



Marketing Research

“Obesity”

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Obesity in America



- Objective:
 - To draw connections between health and lifestyle.
 - Health: BMI
 - Lifestyle: Diet, Exercise, Location, Extracurricular Activities

BMI

- Body mass index (BMI) is a measure of body fat based on height and weight that applies to both adult men and women.
- BMI Categories:
 - Underweight = <18.5
 - Normal weight = $18.5-24.9$
 - Overweight = $25-29.9$
 - Obesity = BMI of 30 or greater
- $$\text{BMI} = \frac{(\text{Weight in pounds})(703)}{(\text{height in inches})^2}$$



Research Objectives

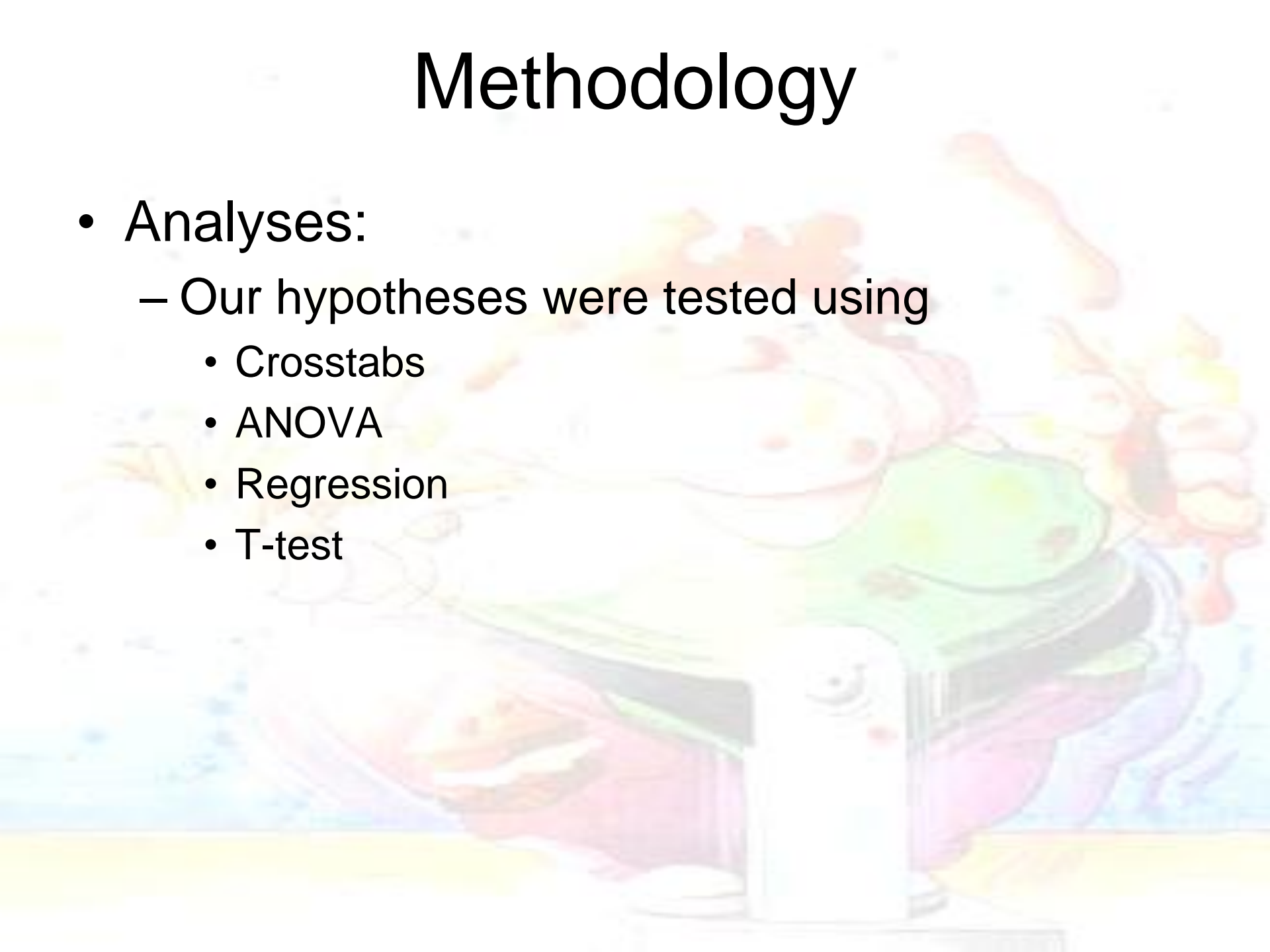
- (1) To evaluate BMI and television viewing
- (2) To evaluate BMI and diet
- (3) To evaluate BMI and location
- (4) To evaluate education and perceived cause of obesity
- (5) To evaluate BMI and lifestyle (fast food consumption, exercise, and television viewing)

Methodology

- Source: ABC News/Time Magazine Obesity Poll, May 2004
 - Households were selected by random-digit dialing. Within households, the respondent selected was the adult living in the household who last had a birthday and who was home at the time of the interview.
- Sample: Persons aged 18 and over living in households with telephones in the contiguous 48 United States.
 - Mean age: 45
 - Gender: 48% male, 52% female
 - Location: Northeast 19%, Midwest 21%, South 38%, West 22%

Methodology

- Analyses:
 - Our hypotheses were tested using
 - Crosstabs
 - ANOVA
 - Regression
 - T-test



Hypothesis 1

- a. Obese individuals watch more television than overweight individuals.

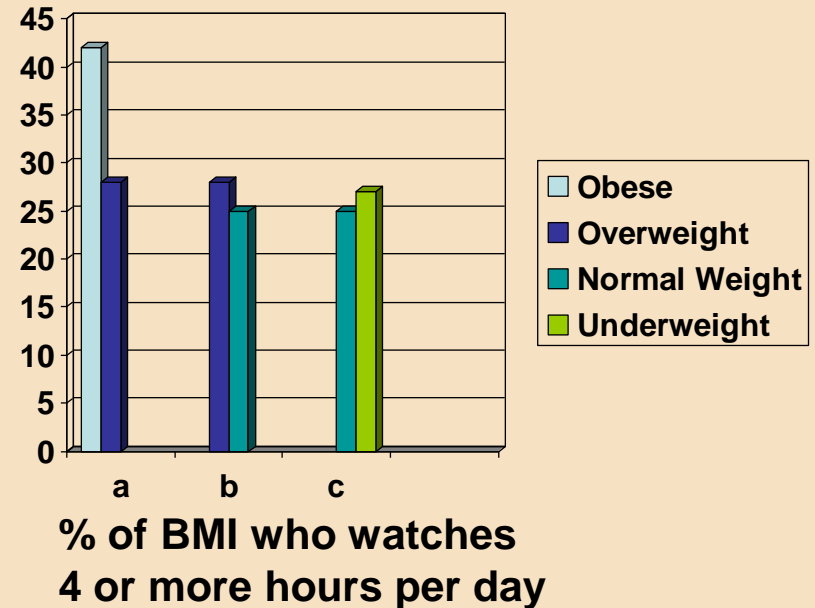
- The April 2006 issue of the journal Preventing Chronic Disease noted that more than two hours of television viewing a day is associated with being overweight and obesity in men and women. (Journal Record, 2007)

Data Analysis for Hypothesis 1

- Variables:
 - Dependent: BMI
 - Independent: Hours of television viewing per day
- Testing:
 - An initial cross tabulation was conducted
 - $X^2=53.282$ with 20 degrees of freedom (dfs)
 - A one-way ANOVA was conducted for further evaluation ($F = 11.32, p < .001$)

Results for Hypothesis 1

- a. Obese people watch more television than overweight people. Supported: 42% vs. 28% watch 4 or more hours per day.
- b. Overweight more than normal weight. Supported: 28% vs. 25%
- c. Normal weight more than underweight. Not supported: 25% vs. 27%.



Interpretation for Hypothesis 1

- Overall, there is a link between television viewing and weight
 - Direct relationship
- Our recommendation:
 - Reduce television viewing and increase outdoor activities
 - Watch TV while exercising

Hypothesis 2

- a. The majority of obese are not currently dieting
 - b. Overweight individuals are more likely to diet than all the other categories
 - c. Underweight are the least likely to diet
 - d. The majority of our sample is not currently dieting.
- Respondents were asked whether they were currently dieting or not at the time of the poll.

Data Analysis for Hypothesis 2

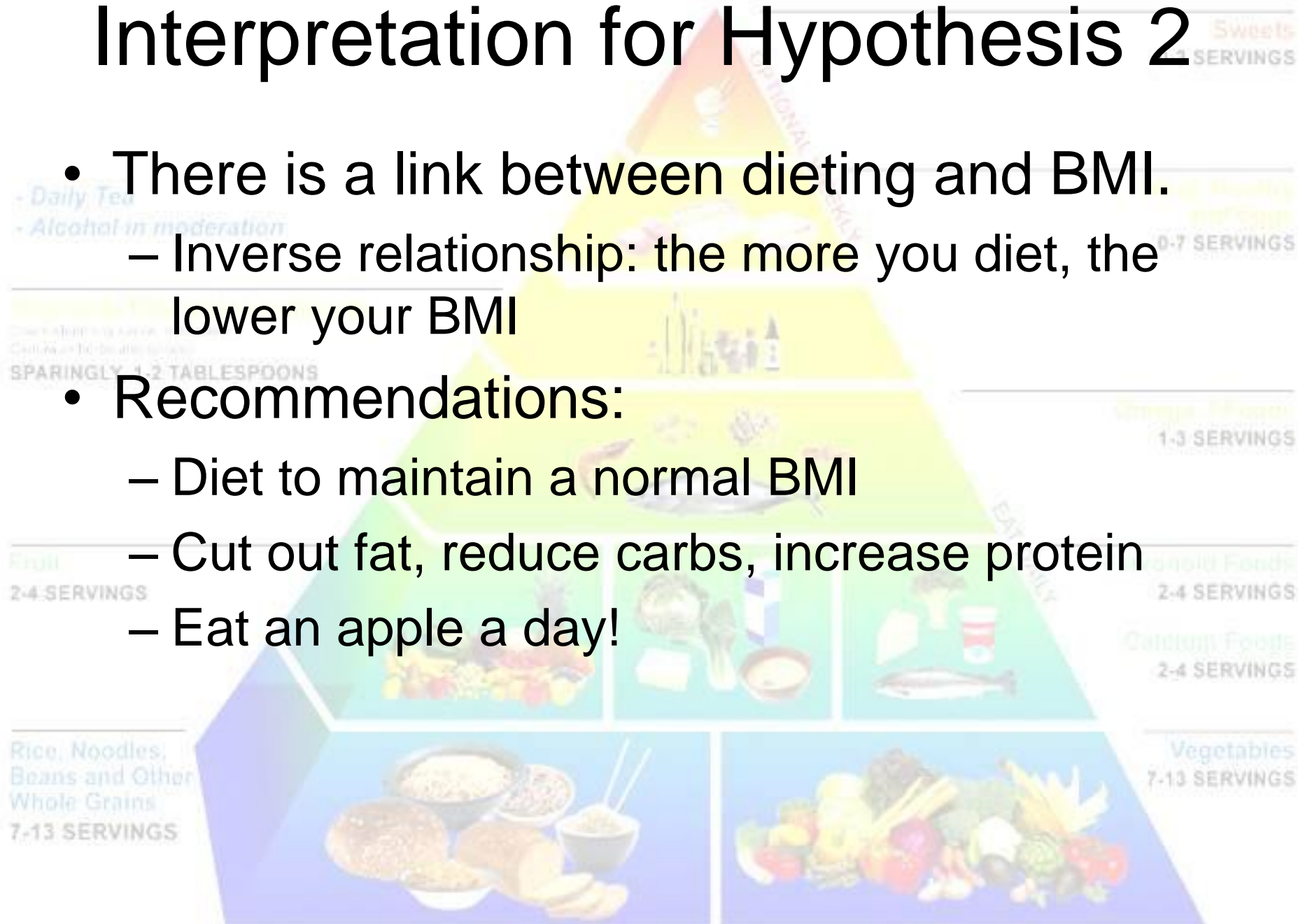
- Variables:
 - Dependent: BMI
 - Independent: Dieting Y/N
- Testing:
 - An initial cross tabulation was conducted
 - $X^2=83.882$ with 3 dfs
 - A one-way ANOVA was conducted for further evaluation ($F = 30.2, p<.001$)

Results

- a. The majority of obese are not currently dieting.
Supported: 42% vs. 58%
- b. Overweight individuals are more likely to diet than all the other categories. **Not supported: the obese are dieting the most of the four categories.**
- c. Underweight are the least likely to diet. **Supported: only 11% of the underweight were currently dieting.**
- d. The majority of our sample is not currently dieting.
Supported: 26% v. 74%.

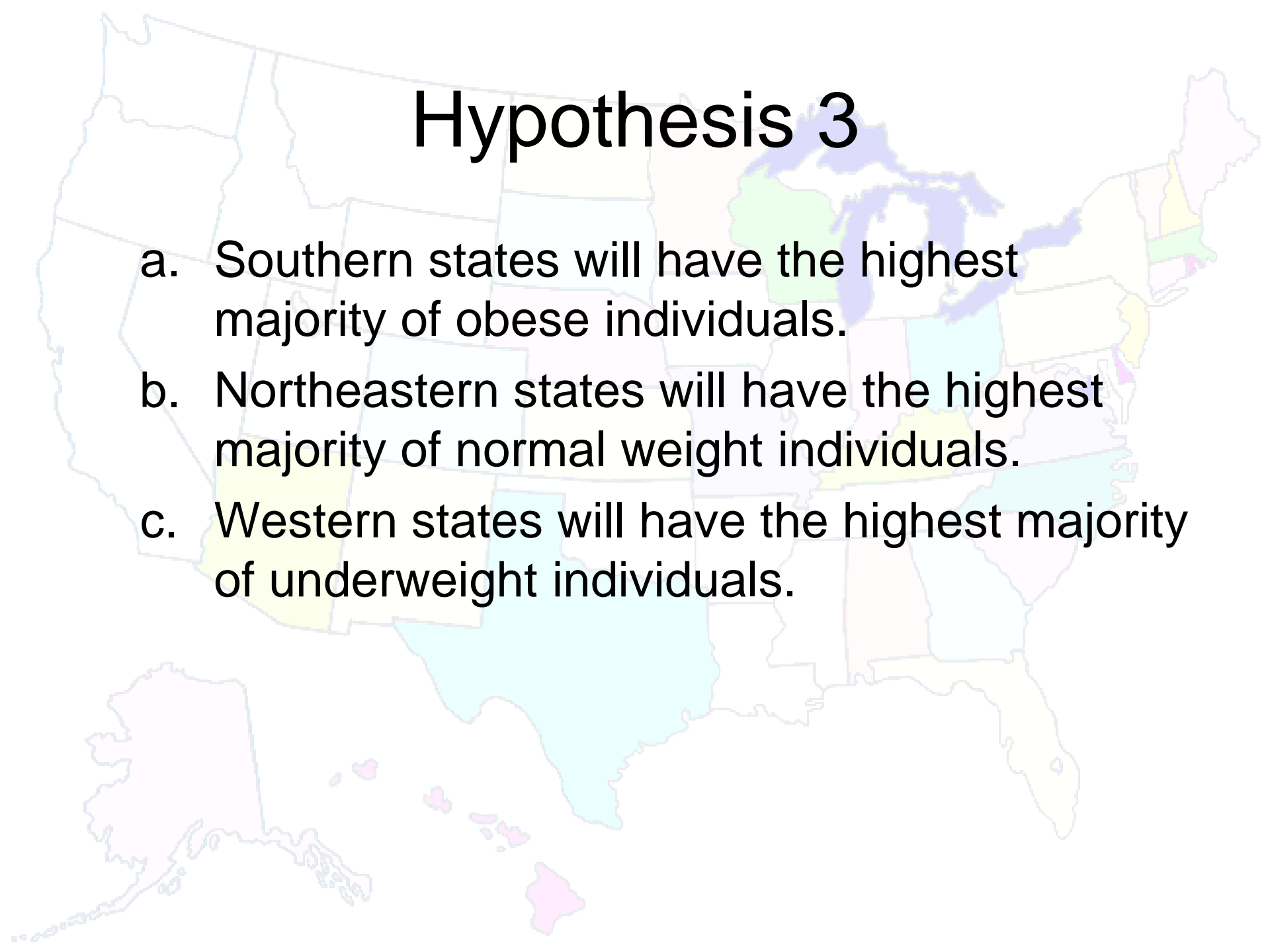
Interpretation for Hypothesis 2

- There is a link between dieting and BMI.
 - Inverse relationship: the more you diet, the lower your BMI
- Recommendations:
 - Diet to maintain a normal BMI
 - Cut out fat, reduce carbs, increase protein
 - Eat an apple a day!



Hypothesis 3

- a. Southern states will have the highest majority of obese individuals.
- b. Northeastern states will have the highest majority of normal weight individuals.
- c. Western states will have the highest majority of underweight individuals.



Data Analysis for Hypothesis 3

- Variables:

- Dependent: BMI

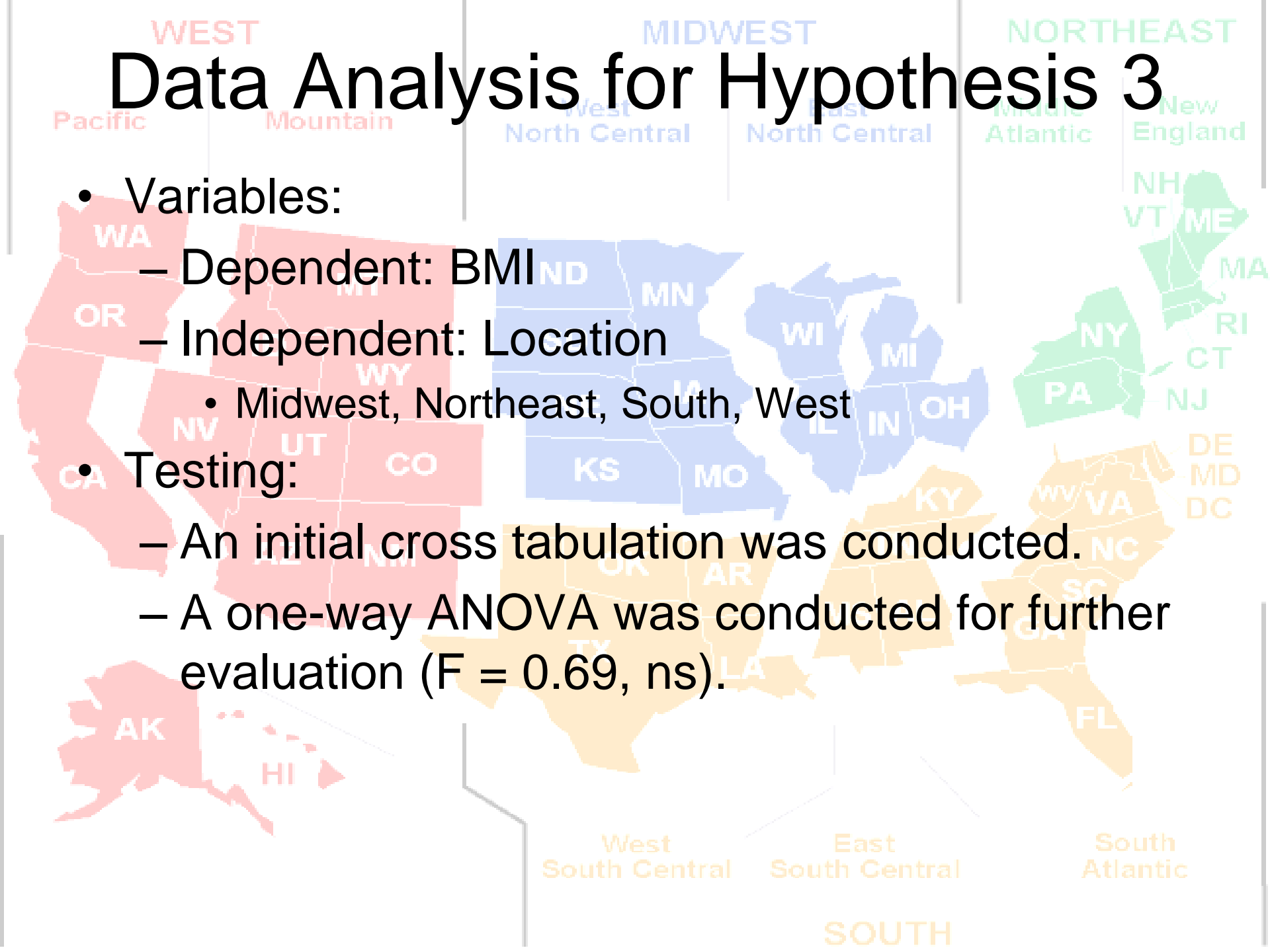
- Independent: Location

- Midwest, Northeast, South, West

- Testing:

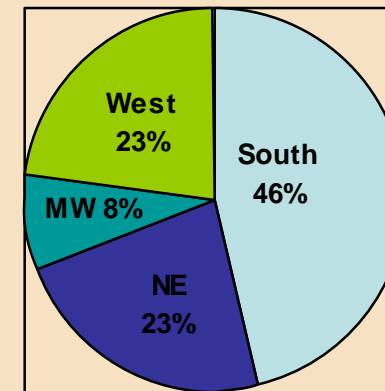
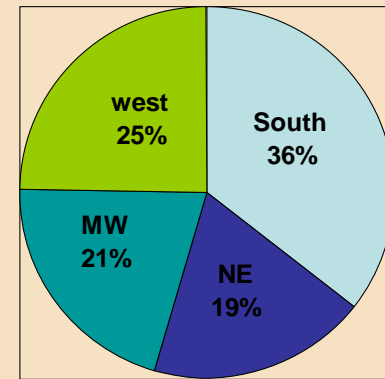
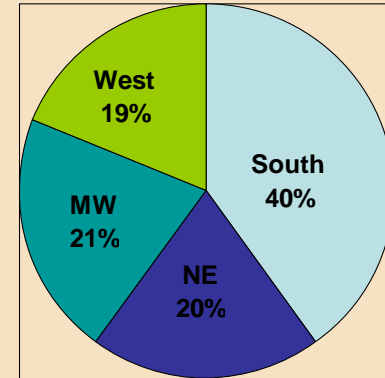
- An initial cross tabulation was conducted.

- A one-way ANOVA was conducted for further evaluation ($F = 0.69$, ns).



Results

- a. Southern states have the highest majority of obese individuals. **Supported: South has the highest with 40%.**
- b. Northeastern states have the highest majority of normal weight individuals. **Not supported: South has the highest with 36%.**
- c. Western states have the highest majority of underweight individuals. **Not supported: Southern states have the highest with 46%.**



Interpretation for Hypothesis 3

- There is no relationship between location and weight.
 - The South has the highest percentage of obese and underweight individuals.
 - The Northeast and West have an almost even distribution among the four BMI categories.
- Weight is more dependent on lifestyle than location.

Hypothesis 4

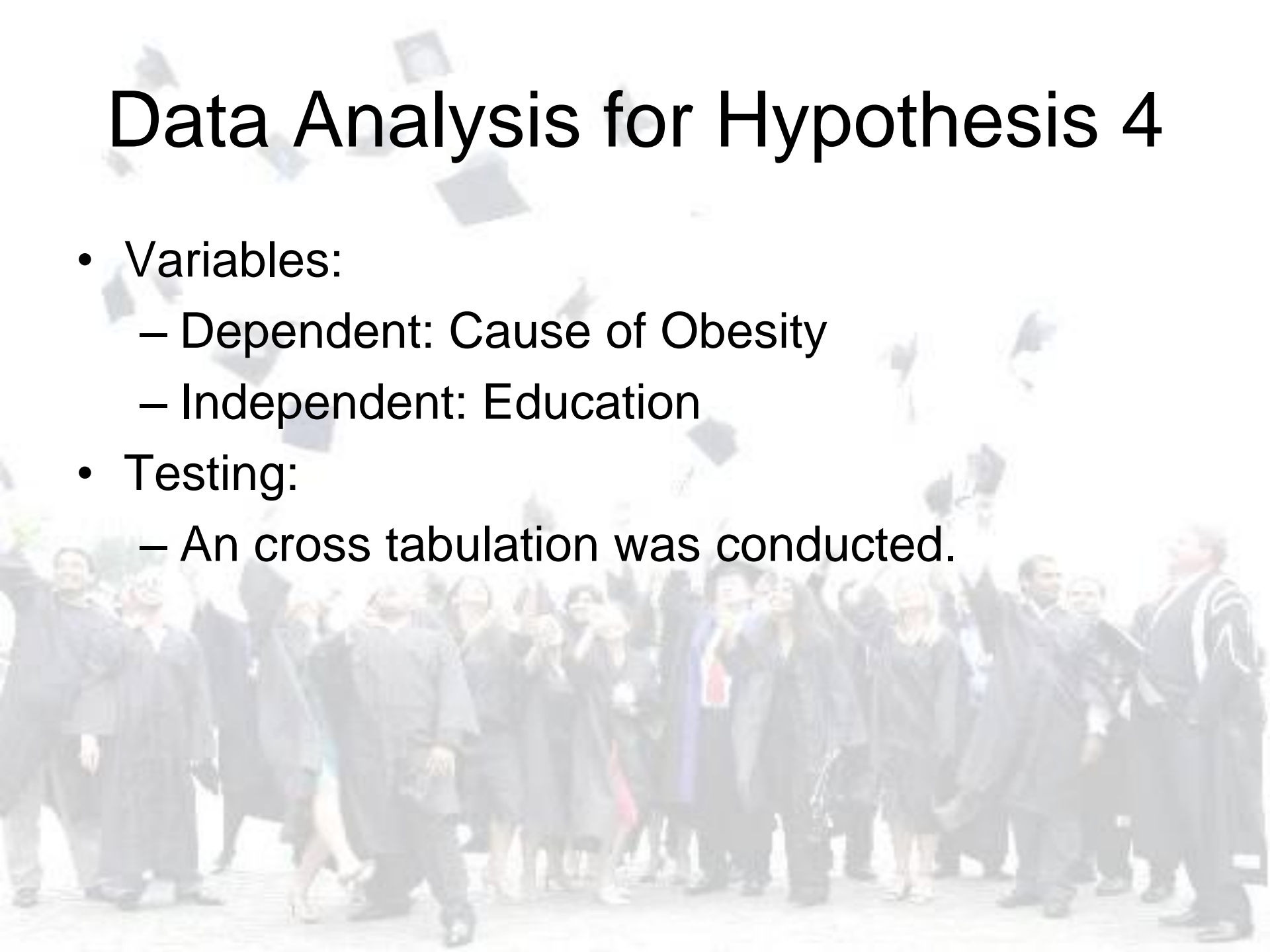
- Education has an effect on beliefs regarding the cause of obesity.
 - Education breakdowns (categories):
 - Less than high school
 - Graduated high school
 - Some college +
 - Causes of obesity:
 - Poor eating habits
 - Not enough exercise
 - Genetics/Family history
 - Marketing of unhealthy food (sweets/fast-food)

Hypothesis 4

- a. Those with no high school diploma attribute obesity to genetics/family history.
- b. Those with a high school diploma attribute obesity to marketing of unhealthy foods.
- c. Those with some college or more attribute obesity to poor eating habits and not enough exercise.

Data Analysis for Hypothesis 4

- Variables:
 - Dependent: Cause of Obesity
 - Independent: Education
- Testing:
 - An cross tabulation was conducted.



Results

- a. Those with no high school diploma attribute obesity to genetics/family history. **Supported: Genetics was given higher ratings for cause of obesity by those w/ no high school diploma (56%) vs. the other education breaks (49% & 43%).**
- b. Those with a high school diploma attribute obesity to marketing of unhealthy foods. **Supported: High school graduates rated this cause higher (61%) than the other education breaks (55% & 60%).**
- c. Those with some college or more attribute obesity to poor eating habits & not enough exercise. **Supported: Those with a college education rated these two causes higher (83% & 84%) than high school graduates (80% & 81%) and those without a high school diploma (79% & 82%).**

Interpretation for Hypothesis 4

- The higher the education the more likely obesity will be linked to internal causes.
 - Educated individuals understand accountability for their own actions.
- The less educated, the more likely obesity will be linked to external causes.
 - Less educated individuals place blame elsewhere, outside of themselves.
- Recommendation:
 - Get educated!

Hypothesis 5

- Fast-food consumption, television viewing, and weekly exercise are good predictors of BMI.
- Consumption of fast food in the United States seems to have an adverse effect on dietary quality in ways that plausibly could increase risk for obesity. (Bowman, 2004)



McDonald's
TM

Data Analysis for Hypothesis 5



- Variables:
 - Dependent: BMI
 - Independent:
 - Weekly fast-food consumption
 - Daily television viewing
 - Weekly exercise
- Testing:
 - A regression model was run for this hypothesis.
 - Overall model $F = 4.96$
 - $R^2 = 0.018$

Data Analysis for Hypothesis 5

- Regression Equation:
- $Y = 2.476 + .068x + .003y - .006z$
 - $Y = \text{BMI}$
 - $x = \text{television}$
 - $y = \text{fast food consumption}$
 - $z = \text{exercise}$
- If we substitute values for x, y, z , BMI should be predicted by the equation.

Results

- Individual t statistics were also examined.
- H0: Fast-food consumption, television viewing, and weekly exercise are good predictors of BMI.
- HA: Fast-food consumption, television viewing, and weekly exercise are NOT all good predictors of BMI.

Results

- Model $R^2 = 0.018$ indicates that fast food consumption, television viewing, and weekly exercise are not good predictors of BMI. Less than 2% of the variance in BMI is explained by this set of independent variables.

Interpretation for Hypothesis 5

- We reject the alternative hypothesis.
- BMI cannot be determined by the three variables used in this hypothesis alone.
- More tests need to be run to determine which variables carry more importance in explaining BMI.



Obesity

Conclusion

- Expected causes of obesity are consistent with prior research.
 - Obese people engage in behaviors that do not require strenuous activities. (Fitness, 2007)
 - E.g., watching large amounts of television
 - Obese people eat unhealthy foods on a regular basis. (Klemm, 2007)
 - Fast-food more than 6 times per week
 - No dieting

Conclusion

- Education level may not directly relate to an individual's BMI, but it does help determine beliefs about causality.
 - When someone is or feels uneducated, they blame internal problems on external issues.

OBESITY

Conclusion

- Obesity is a total American epidemic (Scoppe, 2006).
 - No region is radically more or less obese than the other (according to this data set).
- The reasons for obesity range from one person to the next.
 - The 3 expected causes of obesity are insufficient for prediction.

References

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Thank You