1145-05-1451 **Hana Kim*** (`hakkai14@skku.edu`), **Louis W Shapiro** and **Gi-Sang Cheon**. *Stretched Motzkin paths bounded from below and their applications.*

Let $S = \{(a,0), (b,1), (c,-1)\}$ be a step set where a, b, c are integers such that $a \geq 0$, $b, c > 0$. In this paper we enumerate the lattice paths using the step set S bounded from below by the horizontal line $y = -\alpha$ for a non-negative integer α. In particular, for Motzkin paths, going down to $y = -1$ could be thought of as being on probation in academic circles or being in critical condition in medical terms. We examine four types of probationary conditions which lead to new interesting statistics on several well-known lattice paths. We adopt Riordan group theory to enumerate several statistics on such paths. The enumeration also allows us to prove the conjectures on the recurrence relations of several sequences posed by R. J. Mathar in OEIS. (Received September 24, 2018)