

Eight Years of the Young Adult Health Survey: Highlights and Trends

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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
• Cohort 8 (2021):	1,756
• TOTAL:	16,364

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Young Adult Health Survey

- Each year we follow up with previous cohorts
- About to launch 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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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
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:

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 = 1.163)
- 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:

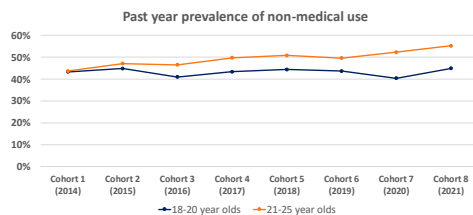
Significant increasing trend over time (t=5.46, p<.001)

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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Non-medical (or "recreational") use in the past
year by age group



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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%

Model split by over/under 21

18-20:

No significant linear trend

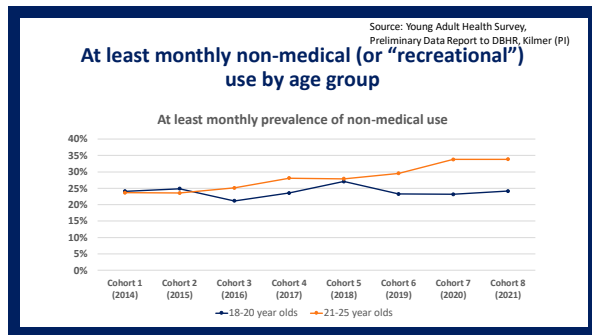
21-25:

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. Cohorts 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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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%

Model split by over/under 21

18-20:

No significant linear trend

21-25:

Significant increasing trend over time ($t=5.62$, $p<.001$)

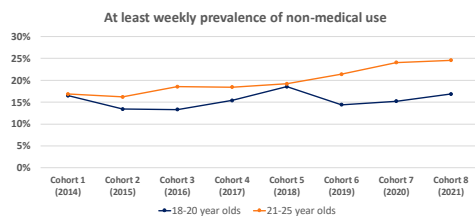
Odds ratio = 1.078 (odds of recreational marijuana use are 7.8% higher with each successive year/cohort)

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

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At least weekly non-medical (or "recreational") use by age group

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



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RECREATIONAL/PERSONAL MARIJUANA USE, NORMS

PERCEPTIONS OF RECREATIONAL MARIJUANA

	Cohort 1 2014	Cohort 2 2015	Cohort 3 2016	Cohort 4 2017	Cohort 5 2018	Cohort 6 2019	Cohort 7 2020	Cohort 8 2021	Although 21.62% use at least weekly (meaning most don't), 68.48% think the typical person their age uses weekly
Never	2.41%	2.42%	1.61%	2.31%	2.06%	1.50%	2.38%	1.92%	
Once a year	2.82%	2.20%	4.76%	2.92%	2.27%	12.63%	2.32%	2.23%	
2 to 3 times a year	8.22%	10.12%	6.73%	6.40%	3.89%	3.31%	2.23%	3.87%	
Every other month	6.98%	7.29%	5.32%	4.59%	3.14%	3.90%	4.42%	3.48%	
Once a month	9.74%	11.15%	10.41%	9.07%	6.88%	5.51%	6.39%	7.07%	
2-3x/month	17.98%	19.68%	19.83%	18.91%	13.47%	13.93%	14.32%	14.04%	
Once per week	12.65%	12.72%	15.43%	13.89%	14.28%	12.91%	12.64%	14.11%	
More than 1x/wk	22.08%	20.70%	21.42%	23.94%	27.12%	25.90%	28.57%	29.17%	
Every other day	9.27%	6.87%	8.56%	8.65%	11.10%	12.25%	13.10%	10.45%	
Every day	6.84%	6.95%	8.96%	10.31%	16.79%	20.03%	14.62%	14.75%	

** In ordinal logistic models, Cohort 4 ($t=2.57$, $p<.01$), Cohort 5 ($t=10.66$, $p<.001$), Cohort 6 ($t=12.35$, $p<.001$), Cohort 7 ($t=9.72$, $p<.001$), and Cohort 8 ($t=9.02$, $p<.001$) have higher perceived recreational marijuana norms compared to cohort 1, but cohort 2 has lower norms compared to cohort 1 ($t=-3.35$, $p<.001$) **

** Overall, a significant increasing linear trend over time ($t=18.28$, $p<.001$) **

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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	72.60%	70.24%	69.68%	77.03%	83.70%	80.74%	80.87%	80.63%
Gave money to someone	22.29%	32.47%	34.72%	41.40%	35.29%	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%	9.02%	7.30%	6.21%	5.04%	6.24%
Bought from retail store	0.99%	4.58%	1.73%	1.82%	2.03%	3.55%	1.58%	1.03%
Got it from parents w/ permission	5.76%	8.65%	13.33%	10.44%	11.49%	12.91%	15.08%	13.91%
Grew it themselves	1.91%	1.15%	1.65%	0.23%	1.47%	2.78%	1.64%	0.42%
Stole it from store/dispensary	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	4.10%	2.40%

For 18-20 year olds...

Decreasing

* Getting it from friends
 * Giving money to 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	92.30%	94.49%	92.30%	90.51%	93.80%	95.17%	90.26%	90.44%
Gave money to someone	19.07%	10.72%	8.10%	5.14%	4.97%	3.67%	5.08%	4.61%
Got it from someone w/ medical mg. card	18.85%	9.41%	2.93%	2.62%	6.17%	0.65%	0.27%	0.62%
Got it from a med. dispensary	20.65%	13.03%	12.60%	9.96%	10.15%	14.23%	14.71%	15.62%
Got it at a party	11.01%	10.76%	10.40%	8.00%	6.54%	5.36%	1.57%	7.12%
Got it from family	11.48%	8.26%	4.08%	7.04%	5.76%	4.37%	4.02%	5.52%
Got it some other way	5.13%	6.48%	3.29%	5.41%	6.71%	3.15%	1.24%	2.11%
Bought from retail store	8.80%	31.86%	72.60%	76.31%	80.56%	76.03%	77.27%	74.43%
Got it from parents w/ permission	4.56%	3.50%	2.02%	4.28%	4.47%	3.35%	2.75%	4.75%
Grew it themselves	1.51%	3.01%	1.49%	1.87%	1.81%	0.71%	1.11%	1.74%
Stole it from store/dispensary	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%	11.98%	10.59%	11.66%	11.24%	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, Rhew,
Calhoun, & Guttmanova (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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Young Adult Health Survey

- About to launch 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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Thank you!

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- | | | |
|-------------------|----------------------------|-------------------|
| • WHY Coalition: | • CSHRB: | • DBHR: |
| • Mary Segawa | • Dr. Christine Lee | • Sarah Mariani |
| • Martha Williams | • Dr. Katarina Guttmannova | • Sandy Salivaras |
| | • Dr. Isaac Rhew | |
| | • Charlie Fleming | |
| | • Dr. Brittney Hultgren | |
| | • Dr. Mike Gilson | |
| | • Dr. Mary Larimer | |
| | • Rachel Cooper | |
| | • Daniela Acuna | |
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