# Evaluation of the Cost Effectiveness of a Community Obesity Prevention Program

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## Background:

- Rates of childhood obesity are a major public health concern.[2]
- Overweight children have a 70% chance of becoming obese adults.[1]
- Extreme obesity accounts for a disproportionate amount of childhood healthcare spending.[2]
- Community-based childhood obesity programs are rarely evaluated for cost-effectiveness.[3]

## Purpose:

- Determine the association between a community obesity prevention program and changes in childhood obesity.
- Determine healthcare cost savings.
- Establish program manager perceived usefulness.

## Rationale:

- Increased push for primary prevention.
- Lack of demonstrated fiscal responsibility.
- Escalating healthcare costs.
- Justification for resources.

## Materials and Methods:

- Community Programs and Policies Intensity (CPPI) scores were calculated and based on three elements.[3]
- Changes in childhood obesity were analyzed and healthcare cost savings were calculated.[2]
- A presentation was given to program managers.

## Results:

- Extreme obesity decreased by 1.4% (p=0.21).
- Overall obesity increased by 1.3% (p=0.38).
- Average dose (CPPI) scores increased by 0.13 (p=0.004).
- Program managers were more likely to incorporate dose (CPPI).
- Two-year childhood medical savings for FGI counties were between $71,436 - $205,140.
- Estimated two-year childhood healthcare savings across VT are $583,495 and $1,505,906.

**Table. 1.** Demonstrates extreme obesity forecasting and associated healthcare savings.

| County | Child Population (Ages 5-18) | Average Dose 2019 | Goal Dose 2022 | Estimated Children Moving Out of Extreme Obesity | Estimated Children Prevented from Becoming Extremely Obese | Estimated Healthcare Cost Savings Over 2 Years (Moving to Normal Weight) | Estimated Healthcare Cost Savings Over 2 Years (Moving to Obese) |
|---|---|---|---|---|---|---|---|
| **Addison** | 5,390 | 0.58 | 0.73 | 70 | 44 | $187,621 | $72,698 |
| **Bennington** | 5,567 | 0.67 | 0.82 | 72 | 45 | $192,558 | $74,611 |
| **Franklin** | 8,642 | 0.78 | 0.93 | 112 | 70 | $299,535 | $116,061 |
| **Grand Isle** | 1,058 | 0.75 | 0.90 | 14 | 9 | $37,853 | $14,667 |
| **Lamoille** | 4,160 | 0.25 | 0.40 | 54 | 34 | $144,830 | $56,118 |
| **Orange** | 4,314 | 0.35 | 0.50 | 56 | 35 | $149,768 | $58,031 |
| **Windham** | 6,244 | 0.36 | 0.51 | 81 | 51 | $217,245 | $84,176 |
| **Windsor** | 8,072 | 0.49 | 0.64 | 105 | 65 | $279,785 | $108,409 |
| **Total** | 43,447 | 0.53 | 0.68 | 563 | 352 | $1,505,906 | $583,495 |

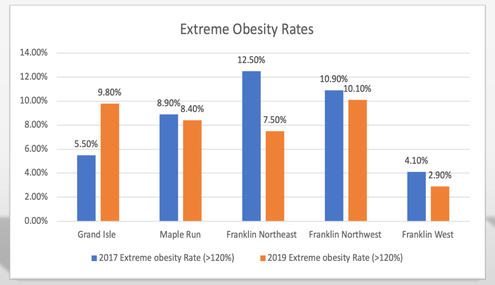


**Figure 1.** Childhood rates of extreme obesity by supervisory union.

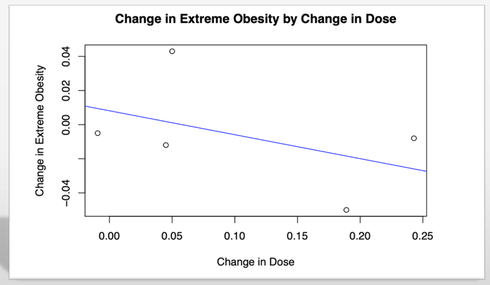


**Figure 2.** Shows the relationship between extreme obesity and dose.

**Table 2.** Highlights the average dose in each supervisory union in 2017 and 2019 (p=0.004).

| Supervisory Union | 2017 Average Dose | 2019 Average Dose |
|---|---|---|
| Grand Isle | 0.70 | 0.75 |
| Maple Run | 0.78 | 0.77 |
| Franklin Northeast | 0.59 | 0.78 |
| Franklin Northwest | 0.65 | 0.89 |
| Franklin West | 0.63 | 0.67 |
| **Total** | **0.69** | **0.82** |

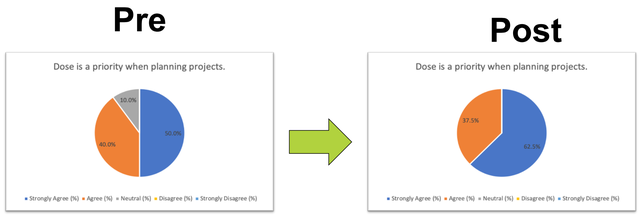


**Figure 3.** Depicts one question from survey results prior to (n=10) and after (n=8) the presentation.

## Implications & Conclusions:

- Future healthcare savings for programs in VT based on changes in dose (CPPI).
- Dose (CPPI) appears to be a viable method to evaluate programs.
- Programs in VT are likely fiscally responsible.

## Limitations

- Unexplored relationship between childhood changes in obesity and parental changes in obesity.
- Lack of childhood weight loss progression information.
- We assume a level of homogeneity within the state of VT.

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## References:

1. Allender, S., Millar, L., Hovmand, P., Bell, C., Moodie, M., Carter, R., Swinburn, B., Strugnell, C., Lowe, J., Haye, K. de la, Orellana, L., & Morgan, S. (2016). Whole of Systems Trial of Prevention Strategies for Childhood Obesity: WHO STOPS Childhood Obesity. International Journal of Environmental Research
2. Biener, A. I., Cawley, J., & Meyerhoefer, C. (2020). The medical care costs of obesity and severe obesity in youth: An instrumental variables approach. Health Economics, 29(5), 624–639. https://doi.org/10.1002/hec.4007
3. Coffield, E., Nihiser, A., Carlson, S., Collins, J., Cawley, J., Lee, S., & Economos, C. (2019). Shape Up Somerville's return on investment: Multi-group exposure generates net-benefits in a child obesity intervention. Preventive Medicine Reports, 16, 100954. https://doi.org/10.1016/j.pmedr.2019.100954
4. Collie-Akers, V. L., Schultz, J. A., Fawcett, S. B., Landry, S., Obermeier, S., Frongillo, E. A., Forthofer, M., Weinstein, N., Weber, S. A., Logan, A., Arteaga, S. S., Nebeling, L., & Au, L. E. (2018). Measuring the intensity of community programs and policies for preventing childhood obesity in a diverse sample of US communities: The Healthy Communities Study. *Pediatric Obesity*, 13(S1), 56-63. https://doi.org/10.1111/ijpo.12423