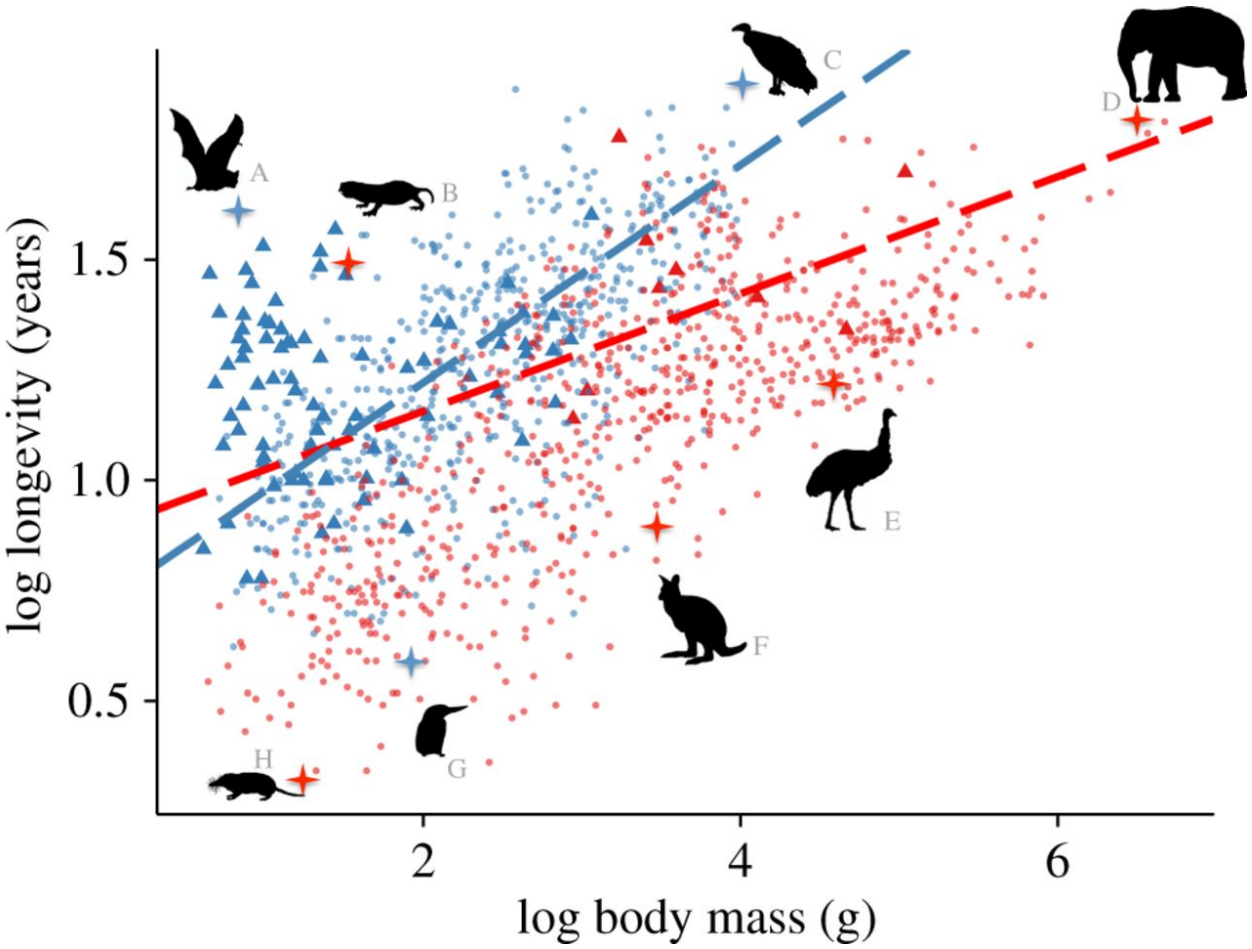
APPLYING INDUCTIVE AND DEDUCTIVE REASONING TO SOME REAL DATA

Graph of the relationships between body mass and maximum lifespan in birds and mammals



Silhouettes highlight a selection of species with much longer or shorter lifespans than expected given their body size. These species are (A) *Myotis brandtii*, Brandt's bat; (B) *Heterocephalus glaber*, naked mole rat; (C) *Vultur gryphus,* Andean condor; (D) *Loxodonta Africana*, African elephant; (E) *Dromaius novaehollandiae*, emu; (F) *Dorcopsulus macleayi*, Papuan forest-wallaby; (G) *Ceryle rudis,* pied kingfisher and (H) *Myosorex varius*, forest shrew.

Blue points and line represent volant birds and mammals. Red points and line represent non-volant birds and mammals. Blue triangles represent bat species and red triangles represent non-volant bird species.

Healy, K et al. (2014) Ecology and mode-of-life explain lifespan variation in birds and mammals, *Proceedings of the Royal Society B*.

1. What is the general relationship between body mass and longevity. Did you decide this by deduction or induction?

2. Generally how does a flying vs. a non-flying lifestyle make a difference to the general relationship between body mass and longevity. Did you decide this by deduction or induction?

3. Mark boldly on your graph where you estimate the following animals would appear:

A. Grizzly bear
B. Mole
C. Etruscan pygmy shrew (weighing only 1.3 grams)
D. Pelican
E. Homo sapiens

Be precise: did you make each of your five decisions by deduction, induction or a combination of both? What were some of the interesting details that arose during your discussion.