APPENDIX 1. Mean value of matrix elements were obtained from: a) National Center for Health Statistics, Center for Disease Control and Prevention, b) KIDS Count Data Center, National KIDS Count, c) National Shooting Sport Foundation d) Expert opinion and/or assumed given other transition rates, e) approximated using license sale data from Alabama Department of Conservation and Natural Resources, f) estimated using other parameter values and assuming adult mortality given data from a). We assumed values for mean variance and the beta distribution shape parameters to incorporate parametric uncertainty into the population simulations.

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| Hunter Population Simulation Parameters |
| Fecunditya |
| $$γ\_{P,i}$$ | Minimum fecundity rate of potential license holders | 0.01 |
| $$ρ\_{P,i}$$ | Maximum fecundity rate of potential license holders | 0.02 |
| $$γ\_{A,i}$$ | Minimum fecundity rate of annual license holders | 0.01 |
| $$ρ\_{A,i}$$ | Maximum fecundity rate of annual license holders | 0.02 |
| $$γ\_{L,i}$$ | Minimum fecundity rate of lifetime license holders | 0.01 |
| $$ρ\_{L,i}$$ | Maximum fecundity rate of lifetime license holders | 0.02 |
| Youth survivala |
| *µYY,i* | Youth survival | 0.92877 |
| *σYY,i* | Variance of *µYY,i* | 0.0001 |
| *m*YY | Variance distribution parameter *m* | 0.0001 |
| υYY | Variance distribution parameter υ | 0.00001 |
| Potential license holder survivalb |
| *µPP,i* | Survival of potential license holders | 0.972 |
| *σPP,i* | Variance of *µPP,i* | 0.001 |
| *m*PP | Variance distribution parameter *m* | 0.001 |
| υPP | Variance distribution parameter υ | 0.0001 |
| Annual license holder survivalc |
| *µAA,i* | Survival annual license holders | 0.68 |
| *σAA,i* | Variance of *µAA,i* | 0.01 |
| *m*AA | Variance distribution parameter *m* | 0.001 |
| υAA | Variance distribution parameter υ | 0.0001 |
| Lifetime license holder survivala |
| *µLL,i* | Survival of lifetime license hunters | 0.99 |
| *σLL,i* | Variance of *µLL,i* | 0.0005 |
| *m*LL | Variance distribution parameter *m* | 0.0001 |
| υLL | Variance distribution parameter υ | 0.00001 |
| Transition from youth to potential license holderd |
| *µYP,i* | Transition rate from youth to potential  | 0.07 |
| *σYP,i* | Variance of *µYP,i* | 0.0005 |
| *m*YP | Variance distribution parameter *m* | 0.0001 |
| υYP | Variance distribution parameter υ | 0.00001 |
| Transition from youth to annual license holderd |
| *µYA,i* | Transition from youth to annual | 0.001 |
| $$S\_{YA}^{O}$$ | Transition from youth to annual for outreach participants | 0.6 |
| *σYA,i* | Variance of *µYA,i* | 0.0001 |
| *m*YA | Variance distribution parameter *m* | 0.0001 |
| υYA | Variance distribution parameter υ | 0.00004 |
| Transition from youth to lifetime license holderd |
| *µYL,i* | Transition from youth to lifetime | 0.00001 |
| *σYL,i* | Variance of *µYL,i* | 0.000005 |
| *m*YL | Variance distribution parameter *m* | 0.00001 |
| υYL | Variance distribution parameter υ | 0.000001 |
| Transition from potential to annual license holdere |
| *µPA,i* | Transition from potential to annual | 0.02 |
| $$S\_{PA}^{O}$$ | Transition from potential to annual for outreach participants | 0.8 |
| *σPA,i* | Variance of *µPA,i* | 0.01 |
| *m*PA | Variance distribution parameter *m* | 0.001 |
| υPA | Variance distribution parameter υ | 0.0001 |
| Transition from potential to lifetime license holdere |
| *µPL,i* | Transition from potential to lifetime | 0.00002 |
| *σPL,i* | Variance of *µPL,i* | 0.00001 |
| *m*PL | Variance distribution parameter *m* | 0.00001 |
| υPL | Variance distribution parameter υ | 0.000001 |
| Transition from annual to potential license holder |
| *µAP,i* | Transition rate from annual to potential | 0.3115 |
| *σAP,i* | Variance of *µAP,i* | 0.01 |
| *m*AP | Variance distribution parameter *m* | 0.001 |
| υAP | Variance distribution parameter υ | 0.0001 |
| Transition from annual to lifetime license holder |
| *µAL,i* | Transition from annual to lifetime | 0.0005 |
| *σAL,i* | Variance of *µAL,i* | 0.00001 |
| *m*AL | Variance distribution parameter *m* | 0.00001 |
| υAL | Variance distribution parameter υ | 0.000001 |
| Density dependent survival of annual license holders |
| z | Density dependence parameter | 0.0005 |