

Reasoning about the worst-case linear-time order statistic recurrence:

In each recursive call, $T(n/5)$ runs FIRST and must return the pivot BEFORE $T(3/4 n)$ can run at the top of each recursion (sub)tree. This contrasts recurrences where subproblems are independent (no info from the solution of a subproblem is needed to solve another subproblem).

Because median is an order statistic, $T(n/5)$ call can run with Select (median i , $n/5$). A large part of the recursion tree computes the median of medians for the top $T(3/4 n)$ call.