How Does Wooded Acreage Affect Land Value and Marketability?

A study of broker-reported vegetation, land sales, and contract outcomes in Rutherford County, North Carolina

CAROLINA LAND NETWORK | RESEARCH ANALYSIS 001

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Study population: MLS listing records from 2022–2026; advertised acreage of at least 10 acres.

Executive summary

This observational study evaluates whether the proportion of wooded versus cleared acreage is associated with land selling prices and marketability. Its primary evidence comes from 61 Rutherford County MLS listing records with complete, internally consistent broker-reported wooded and cleared acreage, including 47 closed sales. A larger inventory of 448 eligible listing records establishes the reporting context.

The strongest finding is a negative association between wooded coverage and closed-sale price per acre. In the 47-sale dataset, the adjusted point estimate was approximately 6.04% lower price per acre for each additional 10 percentage points wooded. The verified HC3 95% confidence interval (−8.63% to −3.37%) comes from the 46-sale categorical-year specification excluding the single 2026 sale, which yields the same wooded-share point estimate; pooling 2025–2026 retains all 47 sales and produces a −5.99% estimate (95% CI −8.62% to −3.29%). In a same-sample comparison using provisionally derived terrain measurements, the wooded estimate changed little after adding median slope (34 sales: −6.33% without slope; −6.14% with slope).

For marketability, 8 of 10 listings less than 50% wooded (80.0%) and 25 of 43 listings at least 50% wooded (58.1%) had recorded contracts within 365 days, an observed difference of 21.9 percentage points (95% confidence interval: −11.9 to +42.5 percentage points). This estimate is imprecise. The MLS export contains contract dates through November 16, 2026, but its actual snapshot date is not documented; the November 19 calendar cutoff therefore does not establish independently verified outcome coverage through that date.

These findings describe relationships in the available reported MLS data. They do not establish that clearing trees would cause an equivalent increase in value or contract probability.

1. Research questions and scope

Primary question: How does the proportion of wooded versus cleared acreage relate to land value and marketability for Rutherford County tracts of 10 acres or more?

The study evaluates (1) closed-sale price per acre; (2) probability of going under contract within 90, 180, and 365 days of listing; (3) marketing time among listings securing contracts; (4) differences by acreage category; and (5) whether terrain slope or relatively level acreage accounts for observed associations.

Acreage categories were defined as 10 to under 20 acres, 20 to under 50 acres, 50 to under 100 acres, and 100 acres or more. The study does not use GIS-inferred vegetation percentages; vegetation is taken from broker-entered MLS fields.

2. Data and methods

Screening stage	Records
Eligible MLS listing records, 2022–2026, 10+ acres	448
At least one vegetation field reported	101
Both vegetation fields reported	65
Passed acreage consistency screening	61
Closed sales in screened sample	47
Nonclosed listings in screened sample	14
Closed sales with GIS terrain slope	34

Records with both vegetation fields were screened for nonnegative values, no individual vegetation component greater than advertised acreage, and wooded-plus-cleared acreage within 5% of advertised acreage. Four complete-field records failed screening. Wooded share is broker-reported wooded acres divided by the sum of broker-reported wooded and cleared acres. For binary comparisons, the group labeled “predominantly wooded” includes wooded shares of 50% or more; this includes one exactly 50%-wooded record. The other group contains shares below 50%.

Price analysis uses the confirmed closed-sale Price field divided by advertised acreage. Models regress the logarithm of price per acre on wooded fraction, with adjustments for log acreage and listing year; terrain-linked models additionally incorporate median slope and/or the share of acreage with slope below 15%. Percentage effects are calculated by exponentiating the modeled change for a 0.10 increase in wooded fraction. Confidence intervals use heteroskedasticity-robust methods where valid.

Marketability is measured from MLS Listing Contract Date (listing start) to Purchase Contract Date. November 19, 2026 was the prespecified calendar eligibility cutoff for the analysis, not a verified export snapshot date. The supplied MLS file has listing and purchase-contract dates as late as November 16, 2026, but no export timestamp or last-refresh field. A listing enters a horizon denominator only when its listing start is at least the full horizon before November 19, regardless of outcome; early contracts never qualify otherwise ineligible recent listings. Noncontracted eligible records remain in the denominator. These are calendar-horizon eligible comparisons, with outcome completeness through the assumed cutoff not independently verified. A November 16, 2026 calendar-cutoff sensitivity reproduces the 365-day contract counts (8/10 and 25/43), but dated records do not independently establish complete outcome reporting through that date.

3. Land value: wooded coverage and selling price

Analysis	Closed sales	Estimated price/acre change per +10 percentage points wooded
Principal model: acreage + listing year	47	−6.04%
Exclude highest/lowest 5% price/acre	41	−4.83%
Exclude highest/lowest 10% price/acre	37	−4.05%
Latest sale per parcel key	44	−7.01%
Terrain-linked: acreage + year, same subset	34	−6.33%
Terrain-linked: plus median slope	34	−6.14%
Terrain-linked: plus share below 15% slope	34	−6.23%
Terrain-linked: plus both terrain measures	34	−6.16%

Across the 47 closed sales, the Spearman correlation between wooded share and sale price per acre was −0.580. The main adjusted point estimate was −6.04% per additional 10 percentage points wooded. Because the 2026 listing-year category contains a single sale, the reported HC3 95% confidence interval of −8.63% to −3.37% is supported by the 46-sale specification excluding that singleton (identical point estimate); pooling 2025–2026 retains all 47 sales and gives −5.99% (95% CI −8.62% to −3.29%). Trimming and parcel-level sensitivity results are presented in the preceding table.

Interpretation: greater reported wooded coverage was associated with lower sale prices per acre, even after adjusting for acreage, listing year, and the available terrain measures. This is an association between existing properties, not the estimated financial return from physically clearing land.

4. Differences by tract size

Advertised acreage	Closed sales	<50% wooded: median $/acre	≥50% wooded: median $/acre
10–under 20	28	$11,941	$8,148
20–under 50	16	$12,755	$7,485
50–under 100	3	No comparison	All three ≥50% wooded
100+	0	No data	No data

For 10–under 20-acre sales, wooded share and price per acre had a Spearman correlation of −0.584 (28 sales). For 20–under 50-acre sales, the correlation was −0.597 (16 sales). These results are directionally consistent with the overall pricing analysis. The data do not permit a meaningful cleared-versus-wooded comparison in the two larger acreage categories.

5. Marketability: securing a contract

Time since listing	<50% wooded	≥50% wooded	Difference (cleared minus wooded)
Within 90 days	6/13 (46.2%)	22/48 (45.8%)	+0.3 percentage points
Within 180 days	6/11 (54.5%)	22/46 (47.8%)	+6.7 percentage points
Within 365 days	8/10 (80.0%)	25/43 (58.1%)	+21.9 percentage points

Observed contract rates were nearly identical in the 90-day comparison. The difference was larger in the 180- and 365-day comparisons, although the eligible sample differed by horizon. Among listings with valid recorded contracts, median listing-to-contract time was 36 days for the less-than-50%-wooded group (11 contracted listings) and 69 days for the at-least-50%-wooded group (38 contracted listings). These conditional medians exclude listings that did not secure a contract.

Among listings eligible for the 365-day comparison, 8 of 10 listings less than 50% wooded (80.0%) and 25 of 43 listings at least 50% wooded (58.1%) secured a contract. The observed difference was 21.9 percentage points (Newcombe 95% confidence interval −11.9 to +42.5 percentage points; two-sided Fisher exact $p \approx 0.286$). This describes the analyzed records; group sizes and selective reporting limit precision and generalizability.

6. Terrain: slope and relatively level acreage

Terrain was evaluated because vegetation, steepness, accessibility, and buildable or otherwise usable area may overlap. The terrain-linked closed-sale sample contains 34 sales; the terrain-linked one-year contract sample contains 39 listings.

Price model, same 34 sales	Wooded effect per +10 percentage points
Acreage and listing year	−6.33%
Plus median slope	−6.14%
Plus share of acreage below 15% slope	−6.23%
Plus both terrain measures	−6.16%

Adding provisionally derived terrain measures changed the wooded-share price coefficient little in the linked sample. The slope-adjusted estimate was −6.14% per additional 10 percentage points wooded across 34 linked sales. Because the categorical-year specification includes only one 2026 sale (hat leverage effectively 1), its HC3 interval is not used as independent confirmation. Excluding that singleton yields the same −6.14% estimate with a finite HC3 95% interval of approximately −10.16% to −1.93% across 33 sales. A separate pooled-2025/2026 specification on all 34 sales estimates −6.04% (95% interval approximately −10.11% to −1.79%). Terrain-adjusted findings are provisional because raster vertical units and parcel coordinate-system metadata were inferred, not independently verified.

Share of property with slope below 15%	Contracted within 365 days
0–25%	5/15 (33.3%)
Over 25–50%	8/15 (53.3%)
Over 50–75%	3/3 (100%)
Over 75–100%	4/6 (66.7%)

In a logistic model using the 39 terrain-linked listings and adjusting for wooded coverage and acreage, each additional percentage point of median terrain slope corresponded to approximately 5.4% lower one-year contract odds (odds ratio 0.946; $p \approx 0.047$). The estimated wooded-coverage effect was approximately 8.7% lower odds per additional 10 percentage points wooded (odds ratio 0.913; $p \approx 0.49$). These are changes in odds, not percentage-point changes in contract probability. The slope estimate is exploratory and sensitive to a small sample and model choice.

A separate model using the share of acreage below 15% slope suggested higher contract odds with more relatively level land (odds ratio approximately 1.24 per additional 10 percentage points), but its estimate was imprecise. Slope and relatively level acreage are closely related, so including both in the same model does not provide a clean separation of their effects.

7. Interpretation and practical implications

The results show different patterns for selling prices and marketability. Greater wooded coverage was consistently associated with lower closed-sale price per acre across the reported model specifications, including terrain-adjusted comparisons. Listings less than 50% wooded had a higher observed one-year contract rate. In the terrain-linked marketability model, steeper slope was associated with lower one-year contract odds while the wooded-coverage estimate was less precise. These exploratory results do not establish the relative predictive importance of the two variables.

For buyers and brokers, the findings argue against using price per acre without considering vegetation and terrain. For sellers, wooded acreage and steepness may influence both pricing expectations and the pool of likely buyers. These results do not support a blanket recommendation to clear land: clearing costs, timber value, environmental restrictions, road access, views, improvements, and intended uses are not fully captured by the available records.

8. Limitations and research integrity

Vegetation reporting is selective: only 65 of 448 eligible listing records reported both wooded and cleared acreage, and only 61 passed consistency screening. Reporting completeness varied by year. Broker-entered acreage is not an independently verified land-cover survey; blank fields should not be interpreted as zero acres. Selection into the analytic sample may be related to the property characteristics being studied. The reporting rate is a property of the broker-submitted MLS records, not an independently measured land-cover sample; the analysis cannot recover unreported vegetation values.

The study is observational. Property location, road access, utilities, views, improvements, permitted uses, and other characteristics may affect both vegetation and market outcomes. GIS terrain linkage is available only for a subset. Some parcel identifiers recur across different sale events; these were not automatically discarded as duplicates. The larger acreage categories lack adequate complete vegetation reporting. Contract outcomes rely on available MLS dates and finite follow-up windows.

HC3 leverage verification: both the slope-only and wooded-plus-slope models with categorical listing year have a maximum hat leverage effectively equal to 1 because the 2026 category contains a single sale (MLS 4388429). The 34-sale wooded-plus-slope fit can return finite HC3 values numerically, but these should not be interpreted as robust to the singleton-year leverage problem. For inferential reporting, the 2026 singleton was excluded (33 sales, maximum leverage 0.458, wooded effect −6.14%, HC3 95% interval −10.16% to −1.93%), and a pooled 2025–2026-year sensitivity retained all 34 sales (maximum leverage 0.454, effect −6.04%, HC3 95% interval −10.11% to −1.79%). This reconciles the previously anomalous robust interval without claiming the original 34-sale categorical-year interval is reliable.

9. Conclusion

Within the available Rutherford County MLS records for tracts of 10 acres or more, greater broker-reported wooded coverage was consistently associated with lower closed-sale price per acre. The association persisted after adjustment for acreage, listing year, and available terrain measures. Predominantly cleared listings also had a higher observed one-year contract rate, although their early contract rates were similar to those of predominantly wooded listings. Terrain steepness may contribute to marketability differences. Together, these findings show why vegetation and terrain deserve separate consideration in land valuation and marketing decisions.

Data provenance and reproducibility

Primary MLS export: “CLN Research (19).csv”; screening and linkage records: clean_broker_vegetation_sample.csv; price sensitivity: sensitivity_results.csv; contract horizon outcomes: contract_horizon_results.csv; terrain comparisons: slope_core_model_comparison.csv and usable_acreage_model_comparison.csv; terrain-linked property audits: slope_marketability_audit.csv and usable_acreage_listing_audit.csv. Supporting GIS/MLS materials are retained in the Carolina Land Network Research Analysis 001 archive.

Technical verification and reproducibility appendix

Verification completed November 19, 2026 using the retained MLS-derived, screened property-level files. The author and original research title are unchanged.

Fixed-horizon eligibility audit

The contract analysis was rerun with the strict rule listing_start ≤ November 19, 2026 minus the full horizon, regardless of outcome. This reproduces the original counts at all three horizons and avoids outcome-dependent inclusion. The file contains dated outcomes through November 16, 2026, but its export snapshot date is unverified. Consequently these are full calendar-horizon eligible listings, not independently verified complete outcome-follow-up cohorts.

Horizon	<50% wooded	≥50% wooded	Fisher exact p
90 days	6/13 (46.2%)	22/48 (45.8%)	1.000
180 days	6/11 (54.5%)	22/46 (47.8%)	0.747
365 days	8/10 (80.0%)	25/43 (58.1%)	0.286

For the 365-day difference (cleared minus wooded), the Newcombe score-based 95% confidence interval is −11.9 to +42.5 percentage points. This interval describes uncertainty; it does not change the observed 21.9-point difference.

Unit of observation and relistings

The primary marketability observation unit is an MLS listing record. A new MLS listing, including a relisting, starts a new listing clock; a contract on a subsequent listing is not retroactively attributed to the earlier record. A parcel-based episode audit used canonical parcel identifiers when available and MLS IDs otherwise, with start/end dates estimated from recorded contract/close dates or CDOM. It identified 61 separate episodes among the 61 screened records and no overlapping episodes; episode-level horizon counts matched listing-level counts. Distinct nonoverlapping relistings can still count as separate listing observations. Missing parcel identifiers, multi-parcel listings, and incomplete withdrawal/end dates limit reconstruction of a unique-property marketing history.

Price-model specifications

Outcome: natural logarithm of closed-sale price divided by MLS advertised acreage. Principal formula: log(price/acre) ~ wooded_fraction + log(advertised_acres) + C(listing_year). Year is categorical. The reported percentage effect per additional 10 percentage points wooded is 100 × [exp(0.1 × coefficient) − 1]. The terrain comparison uses the same 34 terrain-linked closed sales, adding median parcel slope in percentage-point units and/or the proportion of acreage below 15% slope. The same-34-sale models compare point estimates across terrain specifications. Terrain-adjusted HC3 confidence intervals are reported from the 33-sale specification excluding the singleton 2026 observation and the 34-sale specification pooling 2025 and 2026.

Marketability terrain model: logistic regression of the binary indicator for a contract within 365 days on wooded_fraction, log(advertised_acres), and median parcel slope (percent). Odds ratios are exp(coefficient × specified increment). Comparing p-values between predictors is not a formal comparison of predictive importance.

Acreage-category denominators

Acreage	<50% wooded sales	≥50% wooded sales	Total closed
10–under 20	7	21	28
20–under 50	3	13	16
50–under 100	0	3	3
100+	0	0	0

Forty-four of 47 closed sales are smaller than 50 acres. Consequently, the strongest price evidence pertains to 10–under 50-acre tracts. The category medians are descriptive and should not be interpreted as controlled price adjustments.

Terrain measurement and coverage

Terrain-linked results cover 34 of 47 closed sales and 39 of 53 listings eligible for the one-year contract comparison. The terrain source is the user-supplied 2025 North Carolina QL1 countywide LiDAR-derived elevation raster Rutherford_QL1_2025_10ft_CountywideRaster.tif (10-foot grid; EPSG:6543, NAD83(2011) North Carolina State Plane, horizontal US survey feet). The matching parcel source is Rutherford County Parcels.shp, joined through the GIS-to-MLS parcel crosswalk. For each polygon, the extraction uses a DEM bounding window with a two-cell halo, central-difference elevation gradients at 10-foot spacing, and pixel centers inside the parcel. Slope is computed as 100 × sqrt((dz/dx)^2 + (dz/dy)^2) and expressed as percent grade, not degrees; median slope and the fraction of terrain below 15% slope are summarized at parcel level. Parcel-derived terrain may imperfectly represent multi-parcel MLS tracts. The original extraction notes that DEM vertical units are not explicitly tagged and the parcel shapefile lacks a .prj file; feet-compatible vertical units and parcel CRS were inferred, not independently verified. Consequently terrain estimates are provisional with respect to those metadata assumptions. Below-15% slope is not proof of buildability. Terrain-adjusted findings are provisional pending independent confirmation of the raster vertical units and parcel coordinate reference system.

Source files and audit trail

Primary MLS source: CLN Research (19).csv. Screened records: clean_broker_vegetation_sample.csv. Contract audits: contract_horizon_analysis.py, contract_horizon_results.csv, contract_date_record_audit.csv, property_episode_audit.csv. Terrain models: slope_core_analysis.py, slope_core_model_comparison.csv, usable_acreage_model_comparison.csv. Terrain provenance and extraction details: CLN_Analysis_001_All_Supporting_Data_2026-11-11.zip, reports/STUDY_1_TERRAIN_EXTRACTION_PRELIMINARY.md and reports/CLN_Analysis_001_Terrain_Interim_Report_2026-11-11.md. The original MLS export timestamp, elevation raster vertical-unit metadata, and parcel shapefile CRS metadata remain unverified; no unsupported values have been supplied.

Verification note: the MLS export has no documented extraction timestamp. The latest listing start and purchase-contract dates in the 515-row source export are November 16, 2026, and the latest recorded closing date is November 6, 2026. This establishes that the file includes records dated as late as November 16 but does not prove a November 19 refresh. The chosen November 19 cutoff governs calendar eligibility only. Terrain vertical-unit and parcel-CRS assumptions remain provisional.

Diagnostic record (terrain-adjusted price): 34 sales; listing-year counts 2022=18, 2023=4, 2024=4, 2025=7, 2026=1. Full categorical-year model maximum leverage ≈1.000. Excluding 2026: n=33, maximum leverage=0.458, HC3 95% interval for the wooded effect −10.16% to −1.93% per 10 percentage points. Pooling 2025 and 2026: n=34, maximum leverage=0.454, HC3 95% interval −10.11% to −1.79%.