

# Bridging the gap among health, insurance & education – A Statistical Analysis

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## Abstract

Obesity increases the risk of a number of health conditions including hypertension, adverse lipid concentrations, and type-2 diabetes. Annual medical expenditures attributable to obesity have doubled in less than a decade, and may be as high as \$147 billion per year according to RTI International.

This poster will help to identify the root causes of the obesity and how to reduce that weight and insurance costs among the student community. This paper will help to bridge the gap among US department of health, insurance and education system at least by 5% in a year and 25% in next 5 years with respect to costs and awareness. Like a "safe driver" in auto-insurance industry, health insurance industry has to recognize and be ready to provide rewards to the "healthy driver" by reducing the health insurance costs.

## Objective

- To find where USA stands today in terms of global obesity
- Reduction in % Obese in USA
- To offset the increment due to increase in population
- To measure the current physical activity trend among the male and female students in USA and if the student fraternity increases their physical activity timing at least one day in a week it will help to reduce the total health insurance cost
- To reduce the Health Insurance cost at least by 5% in a year

## G-20 Countries Obesity Values

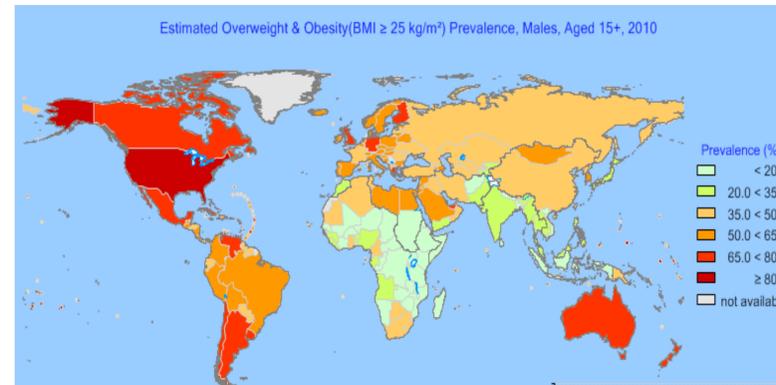


Fig 1: Global Countries Obesity Values obtained from WHO Data Bank

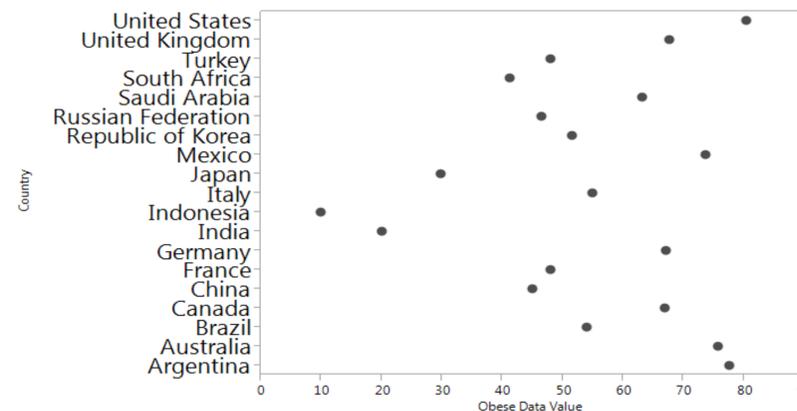


Fig 2: Bubble Plots of G-20 Countries Obesity Values

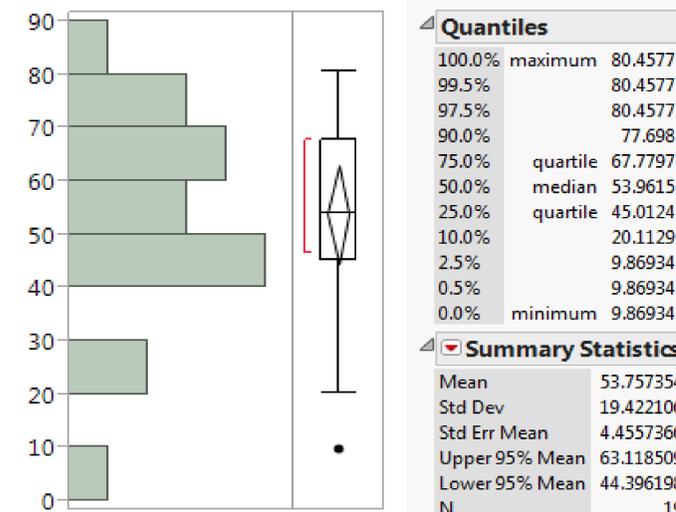


Fig 3: Distribution & Summary Statistics of G-20 Countries obesity percentages

## Methods

- Measured G-20 countries obesity values from World Health Org Data Bank to measure where USA stands in terms of Obesity using bubble graph in SAS JMP 11
- Obtained the R<sup>2</sup> values and Standard Dev using Distribution in SAS JMP 11 to get 2015 incremental obese trend for 10 top obese cities & 10 least obese cities in USA using Bivariate fit in SAS JMP 11
- Analyzed the Cost Vs Obesity increment using Scatterplot Matrix in SAS JMP 11
- Analyzed the Physical Activity done by Male & Female students in USA

## Results

- Fig 1, 2 & 3 depicts where USA stands in the Global Map of % Obesity. Summary Statistics shows the global mean of % obesity to be ~53% whereas the same for USA is about ~80% -this demands our immediate attention
- Fig 4 shows the future projection of obesity increment to be 37.37%
- Fig 5 clearly indicates that the cost of obesity is directly proportional to the total obese population
- Current 'Centers for disease control and prevention' data (plotted in Fig. 6) recorded % Male students not performing any physical activity to be 34%. Considering that these 34% males are currently obese and our projected rate of % obesity in 2015 to be 37% we need to arrest this growth of 3% within the next one year

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## Graph for Results 1

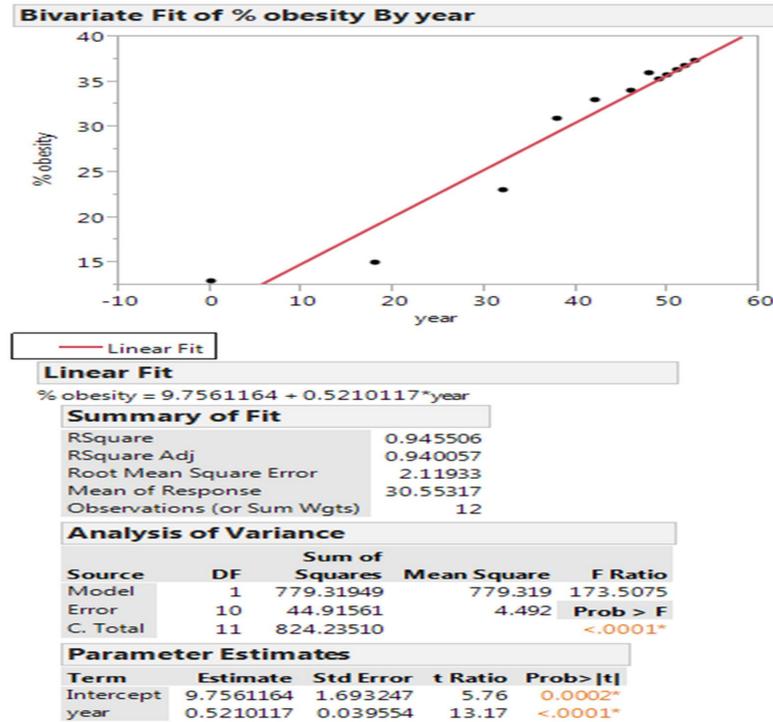


Fig 4: Bivariate Fit of % obesity by year showing the projected rate of increase

## Graph for Result 2

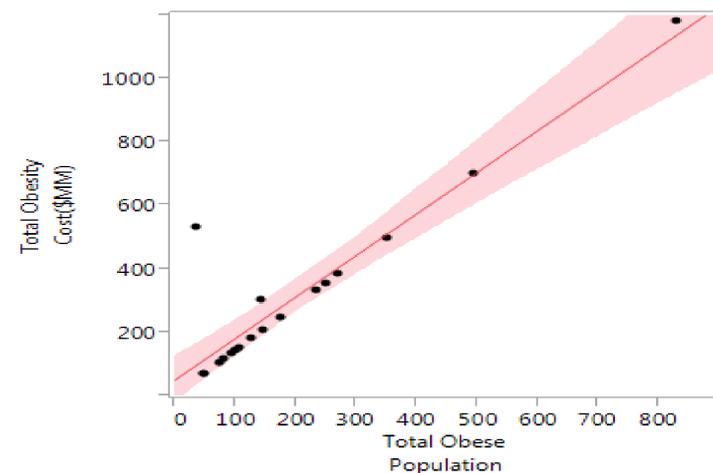


Fig 5: Scatter Matrix for Cost(\$MM) Vs Total Obese Population of 20 US cities showing highest & lowest trend of % Obesity

## Graph for Result 3

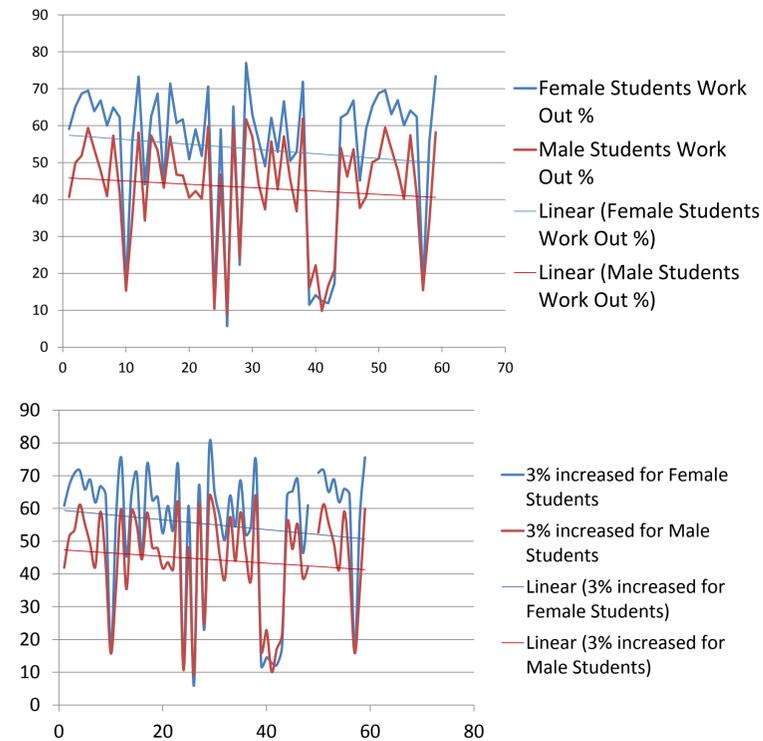


Fig 6: Physical Activity Diagram for Female & Male Students

## Obesity Cost & BMI Calculator

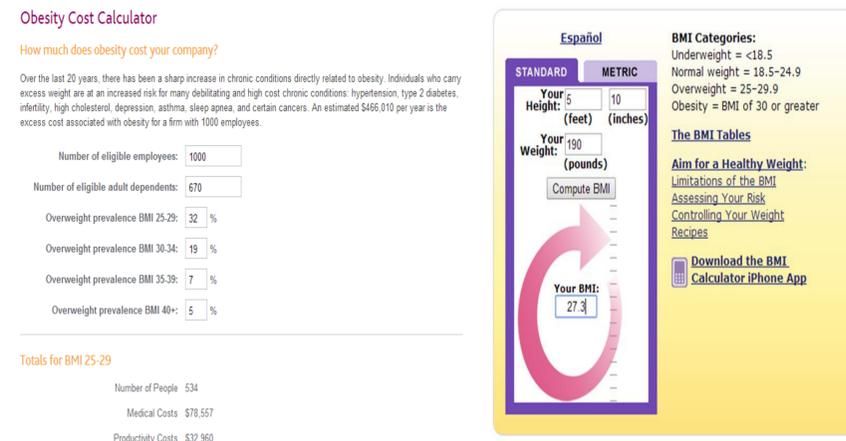


Fig 7 :Obesity Cost Calculator & BMI Calculator

## Conclusions

- Current obesity trend of USA cities shows a steadily increasing trend of obesity among male and female students which would directly hit the cost of family health insurance
- Student fraternity should be encouraged to engage into physical activities as it reduces the %BMI & Administrative Board of Education needs to keep a vigil on students compulsory total weekly work outs
- Health insurance companies can help the cause by introducing %BMI checking every 6 months to control %obesity increments. They can also introduce rewards for 'Healthy drivers' by reducing the cost of health insurance for the young student community.
- A recommendation for Policy-makers would be to reduce the prices of foods with greater nutrient value (E.g. fruits, cereals, vegetables etc.) while increasing the cost of food & beverages with high sugar content (mainly responsible for obesity-related diseases)

## References

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