

IMPACTS OF CANNABIS CONSUMPTION ON HUMANS MENTAL AND PHYSICAL HEALTH

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PROBLEM

- ❖ In 2018, cannabis was legalized in Canada
- ❖ A 2024 survey found that only 71% of Canadians know that daily/almost daily cannabis use increases the risk of mental health problems
- ❖ Consuming cannabis can have major negative effects on the brain and body, especially if you are under the age of 18
- ❖ A study made in 2025 showed an increase in cannabis consumption in youth under 18:
 - ❖ A 26% increase in the overall prevalence of cannabis in adolescents
 - ❖ Number of adolescents consuming edibles increased by 43%.
 - ❖ Youth under 18 had a 34% increase in cannabis smoking
 - ❖ A 28% rise in the co-use of alcohol and cannabis

THESIS



The consumption of cannabis in humans will cause a decline in a person's mental and physical health because of the negative effects cannabis has on the human body.



TYPES OF CANNABIS CONSUMPTION

- ❖ Inhalation:

- ❖ Vaping or smoking cannabis
- ❖ Smoking cannabis- extremely harmful to the human body
- ❖ Smoking burnt cannabis can lead to respiratory problems
- ❖ Has the most detrimental effects

- ❖ Ingestion:

- ❖ Eating or drinking cannabis products
- ❖ Does not harm human lung health
- ❖ Takes longer for psychoactive ingredients to commence

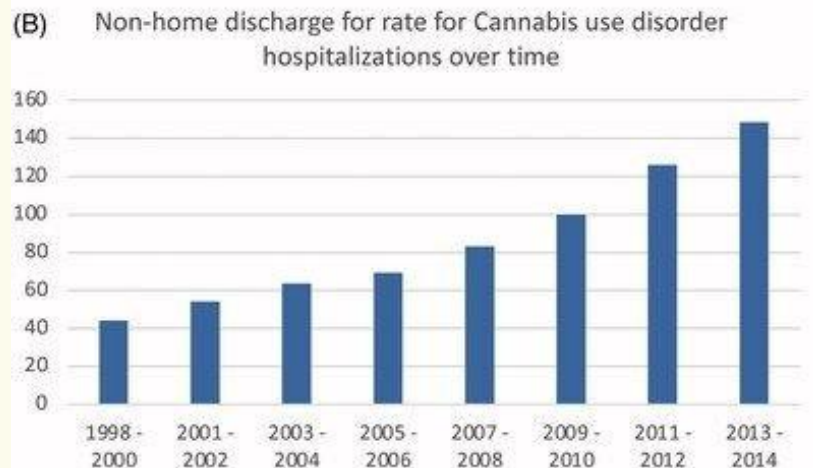
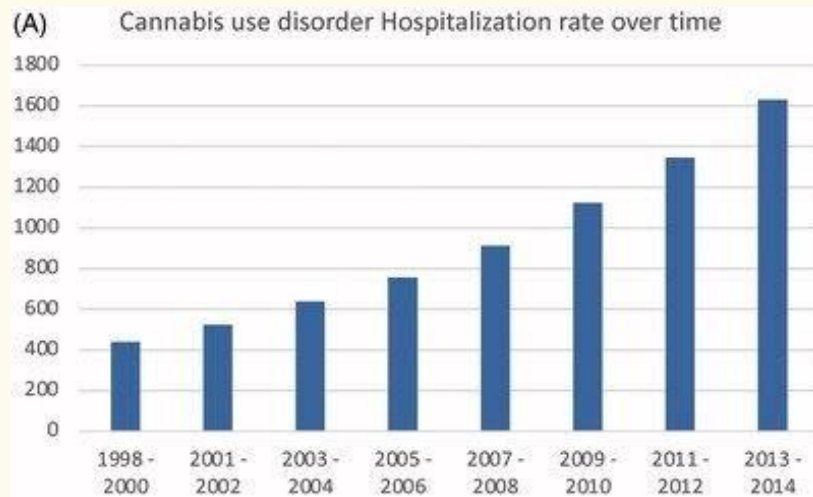


TYPES OF CANNABIS CONSUMPTION

- ❖ High-risk:
 - ❖ Frequently or intensively consuming cannabis
 - ❖ Can involve consuming high THC (Tetrahydrocannabinol) content
- ❖ Low-risk:
 - ❖ Utilizing cannabis occasionally
 - ❖ E.g. using cannabis one day per week or only on weekends


CANNABIS USE DISORDER

- ❖ A substance use disorder where a person is addicted to cannabis
- ❖ Frequently arises when consuming at high-risk
- ❖ Common mental health condition
 - ❖ Estimated 5.8% of people 12 years and older experiencing this disorder in the past 12 months
- ❖ Most severe condition is marijuana addiction





SYMPTOMS OF CANNABIS USE DISORDER

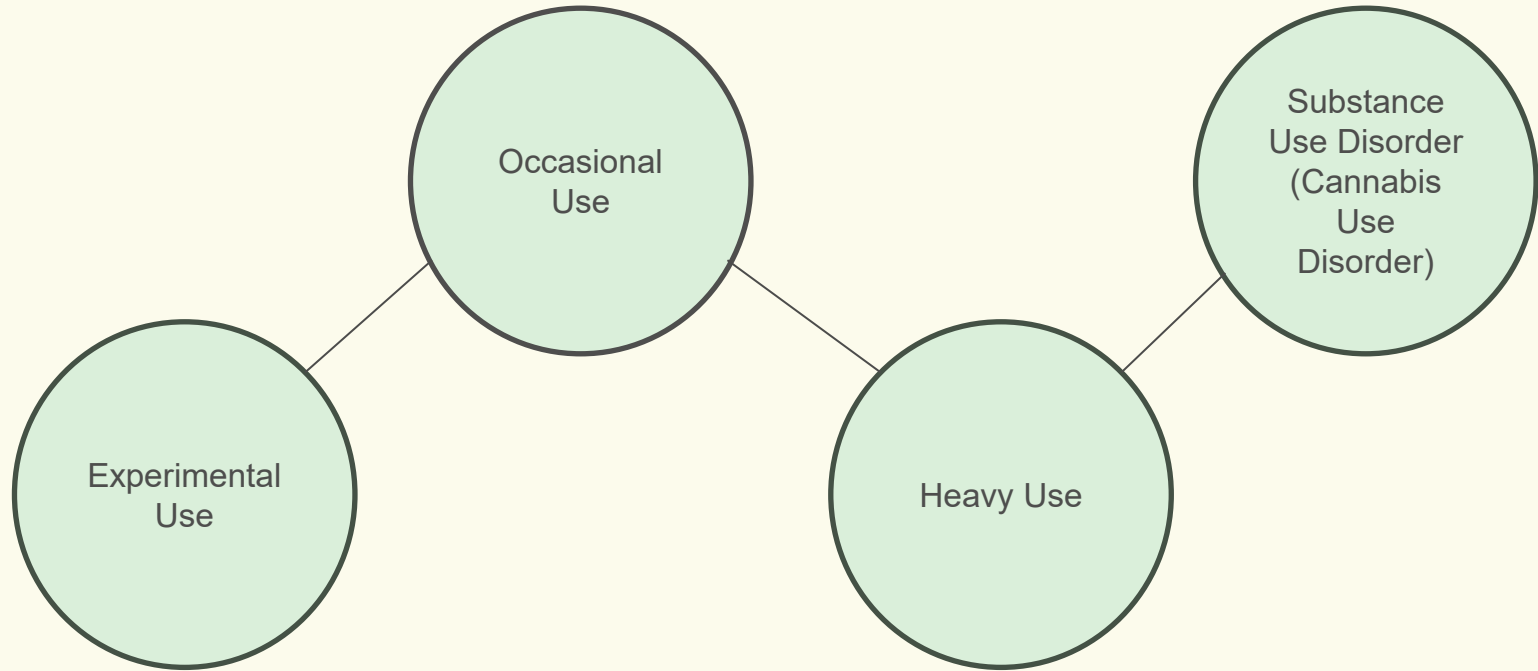
- ❖ Consuming at high-risk
 - ❖ Having a strong desire and/or urge to use cannabis
 - ❖ Unsuccessful efforts to control/cut down cannabis use
 - ❖ Spending lots of time getting, using, or recovering from cannabis
 - ❖ Continuing to use cannabis even though its causing problems in relationships
 - ❖ Giving up social, occupational or recreational activities
 - ❖ Using cannabis continuously even when it puts you in danger
 - ❖ Continuing using cannabis even though it may make ongoing physical or psychological problems worse
 - ❖ Developing tolerance
 - ❖ Experiencing cannabis withdrawal which can be relieved by consuming more
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SYMPTOMS OF CANNABIS USE DISORDER


- ❖ Confusion
- ❖ Memory issues
- ❖ Difficulty learning
- ❖ Hallucinations
- ❖ Delusions
- ❖ Withdrawal from family and friends
- ❖ Sudden changes in mood and behaviour
- ❖ Hostility or denial when confronted about cannabis use
- ❖ Not caring about physical appearance as much as previously
- ❖ Secretive behaviour to conceal cannabis use

PROGRESSION TO CANNABIS USE DISORDER





FACTORS OF THE PROGRESSION TO CANNABIS USE DISORDER

- ❖ THC's effects on the human brain
 - ❖ Genetics
 - ❖ Mental health conditions
 - ❖ Access and exposure
 - ❖ Legalization (specifically in Canada)
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FACTORS WHICH INCREASE THE RISK OF CANNABIS USE DISORDER

- ❖ Age
- ❖ Potency of marijuana
- ❖ Frequency of use
- ❖ Depression
- ❖ Sex (gender)
- ❖ Other substance use disorders

PHYSICAL COMPLICATIONS WHEN CONSUMING CANNABIS

- ❖ Cannabis-induced psychosis
- ❖ Cannabis-induced anxiety disorder
- ❖ Cannabis-induced sleep disorder
- ❖ Cannabis hyperemesis syndrome
- ❖ Chronic bronchitis
- ❖ Fertility issues




WAYS TO COMBAT CANNABIS USE DISORDER

- ❖ Detoxification
 - ❖ Stopping the use of cannabis
- ❖ Cognitive and behavioural therapies (psychotherapy)
 - ❖ Help people learn coping skills and treat cannabis use disorder
 - ❖ Effective therapies for adults:
 - ❖ Cognitive behavioural therapy (CBT)
 - ❖ Dialectical behaviour therapy (DBT)
 - ❖ Assertive community treatment (ACT),
 - ❖ Therapeutic communities (TCs)
 - ❖ Contingency management (CM)
- ❖ Self-help programs



EFFECTS OF CANNABIS IN ADOLESCENTS

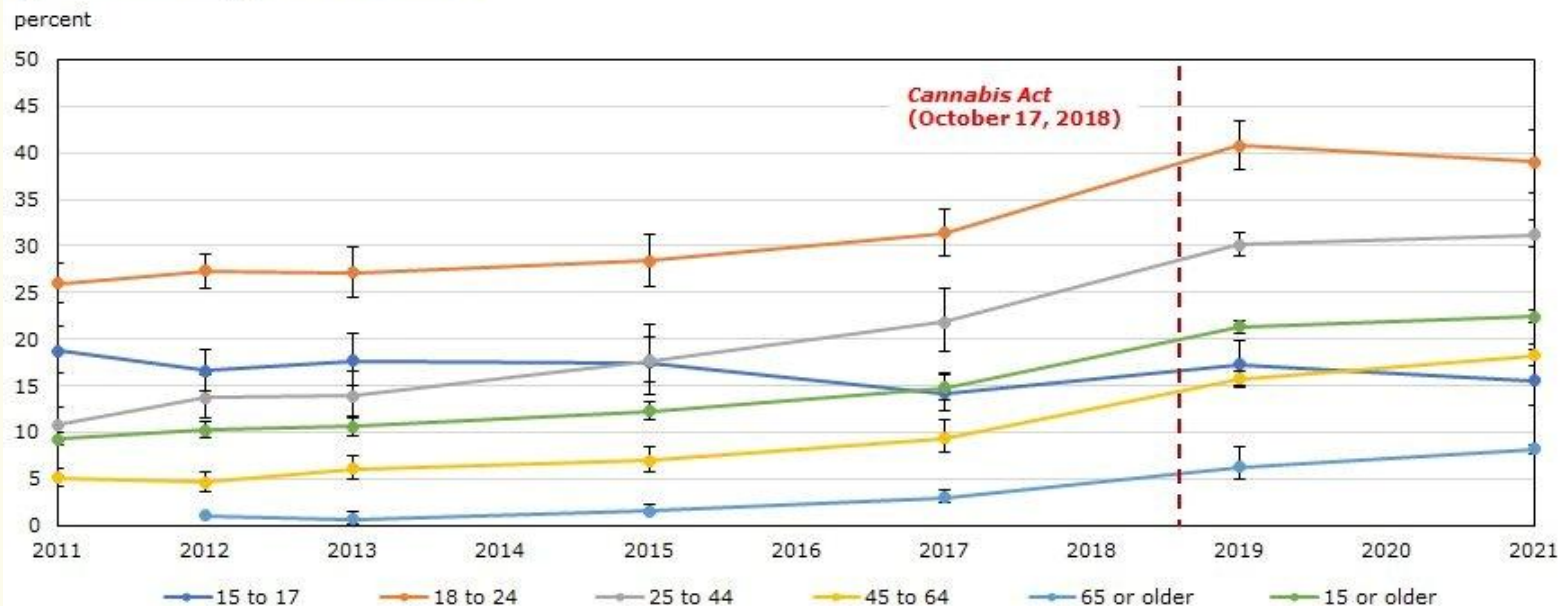
- ❖ Detrimental to the development of the brain
 - ❖ Difficulty thinking and problem-solving
 - ❖ Problems with memory and learning
 - ❖ Reduced coordination
 - ❖ Difficulty maintaining attention
 - ❖ Problems with school and social life.
 - ❖ Increased aggression
 - ❖ Risky sexual behaviours
 - ❖ Impaired driving
 - ❖ Mental health problems
 - ❖ Increased risk of psychosis
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MENTAL HEALTH EFFECTS IN ADOLESCENTS

- ❖ Depression
- ❖ Anxiety
- ❖ Temporary psychosis
- ❖ Long-lasting mental disorders
 - ❖ Schizophrenia

Chart 3
Cannabis use in the past 12 months, by age group, household population aged 15 or older, Canada (provinces only), 2011 to 2021



Notes: The red line refers to the enactment of the *Cannabis Act* (October 17, 2018). Error bars represent the lower and upper 95% confidence interval.

Sources: Statistics Canada, 2011 and 2012 Canadian Tobacco Use Monitoring Survey; 2013, 2015 and 2017 Canadian Tobacco, Alcohol and Drugs Survey; and 2019 and 2021 Canadian Community Health Survey.

FACTORS WHICH INCREASE RISK OF CANNABIS USE DISORDER IN ADOLESCENTS


- ❖ Adolescents who use cannabis are 4-7 times more prone to developing cannabis use disorder than adults. Certain factors are:
- ❖ Parental substance use
- ❖ Poor school performance
- ❖ Antisocial and oppositional behaviours
- ❖ Alcohol and/or nicotine use,
- ❖ Childhood sexual abuse

COMPLICATIONS FROM CANNABIS USE DISORDER IN ADOLESCENTS

- ❖ Severe cannabis use disorder (marijuana addiction)
- ❖ Altered brain development
- ❖ Cognitive impairment
- ❖ Poor educational outcomes
- ❖ Increased likelihood of dropping out of school
- ❖ Lower IQ



FACTORS THAT AFFECT MENTAL HEALTH

- ❖ Potency of cannabis
 - ❖ Frequency
 - ❖ Age
 - ❖ Ways of consuming cannabis
 - ❖ Combining cannabis with other substances
 - ❖ Having a history of mental health disorders in the family
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MENTAL HEALTH EFFECTS

- ❖ High-risk cannabis consumption can increase symptoms of anxiety and depression
 - ❖ Can negatively impact the brain's dopamine system
 - ❖ Make you feel fatigued, low in mood, and unmotivated
- ❖ Consuming cannabis frequently can cause:
 - ❖ Becoming dependent on cannabis
 - ❖ Having trouble regulating emotions



SYMPTOMS OF CANNABIS DEPENDENCE

- ❖ Craving cannabis
 - ❖ Ruminating about cannabis
 - ❖ Finding it hard to quit or reduce use
 - ❖ Feeling the need to use cannabis
 - ❖ An increased tolerance of cannabis
 - ❖ Feeling increasingly restless, moody, or anxious when not using cannabis
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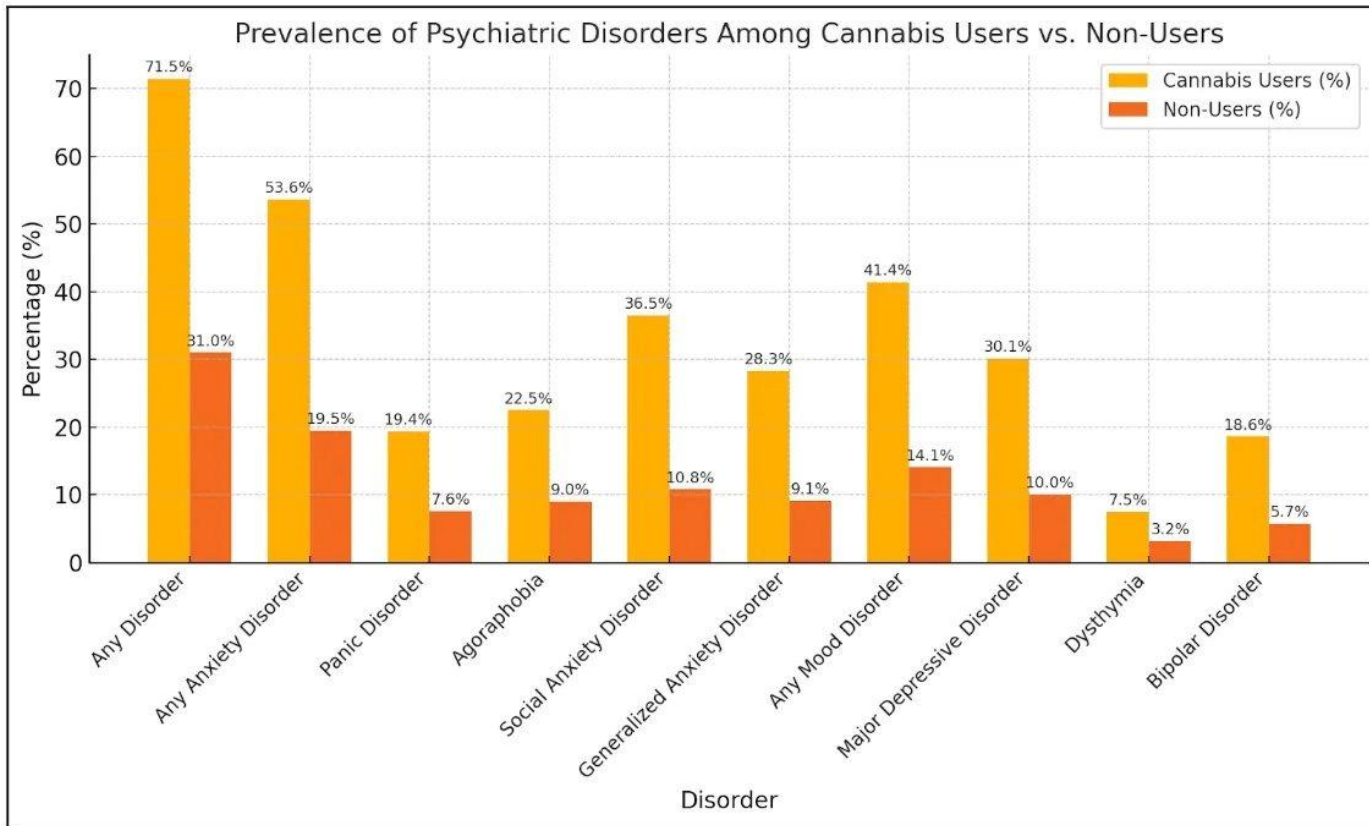
MENTAL HEALTH EFFECTS



- ❖ These occur most frequently when someone has a personal or family history of mental health disorders, specifically in male teenagers and adults:
- ❖ Psychosis
 - ❖ A temporary mental state which can involve extreme paranoia and hearing or seeing things which are not real
- ❖ Schizophrenia
 - ❖ A long-term mental health disorder that includes symptoms like paranoia, hallucinations, disordered thinking, speech, and behaviour

MENTAL HEALTH EFFECTS DUE TO FREQUENT CANNABIS USAGE

- ❖ These effects of cannabis consumption can be frustrating or distressing:
 - ❖ Harm short and long-term memory
 - ❖ Harm thought patterns
 - ❖ Harm focus and speech
 - ❖ Having trouble remembering what you just said
 - ❖ Thinking unusual or abnormal thoughts
 - ❖ Becoming distracted or having trouble concentrating
 - ❖ Having trouble forming sentences
 - ❖ Experiencing delayed speech are all changes of brain function
- ❖ Cannabis impairs multiple skills required for safe driving



PHYSICAL HEALTH EFFECTS DUE TO SHORT-TERM CANNABIS USAGE



- ❖ Increase heart rate and blood pressure
- ❖ Make eyes bloodshot
- ❖ Cause dizziness
- ❖ Headaches
- ❖ Vomiting
- ❖ Affect a person's ability to drive or operate equipment

PHYSICAL HEALTH EFFECTS DUE TO LONG-TERM CANNABIS USAGE

- ❖ Increase the risk of heart attack and stroke (cardiovascular issues)
- ❖ Increase the risk of testicular cancer
- ❖ Gastrointestinal issues
- ❖ Oral issues
- ❖ If inhaled:
 - ❖ Harm the lungs if inhaled
 - ❖ Cause chronic bronchitis
 - ❖ Cause wheezing
 - ❖ Cause phlegm
 - ❖ Trigger severe nausea and repeated vomit




CANNABIS VAPING

- ❖ Increases the risk of developing acute lung disease
 - ❖ Cannabidiol (CBD) found in cannabis:
 - ❖ Damages lung tissue
 - ❖ Promotes inflammation
 - ❖ Increases oxidative stress in the lungs
 - ❖ Damages lung cells
 - ❖ Kills neutrophils
 - ❖ Is toxic to small airway epithelial cells
 - ❖ Decreases the integrity of the lung epithelial barrier
 - ❖ Leads to a significantly lower number of pulmonary interstitial macrophages
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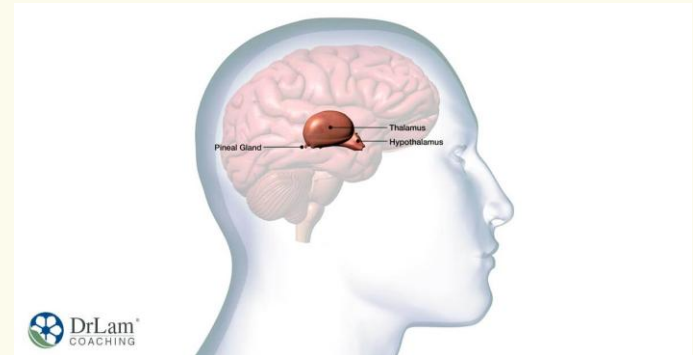
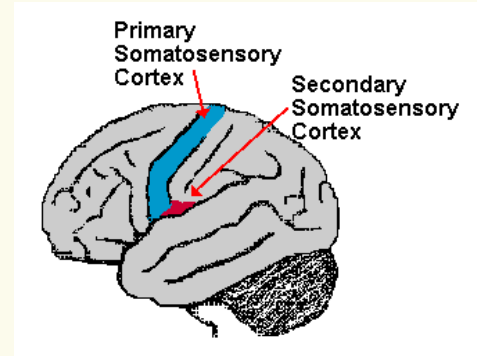


EFFECTS IN ANIMALS BEFORE LEGALIZATION

- ❖ A study conducted in 2016 showed that tetrahydrocannabinol (THC) made rats lazy
 - ❖ Made rats less willing to try a "cognitively demanding task."
 - ❖ THC is the main psychoactive ingredient in marijuana
 - ❖ When the 29 rats were given THC, they wanted to perform the easy challenge even though they would receive a smaller reward
 - ❖ This study helped prompt more research to fully understand what THC does to the human brain to alter decision-making
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EFFECTS IN ANIMALS AFTER LEGALIZATION

- ❖ A study conducted in 2023 showed that vapourized cannabis altered neural activity in laboratory rats. Specifically in the:
 - ❖ Paraventricular nucleus of the hypothalamus
 - ❖ Paraventricular thalamic nucleus
 - ❖ Primary somatosensory cortex.
- ❖ Cannabis impaired the memory of the laboratory rats
- ❖ The experiment displayed that acute cannabis vapour impairs memory based on the dose





EFFECTS IN ANIMALS AFTER LEGALIZATION

- ❖ A study conducted in 2023 showed that THC exposure in rats induced age related long-lasting alterations in cognitive and motivational processes that regulate the pursuit of rewards
 - ❖ Repeated exposure to a moderate dose of THC can create long-term motivational and cognitive effects in male rats
 - ❖ Especially true when the exposure occurs during adulthood
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CONCLUSION

- ❖ Cannabis consumption in humans causes harm to their mental and physical health
- ❖ High and low-risk cannabis consumption can cause mental and physical health effects
- ❖ Excessive cannabis use can lead to addiction, called cannabis use disorder
- ❖ Marijuana addiction is more harmful than cannabis use disorder and affects the mesolimbic system
- ❖ The progression to cannabis use disorder is complex, as are the complications
- ❖ Before the legalization of cannabis in Canada, few studies were conducted regarding this issue
- ❖ One study before the legalization of cannabis in Canada revealed that cannabis made rats less willing to try a "cognitively demanding task."
- ❖ The results of studies conducted after legalization illustrated that cannabis altered neural activity, impaired memory, and could create long-term motivational and cognitive effects on rats
- ❖ This poses the question of why cannabis was legalized in Canada

WHAT'S NEXT

- ❖ One major question which arises is why cannabis was legalized in Canada, especially if it has major negative impacts on humankind
- ❖ To take this project further, I could investigate the process the Government of Canada used to legalize cannabis
- ❖ Another research project could be constructed and then taken further if the results are accurate and logical.
 - ❖ I could explore how cannabis is used to treat various medical conditions and if more diseases can be treated with it
- ❖ If more diseases can be treated with cannabis, this can lead to breakthroughs in medicine.
 - ❖ If proven successful, cannabis treatment could potentially improve and/or save people's lives which could help individuals and society at large.
 - ❖ Could also create more studies which can further society's knowledge and understanding of this topic.