The Vanilla Shark Population

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2022-11-25

Some background

There is nothing special about this population of vanilla sharks, **Carcharhinus ordinarii**. The population lives around a remote island with nothing but deep ocean around, which has led to creating distinct and unique life history traits. A yearly life cycle of one of this sharks runs as follows. The first things that happens is a mating season; gestation is negligbly short, and mating is limited only by the mature females, all of which mate every year. Litters always consists of 2 juveniles, of which sex is randomly assigned in line with a 50/50 sex ratio. Mature males can father multiple litters, but a litter can never have more than father; hence, not all mature males father a litter every mating cycle. Sampling happens pretty quickly after the mating season, and sampling is non-lethal. We can assume that there is no natural mortality between mating and sampling. Sampling is done all around the island with pretty even effort. After sampling there is a long period of ordinary living (again, vanilla sharks are *very* basic sharks), where the sharks swim around the island, eat some smaller fish, and some die. In the end, the sharks make it to the end of the year following survival probability ϕ. The surviving sharks celebrate their birthdays, and all ages are incremented by 1. Any sharks whose age surpasses the maximum age of the vanilla shark, which is 19, are added to the graveyard. Once the lost ones are buried (underwater cremation has proven difficult, for obvious reasons), the new year starts and the cycle continues.

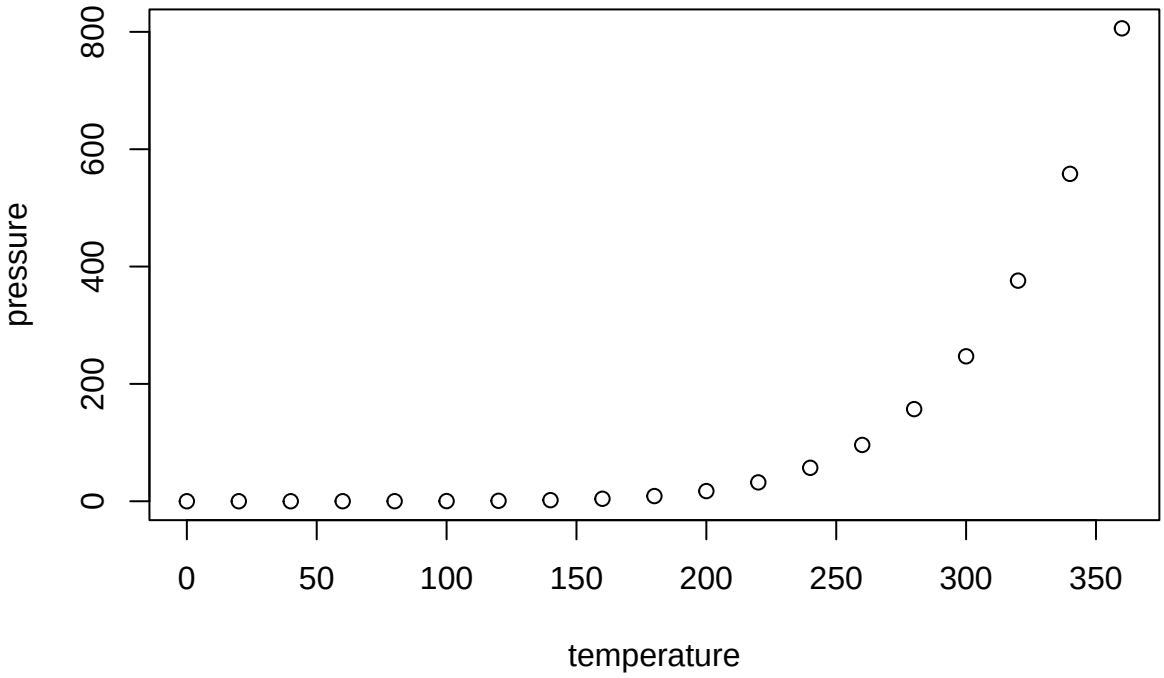
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.