

South Carolina Analysis

Team members: Héctor Orellana, Petra Spakova, David Maycon

Team leader: Héctor Orellana

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Introduction

The CEO enjoyed the presentations and loved the work done. In one of his fit of crazy/genius decisions he decided that North Carolina is not the state that the new business must be implemented in. He interpreted one of his dreams and decided to change it to South Carolina.

To evaluate the business opportunity, the team applied the same statistical analysis to the new state.

Business Problem

In North Carolina, South Carolina and the United States in general there is a big part of the population that are overweight. The overweight characteristics can be seen in a mature or older population throughout the samples. Respondents in surveys claim to have exercised in the past month, however we don't know to what extent. Leaving diet out of the equation, what can be done to attack overweight?

Business Solution

North Carolina proved to be a good geography where to apply the idea of a **Mature Women only fitness center**. The Target will be: Women 45 years old or above, who are overweight but have exercised in the last 30 days. They live in Metropolitan areas and have an income of less than \$75k a year, which is the majority, so we will create a low cost gym for this target.

We believe that South Carolina has a similar enough population in which we can apply this business idea and cater to that target market.

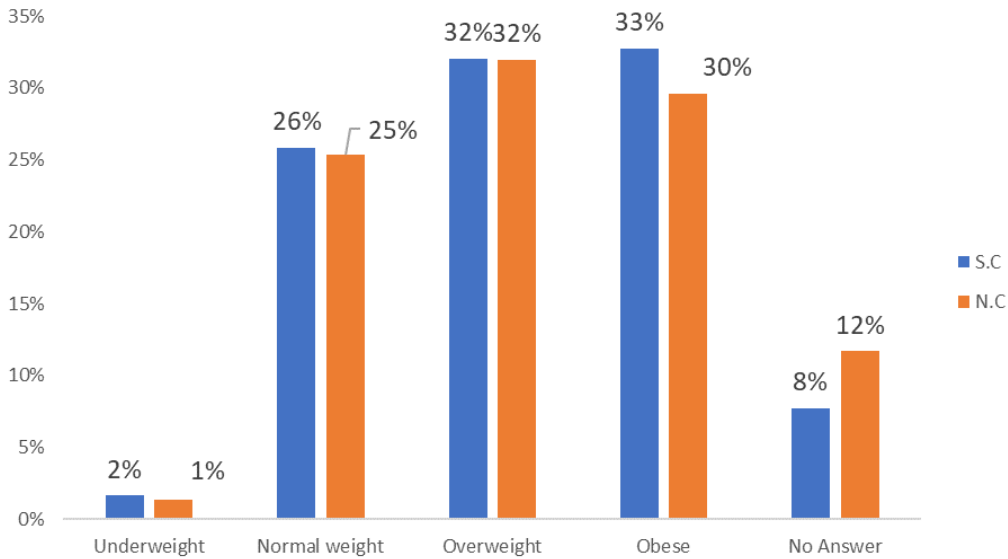
Exploratory Data Analysis

South Carolina vs. North Carolina

	South C	North C
People surveyed in North Carolina	4,014	5,842
North Carolina population	5,190,000	10,490,000
Target Market 1	280	329
Possible customer %	6.98%	5.60%
North Carolina x Target %	362,033	590,758

The most interesting results can be easily understood through the following graphs:

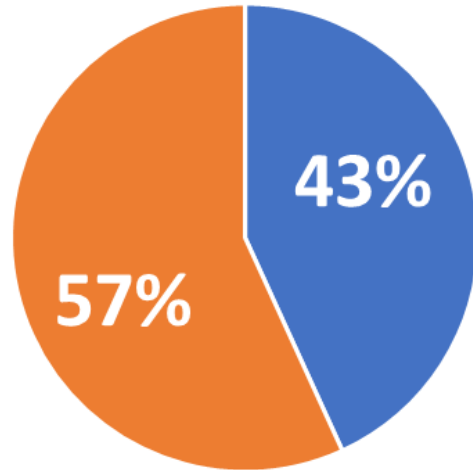
Graph 1: Computed body mass index for both states:



Overweight starts at 2500 body mass index, the mean and median are above this limit. People from both states tend to be overweight, with very similar distribution.

	S.C	N.C
MEAN	2,880	2,850
MEDIAN	2,747	2,744
ST. DEV	689	621

Graph 2: People over 45 years old who are female



■ Male ■ Female

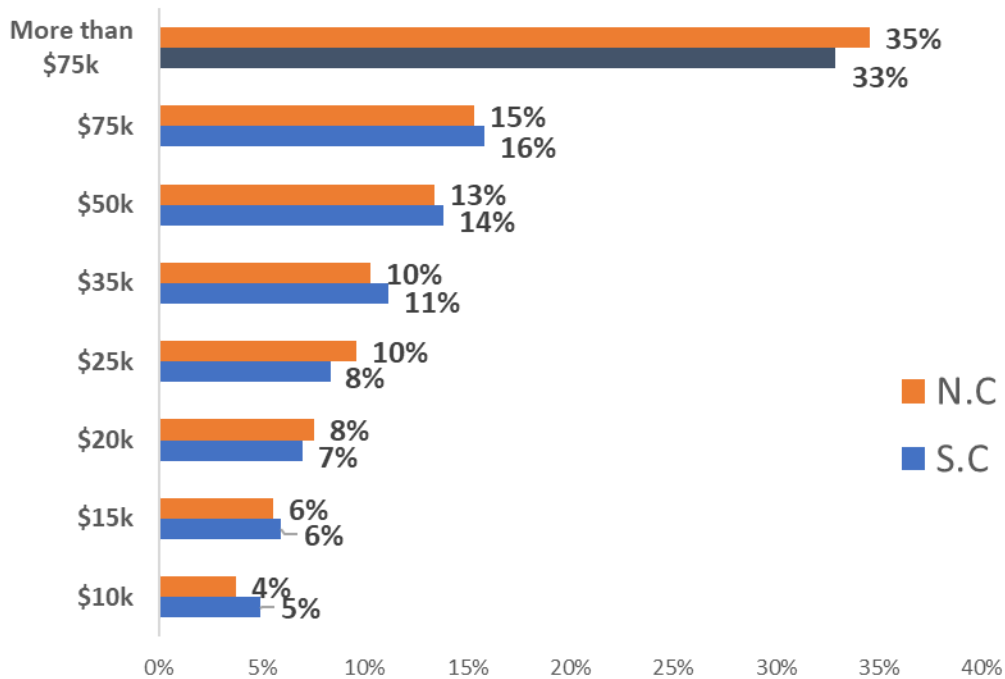
South Carolina shares North Carolina's gender distribution

Age behavior in South vs North:

	S.C	N.C
Mean	55	52.39113
Median	59	54
St. Dev	18	17.67119

Graph 3: Income Level

In the US, most gym members have an income above \$75k per household. In North Carolina, for people above 45, 35% have an income of this level and 33% for South Carolina. However the remaining population can leave an open market for low subscription price gyms.



Analysis of Frequencies: South Carolina vs. U.S

Imputed Age in Six Groups	Frequency		%	
	South Carolina	US	South Carolina	US
1 (Age 18 to 24)	291	25,652	7.2%	6.4%
2 (Age 25 to 34)	409	44,382	10.2%	11.0%
3 (Age 35 to 44)	420	51,971	10.5%	12.9%
4 (Age 45 to 54)	605	62,033	15.1%	15.4%
5 (Age 55 to 64)	768	78,089	19.1%	19.4%
6 (Age 65 or older)	1,521	139,831	37.9%	34.8%
Total	4,014	401,958	100.0%	100.0%

Annual household income level	Frequency		%	
	South Carolina	US	South Carolina	US
1 (Less than \$10,000)	199	12,903	5.0%	4.0%
2 (\$10,000 - \$14,999)	239	13,705	6.0%	4.3%
3 (\$15,000 - \$19,999)	281	21,048	7.0%	6.5%
4 (\$20,000 - \$24,999)	335	27,719	8.3%	8.6%
5 (\$25,000 - \$34,999)	447	31,410	11.1%	9.8%
6 (\$35,000 - \$49,999)	556	43,851	13.9%	13.6%
7 (\$50,000 - \$74,999)	636	52,486	15.8%	16.3%
8 (\$75,000 or more)	1,321	118,779	32.9%	36.9%
Total	4,014	321,901	100%	100%

Exercise in the past 30 days	Frequency		%	
	South Carolina	US	South Carolina	US
1 (Yes)	2,806	305,883	69.9%	76.2%
2 (No)	1,208	95,393	30.1%	23.8%
Total	4,014	401,276	100%	100%

Computed body mass index in groups	Frequency		%	
	South Carolina	US	South Carolina	US
1 (Underweight : BMI5 < 1850)	54	5,993	1.3%	1.5%
2 (Normal Weight: 1850 <= _ BMI5 < 2500)	936	110,121	23.3%	27.4%
3 (Overweight: 2500 <= _ BMI5 < 3000)	1,377	128,946	34.3%	32.1%
4 (Obese: 3000 <= _ BMI5 < 9999)	1,340	115,541	33.4%	28.7%
blank	307	41,357	7.6%	10.3%
Total	4,014	401,958	100%	100%

Metropolitan status	Frequency		%	
	South Carolina	US	South Carolina	US
1 (Metropolitan counties)	3,117	273,118	77.6%	69.2%
2 (Nonmetropolitan counties)	897	121,713	22.4%	30.8%
Total	4,014	394,831	100%	100%

By analyzing these frequencies tables, we can conclude that the South Carolina's data set is not only very similar to the original state of North Carolina, but also to the rest of the country. This

means that the business may have potential in other states in the country too (may be scalable), which again, validates our business idea potential.

Normal Distribution

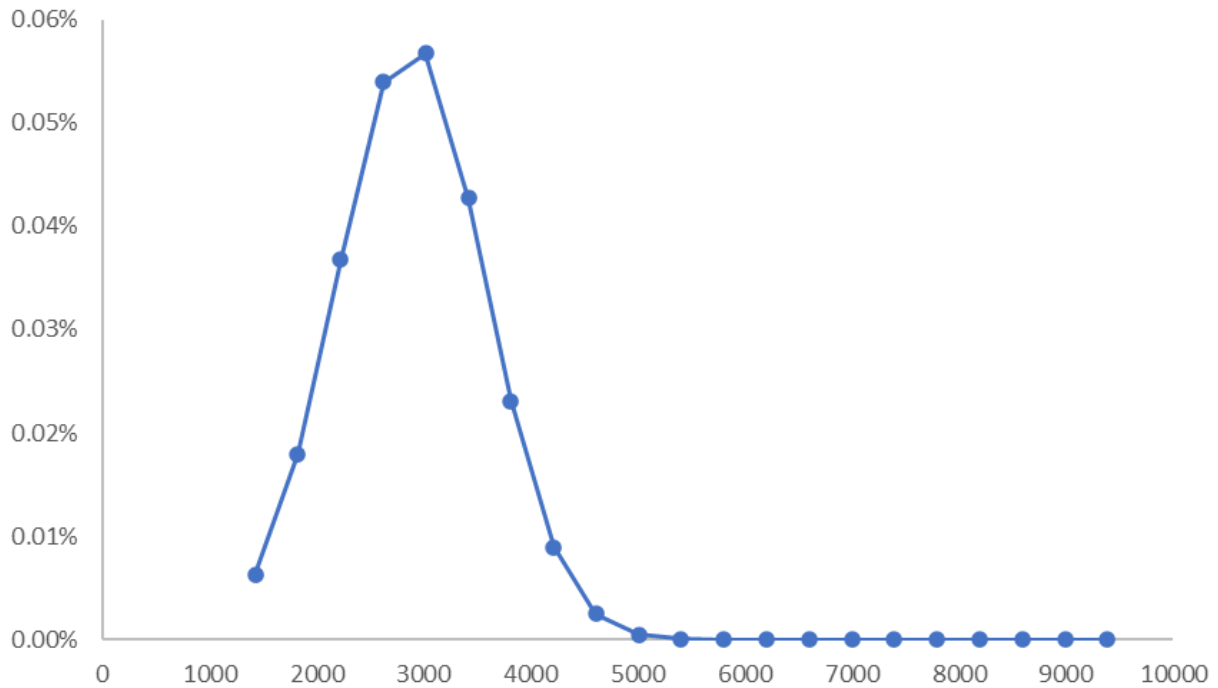
We have found a normal distribution with the variable “Computed body mass index”, so that it can help us to better identify our target for the new business.

So, first we have calculated the minimum, maximum, mean and standard deviation of our distribution, as well as the difference of the maximum and the minimum units:

MAX	9386
MIN	1427
DIF	7959

MEAN	2880
ST. DEV	689

Graph 4: Normal distribution chart of the Computed body mass index in South Carolina



The insights we get from this normal distribution is that there are more respondents that are above the average body mass (mean), and that the standard deviation of this distribution is not big.

Target Market

After this analysis, we can infer that the business would also work in South Carolina, given that it is very similar to North Carolina. This means that the population has a high, even higher than N.C concentration of women in metropolitan areas who exercise, are overweight, 45 years old or more and do not have a high income.

Calculations to find the probability of having Computed body mass index within 2500-5000 in SC Population:

Mean	2880			
St.Dev	689		Z=	-0.55
X	2500		Probability	29%

Mean	2880		Z=	3.08
St.Dev	689		Probability	99.90%
X	5000			

Probability from 2500 to 5000	70.78%
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The probability of a person in South Carolina being overweight is high, this gives us an idea of a possible market. Our confidence intervals show us that we can expect people in NC to be well over the lower limit of overweight, with 95% confidence.

Conclusion

Statistical analysis of the South Carolina state population validates that there is a sizable population with the mentioned characteristics and that it is within the description of North Carolina's target market for the business idea.. The expected Body Mass Index of the population is above what is considered a normal weight BMI.