

Adult Obesity Analysis

Robin Silverstein

Objectives for all Montanans

| # | Objective: By 2023... | Status as of December 2019 |
|---|---|----------------------------|
| 1 | Decrease the percent of Montana adults who currently use tobacco from 26% to 24% (Baseline: MT BRFSS, 2016). | 23% (BRFSS, 2018) |
| 2 | Decrease the percent of Montana high school students who currently use tobacco from 33% to 29% (Baseline: MT YRBS, 2017). | 34% (YRBS, 2019) |
| 3 | Decrease the percent of Montana adults who are currently obese from 26% to 23% (Baseline: MT BRFSS, 2016). | 27% (BRFSS, 2018) |
| 4 | Decrease the percent of Montana high school students who are currently obese from 12% to 9% (Baseline: MT YRBS, 2017). | 12% (YRBS, 2019) |
| 5 | Increase the percent of Montana men and women aged 50 to 75 who report being up-to-date with colorectal cancer screening from 62% to 80% (Baseline: MT BRFSS, 2016). | 65% (BRFSS, 2018) |

Objectives to improve health equity

| # | Objective: By 2023... | Status as of December 2019 |
|---|--|--|
| 1 | Decrease the percent of Medicaid members who currently use tobacco from 15% to 14% (Baseline: Medicaid data, 2017). | 16% (Medicaid data, 2018) |
| 2 | Decrease the percent of American Indian adults who currently use commercial tobacco from 43% to 39% (Baseline: MT BRFSS, 2016). | 47% (BRFSS, 2018) |
| 3 | Decrease the percent of American Indian youth who currently use commercial tobacco from 40% to 36% (Baseline: MT YRBS, 2017). | 35% (YRBS, 2019) |
| 4 | Establish a baseline for the percent of Medicaid members who are currently obese (Data source: Medicaid claims data). | Baseline data for this objective are in process of being calculated. |
| 5 | Decrease the percent of American Indian adults who are currently obese from 32% to 28% (Baseline: MT BRFSS, 2016). | 41% (BRFSS, 2018) |
| 6 | Establish a baseline for the percent of Medicaid youth who are currently obese (Data source: Medicaid claims data). | Baseline data for this objective are in process of being calculated. |
| 7 | Decrease the percent of American Indian youth who are currently obese from 20% to 15% (Baseline: MT YRBS, 2017). | 20% (YRBS, 2019) |
| 8 | Increase the percentage of Medicaid adults aged 50 to 75 who report being up to date with colorectal cancer screening from 9.9% to 10.4% (Baseline: Medicaid data, 2017). | 11.3% (Medicaid data, 2018) |

Medicaid Data lacking obesity information -

- only if diagnosis (ex. morbid obesity >35), no height, weight to calculate BMI/obesity)

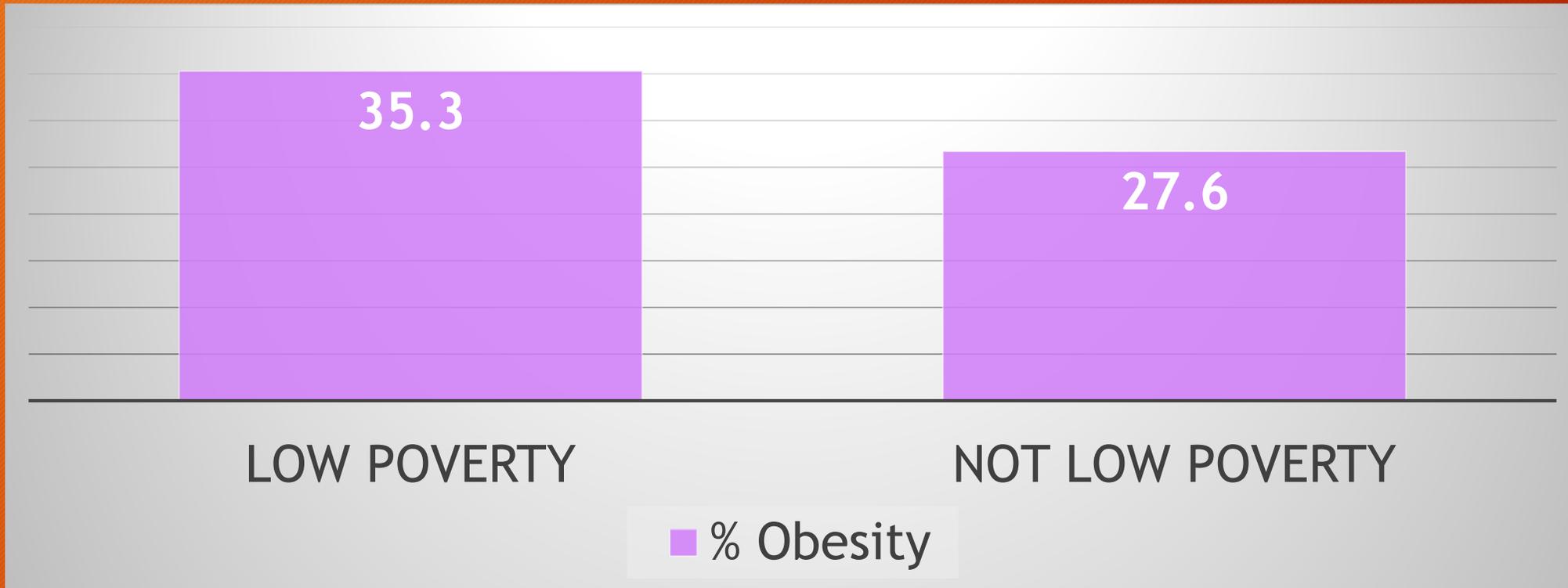
BRFSS has information to estimate obesity in population (methods to follow for # 4)

YRBS has no income level - looking into WIC for # 6

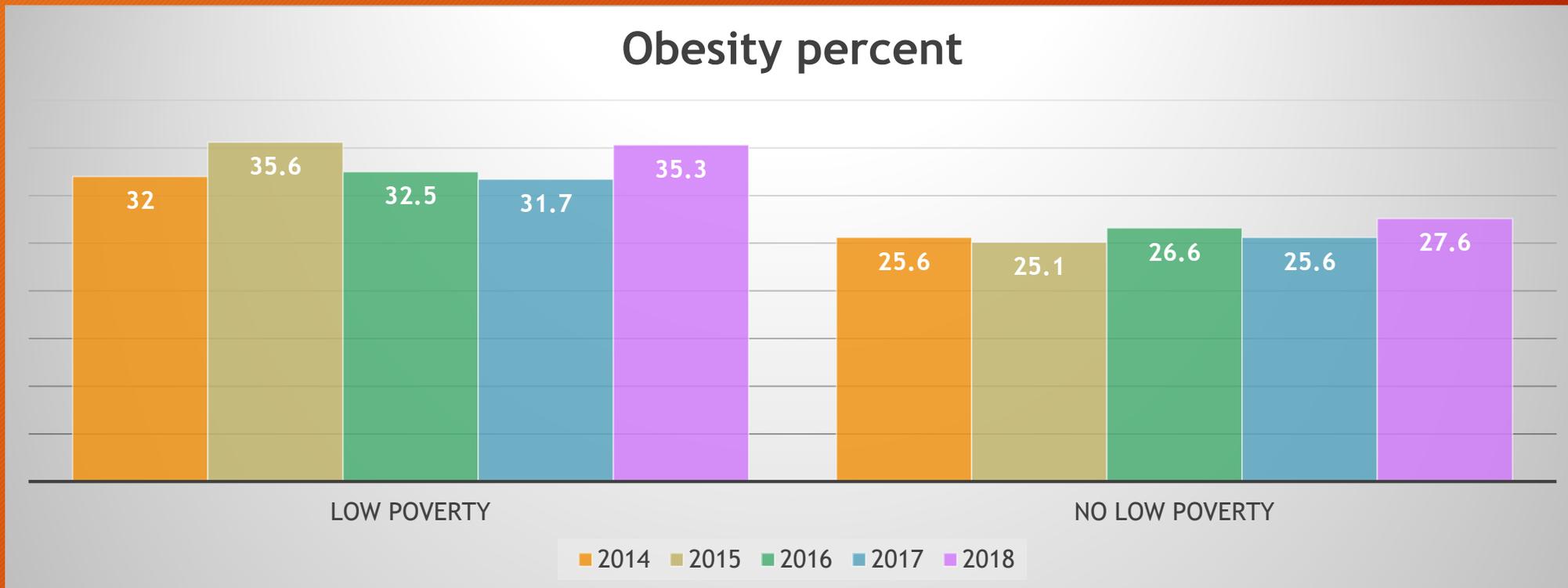
Methods

- Montana BRFSS 2018 data (5190)
- Analysis:
 - Step 1: Household size - number of adults and number of children known (Number of adults only on landline survey) (2586)
 - Step 2: Income level - known (2066)
 - Step 3: At 138% Low Poverty level - calculated by household size/income level (409 at low poverty ~20%)
 - Size = 1 (<15k), 2 (<20k), 3/4 (<25k), 5/6 (<35k), 7-11 (<50k), 12+ (<75k)
 - Step 4: Obesity level from BMI indicator - calculate weighted percentage at low poverty level/not low that are obese (384/1565)(total 1949)

Results



Five Year comparison



R Code

```
# set working directory and load data
setwd("C:/Users/csf354/Documents/Local/BRFSS/R")
# install.packages('name')
library(sas7bdat)
library(data.table)
library(survey)
# Set options for allowing a single observation per stratum
options(survey.lonely.psu = "adjust")
# import data
brfss2018 <- read.sas7bdat("mt2018_brfss_v072019.sas7bdat")
```

```
# calculate obesity rates by poverty rate based on household size

# first add household size
# Add HouseholdSize variable 2018
names(brfss2018)
attach(brfss2018)
brfss2018$HouseHoldSize <- 0
detach(brfss2018)

data.frame(table(brfss2018$NUMADULT))
brfss2018ADULTSknown <- subset(brfss2018, (NUMADULT < 100))
nrow(brfss2018ADULTSknown)

data.frame(table(brfss2018$CHILDREN))
brfss2018CHILDRENknown <- subset(brfss2018, (CHILDREN < 89))
nrow(brfss2018CHILDRENknown)

brfss2018HHknown <- subset(brfss2018, (CHILDREN < 89 & NUMADULT < 100))
nrow(brfss2018HHknown)

# NEXT CHANGE 88 TO 0 FOR NO CHILDREN IN brfss2018CHILDRENknown
attach(brfss2018HHknown)
brfss2018HHknown$CHILDREN[(CHILDREN == "88")] <- 0
detach(brfss2018HHknown)
data.frame(table(brfss2018HHknown$CHILDREN))
data.frame(table(brfss2018HHknown$NUMADULT))
names(brfss2018HHknown)

# HHSizes with household size
brfss2018HHknown$HHSizes <- (brfss2018HHknown$CHILDREN + brfss2018HHknown$NUMADULT)
```

```

# next: assign LowPov based on income and household size do with series of

brfss2018HHINCKnown <- subset(brfss2018HHknown, (INCOME2 < 9))
nrow(brfss2018HHINCKnown)

attach(brfss2018HHINCKnown)
brfss2018HHINCKnown$LowPov <- 0
# income2: 1 = < 10K, 2 = 10-15, 3 = 15-20, 4 = 20-25, 5 = 25-35, 6 = 35-50, 7 = 50-75, 8 = 75+
brfss2018HHINCKnown$LowPov[(HHSizes == "1") & (INCOME2 < 3)] <- 1
brfss2018HHINCKnown$LowPov[(HHSizes == "2") & (INCOME2 < 4)] <- 1
brfss2018HHINCKnown$LowPov[(HHSizes == "3" | HHSizes == "4") & (INCOME2 < 5)] <- 1
brfss2018HHINCKnown$LowPov[(HHSizes == "5" | HHSizes == "6") & (INCOME2 < 6)] <- 1
brfss2018HHINCKnown$LowPov[(HHSizes == "7" | HHSizes == "8" | HHSizes == "9" | HHSizes == "10" | HHSizes == "11") & (INCOME2 < 7)] <- 1
brfss2018HHINCKnown$LowPov[(HHSizes > 11) & (INCOME2 < 8)] <- 1
# income level 8 is 75K+ can't measure low poverty
detach(brfss2018HHINCKnown)
data.frame(table(brfss2018HHINCKnown$LowPov))

# income level low poverty
brfss2018HHLowPov <- subset(brfss2018HHINCKnown, (LowPov == 1))
nrow(brfss2018HHLowPov )

# income LowPov obesity
brfss2018BMI5CATLowPov <- subset(brfss2018HHLowPov, (X_BMI5CAT < 5))
nrow(brfss2018BMI5CATLowPov)
brfssdsgn <- svydesign(id=~1,strata = ~X_STSTR,weights = ~X_LLCPWT,data = brfss2018BMI5CATLowPov)
svymean(~factor(X_BMI5CAT),brfssdsgn,na.rm = TRUE)
# this gives weighted percent of obesity (factor 4) among low poverty

# income level NO low poverty
brfss2018HHNoLowPov <- subset(brfss2018HHINCKnown, (LowPov == 0))
nrow(brfss2018HHNoLowPov )

# income NoLowPov obesity
brfss2018BMI5CATNoLowPov <- subset(brfss2018HHNoLowPov, (X_BMI5CAT < 5))
nrow(brfss2018BMI5CATNoLowPov)
brfssdsgn <- svydesign(id=~1,strata = ~X_STSTR,weights = ~X_LLCPWT,data = brfss2018BMI5CATNoLowPov)
svymean(~factor(X_BMI5CAT),brfssdsgn,na.rm = TRUE)

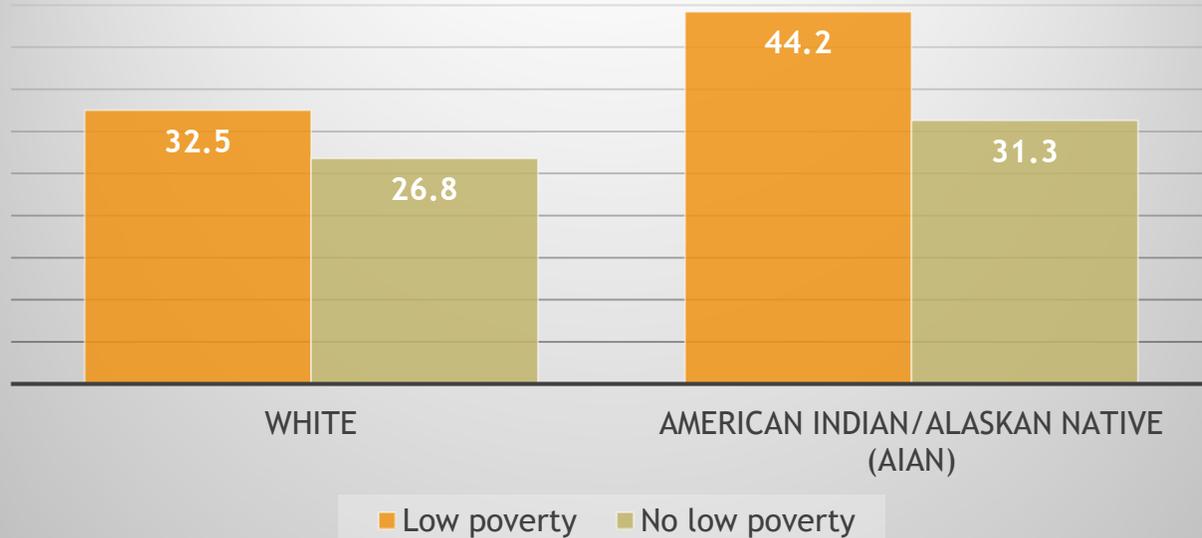
```

Notes:

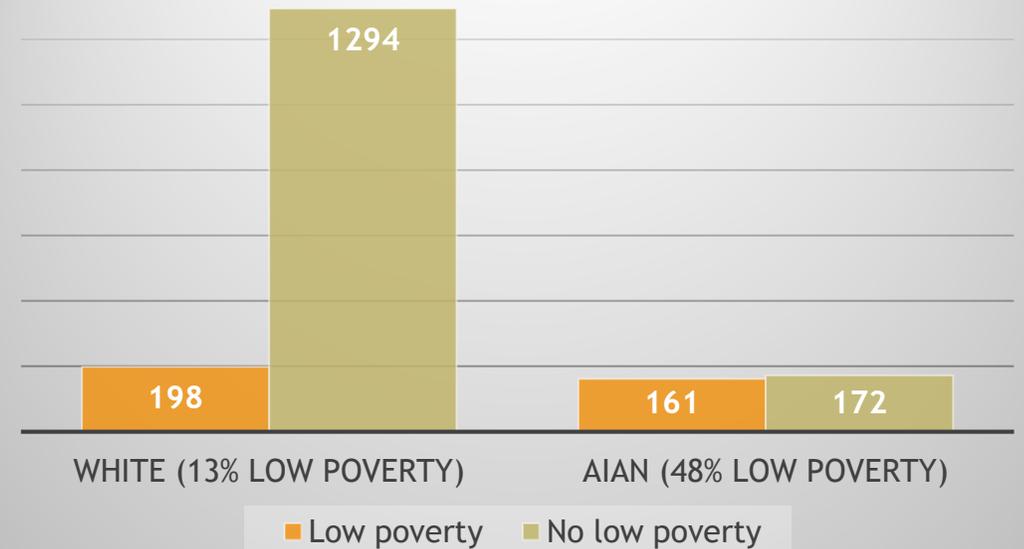
- Weighted percent obesity BRFSS 2018 = 26.85% (lower than both poverty estimates because those with no data had lowest obesity levels)
- Five year comparison used same poverty levels as 2018
- Obese: Low poverty at 35.3%, No Low poverty at 27.6%
- Overweight or obese: Low poverty at 67.7%, No Low poverty at 65.4%
- Underweight: Low poverty at 7.2%, No Low poverty at 2.4%
- Normal Weight: Low poverty at 25.0%, No Low poverty at 32.2%

Race

Percent Obesity



Total Number



Tobacco Use (cigarettes, smokeless, or Ecig)

