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Would the findings differ for different subgroups of the population?

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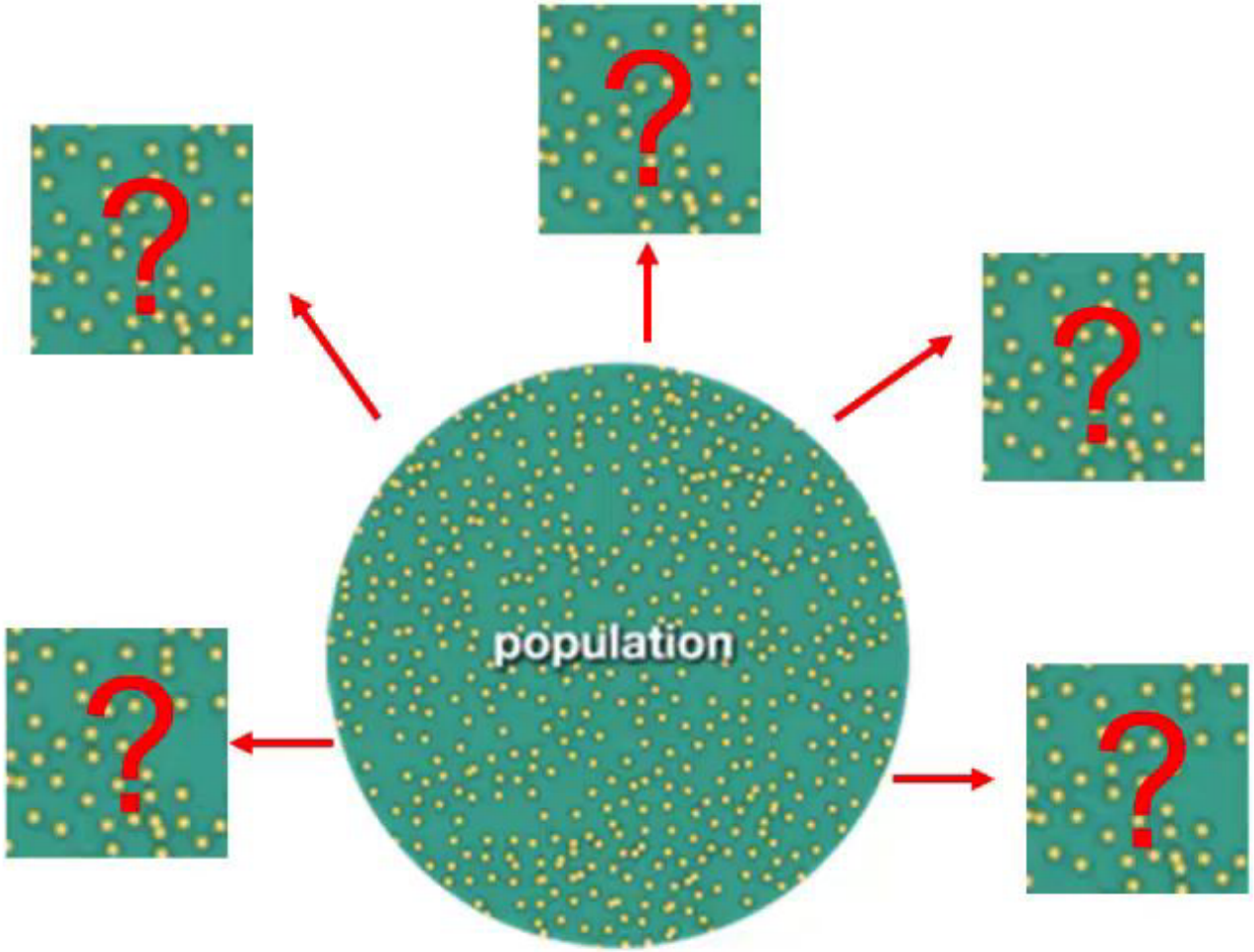

Evaluating Moderation

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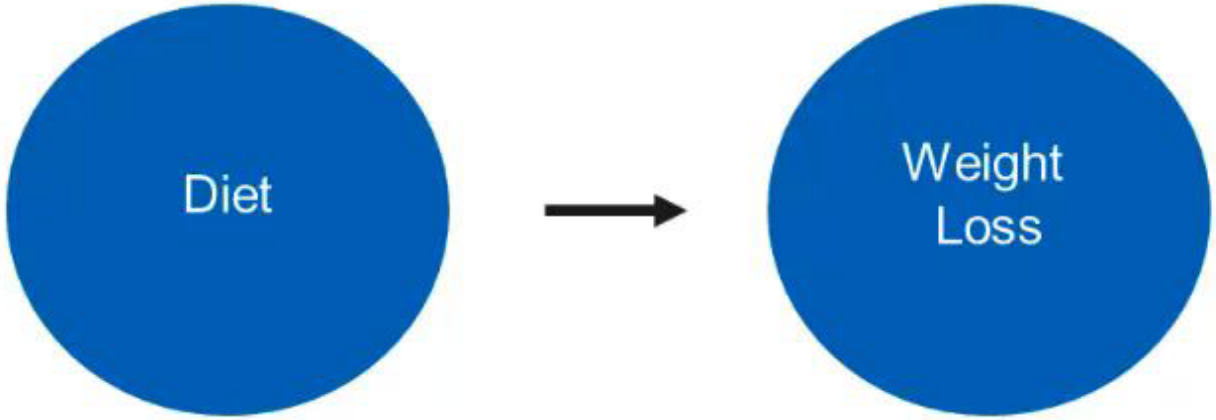
Do you prefer ketchup or soy sauce?

If someone asked you this question, your answer would likely depend upon what you were eating. You probably wouldn't dunk your spicy tuna roll in ketchup. And most people (pregnant moms-to-be excluded) don't seem to fancy eating soy sauce with hot French fries.

Minitab

2 level Categorical
A=low carbs
B=low fat



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Exercise	Diet	WeightLoss
Cardio	A	17.4
Cardio	A	21.5
Cardio	A	23.6
Cardio	A	21.9
Cardio	A	20.5
Cardio	B	5.9
Cardio	B	5.8
Cardio	B	6.4
Cardio	B	6.8
Cardio	B	6.9
Weights	A	10.9
Weights	A	4.2
Weights	A	9.4
Weights	A	10
Weights	A	9.2
Weights	A	10.1
Weights	B	9.8
Weights	B	12.7
Weights	B	14.4
Weights	B	11.6
Weights	B	8.3
Weights	B	11

Not real data

Minitab

Analysis of Variance

		Response	
		Categorical	Quantitative
Explanatory	Categorical	C → C	C → Q
	Quatitative	Q → C	Q → Q

PROC ANOVA; CLASS CAT_EXPLANATORY;

MODEL QUAN_RESPONSE= CAT_EXPLANATORY ;

MEANS CAT_EXPLANATORY;

Analysis of Variance

		Response	
		Categorical	Quantitative
Explanatory	Categorical	C → C	C → Q
	Quatitative	Q → C	Q → Q

```
PROC ANOVA; CLASS DIET;
MODEL WEIGHTLOSS= DIET ;
MEANS DIET;
```

ANOVA Results

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The ANOVA Procedure

Class Level Information

Class	Levels	Values
Diet	2	A B

Number of Observations Read	40
Number of Observations Used	40

The ANOVA Procedure

Dependent Variable: WeightLoss WeightLoss

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	284.622250	284.622250	12.00	0.0013
Error	38	901.381500	23.720566		
Corrected Total	39	1186.003750			

R-Square	Coeff Var	Root MSE	WeightLoss Mean
0.239984	40.62879	4.870376	11.98750

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Diet	1	284.6222500	284.6222500	12.00	0.0013

ANOVA Results

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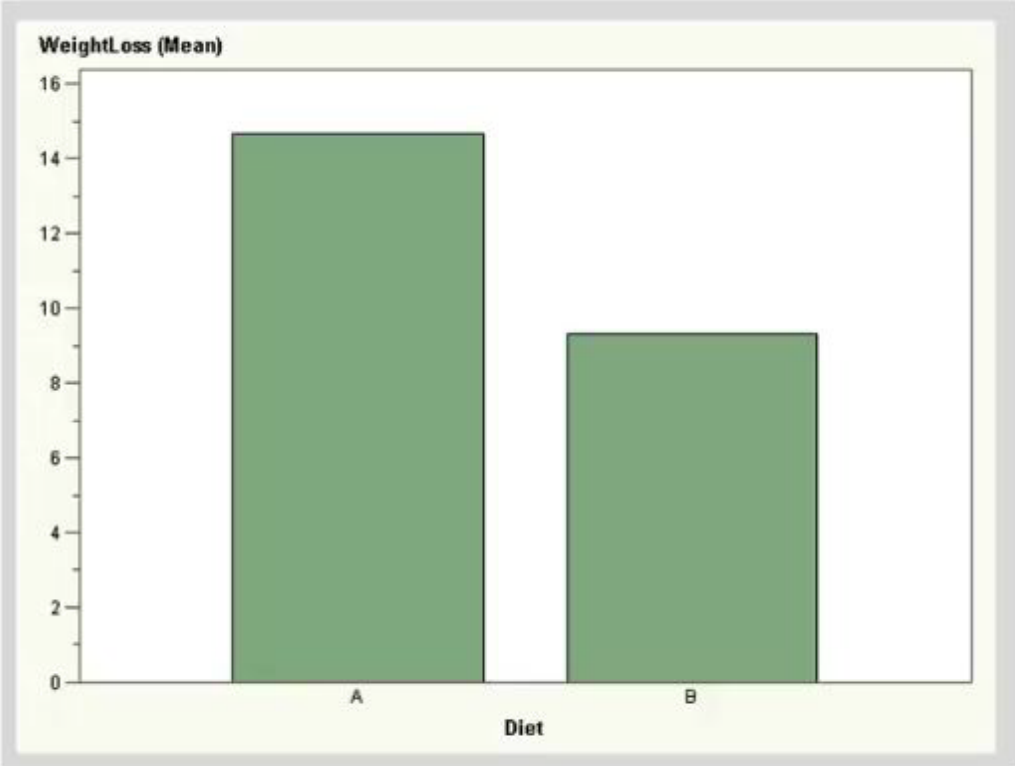
The ANOVA Procedure

Level of Diet	N	WeightLoss Mean	WeightLoss Std Dev
A	20	14.6550000	6.30208612
B	20	9.3200000	2.77936002



ANOVA Results

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The ANOVA Procedure

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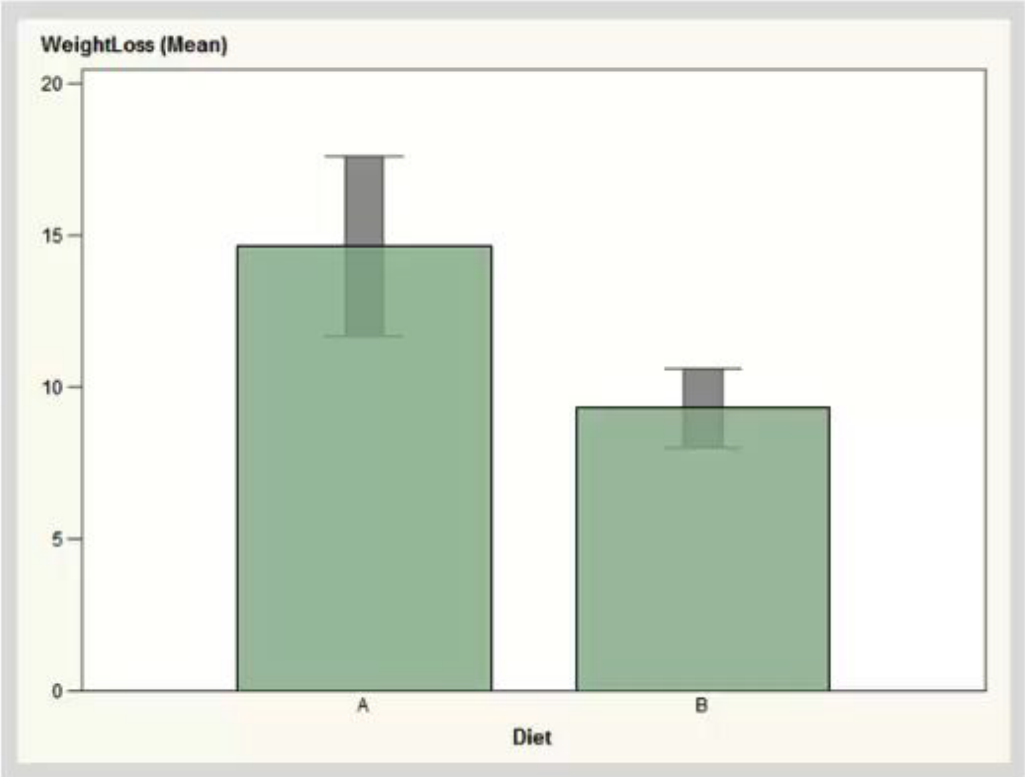

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Weights	B	8.3
Weights	B	11

Not real data

Minitab

ANOVA by different levels of a third variable

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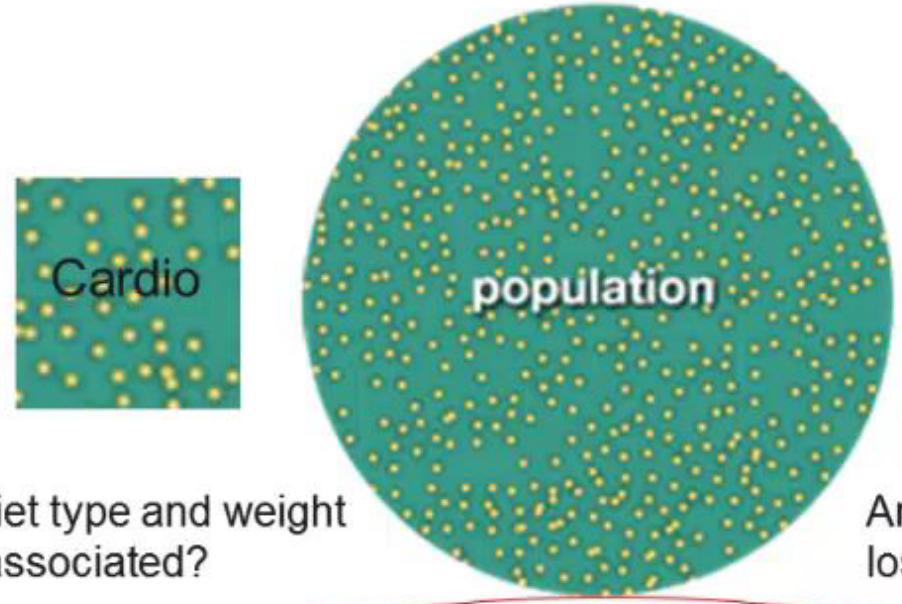


? Are diet type and weight loss associated?

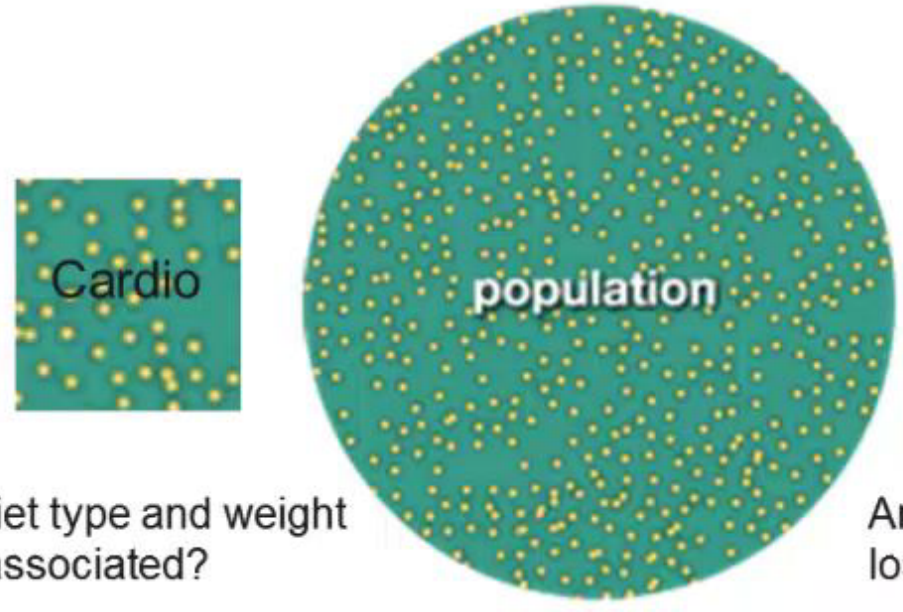
Are diet type and weight loss associated? ?

```
PROC SORT; BY CAT_THIRDVAR;

PROC ANOVA; CLASS CAT_EXPLANATORY;
MODEL QUAN_RESPONSE= CAT_EXPLANATORY ;
MEANS CAT_EXPLANATORY; BY CAT_THIRDVAR;
```

ANOVA by different levels of a third variable

WESLEYAN UNIVERSITY



? Are diet type and weight loss associated?

Are diet type and weight loss associated? ?

PROC SORT; BY EXERCISE;

PROC ANOVA; CLASS DIET;

MODEL WEIGHTLOSS= DIET ;

MEANS DIET; BY EXERCISE;

Type of exercise moderates the relationship between diet and weight loss

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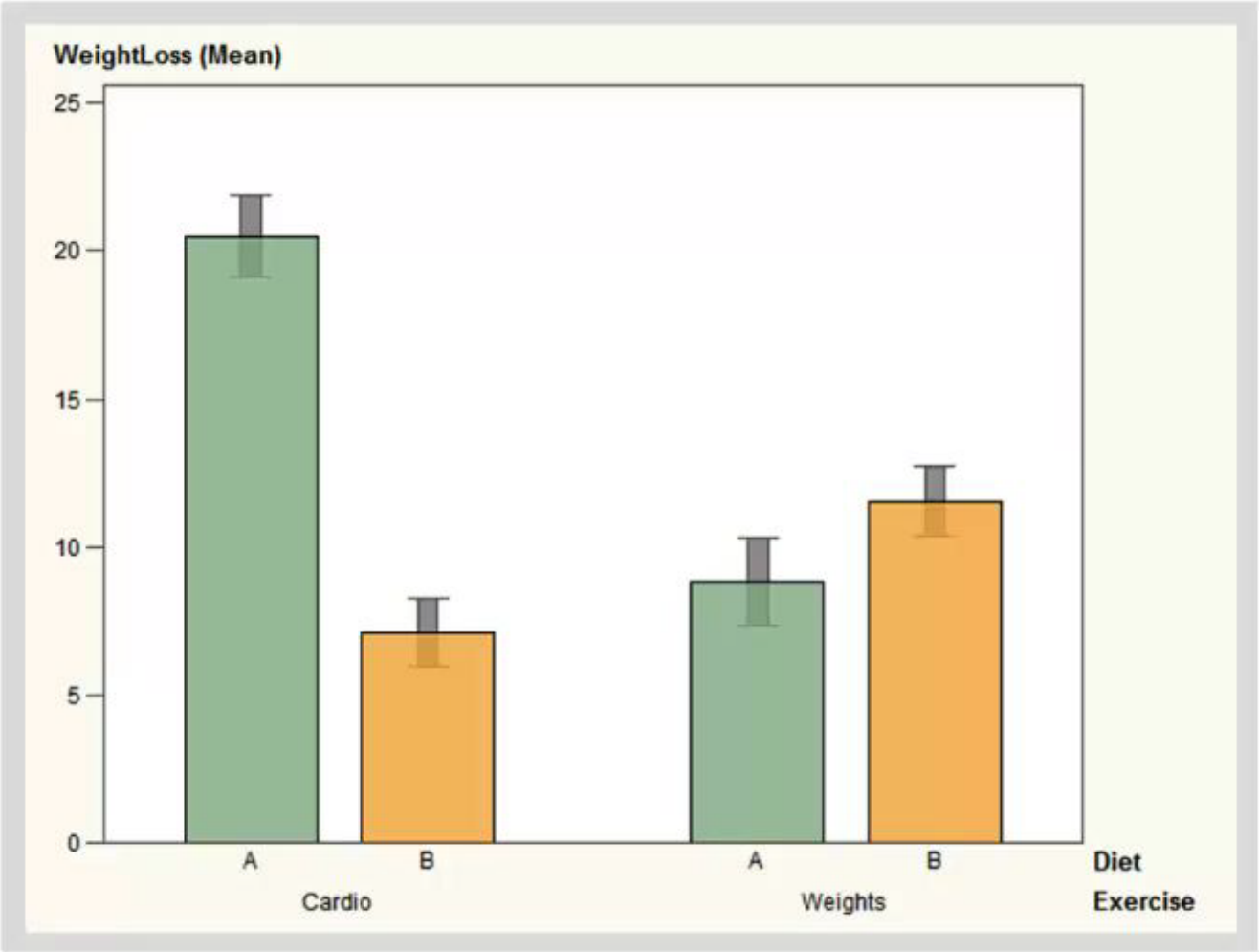

Does a diagnosis of major depression moderate the relationship between smoking and nicotine dependence?

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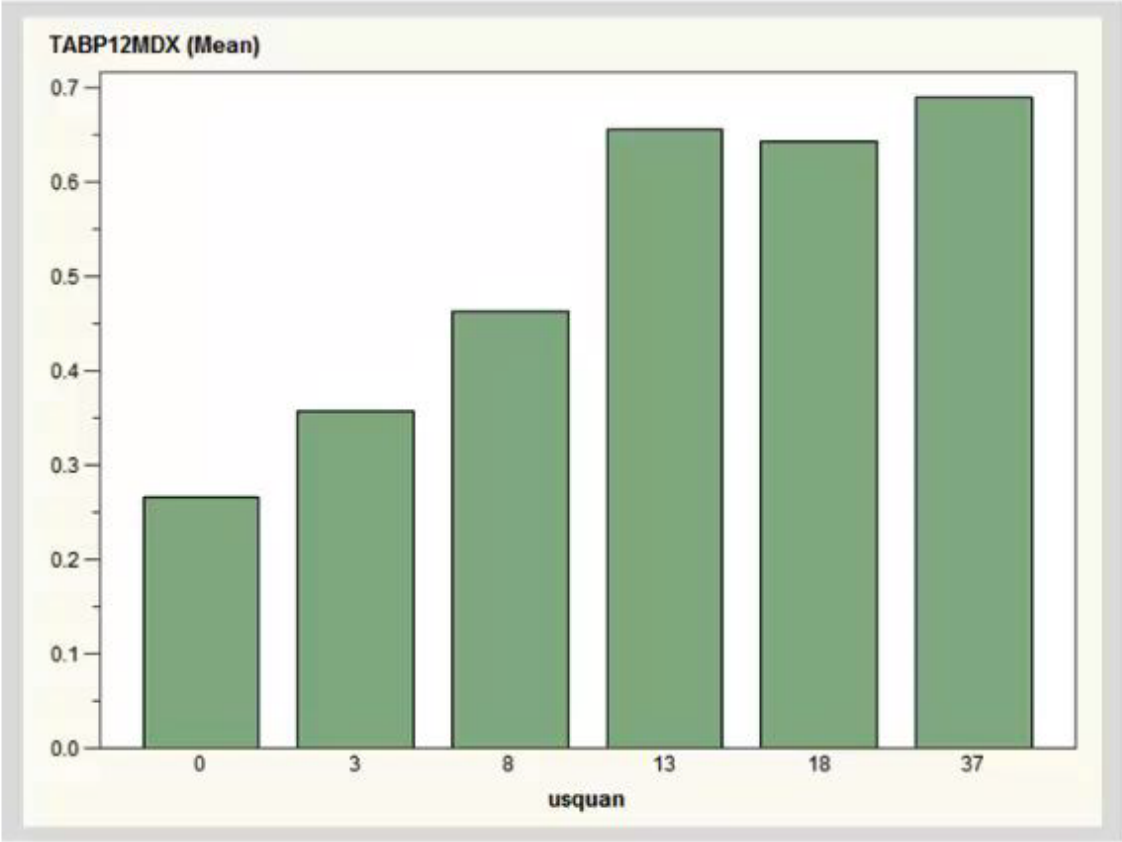

3549-3549	MAJORDEPLIFE		MAJOR DEPRESSION - LIFETIME
		35254	0. No
		7839	1. Yes

Chi Square by different levels of a third variable

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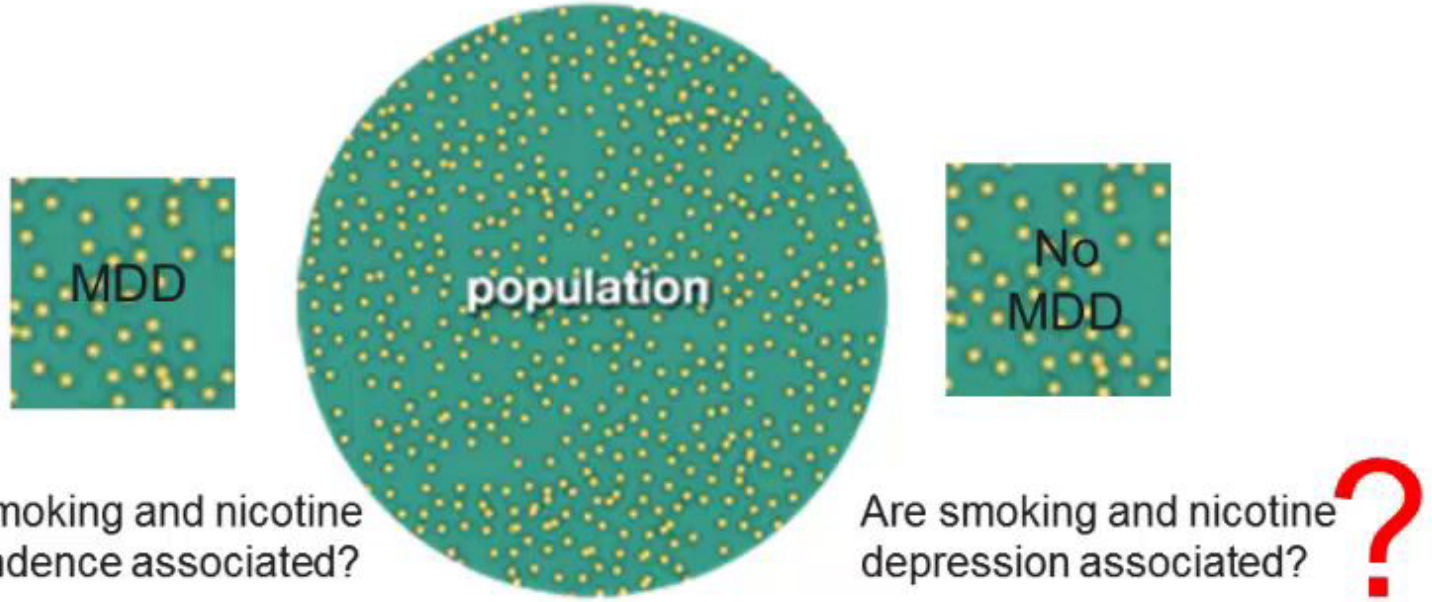

? Are smoking and nicotine dependence associated?

Are smoking and nicotine depression associated? ?

PROC SORT; BY CAT_THIRDVAR;

PROC FREQ; TABLES CAT_RESPONSE*CAT_EXPLANATORY /CHISQ;

BY CAT_THIRDVAR;

Chi Square by different levels of a third variable

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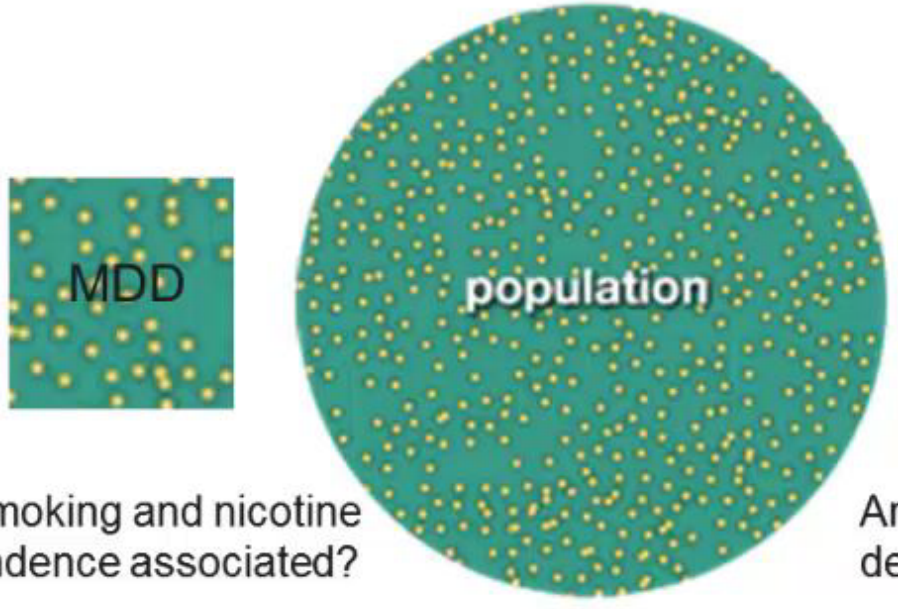

? Are smoking and nicotine dependence associated?

Are smoking and nicotine depression associated? ?

PROC SORT; BY MAJORDEPLIFE;

PROC FREQ; TABLES TAB12MDX*USQUAN /CHISQ;

BY MAJORDEPLIFE;

A diagnosis of major depression does NOT moderate the relationship between smoking and nicotine dependence?

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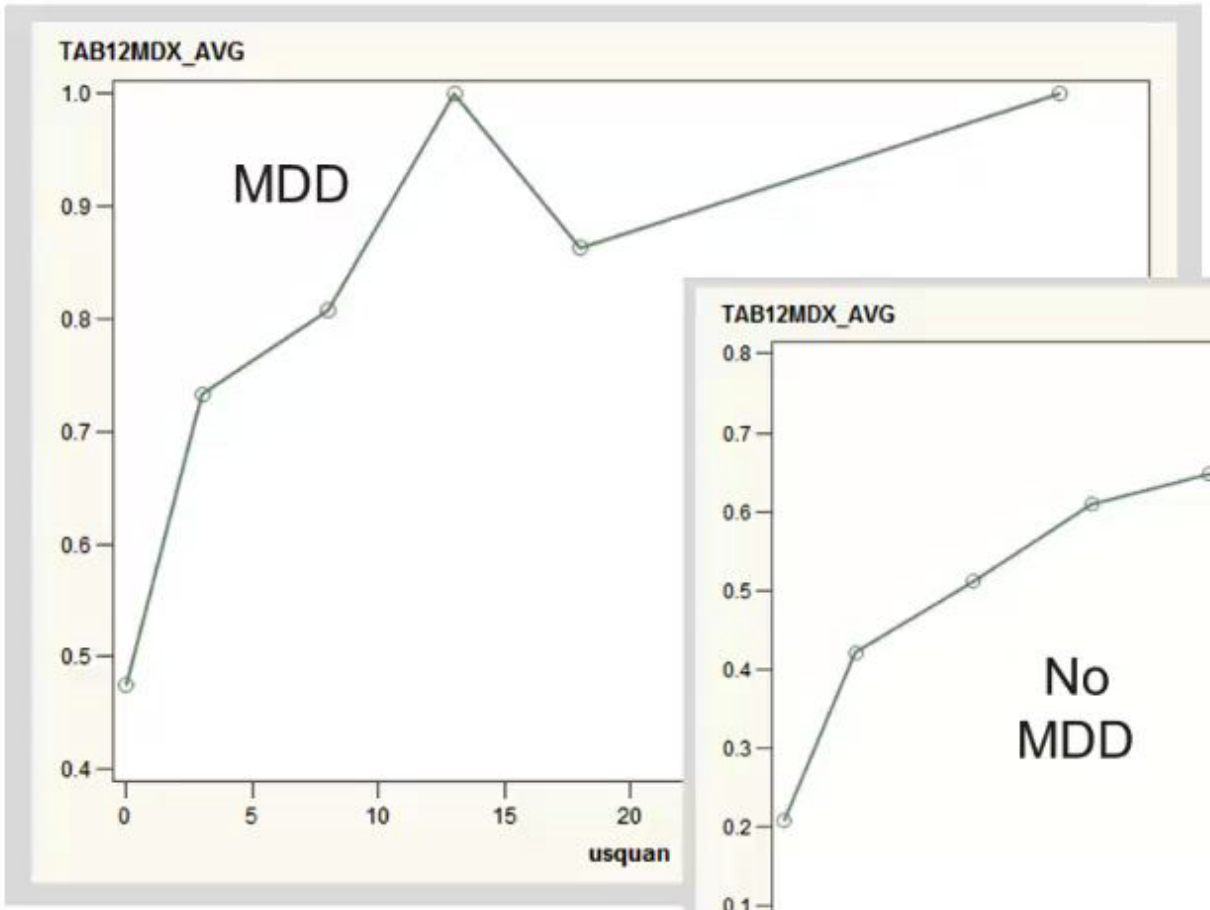

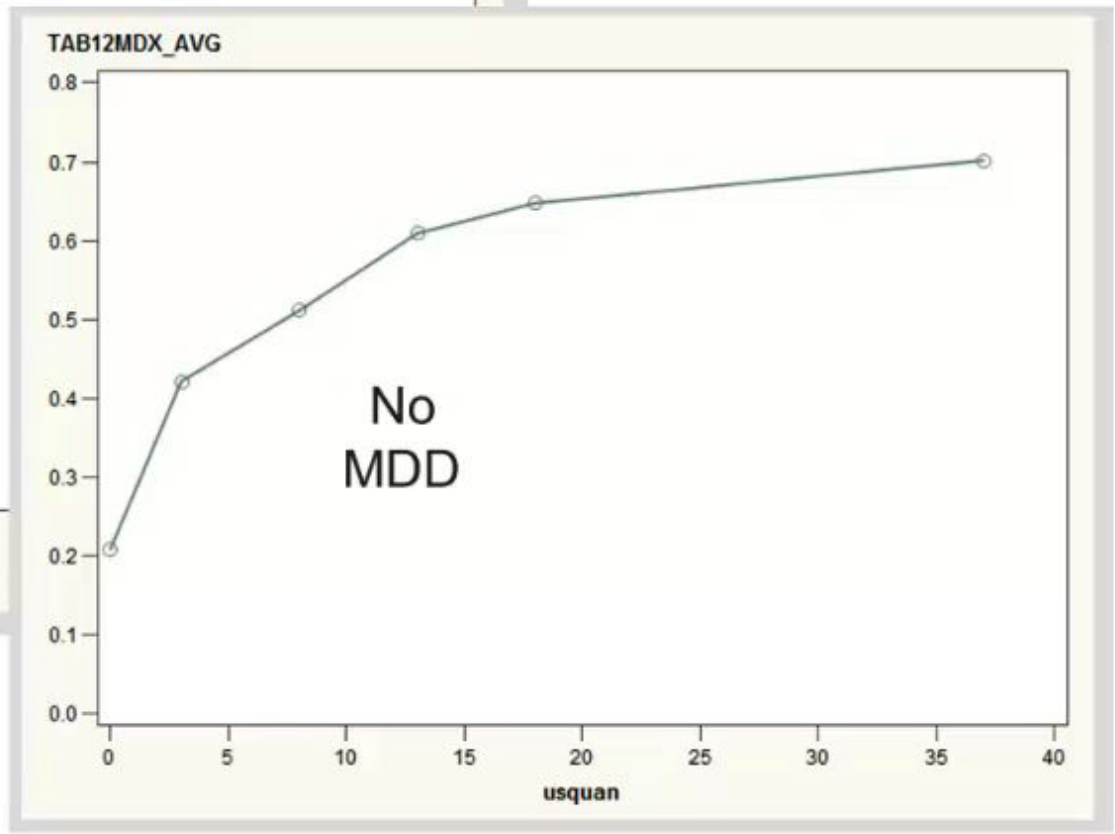

Scatterplot and correlation for urban rate and internet use rate

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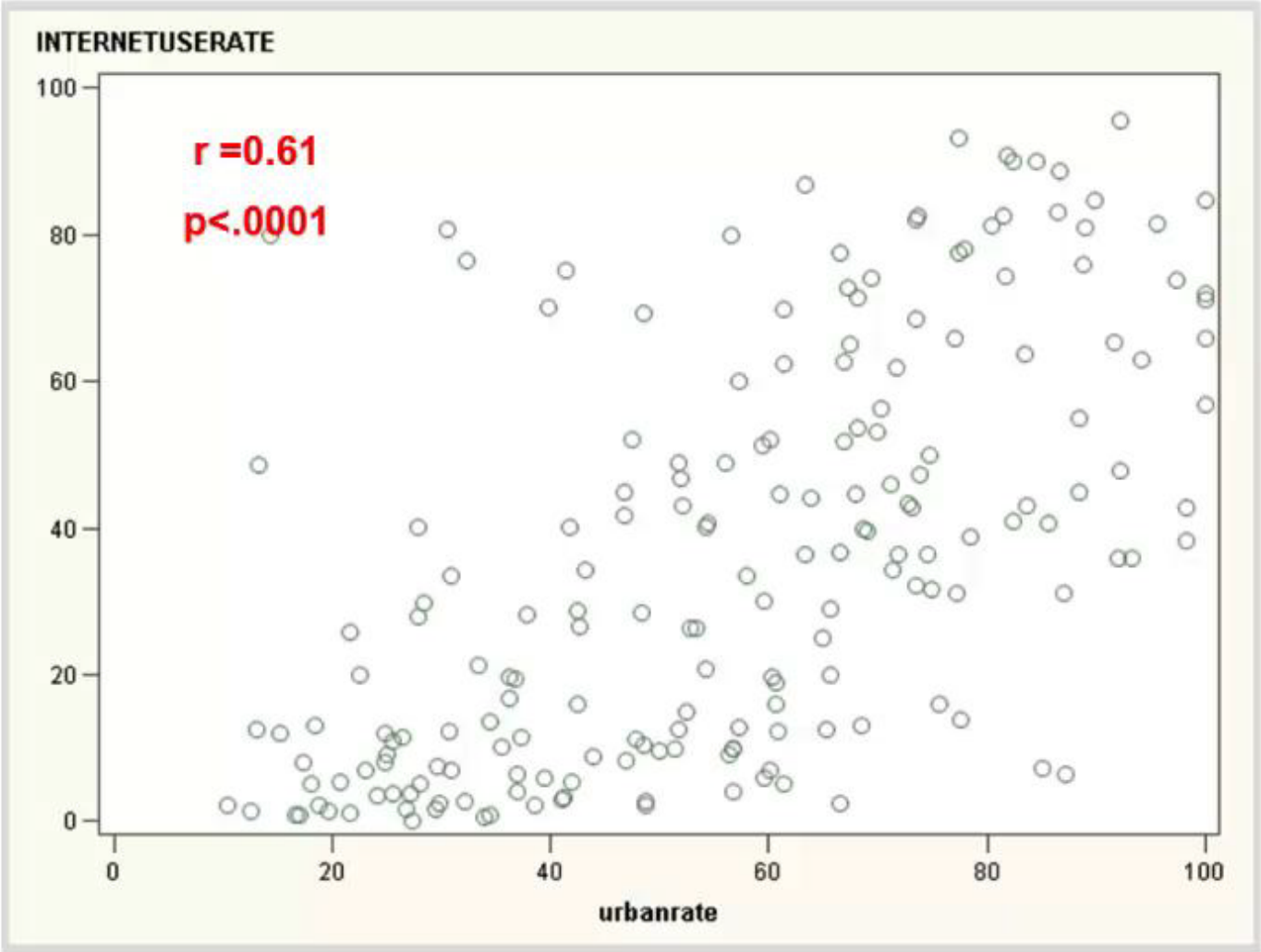

Income per person within countries moderates the association between urban rate and the rate of internet use?

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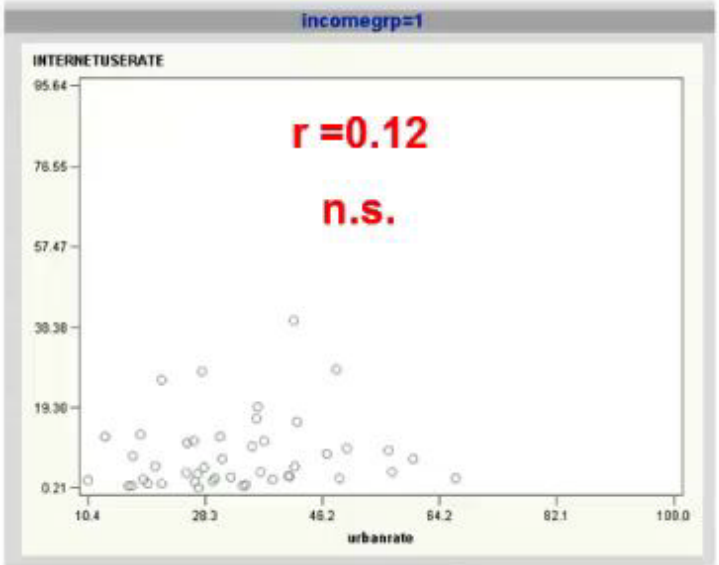

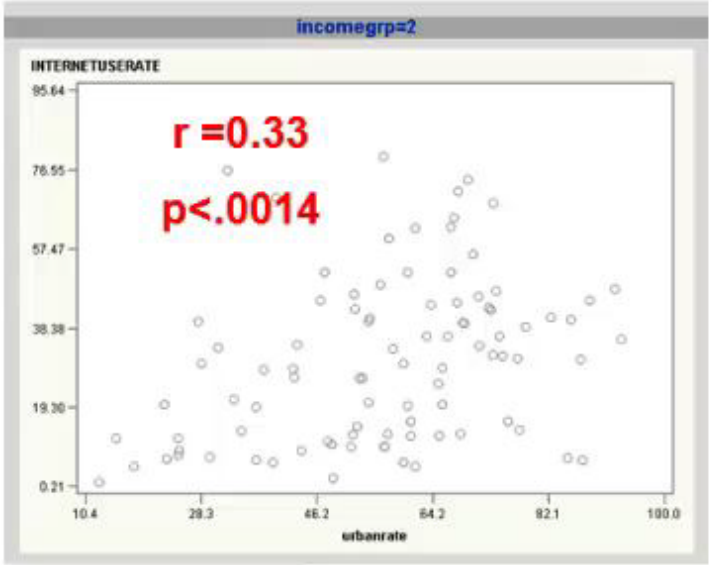

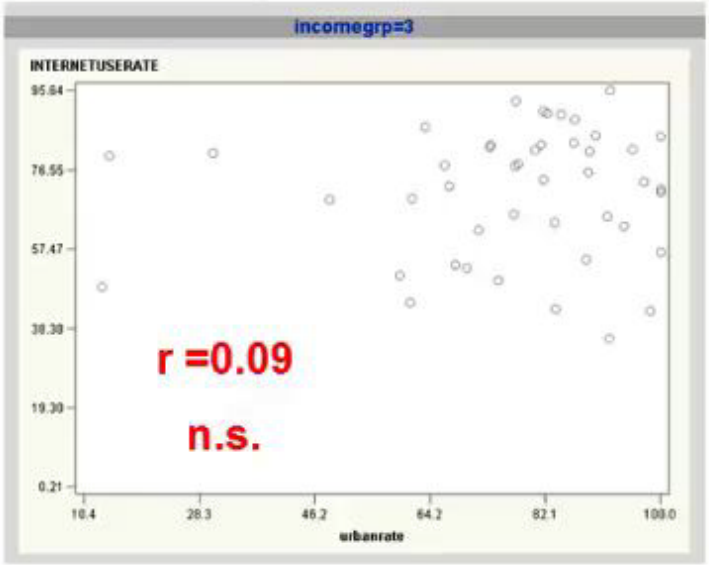

Understanding Relationships

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Description

Anova

Chi Square

Inference

Post hoc tests

Data Visualization

Moderation