
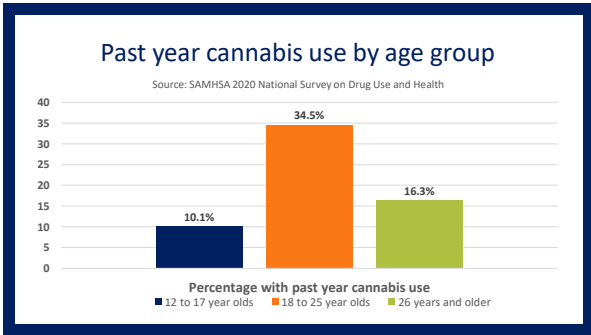


Findings from Washington's Young Adult Health Survey

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Daniela Acuna, Mary E. Larimer
University of Washington, Psychiatry & Behavioral Sciences
July 26, 2022



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Washington Young Adult Health Survey (YAHS)

- Funded by Division of Behavioral Health & Recovery (DBHR):
 - Sarah Mariani
 - Sandy Salivaras
- Young Adult Health Survey Team:
 - Jason Kilmer
 - Mary Larimer
 - Rachel Cooper
 - Daniela Acuna
 - Isaac Rhew

Washington State Health Care Authority (Division of Behavioral Health and Recovery) (PI: Kilmer).

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Young Adult Health Survey Recruitment

- Aimed to collect all Year One data before the first store opened in July 2014
 - 69.3% collected before the first store opened
- Remaining 30.7% collected into August 2014
 - Only 18 stores had opened statewide in July
 - Only 31 stores had opened by August

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Young Adult Health Survey Recruitment

- Participants recruited using a combination of direct mail advertising to a random sample from DOL, as well as online advertising (Facebook, Craigslist, Instagram, study web site, etc.)
- Assessed demographics on ongoing basis and modified strategies to recruit under-represented groups
- Convenience sample, not a random sample

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Post-stratification weighting and analyses

- To improve generalizability, used post-stratification weights based on gender, race, and geographic region
- Weighted results are consistently very similar to non-weighted

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Young Adult Health Survey

- Each year we collect data from a new cohort of 18-25 year olds

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Sample sizes over time

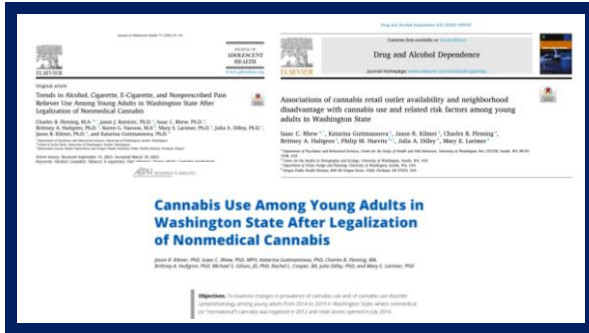
• Cohort 1 (2014):	2,101
• Cohort 2 (2015):	1,675
• Cohort 3 (2016):	2,493
• Cohort 4 (2017):	2,342
• Cohort 5 (2018):	2,412
• Cohort 6 (2019):	1,942
• Cohort 7 (2020)	1,643
• <u>Cohort 8 (2021):</u>	<u>1,756</u>
• TOTAL:	16,364

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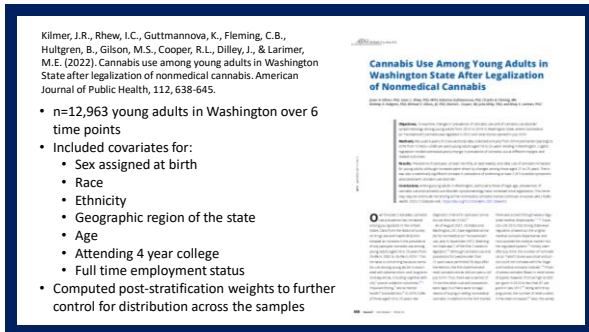
Young Adult Health Survey

- Each year we follow up with previous cohorts
- We have launched our 9th year of data collection this summer (and the cohort we recruited as 18-25 year olds in 2014 is now 26-33)
- Dr. Katarina Guttmannova applied for and obtained a secondary data analysis grant (NIDA grant R01DA047996, PI: Guttmannova)

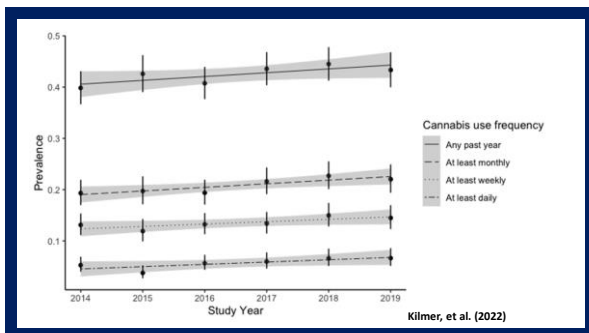
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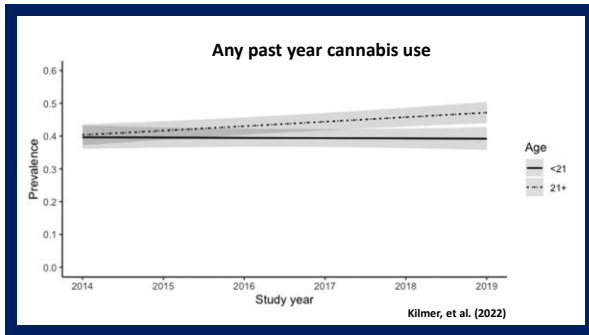


11

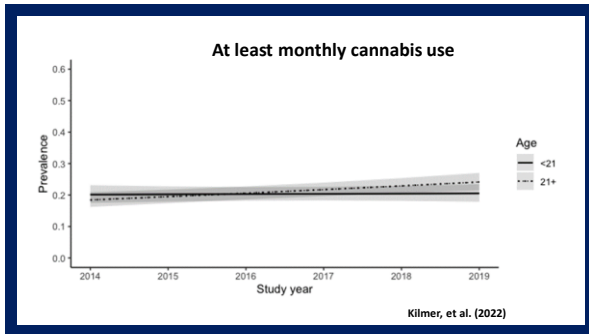


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13




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MaCoun (2013), *Frontiers in Psychiatry*

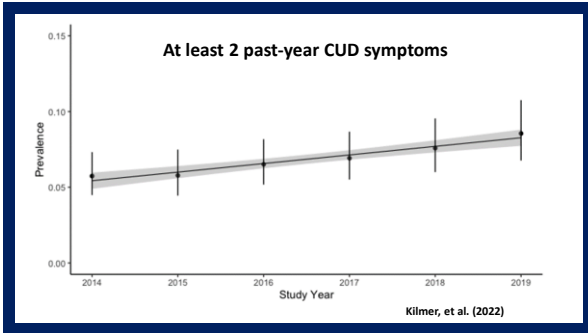
Criterion	DSM-IV substance dependence	DSM-5 substance use disorder
Tolerance	✓	✓
Withdrawal	✓	✓
Taken more/longer than intended	✓	✓
Desire/unsuccessful efforts to quit use	✓	✓
Great deal of time taken by activities involved in use	✓	✓
Use despite knowledge of problems associated with use	✓	✓
Important activities given up because of use	✓	✓
Recurrent use resulting in a failure to fulfill important role obligations		✓
Recurrent use resulting in physically hazardous behavior (e.g., driving)		✓
Continued use despite recurrent social problems associated with use		✓
Craving for the substance		✓

DSM-5 Cannabis Use Disorder Criteria



Mild: 2-3 symptoms
 Moderate: 4-5 symptoms
 Severe: 6+ symptoms

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What have trends looked like in the two years that followed?

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Any past year "recreational"/non-medical/personal use:
Final five cohorts higher than cohort 1

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
19-20	43.27%	44.82%	40.94%	43.41%	44.42%	43.68%	40.39%	44.89%	43.24%
21-25	43.67%	47.09%	46.55%	49.75%	50.87%	49.61%	52.29%	55.21%	49.15%
TOTAL	43.51%	46.29%	44.76%	47.43%	48.49%	47.24%	47.94%	51.19%	46.99%

Regression models:
Cohort 1 vs. Cohorts 2-8:
Compared to Cohort 1, significantly higher prevalence for

- Cohort 4 (t=2.29, p<.05; odds ratio = 1.171)
- Cohort 5 (t=2.96, p<.01; odds ratio = 1.222)
- Cohort 6 (t=2.11, p<.05; odds ratio = 1.153)
- Cohort 7 (t=2.41, p<.05; odds ratio = 1.196)
- Cohort 8 (t=4.19, p<.001; odds ratio = 1.361)

Source: Young Adult Health Survey, Preliminary Data Report to DBHR, Kilmer (PI)

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Any past year "recreational"/non-medical/personal use: Increasing over time

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	43.27%	44.82%	40.94%	43.41%	44.42%	43.68%	40.39%	44.89%	43.24%
21-25	43.67%	47.09%	46.55%	49.75%	50.87%	49.61%	52.29%	55.21%	49.15%
TOTAL	43.51%	46.29%	44.76%	47.43%	48.49%	47.24%	47.94%	51.19%	46.99%

Regression models:
Linear trend from Cohort 1 to Cohort 8:
 Significant (t=4.27, p<.001)
 Odds ratio = 1.030 (odds of recreational marijuana use are 3.0% higher with each successive year/cohort)
Age by cohort interaction:
 Significant (t=2.65, p<.01)

Source: Young Adult Health Survey,
Preliminary Data Report to DBHR, Kilmer (PI)

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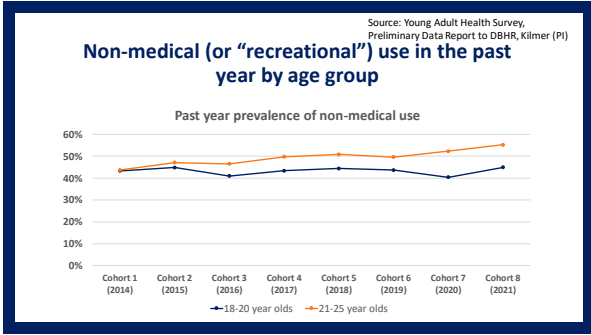
Any past year "recreational"/non-medical/personal use: Increasing over time

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	43.27%	44.82%	40.94%	43.41%	44.42%	43.68%	40.39%	44.89%	43.24%
21-25	43.67%	47.09%	46.55%	49.75%	50.87%	49.61%	52.29%	55.21%	49.15%
TOTAL	43.51%	46.29%	44.76%	47.43%	48.49%	47.24%	47.94%	51.19%	46.99%

Model split by over/under 21
18-20:
 No significant linear trend
21-25:
 Significant increasing trend over time (t=5.46, p<.001)
 Odds ratio = 1.058 (odds of recreational marijuana use are 5.8% higher with each successive year/cohort)

Source: Young Adult Health Survey,
Preliminary Data Report to DBHR, Kilmer (PI)

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**At least monthly "recreational"/non-medical/personal use:
Final four cohorts higher than cohort 1**

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	24.08%	24.88%	21.19%	23.56%	27.06%	23.24%	23.17%	24.16%	23.95%
21-25	23.63%	23.56%	25.12%	28.07%	27.88%	29.55%	33.81%	33.86%	27.87%
TOTAL	23.81%	24.03%	23.84%	26.46%	27.62%	27.09%	29.99%	30.11%	26.45%

Regression models:

Cohort 1 vs. Cohorts 2-8:

- Compared to Cohort 1, significantly higher prevalence for
 - Cohort 5 (t=2.56, p<.01; odds ratio = 1.221)
 - Cohort 6 (t=2.08, p<.05; odds ratio = 1.189)
 - Cohort 7 (t=3.73, p<.001; odds ratio = 1.365)
 - Cohort 8 (t=3.88, p<.001; odds ratio = 1.379)

Source: Young Adult Health Survey,
Preliminary Data Report to DBHR, Kilmer (PI)

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**At least monthly "recreational"/non-medical/personal use:
Increasing over time**

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	24.08%	24.88%	21.19%	23.56%	27.06%	23.24%	23.17%	24.16%	23.95%
21-25	23.63%	23.56%	25.12%	28.07%	27.88%	29.55%	33.81%	33.86%	27.87%
TOTAL	23.81%	24.03%	23.84%	26.46%	27.62%	27.09%	29.99%	30.11%	26.45%

Regression models:

Linear trend from Cohort 1 to Cohort 8:

- Significant (t=5.53, p<.001)
 - Odds ratio = 1.053 (odds of recreational marijuana use are 5.3% higher with each successive year/cohort)
- Age by cohort interaction:
- Significant (t=3.90, p<.001)

Source: Young Adult Health Survey,
Preliminary Data Report to DBHR, Kilmer (PI)

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**At least monthly "recreational"/non-medical/personal use:
Increasing over time**

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	24.08%	24.88%	21.19%	23.56%	27.06%	23.24%	23.17%	24.16%	23.95%
21-25	23.63%	23.56%	25.12%	28.07%	27.88%	29.55%	33.81%	33.86%	27.87%
TOTAL	23.81%	24.03%	23.84%	26.46%	27.62%	27.09%	29.99%	30.11%	26.45%

Models split by over/under 21

18-20:

No significant linear trend

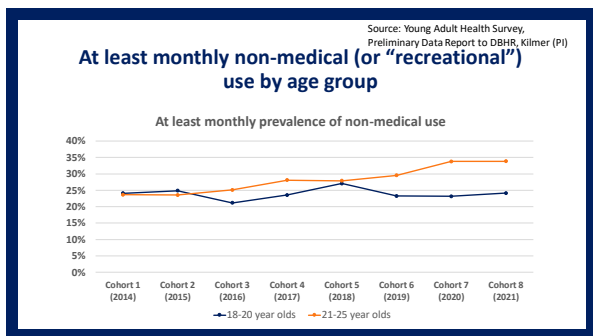
21-25:

Significant increasing trend over time (t=6.82, p<.001)

Odds ratio = 1.083 (odds of recreational marijuana use are 8.3% higher with each successive year/cohort)

Source: Young Adult Health Survey,
Preliminary Data Report to DBHR, Kilmer (PI)

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At least weekly "recreational"/non-medical/personal use: Final two cohorts higher than cohort 1

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	16.51%	13.43%	13.30%	15.40%	18.56%	14.41%	15.21%	16.86%	15.57%
21-25	16.86%	16.21%	18.55%	18.42%	19.22%	21.39%	24.07%	24.59%	19.67%
TOTAL	16.72%	15.23%	16.85%	17.37%	19.03%	18.59%	20.84%	21.62%	18.18%

Regression models:
Cohort 1 vs. Cohort 2-8:
 Compared to Cohort 1, significantly higher prevalence for
 • Cohort 7 (t=2.86, p<.01; odds ratio = 1.311)
 • Cohort 8 (t=3.37, p<.001; odds ratio = 1.374)

Source: Young Adult Health Survey, Preliminary Data Report to DBHR, Kilmer (PI)

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At least weekly "recreational"/non-medical/personal use: Increasing over time

	Cohort 1 (2014)	Cohort 2 (2015)	Cohort 3 (2016)	Cohort 4 (2017)	Cohort 5 (2018)	Cohort 6 (2019)	Cohort 7 (2020)	Cohort 8 (2021)	Total across 8 years
18-20	16.51%	13.43%	13.30%	15.40%	18.56%	14.41%	15.21%	16.86%	15.57%
21-25	16.86%	16.21%	18.55%	18.42%	19.22%	21.39%	24.07%	24.59%	19.67%
TOTAL	16.72%	15.23%	16.85%	17.37%	19.03%	18.59%	20.84%	21.62%	18.18%

Regression models:
Linear trend from Cohort 1 to Cohort 8:
 Significant (t=4.95, p<.001)
 Odds ratio = 1.055 (odds of recreational marijuana use are 5.3% higher with each successive year/cohort)
Age by cohort interaction:
 Significant (t=2.00, p<.05)

Source: Young Adult Health Survey, Preliminary Data Report to DBHR, Kilmer (PI)

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WHERE DO PEOPLE GET MARIJUANA, 18-20 year olds

	Cohort 1 2014	Cohort 2 2015	Cohort 3 2016	Cohort 4 2017	Cohort 5 2018	Cohort 6 2019	Cohort 7 2020	Cohort 8 2021
From friends	72.80%	70.24%	69.68%	77.03%	69.70%	60.74%	60.87%	59.63%
Gave money to someone	25.29%	26.47%	24.72%	41.40%	39.29%	45.17%	40.55%	39.80%
Got it from someone w/ medical mg. card...	17.60%	14.12%	4.30%	5.24%	2.79%	2.82%	4.27%	4.58%
Got it from a med. dispensary	13.65%	18.99%	5.58%	4.72%	6.50%	8.28%	8.41%	12.03%
Got it at a party	22.99%	22.14%	23.08%	24.92%	20.12%	22.91%	8.82%	24.67%
Got it from family	5.65%	5.18%	11.75%	9.75%	11.24%	10.92%	13.49%	7.09%
Got it some other way	11.64%	4.12%	6.12%	9.62%	7.30%	6.21%	5.04%	6.24%
Bought from retail store	0.99%	4.58%	1.73%	1.92%	2.02%	3.51%	1.98%	1.03%
Got it from parents w/ permission	5.76%	6.02%	13.33%	10.44%	11.49%	12.91%	13.08%	13.93%
Grew it themselves	1.91%	1.15%	1.65%	0.23%	1.47%	2.78%	1.64%	0.42%
Stole it from store/dispensary	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.33%	2.40%

For 18-20 year olds...

- Decreasing
 - * Getting it from friends
 - * Getting it from someone with a medical marijuana card
- Increasing
 - * Giving money to someone
 - * Getting it from parents with permission
 - * Stole it from a store/dispensary are increasing

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WHERE DO PEOPLE GET MARIJUANA, 21-25 year olds

	Cohort 1 2014	Cohort 2 2015	Cohort 3 2016	Cohort 4 2017	Cohort 5 2018	Cohort 6 2019	Cohort 7 2020	Cohort 8 2021
From friends	92.20%	94.80%	92.20%	90.51%	89.80%	79.27%	78.20%	76.48%
Gave money to someone	19.87%	10.72%	8.10%	5.64%	4.97%	3.67%	5.08%	4.61%
Got it from someone w/ medical mg. card...	18.85%	9.41%	2.93%	2.02%	0.17%	0.65%	0.27%	0.62%
Got it from a med. dispensary	20.65%	13.03%	12.60%	9.90%	10.15%	14.23%	14.71%	15.62%
Got it at a party	11.01%	10.76%	10.93%	8.60%	6.54%	5.76%	1.57%	7.12%
Got it from family	11.08%	8.26%	4.08%	7.68%	5.76%	4.37%	4.02%	5.52%
Got it some other way	5.13%	6.08%	3.29%	3.41%	3.71%	3.71%	1.24%	2.11%
Bought from retail store	8.80%	31.86%	72.68%	76.31%	80.96%	78.00%	77.27%	74.43%
Got it from parents w/ permission	4.56%	3.50%	2.02%	4.28%	4.47%	3.15%	2.75%	4.75%
Grew it themselves	1.51%	3.01%	1.49%	1.82%	1.81%	0.71%	1.11%	1.74%
Stole it from store/dispensary	2.84%	0.17%	0.60%	0.29%	0.17%	0.11%	0.97%	0.43%

For 21-25 year olds...

- Decreasing
 - * Getting it from friends
 - * Gave money to someone
 - * Getting it from someone with a medical marijuana card
 - * Getting it at a party
 - * Getting it from family
 - * Getting it some other way
- Increasing
 - * Bought from a retail store

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Driving after marijuana use

"During the past 30 days, how many times did you drive a car or other vehicle within three hours after using cannabis (e.g., marijuana, hashish, edibles)?"

	Cohort 1 2014	Cohort 2 2015	Cohort 3 2016	Cohort 4 2017	Cohort 5 2018	Cohort 6 2019	Cohort 7 2020	Cohort 8 2021
Never	50.59%	55.29%	58.19%	58.56%	58.73%	61.80%	65.00%	66.38%
1 time	14.13%	13.13%	12.50%	12.85%	12.11%	8.32%	9.56%	10.25%
2-3 times	13.28%	12.34%	11.97%	11.97%	11.98%	10.59%	11.66%	10.51%
4-5 times	6.43%	4.35%	3.48%	4.48%	6.04%	4.00%	4.51%	4.39%
6 or more times	15.57%	14.88%	13.85%	12.12%	12.52%	14.21%	9.69%	8.47%

There are declines in driving after marijuana use between cohorts 3-8 and cohort 1 (cohort 3, p<.05; cohort 4, p<.01; cohort 5, p<.05; cohort 6, p<.01; cohort 7, p<.001; cohort 8, p<.001), as well as a significant linear trend [p<.001].

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Medical cannabis

- No significant differences in any past year use nor overall categories of use
- Perceptions of medical use increasing significantly (both a linear trend, and past 5 cohorts higher than cohort 1)

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Other substances

- Significant decreasing trend in:
 - Alcohol, at least once in past year
 - Alcohol, at least monthly
 - Cigarettes, at least once in the past year
 - Pain relievers to get high, at least once in the past year
 - Opiates, at least once in the past year

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Perceived risk of marijuana use continues to decrease;
 Perceived risk of alcohol use increases
 (with exception of 5+ drinks every weekend)

• Marijuana

- Physical risk of occasional marijuana use
- Psychological/emotional risk of occasional marijuana use
- Physical risk of regular marijuana use
- Psychological/emotional risk of regular marijuana use

• Alcohol

- Physical risk of 2 drinks every day
- Psychological risk of 2 drinks every day
- Physical risk of 5+ drinks every weekend
- Psychological risk of 5+ drinks every weekend

Gilson, Kilmer, Fleming, Rhow,
 Calhoun, & Guttmannova (under
 revision)

Source: Young Adult Health Survey,
 Preliminary Data Report to DBHR, Kilmer (PI)

*** significant decreasing linear trend ***
 *** significant increasing linear trend ***

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Wrapping up

- Will have our 9th year of data later in 2022
- Questions/discussion

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Thank you!

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 - Dr. Christine Lee
 - Dr. Katarina Guttmanova
 - Dr. Isaac Rhew
 - Charlie Fleming
 - Dr. Brittney Hultgren
 - Dr. Mike Gilson
 - Dr. Mary Larimer
 - Rachel Cooper
 - Daniela Acuna
- DBHR:
 - Sarah Mariani
 - Sandy Salivaras

This research was supported by National Institute on Drug Abuse grant R01DA047996 (PI: Guttmanova) and a contract with the Washington State Health Care Authority (Division of Behavioral Health and Recovery) (PI: Kilmer).

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