

NOTE

CORRECTION TO "AN INTEGRAL EQUATION IN AGE-DEPENDENT BRANCHING PROCESSES"

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The monotonicity conditions of the theorems ([1]) of Sections 2 and 3, respectively, are sufficient conditions but not necessary conditions, as shown by the following counterexample due to Professor David Miller. Let for $t \geq 0$,

$$(1) \quad m(t) = te^{-t} + \int_0^t m(t-u)e^{-u} du$$

and

$$(2) \quad m(0) = 0,$$

with solution

$$(3) \quad m(t) = 1 - e^{-t},$$

which is monotone increasing, but the monotonicity condition of Theorem 2 is violated.

The necessity fails since the renewal representation of Section 2,

$$(4) \quad R(t) = E[\sum_{i=1}^{N(t)} Y_i],$$

does not necessarily hold if the $\{Y_i\}$ are not either strictly positive or strictly negative.

REFERENCE

- [1] WEINER, H. J. (1965). An integral equation in age-dependent branching processes. *Ann. Math. Statist.* **36** 1569-1573.