Q5_Powerpoint_Present

Precious Nhamo

2025-06-17

```
## Rows: 10 Columns: 4
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (2): Poor Sleep Risk, age_group
## dbl (2): Mean_Weight_Change, Count
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
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```

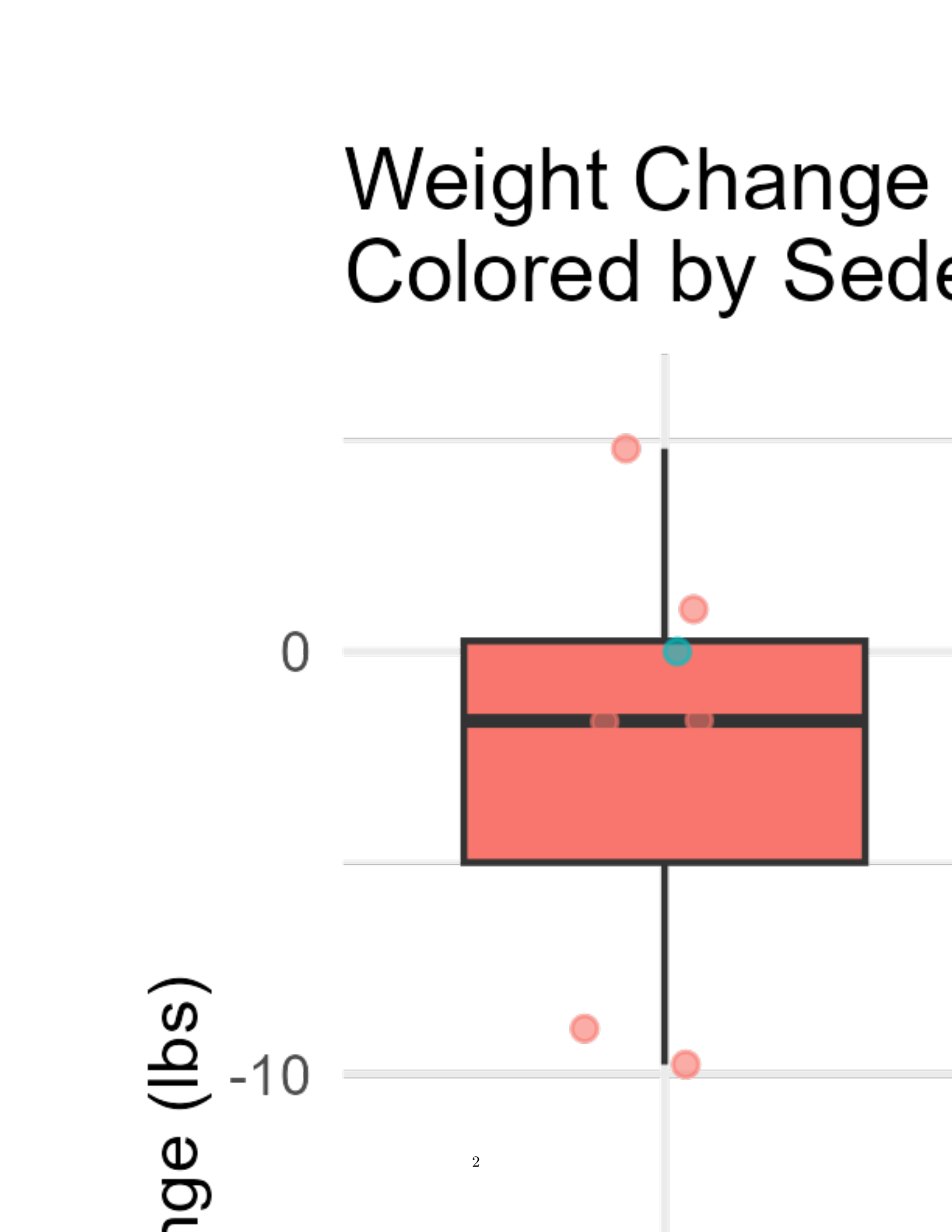
Weight Change
Colored by Sede
0
-10
nge (lbs)

Sleep Risk by Age Group

Table 1: Table: Sleep Risk vs. Age Group

Poor Sleep Risk	age_group	Mean_Weight_Change	Count
No	Adults (20-29)	0.2142665	9
No	Early Career (30-39)	1.5777778	9
No	Middle-aged (40-49)	2.9571429	7
No	Preretirement (50-64)	-0.0982816	11
No	Teenagers (<20)	1.9500000	2
Yes	Adults (20-29)	-3.0281494	15
Yes	Early Career (30-39)	-7.7298256	14
Yes	Middle-aged (40-49)	-6.2899584	17
Yes	Preretirement (50-64)	-2.0918011	12
Yes	Teenagers (<20)	-7.9895678	4

Stress Risk by Age Group

Table 2: Table: Stress Risk vs. Age Group

High Stress Risk	age_group	Mean_Weight_Change	Count
No	Adults (20-29)	-0.3147374	16
No	Early Career (30-39)	0.3380507	16
No	Middle-aged (40-49)	-0.2082122	17
No	Preretirement (50-64)	-0.1510524	16
No	Teenagers (<20)	-2.1816281	5
Yes	Adults (20-29)	-4.8072556	8
Yes	Early Career (30-39)	-14.2037671	7
Yes	Middle-aged (40-49)	-11.8128123	7
Yes	Preretirement (50-64)	-3.3951248	7
Yes	Teenagers (<20)	-17.1501307	1

```
##
## Call:
## lm(formula = `Weight Change (lbs)` ~ sleep_risk * stress_risk +
##     physical_activity + age_group + Gender + `Daily Caloric Surplus/Deficit` +
##     `BMR (Calories)` + `Duration (weeks)`, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -21.8665  -2.2284  -0.1688   3.0284  13.3642
##
## Coefficients:
##                                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                               1.757644   6.660167   0.264  0.79249
## sleep_riskPoor Sleep                     -7.168427   2.704340  -2.651  0.00958 **
## stress_riskLow Stress                     5.800417   2.717209   2.135  0.03566 *
## physical_activityModerately Active       -1.141517   1.892730  -0.603  0.54804
## physical_activitySedentary               -0.539390   1.981756  -0.272  0.78615
## physical_activityVery Active             -1.075895   2.310961  -0.466  0.64272
## age_groupEarly Career (30-39)            -2.976460   1.874652  -1.588  0.11606
```

```
## age_groupMiddle-aged (40-49)               -2.225577   1.766148  -1.260  0.21107
## age_groupPreretirement (50-64)             -0.777232   1.890988  -0.411  0.68209
## age_groupTeenagers (<20)                   -3.178475   2.861000  -1.111  0.26972
## GenderM                                    -1.649830   1.596543  -1.033  0.30436
## `Daily Caloric Surplus/Deficit`             0.002322   0.002981   0.779  0.43807
## `BMR (Calories)`                           -0.001351   0.002211  -0.611  0.54296
## `Duration (weeks)`                         -0.157764   0.175486  -0.899  0.37118
## sleep_riskPoor Sleep:stress_riskLow Stress  2.979590   3.289721   0.906  0.36764
## ---
## Signif. codes:  0 `***` 0.001 `**` 0.01 `*` 0.05 `.` 0.1 ` ` 1
##
## Residual standard error: 5.929 on 85 degrees of freedom
## Multiple R-squared:  0.4553, Adjusted R-squared:  0.3656
## F-statistic: 5.075 on 14 and 85 DF,  p-value: 8.498e-07
```

```
##
## Call:
## lm(formula = `Weight Change (lbs)` ~ `High Stress Risk` * age_group,
##     data = data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -23.865  -2.815   1.035   2.622  16.613
##
## Coefficients:
##                                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                                         -0.3147     1.5095  -0.209  0.83531
## `High Stress Risk`Yes                               -4.4925     2.6145  -1.718  0.08918 .
## age_groupEarly Career (30-39)                        0.6528     2.1348   0.306  0.76047
## age_groupMiddle-aged (40-49)                         0.1065     2.1031   0.051  0.95972
## age_groupPreretirement (50-64)                       0.1637     2.1348   0.077  0.93905
## age_groupTeenagers (<20)                            -1.8669     3.0936  -0.603  0.54771
## `High Stress Risk`Yes:age_groupEarly Career (30-39) -10.0493     3.7845  -2.655  0.00937 **
## `High Stress Risk`Yes:age_groupMiddle-aged (40-49)   -7.1121     3.7668  -1.888  0.06223 .
## `High Stress Risk`Yes:age_groupPreretirement (50-64)  1.2484     3.7845   0.330  0.74226
## `High Stress Risk`Yes:age_groupTeenagers (<20)      -10.4760     7.1123  -1.473  0.14426
## ---
## Signif. codes:  0 `***` 0.001 `**` 0.01 `*` 0.05 `.` 0.1 ` ` 1
##
## Residual standard error: 6.038 on 90 degrees of freedom
## Multiple R-squared:  0.4018, Adjusted R-squared:  0.342
## F-statistic: 6.718 on 9 and 90 DF,  p-value: 2.604e-07
```

Introduction

Analysis of key determinants of health care based on WHO-funded data

Focus on sleep, stress, physical activity, and demographic differences

Goal: Provide practical insights for improving health outcomes

Sleep as a Proxy for Health

How does high stress impact the benefits of adequate sleep?

Analysis using boxplots and regression models with interaction effects

To what extent can stress diminish or negate sleep's positive health effects?

Role of Physical Activity

How does physical activity influence the relationship between sleep and health?

Can physical inactivity offset the benefits of good sleep quality?

Demographic Differences

Which age groups are most vulnerable to poor sleep, high stress, and inactivity?

How do lifestyle differences between younger and older adults affect these health determinants?

Speaker Notes

In this presentation, I will highlight how sleep serves as a proxy for overall health, emphasizing the complex role that high stress plays in potentially reducing the positive effects of good sleep. We will also explore how physical activity modifies this relationship, examining whether inactivity can cancel out the benefits of quality sleep. Finally, I will discuss which demographic groups—particularly younger versus older adults—are most impacted by poor sleep, stress, and inactivity, providing actionable insights for targeted health interventions.

Slide with Bullets

- Bullet 1
- Bullet 2
- Bullet 3

Sleep stress interaction box and whisker and regression results