METHODS
-Models were generated in Microsoft Excel (Redmond, WA)
-Each simulation is the average of 1000 randomly generated samples of 100 simulated subjects
-Model parameters were adjusted to maintain an overall model mean academic achievement score of ~47.5% (Block, 2012)
-Models were tested against a uniform distribution using $\chi^2$ goodness-of-fit

INTRODUCTION
-A number of animal models have demonstrated neuronal apoptosis after exposure of newborns to anesthetics
-In humans, multiple, early exposures to anesthetics have been associated with an increased likelihood of learning disability and poor academic achievement
-It is not known if the overall distribution of academic achievement in children with early exposure to anesthetics differs from that in the general population

RESULTS
-Uniform
-Uniform Gradient
$N_{95}=628; \chi^2\text{sig}=100\%$
-Uniform Decreasing Gradient
$N_{95}=786; \chi^2\text{sig}=97\%$
-Uniform V-shaped Gradient
$N_{95}=345; \chi^2\text{sig}=100\%$
-Uniform Inverse-V Gradient
$N_{95}=2819; \chi^2\text{sig}=38\%$
-Uniform Random Log-Normal
$N_{95}=1891; \chi^2\text{sig}=62\%$
-Uniform Sigmoid Threshold
$N_{95}=1275; \chi^2\text{sig}=81\%$
-Uniform Sigmoid Threshold
$N_{95}=1035; \chi^2\text{sig}=94\%$
-Uniform Sigmoid Threshold
$N_{95}=775; \chi^2\text{sig}=95\%$
-Uniform Sigmoid Threshold
$N_{95}=168; \chi^2\text{sig}=100\%$

MONTE CARLO SIMULATION OF DISTRIBUTIONS OF ACADEMIC ACHIEVEMENT
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CONCLUSIONS
-Many of the distributions, including Fixed %, Random %, Random Fixed %, and Random Log-Normal resemble that reported by Block, et.al.
-Other distributions differ only subtly from the uniform distribution
-Most distributions require a sample size of 1000 – 2000 for reasonable power

APPENDIX

Wilder RT, Flick RP, Sprung J, et.al.: Anesthesiology 2009;110:796
Block RI, Thomas JJ, Bayman EO, et.al.: Anesthesiology 2012;117:494