HW4

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Problem 1

For this problem, we will use the pups dataset. Below, we read and clean the data, coverting from 'wide' to 'long' formmat.

```
#load and clean data
pups = readr::read_csv(file = "FAS_pups.csv") %>%
  clean_names() %>%
  gather(key = pd_outcome, value = days, pd_ears:pd_walk) %>%
  mutate(pd_outcome = str_replace(pd_outcome, 'pd_', ""),
         litter_number = str_replace(litter_number, '#', ''))
```

```
## Parsed with column specification:
## cols(
##   `Litter Number` = col_character(),
##   Sex = col_integer(),
##   `PD ears` = col_integer(),
##   `PD eyes` = col_integer(),
##   `PD pivot` = col_integer(),
##   `PD walk` = col_integer()
## )
```

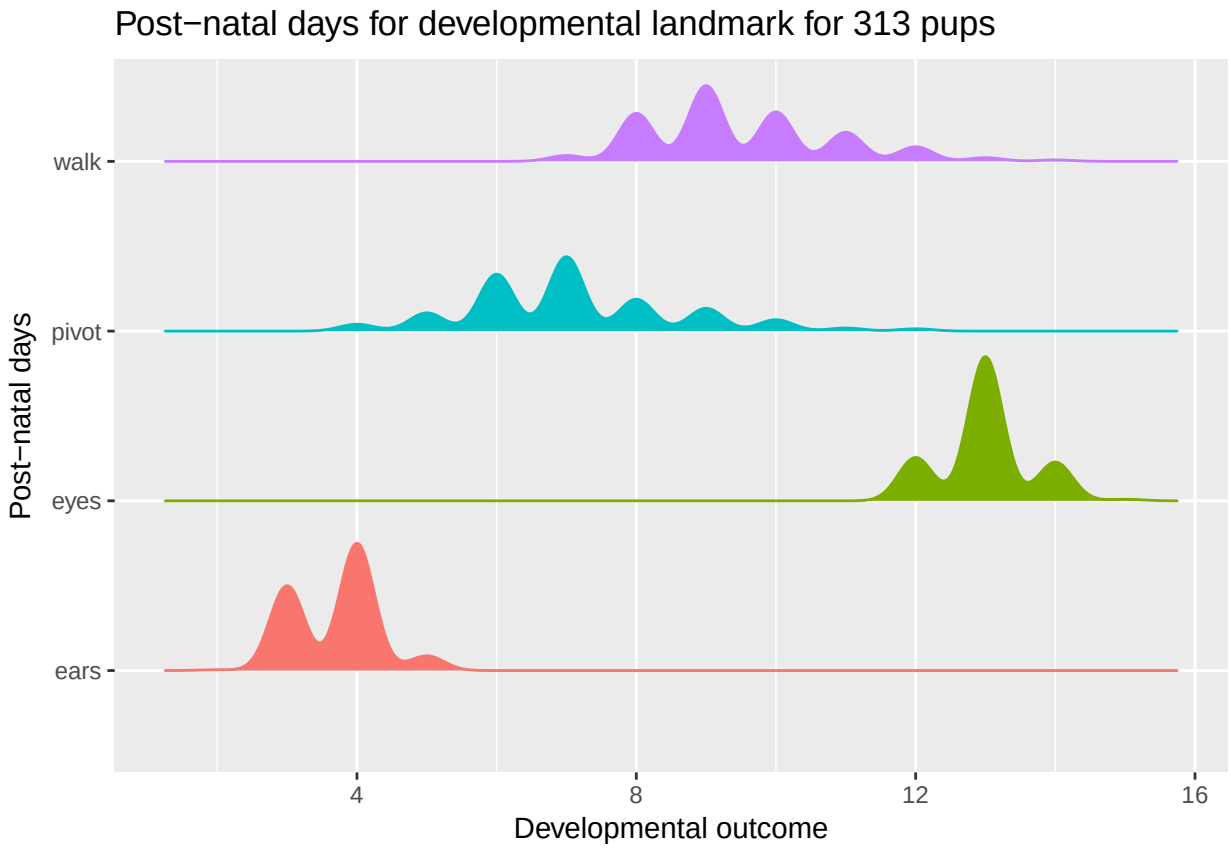
Here we create plots of distributions of post-natal days for each developmental landmark.

```
# pups %>% filter(pd_outcome == "ears") %>% nrow()

ggplot(pups, aes(x = days, y = pd_outcome, color = pd_outcome)) +
  geom_density_ridges(aes(fill = pd_outcome), scale = .85) +
  theme(legend.position = "NULL") +
  labs(
    title = "Post-natal days for developmental landmark for 313 pups",
    x = "Developmental outcome",
    y = "Post-natal days"
  )
```

```
## Picking joint bandwidth of 0.248
```

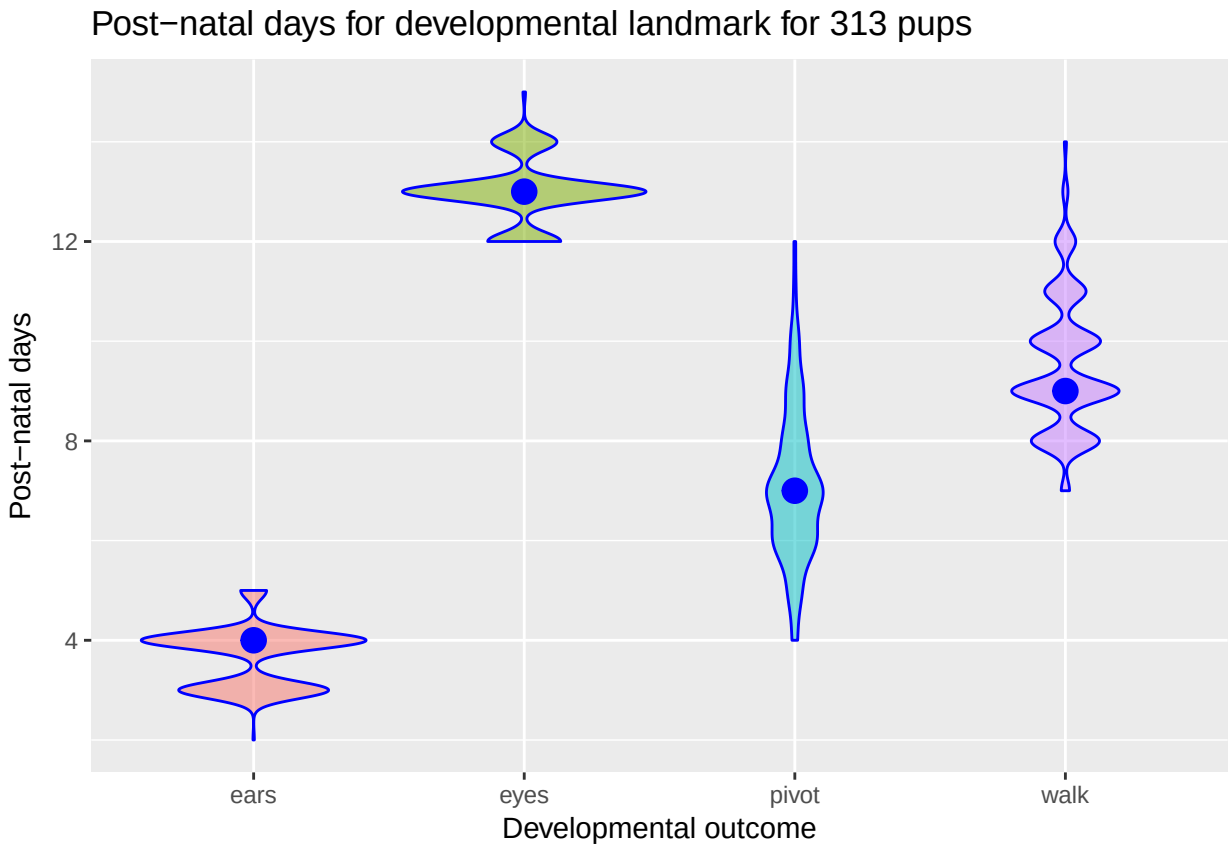
```
## Warning: Removed 44 rows containing non-finite values
## (stat_density_ridges).
```




```
ggplot(pups, aes(x = pd_outcome, y = days)) +
  geom_violin(aes(fill = pd_outcome), color = "blue", alpha = .5) +
  stat_summary(fun.y = median, geom = "point", color = "blue", size = 4) +
  theme(legend.position = "NULL") +
  labs(
    title = "Post-natal days for developmental landmark for 313 pups",
    x = "Developmental outcome",
    y = "Post-natal days"
  )
```

```
## Warning: Removed 44 rows containing non-finite values (stat_ydensity).
```

```
## Warning: Removed 44 rows containing non-finite values (stat_summary).
```



The developmental periods for eyes and ears both look narrow, compared to those for walk and pivot. The majority of pups have eye development at 13 days. The majority of pups have ear development at 4 days, with some developing them sooner. The means for pivot and walk are about 7 and 9 days, respectively.