

Metoda Van Wagnera vs lasy

SZACOWANIE IŁOŚCI MARTWEGO DREWNA

IGNACY MAKOWSKI, ZOFIA HENDRYSIAK



Metoda Van Wagnera

SZACOWANIE ILOŚCI MARTWEGO DREWNA

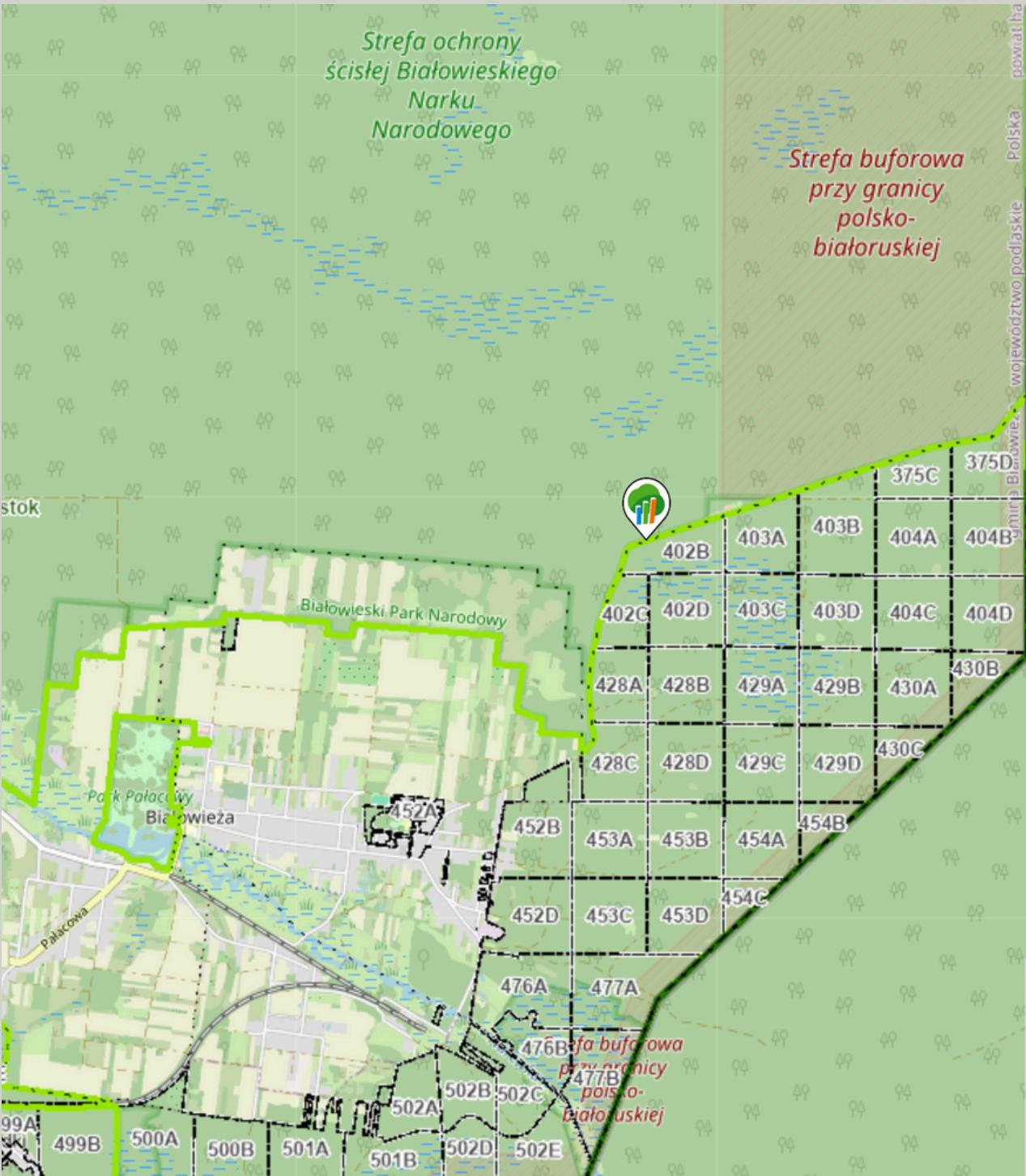
$$V = \frac{A\pi^2 \sum d^2}{8L}$$

DŁUGOŚĆ TRANSEKTU POMIAROWEGO

Gutowski et al. wskazuje, że długość linii dla van Wagnera powinna wynosić: $L=5132e^{0.04V}$, to jest 266m dla obszaru rezerwatu, a dla Parku Narodowego 50m.



Postgospodarczy las - metodyka

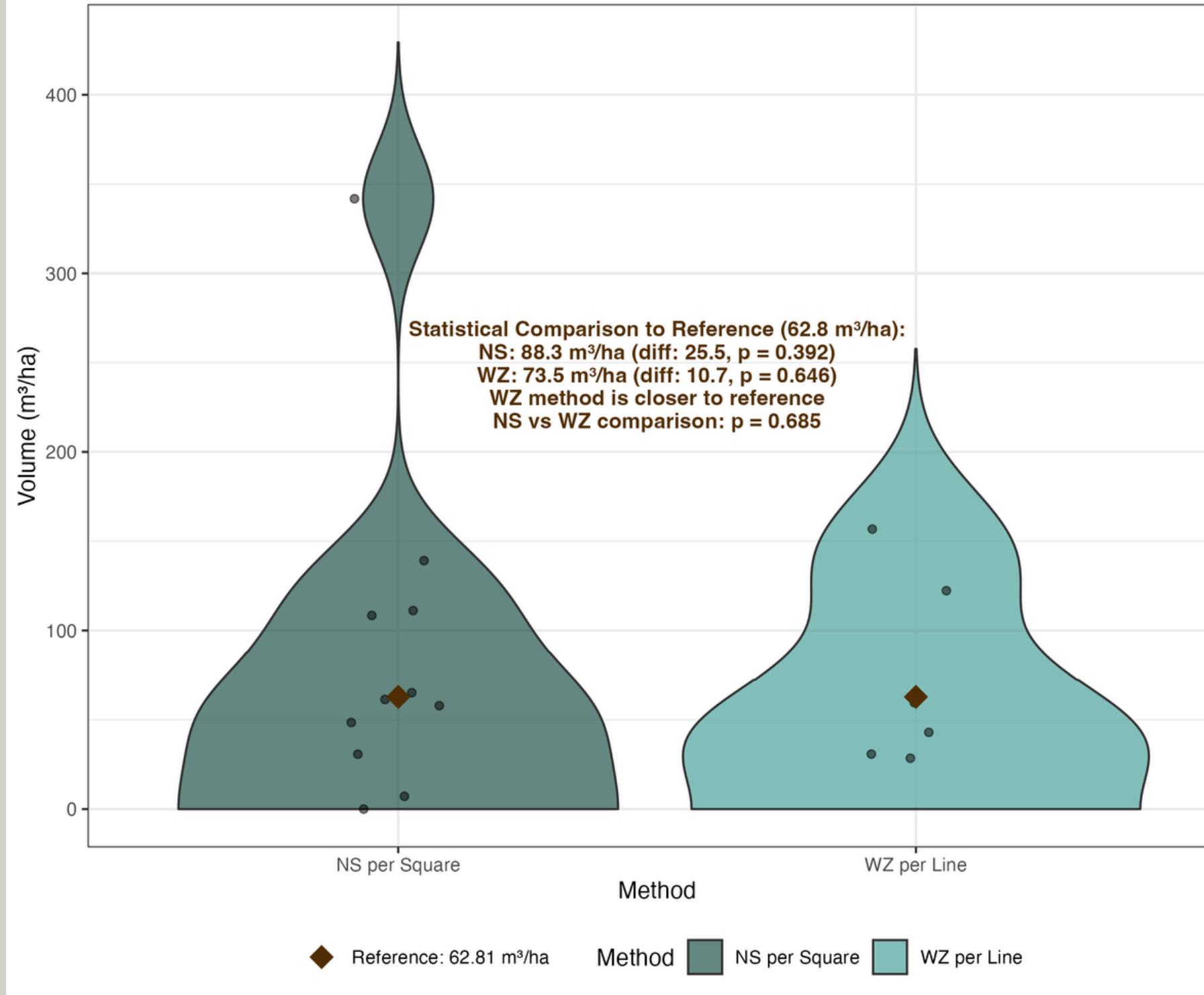


Tallying rules.

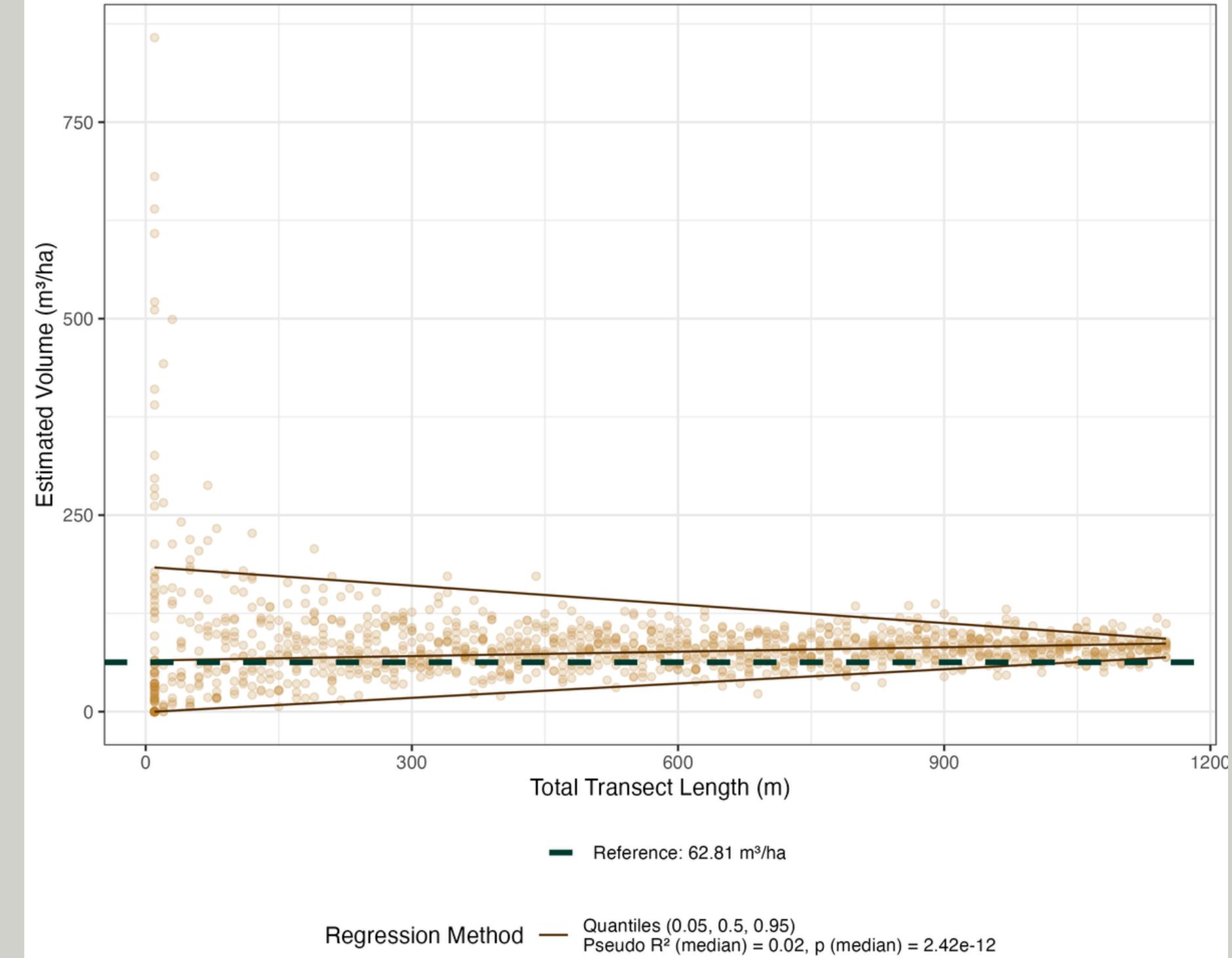
1. Lay a line of known length across the area to be studied.
 2. Record the diameter of every piece of wood intersected.
 3. If the sample line crosses the end of a piece, tally only if the central axis is crossed.
 4. If the sample line passes exactly through the end of a piece's central axis, tally every second such piece.
 5. Ignore any piece whose central axis coincides with the sample line.
 6. If the sample line crosses a curved piece more than once, tally each crossing.
- Rules 4, 5, and 6 are obviously of slight practical importance, but are included to cover all possibilities. Piece length and crossing angle need not be recorded.

Las Postgospodarczy

Distribution of Volume Estimates vs. Reference Value
Estimates calculated per NS Square and WZ Line with Statistical Comparison



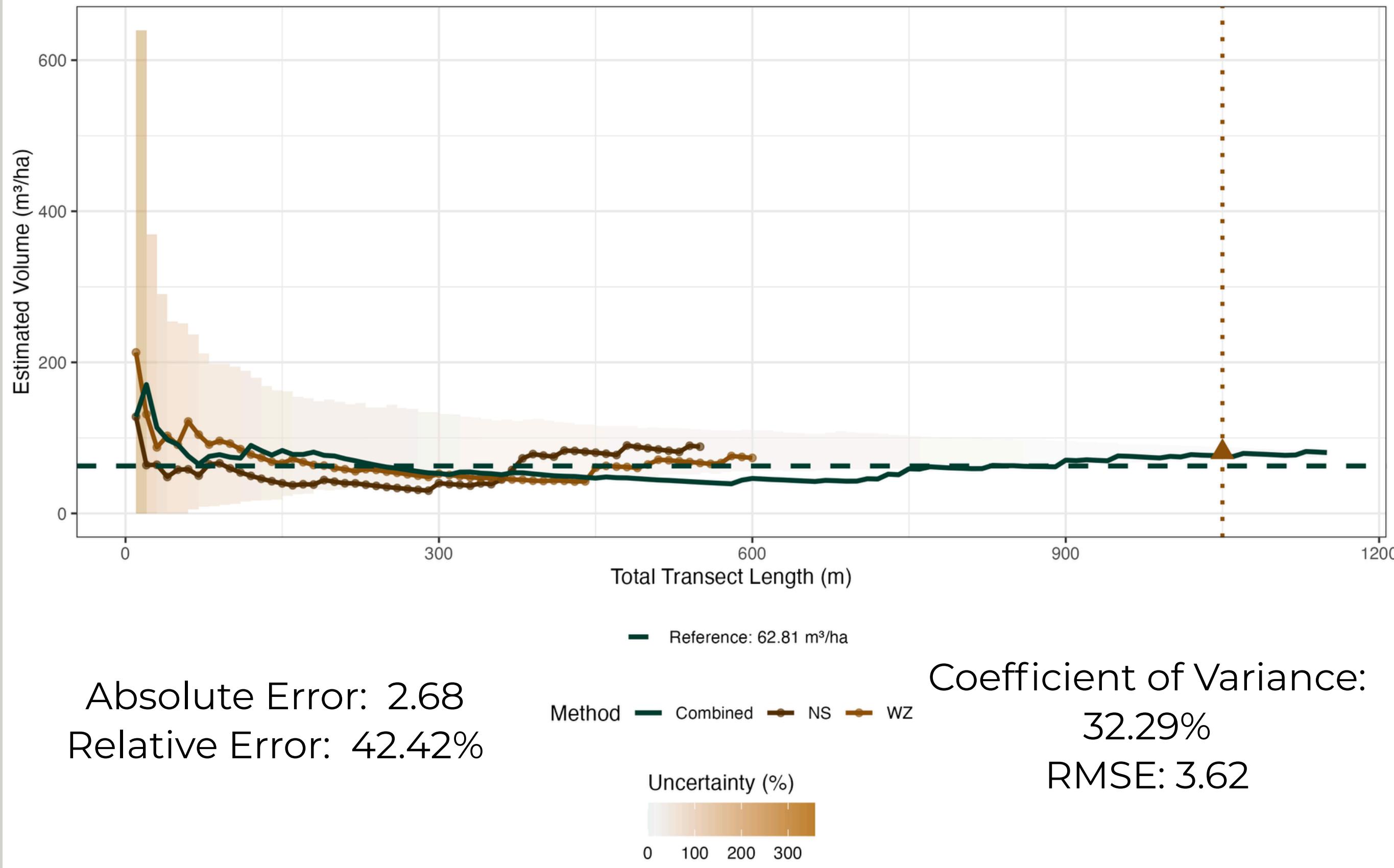
Regression of Volume Estimate vs. Transect Length
Uncertainty shown with Quantile Regression



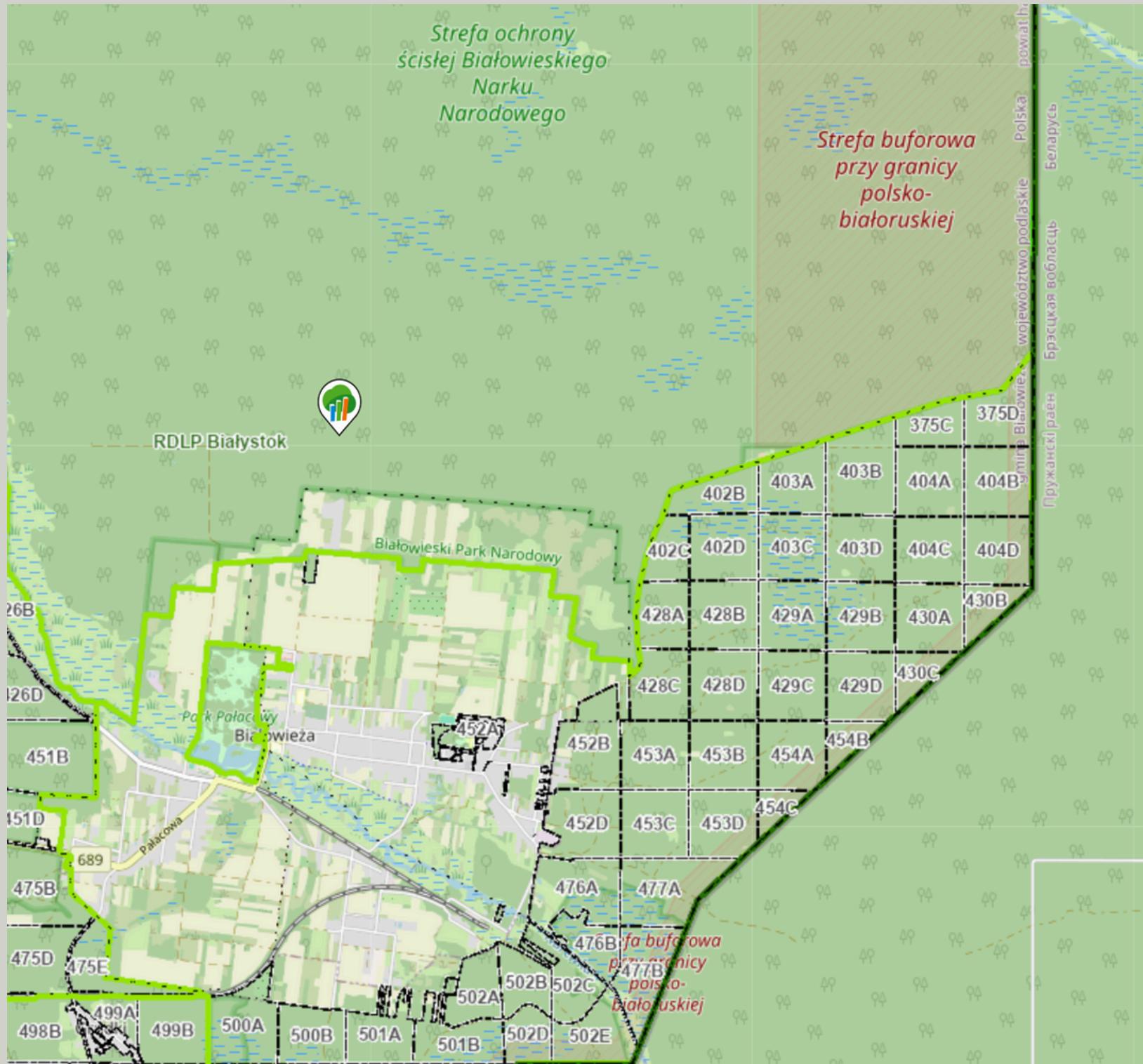
Cumulative Dead Wood Volume Estimate vs. Transect Length

Alternating NS-WZ sampling pattern with uncertainty heatmap

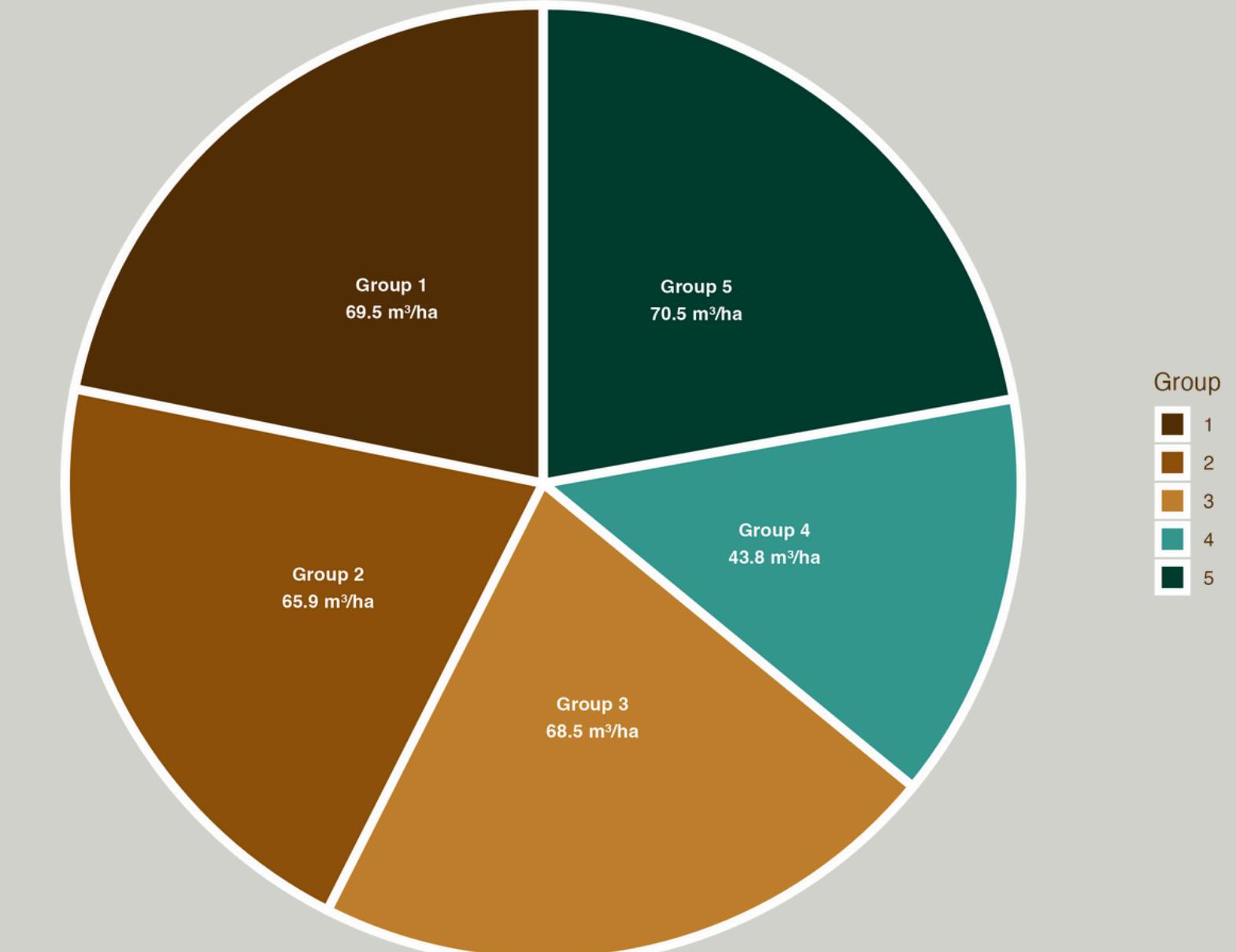
Uncertainty $\leq 10\%$ achieved at 1050m



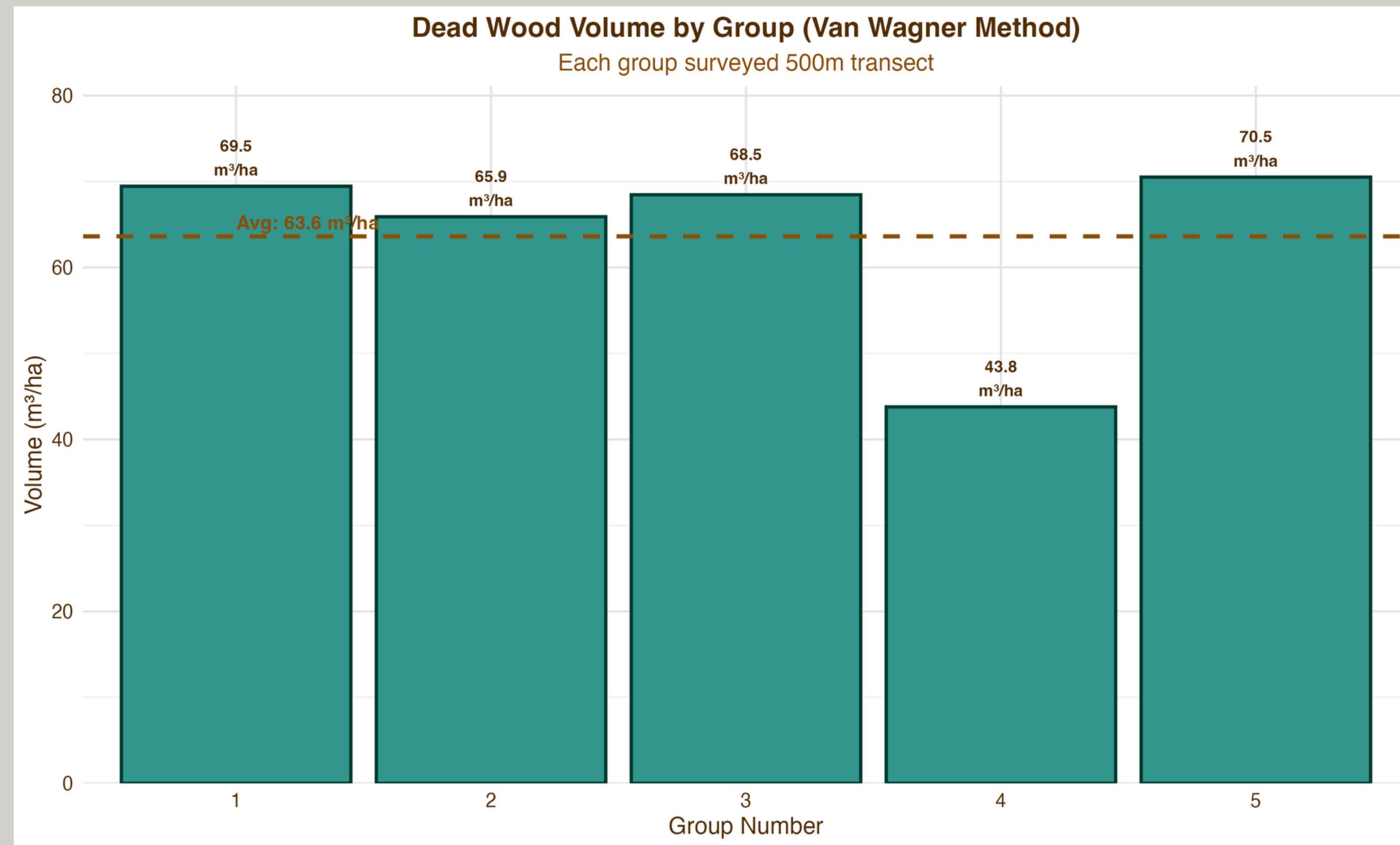
Białowieski Park Narodowy



Proportion of Dead Wood Volume by Group



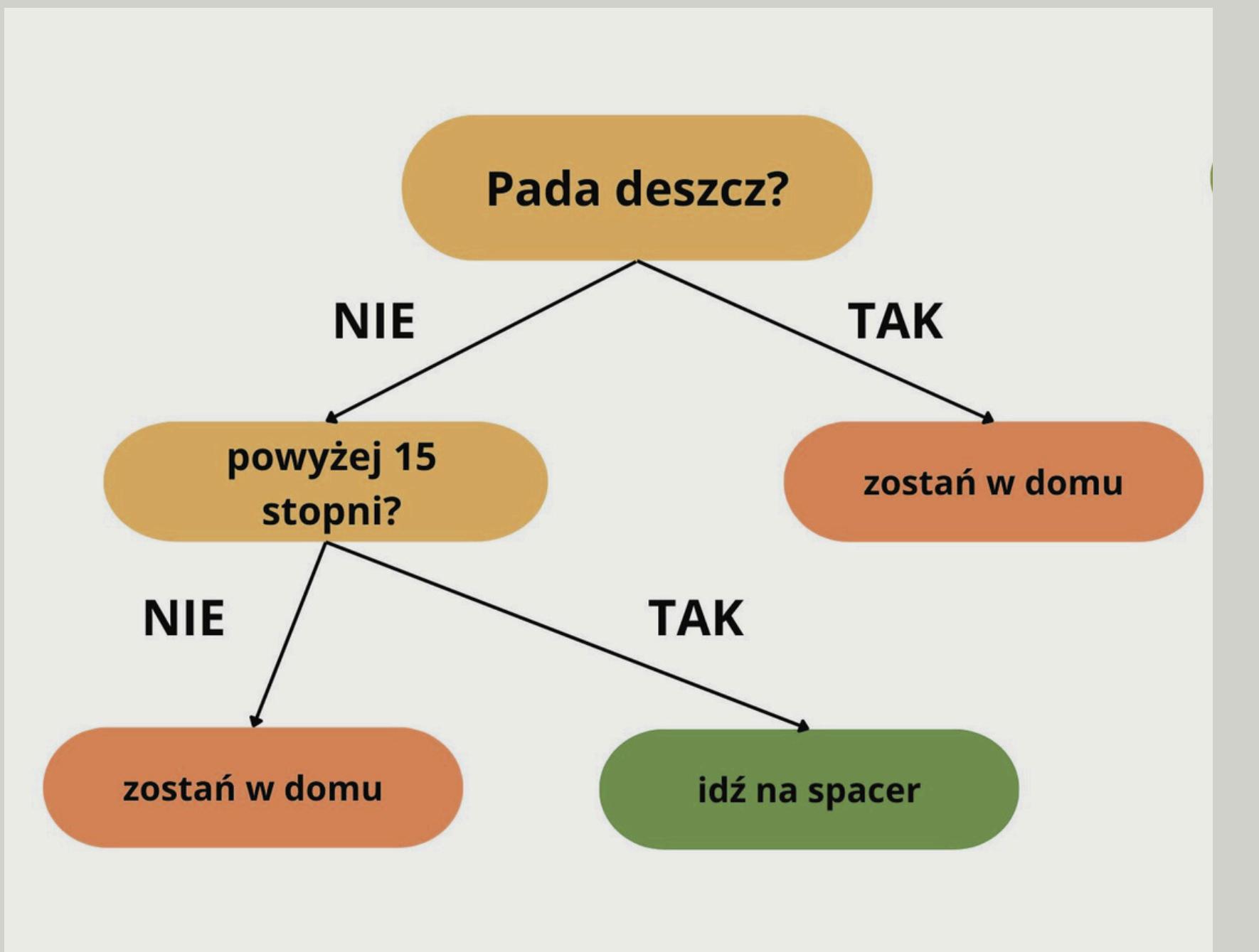
Van Wagner a ochrona ścisła



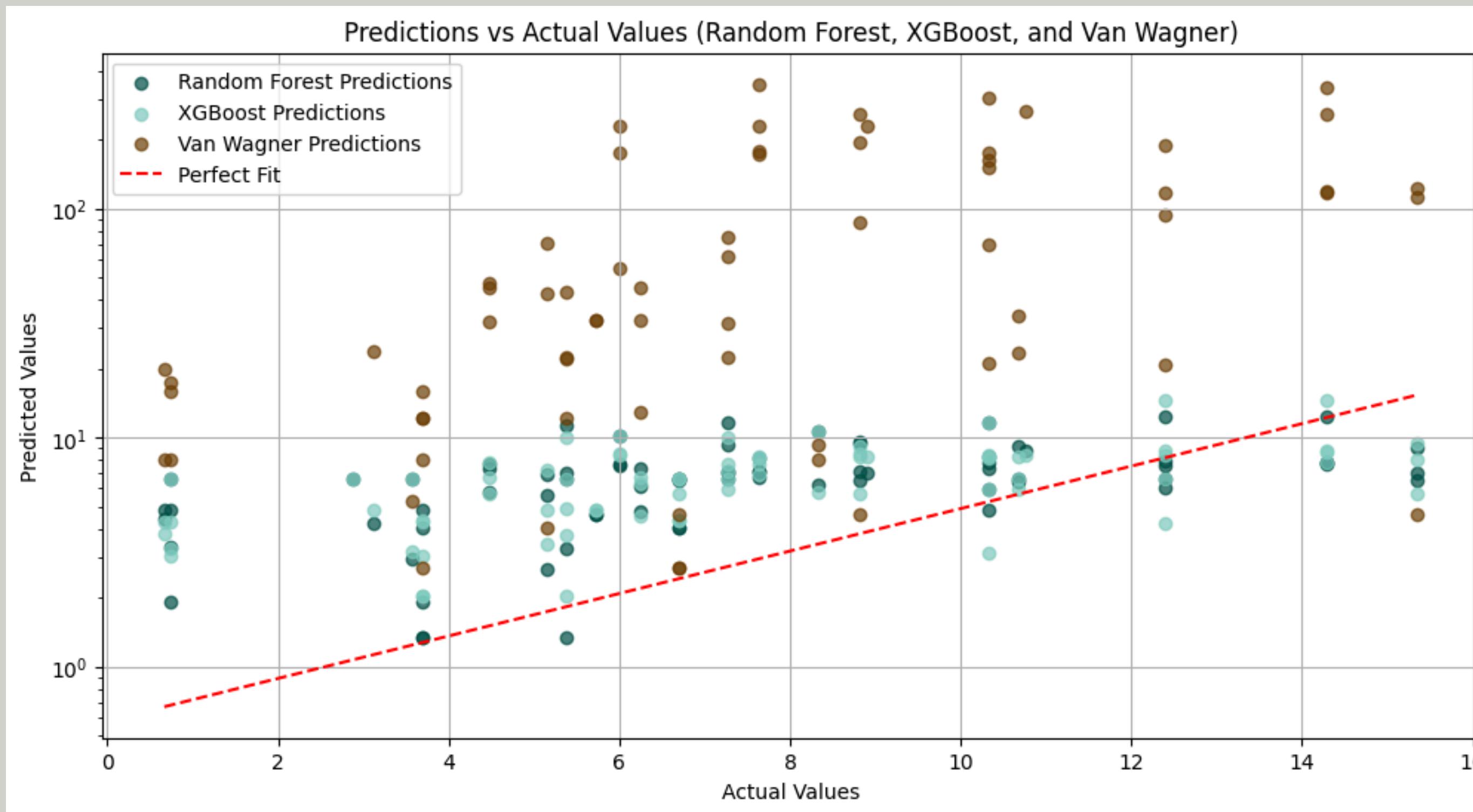
A dark, atmospheric photograph of a forest at dusk or dawn. The scene is filled with tall, thin trees whose silhouettes stand out against a lighter, hazy sky. The overall mood is mysterious and serene.

Lasy losowe

Drzewa decyzyjne



Metoda Fun Wagnera



FUN Scores:

MAE=2.67

MSE= 10.67

Wagner Scores:

MAE=62.73

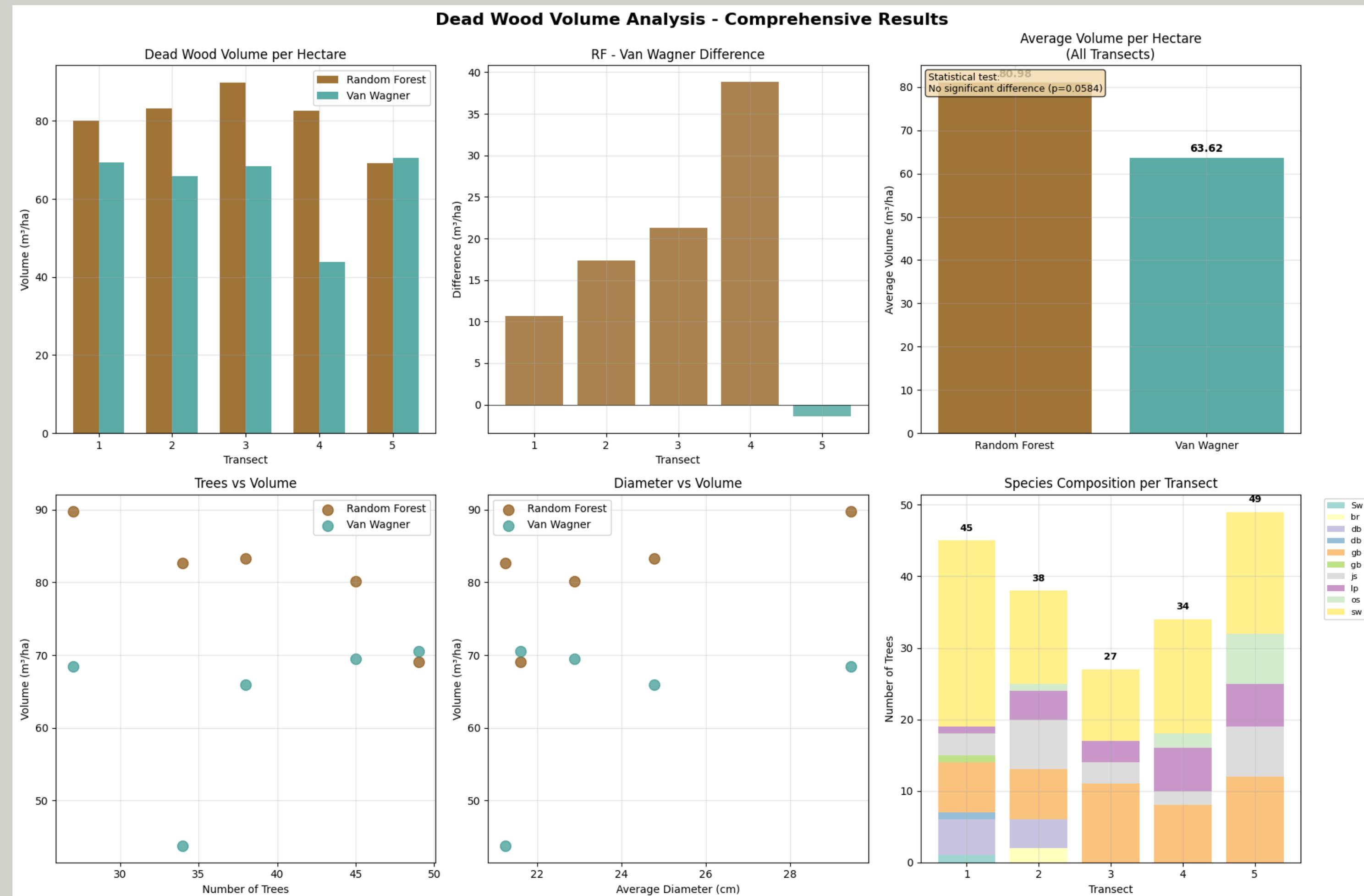
MSE=1510876.08

RE= 914.13%

RMSE=1229.18

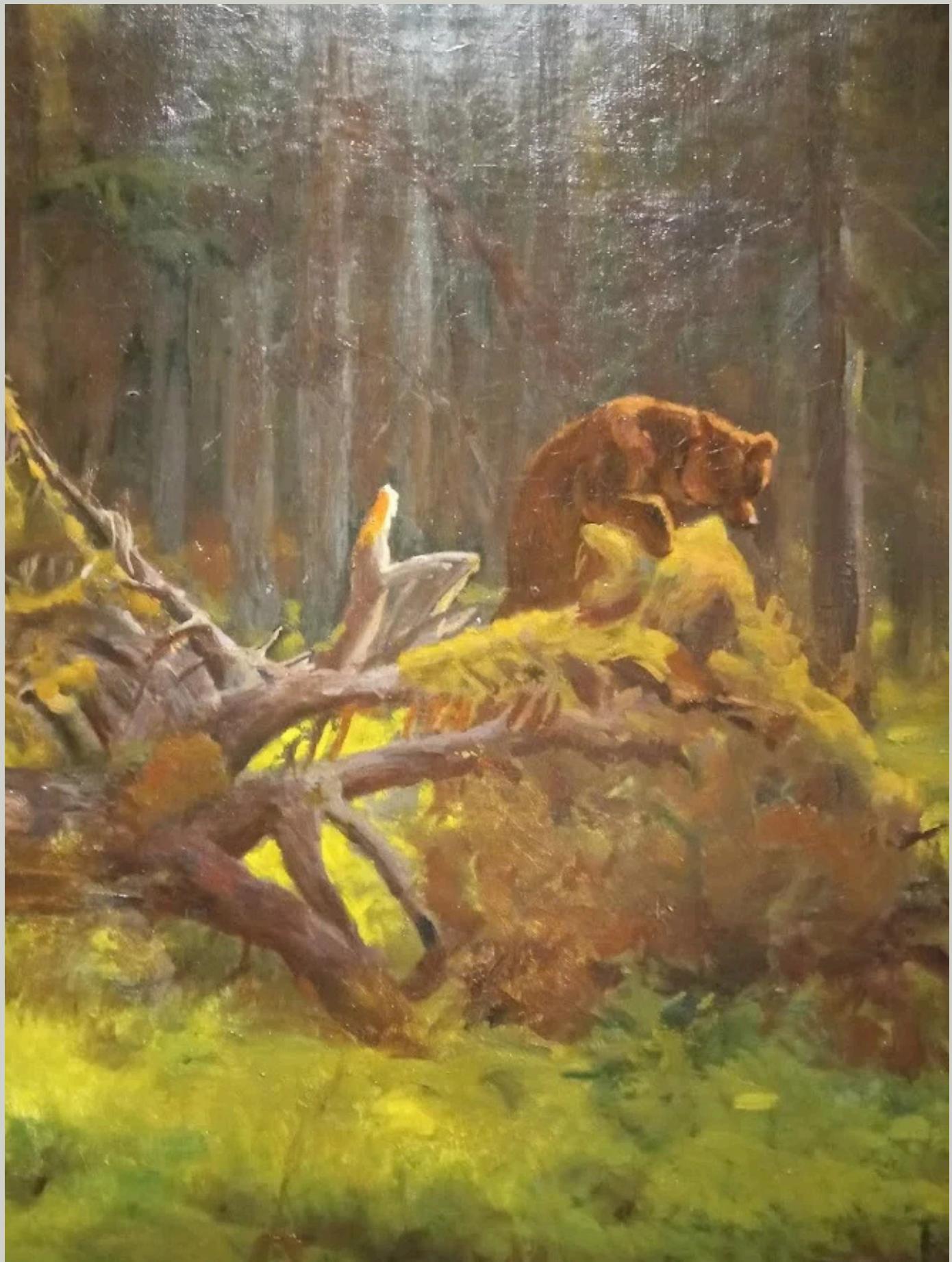
Coefficient of Variance= 125.05%

Dead Wood Volume Analysis - Comprehensive Results



Podsumowanie

- Metoda van Wagnera jest obarczona znaczącym relatywnym błędem,
- Metoda Van Wagnera sprawdza się przy dłuższych transektach, jest stabilna dla odcinków dłuższych niż 1050m, choć literatura pokazuje, że powinno się to sprawdzić dla różnych typów siedlisk,
- Dla krótszych transektów istnieją bardziej skuteczne metody, np. lasy losowe



Dziękujemy



Bibliografia

- Gutowski, et al., (2004), “Drugie życie drzewa”,
- Kuberski, et al., (2018) “Zasoby martwego drewna w Puszczy Białowieskiej na podstawie aktualnej inwentaryzacji na stałych powierzchniach badawczych”,
- Wagner, C. E., (1968) “The Line Intersect Method In Forest Fuel Samplin”
- Mapa lasów
- Józef Marian Chełmoński - wybrane obrazy

