The demography of emperor penguins has been studied for decades using mark and recapture studies in Antarctica. Temperature in the winter is thought to have complex effects on penguins. On one hand, warmer temperatures might increase the availability of krill, a primary food source. On the other hand, these animals live on sea ice during the breeding period and the warm temperatures might break up the sea ice and reduce breeding success. The data provided gives demography of penguins during a ‘normal’ year and for a year in which temperatures are considered warm?

Scientific question: What are the sensitive life stages in the life cycle of the emperor penguin? How does the population growth rate differ between a normal and a warm year?

Metadata: Each row of data is an individual penguin. The penguin life cycle can be defined by 5 separate juvenile stages, breeding adults, and non-breeding adults. A non-breeding adult is an animal that breed in the past but is not breeding in the current year. The ‘stage t0’ and ‘stage t1’ columns show the stage of each individual from one year to the next. Each breeding adult can produce only one egg per year. The column ‘successfully fledged offspring’ gives the number of successfully fledged offspring for each breeding individual (0 or 1).