate than teens who do not smoke marijuana, or smoke less often.<sup>99</sup>

## DEPENDENCY AND TREATMENT

- “The basic rule with any drug is if the drug becomes more available in the society, there will be more use of the drug,” said Thomas Crowley, a University of Colorado psychiatry professor and director of the university’s Division of Substance Dependence. “And as use expands, there will be more people who have problems with the drug.”<sup>100</sup>
- A study of substance abuse treatment admissions in the United States between 1998 and 2008, found that although admission rates for alcohol treatment were declining, admission rates per 100,000 population for illicit drug use were increasing. One consistent pattern in every region was the increase in the admission rate for marijuana use which rose 30 percent nationally.<sup>101</sup>
- California, a national leader in ‘medical’ marijuana use, saw admission for treatment for marijuana dependence more than double over the past decade. Admissions grew from 52 admissions per 100,000 population in 1998 to 113 per 100,000 in 2008, an increase of 117 percent.<sup>102</sup>
- “[R]esearch shows that use of [marijuana] can lead to dependence. Some heavy users of marijuana develop withdrawal symptoms when they have not used the drug for a period of time. Marijuana use, in fact, is often associated with behavior that meets the criteria for substance dependence established by the American Psychiatric Association.”<sup>103</sup>
- Of the 22.5 million Americans aged 12 or older who used illicit drugs in the past 30 days in 2011, 18.1 million used marijuana, making it the most commonly used illicit drug in 2011.<sup>104</sup>
- Marijuana was the illicit drug with the highest rate of past year dependence or abuse in 2011; of the 6.5 million persons age 12 or older classified with illicit drug dependence or abuse, 4.2 million had marijuana dependence or abuse (representing 1.6 percent of the total population aged 12 or older and 63.8 percent of all those classified with illicit drug dependence or abuse).<sup>105</sup>
- Among all ages, marijuana was the second most common illicit drug responsible for treatment admissions in 2010 after opioids, accounting for 18 percent of all admissions--outdistancing cocaine, the next most prevalent cause.<sup>106</sup>
- The proportion of admissions for marijuana as the primary substance of abuse for persons aged 12 or older increased from 14 percent in 2000 to 18 percent in 2010.<sup>107</sup>
- Thirty-nine percent of primary marijuana admissions were under age 20 (versus 11 percent of all admissions).<sup>108</sup>
- Twenty-four percent of primary admissions had first used marijuana by age 12 and another 31 percent by age 14.<sup>109</sup>
- In 2010, 87 percent of adolescent treatment admissions involved marijuana as a primary or secondary substance.<sup>110</sup>

## DANGERS TO NON USERS

### *DELINQUENT BEHAVIORS*

Marijuana use is strongly associated with juvenile crime.

- In a 2008 paper entitled *Non-Medical Marijuana III: Rite of Passage or Russian Roulette*, CASA reported that in 2006 youth who had been arrested and booked for breaking the law were four times likelier than those who were never arrested to have used marijuana in the past year.<sup>111</sup>
- According to CASA in their report on *Criminal Neglect: Substance Abuse, Juvenile Justice and the Children Left Behind*, youth who use marijuana are likelier than those who do not to be arrested and arrested repeatedly. The earlier an individual begins to use marijuana, the likelier he or she is to be arrested.
- Marijuana is known to contribute to delinquent and aggressive behavior. A June 2007 report released by the White House Office of National Drug Control Policy (ONDCP) reveals that teenagers who use drugs are more likely to engage in violent and delinquent behavior. Moreover, early use of marijuana, the most commonly used drug among teens, is a warning sign for later criminal behavior. Specifically, research shows that the instances of physically attacking people, stealing property, and destroying property increase in direct proportion to the frequency with which teens smoke marijuana.<sup>112</sup>

In a report titled *The Relationship between Alcohol, Drug Use, and Violence among Students*, the Community Anti-Drug Coalitions of America (CADCA) reported that according to the 2006 Pride Surveys, during the 2005-2006 school year:

- Of those students who report carrying a gun to school during the 2005-2006 year, 63.9 percent report also using marijuana.
- Of those students who reported hurting others with a weapon at school, 68.4 percent had used marijuana.
- Of those students who reported being hurt by a weapon at school, 60.3 percent reported using marijuana.
- Of those students who reported threatening someone with a gun, knife, or club or threatening to hit, slap or kick someone, 27 percent reported using marijuana.
- Of those students who reported any trouble with the police, 39 percent also reported using marijuana.<sup>113</sup>
- According to ONDCP, the incidence of youth physically attacking others, stealing, and destroying property increased in proportion to the number of days marijuana was smoked in the past year.<sup>114</sup>

- ONDCP reports that marijuana users were twice as likely as non-users to report they disobeyed school rules.<sup>115</sup>
- Youths aged 12 to 17 who had engaged in fighting or other delinquent behaviors were more likely than other youths to have used illicit drugs in the past month. In 2011 past month illicit drug use was reported by 18.5 percent of youths who had gotten into a serious fight at school or work compared with 8 percent of those who had not engaged in fighting at school or work, and by 45.1 percent of those who had stolen or tried to steal something worth over \$50 in the past year compared with 8.7 percent who had not attempted or engaged in such theft.<sup>116</sup>

## *DRUGGED DRIVERS*

Drugged driving, also referred to as impaired driving, is driving under the influence of alcohol, over-the-counter-medications, prescription drugs, or illegal drugs.

- The principal concern regarding drugged driving is that driving under the influence of any drug that acts on the brain could impair one's motor skills, reaction time, and judgment. Drugged driving is a public health concern because it puts not only the driver at risk, but also passengers and others who share the road.<sup>117</sup>
- In Montana, where there has been an enormous increase in "medical" marijuana cardholders, Narcotics Chief Mark Long told a legislative committee in April 2010 that "DUI arrests involving marijuana have skyrocketed, as have traffic fatalities where marijuana was found in the system of one of the drivers."<sup>118</sup>
- In 2011 there were 9.4 million persons aged 12 and older who reported driving under the influence of illicit drugs during the past year. The rate was highest among young adults aged 18 to 25.<sup>119</sup>
- Drugs that may affect driving were detected in one of every seven weekend nighttime drivers in California during the summer of 2012. In the first California statewide roadside survey of alcohol and drug use by drivers, 14 percent of drivers tested positive for drugs and 7.4 percent of drivers tested positive for alcohol, and just as many as tested positive for marijuana as alcohol.<sup>120</sup>
- Since 2000, Liberty Mutual Insurance and Students Against Destructive Decisions (SADD) - have been conducting a study of teens driving under the influence. Their most recent report, released in February 2012, found that nearly one in five teens have gotten behind the wheel after smoking marijuana.
  - They also found that driving under the influence of marijuana (19 percent) is a greater threat than driving under the influence of alcohol (13 percent). What greatly concerned the researchers is that many teens don't even consider marijuana use a distraction to their driving.<sup>121</sup>
  - "Marijuana affects memory, judgment, and perception and can lead to poor decisions when a teen under the influence of this or other drugs gets behind the wheel of a car," said Stephen Wallace, Senior Advisor for Policy, Research and Education at SADD.

“What keeps me up at night is that this data reflects the dangerous trend toward acceptance of marijuana and other substances compared to our study of teens conducted just two years ago.”<sup>122</sup>

- The study also found that most teen drivers would not drive while under the influence if asked by their passengers not to. However, even more alarming is that teen passengers are less concerned about riding in a car with a driver who has smoked marijuana than one who has used alcohol.<sup>123</sup>
- A study in the British Medical Journal on the consequences of cannabis impaired driving found that drivers who consume cannabis within three hours of driving are nearly twice as likely to cause a vehicle collision as those who are not under the influence of drugs or alcohol.<sup>124</sup>
- A study in the Epidemiologic Reviews by researchers from Columbia University found that drivers who get behind the wheel after smoking pot run more than twice the risk of getting into an accident. This risk is even greater if the driver had also been drinking alcohol. “As more states consider medical use of marijuana, there could be health implications,” said senior author Gouhua Li.<sup>125</sup>
- Researchers at the Pacific Institute for Research and Evaluation in Maryland studied a government data base on traffic fatalities and examined the data from 44,000 drivers involved in single-vehicle crashes who died between 1999 and 2009. They found that 24.9 percent of the drivers tested positive for drugs and 37 percent had blood-alcohol levels in excess of .08, the legal limit. The study is one of the first to show the prevalence of drug use among fatally injured drivers. Among the drivers who tested positive for drugs, 22 percent were positive for marijuana, 22 percent for stimulants, and 9 percent for narcotics.<sup>126</sup>
- In a study of seriously injured drivers admitted to a Maryland Level-1 shock-trauma center, 65.7 percent were found to have positive toxicology results for alcohol and/or drugs. Almost 51 percent of the total tested positive for illegal drugs. A total of 26.9 percent of the drivers tested positive for marijuana.<sup>127</sup>
- The percentage of fatally injured drivers testing positive for drugs increased over the last five years according to data from the National Highway Traffic Safety Administration (NHTSA). In 2009, 33 percent of the 12,055 drivers fatally injured in motor vehicle crashes with known test results tested positive for at least one drug compared to 28 percent in 2005. In 2009, marijuana was the most prevalent drug found in this population – approximately 28 percent of fatally injured drivers who tested positive tested positive for marijuana.<sup>128</sup>
- Recognizing that drugged driving is a serious health and safety issue, the National Organization for the Reform of Marijuana Laws (NORML) has called for a science-based educational campaign targeting drugged driving behavior. In January of 2008, Deputy Director Paul Armentano released a report titled, *Cannabis and Driving*, noting that motorists should be discouraged from driving if they have recently smoked cannabis and should never operate a motor vehicle after having consumed both marijuana and alcohol. The report also calls for the development of roadside, cannabis-sensitive technology to better assist law enforcement in identifying drivers who may be under the influence of pot.<sup>129</sup>

- In a 2007 National Roadside Survey of alcohol and drug use by drivers, a random sample of weekend nighttime drivers across the United States found that 16.3 percent of the drivers tested positive for drugs, compared to 2.2 percent of drivers with blood alcohol concentrations at or above the legal limit. Drugs were present more than 7 times as frequently as alcohol.<sup>130</sup>
- According to a National Institute of Drug Abuse (NIDA) funded study, a large number of American adolescents are putting themselves and others at great risk by driving under the influence of illicit drugs or alcohol. In 2006, 30 percent of high school seniors reported driving after drinking heavily or using drugs, or riding in a car whose driver had been drinking heavily or using drugs, as least once in the prior two weeks. Dr. Patrick O'Malley, lead author of the study, observed that "Driving under the influence is not an alcohol-only problem. In 2006, 13 percent of seniors said they drove after using marijuana while ten percent drove after having five or more drinks." "Vehicle accidents are the leading cause of death among those aged 15 to 20," added Dr. Nora Volkow, Director of NIDA. "Combining the lack of driving experience among teens with the use of marijuana and/or other substances that impair cognitive and motor abilities can be a deadly combination."<sup>131</sup>
- A June 2007 toxicology study conducted at the University of Maryland's Shock-Trauma Unit in Baltimore found that over 26 percent of injured drivers tested positive for marijuana. In an earlier study, the U.S. National Survey on Drug Use and Health estimated that 10.6 million Americans had driven a motor vehicle under the influence of drugs during the previous year.<sup>132</sup>
- A study of over 3000 fatally-injured drivers in Australia showed that when marijuana was present in the blood of the driver they were much more likely to be at fault for the accident. And the higher the THC concentration, the more likely they were to be culpable.<sup>133</sup>
- The National Highway Traffic Safety Administration (NHTSA) has found that marijuana significantly impairs one's ability to safely operate a motor vehicle. According to its report, "[e]pidemiology data from road traffic arrests and fatalities indicate that after alcohol, marijuana is the most frequently detected psychoactive substance among driving populations." Problems reported include: decreased car handling performance, inability to maintain headway, impaired time and distance estimation, increased reaction times, sleepiness, lack of motor coordination, and impaired sustained vigilance.<sup>134</sup>

## **OTHER CONSEQUENCES OF MARIJUANA USE**

- In Massachusetts in 2009 the possession of one ounce of marijuana went from a criminal charge to a civil fine. Police and District Attorneys want residents to know that smoking weed is not a victimless crime. Middlesex District Attorney Gerard T. Leone Jr. says that he fears that "decriminalization has created a booming 'cottage industry' for dope dealers to target youths no longer fearing the stigma of arrest or how getting high could affect their already dicey driving. What we're seeing now is an unfortunate and predictable outcome. It's a cash and carry business. With more small-time dealers operating turf encroachment is inevitable. This tends to make drug dealers angry." Wellesley Deputy Police Chief William Brooks III, speaking on behalf of the Massachusetts Chiefs of Police Association said "the whole thing is a mess. The perception out there among a lot of people is it's ok to do it now, so there's an uptick in the number of people wanting to do it...Most of the drug-related violence you see

now – the shootings, murders – is about weed.” Several 2010 high-profile killings have been linked by law enforcement to the increased market:

- The May fatal shooting of a 21-year-old inside a Harvard University dorm, allegedly in a bid to rob him of his pot and cash.
  - The June murder of a 17-year-old in Callahan State Park, where he was lured by two men seeking revenge in a fight over marijuana.
  - The September massacre of four people in Mattapan, including a 21-year-old woman and her 2-year-old son, over an alleged pot-dealing turf dispute.
  - The September fatal shooting of a 29-year-old man, by four men, one a high school senior, in connection with robbery and murder of a drug dealer.<sup>135</sup>
- Children often bear the consequences of actions engaged in by parents or guardians involved with marijuana.
    - In Bradenton, Florida a Highway Patrol officer tried to stop a man speeding on I-75. The driver did not stop until he ran up on the median and crashed into a construction barrel. In the car the troopers found three small children, forty pounds of marijuana and several thousand dollars in cash.<sup>136</sup>
    - A Hamilton, Montana man put his three toddlers in the back seat of his one ton Chevy pickup and then partied with a friend as he drove along the highway. At 50 miles an hour he swerved into another car killing the owner. While partying with his friend in the vehicle he had smoked two bowls of pot.<sup>137</sup>
    - An Ohio mother is accused of teaching her two-year-old daughter smoke pot and recording the incident on her cell phone.<sup>138</sup>
    - A Virginia mother and her roommate were charged with reckless child endangerment after her two-year-old daughter ingested an unknown amount of marijuana in a motel room.<sup>139</sup>
    - A California couple was arrested after a video surfaced of them allowing their 23-month-old son to use a marijuana pipe. The video showed the child smoking the pipe. The pipe was tested and found to have marijuana residue in it. Both parents said they had medical marijuana cards, but could not explain why they would give it to their child and then videotaped the incident.<sup>140</sup>
    - Cincinnati, Ohio police arrested a woman for allegedly giving her three children, ages seven, four and one marijuana. The seven-year-old told the school counselor that she had been forced to smoke marijuana. All three children tested positive for marijuana.<sup>141</sup>

- In Stockton, California a two-year-old girl was in critical condition after ingesting marijuana resin. Although four adults were home at the time, none were supervising the child when she found a jar lid containing resin.<sup>142</sup>
- Two toddlers in Louisiana were hospitalized after ingesting marijuana and amphetamines. A search warrant of the home found several unsecured bottles of prescription medication and a hand-rolled cigar containing marijuana.<sup>143</sup>
- In Santa Clara, California, in one week in December, four dispensaries and one marijuana grower were hit by vandals, burglars, or armed robbers. At one location four suspects robbed the victim by throwing him to the floor, holding a piece of metal to his throat, and demanding marijuana and money. At one dispensary, the owner, who is paralyzed and in a wheelchair, was closing up the shop when armed robbers knocked him over and barged in. The robbers tied him up and took marijuana and cash.<sup>144</sup>
- The Los Angeles Police Department investigated a series of robberies and shootings at marijuana dispensaries. Over a one week period in June 2010 a Northridge dispensary robbery left one employee in critical condition after being shot in the face; the shooting was the second at that business that year and the third dispensary to be targeted in three days. Two people were fatally shot in a pot shop robberies in Echo Park and Hollywood, and a third person was wounded.<sup>145</sup>
- On March 4, 2010, a California man was killed after opening fire on two Pentagon Police Officers. In a story on MSNBC, the Friday before the incident, John Patrick Bedell's parents had warned local authorities that his behavior had become erratic and that he was unstable and had a gun. Bedell was diagnosed as bipolar and had been in and out of treatment programs for years. His psychiatrist, J. Michael Nelson, said "Bedell tried to self-medicate with marijuana, inadvertently making his symptoms more pronounced."<sup>146</sup> Bedell had been given a prescription for medical use of marijuana in 2006 for chronic insomnia. According to long-time friend Reb Monaco "he was not a person who should have been issued a medical clearance to use marijuana, but he was."<sup>147</sup>
- A marijuana dealer kidnapped and murdered a 15 year-old boy after he got angry at the teen's half-brother for owing him a \$2,500 drug debt.<sup>148</sup>
- Grant Everson and three friends armed with box cutters and a shot-gun slipped into Everson's parents' Chaska, Minnesota home demanding money to open a coffeehouse in the marijuana-friendly City of Amsterdam. Although Grant lost his nerve, his friends proceeded to shoot and kill his mother. All four were arrested. Their alibi was that they had been sleeping in the same Burnsville apartment after a night of smoking marijuana and playing video games.<sup>149</sup>

The National Transportation Safety Board investigation of a small plane crash near Walnut Ridge, Arkansas, killing a passenger and the pilot, was a result of pilot error. Pilot Jason Heard failed to fly high enough and maintain enough airspeed to avoid a stall. The report notes that Pilot Jason Heard had enough marijuana in his system to have contributed to the accident.<sup>150</sup>

## MARIJUANA AND INCARCERATION

Federal marijuana investigations and prosecutions usually involve hundreds of pounds of marijuana. Few defendants are incarcerated in federal prison for simple possession of marijuana.

- In 2008, according to the United States Sentencing Commission (USSC), 25,337 people were sentenced in federal court for drug crimes under six offense categories. Marijuana accounted for 6,337 (25 percent). Looking even further, of the 6, 337 people sentenced, only 99 people or 1.6 percent, were sentenced for “simple possession” of marijuana.<sup>151</sup>
- According to a Bureau of Justice Statistics survey of state and federal prisoners published in October 2006, approximately 12.7 percent of state prisoners and 12.4 percent of federal prisoners were serving time for a marijuana-related offense. This is a decrease from 1997 when these figures were 12.9 percent and 18.9 percent respectively.<sup>152</sup>
- Between October 1, 2005 and September 30, 2006, there were 6,423 federal offenders sentenced for marijuana-related charges in the U.S. Courts. Approximately 95.9 percent of the cases involved trafficking.<sup>153</sup>
- In Fiscal Year 2006, there were 25,814 offenders sentenced in federal court on drug charges. Of those, only 1.6 percent (406 people) were sentenced for simple possession.<sup>154</sup>
- According to the White House Office of National Drug Control Policy, “Many inmates ultimately sentenced for marijuana and possession were initially charged with more serious crimes but were able to negotiate reduced charges or lighter sentences through plea agreements with prosecutors. Therefore the ...figure for simple possession defendants may give an inflated impression of the true numbers, since it also includes these inmates who pled down from more serious charges.”<sup>155</sup>
- While illicit drugs are implicated in three-quarters of incarcerations (75.9 percent), few inmates are incarcerated for marijuana possession as their controlling or only offense. Inmates incarcerated in federal and states prisons and local jails for marijuana possession as the controlling offenses accounted for 1.1 percent of all inmates and 4.4 percent of those incarcerated for drug law violations. Those incarcerated for marijuana possession as their only offense accounted for .9 percent of all inmates and 2.9 percent those incarcerated for drug law violations.<sup>156</sup>
- Findings from the 2008 Arrestee Drug Abuse Monitoring System (ADAM II), which surveys drug use among booked male arrestees in ten major metropolitan areas across the country, shows the majority of arrestees in each city test positive for illicit drug use, with as many as 87 percent of arrestees testing positive for an illegal drug. Marijuana is the most commonly detected drug at the time of the arrest. In seven of the ten sites arrestees who are using marijuana are using it on the average of every other day for the past 30 days.<sup>157</sup>

## OTHER CONSIDERATIONS

### *MARIJUANA USE AMONG YOUTH IS RISING AS PERCEPTION OF RISK DECREASES*

- Historical drug trends from the national Monitoring the Future Survey show that when anti-drug attitudes soften there is a corresponding increase in drug use in the coming years. An adolescent's perception of risks associated with substance use is an important determinant of whether he or she engages in substance abuse. Youths who perceive high risk of harm are less likely to use drugs than youths who perceive low risk of harm.
- The 2011 Monitoring the Future Survey noted that daily or near daily marijuana use, defined as use on 20 or more occasions in the past 30 days rose significantly in the 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> grades in 2010 and rose slightly higher again in 2011. This translates to one in every 15 high school seniors smoking pot on a daily or near daily basis, the highest rates that has been seen in thirty years – since 1981.<sup>158</sup>
- One explanation for the resurgence is that perceived risk of harm from use of the marijuana, even on a daily basis, has fallen sharply for marijuana over the past five years, and it declined in all three grades in 2011. Teens' disapproval of marijuana use also has fallen over the past three or four years, suggesting a lowering of peer norms against use.<sup>159</sup>
- In 2012 the annual use of marijuana by 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> graders remained at about the same levels as 2011. However, the perception of risk continued to decline. According to the study's principal investigator, "One important variable that has been a lead indicator of use – namely the amount of risk teenagers perceive to be associated with marijuana use – continued its sharp decline in 2012 among teens, which would suggest further increase in use in the future."<sup>160</sup>
- According to the Results from the 2011 National Survey on Drug Use and Health, between 2007 and 2011 the percentage of adolescents who perceived great risk from smoking marijuana once or twice a week decreased from 54.6 to 44.8 percent, and the rate of past month marijuana use among adolescents increased from 6.7 to 7.9 percent.<sup>161</sup>
- According to the Partnership Attitude Tracking Survey, 2011 Parents and Teens, nine percent of teens (1.5 million) smoked marijuana heavily (at least 20 times in the past month). Between 2008 and 2011, past month use is up 42 percent, past year use is up 26 percent and lifetime use is up 21 percent among teens.<sup>162</sup>
- Teens report seeing more of their peers smoking marijuana; only 26 percent say that in their school most teens don't smoke marijuana. Also, 71 percent of teens say they have friends that smoke marijuana regularly, up from 64 percent in 2008.<sup>163</sup>
- A continuing erosion of anti-marijuana attitudes was also noted; only about half of teens (51 percent) say they see great risk in using marijuana, down from 61 percent in 2005.<sup>164</sup>
- Media also plays a role in changing the perception of marijuana use. Nearly half (45 percent) of teens say that the music they listen to makes marijuana seem cool and almost half (47 percent) agree that movies and television shows make drugs seem like the thing to do.<sup>165</sup>

## Endnotes

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For more information, visit the  
DEA websites:

[www.dea.gov](http://www.dea.gov)

[www.justthinktwice.com](http://www.justthinktwice.com) – for teens

[www.getsmartaboutdrugs.com](http://www.getsmartaboutdrugs.com) – for parents