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## A diminishing population whose every cohort more than replaces itself

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### Abstract

We observe that a dynamic population model can have period fertility that is always below replacement and cohort fertility that is always above replacement. We ask whether such a paradoxical population will get larger or smaller, and show that it must become smaller. Cohort replacement does not imply population replacement, and emphasizing fertility timing and cohort fertility ignores the issue of relative cohort size. The resolution of this apparent paradox reinforces the importance of the level of period fertility in demographic analysis.

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