IMPACT AND EFFECTIVENESS TABLE 31

School Wellness Policies (Nutrition)

EFFECTIVENESS TABLES

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
United States				
Author Economos, Hyatt (2007); Goldberg, Collins (2009); Economos, Folta (2009) Massachusetts **Design** Intervention Evaluation Non-randomized trial **Duration** High 3 years	**Measures** *Community and school accessibility* (accessible routes, bike racks, physical activity policies, and access to healthier food options) **Outcome(s) Affected** Overweight/obesity (height and weight to determine body mass index) and school and community environment and policy change (direct observation, site-visits to restaurants)	**Net Positive for Overweight/obesity in the Study Population (School Wellness Policies)** **School Wellness Policies (Nutrition)** OVERWEIGHT/OBESITY: 1. The average change in BMI z-score in the intervention community was -0.1307 (95% CI -0.1836, -0.0778, p=0.02) compared with control 1 and -0.1048 (95% CI -0.1541, -0.0555, p=0.02) compared with control 2 after controlling for baseline BMI z-score, sex, grade, age, race, primary language spoken at home, school and community. 2. When the controls were pooled, the average change in BMI z-score was -0.1005 in the intervention community compared with the control communities (95% CI -0.1151, -0.0859, p=0.001), after controlling for the same covariates. POLICY CHANGE: 3. Various community-wide policies were developed including: school wellness policy, policies and union contract negotiations that led to enhancements of the school food service, expanded pedestrian safety and environmental policies, healthy meeting and event policy and a city employee fitness wellness benefit 4. 21 restaurants became Shape Up Approved.	**Effective for Overweight/ obesity in the Study Population** Study design = Intervention evaluation Intervention duration = High Effect size = Net positive for overweight/ obesity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Jordan, Erickson (2008) Utah **Design** Intervention Evaluation Non-randomized trial **Duration** Medium June 2005 – May 2006	**Measures** *Healthier school environment* (promotion of physical activity and access to fruits and vegetables) **Outcome(s) Affected** Overweight/obesity (height and weight calculated body mass index (BMI) z-scores) and dietary intake and physical activity (parent and student survey)	**Neutral for Overweight/obesity in the Study Population (School Wellness Policies)** **Net Positive for Nutrition in the Study Population (School Wellness Policies)** **School Wellness Policies (Nutrition)** OVERWEIGHT/OBESITY: 1. There was a non-significant rise in BMI z-scores from baseline to follow-up for students in the intervention group (change = 0.21 ± 0.47; p=0.484). 2. Conversely, there was a significant increase in BMI z-scores baseline to follow-up for the control group (change = 0.53 ± 0.38; p<0.05). NUTRITION: 3. Parent surveys at year one indicated that children in the intervention group drank fewer soft drinks per day than the control group (p=0.008). 4. Student surveys revealed that the intervention students drank fewer "soft drinks yesterday" (p=0.085) and ate "more fruits and vegetables yesterday" (p=0.094) than the control students, but results were not statistically significant.	**Not Effective for Overweight/ obesity in the Study Population** **Effective for Nutrition in the Study Population** Study design = Intervention evaluation Intervention duration = Medium Effect size = Net positive for nutrition and net neutral for overweight/ obesity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Longley, Sneed (2009) United States **Design** Association Cross-sectional study **Duration** Not Applicable Only cross-sectional data provided	**Measures** *Healthier school environment* (increase in required daily minutes of physical education in school) **Outcome(s) Affected** School policy and environment change changes (questionnaire)	**Not Reported (for desired health outcomes)** **School Wellness Policies (Nutrition)** POLICY CHANGE: 1. Prior to the federal wellness legislation, foodservice directors reported that 37.4% of the wellness components were in place, while following legislation 72.4% of the wellness components were in place. 2. Staff wellness policies in school districts increased from 20.4% to 70.8%.	**More Evidence Needed** Study design = Association Effect size = Not reported	**Maintenance** Not Applicable Only cross-sectional data provided **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
International				
Author Macaulay, Paradis (1997); Horn, Paradis (2001); Potvin, Cargo (2003); Jimenez, Receveur (2003); Paradis, Levesque (2005); McComber, Macaulay (1998) Canada **Design** Intervention Evaluation Non-randomized trial (1994-1996), with cross-sectional follow-up measurements in 1995, 1996, 1998, 1999 and 2000. **Duration** High 8 years	**Measures** *Healthier school environment* (extra physical education class each week, extra physical activity integrated with other daily behaviors, access to healthier food options) **Outcome(s) Affected** Overweight/obesity (BMI and skinfold thickness), high-calorie and high-fat food intake and physical activity (24 hour recall, questionnaire, 1-mile run/ walk test)	**Net Neutral for Overweight/obesity in Native American children (School Wellness Policies)** **Net Neutral for Nutrition in Native American children (School Wellness Policies)** **School Wellness Policies (Nutrition)** OVERWEIGHT/OBESITY: 1. From 1994-1996, children in the intervention community showed significantly less increase in subscapular (36% vs. 65 %) and triceps (35% vs. 62%) skinfold thickness than children in the comparison community (time x community interaction: $p<0.01$ for both skinfolds); this did not translate into a lower rate of increase in BMI. 2. For girls, independent predictors for skinfold change were baseline skinfold thickness ($R^2= 0.67$), younger age ($R2= 0.01$), watching excessive television ($R^2= 0.01$), being from the comparison community ($R^2= 0.02$) and higher relative physical activity ($R^2= 0.01$), $p<0.05$ for all. 3. For boys, only baseline subscapular skinfold thickness was a significant predictor of skinfold thickness change ($R^2= 0.72$, $p<0.001$). NUTRITION: 4. No significant changes between intervention and comparison communities from 1994-96 for consumption of sugar, fat or fruits and vegetables.	**Not Effective for Overweight/ obesity in Native American children (Study Population)** **Not Effective for Nutrition in Native American children (Study Population)** Study design = Intervention evaluation Intervention duration = High Effect size = Net neutral for overweight/ obesity and nutrition in Native American children (study population)	**Maintenance** 1. (n=304) No significant differences in mean intake of energy, fat, and sucrose were found after 4 years of the intervention, in 2 different groups of 4-6 grade children. 2. In 2002 (after 8 years of intervention implementation), students were at a significantly higher risk of having higher BMI (OR=1.37 95% CI: 1.03-1.81) and skinfold thickness (subscapular OR=1.94 95% CI: 1.44-2.63; triceps OR=1.59 95% CI: 1.18-2.12) compared with baseline. Excess risk ranged from 37%-94%. 3. Mean number of physical activities increased, fitness measure improved, and TV watching decreased significantly in 1999 in the intervention community, but all three improvements were lost in 2002. 4. There were significant decreases in key high-sugar and high-fat food items intake from 1996 onward (65-70% reduction in risk of consumption in 2002), but consumption of fruits and vegetables also decreased significantly over the same period. **Sampling / Representativeness** Not Reported

IMPACT TABLES

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
United States						
Author Economos, Hyatt (2007); Goldberg, Collins (2009); Economos, Folta (2009) Massachusetts	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All students in the intervention schools were exposed to the school environment changes; students near the SR2S routes (within 1/2 mile from school) were exposed to the SR2S component; community members visiting Shape-Up approved restaurants were exposed to the healthier menus.. **High-Risk Population** Low Urban 6-9 year olds Community demographics: 28-36% non-English speaking in the home, 12.5-14.5% living below the poverty level Exposed - 49.6% White, 7.5% Black, 18.2% Hispanic, 9.1% Asian, 15.6% Other Unexposed A - 37.8% White, 25.1% Black, 11.8% Hispanic, 2.3% Asian, 13% Other Unexposed B - 51.7% White, 6.9% Black 22.8% Hispanic, 7.3% Asian, 11.2% Other	**Representative** High All students in the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = Low Representativeness = High	**Intervention Components** Multi-component Shape –Up Somerville – Expanded pedestrian safety and environmental policies MULTI-COMPONENT: 1. School & community policies to increase the availability of foods of low energy density (emphasis on fruits, vegetables, whole grains and low fat dairy) and decrease the consumption of foods high in fat through modification to the school food service (e.g., vegetarian recipes, salads made daily, fresh food available daily, ice cream available once per week, change in a la carte to meet nutrition standards) 2. Parent/community outreach: Monthly newsletters, community events, local media outlets and parent forums; Shape Up approved restaurants (must meet criteria on fat, portion size, serving of F&V and healthy food options) 3. Safe Routes to School [SR2S] (school maps, city ped/bike coordinator, bike racks in all elem. schools) 4. Policy change initiatives COMPLEX: Class component: HEAT club in-class curriculum and after-school curriculum (26 lessons) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, Shape-Up approved restaurants, Safe Routes to School, monthly newsletters, community events, local media initiatives, policy change initiatives, classroom curriculum (HEAT) Specialized expertise: Pedestrian/bike coordinator; training for program leaders of after school programs, food service staff and teachers Resources needed: Personnel/ funds/time to carry out the intervention activities, materials for community events, materials to help recruit restaurants, thermoplastic paint for sidewalks, bike racks, newsletters, posters, tabletop tents, incentives for control schools, new kitchen equipment, media placements, pedestrian/bike coordinator, Safe Routes to School maps Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in Study Population Effectiveness = Effective for overweight/obesity for study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = High Implementation complexity = High **Sustainability** Yes Research team helped the community secure $1.5 million from other funding sources to continue activities.	Not Reported	1. Various community-wide policies were developed including: school wellness policy, policies and union contract negotiations that led to enhancements of the school food service, expanded pedestrian safety and environmental policies, healthy meeting and event policy and a city employee fitness wellness benefit 2. 21 restaurants became Shape Up Approved.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Jordan, Erickson (2008) Utah	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children in the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 5-10 year olds in grades 1, 3 and 5 at elementary schools Gold Medal Schools- 85.8% White, 7.6% Hispanic, 0.4% American Indian/ Alaska Native, 2.8% Native Hawaiian/ Pacific Islander, 0.7% Asian, 2.8% Other Non-Gold Medal Schools- 86.7% White, 7.0% Hispanic, 0.7% American Indian/ Alaska Native, 0.4% Native Hawaiian/ Pacific Islander, 0.7% Asian, 2.1% African American, 2.5% Other (evaluation sample)	**Representative** High All children in the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component The Gold Medal Schools Program – School wellness policy included designated physical activity programs such as Walk Your Child to School Day and the President's Challenge for physical fitness. MULTI-COMPONENT: 1. School wellness policies to promote fruits and vegetables at school meals COMPLEX: 1. Promotion of fruits and vegetables at breakfast and lunch. 2. The Gold Medal Schools designations (bronze, silver, gold, platinum) represent increasing levels of achievement in implementing school wellness criteria. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional fruits and vegetables at school meals, additional physical activity opportunities, promotion of fruits and vegetables Specialized expertise: Not reported Resources needed: Funds for additional fruits and vegetables Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Overweight/obesity in the Study Population High Impact for Nutrition for the Study Population Effectiveness = Not effective for overweight/ obesity and effective for nutrition for the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	**School Wellness Policies (Physical Activity)** OVERWEIGHT/OBESITY: 1. There was a non-significant rise in BMI z-scores from baseline to follow-up for students in the intervention group (change = 0.21 ± 0.47; p=0.484). 2. Conversely, there was a significant increase in BMI z-scores baseline to follow-up for the control group (change = 0.53 ± 0.38; p<0.05). PHYSICAL ACTIVITY: 3. Both groups increased the days/ week they walked or biked to school over 1 year. However, a significant improvement was observed only for the control group (p<0.001).	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Longley, Sneed (2009) United States	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided School wellness policy development in school districts following the 2004 federal Reauthorization Act **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	**School Wellness Policies (Physical Activity)** <u>PHYSICAL ACTIVITY:</u> 1. The incorporation of physical education in the classroom increased from 31.7% to 60.6% and required daily minutes of physical education increased from 46% to 68.3%.	1. In phase 1, thirty states scored zero and only three states: CA, TN, MS scored five or greater to meet the criteria for a state with a strong environment for wellness policy development in 2004. In 2006, 22 states scored 5 or greater to meet the criteria. 2. Foodservice directors noted after the law's enactment the integration of nutrition into the curriculum increased from 56.5% of districts to 81.3% of districts, use of the foodservice department for nutrition education increased from 52.1% to 75.8%, nutrition education for all grades increased from 33.6% to 61.2%, requirements for professional standards for nutrition educators increased from 21.8% to 49%, and nutrition education offered to adults increased from 16% to 46.6%. 3. Wellness teams were designated by 60.3% of school districts for implementing and by 63.4% of school districts for evaluating the progress of the wellness policy.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
International						
Author Macaulay, Paradis (1997); Horn, Paradis (2001); Potvin, Cargo (2003); Jimenez, Receveur (2003); Paradis, Levesque (2005); McComber, Macaulay (1998) Canada	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children (grades 1-6) at the 2 intervention schools were exposed to the intervention. **High-Risk Population** High 6-12 year olds (target population) 100% Native American/American Indian	**Representative** High All children at the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** Low High-risk population = Low Representativeness = High	**Intervention Components** Multi-component Kahnawake Schools Diabetes Prevention Project (KSDPP)- Extra physical education class each week (added at 1 school); school incentives for integrating extra physical activity into daily routine <u>MULTI-COMPONENT:</u> 1. School policies that require canteens to only offer healthy foods (low-fat, low-simple sugar, high-fiber foods) and students bring only healthy lunches and snacks to school. <u>COMPLEX:</u> 1. Health curriculum component: taught in grades 1-6 for ten 45-min lessons/year/grade 2. Community component: 63 activities for children, teachers, families, and the community both in and out of school; creation of on-going programs; support of existing community groups. 3. Promotion component: used media to increase awareness and community mobilization **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, extra physical education class each week, health education, community programs, promotional activities Specialized expertise: Dietitian and community health nurses to create and teach the curriculum during the 1st year; training for teachers to deliver the curriculum during the following years Resources needed: Dieticians, nurses, staff to coordinate the field intervention, staff secretary, newspaper and radio ads, Community Advisory Board (ambassadors of "wellness"), healthier foods for school canteens, incentives, funds for community activities Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Overweight/obesity in the Study Population No Impact for Nutrition in the Study Population Effectiveness = Not effective for overweight/ obesity and nutrition in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** No Impact for Overweight/obesity in Native American children No Impact for Nutrition in Native American children Effectiveness for high-risk populations = Not effective for overweight/ obesity and nutrition for Native American children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Yes Kahnawake Schools Diabetes Prevention Project received funding to develop a Kahnawake-based research and training center for diabetes prevention, Phase IV of the project.	**School Wellness Policies (Physical Activity)** <u>OVERWEIGHT/OBESITY:</u> 1. From 1994-1996, children in the intervention community showed significantly less increase in subscapular (36% vs. 65 %) and triceps (35% vs. 62%) skinfold thickness than children in the comparison community (time x community interaction: $p<0.01$ for both skinfolds); this did not translate into a lower rate of increase in BMI. 2. For girls, independent predictors for skinfold change were baseline skinfold thickness (R^2= 0.67), younger age (R^2= 0.01), watching excessive television (R^2= 0.01), being from the comparison community (R^2= 0.02) and higher relative physical activity (R^2= 0.01), $p<0.05$ for all. 3. For boys, only baseline subscapular skinfold thickness was a significant predictor of skinfold thickness change (R^2= 0.72, $p<0.001$). <u>PHYSICAL ACTIVITY:</u> 4. From 1994-1996 children in the intervention community performed worse on the run/ walk test (22% deterioration over time), compared to children in comparison community (8% improvement over time). This may be due to a significant decrease in frequency of gym class at school in the intervention community, from 2.84 to 1.85 times/week between 1994-1996, compared to students in the comparison community who reported an increase from 1.71 to 2.18 times/ week ($F[1220] = 24.81$; $p<0.01$). 5. After 2 years in both communities, the frequency of self reported episodes of at least 15 minutes of physical activity increased by 23%.	Not Reported