



NORTHERN NV REGIONAL
MLS

2015-
2022

NNRMLS Sales Price Impact Study





Executive Summary

A multiple listing service (MLS) is a database of properties for sale maintained by a local real estate association or board. The purpose of the MLS is to allow agents and brokers to share information about properties they have listed for sale, and to give them access to a wider pool of potential buyers. This makes it easier for buyers to find properties that meet their needs, and for sellers to find buyers for their properties in a free market.

Home prices in Northern Nevada have surged in recent years, with the median price per square foot effectively doubling from 2015 to 2022, reaching \$301 per square foot in the first six months of 2022. Sellers heavily utilized MLS over this period, with 86% of eligible properties listed on MLS.

Northern Nevada Regional MLS (NNRMLS) partnered with an independent data analytics firm, Naniik LLC, to study what impact listing a property on the NNRMLS has on home sales price. Transaction data was pulled from six Northern Nevada counties over a seven-and-a-half-year period and reconciled with NNRMLS records. A multiple linear regression model was used to control for property and neighborhood characteristics, while isolating the impact on sales price of listing on the NNRMLS. Key variables impacting sales price included the year sold, square footage, lot size, the zip code's median income, and whether the property was listed on the NNRMLS.

This study found that the impact of listing on the NNRMLS was clear, yielding a 17% premium in sales price over properties not listed, independent of other variables. While fluctuations exist over the seven-and-a-half-year period and in different areas, analysis showed a consistent premium associated with listing on the NNRMLS.



NORTHERN NV REGIONAL

MLS

About NNRMLS

Founded in 2003, the NNRMLS serves the REALTORS® of Reno, Sparks, Carson City, Fernley, Fallon, Yerington, Minden, Gardnerville, East Lake Tahoe, and Topaz areas.

NNRMLS is the region's largest member-based MLS, serving real-estate professionals from more than six counties and offering the most accurate and up-to-date information on properties available in Northern Nevada. NNRMLS is dedicated to serving its nearly 4,000 brokers, agents, and appraisers by offering innovative tools and meaningful business solutions. The members of NNRMLS are your trusted source of real estate expertise.

Our vision is to foster a trusted cooperative real estate marketplace by delivering industry-leading information, expertise, and solutions.

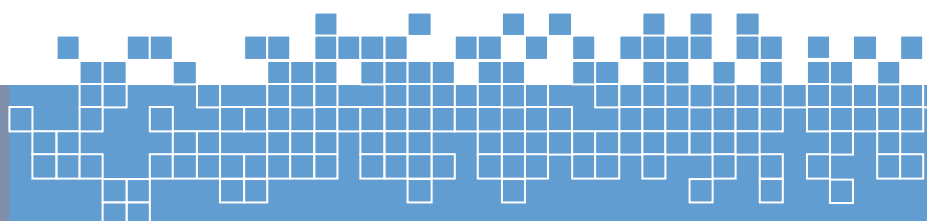
This multi-year study presented an opportunity to share unprecedented findings with current and future members as well as the community at large.

For questions, inquiries, or more information regarding this study or other general information, contact the NNRMLS Team at marketing@nnrmls.com.

About Naniik LLC

Naniik LLC is a data services and analytics company which helps organizations harness internal and external data to extract insights and inform decisions. Our team is comprised of technology professionals with over 20 years combined experience in business intelligence, data engineering and analytics, and financial analysis. Specializing in real estate data, our team has developed expertise in the acquisition, aggregation, cleaning, and analysis of real estate data sets.

Naniik has previously leveraged county assessor records to identify and trend real estate transactions throughout the Northern Nevada area. This experience made for a natural fit when the NNRMLS sought out a third party to study how properties listed on the NNRMLS compared to other properties sold.





Methodology

Assessor records were obtained for all real estate transactions from six counties between January 1st, 2015, and June 30th, 2022. The records were then filtered to remove transactions out of scope for NNRMSL listing, including:

- Non single family residential
- New construction
- Foreclosures
- Intrafamily transfers
- Non-sale transfers

Data cleansing was then undertaken. Data cleansing included activities such as algorithmic text cleanup and missing value data acquisition. One such example of missing value data acquisition was the use of Azure Maps APIs to populate zip codes missing from assessor data sets.

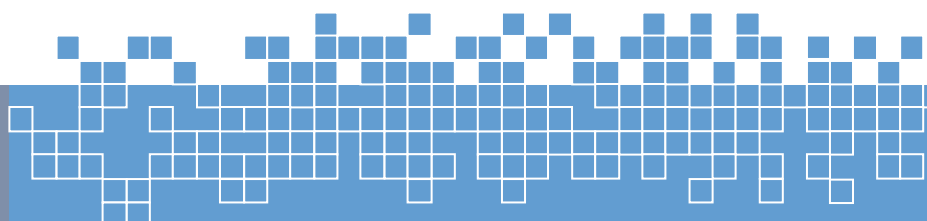
The assessor records were then joined to the NNRMLS listing database to identify which sales were listed on and off the NNRMLS. Six methods of joining were applied concurrently to account for data hygiene issues; details can be found in the Technical Appendix. Records that could not be joined were assumed to have not been listed on the NNRMLS, a methodology which was confirmed via random sampling of those records.

Next, the data was analyzed to isolate the sales price impact of listing on the NNRMLS.

Outliers were removed from the data set:

- Top and bottom 2% by price
- Square footages below 500

A simple comparison of the median sales price for homes sold on and off the NNRMLS was performed. A multiple linear regression was performed to account for home and neighborhood characteristics that also impact the sales price. This regression considered the below key variables:





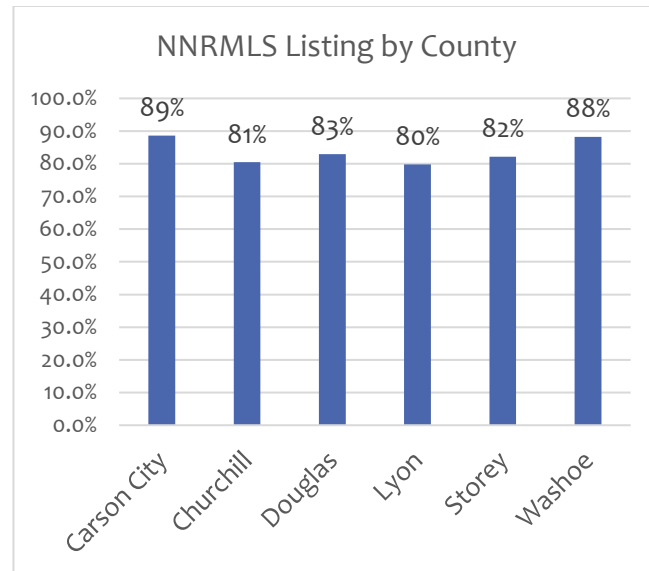
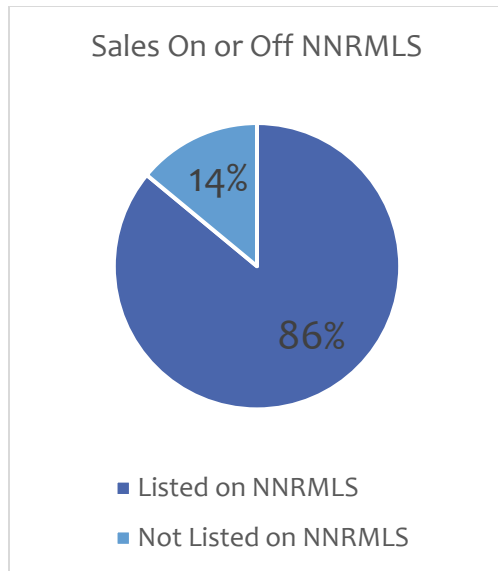
- Year sold
- Square footage
- Lot size
- NNRMLS listing indicator
- Median income of the zip code
- Is a manufactured/mobile home converted to real property

Results

In Northern Nevada, between January 2015 and June 2022, 91,697 real estate transactions took place which were in scope for this study.

County	# of Sales	Median Sales Price	Median Price per sqft
Carson City	6,327	\$ 309,000	\$192
Churchill	3,240	\$ 230,000	\$140
Douglas	9,192	\$ 399,000	\$228
Lyon	12,065	\$ 245,900	\$152
Storey	793	\$ 255,000	\$167
Washoe	60,080	\$342,500	\$206

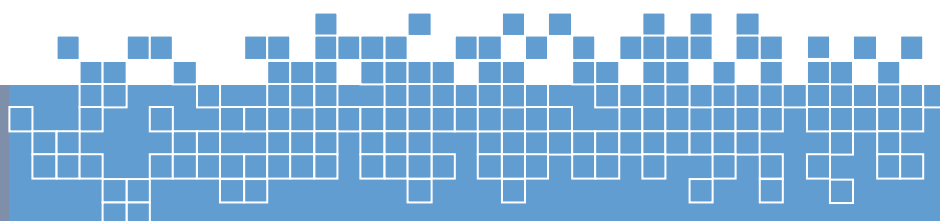
Joining of Assessor and NNRMLS records achieved a 97% match rate of NNRMLS records. Unmatched Assessor records were assumed to be sold off the NNRMLS, with extensive random sampling confirming greater than 95% accuracy of this methodology. It was found that 86% of homes were sold on the NNRMLS. This value did not vary much with year (85.6%-88.5%), but did vary slightly with county.



The median sales price for homes listed on the NNRMLS was found to be 23% higher than for homes not listed on the NNRMLS. Of course, there are various property and neighborhood characteristics that also impact sales price. Multiple linear regression was performed to isolate how listing on the NNRMLS impacts the sales price, independent of other key variables. Results of the regression can be found in the Technical Appendix, but are interpreted below for key variables:

Key Variables	Impact on Sales Price
Every 500 increase in sqft	20% increase
Listing on the NNRMLS	17% increase
Every year after 2015	10% increase
Every \$10k increase in median income	4% increase

It was found that listing on the NNRMLS increased sales price by 17%, independent of other variables. For a typical home, this resulted in a \$55,250 increase in sales price.



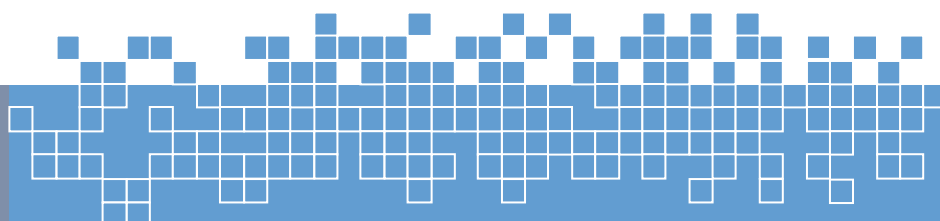


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MLS

Other key variables included square footage, year sold, and the median income of the zip code. Given the surge in home prices in recent years, it is unsurprising that the year in which a home was sold positively impacted its sales price. Predictably, increases in square footage also positively impacted the sales price. Median income for each zip code was also considered to normalize for geographical variation in price, though this variable's impact on sales price was more moderate compared with other key variables.

This study finds that listing on the NNRMLS has a statistically significant positive impact on the sales price of the home, independent of other home and neighborhood characteristics.





Technical Appendix

Data Sources

Washoe County Assessor Data

Data Disclaimer: "The information maintained herein is for assessment purposes only. Washoe County, its officers, agents, employees, and representatives do not warrant that the information contained herein is error free. Persons relying upon this information are urged to verify the information from other sources. Washoe County, its officers, agents, employees, and representatives will not be responsible for the use or misuse of this information and persons using this information are hereby notified to do so at their own risk. The summary data may not be a complete representation of the parcel or of the improvements thereon. Building information, including unit counts and number of permitted units, should be verified with the appropriate building and planning agencies. Zoning information should be verified with the appropriate planning agency. All parcels are reappraised each year."

Churchill Country

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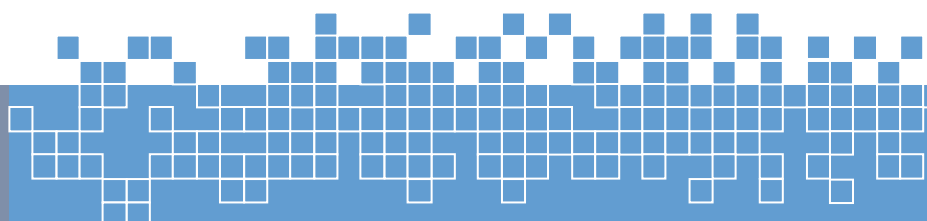
Storey County

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Douglas County Assessor Data

Carson City County Assessor Data

Lyon County





Meta data

Variable	Average	Minimum	25th percentile	Median	75th percentile	Maximum
Year sold	2018	2015	2016	2018	2018	2022
Square footage	1,773	504	1,296	1,645	2,117	7,566
Lot size (acres)	0.7	0.0	0.1	0.2	0.3	697.6
Median income of zip code	\$ 78,263	\$ 31,813	\$ 61,776	\$ 73,608	\$ 90,343	\$ 250,001
Sale price	\$ 362,822	\$ 75,000	\$ 238,900	\$ 325,000	\$ 440,000	\$ 1,222,200

Joining NNRMLS and Assessor Records

An algorithm was developed to match NNRMLS, and assessor data based on a combination of cleansed data fields.

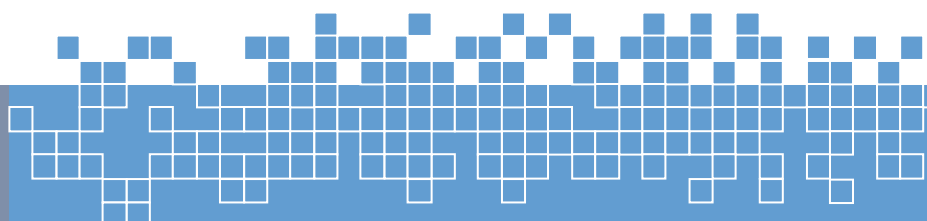
1. Parcel Number
2. County
3. Price
4. Sales Date
5. Address
6. Text Analytics on Addresses

Regression

Multiple linear regression parameters

$$\text{Log}(y_i) = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2} + \dots + \beta_p x_{ip} + \epsilon$$

- y_i = dependent variable
- x_i = explanatory variables
- β_0 = y-intercept
- β_p = slope coefficients for each explanatory variable
- ϵ = the model's error term





Dependent variable

- Sales price

Independent variables

- Year sold
- Square footage
- Lot size (acres)
- Listed on NNRMLS (0 or 1 binary variable)
- Zip code median income
- Is manufactured/mobile home converted to real property (0 or 1 binary variable)

Regression results

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.8255866
R Square	0.6815932
Adjusted R Square	0.6815706
Standard Error	0.2774579
Observations	84376.000

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	6	13903.367	2317.228	30100.562	0.000
Residual	84369	6494.968	0.076983		
Total	84375	20398.336			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-186.91983	0.906690559	-206.156148896	0.000	-188.6969403	-185.1427276
Square footage	0.0004069	0.000001561	260.610595063	0.000	0.0004038	0.0004100
Lot size	0.0028312	0.000197954	14.302564897	0.000	0.0024433	0.0032192
Year Sold	0.0983062	0.000449231	218.831951624	0.000	0.0974257	0.0991867
Listed on NNRMLS	0.1721945	0.002864562	60.111974579	0.000	0.1665799	0.1778090
Is Manu/Mobile	-0.3790945	0.004018010	-94.348827184	0.000	-0.3869698	-0.3712192
Zip code income	0.0000045	0.000000049	91.245808280	0.000	0.0000044	0.0000046