



AMR Workgroup



COLORADO
Department of Revenue

August 22, 2023

1

Today's Agenda

- Explain the current calculation methodology
- Review two analyses of the average market rate data
- Discussion and questions
- Next steps

DOR_TaxRules@state.co.us



COLORADO
Department of Revenue

2

Statutory Background

“Average market rate” means the average price, as determined by the department on a quarterly basis, of all unprocessed retail marijuana that is sold or transferred from retail marijuana cultivation facilities in the state to retail marijuana product manufacturing facilities or retail marijuana stores, less taxes paid on the sales or transfers.



COLORADO
Department of Revenue

3

Statutory Background

An “average market rate” may be based on the purchaser or transferee of unprocessed retail marijuana or on the nature of the unprocessed retail marijuana that is sold or transferred. The “average market rate” must include one or more rates that cover unprocessed marijuana that is allocated to extractions, and the initial rates for these product types must be lower than the rate for unprocessed marijuana that is allocated for direct sale to consumers.



COLORADO
Department of Revenue

4

Average Market Rates (AMRs)

The AMRs are the median market prices for each category of unprocessed retail marijuana and are used to calculate the retail marijuana excise tax under certain conditions.

The Department of Revenue calculates AMRs quarterly using the previous three months of transfers that originated from retail marijuana cultivators and were recorded in the Marijuana Enforcement Tracking Reporting Compliance system or METRC.



COLORADO
Department of Revenue

[Average Market Rate For Unprocessed Retail Marijuana Website](#)

5

Data Used to Calculate AMRs

The data used to calculate the AMR **includes transfers** that meet the following criteria:

- Originated at a retail cultivator
- To retail stores or retail infused product manufacturers
- Unprocessed marijuana
- Between unaffiliated businesses
- Receiver price greater than a penny



COLORADO
Department of Revenue

[Average Market Rate - Methodology](#)

6

AMR Methodology

For each item transferred, prices per pound or unit were calculated using the receiver price and received weight/quantity. Then, for each category, the AMR is determined by the **median price per pound or unit** of all the included transfers.

Median: the middle value when the values are ordered from least to greatest.

Since the July 2017 AMR, the Department has used the median as the AMR instead of the mean.



COLORADO
Department of Revenue

[Average Market Rate - Methodology](#)

7

Current & Prior Retail Marijuana Average Market Rates

Average Market Rate as of:	Bud (\$/lb)	Trim (\$/lb)	Bud Allocated for Extraction (\$/lb)	Trim Allocated for Extraction (\$/lb)	Immature Plant (\$/ea)	Wet Whole Plant (\$/lb)	Seed (\$/ea)	Contaminated Product Allocated for Extraction (\$/lb)
July 1, 2023	\$703	\$300	\$143	\$41	\$13	\$82	\$9	N/A
April 1, 2023	\$649	\$253	\$405	\$51	\$13	\$81	\$8	N/A
January 1, 2023	\$658	\$253	\$350	\$61	\$13	\$101	\$9	N/A
October 1, 2022	\$658	\$249	\$277	\$76	\$13	\$126	\$4	N/A
July 1, 2022	\$709	\$227	\$275	\$120	\$12	\$123	\$4	N/A
April 1, 2022	\$799	\$275	\$228	\$180	\$10	\$130	\$4	N/A
January 1, 2022	\$948	\$354	\$345	\$253	\$10	\$172	\$4	N/A
October 1, 2021	\$1,316	\$425	\$405	\$302	\$10	\$181	\$3	N/A



COLORADO
Department of Revenue

[Average Market Rate - Current & Prior Rates](#)

8

2022 AMR Data Analysis

Goal: Help stakeholders understand the retail marijuana AMR methodology using median prices, mean prices, frequency tables, and histograms

Histograms are visualizations of the frequencies of prices per pound (or count). The shape of the histogram data shows you the overall distribution of the prices in the dataset.

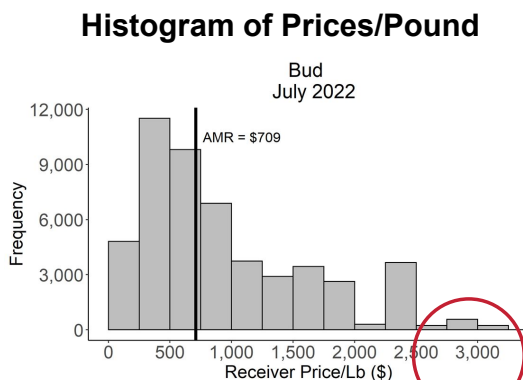


COLORADO
Department of Revenue

[AMR Methodology Analysis - August 2022](#)

9

Distribution of Prices



Conclusion: Generally, the AMR (median) is lower than the mean, because:

Most of the distributions are not normal

The mean is influenced by high priced outliers falling in the right tail of the distribution.



COLORADO
Department of Revenue

[AMR Methodology Analysis - August 2022](#)

10

2023 AMR Data Analysis

Considered two alternative calculations for AMR:

- **Mean:** Calculated by taking the sum of all of the price per unit values and then dividing by the total number of transfers.
- **Weighted Mean:** Calculated by taking the sum of all of the transfer prices times the transfer weights (or counts) and dividing that by the total weight (or count).



Comparison of Calculations

July 2023 (transfers from March 1 - May 31)

Statistic	Bud	Trim	Bud Extract	Trim Extract	Immature Plant	Wet Whole Plant	Seeds
Median (AMR)	\$703	\$300	\$143	\$41	\$13	\$82	\$9
Mean	\$919	\$467	\$349	\$70	\$13	\$87	\$8
Weighted Mean	\$965	\$379	\$1,237	\$373	\$295	\$512	\$171
# of Transfers	43,797	2,173	6,164	9,967	762	3,502	429

- **Median** tends to be lower than the mean
- **Mean** tends to be lower than the weighted mean
- **Weighted mean** has the highest values



The Median is Robust

The median tends to be less volatile over time because it is not influenced by outliers or skewed data.

Bud			
AMR	Median (AMR)	Mean	Weighted Mean
Oct 2022	\$658	\$934	\$962
Jan 2023	\$658	\$928	\$1,152
Apr 2023	\$649	\$909	\$910
Jul 2023	\$703	\$919	\$965



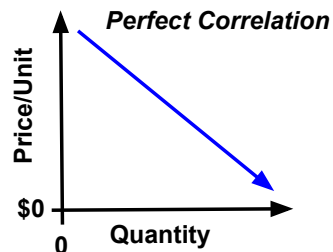
COLORADO
Department of Revenue

[Supplemental Average Market Rate Data - Aug 2023](#)

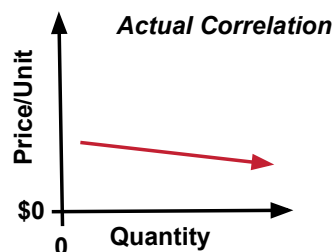
13

Does the Price per Unit Go Down as the Quantity Goes Up?

Tested the **correlation** between the price per unit and the weight (or count) to answer this question.



Although the relationship between price per unit and quantity does tend to be inverted, these relationships were **usually negligible**.



COLORADO
Department of Revenue

[Supplemental Average Market Rate Data - Aug 2023](#)

14

Reference Documents

- [Current AMR Methodology](#)
- [Video explaining AMR Calculations](#)
- [AMR Methodology Analysis - August 2022](#)
- [Supplemental Average Market Rate Data - Aug 2023](#)
- [Current Draft of Retail Marijuana Tax Rules](#)

Tax.Colorado.gov/tax-rules
DOR_TaxRules@state.co.us



COLORADO
Department of Revenue