# Tool Window Usage Analysis: manual vs auto

**Dataset:** toolwindow_data.csv | events: 3503 | users: 205 | episodes: 1865 | censored episodes kept: 34

### Assumptions & Cleaning:

• Standardized event_id to {open, close} and open_type to {manual, auto}.

• Consecutive opens policy: close_previous.

• Right-censored episodes retained for survival analysis.

## Summary statistics

### By open_type
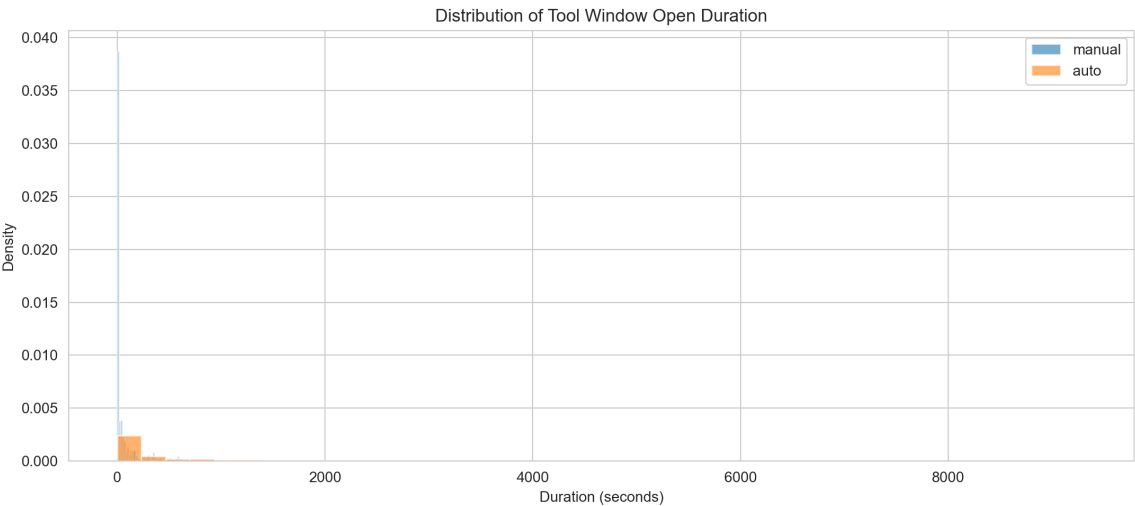
• Cleaning: min_duration_ms=100, IQR multiplier=3.0 (group-wise).

• Group comparison: Mann–Whitney U; Cliff's delta; bootstrap 95% CI for mean/median.

- Per-user analysis: 500 user. mean=66.05s (95% CI [55.81,76.75]) (median=8.59s (95% CI [7.21,11.02]), IQR=[1.81,55.18]

- auto: auto: n=982, mean=791.23s (95% CI [698.20,887.22]), median=157.54s (95% CI [133.80,185.81]), IQR=[31.64,791.75]
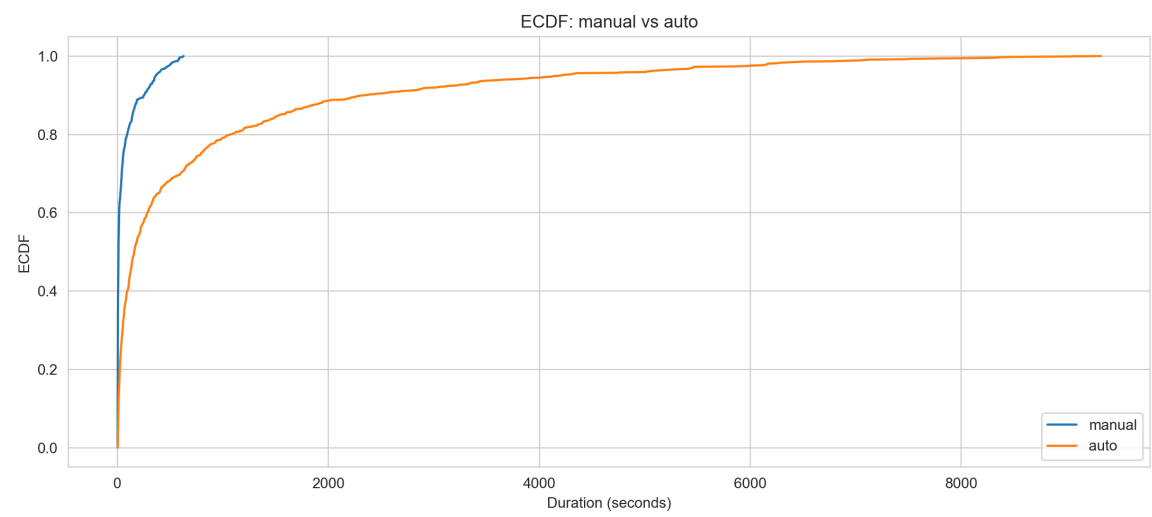
## Statistical tests

Mann–Whitney U: U=105866.50, p=6.19521e-90
Cohen's d=-0.610, mean_diff=-725.18s
Cliff's delta=-0.615 (magnitude: large)
Per-user Wilcoxon: n_users=109, W=527.00, p=8.08449e-14
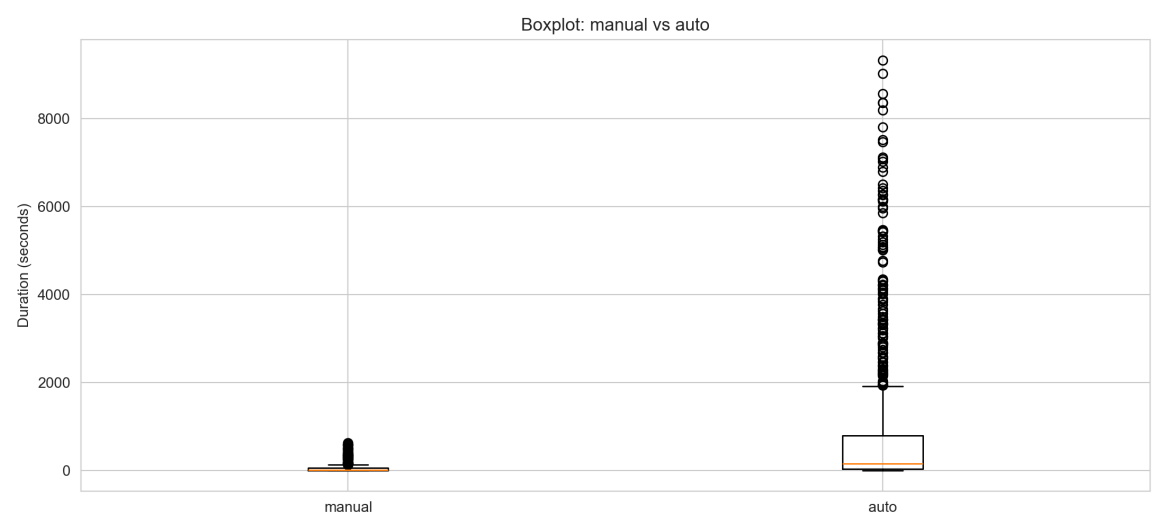Log-rank test: chi2=509.49, p=8.18938e-113

## Histogram



Distribution of Tool Window Open Duration

# ECDF



# Boxplot



# Kaplan–Meier