**Supplementary Material**

**Supplementary Questionnaire 1: Survey Tool**

**Opinion Survey**

1. **In your opinion, what is the safest way to use marijuana?**
* Smoking
* Vaping bud (using a device to inhale marijuana vapor)
* Vaping concentrate or liquid (using a device to inhale marijuana vapor)
* Edibles (using marijuana in liquid or solid form, such as tea, cookies, brownies, etc.)
* Dabbing concentrate (using high heat to inhale hash oil)
* There is no safe way to use marijuana
1. **What do you believe are the benefits of marijuana? (Check all that apply)**
* Pain management
* Treatment of disease (such as epilepsy or multiple sclerosis)
* Help decreasing or stopping other medicines
* Relief from stress, anxiety, or depression
* Improved sleep
* Improved appetite
* Improved focus or concentration
* Improved creativity
* Increased energy
* Other benefit: \_\_\_\_\_
* Marijuana has no benefits
1. **Which benefit of marijuana do you believe is most important?**
* Pain management
* Treatment of disease (such as epilepsy or multiple sclerosis)
* Help decreasing or stopping other medicines
* Relief from stress, anxiety, or depression
* Improved sleep
* Improved appetite
* Improved focus or concentration
* Improved creativity
* Increased energy
* Other benefit: \_\_\_\_\_
* Marijuana has no benefits
1. **Where do you get information about the benefits of marijuana? (Check all that apply)**
* Friends
* Relatives
* Health Professional (doctor, nurse, etc.)
* Politician
* Law Enforcement Professional
* Media Platform (TV, radio, newspaper, etc.)
* Google or other internet searches
* Social Media Platform (Twitter, Facebook, Snapchat, etc.)
* Advertisement (commercial, billboard, etc.)
1. **What do you believe are the risks of marijuana? (Check all that apply)**
* Increase in stress, anxiety, or depression
* Addiction to marijuana
* Increased use of other drugs
* Decrease in energy
* Disrupted sleep
* New or worsening health problems
* Impaired memory
* Decrease in Intelligence (IQ)
* Personal or relationship problems
* Legal Problems
* Other risk: \_\_\_\_\_
* Marijuana has no risks
1. **Which risk of marijuana do you believe is most important?**
* Increase in stress, anxiety, or depression
* Addiction to marijuana
* Increased use of other drugs
* Decrease in energy
* Disrupted sleep
* New or worsening health problems
* Impaired memory
* Decrease in Intelligence (IQ)
* Personal or relationship problems
* Legal Problems
* Other risk: \_\_\_\_\_
* Marijuana has no risks
1. **Where do you get information about the risks of marijuana? (Check all that apply)**
* Friends
* Relatives
* Health Professional (doctor, nurse, etc.)
* Politician
* Law Enforcement Professional
* Media Platform (TV, radio, newspaper, etc.)
* Google or other internet searches
* Social Media Platform (Twitter, Facebook, Snapchat, etc.)
* Advertisement (commercial, billboard, etc.)
* Marijuana dispensary or other marijuana industry sources (conventions, trade publications, etc.)
* Other: \_\_\_\_
1. **Which information source about the benefits and risks of marijuana is the most influential for you?**
* Friends
* Relatives
* Health Professional (doctor, nurse, etc.)
* Politician
* Law Enforcement Professional
* Media Platform (TV, radio, newspaper, etc.)
* Google or other internet searches
* Social Media Platform (Twitter, Facebook, Snapchat, etc.)
* Advertisement (commercial, billboard, etc.)
* Marijuana dispensary or other marijuana industry sources (conventions, trade publications, etc.)
* Other: \_\_\_\_
1. **How much do people risk harming themselves physically or in other ways when they smoke marijuana once a day?**
* No risk
* Slight risk
* Moderate risk
* Great risk
1. **How much do people risk harming themselves physically or in other ways when they smoke marijuana once or twice a week?**
* No risk
* Slight risk
* Moderate risk
* Great risk
1. **How much do people risk harming themselves physically or in other ways when they smoke marijuana once a month?**
* No risk
* Slight risk
* Moderate risk
* Great risk
1. **How addictive is marijuana?**
* Very addictive
* Somewhat addictive
* Not at all addictive

**Please rate your level of agreement for questions 13 through 15.**

1. **Edible marijuana *prevents* health problems.**
* Strongly disagree
* Somewhat disagree
* Somewhat agree
* Strongly agree
1. **Vaping marijuana *prevents* health problems.**
* Strongly disagree
* Somewhat disagree
* Somewhat agree
* Strongly agree
1. **Smoking marijuana *prevents* health problems.**
* Strongly disagree
* Somewhat disagree
* Somewhat agree
* Strongly agree
1. **How safe is *smoking* marijuana every day?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How safe is using *edible* marijuana every day?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How safe is *vaping* marijuana every day?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How safe is it to expose children to secondhand smoke from marijuana?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How safe is it to expose adults to secondhand smoke from marijuana?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How safe is it for pregnant women to use marijuana?**
* Completely unsafe
* Somewhat unsafe
* Somewhat safe
* Completely safe
1. **How does smoking one marijuana joint a day compare to drinking one glass of wine a day?**
* Smoking one marijuana joint a day is ***much less safe***than drinking one glass of wine a day
* Smoking one marijuana joint a day is ***somewhat less safe*** than drinking one glass of wine a day
* Smoking one marijuana joint a day is ***as safe as*** drinking one glass of wine a day
* Smoking one marijuana joint a day is ***somewhat safer*** than drinking one glass of wine a day
* Smoking one marijuana joint a day is ***much safer*** than drinking one glass of wine a day
1. **How does smoking one marijuana joint a day compare to smoking one cigarette a day?**
* Smoking one marijuana joint a day is ***much less safe***than smoking one cigarette a day
* Smoking one marijuana joint a day is ***somewhat less safe*** than smoking one cigarette a day
* Smoking one marijuana joint a day is ***as safe as*** smoking one cigarette a day
* Smoking one marijuana joint a day is ***somewhat safer*** than smoking one cigarette a day
* Smoking one marijuana joint a day is ***much safer*** than smoking one cigarette a day
1. **How does secondhand smoke from marijuana compare to secondhand smoke from tobacco?**
* Secondhand smoke from marijuana is ***much less safe***than secondhand smoke from tobacco
* Secondhand smoke from marijuana is ***somewhat less safe*** than secondhand smoke from tobacco
* Secondhand smoke from marijuana is ***as safe as*** secondhand smoke from tobacco
* Secondhand smoke from marijuana is ***somewhat safer*** than secondhand smoke from tobacco
* Secondhand smoke from marijuana is ***much safer*** than secondhand smoke from tobacco
1. **How does driving under the influence of marijuana compare to driving under the influence of alcohol?**
* Driving under the influence of marijuana is ***much less safe***than driving under the influence of alcohol
* Driving under the influence of marijuana is ***somewhat less safe*** than driving under the influence of alcohol
* Driving under the influence of marijuana is ***as safe as*** driving under the influence of alcohol
* Driving under the influence of marijuana is ***somewhat safer*** than driving under the influence of alcohol
* Driving under the influence of marijuana is ***much safer*** than driving under the influence of alcohol

1. **How does using marijuana daily impact *mental health*?**
* Significantly harms
* Somewhat harms
* Has no effect
* Somewhat improves
* Significantly improves
1. **How does using marijuana daily impact *school success*?**
* Significantly harms
* Somewhat harms
* Has no effect
* Somewhat improves
* Significantly improves
1. **How does using marijuana daily impact *job success?***
* Significantly harms
* Somewhat harms
* Has no effect
* Somewhat improves
* Significantly improves
1. **How does using marijuana daily impact *relationships (family, friends, or other)*?**
* Significantly harms
* Somewhat harms
* Has no effect
* Somewhat improves
* Significantly improves

**Exposure Survey**

1. **Have you ever used marijuana?**
* Yes
* No

*Yes: Q. 29*

*No: Finished*

1. **How old were you the first time you used marijuana?**
* Age: \_\_\_\_\_\_\_
1. **How long has it been since you last used marijuana?**
* Within the past 30 days
* More than 30 days but within the past 6 months
* More than 6 months but within the past 12 months
* More than 12 months ago

*Within past 30 days: Q. 31 then proceed to Q. 32*

*More than 30 days but within the past 6 months/More than 6 months but within the past 12 months: Skip Q.31, proceed to Q. 32*

*More than 12 months ago: Finished*

1. **In what form(s) have you used marijuana in the last 30 days? (Check all that apply)**
* Smoking
* Vaping
* Edibles
* Concentrate
* Topically
1. **In what form(s) have you used marijuana in the last year? (Check all that apply)**
* Smoking
* Vaping
* Edibles
* Concentrate
* Topically

**Supplementary Table 1**. **Status of Marijuana Legalization by State at Time of Survey Administration**

**Marijuana Legal Status by State**

|  |  |  |
| --- | --- | --- |
| **Recreational** | **Medical** | **No Legal Status\*** |
| Alaska California ColoradoMaine Massachusetts Nevada Oregon Washington Washington DC | ArizonaArkansasConnecticut DelawareFlorida Hawaii Illinois Louisiana Maryland MichiganMinnesotaMontana New Hampshire New JerseyNew MexicoNew YorkNorth DakotaOhioPennsylvania Rhode Island Vermont  | Alabama Georgia Indiana IowaKentuckyMississippiMissouri North CarolinaOklahoma South Carolina Tennessee TexasUtahVirginia Wisconsin Wyoming IdahoKansasNebraskaSouth Dakota West Virginia |

\*States designated as “No Legal Status” included states with limited CBD laws

**Supplementary Table 2. Baseline Characteristics of Participants Grouped by Legalization Status of the State**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Recreational** | **Medical** | **Non-Legal** | **p-value** |
| **Age** |  |  |  | 0.79 |
| 18-34 | 519 (27.7%) | 1080 (28%) | 943 (28.8%) |  |
| 35-49 | 475 (25.3%) | 916 (23.7%) | 782 (23.9%) |  |
| 50-64 | 507 (27%) | 1053 (27.3%) | 906 (27.7%) |  |
| 65+ | 375 (20%) | 809 (21%) | 638 (19.5%) |  |
| **Gender** |  |  |  | 0.96 |
| Male | 902 (48.1%) | 1846 (47.9%) | 1576 (48.2%) |  |
| Female | 974 (51.9%) | 2011 (52.1%) | 1693 (51.8%) |  |
| **Race** |  |  |  | <.0001 |
| White | 1019 (54.3%) | 2574 (66.7%) | 2180 (66.7%) |  |
| Black | 101 (5.4%) | 489 (12.7%) | 477 (14.6%) |  |
| Hispanic | 479 (25.5%) | 523 (13.6%) | 429 (13.1%) |  |
| Other | 277 (14.8%) | 273 (7.1%) | 183 (5.6%) |  |
| **Education** |  |  |  | 0.001 |
| High school or less | 673 (35.9%) | 1543 (40%) | 1358 (41.5%) |  |
| Some college | 546 (29.1%) | 1071 (27.8%) | 963 (29.4%) |  |
| Bachelor’s degree or higher | 658 (35.1%) | 1243 (32.2%) | 949 (29%) |  |
| **Current Employment Status** |  |  |  | 0.67 |
| Working | 1168 (62.3%) | 2367 (61.4%) | 2044 (62.5%) |  |
| Not Working | 708 (37.7%) | 1491 (38.6%) | 1225 (37.5%) |  |
| **Household Income** |  |  |  | 0.003 |
| <$20,000 | 219 (11.7%) | 448 (11.6%) | 408 (12.5%) |  |
| $20,000-49,999 | 380 (20.2%) | 880 (22.8%) | 816 (25%) |  |
| $50,000-74,999 | 307 (16.4%) | 672 (17.4%) | 589 (18%) |  |
| $75,000 or greater | 971 (51.7%) | 1858 (48.2%) | 1457 (44.6%) |  |

**Supplementary Table 3. Baseline Characteristics of Knowledge Panel (KP) Respondents Compared to National Survey of Drug Abuse and Health (NSDUH) Respondents (US Adults 18 Years and Older)**

|  |  |  |  |
| --- | --- | --- | --- |
|   |   | **KP 2017** **Weighted data****N = 9003** | **NSDUH 2015** **Weighted data****N = 43,561** |
|  |  | **N (%)** | **N (%)** |
| **Age** (years) |  |  |  |
|  | 18-34 | 2543 (29%) | 23,637 (30%) |
|  | 35-49 | 2172 (24%) | 11,164 (25%) |
|  | 50-64 | 2466 (27%) | 5,157 (26%) |
|  | 65+ | 1822 (20%) | 3,598 (19%) |
| **Gender** |  |  |  |
|  | Male | 4325 (48%) | 19,828 (48%) |
|  | Female | 4678 (52%) | 23,733 (52%) |
| **Race** |  |  |  |
|  | White | 5772 (64%) | 26,025 (65%) |
|  | Black | 1067 (12%) | 5,502 (12%) |
|  | Hispanic | 1430 (16%) | 7,648 (15%) |
|  | Other | 734 (8%) | 4,386 (8%) |
| **Education** |  |  |
|  | High school or less | 3573 (39%) | 18,081 (40%) |
|  | Some college | 2579 (29%) | 14,504 (30%) |
|  | Bachelor’s degree or higher | 2850 (32%) | 10,976 (30%) |
| **Employment Status** |  |  |
|  | Working | 5579 (62%) | 29,183 (62%) |
|  | Not Working | 3424 (38%) | 14,378 (38%) |
| **Mean Household size** | 3 | 3b |
| **Household Income** |  |  |
|  | <$20,000 | 1074 (12%) | 9,703 (18%) |
|  | $20,000-49,999 | 2075 (23%) | 14,015 (30%) |
|  | $50,000-74,999 | 1567 (17%) | 6,770 (17%) |
|   | $75,000 or greater | 4287 (48%) | 13,073 (35%) |
| b mean household size was calculated by considering respondents in the “6 or more category” as a value of 6 |

**Supplementary Table 4. Comparison of Views of Residents of Recreational States on Benefits and Risks of Marijuana Use Compared to Other States After Adjusting for Baseline Population Characteristics.**

|  |  |  |
| --- | --- | --- |
|   | **Unadjusted** **OR [95% CI]** | **Adjusted** **OR [95% CI]** |
| **What do you believe are the benefits of marijuana?** |  |  |
| Pain Management | 1.46 [1.3, 1.63] | 1.56 [1.39, 1.75] |
| Treatment of disease (such as epilepsy or multiple sclerosis) | 0.87 [0.79, 0.97] | 0.93 [0.84, 1.04] |
| Relief from stress, anxiety, or depression | 1.3 [1.17, 1.44] | 1.39 [1.25, 1.55] |
| Improved appetite | 1.33 [1.2, 1.48] | 1.47 [1.31, 1.63] |
| Improved sleep | 1.44 [1.29, 1.6] | 1.56 [1.4, 1.75] |
| Help decreasing or stopping other medicines | 1.28 [1.14, 1.43] | 1.38 [1.23, 1.56] |
| Improved creativity | 1.17 [1.02, 1.34] | 1.27 [1.1, 1.46] |
| Improved focus or concentration | 0.96 [0.81, 1.13] | 1.06 [0.89, 1.26] |
| Increased energy | 1.15 [0.96, 1.37] | 1.22 [1.01, 1.47] |
| Other benefit | 0.95 [0.75, 1.19] | 0.91 [0.71, 1.15] |
| Marijuana has no benefits | 0.71 [0.61, 0.82] | 0.69 [0.59, 0.79] |
| **What do you believe are the risks of marijuana?** |  |  |
| Addiction to marijuana  | 1.02 [0.92, 1.13] | 0.95 [0.86, 1.05] |
| Legal Problems  | 0.72 [0.65, 0.79] | 0.73 [0.65, 0.81] |
| Increased use of other drugs  | 0.94 [0.85, 1.04] | 0.93 [0.83, 1.04] |
| Impaired memory  | 1.25 [1.13, 1.39] | 1.28 [1.15, 1.42] |
| Decrease in Intelligence (IQ)  | 1.18 [1.06, 1.32] | 1.17 [1.05, 1.31] |
| Personal or relationship problems  | 1.13 [1.01, 1.25] | 1.12 [1, 1.24] |
| New or worsening health problems  | 1.08 [0.94, 1.23] | 0.97 [0.83, 1.15] |
| Decrease in energy  | 1.33 [1.19, 1.49] | 1.38 [1.24, 1.55] |
| Increase in stress, anxiety, or depression  | 1.26 [1.1, 1.45] | 1.25 [1.08, 1.43] |
| Disrupted sleep  | 1.01 [0.86, 1.19] | 0.97 [0.83, 1.15] |
| Other risk | 1.24 [1, 1.53] | 1.24 [1, 1.53] |
| Marijuana has no risks  | 0.97 [0.81, 1.16] | 1.04 [0.86, 1.25] |

**Supplementary Table 5. Comparison of Views of Residents of Recreational States on Important Public Health Domains Pertaining to Marijuana Compared to Other States After Adjusting for Baseline Population Characteristics**

|  |  |
| --- | --- |
|  | **Views of Residents of recreational states compared to other states** |
|  | **Unadjusted OR****(95% CI)** | **Adjusted OR\*****(95% CI)** |
| Smoking one marijuana joint a day is somewhat safer or much safer than smoking one cigarette per day | 1.26 [1.14, 1.4] | 1.38[1.23, 1.54] |
| Marijuana is not at all addictive | 1.02[0.9, 1.15] | 1.05[0.93, 1.19] |
| It is somewhat safe or completely safe for pregnant women to use marijuana  | 1.02[0.84, 1.23] | 1.11[0.9, 1.36] |
| Driving under the influence of marijuana is somewhat safer or much safer than driving under the influence of alcohol | 0.94 [0.84, 1.06] | 1.03[0.91, 1.16] |
| It is somewhat safe or completely safe to expose adults to secondhand smoke from marijuana | 1.01 [0.89, 1.16] | 1.06 [0.92, 1.22] |
| It is somewhat safe or completely safe to expose children to secondhand smoke from marijuana  | 0.96 [0.79, 1.17] | 1.02[0.83, 1.25] |
| Secondhand smoke from marijuana is somewhat safer or much safer than secondhand smoke from tobacco  | 1.14 [1.03, 1.27] | 1.23 [1.1, 1.37] |
| Smoking one marijuana joint a day is somewhat safer or much safer than drinking one glass of wine a day  | 1.13 [0.98, 1.31] | 1.21 [1.03, 1.41] |

\*Odds ratios for multivariate models that included each endorsed benefit or risk of marijuana, adjusted for socio-demographic characters (age, gender race, education, income, employment). There was a separate model for each endorsed benefit or risk and the referent in each model was people who did not endorse that benefit or risk.

**Supplementary Table 6. Comparison of Views of Residents of Recreational States on Different Forms of Marijuana Use Preventing Health Problems Compared to Other States After Adjusting for Baseline Population Characteristics**

|  |  |
| --- | --- |
|  | **Views of Residents of recreational states on different forms of Marijuana Preventing Health Problems compared to other states** |
|  | **Unadjusted OR****(95% CI)** | **Adjusted OR\*****(95% CI)** |
| Somewhat agree or strongly agree that **edible** marijuana prevents health problems  | 0.92[0.82, 1.02] | 0.97[0.87, 1.08] |
| Somewhat agree or strongly agree that **vaping** marijuana prevents health problems | 0.92 [0.82, 1.03] | 0.97[0.86, 1.09] |
| Somewhat agree or strongly agree that **smoking** marijuana prevents health problems | 0.88[0.79, 0.99] | 0.94[0.84, 1.07] |

\*Odds ratios for multivariate models that included each endorsed benefit or risk of marijuana, adjusted for socio-demographic characters (age, gender race, education, income, employment). There was a separate model for each endorsed benefit or risk and the referent in each model was people who did not endorse that benefit or risk.