Fig_1F

```
source("source.R")

path_file <-
  "data/dat_all.csv"
```

- import data

```
dat_raw <-
  path_file %>%
  fread() %>%
  as_tibble()
```

- call N

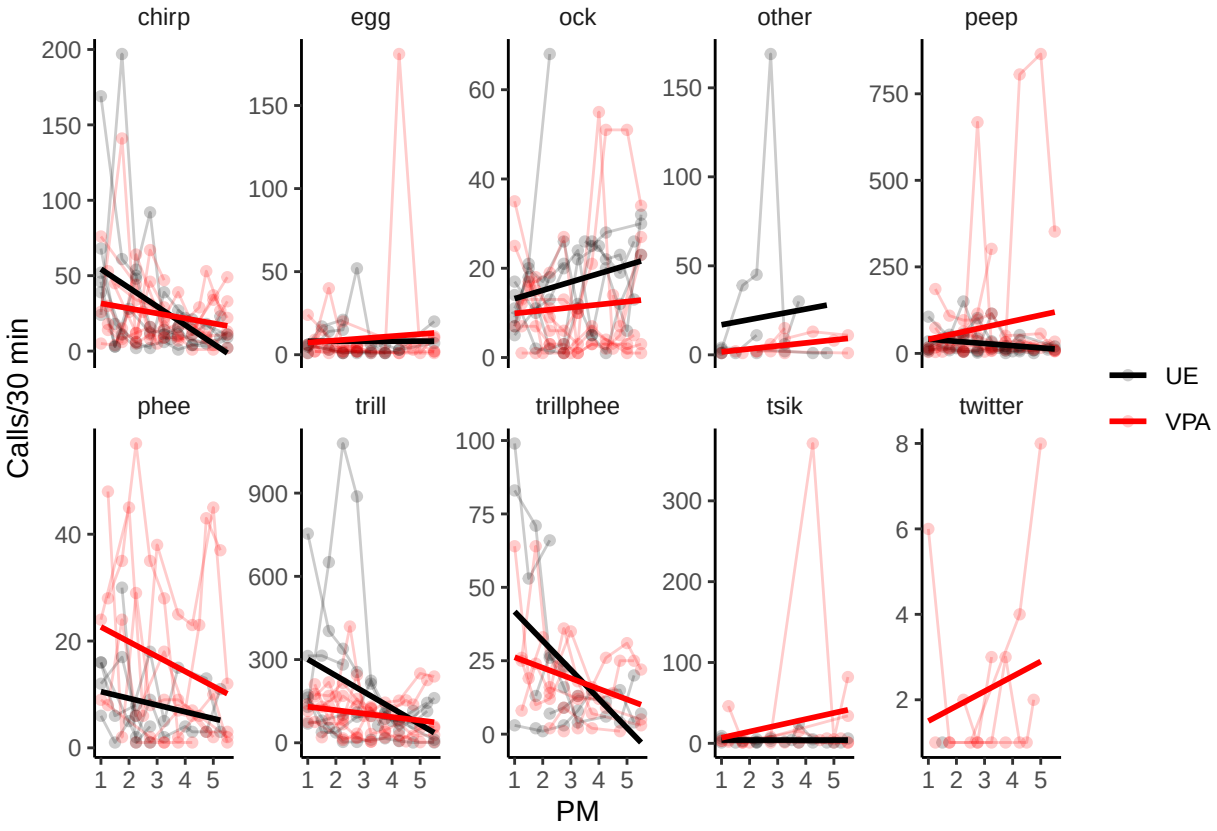
```
dat_N <-
  dat_raw %>%
  group_nest(Name, calltype, type, PW, PM, fm, parents) %>%
  mutate(n = map_dbl(data, nrow))
```

```
dat_N %>%
  group_by(calltype, type) %>%
  summarise(n = sum(n)) %>%
  pivot_wider(
    values_from = n,
    names_from = type
  )
```

```
## # A tibble: 10 x 3
## # Groups:   calltype [10]
##    calltype     UE   VPA
##    <chr>     <dbl> <dbl>
##  1 chirp      1273  1498
##  2 egg         203   416
##  3 ock         770   647
##  4 other       315    74
##  5 peep       1224  4858
##  6 phee        217   738
##  7 trill      8164  6262
##  8 trillphee   609   700
##  9 tsik         84   607
## 10 twitter       1    38
```

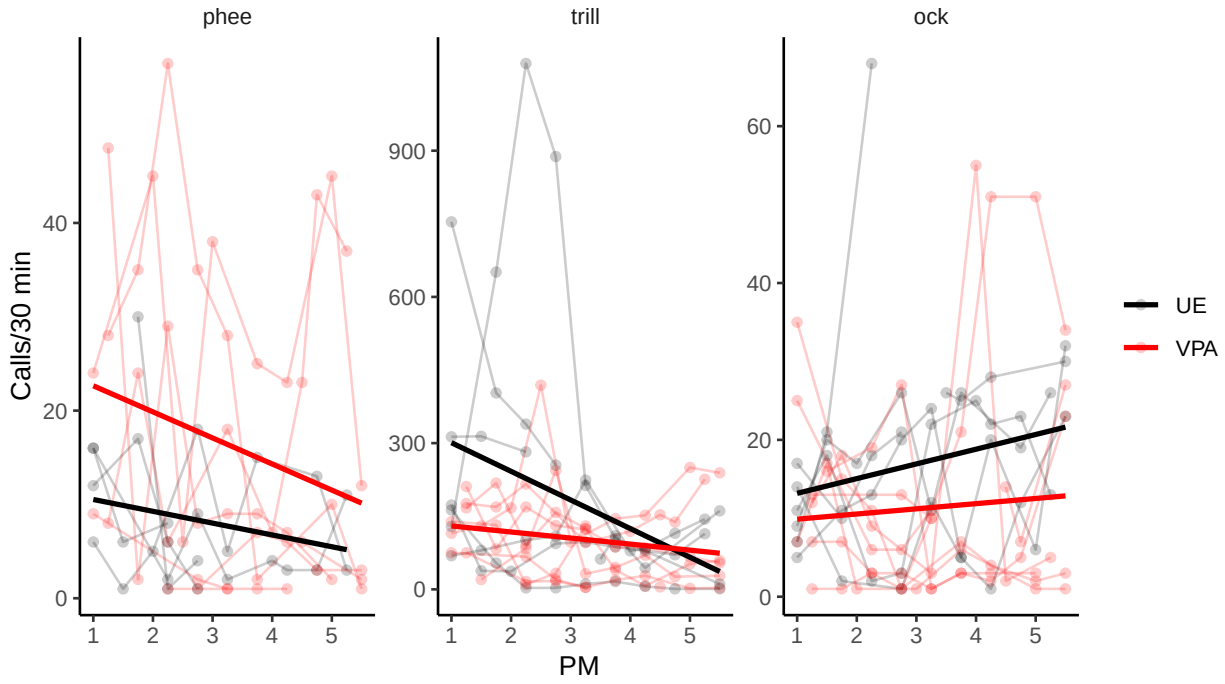
- visualization

```
dat_N %>%
  ggplot() +
  aes(PM, n, color = type) +
  geom_line(aes(group = Name), alpha = 0.2) +
  geom_point(alpha = 0.2) +
  geom_smooth(method = "lm", se = F) +
  scale_color_manual(values = c(UE = "black", VPA = "red")) +
  facet_wrap(~calltype, scales = "free_y", nrow = 2) +
  labs(y = "Calls/30 min")
```




```
.calls <-  c("phee", "trill", "ock")

dat_N %>%
  filter(calltype %in% .calls) %>%
  mutate(calltype = factor(calltype, levels = .calls)) %>%
  ggplot() +
  aes(PM, n, color = type) +
  geom_line(aes(group = Name), alpha = 0.2) +
  geom_point(alpha = 0.2) +
  geom_smooth(method = "lm", se = F) +
  scale_color_manual(values = c(UE = "black", VPA = "red")) +
  facet_wrap(~calltype, scales = "free_y", nrow = 1) +
  labs(y = "Calls/30 min")
```



- two-way ANOVA

```
dat_N %>%
  group_by(calltype) %>%
  rstatix::anova_test(
    n ~ PM * type
  )%>%
  data.frame() %>%
  filter(Effect == "type")
```

```
##      calltype Effect DFn DFd     F     p p..05   ges
## 1       chirp   type   1 101 0.392 0.533       0.004
## 2         egg   type   1  63 0.071 0.790       0.001
## 3         ock   type   1  98 5.709 0.019     * 0.055
## 4       other   type   1  25 1.898 0.181       0.071
## 5        peep   type   1 100 3.386 0.069       0.033
## 6        phee   type   1  68 7.504 0.008     * 0.099
## 7       trill   type   1 102 5.556 0.020     * 0.052
## 8  trillphee   type   1  61 0.325 0.571       0.005
## 9        tsik   type   1  42 1.355 0.251       0.031
## 10    twitter   type   1  15 0.092 0.766       0.006
```

- model selection

```
dat_fit <-
  dat_N  %>%
  group_nest(calltype) %>%
  mutate(model = list(list_model)) %>%
  unnest(model) %>%
```

```
  rowid_to_column("modelid") %>%
  group_by(calltype) %>%
  mutate(modelid = modelid - min(modelid) + 1) %>%
  ungroup() %>%
  mutate(fit = map2(model, data, ~.x(.y))) %>%
  mutate(AIC = map_dbl(fit, AIC)) %>%
  group_by(calltype) %>%
  mutate(dAIC = AIC - min(AIC)) %>%
  ungroup()

dat_fit %>%
  select(modelid, calltype, dAIC) %>%
  pivot_wider(
    values_from = dAIC,
    names_from = calltype
  ) %>%
  print(n = 100)
```

```
## # A tibble: 21 x 11
##    modelid chirp    egg     ock other  peep  phee trill trillphee  tsik twitter
##      <dbl> <dbl>  <dbl>   <dbl> <dbl> <dbl> <dbl> <dbl>     <dbl> <dbl>   <dbl>
##  1       1 28.6  1.56   15.6    10.3  74.2  23.3  59.4      55.3  13.7    0.719
##  2       2 20.5  3.65   16.2    10.7  70.9  22.3  46.5      48.5  13.3    6.41
##  3       3 23.4  3.65   16.7    10.9  73.2  25.3  53.1      50.0  13.7    6.40
##  4       4 11.9  3.43    4.21    9.65 27.7  10.7  20.3      14.6  10.9    0
##  5       5 16.1  3.35    3.03   10.6  12.7  17.1  39.5      17.2   9.73   4.83
##  6       6 29.8  3.46   12.2    10.4  72.6  19.9  55.6      56.6  14.1    2.34
##  7       7 26.2  0.189  11.2     4.32 63.2  18.8  45.2      53.8   6.74   4.75
##  8       8 21.1  0.0447  3.03    1.82 36.6   8.78 17.8      21.8   4.78   4.69
##  9       9 25.3  0       0.699   4.12 38.5   6.83 39.3      22.9   4.86   4.75
## 10      10 19.0  3.34   16.0    12.2  75.3  23.7  52.7      45.1  14.7    1.62
## 11      11 18.1  4.98   17.6    10.5  68.5  22.9  41.2      46.1  12.1   10.2
## 12      12 20.5  4.98   18.8    10.8  70.7  26.7  47.4      46.9  12.3   10.2
## 13      13  6.40 4.80    4.85    9.52 25.0  11.1  13.9      13.3   9.89   3.97
## 14      14 11.5  4.63    3.72   10.6   8.60 17.5  33.5      16.6   8.09   8.78
## 15      15 17.8  7.18   13.8    14.1  74.4  19.8  47.0      45.4  16.7    3.51
## 16      16 11.6  1.40   13.6     2.42 56.4  18.7  26.1      41.3   3.17   8.74
## 17      17  0    1.14    0.0876  1.68 13.7   6.44  0         9.01  1.35   2.40
## 18      18  4.98 1.03    0       2.42  0     0    22.8       0     0      7.12
## 19      19 11.2  1.40   13.0     2.42 56.4  18.7  26.6      41.3   3.17   8.74
## 20      20  8.65 1.32    4.31    0    29.8   8.91  4.58     18.0   1.65   8.61
## 21      21 11.5  1.27    1.76    2.33 30.3   7.46 21.9      14.8   1.56   8.74
```

```
dat_minAIC <-
  dat_fit %>%
  filter(dAIC == 0)

dat_minAIC
```

```
## # A tibble: 10 x 7
##    modelid calltype                data model  fit          AIC  dAIC
##      <dbl> <chr>     <list<tibble[,8]>> <list> <list>     <dbl> <dbl>
##  1      17 chirp              [105 x 8] <fn>   <lmerMod>  995.      0
```

```
##  2       9 egg               [67 x 8] <fn>   <lmerMod>  612.      0
##  3      18 ock              [102 x 8] <fn>   <lmerMod>  795.      0
##  4      20 other             [29 x 8] <fn>   <lmerMod>  276.      0
##  5      18 peep             [104 x 8] <fn>   <lmerMod> 1246.      0
##  6      18 phee              [72 x 8] <fn>   <lmerMod>  562.      0
##  7      17 trill            [106 x 8] <fn>   <lmerMod> 1332.      0
##  8      18 trillphee         [65 x 8] <fn>   <lmerMod>  526.      0
##  9      18 tsik              [46 x 8] <fn>   <lmerMod>  489.      0
## 10       4 twitter           [18 x 8] <fn>   <lmerMod>   78.4     0
```