

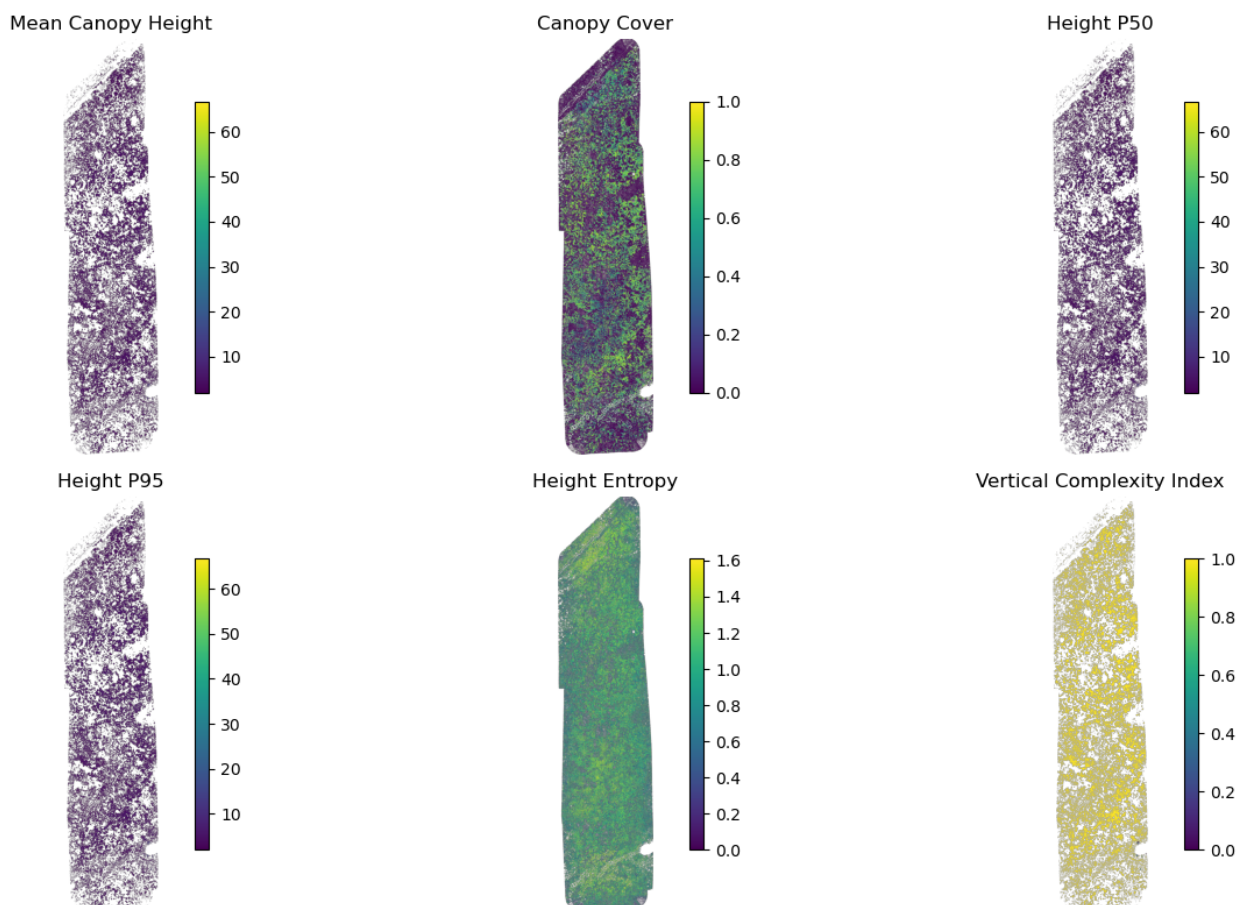
Summary of LiDAR-Derived Vegetation Structure Metrics

To describe the structure of vegetation in the study area, I selected five LiDAR-derived metrics that capture key aspects of vegetation height, cover, and vertical complexity:

1. **Mean Canopy Height** – provides an average measure of vegetation stature within each grid cell.
2. **Canopy Cover Fraction** – quantifies the proportion of points >2 m above ground, indicating the density of vegetation.
3. **Height Percentiles (P50, P95)** – characterize the vertical distribution of vegetation, highlighting central and upper canopy conditions.
4. **Height Entropy** – measures the complexity of vertical structure using the distribution of heights within each cell.
5. **Vertical Complexity Index (VCI)** – captures the proportion of mid-story vegetation (2–10 m) relative to taller vegetation, reflecting layering.

These metrics were selected based on their demonstrated relevance in ecological and forestry studies for quantifying vegetation structure.

Results



The analysis revealed that the average canopy height across the landscape was 2.04 meters, with a high coefficient of variation ($CV \approx 1.0$), indicating substantial heterogeneity in vertical structure. The 95th percentile canopy height was 5.38 meters, and the median (P50) was only 1.57 meters, suggesting that tall vegetation is rare and that the landscape is dominated by short-stature vegetation, such as shrubs or small trees. The canopy cover fraction was relatively low, averaging 29.6%, and only about one-third of grid cells exhibited cover above 50%, confirming a predominantly open canopy. Height entropy averaged 0.86, reflecting moderate vertical structural diversity, while the VCI was near 1.0. Overall, these metrics indicate a structurally heterogeneous but generally low and open vegetation canopy, consistent with a mosaic of shrubland, degraded woodland, or savanna.