

# Death and Taxa

time-invariant differences in mammal species durations

Peter D Smits

Committee on Evolutionary Biology, University of Chicago

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The Paleobiology Database  
revealing the history of life



## Question

Why do taxa go extinct at different rates?

## Motivating questions

- ▶ How do mammal species traits affect extinction risk?
  - ▶ How do shared time of origination or evolutionary history relate?
- ▶ How do my findings compare to current risk factors?
- ▶ Is species extinction risk age-independent?

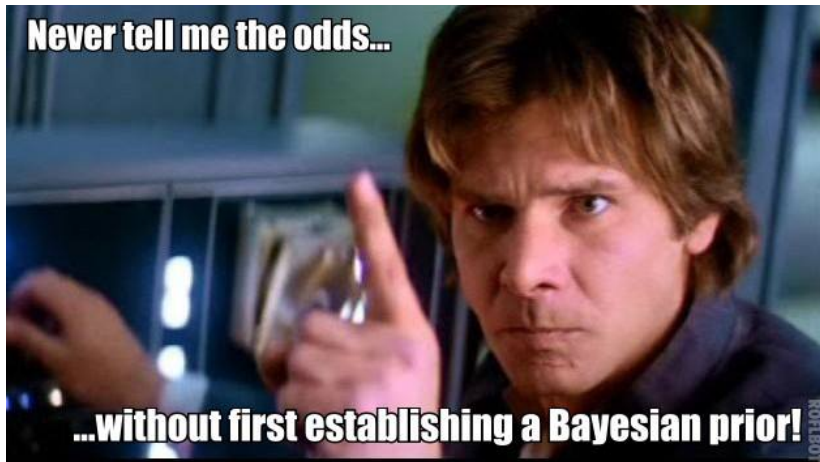
# Relationship between range size and extinction risk

# Hypotheses of effects of geographic range category

# Hypotheses of effects of dietary category

# Hypotheses of effects of locomotor category

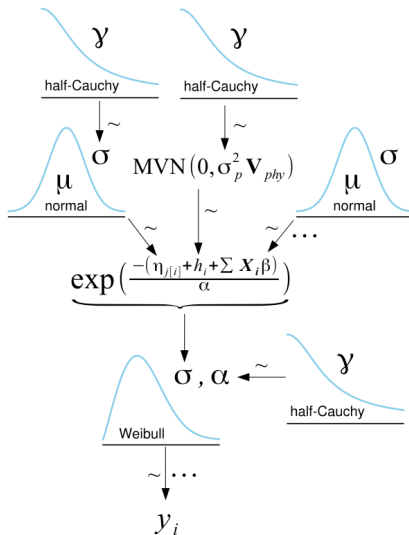
# Hierarchical Bayesian modeling approach



([www.countbayesie.com](http://www.countbayesie.com))



# Survival model diagram



# Pattern of species survival under two models

# Effect of dietary category on extinction risk

# Effect of locomotor category on extinction risk

# Difference in risk between origination cohorts

## Three sources of variance

## Comparison with the Recent

# Conclusions



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## Further posterior predictive checks

## Concerns regarding estimation of $\alpha$