01-exposure

```r
knitr::opts_chunk$set(
    echo = T,
    message = FALSE,
    warning = FALSE
)
options(scipen = 99999)
library(tidyverse)
```

```
-- Attaching packages ------------------------------------ tidyverse 1.3.1 --


v ggplot2 3.4.4      v purrr   1.0.2
v tibble  3.2.1      v dplyr   1.1.3
v tidyr   1.3.0      v stringr 1.5.0
v readr   2.1.1      v forcats 0.5.1


-- Conflicts ------------------------------------- tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```r
library(zipcodeR)
```

Pink Slime Calculations

Read in data

```r
pink_slime_by_person <- read_csv("../data/pink_slime_by_person.csv")
```

Exposure

Percent Exposed

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% pull(pink_slime_flag),
    w = pink_slime_by_person %>% pull(weight)),
    se = diagis::weighted_se(x = pink_slime_by_person %>% pull(pink_slime_flag),
    w = pink_slime_by_person %>% pull(weight))) %>%
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
   mean      se    low   high
  <dbl>   <dbl>  <dbl>  <dbl>
1 0.0374 0.00751 0.0227 0.0521
```

```r
pink_slime_by_person %>%
  summarize(x = sum(pink_slime_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)
```

```
# A tibble: 1 x 10
      x     n estimate statistic  p.value parameter conf.low conf.high method
  <dbl> <dbl>    <dbl>     <dbl>    <dbl>     <int>    <dbl>     <dbl> <chr>
1  47.4 1267.   0.0374    1083. 2.03e-237         1   0.0279    0.0498 1-sampl~
# i 1 more variable: alternative <chr>
```

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% pull(untrustworthy_flag),
    w = pink_slime_by_person %>% pull(weight)),
    se = diagis::weighted_se(x = pink_slime_by_person %>% pull(untrustworthy_flag),
    w = pink_slime_by_person %>% pull(weight))) %>%
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
  mean     se   low  high
  <dbl>  <dbl> <dbl> <dbl>
1 0.391 0.0208 0.350 0.431
```

```r
weights::wtd.t.test(x = pink_slime_by_person %>% pull(pink_slime_flag),
                    weight = pink_slime_by_person %>% pull(weight),
                    y = pink_slime_by_person %>% pull(untrustworthy_flag),
                    weighty = pink_slime_by_person %>% pull(weight))
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
  t.value         df    p.value
 -23.7399 1602.6137     0.0000

$additional
 Difference        Mean.x        Mean.y     Std. Err
-0.35335046   0.03738250   0.39073296   0.01488424
```

```r
pink_slime_by_person %>%
  summarize(x = sum(untrustworthy_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)
```

```
# A tibble: 1 x 10
      x     n estimate statistic  p.value parameter conf.low conf.high method
  <dbl> <dbl>    <dbl>     <dbl>    <dbl>     <int>    <dbl>     <dbl> <chr>
1  495. 1267.    0.391      60.1 9.20e-15         1    0.364     0.418 1-sample~
# i 1 more variable: alternative <chr>
```

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% pull(local_only_flag),
       w = pink_slime_by_person %>% pull(weight)),
       se = diagis::weighted_se(x = pink_slime_by_person %>% pull(local_only_flag),
       w = pink_slime_by_person %>% pull(weight))) %>%
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
   mean     se   low  high
  <dbl>  <dbl> <dbl> <dbl>
1 0.364 0.0204 0.324 0.404
```

```r
pink_slime_by_person %>%
  summarize(x = sum(local_only_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)
```

```
# A tibble: 1 x 10
      x     n estimate statistic  p.value parameter conf.low conf.high method
  <dbl> <dbl>    <dbl>     <dbl>    <dbl>     <int>    <dbl>     <dbl> <chr>
1  461. 1267.    0.364      93.0 5.28e-22         1    0.338     0.391 1-sample~
# i 1 more variable: alternative <chr>
```

```r
prop.test(x = c(47.35446, 461.2782),
          n = c(1266.755, 1266.755)) %>%
  broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic  p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>    <dbl>     <dbl>    <dbl>     <dbl> <chr>
1    0.0374     0.364      419. 3.25e-93         1   -0.356    -0.297 2-sample ~
# i 1 more variable: alternative <chr>
```

```r
prop.test(x = c(47.35446, 494.9629),
          n = c(1266.755, 1266.755)) %>%
  broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic  p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>    <dbl>     <dbl>    <dbl>     <dbl> <chr>
1    0.0374     0.391      468. 8.90e-104        1   -0.383    -0.324 2-sample~
# i 1 more variable: alternative <chr>
```

```r
weights::wtd.t.test(x = pink_slime_by_person %>% pull(pink_slime_flag),
                    weight = pink_slime_by_person %>% pull(weight),
                    y = pink_slime_by_person %>% pull(local_only_flag),
                    weighty = pink_slime_by_person %>% pull(weight))
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
    t.value          df     p.value
 -22.21919  1612.42740     0.00000

$additional
 Difference       Mean.x       Mean.y     Std. Err
-0.32675912   0.03738250   0.36414162   0.01470616
```

Presidential Support

```
pres_support <- pink_slime_by_person %>%
  group_by(presvote20combined) %>%
  summarize(x = sum(pink_slime_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)

prop.test(x = c(pres_support %>% filter(presvote20combined == "Donald Trump") %>% pull(x),
                pres_support %>% filter(presvote20combined == "Joe Biden") %>% pull(x)),
          n = c(pres_support %>% filter(presvote20combined == "Donald Trump") %>% pull(n),
                pres_support %>% filter(presvote20combined == "Joe Biden") %>% pull(n))) %
  broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>   <dbl>     <dbl>    <dbl>     <dbl> <chr>
1    0.0207    0.0442      4.18  0.0409         1   -0.0452  -0.00173 2-sample t~
# i 1 more variable: alternative <chr>
```

```
pres_support_lib <- pink_slime_by_person %>%
  group_by(presvote20combined) %>%
  summarize(x = sum(pink_slime_lib_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)
```

```r
prop.test(x = c(pres_support_lib %>% filter(presvote20combined == "Donald Trump") %>% pull
                pres_support_lib %>% filter(presvote20combined == "Joe Biden") %>% pull(x)
          n = c(pres_support_lib %>% filter(presvote20combined == "Donald Trump") %>% pull
                pres_support_lib %>% filter(presvote20combined == "Joe Biden") %>% pull(n)
  broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic  p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>    <dbl>     <dbl>    <dbl>     <dbl> <chr>
1   0.00508    0.0362      11.4 0.000729         1  -0.0485   -0.0138 2-sample ~
# i 1 more variable: alternative <chr>
```

```r
pres_support_con <- pink_slime_by_person %>%
  group_by(presvote20combined) %>%
  summarize(x = sum(pink_slime_con_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)

prop.test(x = c(pres_support_con %>% filter(presvote20combined == "Donald Trump") %>% pull
                pres_support_con %>% filter(presvote20combined == "Joe Biden") %>% pull(x)
          n = c(pres_support_con %>% filter(presvote20combined == "Donald Trump") %>% pull
                pres_support_con %>% filter(presvote20combined == "Joe Biden") %>% pull(n)
  broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>   <dbl>     <dbl>    <dbl>     <dbl> <chr>
1    0.0185   0.00946      1.15   0.283         1 -0.00648    0.0245 2-sample t~
# i 1 more variable: alternative <chr>
```

```r
pres_misinfo <- pink_slime_by_person %>%
  group_by(trump_support) %>%
  summarize(x = sum(untrustworthy_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)
```

```r
  prop.test(x = c(pres_misinfo %>% filter(trump_support == 1) %>% pull(x),
                  pres_misinfo %>% filter(trump_support == 0) %>% pull(x)),
            n = c(pres_misinfo %>% filter(trump_support == 1) %>% pull(n),
                  pres_misinfo %>% filter(trump_support == 0) %>% pull(n))) %>%
    broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic    p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>      <dbl>     <dbl>    <dbl>     <dbl> <chr>
1     0.489     0.322      35.1    3.11e-9         1    0.111     0.223 2-sam~
# i 1 more variable: alternative <chr>
```

```r
  pres_local <- pink_slime_by_person %>%
    group_by(trump_support) %>%
    summarize(x = sum(local_only_flag * weight),
              n = sum(weight)) %>%
    rowwise %>%
    mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
    tidyr::unnest(tst)

  prop.test(x = c(pres_local %>% filter(trump_support == 1) %>% pull(x),
                  pres_local %>% filter(trump_support == 0) %>% pull(x)),
            n = c(pres_local %>% filter(trump_support == 1) %>% pull(n),
                  pres_local %>% filter(trump_support == 0) %>% pull(n))) %>%
    broom::tidy()
```

```
# A tibble: 1 x 9
  estimate1 estimate2 statistic p.value parameter conf.low conf.high method
      <dbl>     <dbl>     <dbl>   <dbl>     <dbl>    <dbl>     <dbl> <chr>
1     0.360     0.367    0.0293   0.864         1  -0.0618    0.0491 2-sample t~
# i 1 more variable: alternative <chr>
```

Age

```r
  ages_pink <- pink_slime_by_person %>%
    group_by(age4) %>%
    summarize(x = sum(pink_slime_flag * weight),
              n = sum(weight)) %>%
    rowwise %>%
```

```r
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


age_plot_pink <- ages_pink %>%
  mutate(age4 = factor(age4, levels = c("Under 30", "30-44", "45-64", "65+"))) %>%
  ggplot(aes(x = age4, ymin = conf.low, y = estimate, ymax = conf.high, color = age4))+
  geom_pointrange()+
  scale_color_grey()+
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_discrete(guide = guide_axis(angle = 30)) +
  labs(title = "Pink Slime - Age",
       x = "",
       y = "") +
  theme_bw()+
  theme(legend.position = "none", panel.grid.major.x = element_blank())


media_deciles_pink <- pink_slime_by_person %>%
  group_by(ideology_bin) %>%
  summarize(x = sum(pink_slime_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


media_plot_pink <- media_deciles_pink %>%
  ggplot(aes(x = ideology_bin, ymin = conf.low, y = estimate, ymax = conf.high))+
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_continuous(breaks = seq(0, 10, 1)) +
 labs(x = "",
       y = "",
       title = "Pink Slime - Media Diet Slant") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())
```

```r
race_pink <- pink_slime_by_person %>%
  group_by(race4) %>%
  summarize(x = sum(pink_slime_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


race_plot_pink <- race_pink %>%
  ggplot(aes(x = reorder(race4, desc(estimate)), ymin = conf.low, y = estimate, ymax = con
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_color_grey() +
 labs(x = "",
       y = "",
       title = "Pink Slime - Race") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())


ages_misinfo <- pink_slime_by_person %>%
  group_by(age4) %>%
  summarize(x = sum(untrustworthy_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


age_plot_misinfo <- ages_misinfo %>%
  mutate(age4 = factor(age4, levels = c("Under 30", "30-44", "45-64", "65+"))) %>%
  ggplot(aes(x = age4, ymin = conf.low, y = estimate, ymax = conf.high, color = age4))+
  geom_pointrange()+
  scale_color_grey()+
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_discrete(guide = guide_axis(angle = 30)) +
  labs(title = "Misinformation - Age",
       x = "",
       y = "") +
```

```r
  theme_bw()+
  theme(legend.position = "none", panel.grid.major.x = element_blank())

media_deciles_misinfo <- pink_slime_by_person %>%
  group_by(ideology_bin) %>%
  summarize(x = sum(untrustworthy_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)

media_plot_misinfo <- media_deciles_misinfo %>%
  ggplot(aes(x = ideology_bin, ymin = conf.low, y = estimate, ymax = conf.high))+
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_continuous(breaks = seq(0, 10, 1)) +
 labs(x = "most liberal to most conservative media diet",
      y = "",
      title = "Misinformation - Media Diet Slant") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())

race_misinfo <- pink_slime_by_person%>%
  group_by(race4) %>%
  summarize(x = sum(untrustworthy_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)

race_plot_misinfo <- race_misinfo %>%
  ggplot(aes(x = reorder(race4, desc(estimate)), ymin = conf.low, y = estimate, ymax = con
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_color_grey() +
```

```r
  labs(x = "",
       y = "",
       title = "Misinformation - Race") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())


ages_local <- pink_slime_by_person %>%
  group_by(age4) %>%
  summarize(x = sum(local_only_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


age_plot_local <- ages_local %>%
  mutate(age4 = factor(age4, levels = c("Under 30", "30-44", "45-64", "65+"))) %>%
  ggplot(aes(x = age4, ymin = conf.low, y = estimate, ymax = conf.high, color = age4))+
  geom_pointrange()+
  scale_color_grey()+
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_discrete(guide = guide_axis(angle = 30)) +
  labs(title = "Local News - Age",
       x = "",
       y = "") +
  theme_bw()+
  theme(legend.position = "none", panel.grid.major.x = element_blank())


media_deciles_local <- pink_slime_by_person %>%
  group_by(ideology_bin) %>%
  summarize(x = sum(local_only_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


media_plot_local <- media_deciles_local %>%
  ggplot(aes(x = ideology_bin, ymin = conf.low, y = estimate, ymax = conf.high))+
```
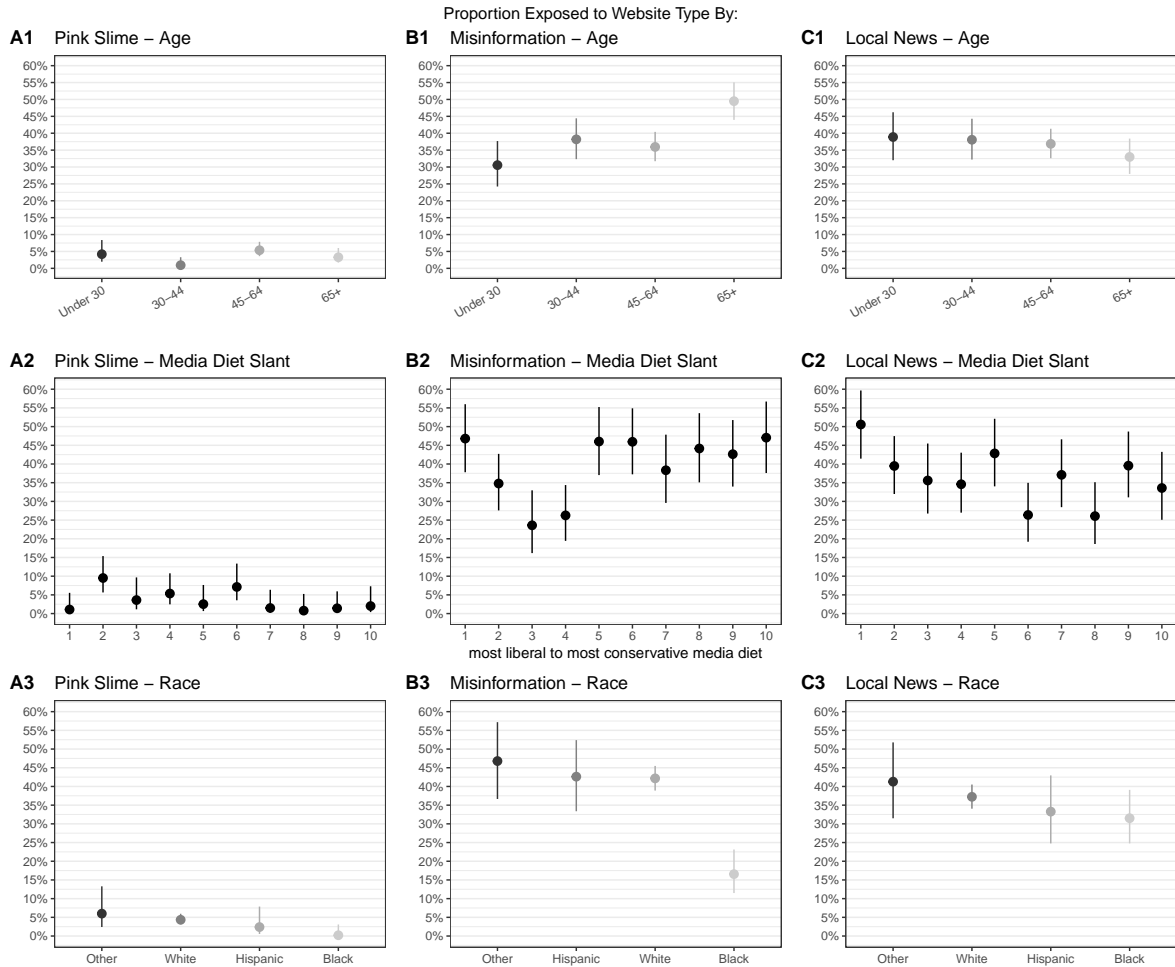
```
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_x_continuous(breaks = seq(0, 10, 1)) +
 labs(x = "",
      y = "",
      title = "Local News - Media Diet Slant") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())


race_local <- pink_slime_by_person %>%
  group_by(race4) %>%
  summarize(x = sum(local_only_flag * weight),
            n = sum(weight)) %>%
  rowwise %>%
  mutate(tst = list(broom::tidy(prop.test(x, n, conf.level=0.95)))) %>%
  tidyr::unnest(tst)


race_plot_local <- race_local %>%
  ggplot(aes(x = reorder(race4, desc(estimate)), ymin = conf.low, y = estimate, ymax = con
  geom_pointrange() +
  #scale_color_grey() +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, 1, .05), limits =
  scale_color_grey() +
 labs(x = "",
      y = "",
      title = "Local News - Race") +
  theme_bw()+
  theme(legend.position = "none",
        panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank())


ggpubr::ggarrange(age_plot_pink, age_plot_misinfo, age_plot_local, media_plot_pink, media_
   ggpubr::annotate_figure(top = ggpubr::text_grob("Proportion Exposed to Website Type By:
```

Proportion Exposed to Website Type By:

A1 Pink Slime – Age   **B1** Misinformation – Age   **C1** Local News – Age

A2 Pink Slime – Media Diet Slant   **B2** Misinformation – Media Diet Slant   **C2** Local News – Media Diet Slant

most liberal to most conservative media diet

A3 Pink Slime – Race   **B3** Misinformation – Race   **C3** Local News – Race

Exposure Among the Exposed

```
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(pink_slime_n > 0)
    w = pink_slime_by_person %>% filter(pink_slime_n > 0) %>%  pull(weight)),
    se = diagis::weighted_se(x = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pu
    w = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(weight))) %>%
  mutate(low = mean - se * 1.96,
        high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
  mean    se   low  high
  <dbl> <dbl> <dbl> <dbl>
```

13

```
1  2.59 0.606  1.40  3.77
```

```r
  tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(untrustworthy_n >
        w = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>%  pull(weight)),
        se = diagis::weighted_se(x = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>%
        w = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>% pull(weight))) %>%
    mutate(low = mean - se * 1.96,
           high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
   mean    se   low  high
  <dbl> <dbl> <dbl> <dbl>
1  38.0  6.56  25.2  50.9
```

```r
  weights::wtd.t.test(x = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(pink_s
                      weight = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(we
                      y = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>% pull(untr
                      weighty = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>% pul
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
          t.value                   df          p.value
 -5.41972519113646 540.67290104448773    0.00000009004656

$additional
Difference      Mean.x      Mean.y    Std. Err
-35.462359    2.586638   38.048998    6.543202
```

```r
  weights::wtd.t.test(x = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(pink_s
                      weight = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(we
                      y = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>% pull(untr
                      weighty = pink_slime_by_person %>% filter(untrustworthy_n > 0) %>% pul
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
```

```
         t.value                df              p.value
 -4.16959927593 540.36586559356     0.00003553796


$additional
   Difference         Mean.x          Mean.y        Std. Err
-0.0027403844   0.0001742875   0.0029146719   0.0006572297
```

```r
    weights::wtd.t.test(x = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(pink_s
                        weight = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(we
                        y = pink_slime_by_person %>% filter(local_only_n > 0) %>% pull(local_o
                        weighty = pink_slime_by_person %>% filter(local_only_n > 0) %>% pull(w
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
          t.value                df              p.value
 -4.574546880194 520.234711037732     0.000005972768


$additional
Difference      Mean.x       Mean.y      Std. Err
-11.527041    2.586638    14.113680      2.519821
```

```r
    weights::wtd.t.test(x = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(pink_s
                        weight = pink_slime_by_person %>% filter(pink_slime_n > 0) %>% pull(we
                        y = pink_slime_by_person %>% filter(local_only_n > 0) %>% pull(local_o
                        weighty = pink_slime_by_person %>% filter(local_only_n > 0) %>% pull(w
```

```
$test
[1] "Two Sample Weighted T-Test (Welch)"

$coefficients
             t.value                   df                 p.value
 -6.73601113349306768 561.94581708032023926     0.00000000004035705


$additional
   Difference         Mean.x          Mean.y        Std. Err
-0.0007368395   0.0001742875   0.0009111271   0.0001093881
```

```r
  tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(local_only_n > 0)
         w = pink_slime_by_person %>% filter(local_only_n > 0) %>%  pull(weight)),
         se = diagis::weighted_se(x = pink_slime_by_person %>% filter(local_only_n > 0) %>% pu
         w = pink_slime_by_person %>% filter(local_only_n > 0) %>% pull(weight))) %>%
    mutate(low = mean - se * 1.96,
           high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
   mean    se   low  high
  <dbl> <dbl> <dbl> <dbl>
1  14.1  3.03  8.18  20.0
```

```r
  plot_n_pink <- pink_slime_by_person %>%
    filter(pink_slime_flag == 1) %>%
    left_join(pres_support) %>%
    ggplot(aes(pink_slime_n)) +
    geom_density(alpha = 1, fill = "grey") +
    scale_fill_grey() +
    scale_x_log10() +
    labs(title = "Distribution of Total Pink Slime Website Visits",
         x = "log scale of # of pink slime website visits") +
    theme_classic() +
    theme(legend.position = "none")

  plot_per_pink <- pink_slime_by_person %>%
    filter(pink_slime_flag == 1) %>%
    left_join(pres_support) %>%
    ggplot(aes(pink_slime_per)) +
    geom_density(alpha = 1, fill = "black") +
    scale_fill_grey() +
    scale_x_log10(labels = scales::percent_format()) +
    labs(title = "Distribution of Total Pink Slime Website Visits",
         x = "log scale of # of pink slime website visits") +
    theme_classic() +
    theme(legend.position = "none")

  plot_n_misinfo <- pink_slime_by_person %>%
    filter(untrustworthy_flag == 1) %>%
    left_join(pres_support) %>%
    ggplot(aes(untrustworthy_n)) +
    geom_density(alpha = 1, fill = "grey") +
```

```r
  scale_fill_grey() +
  scale_x_log10() +
  labs(title = "Distribution of Total Misinformation Website Visits",
       x = "log scale of # of misinformation website visits") +
  theme_classic() +
  theme(legend.position = "none")

plot_per_misinfo <- pink_slime_by_person %>%
  filter(untrustworthy_flag == 1) %>%
  left_join(pres_support) %>%
  ggplot(aes(untrustworthy_per)) +
  geom_density(alpha = 1, fill = "black") +
  scale_fill_grey() +
  scale_x_log10(labels = scales::percent_format()) +
  labs(title = "Distribution of Total Misinformation Website Visits",
       x = "log scale of # of misinformation website visits") +
  theme_classic() +
  theme(legend.position = "none")


plot_n_local <- pink_slime_by_person %>%
  filter(local_only_flag == 1) %>%
  left_join(pres_support) %>%
  ggplot(aes(local_only_n)) +
  geom_density(alpha = 1, fill = "grey") +
  scale_fill_grey() +
  scale_x_log10() +
  labs(title = "Distribution of Total Local News Website Visits",
       x = "log scale of # of local news website visits") +
  theme_classic() +
  theme(legend.position = "none")

plot_per_local <- pink_slime_by_person %>%
  filter(local_only_flag == 1) %>%
  left_join(pres_support) %>%
  ggplot(aes(local_only_per)) +
  geom_density(alpha = 1, fill = "black") +
  scale_fill_grey() +
  scale_x_log10(labels = scales::percent_format()) +
  labs(title = "Distribution of Total Local News Website Visits",
       x = "log scale of # of local news website visits") +
  theme_classic() +
```
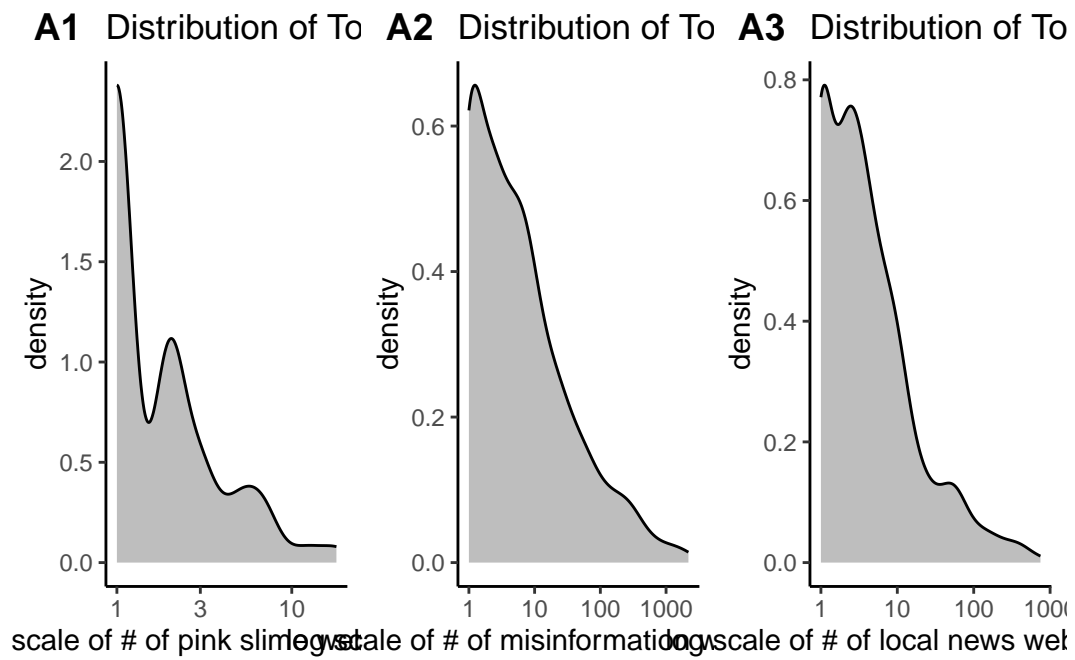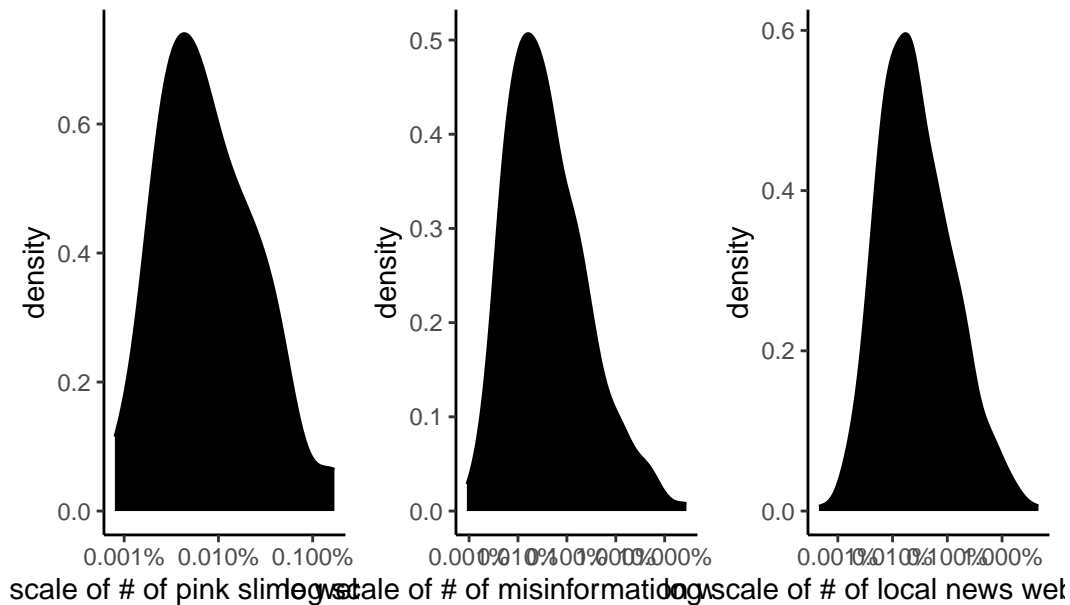
```
    theme(legend.position = "none")

  ggpubr::ggarrange(plot_n_pink, plot_n_misinfo, plot_n_local, plot_per_pink, plot_per_misin
```

$`1`

$`2`

A1 Distribution of To **A2** Distribution of To **A3** Distribution of To

```
attr(,"class")
[1] "list"      "ggarrange"
```

```r
exposed_calcs <- pink_slime_by_person %>%
  filter(local_only_flag == 1) %>%
  select(`# of Exposures` = local_only_n, `% of Web Visits` = local_only_per) %>%
  mutate(type = "3. Local News") %>%
  bind_rows(pink_slime_by_person %>%
  filter(pink_slime_flag == 1) %>%
  select(`# of Exposures` = pink_slime_n, `% of Web Visits` = pink_slime_per) %>%
  mutate(type = "1. Pink Slime")) %>%
  bind_rows(pink_slime_by_person %>%
  filter(untrustworthy_flag == 1) %>%
  select(`# of Exposures` = untrustworthy_n, `% of Web Visits` = untrustworthy_per) %>%
  mutate(type = "2. Misinformation")) %>%
  pivot_longer(cols = c(`# of Exposures`, `% of Web Visits`))

exposed_plot <- exposed_calcs %>%
  filter(name == "# of Exposures") %>%
  ggplot(aes(value, fill = type)) +
```
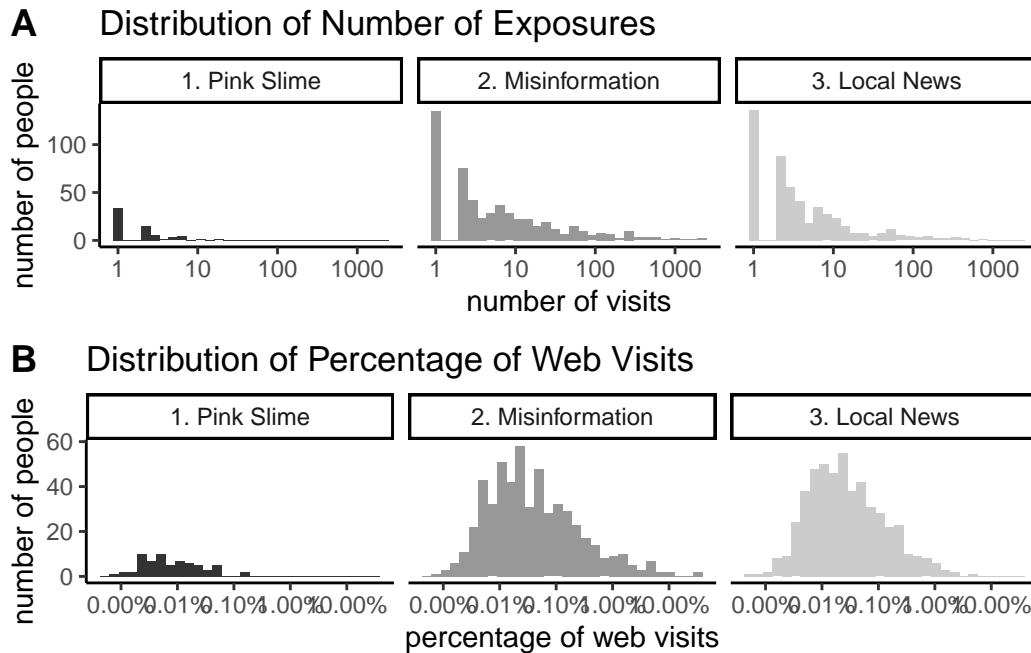
```r
  geom_histogram() +
  scale_x_log10() +
  scale_fill_grey() +
  facet_wrap(.~type) +
  theme_classic() +
  labs(title = "Distribution of Number of Exposures",
       y = "number of people",
       x = "number of visits") +
  theme(legend.position = "none")

per_plot <- exposed_calcs %>%
  filter(name == "% of Web Visits") %>%
  ggplot(aes(value, fill = type)) +
  geom_histogram() +
  scale_x_log10(labels = scales::percent_format(.01)) +
  scale_fill_grey() +
  facet_wrap(.~type) +
  theme_classic() +
  labs(title = "Distribution of Percentage of Web Visits",
       y = "number of people",
       x = "percentage of web visits") +
  theme(legend.position = "none")


ggpubr::ggarrange(exposed_plot, per_plot, ncol = 1, labels = c("A", "B"))
```

A Distribution of Number of Exposures

B Distribution of Percentage of Web Visits


```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(!is.nan(pink_slime
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_per)) %>%  pull(weight)),
    se = diagis::weighted_se(x = pink_slime_by_person %>% filter(!is.nan(pink_slime_per))
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_per)) %>% pull(weight))) %>%
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
      mean          se         low        high
     <dbl>       <dbl>       <dbl>       <dbl>
1 0.00000652 0.00000244 0.00000173 0.0000113
```

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(!is.nan(pink_slime
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_local_per)) %>%  pull(weight))
    se = diagis::weighted_se(x = pink_slime_by_person %>% filter(!is.nan(pink_slime_local
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_local_per)) %>% pull(weight)))
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
```

```
  mean   se   low  high
 <dbl> <dbl> <dbl> <dbl>
1   NA    NA    NA    NA
```

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(!is.nan(pink_slime
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_per) & pink_slime_n > 0) %>%
    se = diagis::weighted_se(x = pink_slime_by_person %>% filter(!is.nan(pink_slime_per)
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_per) & pink_slime_n > 0) %>% p
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
      mean        se       low     high
     <dbl>     <dbl>     <dbl>    <dbl>
1 0.000174 0.0000460 0.0000841 0.000265
```

```r
tibble(mean = diagis::weighted_mean(x = pink_slime_by_person %>% filter(!is.nan(pink_slime
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_local_per) & pink_slime_n > 0)
    se = diagis::weighted_se(x = pink_slime_by_person %>% filter(!is.nan(pink_slime_local
    w = pink_slime_by_person %>% filter(!is.nan(pink_slime_local_per) & pink_slime_n > 0)
  mutate(low = mean - se * 1.96,
         high = mean + se * 1.96)
```

```
# A tibble: 1 x 4
   mean      se     low   high
  <dbl>   <dbl>   <dbl>  <dbl>
1 0.0117 0.00372 0.00440 0.0190
```

Avg. time on page

[The data to run these calculations is unavailable because they require individual-level website visits, of which we cannot share in order to protect participant privacy]

```r
t.test(all_pulse_labeled %>% filter(pink_slime == 1) %>% pull(page_duration)) %>%
  broom::tidy()

t.test(all_pulse_labeled %>% filter(local == 1) %>% pull(page_duration)) %>%
  broom::tidy()
```

```r
t.test(all_pulse_labeled %>% filter(misinformation_moore == 1) %>% pull(page_duration)) %>
  broom::tidy()

t.test(all_pulse_labeled %>% filter(pink_slime == 1) %>% pull(page_duration),
       all_pulse_labeled %>% filter(local == 1) %>% pull(page_duration)) %>%
  broom::tidy()

t.test(all_pulse_labeled %>% filter(pink_slime == 1) %>% pull(page_duration),
       all_pulse_labeled %>% filter(misinformation_moore == 1) %>% pull(page_duration)) %>
  broom::tidy()
```

Referral Analysis

[The data to run these calculations is unavailable because they require individual-level website visits, of which we cannot share in order to protect participant privacy]

```r
all_pulse_refs <- all_pulse_labeled %>%
  mutate(pink_slime = ifelse(is.na(pink_slime), 0, pink_slime)) %>%
  group_by(caseid) %>%
  mutate(site_lead = dplyr::lead(combined_name, n = 1L, order_by = date_time_local)) %>%
  mutate(ref_category = case_when(
    str_detect(site_lead, "google.com") ~ "Google",
    str_detect(site_lead, "bing.com") ~ "Bing",
    str_detect(site_lead, "search.yahoo.com") ~ "Yahoo",
    str_detect(site_lead, "duckduckgo.com") ~ "DuckDuckGo",
    str_detect(site_lead, "facebook.com") ~ "Facebook",
    str_detect(site_lead, "twitter.com") ~ "Twitter",
    str_detect(site_lead, "youtube.com") ~ "YouTube",
    str_detect(site_lead, "reddit.com") ~ "Reddit",
    str_detect(site_lead, "instagram.com") ~ "Instagram",
    site_lead %in% c("mail.yahoo.com", "outlook.live.com", "mail.google.com", "mail.aol.co
  T ~ "other")) %>%
  ungroup()

all_pulse_refs %>%
  filter(pink_slime == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
         type = "Pink Slime") %>%
  bind_rows(all_pulse_refs %>%
```

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```r
  filter(misinformation_moore == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
         type = "Misinformation")) %>%
  bind_rows(all_pulse_refs %>%
  filter(local_only == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
         type = "Local News")) %>%
  filter(ref_category != "other") %>%
  mutate(type = factor(type, levels = c("Pink Slime", "Misinformation", "Local News"))) %>
  ggplot(aes(x = reorder(ref_category, desc(per)), y = per, fill = type)) +
  geom_col(position = position_dodge(), color = "black") +
  scale_y_continuous(labels = scales::percent_format(), breaks = seq(0, .3, .05)) +
  scale_fill_grey() +
  labs(title = "Website Referrers",
      x = "",
       y = "Estimated percentage of visits
originating from referrer",
fill = "Website Type") +
  theme_bw() +
  theme(panel.grid.major.x = element_blank(),
        panel.grid.minor.x = element_blank(),
        axis.text.x = element_text(angle = 45, vjust = 1, hjust=1))

all_pulse_refs %>%
  filter(pink_slime == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
         type = "Pink Slime")

all_pulse_refs %>%
  filter(misinformation_moore == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
         type = "Misinfo")

all_pulse_refs %>%
  filter(local_only == 1) %>%
  count(ref_category, sort = T) %>%
  mutate(per = n / sum(n),
```

```
                  type = "Local News")
```

Geo Engineering

```
participant_zips <- pink_slime_by_person %>%
  select(caseid, zipcode) %>%
  filter(!is.na(zipcode)) %>%
  left_join(reverse_zipcode(pink_slime_by_person %>% filter(!is.na(zipcode)) %>% pull(zipc
  mutate(county = tolower(county))


news_per_county <- list.files("../data/US News Deserts Database/", full.names = T) %>%
  lapply(readxl::read_xlsx) %>%
  lapply(janitor::clean_names) %>%
  bind_rows() %>%
  mutate(county = if_else(is.na(county), ethnic_media_county, county),
         state = if_else(is.na(state), ethnic_media_state, state)) %>%
  mutate(county = str_replace(county, " county", ""),
         county = tolower(county)) %>%
  count(county, state, sort = T)


news_desert_info <- participant_zips %>%
  mutate(county = str_replace(county, " county", "")) %>%
  left_join(news_per_county) %>%
  mutate(n_news = replace_na(n, 0)) %>%
  mutate(news_desert_binary = if_else(n_news == 0, 1, 0),
         news_desert_binary_2 = if_else(n_news <= 1, 1, 0),
         news_desert_category = case_when(
           n_news == 0 ~ "2.no_papers",
           n_news == 1 ~ "1.one_paper",
           n_news > 1 ~ "0.multiple_papers"
         ),
         n_news_log = log(n_news + .0001),
         n_news_per_capita = n_news / population,
         n_news_per_capita_log = log(n_news_per_capita + .0001))


news_desert_md <- pink_slime_by_person %>%
  left_join(news_desert_info, by = c("caseid", "zipcode")) %>%
  filter(!is.na(zipcode)) %>%
```

```r
  mutate(race4 = case_when(
    race4 == "Other" ~ "0. Other",
    T ~ race4
  ))

pink_slime_nd_model <- lm(pink_slime_flag ~ n_news, data = news_desert_md, weights = weigh

misinfo_nd_model <- lm(untrustworthy_flag ~ n_news, data = news_desert_md, weights = weigh

local_nd_model <- lm(local_only_flag ~ n_news, data = news_desert_md, weights = weight)

pink_slime_nd_model_full <- lm(pink_slime_flag ~ n_news + trump_support + knowledge + inte

misinfo_nd_model_full <- lm(untrustworthy_flag ~ n_news + trump_support + knowledge + inte

local_nd_model_full <- lm(local_only_flag ~ n_news + trump_support + knowledge + interest

stargazer::stargazer(pink_slime_nd_model, local_nd_model, pink_slime_nd_model_full, local_
#omit.stat = c("f","adj.rsq"),
font.size = "footnotesize",
column.sep.width = "1pt",
digits=2,
no.space = TRUE)

pink_slime_nd_model_log <- glm(pink_slime_flag ~ n_news, data = news_desert_md, weights =

local_nd_model_log <- glm(local_only_flag ~ n_news, data = news_desert_md, weights = weigh

pink_slime_nd_model_full_log <- glm(pink_slime_flag ~ n_news + trump_support + knowledge +

local_nd_model_full_log <- glm(local_only_flag ~ n_news + trump_support + knowledge + inte

stargazer::stargazer(pink_slime_nd_model_log, local_nd_model_log, pink_slime_nd_model_full
#omit.stat = c("f","adj.rsq"),
font.size = "footnotesize",
```

Table 1

	Pink Slime	Local News	Pink Slime	Local News
		Exposure to at least one website		
News Outlets in County	−0.0001	0.002**	−0.0000	0.002**
	(0.0002)	(0.001)	(0.0002)	(0.001)
Trump supporter			−0.05***	0.02
			(0.01)	(0.03)
Political knowledge			0.002	0.06***
			(0.01)	(0.01)
Political interest			0.01	0.04*
			(0.01)	(0.02)
College			−0.04**	0.10**
			(0.01)	(0.03)
Female			−0.02*	−0.05
			(0.01)	(0.03)
Non-white			−0.04***	−0.03
			(0.01)	(0.03)
Age 30-44 years			−0.01	0.04
			(0.02)	(0.05)
Age 45-64 years			0.03	−0.02
			(0.02)	(0.05)
Age 65+			0.003	−0.08
			(0.02)	(0.05)
Constant	0.04***	0.35***	0.04	0.12
	(0.01)	(0.02)	(0.03)	(0.07)
Observations	1,056	1,056	1,056	1,056
R^2	0.0002	0.01	0.04	0.07
Adjusted R^2	−0.001	0.01	0.03	0.06
Residual Std. Error	0.18 (df = 1054)	0.49 (df = 1054)	0.18 (df = 1045)	0.47 (df = 1045)
F Statistic	0.18 (df = 1; 1054)	8.65** (df = 1; 1054)	4.78*** (df = 10; 1045)	7.53*** (df = 10; 1045)

Note: *p<0.05; **p<0.01; ***p<0.001

```
column.sep.width = "1pt",
digits=2,
no.space = TRUE)
```

Table 2

| | Exposure to at least one website | | | |
	Pink Slime	Local News	Pink Slime	Local News
News Outlets in County	−0.003	0.01**	0.003	0.01**
	(0.01)	(0.003)	(0.01)	(0.003)
Trump supporter			−1.52***	0.09
			(0.43)	(0.14)
Political knowledge			−0.02	0.26***
			(0.18)	(0.06)
Political interest			0.48	0.18*
			(0.26)	(0.08)
College			−1.35**	0.43**
			(0.49)	(0.14)
Female			−0.74*	−0.22
			(0.37)	(0.14)
Non-white			−1.78**	−0.12
			(0.64)	(0.16)
Age 30-44 years			−0.52	0.16
			(0.95)	(0.22)
Age 45-64 years			1.16	−0.09
			(0.73)	(0.21)
Age 65+			0.41	−0.38
			(0.79)	(0.23)
Constant	−3.31***	−0.61***	−4.02***	−1.71***
	(0.20)	(0.08)	(1.05)	(0.33)
Observations	1,056	1,056	1,056	1,056
Log Likelihood	−119.56	−624.13	−93.73	−594.53
Akaike Inf. Crit.	243.12	1,252.26	209.47	1,211.06
Note:			*p<0.05; **p<0.01; ***p<0.001	

Pink Slime Hits

[The data to run these calculations is unavailable because they require individual-level website visits, of which we cannot share in order to protect participant privacy]

```
pink_slime_dist_calcs <- all_pulse_labeled %>%
  filter(pink_slime == 1) %>%
  left_join(read_csv("data/hits_labeled.csv")) %>%
  left_join(news_desert_md) %>%
```

```r
  select(caseid, combined_name, news_lat, news_long, lat, lng) %>%
  rowwise() %>%
  mutate(dist_meters = geodist::geodist_vec(lng, lat, news_long, news_lat),
         dist_miles = dist_meters / 1609.344) %>%
  left_join(news_desert_md) %>%
  mutate(trump_support_long = ifelse(trump_support == 1, "Trump supporter", ifelse(trump_s
  left_join(weights) %>%
  mutate(race4 = case_when(
    race4 == "Other" ~ "0. Other",
    T ~ race4
  ),
  type = "pink_slime",
  pink_slime = 1)

local_dist_calcs <- all_pulse_labeled %>%
  filter(local_only == 1) %>%
  left_join(read_csv("data/local_regional_labeled.csv")) %>%
  left_join(news_desert_md) %>%
  select(caseid, combined_name, news_lat, news_long, lat, lng) %>%
  mutate(news_long = -abs(news_long)) %>%
  rowwise() %>%
  mutate(dist_meters = geodist::geodist_vec(lng, lat, news_long, news_lat),
         dist_miles = dist_meters / 1609.344) %>%
  left_join(news_desert_md) %>%
  mutate(trump_support_long = ifelse(trump_support == 1, "Trump supporter", ifelse(trump_s
  left_join(weights) %>%
  mutate(race4 = case_when(
    race4 == "Other" ~ "0. Other",
    T ~ race4
  ),
  type = "local_news",
  pink_slime = 0)

dist_calcs <- pink_slime_dist_calcs %>%
  bind_rows(local_dist_calcs) %>%
  mutate(type = case_when(
    type == "pink_slime" ~ "Pink Slime",
    type == "local_news" ~ "Local News"
  ))
```

```r
map_data("state") %>%
  ggplot() +
  geom_polygon(aes(long, lat, group = group), fill = "white", color = "grey", alpha = .6)
  geom_point(data = dist_calcs %>% filter(!is.na(lat) & !is.na(news_lat)), aes(x = lng, y
  geom_segment(data = dist_calcs %>% filter(!is.na(lat) & type == "Local News"), aes(x = l
  geom_segment(data = dist_calcs %>% filter(!is.na(lat) & type == "Pink Slime"), aes(x = l
  coord_map() +
  lims(x = c(-125, -67),
       y = c(25, 50)) +
  scale_color_manual(values = c("blue", "red")) +
  labs(title = "Location of individuals and their local news/ pink slime consumption",
       subtitle = "dot = individual location, arrow tip = pink slime location",
       color = "",
       caption = "Alaska and Hawaii not included in map") +
  theme_void() +
  theme(legend.position = "none") +
  facet_wrap(type~trump_support_long)


dist_model_1 <- lme4::lmer(dist_miles ~ (1|caseid), data = dist_calcs %>% filter(pink_slim


dist_model_2 <- lme4::lmer(dist_miles ~ (1|caseid), data = dist_calcs %>% filter(pink_slim


dist_model_3 <- lme4::lmer(dist_miles ~ pink_slime + (1|caseid), data = dist_calcs, weight


dist_model_4 <- lme4::lmer(dist_miles ~ trump_support + knowledge + interest + college + f


stargazer::stargazer(dist_model_1, dist_model_2, dist_model_3, header = FALSE, type = "lat
```

Session Info

```r
sessionInfo()
```

```
R version 4.1.2 (2021-11-01)
Platform: x86_64-apple-darwin17.0 (64-bit)
Running under: macOS Big Sur 10.16

Matrix products: default
BLAS:   /Library/Frameworks/R.framework/Versions/4.1/Resources/lib/libRblas.0.dylib
```

```
LAPACK: /Library/Frameworks/R.framework/Versions/4.1/Resources/lib/libRlapack.dylib

locale:
[1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

other attached packages:
 [1] zipcodeR_0.3.4  forcats_0.5.1   stringr_1.5.0   dplyr_1.1.3
 [5] purrr_1.0.2     readr_2.1.1     tidyr_1.3.0     tibble_3.2.1
 [9] ggplot2_3.4.4   tidyverse_1.3.1

loaded via a namespace (and not attached):
 [1] minqa_1.2.4        colorspace_2.1-0   ggsignif_0.6.3
 [4] class_7.3-19       rgdal_1.5-32       snakecase_0.11.0
 [7] htmlTable_2.3.0    base64enc_0.1-3    fs_1.6.3
[10] rstudioapi_0.13    proxy_0.4-27       mice_3.14.0
[13] farver_2.1.1       ggpubr_0.4.0       diagis_0.2.2
[16] bit64_4.0.5        fansi_1.0.5        lubridate_1.9.3
[19] xml2_1.3.3         codetools_0.2-18   splines_4.1.2
[22] cachem_1.0.8       knitr_1.44         Formula_1.2-4
[25] jsonlite_1.8.7     nloptr_1.2.2.3     broom_0.7.10
[28] cluster_2.1.2      dbplyr_2.1.1       png_0.1-7
[31] compiler_4.1.2     httr_1.4.5         backports_1.4.1
[34] assertthat_0.2.1   Matrix_1.3-4       fastmap_1.1.1
[37] cli_3.6.1          htmltools_0.5.6.1  tools_4.1.2
[40] coda_0.19-4        gtable_0.3.4       glue_1.6.2
[43] rappdirs_0.3.3     Rcpp_1.0.11        carData_3.0-5
[46] cellranger_1.1.0   raster_3.5-29      vctrs_0.6.4
[49] nlme_3.1-153       gdata_2.18.0       stargazer_5.2.2
[52] tigris_1.6.1       xfun_0.40          lme4_1.1-27.1
[55] rvest_1.0.3        timechange_0.2.0   lifecycle_1.0.3
[58] gtools_3.9.4       weights_1.0.4      rstatix_0.7.0
[61] terra_1.6-7        MASS_7.3-54        scales_1.2.1
[64] vroom_1.5.7        hms_1.1.3          parallel_4.1.2
[67] RColorBrewer_1.1-3 yaml_2.3.7         curl_5.0.0
[70] memoise_2.0.1      gridExtra_2.3      rpart_4.1-15
[73] latticeExtra_0.6-29 stringi_1.7.12    RSQLite_2.2.16
[76] maptools_1.1-2     e1071_1.7-13       checkmate_2.2.0
[79] boot_1.3-28        rlang_1.1.1        pkgconfig_2.0.3
[82] evaluate_0.22      lattice_0.20-45    sf_1.0-7
[85] labeling_0.4.3     htmlwidgets_1.6.2  cowplot_1.1.1
```

```
 [88] bit_4.0.4           tidyselect_1.2.0    magrittr_2.0.3
 [91] R6_2.5.1            generics_0.1.3      Hmisc_4.7-1
 [94] DBI_1.1.1           pillar_1.9.0        haven_2.4.3
 [97] foreign_0.8-81      withr_2.5.1         units_0.8-0
[100] abind_1.4-5         survival_3.2-13     sp_1.4-6
[103] nnet_7.3-17         janitor_2.1.0       car_3.0-12
[106] modelr_0.1.8        crayon_1.5.2        tidycensus_1.2.2
[109] uuid_1.1-1          KernSmooth_2.23-20  utf8_1.2.4
[112] tzdb_0.4.0          rmarkdown_2.25      jpeg_0.1-9
[115] grid_4.1.2          readxl_1.3.1        data.table_1.14.8
[118] blob_1.2.2          reprex_2.0.1        digest_0.6.33
[121] classInt_0.4-3      munsell_0.5.0
```