Health eTools®
has been recognized as a validated tool for data collection and reporting on youth health.

Examples of scholarly research and a draft copy of the Executive Summary of a soon to be released report on PA Childhood Obesity Trends and Recommendations are below
Examples of Publications based on Health eTools for Schools

1) YoussefAgha, A. H., Lohrmann, D. K., Jayawardene, W. P., and El Afandi, G. S. **Air Pollution** Indicators Predict Outbreaks of **Asthma** Exacerbations Among Elementary School Children: Integration of Daily Environmental and School Health Surveillance Systems in Pennsylvania. *Journal of Environmental Monitoring* [submitted on 3/5/2012-Reviewers comments were received on 04/19/2012].


3) Youssefagha AH, Lohrmann DK, Jayawardene, WP. **Upper-Air** Observation Indicators Predict Outbreaks of **Asthma** Exacerbations among Elementary School Children: integration of daily environmental and school health surveillance systems in Pennsylvania. *Journal of Asthma* [Accepted on 11/14/2011]

4) Jayawardene, WP, YoussefAgha AH, Lohrmann DK. **Upper-Air** observation indicators predict outbreaks of **Allergies** among elementary school children: Integration of daily environmental and school health surveillance systems in Pennsylvania. *International Journal of Child and Adolescent Health* [Accepted on 01/03/2011].

5) Youssefagha AH, Jayawardene WP, Lohrmann DK, El Afandi GS. Application of Data Mining Techniques to Predict **Allergy** Outbreaks among Elementary School Children: Integration of Hourly **Air Pollution**, Bi-Daily Upper-Air, and Daily School Health Surveillance Systems in Pennsylvania. *WORLDCOMP’12 – 8th International Conference on Data Mining (DMIN’12), Las Vegas NV*. Oral Presentation and Paper [Accepted on 04/26/2012]
Stemming the Flood: 
Childhood Obesity Prevention in Pennsylvania, 2005-2014

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Executive Summary

The Obesity Epidemic: Health Consequences and Costs

Now an epidemic, obesity was fairly rare in the U.S. as late as the 1980s. Looking back, clearly no one event caused this rapid increase in obesity. Rather, like an unexpected and sudden nighttime flash flood caused by many separate, rapidly swelling and converging creeks and streams, many societal changes began in the 1950s and silently grew over 40-50 years into a new and different human ecology that profoundly influenced both population weight and health status. This rapid increase in unhealthy weight was only first detected between 1990 and 2000; the “blink of an eye” in human history. From 1990 to today, the US obesity rate doubled from less than 15% of adults to 29.4%. For Pennsylvania the obesity rate rose from less than 10% in 1990 to 30% today--ranking 30th among the 50 states.

Obesity contributes to cancer, Type 2 diabetes, and cardio-vascular disease as well as accidental injury and disabling orthopedic problems among adults. Excess weight contributes to 1 in 5 U.S. cancer deaths today. By 2050, 1 in 3 U.S. adults may have diabetes. And, obesity is very costly; the total U.S. economic consequences of obesity (health care costs plus lost productivity) are minimally estimated at $147 billion annually. Much of this cost is shouldered by public sector health plans--Medicaid and Medicare. By 2030, the adult US obesity rate is projected to climb from the current 29.4% to over 40%, with severe obesity increasing even faster.

Today’s youth are the adults of 2030 and, unfortunately, obesity has already dramatically expanded among U.S. youth of all ages with immediate negative physical health consequences, including pre-diabetes, hypertension, high cholesterol, sleep apnea, accidental injury, and bone and joint problems. Negative emotional and social consequences include poor self-esteem and stigmatization. Those who are overweight or obese as children and teenagers are highly likely to become or remain obese or severe obese as young adults. They are also at increased risk of developing chronic diseases previously only experienced much later in life.


Through use of a system called Health eTools for Schools, 1.9 million de-identified student Body Mass Index (BMI) measures were accessed and analyzed (results are presented in the accompanying graphs). BMI data came from 1,114 schools in 293 districts and 53 counties. Pennsylvania’s 10 largest cities and 18 largest counties are represented.

These graphs illustrate the following BMI rates and trends among Pennsylvania children and adolescents:
- **Healthy weight still predominates**: 6 of every 10 Pennsylvania children and adolescents have a healthy BMI.
- Levels of overweight and obesity were steady to slightly decreasing, 2007-2013, and increased slightly in 2014.
- Levels of severe obesity were unchanged, 2007-2013, and increased slightly in 2014.
- Though not a focus of this report, underweight increased for a small percentage of children and adolescents, 2007-2014; however, overweight and obesity affect far, far greater numbers of children and youth.
- In general, at all school levels girls were more likely to be normal weight or overweight and boys were more likely to be obese or severe obese (not shown).
- The trends in overweight, obesity and severe obesity for elementary boys were all moving in the desired, healthy direction (not shown).
- While overweight is projected to decrease somewhat, both obesity and severe obesity are projected to increase so that the combined rate of overweight, obesity and severe obesity in 2020 could be slightly higher (36%) than in 2013 (35.66%) but still below 2007 (37.21%).

Projections need not be destiny. Increases in child and adolescent obesity and severe obesity projected by 2020 are only likely to materialize if current trends continue. The trends on which these predictions are based could be reversed if the many, many well documented environmental conditions that foster unhealthy eating and inadequate physical activity are further modified or discontinued. **The goal should be to create a community environment within which every child and adolescent can attain and maintain a healthy weight.**

### Causes of the Obesity Epidemic

Over the past 50-60 years, many environmental factors that influence weight changed, making it harder for many individuals in the U.S. to engage in the behaviors that allow them to maintain a healthy weight. Most of the environmental changes that negatively impact adult BMI also occurred in the schools, surrounding neighborhoods, and homes of children, youth, and school employees. While none of these changes alone caused obesity, these changes in combination and with increased frequency have all contributed. Examples of changes that affected children and adolescents include:

- Pressures on school administrators to raise additional funds for materials, equipment and student activities leading to:
  - Marketing of less healthy food and drinks in schools through exclusive sales (pouring rights) contracts, especially with soft drink companies along with
  - Wide spread placement of food and drink vending machines, food sales for fund raisers, ala cart lines in cafeterias, and concession stands;
- Increased costs of food preparation in school cafeterias with greater reliance on pre-prepared foods and less reliance on fresh foods;
- Use of candy, sweets and other foods (i.e. pizza party) to reward good behavior and academic success;
- Replacement of milk consumption by soft drink consumption;
- Reduction or complete elimination of physical education and recess in some schools in an attempt to increase standardized test scores;
- Lack of access to adequate and healthy foods after school and on weekends and breaks;
- Concentration of fast food outlets around schools and/or in low income neighborhoods;
- Unsafe neighborhoods due to criminal activity;
• Lack of safe walking and biking routes to schools even in otherwise safe neighborhoods;
• Building of new schools at community outskirts, limiting access via walking and biking;
• More types of screens (e.g., computers, tablets, cell phones) and increased screen time.

Pennsylvania Schools help Stem the Flood
Over the past decade, Pennsylvania schools, in collaboration with the Pennsylvania Departments of Education and Health, along with private funders such as the Highmark Foundation, have substantially improved health policies and related school breakfast and lunch programs, wellness programs, nutrition education, physical education, and opportunities for physical activity. Comparisons of statewide trends in student BMI (2008-2014) and school health policy and program implementation (2008-2012) determined that:

• Implementation of health-positive school policy and program improvements (e.g., nutrition education and physical education quality) were associated with declines in student excess, unhealthy weight.
• Reductions in unhealthy practices (e.g., high sugar drinks in vending machines) were associated with declines in student excess, unhealthy weight.
• Slippage in some health-positive policies and practices (i.e., from 2010 to 2012) was associated with increased student excess, unhealthy weight two years later (2014).

Call to Action: Enhanced Community Involvement and Family Engagement
The child and adolescent obesity epidemic in Pennsylvania has peaked and slightly receded, the essential first step in controlling any epidemic. While the many, many school-based policies, programs and activities implemented over the past ten years likely facilitated these positive trends, schools simply cannot be expected to bear disproportionate responsibility for reversing the child and adolescent obesity epidemic. To continue reversing Pennsylvania’s child and adolescent obesity epidemic requires both greater family engagement and intensive community involvement along with maintenance and enhancement of health-positive school policies and programs.

Clearly, everyone has a vested interest in reversing obesity and preventing associated diseases that cause needless distress and human suffering. For communities, improving population health makes additional sense because a healthy citizenry is essential to economic development. Employers have an added vested interest in child and adolescent health because today’s youth are their employees of tomorrow. Bottom line? Investing in child and adolescent health is good business.

The full report lists many recommended actions for multiple community stakeholders including community leaders, medical providers, insurers, philanthropic organizations, faith communities, employers, school districts, and parents to implement in order to encourage, support and reinforce the healthy eating and regular physical activity habits that help children and youth maintain a healthy, normal weight. A key for all is to “make the healthy choice the easy choice.” Highlights include:

A. Community Decision Makers:
• Convene community stakeholders (e.g. A-H above) for the purpose create a broad-based force for health by adopting common and consistent policies and programs, delivering a common message, facilitating resource sharing, and providing meaningful incentives for “making the healthy choice the easy choice.”
• Include “healthy choice the easy choice” initiatives in economic development plans
• Assure that neighborhoods are safe for children and families
• Construct or modify physical structures to facilitate physical activity (e.g., parks and play grounds, neighborhood walking trails, sidewalks in subdivisions, etc.)
• Adopt “complete streets” program to facilitate and encourage walking and biking
• Provide additional resources for schools so they do not have to rely on food and beverage sales and advertising for raising additional funds
• Initiate community-wide, family-friendly opportunities for physical activity
• Conduct assessments to determine if food deserts exist and, if so, rectify so that affordable, healthy food options are available to all families
• Conduct community-wide public information campaigns that encourage healthy eating and physical activity
• Adopt “healthy choice the easy choice” practices in all government/community facilities

B. Business Leaders
• Adopt a school for student and staff wellness and assist with needs assessments, planning, community report preparation and dissemination and fund-raising; coordinate corporate employee wellness programs with school employee wellness programs
• Encourage employees to volunteer for school and community wellness activities
• Adopt “healthy choice the easy choice” environments and practices in all facilities to especially support and encourage employees with children
• Provide incentives and opportunities for employees and their families to be physically active
• Encourage more healthful eating by providing nutrition education and food preparation programs for employees

C. Parents and Families:
• Provide healthy meals and snacks at home, require that your child(ren) make healthy choices when eating out
• Support your child in being physically active—do this as a family, provide opportunities, and turn off the screens
• Personally, model healthy eating and being physically active
• Get informed—know what your school is doing with regard to nutrition and physical activity
• Volunteer—join your school district’s Wellness Policy advisory group (see below)
• Help Implement the Wellness Policy—work with official designated to insure wellness policy compliance in your child’s school
• Demand accountability—assure that schools monitor Wellness Policy implementation and regularly report progress to the community

D. School Decision Makers:
• Assure compliance with USDA standards for all foods sold in schools, on school grounds and during school-sponsored events, activities and celebrations, including fund-raisers
• Develop, implement and continuously maintain a comprehensive Wellness Policy along with plans for assuring policy compliance in every school
• Solicit active participation of members from diverse stakeholder groups in district-level and school-level wellness councils
• Encourage family engagement and community involvement in implementing and monitoring plans to insure wellness policy compliance
• Establish a “health and wellness” account within a school district foundation to allow targeted giving.