Grad admissions: IU Biology

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Objective

Track trends in graduate admission starting in 2011 with particular emphasis on underrepresented minorities

Set working environment and load packages

```
# Clear and set working directory
rm(list = ls())
setwd("~/GitHub/bioadmissions/")

# Require and/or install packages
package.list <- c('grid', 'png', 'tidyverse',"reshape2", "cowplot")
for (package in package.list) {
  if (!require(package, character.only=T, quietly=T)) {
    install.packages(package)
    library(package, character.only=T)
  } }
```

Load data

```
# Load data set
data <- read.delim("~/GitHub/bioadmissions/data/BioGradAdmisssions2.txt",
              sep = "", header = TRUE)

# Create proportion underrepresented minority (urm) columns
data2 <- data %>%
 select(year, section, app.num, app.urm, inv.urm, inv.num, off.urm, off.num,
        acc.urm, acc.num) %>%
 mutate(
  app.per.urm = app.urm/app.num, # proportion urm applied
  inv.per.urm = inv.urm/inv.num, # proportion urm invited
  off.per.urm = off.urm/off.num, # proportion urm offered
  acc.per.urm = acc.urm/acc.num  # proportion urm accepted
)
```

Trends in underrepresented minority students by numbers

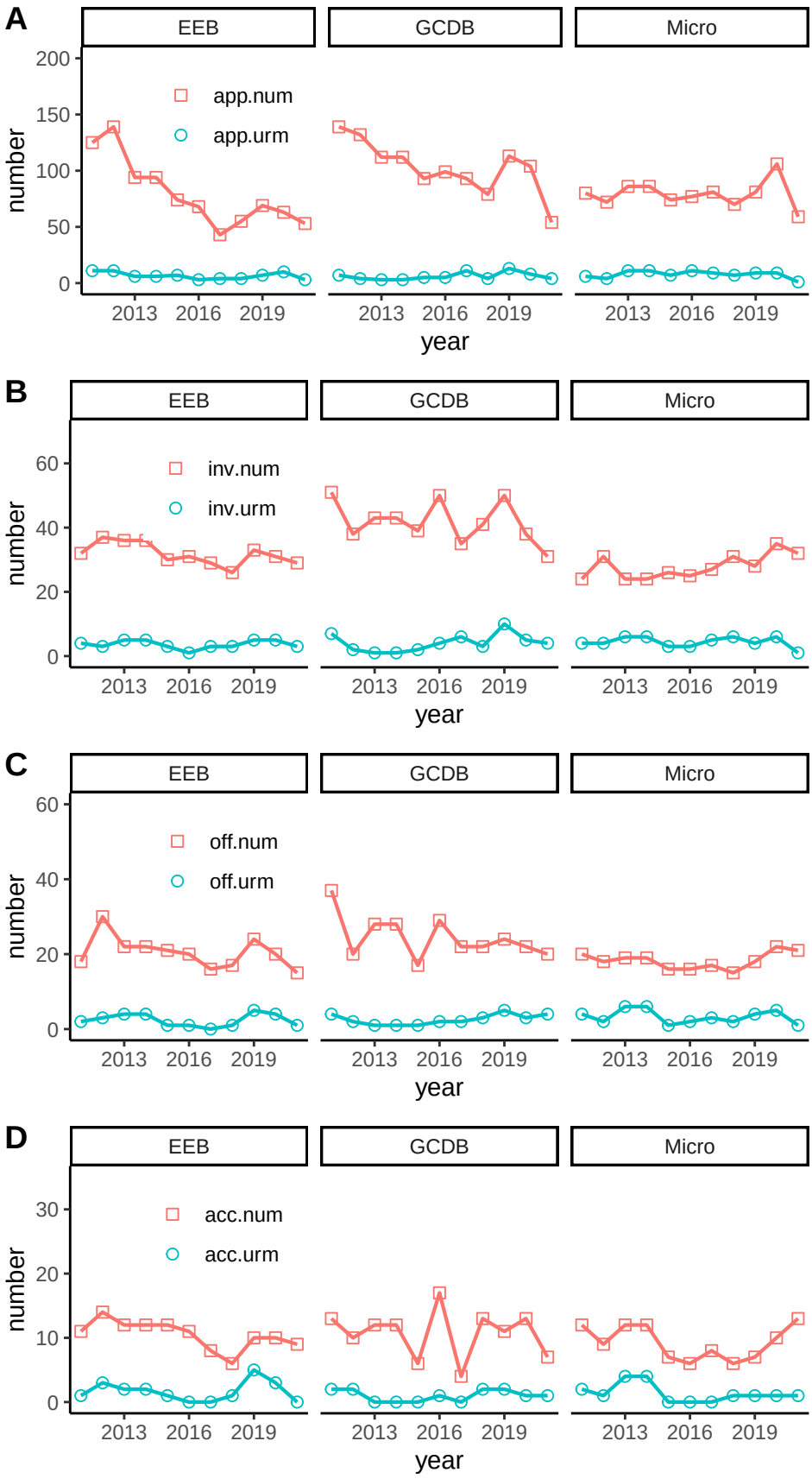
```
# applications
plot.app <- data2 %>%
  # filter(section == "EEB")  %>%
  pivot_longer(cols = c("app.num", "app.urm"), names_to = "type", values_to = "number")%>%
  ggplot(data = ., aes(x = year, y = number, color = type)) +
  geom_line(aes(linetype = "solid"), size = 0.75, show.legend = F) +
  geom_point(aes(shape = type), size = 2) + scale_linetype_manual(values = c(1,1)) +  ylim(0, 200) +
  scale_shape_manual(values=c(0,1)) + theme_classic() + theme(legend.position = c(0.2, 0.75)) +
  theme(legend.title = element_blank()) +
  facet_wrap(~section)

# invitations
plot.inv <- data2 %>%
  # filter(section == "EEB")  %>%
  pivot_longer(cols = c("inv.num", "inv.urm"), names_to = "type", values_to = "number")%>%
  ggplot(data = ., aes(x = year, y = number, color = type)) +
  geom_line(aes(linetype = "solid"), size = 0.75, show.legend = F) +
  geom_point(aes(shape = type), size = 2) + scale_linetype_manual(values = c(1,1)) + ylim(0, 70) +
  scale_shape_manual(values=c(0,1)) + theme_classic() + theme(legend.position = c(0.2, 0.75))+
  theme(legend.title = element_blank()) +
  facet_wrap(~section)

# offers
plot.off <- data2 %>%
  # filter(section == "EEB")  %>%
  pivot_longer(cols = c("off.num", "off.urm"), names_to = "type", values_to = "number")%>%
  ggplot(data = ., aes(x = year, y = number, color = type)) +
  geom_line(aes(linetype = "solid"), size = 0.75, show.legend = F) +
  geom_point(aes(shape = type), size = 2) + scale_linetype_manual(values = c(1,1)) + ylim(0, 60) +
  scale_shape_manual(values=c(0,1)) + theme_classic() + theme(legend.position = c(0.2, 0.75))+
  theme(legend.title = element_blank()) +
  facet_wrap(~section)

# acceptances
plot.acc <- data2 %>%
  # filter(section == "EEB")  %>%
  pivot_longer(cols = c("acc.num", "acc.urm"), names_to = "type", values_to = "number")%>%
  ggplot(data = ., aes(x = year, y = number, color = type)) +
  geom_line(aes(linetype = "solid"), size = 0.75, show.legend = F) +
  geom_point(aes(shape = type), size = 2) + scale_linetype_manual(values = c(1,1)) + ylim(0, 35) +
  scale_shape_manual(values=c(0,1)) + theme_classic() + theme(legend.position = c(0.2, 0.75))+
  theme(legend.title = element_blank()) +
  facet_wrap(~section)

plot_grid(plot.app, plot.inv, plot.off, plot.acc, labels = "AUTO", ncol = 1)
```


A
EEB
GCDB
Micro
app.num
app.urm
number
year
B
inv.num
inv.urm
C
off.num
off.urm
D
acc.num
acc.urm

Trends in underrepresented minority students by proportions

```
plot.props <- data2 %>%
  # filter(section == "EEB")  %>%
  pivot_longer(cols = c("app.per.urm", "inv.per.urm", "off.per.urm", "acc.per.urm"),
      names_to = "type", values_to = "proportion") %>%
  ggplot(data = ., aes(x = year, y = proportion, color = type)) +
  geom_line(aes(linetype = "solid"), size = 0.75, show.legend = F) +
  geom_point(aes(shape = type), size = 2) + scale_linetype_manual(values = c(1,1,1,1)) +
  scale_shape_manual(values=c(0,1,0,0)) + theme_classic() + theme(legend.position = c(0.1, 0.8))+
  theme(legend.title = element_blank()) +
  facet_wrap(~section)

plot.props
```