Arlington Heights, IL

Demographics Summary and

Youth Activity and Nutrition Survey (YANS) Year One Report

Healthy Communities Surveillance and Management Project

November 2015

Table of Contents

I. Introduction 1

II. Background 3

A. Detailed Arlington Heights Demographics 3

B. Arlington Heights Park District Population and Demographic Trends 4

C. State and County Health Rankings 9

D. Body Mass Index (BMI) 10

E. Statewide and County Obesity Levels 11

F. Identified Factors and Indicators for Physical Activity and Obesity 11

III. Summary Findings from YANS in Arlington Heights 13

A. Survey Administration, Methodology, and Analysis 13

B. BMI Results from Youth in Arlington Heights 14

C. Reported Nutrition Regimen 16

D. Out of School Activities Participation 20

E. Perceptions of Safety 30

F. Parental/Guardians Modeling and Support 30

G. Analysis of Findings Using Multiple Regression 34

IV. Conclusions 39

V. Limitations and Indications for Further Study 39

VI. Recommendations for Future Action 41

References and Resource Documents 42

Appendix A – Sample BMI Charts for Boys and Girls 45

Appendix B – Primary Factors and Indicators for Analysis 51

Appendix C – YANS Survey Instrument 55

Table of Figures

Table 1: Survey Distribution and Response Data 1
Table 2: Summary Demographics for Arlington Heights Park District 4
Table 3: Arlington Heights Park District Population projections, 2000--2020 4
Table 4: Arlington Heights Educational Attainment, 2015 7
Table 5: Arlington Heights Housing Statistics 8
Table 6: Number of Study Participants Engaged in Physical Activity per Week 20
Table 7: Dummy Coding Chart for Dichotomous Explanatory Variables 34

Table of Figures

Figure 1: Arlington Heights Park District Age Distribution for the Years 2010, 2015, and 2020 5
Figure 2: Arlington Heights Park District Race/Ethnicity Statistics (2010, 2015, 2020) 6
Figure 3: Arlington Heights Employment by Industry, 2015 8
Figure 4: Annual Household Income Distribution Comparison (2015 – 2020) 9
Figure 5: Descriptive Output – BMI 14
Figure 6: Means and Standard Deviation by Gender and Grade 14
Figure 7: BMI Category Ranges 15
Figure 8: Weekday Summary of Percentage of Time Spent on Non-Active Pursuits by Gender 23
Figure 9: Non-Active Weekday Participation by Grade 24
Figure 10: Gender Differences – Non-Active Activities Weekends 26
Figure 11: Weekend Proportional Analysis 27
Figure 12: Comparison by Grade 28

I. Introduction

As part of GP RED's Healthy Communities Research Group (www.gpred.org) Surveillance and Management Toolkit Beta Site project with Arlington Heights, the project team has conducted a thorough analysis of **community demographics** as well as a ***Youth and Activities Nutrition Survey (YANS***) through two middle schools in Arlington Heights, Illinois, School District 25.

We are thankful for the participation of District 25, which allowed students to take the YANS during school time. The total number of individual students who at least attempted to start the survey was N = 1,426. Due to incomplete surveys (many students did not include the primary response variable of weight or other key factors), usable data for this summary analysis is **N = 950** from the two middle schools participating. These were Thomas Middle School (**n=712**) and South Middle School (**n=238**).

Thomas Middle School	712	74.9%
South Middle School	238	25.1%

Table 1: Survey Distribution and Response Data

Middle School	Total 2015 Enrollment	Total Survey Attempts	Completed Usable Surveys	% students
Thomas	912	764	712	78%
South	869	662	238	27%
Total	**1781**	**1426**	**950**	

Note: The information on all answers given by students has been saved in raw data format, and may be re-analyzed for other variables not covered in this analysis at a future date, if warranted.

The online survey consisted of 23 questions related to demographic factors and habits of middle school youth related to physical activity, nutrition, and resultant body mass index (BMI). The survey was conducted during school time (average completion time was about 18 minutes) using school computers accessible to students. This summary research report analyzes this resultant data set. It provides descriptive statistics from the findings, and explores various research questions to evaluate the relationships of a variety of potential explanatory variables to see if there were significant effects on student BMI.

This YANS allowed for the rare opportunity to further explore some of the determinants of health for middle school students in Arlington Heights and to find out more specific information about what the youth in the community think about determinants of health. Primary Elements of the research include:

- What are the actual BMI levels of participating middle school youth in Arlington Heights?
- What are the key community-specific issues around nutritional habits and physical activity of middle school youth in Arlington Heights?
- Are there areas of concern or potential opportunities for health and/or programming improvements?
- What can community leaders do to address these opportunities?

This information will be valuable to help continue to expand health improvement efforts through the Arlington Heights Parks District (AHPD) and the Arlington Heights Health Action Alliance (AHHAA) partners, including schools. The information gathered will be valuable to help improve health outcomes for students in Arlington Heights through the GP RED Surveillance and Management Toolkit.

This written report of findings from the survey includes a demographics overview along with statistical analysis of the YANS and identification of key issues for potential action and/or additional research. The information gathered is jointly owned between GP RED and APHD, and will be used locally and primarily for publications and comparative analysis with other communities beyond the AHPD project. AHPD and School District 25 has access to the resultant data (with no individual identifiers) if desired, providing GP RED with credits if used, and notifications if published, so effects can be tracked. We are hopeful to establish a long term relationship of assistance with these organizations as we address improving health outcomes within Arlington Heights as part of the ongoing Healthy Communities research. Additional research may be indicated for areas of key findings.

II. Background

Obesity is one of the greatest health threats currently facing the United States. It contributes significantly to a variety of serious diseases including heart disease, diabetes, stroke, and certain cancers, as well as poor general health and premature death (CDC, 2014, Finkelstein et al., 2008, Wetmore & Mokdad, 2012). In addition, research shows that at this point in time, the current generation of youth are the first that will most likely have a shorter lifespan than their parents (Compton, 2013). Various literature, trends, and local demographics were collected to help supplement the findings and potential recommendations. This project was conducted to get actual representative data from Arlington Heights youth to help guide community decisions in the future.

A. Detailed Arlington Heights Demographics

Population Summary

Understanding detailed community demographics and needs is an important component of planning for the Arlington Heights Healthy Community Surveillance and Management Toolkit. The population data used in this demographic profile comes from Esri Business Information Solutions, based on and projected from the 2000 and 2010 U.S. Census data. They are similar to (but not exactly the same as) demographics reported by Arlington Heights School District 25 in 2014.

The Park District's population is just under 75,000. It’s the third largest suburb in Cook County, the eighth largest suburb in the Chicago Metropolitan area, and the twelfth largest community in the State of Illinois.

Table 2: Summary Demographics for Arlington Heights Park District

Summary Demographics - 2015	
Population	72,287
Number of Households	29,407
Avg. Household Size	2.43
Median Household Income	$77,020
Median Age	44
% of Youth ages 10-14	6%
No. of Youth ages 10-14	4,337

- As compared to Cook County and U.S. overall, median age for the District is higher (County median is 35.3, slightly lower than the median age of 37.1 for the United States).
- The median income in Arlington Heights is higher than the County (the estimated median household income for Cook County residents was $51,004).

B. Arlington Heights Park District Population and Demographic Trends

Population Projections

Although future population growth cannot be predicted with certainty, it is helpful to make growth projections for planning purposes. ***Table 2*** contains actual population figures based on the 2000 and 2010 U.S. Census for Arlington Heights, as well as a population estimate for 2015 and projection for 2020. The park district's annual growth rate from 2000 through 2010 was -0.19%. Esri's projected growth rate for 2015 through 2020 is 0.15% for the park district, compared to the projected 2015 – 2020 annual growth rate for the State of Illinois (0.21%) and the United States as a whole (0.75%). The growth trend is graphically represented in ***Figure 1***.

Table 3: Arlington Heights Park District Population projections, 2000--2020

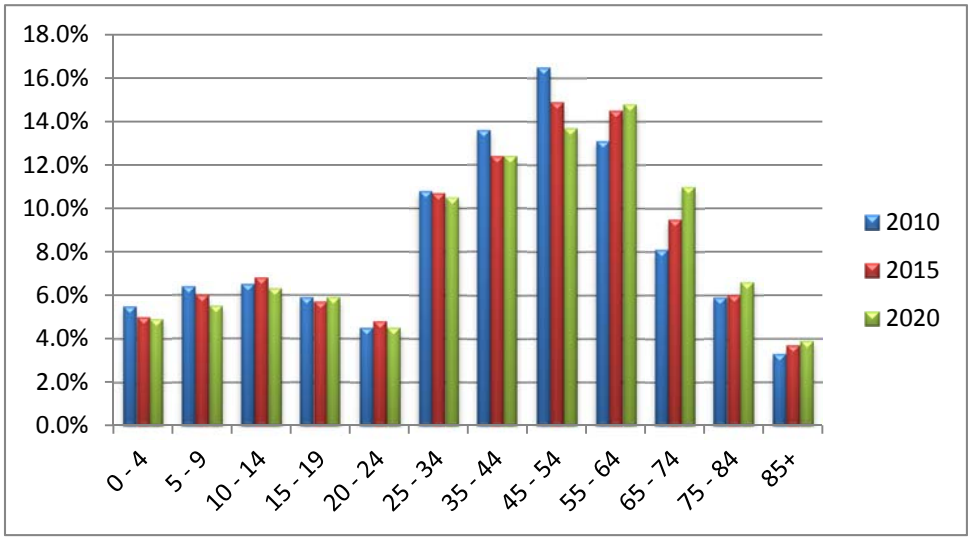
U.S. Census (2000 and 2010) and Esri Projections	
2000 Population	73,491
2010 Population	72,086
2015 Estimated	72,287
2020 Projected	72,814

Source: 2010 U.S. Census; 2015 estimates and 2020 forecasts provided by Esri Business Information Solutions.

Population Age Distribution

A comparison of the estimated population break down by age for Arlington Heights Park District from 2010 to 2020 is shown in ***Figure 1***. The gender distribution in 2015 is 50.3 percent male to 49.7 percent female. The median age projected for the park district by Esri in 2015 is 44.0. When broken down by race/ethnicity by the U.S. Census in 2010, the median age for the Caucasian population was 44.5, the Asian population was 36.1, the African American population was 32.2, and the Hispanic population (irrespective of race) was 27.8.

Figure 1: Arlington Heights Park District Age Distribution for the Years 2010, 2015, and 2020



Source: 2010 U.S. Census; 2015 estimates and 2020 forecasts by Esri Business Information Solutions.

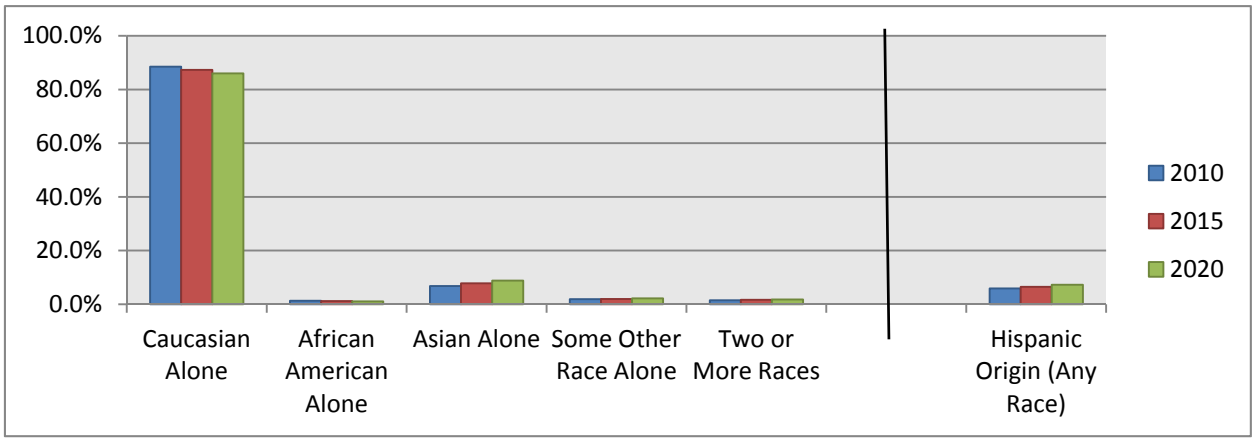
The age demographics have undergone a number of changes in the district from 2010 to 2015 with these trends predicted to continue through 2020. The percentage of Arlington Heights Park District residents in the 55-85+ age range is expected to grow 5.9 percent respectively, from 2010 to 2020. Conversely, the percentage of residents in the 25-54 age range is predicted to drop 4.3 percent from 2010 to 2020. **The percentage of youth in the 10-14 age range from 2010 to 2020 is over 6 percent, with an estimated peak at 6.8 percent in 2015.**

Race/Ethnicity

Figure 3 reflects the racial/ethnic population distribution for Arlington Heights Park District. Esri estimates that 87.3 percent of the population in 2015 is Caucasian, with the African American population at 1.2 percent and the Asian population at 7.8 percent. The population of Hispanic origin* provides separate look at the population, irrespective of race, and this population is estimated at 6.5 percent of the population in 2015.

- The Caucasian population is trending downward from 88.5 percent in 2010 to a predicted 86 percent in 2020.
- The Asian population is trending upward, with the percentage increasing by 1.4 percent from 2010 to 2020, while the African American population percentages are staying relatively level at around 1.2 percent.
- The population of Hispanic origin (irrespective of race), at 5.9 percent in 2010, is expected represent 7.3 percent of the population by 2020.

Figure 2: Arlington Heights Park District Race/Ethnicity Statistics (2010, 2015, 2020)



Source: 2010 U.S. Census; 2015 estimates and 2020 forecasts by Esri Business Information Solutions.

* Hispanic origin can be viewed as the heritage, nationality, lineage, or country of birth of the person or the person's parents or ancestors before arriving in the United States. In the U.S. Census, people who identify as Hispanic, Latino, or Spanish may be any race and are included in all of the race categories. Figure 3 represents Hispanic Origin as recorded in the U.S. Census.

Educational Attainment

As shown in ***Table 4***, the highest ranking educational cohorts in Arlington Heights are those residents with a bachelor's degree (31.9%), those with a graduate degree (21.2%), and high school graduates (18.3%), followed by those with some college, no degree (16.2%). According to a census study, education levels had more effect on earnings over a 40-year span in the workforce than any other demographic factor, such as gender, race, and ethnic origin.[1]

Table 4: Arlington Heights Educational Attainment, 2015

Education Attainment	Service Area Percentage
Less than 9th grade	2.1%
9th to 12th grade, no diploma	
High school graduate	18.3%
GED/alternative credential	1.6%
Some college, no degree	16.2%
Associate's degree	6.6%
Bachelor's degree	31.9%
Graduate or professional degree	21.2%

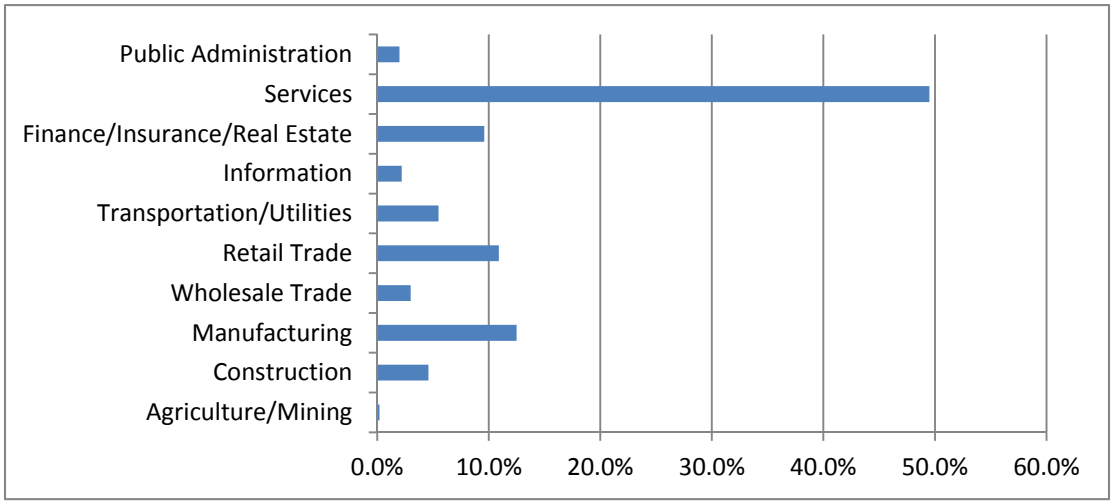
Source: Esri Business Information Solutions 2015 estimate based on the 2010 U.S. Census.

Employment

According to the Esri estimates for 2015, the industries in the district providing the greatest employment percentages are the service industry (49.5%), manufacturing (12.5%), the retail trade (10.9%), and finance/insurance/real estate (9.6%). ***Figure 3*** reflects the Esri estimate of employment by industry in the District in 2015.

[1] Tiffany Julian and Robert Kominski, "Education and Synthetic Work-Life Earnings Estimates" American Community Survey Reports, US Census Bureau, http://www.census.gov/prod/2011pubs/acs-14.pdf, September 2011.

Figure 3: Arlington Heights Employment by Industry, 2015



Source: Esri Business Information Solutions 2015 estimate based on the 2010 U.S. Census.

Household Information

As reflected in ***Table 5,*** in 2015, Arlington Heights has 31,239 housing units with a 71.1 percent owner-occupied housing rate, compared to 23.0 percent renter occupied rate. The owner-occupied housing rate has dropped somewhat since 2000, when 74.2 percent of the housing in the park district was owner-occupied. The average household size in 2015 is 2.43.

Table 5: Arlington Heights Housing Statistics

	2000	2010	2015	2020
Total housing units	30,031	30,804	31,239	31,573
Percent owner occupied	74.2%	73.6%	71.1%	70.8%
Percent renter occupied	22.9%	20.9%	23.0%	23.4%
Percent vacant	2.8%	5.6%	5.9%	5.8%

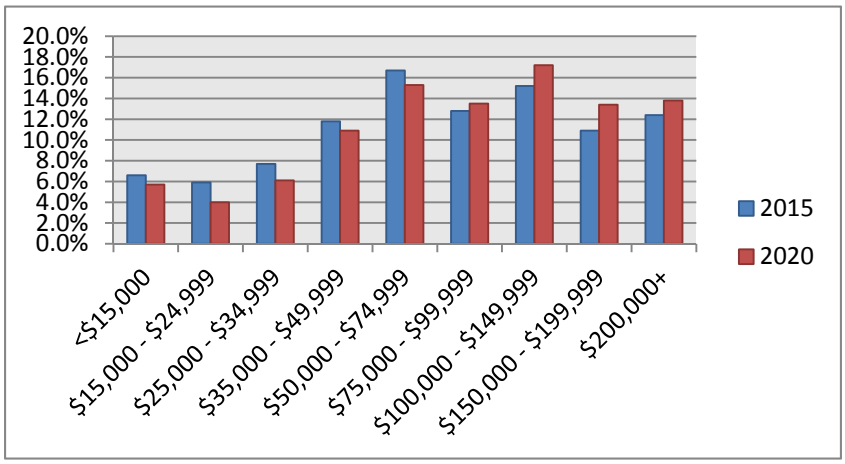
Source: 2010 U.S. Census; 2015 Estimates and 2020 forecasts provided by Esri Business Information Solutions.

Household Income

The estimated 2015 median household income for residents of Arlington Heights is $77,020 and is expected to grow to $88,069 by 2020. ***Figure 4*** illustrates the full income distribution estimated for the park district in 2015 and projected for 2020.

- In 2015, most residents have an income in the $50,000-$74,000 income range (16.7%), followed by the $100,000-$149,999 income range (at 15.2%).
- Income distribution in the $75,000 through $200,000+ income range is expected to grow by a total of 6.6 percent, from 2015 to 2020.

Figure 4: Annual Household Income Distribution Comparison (2015 – 2020)



Source: Esri Business Information Solutions, 2015.

C. State and County Health Rankings

While detailed data on health was not previously available for youth specifically for Arlington Heights (it is part of the goals for this project), available statewide health and obesity information follows.

The United Health Foundation ranked Illinois 30th in its *State Health Rankings* in 2014, retaining the state's 2013 ranking.

The State's biggest strengths include:

- Ready availability of primary care physicians
- Ready availability of dentists
- Low occupational fatalities rate

Some of the challenges the State faces include:

- High prevalence of binge drinking
- High levels of air pollution
- High rate of preventable hospitalizations

D. Body Mass Index (BMI)

Body Mass Index (BMI) is a measurement of height relative to weight that is often used to evaluate health as related to body size. As stated by Jones and Crawford (2006):

> "Body mass index (BMI) has been a standard measure of relative physical status with larger values indicating greater adiposity. In the literature on adolescent girls, a positive, linear relationship between BMI and body dissatisfaction has been reported frequently. For boys, the pattern has been more inconsistent. In some cases, BMI has not been a significant predictor of body image dissatisfaction among boys. However, the majority of the evidence has shown that higher BMI scores are related to greater body dissatisfaction and weight related concerns."

Body Mass Index was the primary response variable measured, through student self-report of weight (they weighed themselves privately just prior to taking the survey) and height (an attendant measured their height for them just prior to survey) using the standard BMI percentage calculation of:
weight (lb) / [height (in)]2 x 703 = BMI (CDCP, 2014)

There are limitations related to using BMI as a self-reported measurement tool (an explanation of which is beyond the scope of this paper), but it is a well-accepted practice (CDCP, 2014), and with limited resources, it is the best mechanism available for assessing overall body mass in large populations. The national categories for weight classifications typically include categories (underweight; healthy weight; overweight; and obese) as established by the Centers for Disease Control and Prevention (CDCP, 2014). According to the CDCP, a healthy BMI for girls in this age range is 16.5 – 22.8, and for boys it is 15.5 – 22.5.

Note: While BMI is calculated the same way for youth and adults, standard youth classification charts indicate slightly different ranges for normal, overweight, and obesity to accommodate the variability of younger bodies. Sample BMI Charts for boys and girls ages 2-20 from the Centers for Disease Control and Prevention (CDCP, 2014) are provided in ***Appendix A.***

E. Statewide and County Obesity Levels

Obesity levels in Illinois vary by age. According to the United Health Foundation, 25.3 percent of those in the 18-44 age range are obese, with this percentage rising to 35.3 percent for the 45-64 age range, and dropping again to 28.8 percent for the 65+ age range. A report entitled "The State of Obesity in Illinois," found that in 2011, the obesity rate for 2-4 year olds from low-income families was 14.7 percent, while the rate was 19.3 percent for 10-17 year olds.[2]

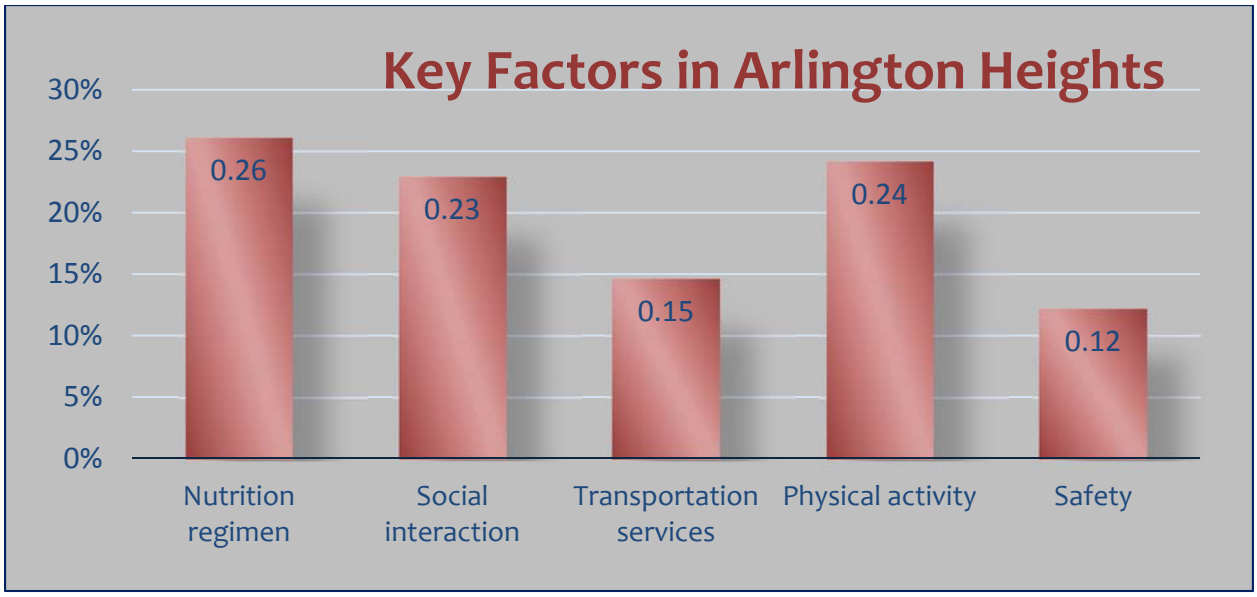
The Cook County Department of Public Health conducted a study of the prevalence of obesity and overweight among school children in suburban Cook County from 2010 to 2012.[3] Obesity rates for youth in Northwest Cook County, where the Arlington Heights Park District is located, were 13.8 percent for kindergarteners (age 4.5 to 6.5), 20.7 percent for 6th graders (age 10.5 to 12.5), and 15.8 percent for ninth graders (age13.5 to 15.5). These obesity rates were similar to most other regions of suburban Cook County, and they are somewhat higher than the national average of 12.7 percent (kindergarten), 20.4 percent (6th Grade), and 16.7 percent (9th grade).

F. Identified Factors and Indicators for Physical Activity and Obesity

The YANS includes answers to questions carefully selected to evaluate youth responses regarding BMI, nutrition, activity types, perception of safety, transportation, and social/caregiver factors. These factors were focused based on the prior work by GP RED which identified these primary factors and indicators through extensive literature review and Multi-Attribute Utilities Technique (MAUT) nominal group process analysis in multiple communities (see www.gpred.org and ***Appendix B – MAUT Report for Arlington Heights*** for more information.

[2] Robert Wood Johnson Foundation and the Trust for America's Health, "The State of Obesity in Illinois", http://stateofobesity.org/states/il/,accessed on July 14, 2015.

[3] CCDPH Brief, September 2013, http://www.cookcountypublichealth.org/files/community-toolbox/Obesity_Brief_091913_final_339PM.pdf, accessed on July 14, 2015.


Key Factors in Arlington Heights
30%
25%
20%
15%
10%
5%
0%
0.26
0.23
0.15
0.24
0.12
Nutrition regimen
Social interaction
Transportation services
Physical activity
Safety

III. Summary Findings from YANS in Arlington Heights

A. Survey Administration, Methodology, and Analysis

Under the leadership of GP RED team members, AHPD, and Ms. Debbie Williams, Arlington Heights School District 25, and through the supervision of school personnel, students from Thomas Middle School (2014-15 Enrollment = 912), and South Middle School (2014-15 Enrollment = 869) participated in the online YANS. See ***Appendix C*** for a printed copy of the survey instrument). This survey has been pilot tested and administered in other GP RED Beta Site Communities.

The electronic survey was administered by East Carolina University for the Spring 2015 data collection process. Full raw data, statistical methodology, and coding structure is available from the GP RED team. This survey has been approved by the Internal Review Boards of both East Carolina and North Carolina State Universities for this type of use.

Note: The GP RED HCRG Research Team is well aware of the potential accuracy challenges of relying upon self-reported data from youth. Given the available resources, and as this information is collected anonymously in an age appropriate format, this method appears to be the best available method to gather large amounts of community-specific youth data of this type at this time.

Note: There are 23 questions on the YANS Survey (some are basic demographics/height and weight, etc. – See ***Appendix C***). To streamline this report, summary analysis was conducted on the topics that most closely related to the Key Factors and Indicators for AHPD. Further analysis can be conducted on other variables in the future, and will be part of additional overall comparative research for GP RED.

B. BMI Results from Youth in Arlington Heights

While BMI remains challenging to accurately to obtain for individuals, a controlled project protocol attempts to help increase reliability of this self-report format. Students were to weigh themselves privately and had an attendant measure their height just prior to taking their own survey on a computer terminal. One of the first set of questions had them enter height and weights. These were later calculated for BMI during analysis. The **full N = 1,426** was adjusted for response errors to exclude non-completed surveys (many students did not include weight) and BMI percentages under 10 percent and over 50 percent (due to assumed reporting or measurement errors), resulting in a useable dataset of **N = 950**. The overall descriptive statistics for total BMI for Arlington Heights are shown in ***Figure 5*****.**

Figure 5: **Descriptive Output – BMI**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
BMI Calc.	950	11.83	39.10	18.94	3.29

The overall mean of **18.94** for all students is under the national category upper limit of healthy weight of 22.5 for boys, and 22.8 for girls, so **on average, the students are of healthy weight**. However, those above range limits may be overweight or obese. The calculated BMI scores were also examined by gender and age. ***Figure 6*** illustrates the mean of students, regardless of age or gender are of a healthy weight level. However, it is evident that BMI increases with each grade level and by gender.

Figure 6: **Means and Standard Deviation by Gender and Grade**

Gender	Grade	Mean	SD	N
Female	6th	17.8	2.50	141
	7th	18.78	3.26	153
	8th	19.81	3.29	153
	All	**18.82**	**3.15**	**447**
Male	6th	18.36	3.11	162
	7th	18.85	3.45	172
	8th	19.83	3.47	168
	All	**19.02**	**3.40**	**502**

One student did not respond with his/her gender.

Figure 7 shows proportion of underweight (Female: BMI <16.5; Male: BMI < 15.5), healthy weight (Female: 16.5 ≤ BMI ≤ 22.8; Male 15.5 ≤ BMI ≤ 22.5), and overweight/obese (Female BMI > 22.8; Male BMI > 22.5) by gender.

Figure 7: BMI Category Ranges

BMI Categories						
Sex			Frequency	Percent	Valid Percent	Cumulative Percent
.	Missing	System	1	100.0		
Girl	Valid	Underweight	93	20.8	20.8	20.8
		Healthy Weight	313	70.0	70.0	90.8
		Overweight/Obese	41	9.2	9.2	100.0
		Total	447	100.0	100.0	
Boy	Valid	Underweight	46	9.2	9.2	9.2
		Healthy Weight	394	78.5	78.5	87.6
		Overweight/Obese	62	12.4	12.4	100.0
		Total	502	100.0	100.0	

This analysis shows that approximately 9.2 percent female students are overweight or obese, while 12.4 percent of male students are overweight/obese. This overall 10.6 percent rate for both genders compares very favorably to other county, state, and national data for this age group. However, as 33 percent of students taking the survey did not indicate weight (so their data is unusable for this analysis), this result may be skewed toward normal or underweight students. This is a very common challenge with self-report surveys.

Jurisdiction	Obesity Levels Comparison	Ages	Source
Nationwide	20.5%	*12 to 19*	CDC
Statewide	19.3%	*10 to 17*	CCDPH
NW Cook County	20.7%	*6th grade*	CCDPH
AH YANS Self-Report	10.6%	*10 to 14*	YANS

C. Reported Nutrition Regimen

1. Breakfast Frequency

Research findings support the importance of promoting regular breakfast consumption among adolescents, as typically breakfast-eating frequency declines through adolescence and has been inversely associated with body weight in cross-sectional studies, (Bruening, Larson, Story, Neumark-Sztainer, & Hannan, 2011).

Question 13.1 – Answers indicate the number of times did not eat breakfast in the last week.

Students skipped at least one breakfast (missing=21)					
		Frequency	Percent		Cumulative Percent
Valid	Ate	718	75.6		77.3
	Skipped	211	22.2		100.0
	Total	929	97.8		
Missing	System	21	2.2		
Total		950	100.0		

Approximately, 22.2% of students skipped at least one meal of breakfast.

Among those students who skipped at least one meal for breakfast, **13.4%** (n = 40) skipped all seven (7) meals for breakfast for a week.

Times did not eat breakfast			
		Frequency	Percent
Valid	1	87	29.2
	2	58	19.5
	3	35	11.7
	4	26	8.7
	5	44	14.8
	6	8	2.7
	7	40	13.4
	Total	298	100.0

Results by Gender

Students skipped at least one breakfast (Missing =1)				
Sex			Frequency	Percent
Girl		Ate	327	73.2
		Skipped	112	25.1
		Total	439	98.2
		System	8	1.8
			447	100.0
Boy		Ate	391	77.9
		Skipped	98	19.5
		Total	489	97.4
		System	13	2.6
	Total		502	100.0

A total of 25.1 percent of female students and 19.5 percent male students didn't eat breakfast at least once. Among those students who skipped at least one meal for breakfast, 12 percent of female students did not eat breakfast at all, while 14.8 percent of male students didn't eat at all.

Correlational Analysis of BMI with Skipping Breakfast

Correlational Analysis between BMI and # Breakfasts skipped			
Sex		BMI Calc	Number of bkfst skipped.
Female: BMI Calc	Pearson Correlation	1	.036
	Sig. (2-tailed)		.456
	N	447	439
Male: BMI Calc	Pearson Correlation	1	.224**
	Sig. (2-tailed)		.000
	N	502	490
**. Correlation is significant at the 0.01 level (2-tailed).			

We examined the correlational relationship between BMI score and the number of meals (breakfast) skipped. There was a significant positive relationship between two variables for male students ($r=.224$, $p<.001$), but not female students ($r=.036$, $p>.05$). **This results indicate that the higher the number of meals skipped for males, the higher the BMI, but this correlation was not significant for females.**

Note: This result might not be truly significant since more than half (66.4 percent for female & 66.7 percent for male) of students indicated that they, "do not skip any breakfast."

2. Sugar Sweetened Soft Drink Consumption

Research has indicated a potential correlation between sugar-sweetened beverages and obesity (Cordain, Eaton, Sebastian, Mann, Lindeberg, Watkins & Brand-Miller, 2005; Ferder, Ferder, & Inserra, 2010).

Question 20.1 - This question asked about type of beverage YESTERDAY and did not specify day of week (could have been weekday or weekend). It is understood that they may have drunk other sugar-sweetened beverages (energy drinks, lemonade, sweet tea, etc.) not accounted for in this answer analysis, but the analysis for this question right now is: **Did they drink specifically drink one or more sugared soft drinks yesterday?**

Whether drank Sugar Soda Yesterday or not			
		Frequency	Valid Percent
Valid	No	600	64.4
	Yes	332	35.6
	Total	932	100.0
Missing		18	
Total		950	

Thirty-five-point-six percent (35.6%) of students reported drinking a sugar-sweetened soda on the previous day.

Girls and Boys - Whether drank sugar soda or not				
Sex			Frequency	Valid Percent
Girl	Valid	No	322	72.7
		Yes	121	27.3
		Total	443	100.0
	Total		447	
Boy	Valid	No	278	57.0
		Yes	210	43.0
		Total	488	100.0
	Total		502	100.0

A total of 27.3% of Girls and 43% of boys drank a sugar soda on the previous day.

Comparing mean BMI scores between those who drank soft drink and those who didn't.

Group Statistics						
Sex		Whether drank or not	N	Mean	Std. Deviation	Std. Error Mean
.	BMI Calc	No	0[a]	.	.	.
		Yes	1	25.6936	.	.
Girl	BMI Calc	No	322	18.6998	2.95884	.16489
		Yes	121	19.0631	3.49036	.31731
Boy	BMI Calc	No	278	18.9899	3.28545	.19705
		Yes	210	19.0861	3.61143	.24921
a. t-test cannot be computed because at least one of the groups is empty.						

The mean BMI for those who drank soda is higher than for those who didn't.

Independent T-Test Sample – Boys vs. Girls

Sex		Levene's Test for Equality of Variances	t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Girl	BMI Calc	2.523	.113	-1.095	441	.274	-.36326
Boy	BMI Calc	2.682	.102	-.307	486	.759	-.09622

Those students who drank soft drinks appear to have slightly higher BMI scores than those who didn't drink it, but the difference between two groups was not statistically significant (Female: Mean difference ($\bar{X}$) =.36, p=.274; Male: mean difference ($\bar{X}$)=.10, p=.759).

D. Out of School Activities Participation

1. Types of Activities

Research indicates that the types of activities youth engage in may be correlated with BMI. Questions 22.1. through 22.7 ask students to indicate any activities in which they participate during their time out of school. A limitation is the understanding that some respondents may have miscategorized other activities which could fit under the previous headings, and some did not check any activities.

Table 6: Number of Study Participants Engaged in Physical Activity per Week

	Organized Physical Activity	Outdoor Activity	Youth Group Activity	Park & Rec Center	Other Activities	Doing More Than One Activity
Total	706 (74.3%)	700 (73.7%)	194 (20.4%)	524 (55.2%)	244 (25.7%)	768 (80.8%)
Female	340 (76.1%)	329 (73.6%)	96 (21.5%)	236 (52.8%)	116 (26%)	363 (81.2%)
Male	366 (72.9%)	371 (73.9%)	98 (19.5%)	287 (57.2%)	128 (25.5%)	405 (80.7%)

Most students indicate that they participate in more than one activity, with organized activities being highest participation for girls, and outdoor activities highest for boys. **55 percent** of all students report participating in the recreation center activities, while **74 percent** participate in organized physical activities, and **74 percent** participate in outdoor activities.

2. Percentage Time Spent on Various Non-Active Activities

Research indicates that individual entertainment, passive screen time, and social media is increasing, and increased screen time is typically related to increased BMI (Gronsted & Hu, 2011; Stamatakis, Rogers, Ding, Berrigan, Chau, Hamer, & Bauman, 2015). Therefore, we are interested in the amount of time spent on social and entertainment vs. academic activities. We recognize that social media may be on the computer – but focus is on the type of activity, not the tool. The argument can also be made that video games can be social.

Q. 28 – 1.1 – 2.4. We analyzed the number of hours spent on academic, watching TV, playing video games, or engaged in social media/phone both during the week and on the weekend.

Statistics					
		Total hours in Academic Work	Total hours watching TV	Total hours playing video game	Total hours connecting social media
N	Valid	837	830	815	839
	Missing	113	120	135	111
Mean		6.0167	5.4108	4.0344	6.4779
Median		6.0000	5.0000	3.0000	6.0000
Mode		4.00	4.00	1.00	11.00
Std. Deviation		2.66731	2.97576	3.32163	3.41542
Range		9.00	9.00	9.00	9.00
Minimum		1.00	1.00	1.00	1.00
Maximum		11.00	11.00	11.00	11.00

On average, students spent **22 hours per week** on non-active activities per week**.**

Weekday Activities – Hours per Week

Statistics					
		WeekDAY Hours-Academic activities	WeekDAY Hours-Watch TV	WeekDAY Hours-Play video games	WeekDAY Hours-Social media, texting, on phone
N	Valid	866	862	848	864
	Missing	84	88	102	86
Mean		3.08	1.96	1.24	2.58
Mode		5	1	1	5
Std. Deviation		1.636	1.618	1.660	1.776

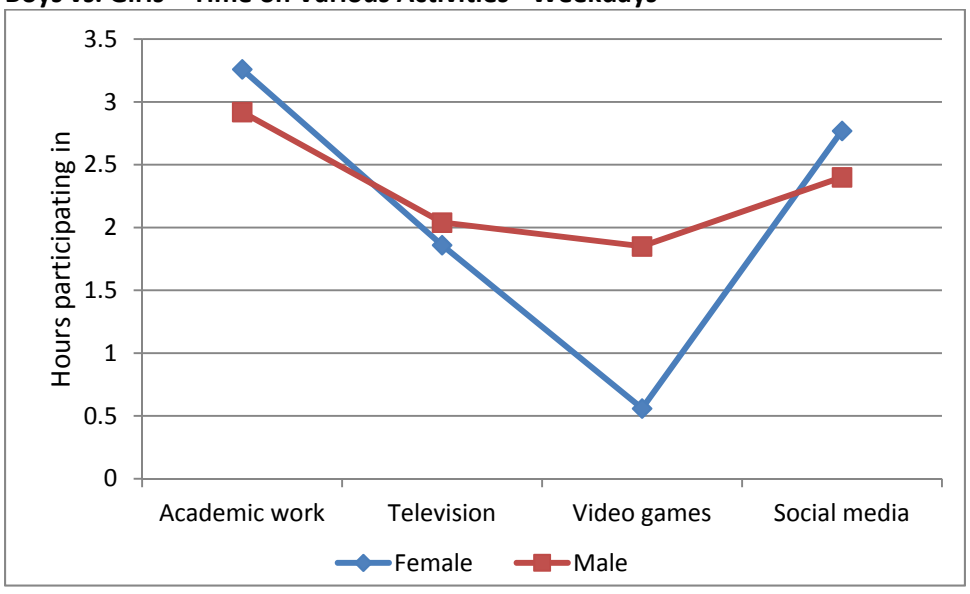
During week days, for non-active activities, study participants engaged in academic activities most often, at just over 3 hours, followed by social media, then TV and video games. Total hours per week on average were just under **9 hours** during weekdays.

Gender Comparison – Hours Spent During the Week on Non-Active Activities

Statistics						
Sex			WeekDAY Hours-Academic activities	WeekDAY Hours-Watch TV	WeekDAY Hours-Play video games	WeekDAY Hours-Social media, texting, on phone
Girl	N	Valid	412	410	399	411
		Missing	35	37	48	36
	Mean		3.26	1.86	0.56	2.77
	Mode		5	1	1	5
	Std. Deviation		1.557	1.562	1.203	1.703
Boy	N	Valid	453	451	448	452
		Missing	49	51	54	50
	Mean		2.92	2.04	1.85	2.40
	Mode		5	1	1	1
	Std. Deviation		1.689	1.663	1.774	1.823

Girls spend slightly more time on academics and social media, and less time on TV and video games; however, the amount is only significant for video games.

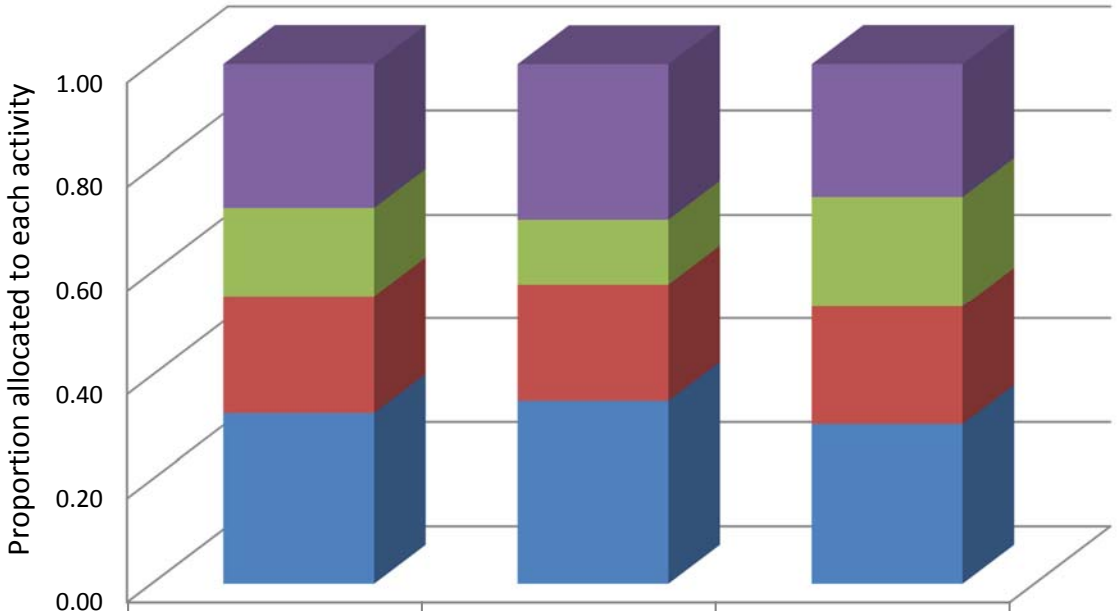
Boys vs. Girls – Time on Various Activities - Weekdays



Proportions of Time Spent

For each activity, proportions of hours engaged by study participants were calculated by dividing the number of hours for an activity by total number of hours that each participant spent for all four activities. It allows us to examine a relative proportion of time spent for specific activities.

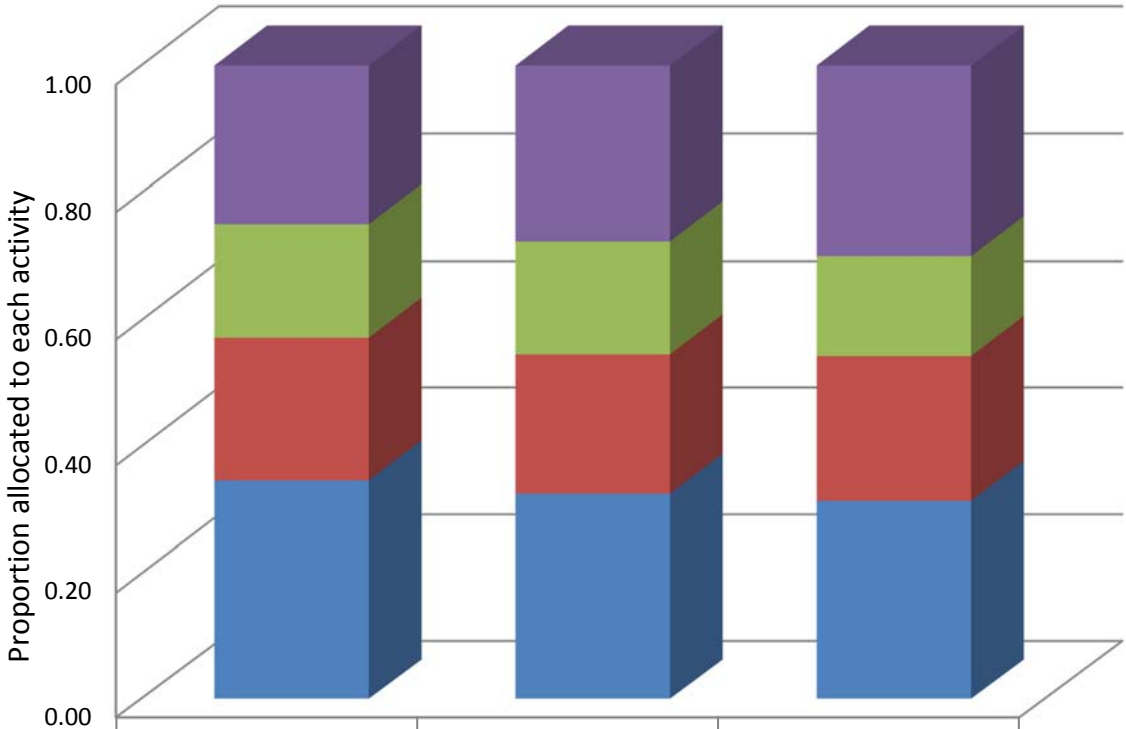
Figure 8: Weekday Summary of Percentage of Time Spent on Non-Active Pursuits by Gender



	Total	Female	Male
Social Media	0.28	0.30	0.25
Video games	0.17	0.12	0.21
Television	0.23	0.23	0.23
Academic	0.33	0.35	0.31

In summary, **33 percent** of Non-Active Activity time on weekdays was spent on academic tasks, while the majority **(67%)** was spent on watching TV, playing video games, or social networking. Female students (35%) spent more time on academic work than male students (31%). It was notable that female students engaged in social media longer than male students while they played video games less than male students.

Figure 9: Non-Active Weekday Participation by Grade



	6th	7th	8th
Social Media	0.25	0.28	0.30
Video games	0.18	0.18	0.16
Television	0.23	0.22	0.23
Academic	0.35	0.33	0.31

The number of hours spent after school connected to social media also increased as the grade level increased (6th graders: 25%; 7th graders: 28%; and 8th graders: 30%) while decreasing the proportion for academic works).

Weekend Data Analysis

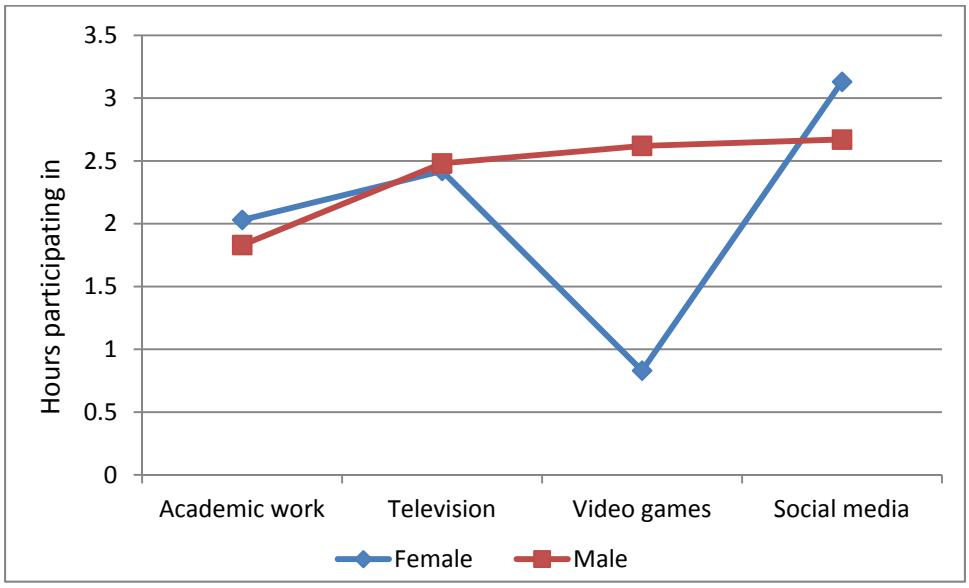
During weekend day, on average, study participants spent 2 hours, 2.5 hours, 1.75 hours, and 3 hours for each activity in order, for a total of just over **9 hours on just the two days**. Interestingly, the majority students were connecting social media for over 5 hours (mode).

Statistics – Hours per weekend					
		WeekEND Hours-Academic activities	WeekEND Hours-Watch TV	WeekEND Hours-Play video games	WeekEND Hours-Social media, texting, on phone
N	840	834	822	844	864
	110	116	128	106	86
Mean		1.93	2.45	1.78	2.89
Mode		1	1	1	5
Std. Deviation		1.516	1.653	1.861	1.821

Gender comparison - Weekends

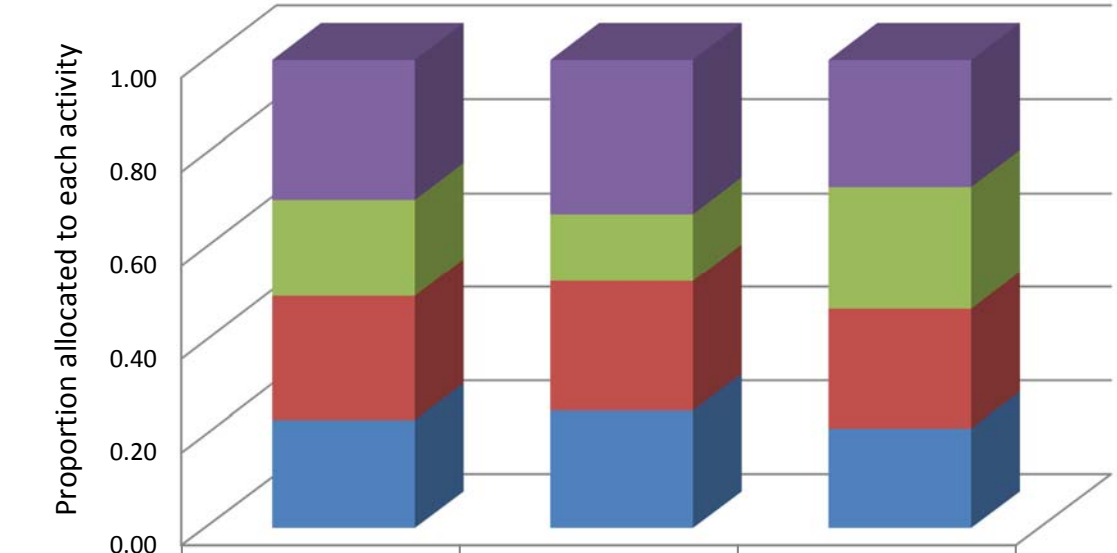
Statistics						
Sex			WeekEND Hours-Academic activities	WeekEND Hours-Watch TV	WeekEND Hours-Play video games	WeekEND Hours-Social media, texting, on phone
Girl	N	Valid	401	400	384	402
		Missing	46	47	63	45
	Mean		2.03	2.42	0.83	3.13
	Mode		1	2	1	5
	Std. Deviation		1.438	1.602	1.404	1.721
Boy	N	Valid	438	433	437	441
		Missing	64	69	65	61
	Mean		1.83	2.48	2.62	2.67
	Mode		1	3	5	5
	Std. Deviation		1.580	1.698	1.806	1.882

Figure 10: Gender Differences – Non-Active Activities Weekends



Again, there was a significant difference in hours playing video game between male and female students. Results indicated that male students played video games over **2.5 hours** on average, while female students spent **less than 1 hour** playing video games on weekends. On the other hand, female students spent more hours connecting to social media than male students.

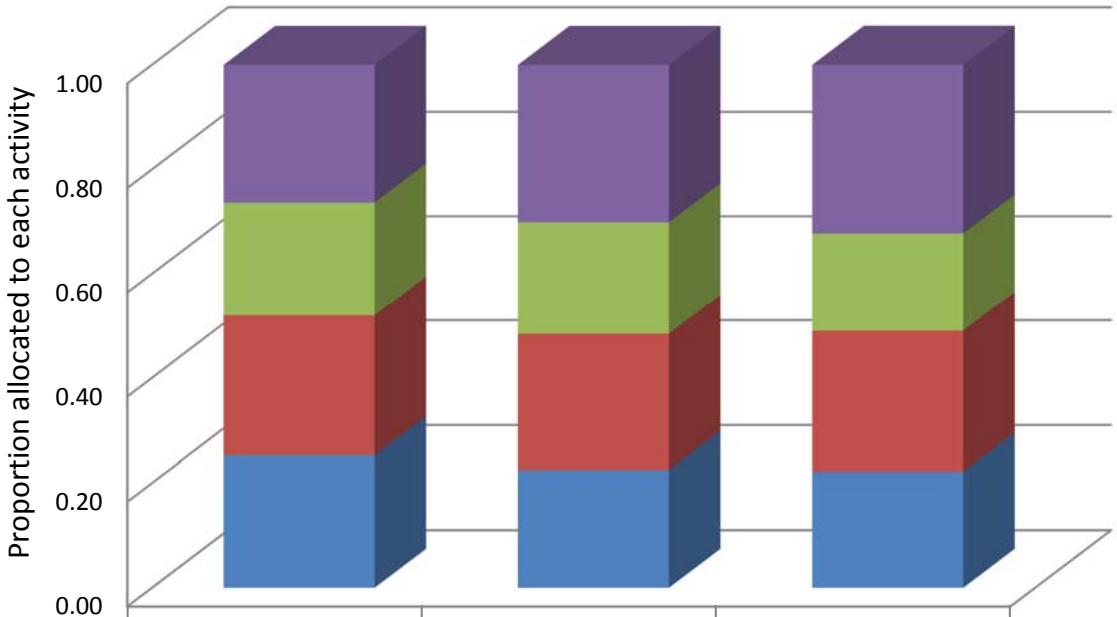
Figure 11: Weekend Proportional Analysis



	Total	Female	Male
Social Media	0.30	0.33	0.27
Video games	0.21	0.14	0.26
Television	0.26	0.28	0.26
Academic	0.23	0.25	0.21

Twenty-three percent (23%) of time on weekend day was spent by students on academic tasks, while the majority **(77%)** was spent on watching TV, playing video games, or social networking. As during the week, female students (25%) spent more time on academic work than male students (21%). In addition, female students engaged in social media longer than male students, but they played video games less than male students.

Figure 12: Comparison by Grade



	6th	7th	8th
Social Media	0.26	0.30	0.32
Video games	0.22	0.21	0.19
Television	0.27	0.26	0.27
Academic	0.25	0.22	0.22

Again, trends of the time connecting social media during weekdays were similar to the trends during the weekend. The number of hours spent after school connected to social media also increased as the grade level increased (6th graders: 26%; 7th graders: 30%; and 8th graders: 32%), while the proportion for academic work decreased.

3. Transportation to Activities - Out of School Time

A variety of studies indicate potential correlations between primarily self-transport or vehicular transport and youth BMI (Friedan, 2010; Glanz & Sallis, 2006; Grow & Saelens, 2008). For this study, Question #23 asked students how they USUALLY get to their activities outside of school time.

Modes to Get to Location for After School Activities (Percent)

	Walk	Bike	Bus	Adult drives	Other	Total (missing)
Total	101 (10.6%)	175 (18.4%)	5 (0.5%)	624 (65.7%)	25 (2.6%)	930 (20)
Female	48 (10.7%)	38 (8.5%)	0	342 (76.5%)	10 (2.2%)	438 (9)
Male	52 (10.4%)	137 (27.3%)	5 (1.0%)	282 (56.2%)	15 (3.0%)	491 (11)

The majority students for both genders **(66%)** rely on other adults who drive for them when they go to a place for extracurricular activities, while just **11 percent** walk. Interestingly, a significant number of male students **(27%)** ride a bike to get there. Bus usage is minimal for boys and non-existent for girls.

In using an independent samples t-test to examine the mean difference in BMI scores between students using self-transport and vehicular transport, there is no significant difference.

Modes to Get to School

	Walk	Bike	Bus	Adult drives	Total
Total	173 (18.2%)	64 (6.7%)	357 (37.6%)	356 (37.5%)	950
Female	82 (18.3%)	13 (2.9%)	165 (36.9%)	182 (41.8%)	447
Male	91 (18.1%)	51 (10.2%)	192 (38.2%)	168 (33.5%)	502

Seventy-five percent (75%) of students take the bus or get a ride to get to school, while nearly one quarter (**24.9%**) of students go to school by walking or riding a bike. There was no noticeable gender difference in modes of transportation to get to school. F-statistics were calculated to examine if there was a significant mean difference in BMI scores between students using different transportation modes using an omnibus test. Descriptive statistics indicate that students that ride a bike or walk show slightly lower BMI scores than those students taking bus or vehicle, but the result was not statistically significant ($F=.497$, $df=949$, $p>.05$).

E. Perceptions of Safety

One barrier to activity participation may be the safety or perception of safety around how youth get to the activity location (Carver & Timperio, 2008; Friedan & Dietz, 2010). While Q. 23 analyzed previously asked about how they get to activities, **Q. 24 asks how safe they feel on their way.**

Perceptions of safety

	Not at all safe	Somewhat safe	Very safe	Total (missing)
Total	23 (2.4%)	209 (22.0%)	695 (73.2%)	927 (23)
Female	6 (1.3%)	112 (25.1%)	320 (71.6%)	438 (9)
Male	17 (3.4%)	97 (19.3%)	374 (74.5%)	488 (14)

It appears that overall students in Arlington Heights feel very **(73%)** or at least somewhat **(22%)** safe getting to activities. This coincides with the previous tools that indicate that perception of safety is high in Arlington Heights, and therefore, is not a key priority for attention at this time. This is an area to monitor over time, as it is always a goal to have all youth feel safe getting around their community.

F. Parental/Guardians Modeling and Support

While peer behavior often becomes more important with age, the role of modeling and support by parents and guardians are still key determinants for behaviors by youth. (Haines, 2007; Puhl, 2010) Questions examined four categories of factors in parents/guardians influencing their children's healthy behaviors were examined including 1) physical activity support, 2) parent engagement in physical activities, 3) parent surveillance, and 4) parent dietary habits.

Inter-item reliability coefficients of four constructs asking healthy behaviors of study participants' parents/guardians.

Construct	Reliability coefficient (alpha)	Items
Parent surveillance	.83	They set limits on the amount of time I can be on the computer, video games, and/or watch TV
		They pay attention to or keep track of what I eat and drink
		They monitor and keep track of my physical activities when I am out of school
		They control how many snack and junk foods we have in the house
Physical activity support	.80	They encourage me to participate in physical activities when I am not in school
		They ask me about what activities I have done and how much time I spent doing them
		They encourage me play outside and be active
		They are willing to pay for me to be in physical activities
Parent engagement in physical activities	.79	They like to do physical activities with me when I am not in school
		They exercise 3 or more times a week on a regular basis1
Parent dietary habits	.80	They tend to drink mostly water with meals (rather than soft drinks or wine, etc.)
		They have a nutrition plan that we all follow
		They prepare homemade meals rather than pre-packaged or frozen meals

Parent/guardian support for student engagement in out-of-school activities

	n	Mean	SD
Parent surveillance	573	3.58	.90
Physical activity support	600	4.04	.76
Parent engagement in physical activities	601	3.41	1.10
Parent dietary habits	585	3.56	.87

NOTE: The mean indicates the level of perceived type of support by parents. A five-point scale was used with 1 = strongly disagree and 5 = strongly agree.

Summary of this Analysis

Mahalanobis distances were calculated for each constructs, and found that no outlier was detected. Results indicated that students believe parents/guardians pay special attention to support their physical activity engagement (X =4.04, SD=.76). However, they also believe that their parents do not fully engage in healthy behaviors (Physical activity engagement: X=3.41, SD=1.10; Parent's dietary: X=3.56, SD=.87).

Relationship between BMI, Support of parent/guardian, Parent engagement in physical activity

		Support of student PA	Engagement in PA	Surveillance by parent	Diet Habits
BMI	Pearson Correlation	-.055	-.115**	-.095*	-.087*
	Sig. (2-tailed)	.175	.005	.023	.036
		600	601	573	585
Support of student PA	Pearson Correlation		.523**	.650**	.537**
	Sig. (2-tailed)		.000	.000	.000
			565	548	552
Engagement in PA	Pearson Correlation			.527**	.540**
	Sig. (2-tailed)			.000	.000
				542	553
Surveillance by parent guardian	Pearson Correlation				.671**
	Sig. (2-tailed)				.000
					528
** Correlation is significant at the 0.01 level (2-tailed).					
* Correlation is significant at the 0.05 level (2-tailed).					

There were significant relationships among these four constructs, which suggested that those parents/guardians who support their child's involvement in physical activities tended to engage in healthy behaviors. In addition, relationships between students' BMI score and these four constructs were examined. Interestingly, results of analysis showed that one of constructs (Support of students' physical activity) was not significantly associated with students' BMI scores, while the other three constructs were related (note: the effect sizes of these results were small). **This result indicates that students' BMI scores tend to be lower if their parents/guardians engage in physical activities; maintain their healthy eating habits; and monitor their youth's screen time, eating habits, and physical activity involvement. However, student's BMI scores were not significantly influenced only by support from their parents/guardians (r=-.055, p=.175)**

G. Analysis of Findings Using Multiple Regression

The descriptive data and apparent trends indicated potential health issues among students in the two middle schools in Arlington Heights, and created a clear warrant for agency action. To further explore the potential interactions and correlations, multiple regression techniques were utilized for some to the key explanatory variables such as gender, whether they actively transported themselves to school or were driven (walk/ride), whether they ate breakfast at least four days per week, whether they drank a soft drink yesterday, and if they were in organized physical activity through sports (Org. PA). The categorical explanatory variables were dummy coded to standardized dichotomous numeric (see ***Table 7***).

Table 7: **Dummy Coding Chart for Dichotomous Explanatory Variables**

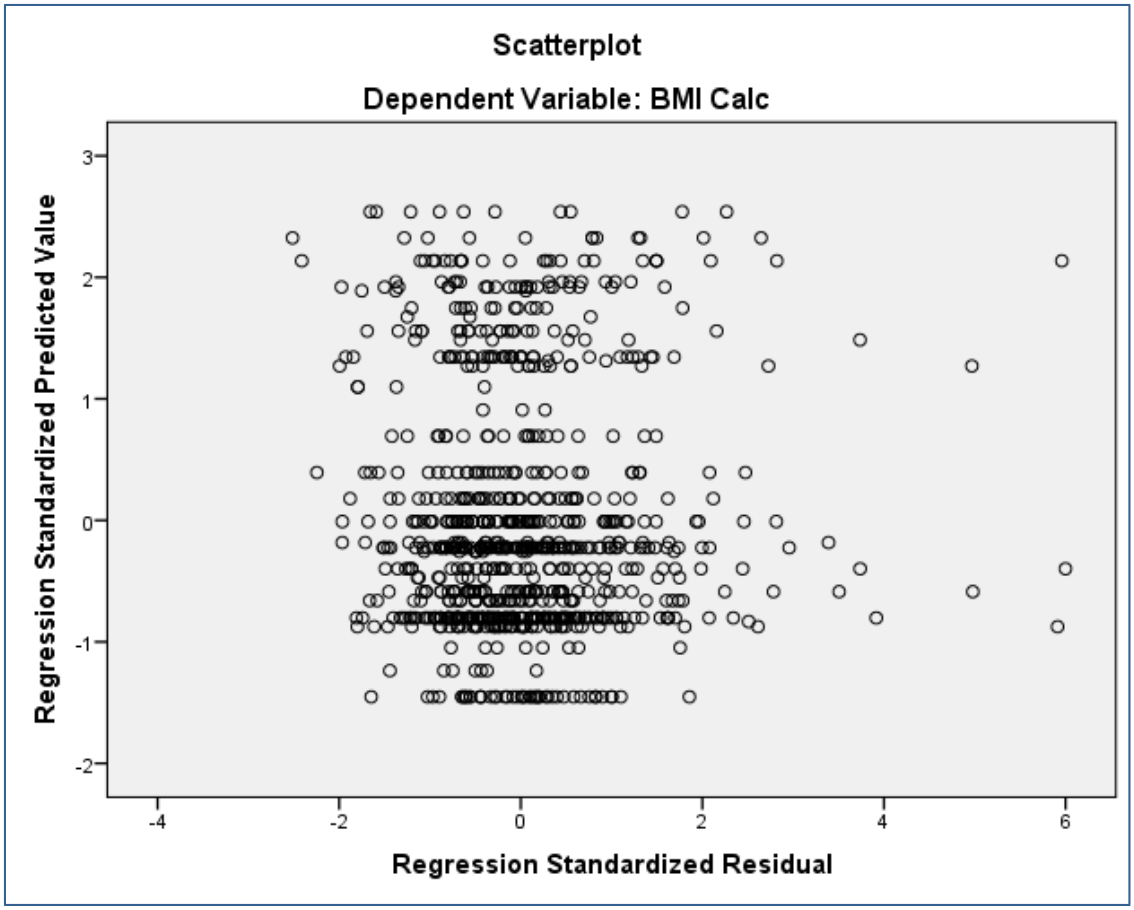
Variables	**Y = Response**	**X Variables = Explanatory**				
Description	**BMI = Y**	**Gender**	**Walk/Ride**	**Breakfast**	**Soft Drinks**	**Org. PA**
Continuous	Yes	no	No	no	No	
Dummy (categorical)	No	1 = girl	1 = walk/bike	0 =ate 6+	0 = No drink	1 = Org.
		2 = boy	2= bus/car	1 = Ate 5 times or less	1= Drink	0 = No Org.

In order to analyze data using regression analysis, researchers needed to examine several assumption tests. Since there are four independent variables (dichotomy variables) selected to predict BMI score, there are some limitations while interpreting results of this analysis (significant levels can be either over or under estimated). There are four major assumptions of a multiple linear regression analysis including linearity, homoscedasticity, multicollinearity, & normality. GP RED researchers tested all of them and no violation was found statistically significant.

Results of assumption tests for Linear Regression

Correlations --> Multicollinearity test. Relationship between these two variables may be highly related enough to run a regression analysis, but not significantly.				
	Modes of transportation to get to school	Ate or not	Whether drank or not	Participate organized physical activities
Sex	-.091	-.065	**.165**	-.034
Modes of transportation to get to school		-.034	.059	-.086
Ate or not			.048	-.047
Whether drank or not				-.067

Coefficients: Tolerance and VIF values were acceptable			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Gender	.955	1.047
	Modes of transportation to get to school	.977	1.024
	Ate or not	.988	1.012
	Whether drank or not	.961	1.041
	Participate organized physical activities	.985	1.015
a. Dependent Variable: BMI Calc, Problem if …. Tolerance <.3 VIF > 10			



Visual inspection of scatter plots between standardized predicted value and standardized residual.

Results of regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.140[a]	.020	.014	3.22769

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	188.055	5	37.611	3.610	.003[b]
	Residual	9449.136	907	10.418		
	Total	9637.191	912			
a. Dependent Variable: BMI Calc						
b. Predictors: (Constant), Participate organized PA, Gender, Ate Break or not, Modes of transportation to get to school, Whether drank soda or not						

As shown in the previous table, in order to predict students' BMI scores, four categorical variables were entered into a regression model. These four variables were significantly predictors of students' BMI scores (F=3.61, p=.003), but it is not meaningful from a practical standpoint. These four variables can predict only two percent of variance explaining study participants' BMI score (R^2=.02).

T-Scores: Coefficient Analysis

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	17.866	.633		28.231	.000
Gender	.262	.219	.040	1.197	.231
Modes of transportation to get to school	.295	.249	.039	1.186	.236
Ate breakfast or not	.974	.256	.126	3.803	.000
Whether drank or not	.098	.227	.014	.429	.668
Participate in organized physical activities	-.183	.250	-.024	-.735	.463
a. Dependent Variable: BMI Calc					

Variance of the BMI score was significantly explained by one variable only (whether they typically ate breakfast or not). (Note: Coding: "0" means ate breakfast six or more days a week; "1" means ate 5 or less meals). This means that students who ate breakfast regularly have lower BMI scores (B=.974, p<.001) than those who skipped breakfast two times or more in a week.

Formula

BMI = 17.87 + Gender (.262) + ModeTransp (.295) + Breakfast (.974) + Soft Drink (.098) - Org. PA (.183) + error

Summary BMI results

Male > Female; Bus/Car > Walk; **Skipped Breakfast > Ate Breakfast**; Soft Drinks > No Soft Drink; & No Organized PA > Engaging in Org. PA

THIS PAGE INTENTIONALLY LEFT BLANK

IV. Conclusions

Notable key findings include:

- From this analysis, it appears that youth in Arlington Heights are, on average, of healthy weight. This analysis indicates a lower than national, state, and county-wide average of overweight and obesity, but as 33 percent of survey respondents did not answer the question on weight, it cannot be assumed that this result is not skewed. A re-survey with strong focus on accurate self-reporting of weight can confirm the findings.
- Good coverage from parks and programs.
- Nutritional policies and education appear key.
- Opportunities to increase walking/biking and reduce screen time.
- Parental modeling and adult change helps.
- Attention to Youth Focus Group and ideas.
- Need healthy foods, more non-competitive programming, and better tracking.

Now is the time to put these findings all in context for Visioning and Future Actions.

V. Limitations and Indications for Further Study

There are identified limitations to using self-reported data from middle schools students in terms of recall and honesty, and the use of self-measured height and weight to calculate BMI. However, by removing some obviously wrong answers (i.e.; BMI reported as > 50, strong outliers for nutritional answers, etc.) and with the power of 950 responses, it appears this may be as close as we can get for community-specific recalled data with relatively low cost and time investment.

However, due to the large percentage of students who at least attempted the survey but who did not enter an accurate answer for weight (33%), and whose data is not usable for this analysis, it is possible that the data is skewed to normal weight individuals. For future protocols, it is crucial that all students understand the importance of reporting accurate weights.

Other limitations are that this is a snapshot in time for just one community. It will be good to collect additional data from other communities, and again from Arlington Heights students as time goes on, for comparative purposes and to confirm the reliability and validity of the testing and analysis methods. As with all research, multiple regression helps control for some variable bias effects, but does not solve the problem of identifying effects of unmeasured variables that have not been considered (Remler & Van Ryzin, 2015). It is hoped that over time these limitations will be further explored and can be minimized for this type of research.

VI. Recommendations for Future Action

The YANS survey should be administered again in Arlington Heights to determine if there are changes and/or consistency in data findings. It would be desirable to add additional middle schools and to work to increase accurate completion of the weight reporting factor. A comparative analysis with the 2015 data will provide the beginnings of a longitudinal study of factors influencing monitoring of the obesity issue in Arlington Heights among middle school youth. This may also be compared with findings from other YANS reports to be conducted by GP RED and/or NCSU in other communities in 2015.

Now that the factor of consistent breakfast eating has been shown to have strong potential effect in Arlington Heights, it could be beneficial to compare the answers for other types of activity groups that were collected to see if those types of activities also have a similar effect on community youth BMI. It would also be beneficial to compare this to other variables, such as distance to activity locations, fast food consumption, etc. There is really no limit to the amount of detail that can be explored with this type of data analysis. It will be beneficial to have a further-validated survey instrument to help identify and address key variables for this age group. Perhaps with each look, we may get closer to unlocking the puzzle of how we can manage community offerings and education to help our youth become healthier in the future.

References and Resource Documents

Behavioral Risk Factor Surveillance System (BRFSS). 2014. Centers for Disease Control, accessed on 5/2/14 at http://www.cdc.gov/brfss/annual_data/annual_data.htm.

Bruening, M., Larson, N., Story, M., Neumark-Sztainer, D., & Hannan, P. (2011). Predictors of Adolescent Breakfast Consumption: Longitudinal Findings from Project EAT. *Journal of Nutrition Education and Behavior*, *43*(5), 390–395. http://doi.org/10.1016/j.jneb.2011.02.016

Carver, A., A. Timperio, et al. (2008). "Playing it safe: The influence of neighborhood safety on children's physical activity—A review." *Health & Place* **14**(2): 217-227.

Centers for Disease Control and Prevention (CDCP). 2013. *Overweight and obesity*. Available at http://www.cdc.gov/obesity. Accessed March 28, 2015.

Centers for Disease Control and Prevention (CDCP). 2014. *State Indicator Report on Physical Activity*. Atlanta, GA: U.S. Department of Health and Human Services.

Compton, D.M. (2013). “Getting Kids off the Couch and into Healthy Communities: Modeling Recreation Programs with STELLA.” ISEE Systems - The Connector, no. Fall 2013. Accessed June 23, 2014. http://www.iseesystems.com/community/connector/Zine/2013_Fall/KidsHealthyCommunities.aspx?utm_source=isee+systems+Mailing+List&utm_campaign=e1d0692c0e-Connector_Fall_2013&utm_medium=email&utm_term=0_3cf270221b-e1d0692c0e-299128045.

Compton, D. M., Kiboum K., & Damask, D. (2012). *MAUT Analysis of Factors and Indicators*, Appendix B, South Bend, Indiana Parks and Recreation Department, Healthy Communities Research Group Surveillance and Management Toolkit, Year Two Report, GP RED, 2013, Available at http://gpred.org/wp-content/uploads/2014/02/South-Bend-HCRG-Year-Two-Report.pdf. Accessed March 23, 2014.

Cordain, L., Eaton, S. B., Sebastian, A., Mann, N., Lindeberg, S., Watkins, B. A., Brand-Miller, J. (2005). Origins and evolution of the Western diet: health implications for the 21st century. *American Journal of Clinical Nutrition*, *81*(2), 341–354.

Ferder, L., Ferder, M. D., & Inserra, F. (2010). The role of high-fructose corn syrup in metabolic syndrome and hypertension. *Current Hypertension Reports*, 12(2), 105–112.

Finkelstein E.A., Trogdon J.G., Cohen J.W., Dietz W. (2009). Annual medical spending attributable to obesity: Payer- and service-specific estimates. Health Affairs. 28(5): w822-w831.

Frieden, T. R., W. Dietz, et al. (2010). "Reducing Childhood Obesity Through Policy Change: Acting Now To Prevent Obesity." *Health Affairs* **29**(3): 357-363.

Glanz, K. and J. F. Sallis (2006). The role of built environments in physical activity, eating, and obesity in childhood. *The Future of Children.* **16:** 89+.

Grøntved A., and Hu F.B. Television Viewing and Risk of Type 2 Diabetes, Cardiovascular Disease, and All-Cause Mortality. *JAMA*. 2011; 305 (23):2448–55.

Grow, H. M., B. E. Saelens, et al. (2008). "Where Are Youth Active? Roles of Proximity, Active Transport, and Built Environment." *Medicine and Science in Sports and Exercise* **40**(12): 2071-2079.

Haines, J., D. Neumark-Sztainer, et al. (2007). "Personal, Behavioral, and Environmental Risk and Protective Factors for Adolescent Overweight. *Obesity* **15**(11): 2748-2760.

Hinkin, T.R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1, 104-121.

Institute for Health Metrics and Evaluation (IHME). *Overweight and Obesity Viz*. Seattle, WA: IHME, University of Washington, 2014. Available from http://vizhub.healthdata.org/obesity. (Accessed 7/1/15)

Jones, D. C., & Crawford, J. K. (2006). The Peer Appearance Culture During Adolescence: Gender and Body Mass Variations. *Journal of Youth and Adolescence*, *35*(2), 243–255. http://doi.org/http://dx.doi.org.prox.lib.ncsu.edu/10.1007/s10964-005-9006-5

Jordan, D., Compton, D.M., Kim, K., and Penbrooke, T., Youth Activity and Nutritional Surveys (YANS), *In progress*, communication from authors, East Carolina University and GP RED, March 2015.

Penbrooke, T. L., Compton, D. ., Kim, K., Layton, R., & Bartnik, J. (2014). *Findings Report – Liberty, MO, Parks and Recreation GP RED Healthy Communities Research Group*. Lafayette, Colorado: GP RED. Retrieved from http://gpred.org/healthy-communities-research-group/

Puhl, R. M. H. C. A. (2010). Obesity Stigma: Important Considerations for Public Health. *American Journal of Public Health* **100**(6): 1019-1028.

Remler, D.K., and Van Rzyin, G.G. (2015). *Research Methods in Practice: Strategies for Description and Causation*. Thousand Oaks, CA, Sage Publications.

Stamatakis, E., Rogers, K., Ding, D., Berrigan, D., Chau, J., Hamer, M., and Bauman, A. (2015). All-cause mortality effects of replacing sedentary time with physical activity and sleeping using an isotemporal substitution model: a prospective study of 201,129 mid-aged and older adults. International Journal of Behavioral Nutrition and Physical Activity

(2015) 12:121.

Tummers, L.G. & Knies, E. (2015). Measuring Public Leadership: Developing Scales for Four Key Public Leadership Roles. *Public Administration.*

Wetmore, C. M., & Mokdad, A. H. (2012). In denial: misperceptions of weight change among adults in the United States. Preventive Medicine, 55(2), 93–100.

Appendix A – Sample BMI Charts for Boys and Girls

THIS PAGE INTENTIONALLY LEFT BLANK

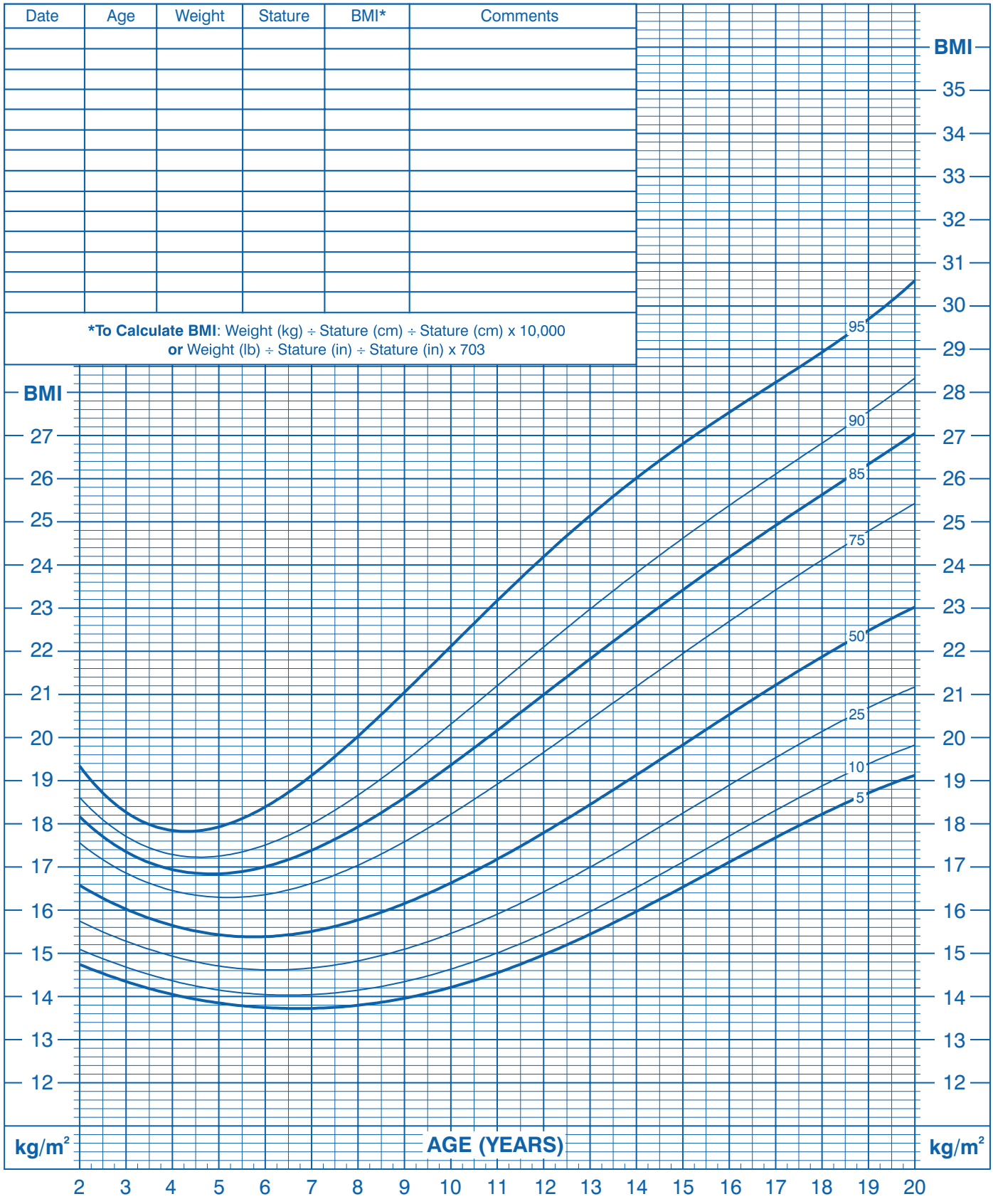
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

***To Calculate BMI**: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
SAFER • HEALTHIER • PEOPLE™

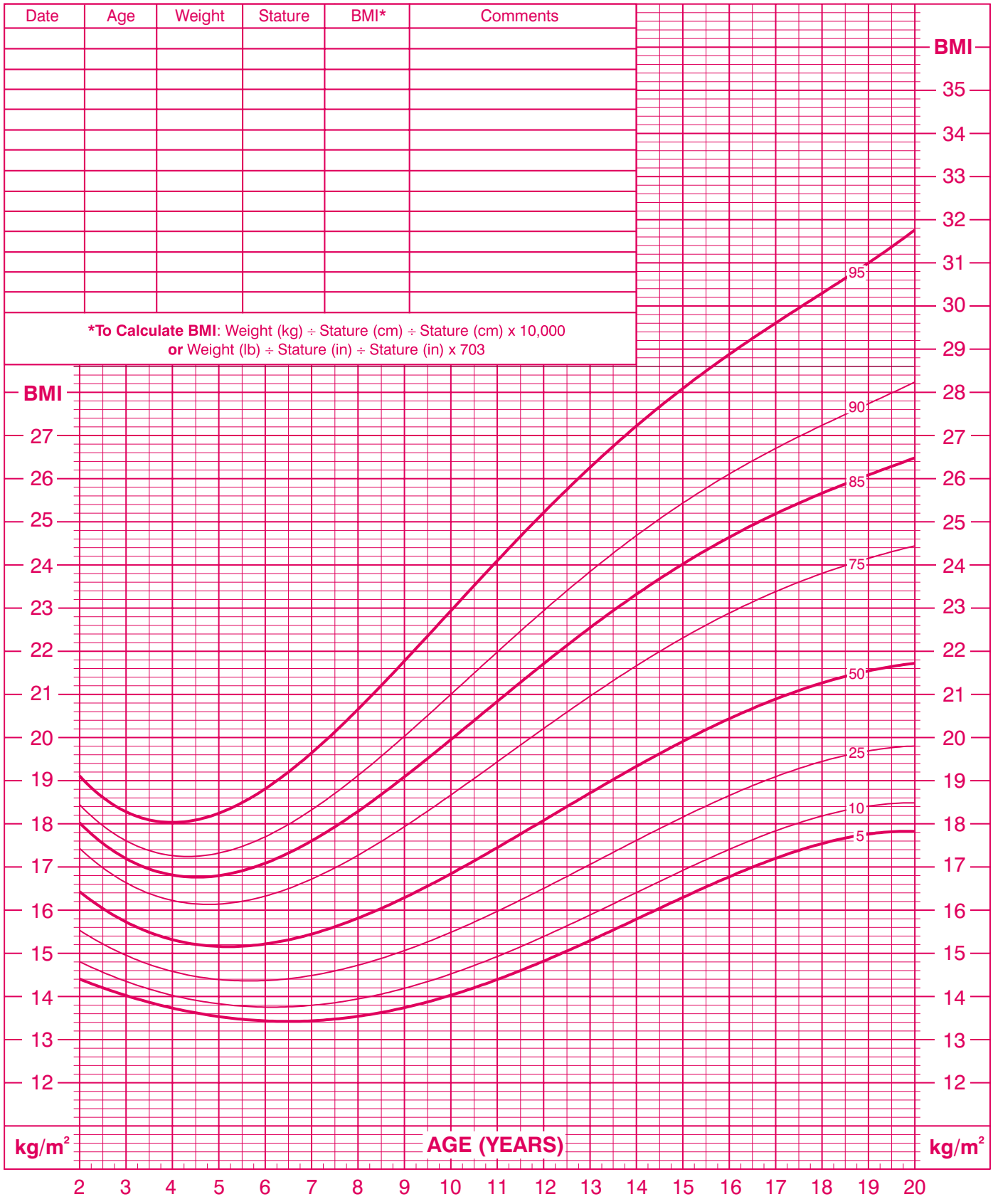
2 to 20 years: Girls
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

***To Calculate BMI**: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
SAFER • HEALTHIER • PEOPLE™

Appendix B – Primary Factors and Indicators for Analysis

An intensive ongoing literature review has been performed by the GP RED Healthy Communities Research Group Staff, including a focused effort by Dianna Damask, MPH, as an intern at GPRED in 2012. There was much initial work to identify primary critical factors and indicators relevant to policies contributing to the potential increase in physical activity and reduction of the prevalence of overweight and obesity issue among youth age 10-14 years. As a result of this process, five factors and corresponding indicators were deduced from the literature reviews and input of HCRG Peer Review experts. These factors include: 1) Nutrition regimen; 2) Social interaction; 3) Transportation services; 4) Physical activity; and 5) Safety. In addition, five indicators corresponding to each factor were identified as shown in the following table.

Factors and indicators contributing to reducing obesogenic reduction

Nutrition regimen: A balanced intake of food that is comprised of various solids, liquids, fresh and prepared foods that provide the necessary daily nutrients for an active lifestyle and is culturally relevant.	
Availability of healthy food	Support and provide incentives for farmers' markets and grocery stores serving fresh food and healthy food.
Information, education and training	Increase programming and communication campaigns for healthy cooking, gardening, and recipe testing, along with messaging about healthy eating consequences
Healthy food/drink options	Limited to healthy food/drink at public P&R venues or related agencies that are relevant.
Collaboration with local restaurants	Affinity programs that adds points on a score card when one chooses a healthy menu, which may be redeemed at the P&R.
Community gardens	Increasing number of community gardens at several places in the service area and land them at a lower cost.

Social interaction: Positive social relations and role modeling with peers and adults in various settings. Engaging in social discourse. Developing and maintaining friendships with others.	
Efforts to prevent bullying and hazing	Establish programs, campaigns, etc. for those who are ostracized or socially isolated, and those who engage in bullying behaviors.
Non-competitive organized activity options	Encourage more youth to participate in non-competitive activities to increase retention in programs/activities.
Establish practices of social inclusiveness	Emphasize the virtue of friendships, teamwork, and a sense of belonging in the every program.
Positive social environment	Create positive atmosphere where all youth are welcomed, valorized and respected; Establish a strong policy strictly prohibiting bullying or hazing behaviors.
Relevancy of programs/services	Offering programs, services and activities based on customer identified needs, and appropriateness (e.g.) age, gender, religious preference, cultural norms, etc.
Transportation services: Various modes of transportation of individuals or groups including vehicles offered by public, private or family members. Primarily used for getting youth to and from a program, event or activity.	
Accessibility, availability, and Interconnectivity of public transportation	Transportation in communities is multi-modal and requires close access, available when most needed, synchronized with programs, services, and operating hours, and accounts for interconnectivity across the community at large.
Cost of services	Collaboration with schools, local businesses, and other agencies when utilizing public modes of transportation to and from P&R facilities and programs.
Convenience	Synchronization with P & R programs, events, services, activities of P&R.
Consumer knowledge of public transportation services	Information and training strategies to increase the level of awareness of public transportation to and from P & R facilities, programs, events, services, activities.

Utilization rates	Monitor utilization rates by type of customer, location, mode of transportation, frequency, time/day, etc.
Physical activity: The array of opportunities in a community that require physical skills and capacities (e.g. balance, strength, flexibility, etc.) and often specific venues in which to engage during free or discretionary time.	
Quality of natural and built assets	Increase the number of amenities, invest more financial resources for maintenance.
Varied physical demands of programs/services	Utilize analysis to examine the level of required physical skills in programs, events, activities, sport types by age, gender, etc. to sustained engagement across the lifespan.
Availability of assets/programs	Using GIS to document the location and operating hours/days of all natural and built assets; likewise do the same with all programs, services, activities, events by age, program type, etc.
Application of evidence based standards, practices by staff	Using national, state and other physical fitness standards seek to increase the physical capacity of each individual in community. Review and implement evidence based practices to increase physical capacity (aerobic, strength, flexibility, balance, etc.).
Marketing and promotion of increased physical capacity	Utilize varying modes of increasing physical activity through collaboration, partnerships, sponsorships, campaigns to increase awareness of the vital role in personal and public health
Safety: Both actual and perceived, including provision of programs, activities, events, places, spaces (indoors or outdoors) that are not likely to cause avoidable harm, personal injury, or perceived threat of same.	
Crime rate at or near assets/programs	Collaborate with law enforcement to reduce crimes in areas managed by P & R. Install surveillance cameras, Hire police or security officers, CPTED principles, and/or positive activation.
Parent/children perception of safety level	Make streetlights brighter, more people on trails, speed bumps near P&R buildings and pedestrian walkways.

Prevention practices of direct and affiliated service providers	Staff training for accident/injury free environment and safety education for participants.
Safety inspection & risk management	Conduct frequent and regular inspections to ensure safe operations at facilities (built or natural) and in programs/events/services.
Staff supervision & surveillance efforts	Establish standards for supervision and surveillance at all sponsored programs, events, and activities as well as managed assets.

Complete References for Appendix B are included in:

Compton, D. M., Kiboum K., and Damask, D. (2012). *MAUT Analysis of Factors and Indicators*, Appendix B, South Bend, Indiana Parks and Recreation Department, Healthy Communities Research Group Surveillance and Management Toolkit, Year Two Report, GP RED, 2013, Available at http://gpred.org/wp-content/uploads/2014/02/South-Bend-HCRG-Year-Two-Report.pdf. Accessed March 23, 2014.

Appendix C – YANS Survey Instrument

THIS PAGE INTENTIONALLY LEFT BLANK

Healthy Communities Research Group

YOUTH ACTIVITY AND NUTRITION SURVEY

Intro

Intro.
Thank you for completing this survey about what young people do when they are not in school. This information will help us to create better programs and places for young people all around the country. When you answer the questions your answers go to a computer in North Carolina and NOBODY will know how you answered – not even the researchers. Your answers are totally anonymous. By clicking the NEXT button below, you are agreeing that we can use your answers mixed in with everyone else's answers to learn about youth, activities, and what they eat.

The survey should take only 15 minutes or so to complete. While answering the questions is voluntary, we will get the most useful information if you answer all the questions. Like we said, when you hit SUBMIT at the end of the survey, all your answers are totally anonymous. You, your parents, teachers, and friends (and even the researchers) will not know who answered any of the questions. That is why we are not asking for your name.

Once we have answers from lots of young people we'll analyze the responses and then write reports based on ALL the scores—not just yours. So, your honest answers are needed. Please be thoughtful and answer each question to the best of your knowledge. There are no right or wrong answers... everyone has their own levels of participation, eating habits, and family. If you have any questions, be sure to ask your teacher or other adult who is in the room with you. They can help if you don't understand a word or question.

Ready? Click **NEXT** to get started with the survey—and thank you again!

Part I Demographics

Part 1. **First, we want to know a little bit about you...**

Q1. We are comparing height and weight to the rest of the questions on this survey. We know this is personal information, so please remember that NO ONE can see your answers and, when you hit SUBMIT at the end of the survey your answers will go into a computer in North Carolina.

FIRST, tell us how many feet tall you are (we'll ask about the inches in the next question).

3 feet	4 feet	5 feet	6 feet
○	○	○	○

Q2. And now, tell us how many inches you are in addition to the feet you just marked in the previous question. So, if you are 4 feet 5 inches tall, you would have marked 4 feet in the previous question and now you will choose 5 inches from this list. If you are 4 feet, 5 and one half inches, just round up -- you will be 4 feet, 6 inches.

0 inches	1 inch	2 inches	3 inches	4 inches	5 inches	6 inches	7 inches	8 inches	9 inches	10 inches	11 inches
○	○	○	○	○	○	○	○	○	○	○	○

Q3. Just like height, we would like to know how much you weigh... Again, we know this is personal information, so remember that NO ONE can see your answers and, when you hit SUBMIT at the end of the survey your answers will go into a computer in North Carolina.

So, please write in the number of pounds you weigh (the number should be something like 68 or 82 or 105—no letters)

Q4. Are you a ...

Girl	Boy
○	○

Q5. How would you describe your racial/ethnic background?

African American/Black	Asian	Latino/ Hispanic	Native American	White/ Caucasian	Mixed race/ Ethnicity
○	○	○	○	○	○

Q6. This question has two drop down boxes. So, click on the arrow and then choose the year you were born for the first question and the month you were born in for the second question. **Please choose an answer for each item -- year and month**.

When were you born?

Year

Month

Q7. What school do you go to?

Thomas Middle School	South Middle School
○	○

Q8. What grade are you in?

6th	7th	8th
○	○	○

Q9. How do you usually get to school?

- ○ I walk to school on most days
- ○ I ride my bike to school on most days
- ○ Someone drives me to school on most days
- ○ I ride the bus to school on most days

Part 2. **This next set of questions is about your eating for THIS PAST WEEK. There are two questions for each meal. You will write in the number of days for each item--the total for each question must add up to 7.**

Q10. Think about this PAST WEEK (including the weekend) and tell us the number of times you ate the types of foods listed below for BREAKFAST. Since there are seven days in the week, **the total must add up to 7.**

I did not eat breakfast	0	days this past week
I ate quick foods for breakfast, like pop tarts or bagels	0	days this past week
I ate a cold breakfast like cereal	0	days this past week
I ate fast food for breakfast, like pizza	0	days this past week
I ate a hot breakfast, like eggs, oatmeal, or waffles	0	days this past week
I ate something else for breakfast	0	days this past week
Total	0	days this past week

Q11. Okay, we're still asking about BREAKFAST... tell us the number of times you ate at each type of place listed below. Since there are seven days in the week, **the total must add up to 7.**

I did not eat breakfast	0	days this past week
I ate breakfast at home	0	days this past week
I ate breakfast at school	0	days this past week
I ate breakfast elsewhere	0	days this past week
I ate breakfast someplace not listed here	0	days this past week
Total	0	days this past week

Q12. Now about LUNCH...Think about this **PAST WEEK AT SCHOOL** and tell us the number of times you did each thing mentioned below. Since there are five days in a school week, **the total must add up to 5.**

I did not eat lunch	0	days this past week
I ate a lunch at school that I brought from home	0	days this past week
I ate a lunch at school that I bought at school	0	days this past week
I ate a free lunch that I got at school	0	days this past week
I ate lunch elsewhere	0	days this past week
Total	0	days this past week

Q13. Still thinking about LUNCH...during this **PAST WEEKEND** (Saturday and Sunday) tell us the number of times you ate lunch at each type of place listed below. Since there are only two days in a weekend, **the total must add up to 2.**

I did not eat lunch	0	days this past week
I ate lunch at home	0	days this past week
I ate lunch elsewhere	0	days this past week
Total	0	days this past week

Q14. And... two questions about DINNER... during this **PAST WEEK** at dinner or supper time tell us the number of times you did each thing listed below. Since there are seven days in a week, **the total must add up to 7.**

I did not eat dinner/supper	0	days this past week
I ate snacks for dinner/supper	0	days this past week
I ate fast food like chicken nuggets, pizza, or burgers for dinner/supper	0	days this past week
I ate a full dinner/supper (such as meat, vegetables, bread, salad, and so on)	0	days this past week
Total	0	days this past week

Q15. For the second question about DINNER... think about this **PAST WEEK** and tell us the number of times you ate at each place listed below. Since there are seven days in the week, **the total must add up to 7.**

I did not eat dinner/supper	0	days this past week
I ate dinner/supper at home	0	days this past week
I ate dinner/supper elsewhere	0	days this past week
Total	0	days this past week

Q16. Now we want to know about the kinds of FOODS you ate this past week. So, during this **PAST WEEK** (including the weekend) how many days did you eat the following foods? **Be sure to click one button for each item**...

Number of Days LAST Week that You Ate...

	Never	Once	Twice	Three times	Four times	Five times	Six times	Every day
Fresh vegetables	○	○	○	○	○	○	○	○
Fresh fruit	○	○	○	○	○	○	○	○
Fast food (chicken nuggets, pizza, hot dogs, burgers, etc)	○	○	○	○	○	○	○	○

Q17. Now think about **JUST YESTERDAY**-- see the list below and tell us how many of each kind of drink you had. Be sure to click one box for **EACH TYPE** of drink (click NONE if you didn't have that drink yesterday).

Number of These Kinds of Drinks You had YESTERDAY

	None, I didn't drink this yesterday	I had 1 or 2 (cans, glasses, bottles) of this drink	I had 3 or 4 (cans, glasses, bottles) of this drink	I had more than 4 (cans, glasses, bottles) of this drink
Soft drinks	○	○	○	○
Diet soft drinks	○	○	○	○
Energy drinks (Gatorade, Powerade)	○	○	○	○
Bottled or glass of water	○	○	○	○
Sugary drinks (lemonade, chocolate mile, Koolaid)	○	○	○	○
White milk	○	○	○	○
100% fruit juices (orange juice)	○	○	○	○
Other drinks like iced tea, hot chocolate, soy milk, etc)	○	○	○	○

Participation

Part 3. **Next, we want to know about your involvement in out-of-school activities...**

Be sure to read the instructions--sometimes you can check several options and sometimes you check only one.

Q18. Think about when you are **NOT in school** -- check the boxes for ALL the following kinds of activities you participate in. **Check all the activities that apply to you.**

- [ ] Hang out at a park, recreation center, youth center, church center, or similar place
- [ ] Organized physical activities like sports, gymnastics, dance, swimming, weight lifting...
- [ ] Outdoor activities like playing in a park, skateboarding, walking, running, hiking, biking, climbing, hunting, fishing, and so on
- [ ] Youth group activities like Girl or Boy Scouts, church youth groups, Boys/Girls Clubs, 4H activities, and so on
- [ ] Any others not listed? Please write the activity here...

Q19. How do you **USUALLY** get to the activities you checked in the last question?

- ○ I usually walk
- ○ I usually ride my bike
- ○ My parents or other adults usually drive me
- ○ I usually take the city bus (public transportation)
- ○ Some other way

Q20. Think about the way you usually get to your out-of-school activities (walk, bike, car, bus). Now we'd like to know how safe you feel on your way to and from your activity sites. For example, how worried are you about getting hurt by others or traffic on your way to or from the park where you play basketball?

- ○ Not at all safe (I always worry that I might get hurt going to or from my activity sites)
- ○ Somewhat safe (I worry about what's going on, but I mostly feel safe)
- ○ Very safe (I never worry about something happening to me on my way to my activities)

Q21. Think about **THIS PAST WEEK when you were NOT in school (after school, weekends)**... In the first column, tell us how many **HOURS** you participated in the activity AND in the second column tell us **HOW MANY FRIENDS** participated with you in that activity. The activity categories are the same as in the previous question.

	HOURS I participated when not in school						Number of friends participated with me				
	None	1	2	3	4	5+	None	1	2	3	4 or more
Hang out at a park or center	○	○	○	○	○	○	○	○	○	○	○
Organized physical activities	○	○	○	○	○	○	○	○	○	○	○
Outdoor activities	○	○	○	○	○	○	○	○	○	○	○
Youth group activities	○	○	○	○	○	○	○	○	○	○	○
Hobbies and other activities	○	○	○	○	○	○	○	○	○	○	○
Music and art activities	○	○	○	○	○	○	○	○	○	○	○
Any others not listed? Please write the activity here...	○	○	○	○	○	○	○	○	○	○	○

Q22. Think about the activities that you **DO participate** in when you are not in school. Then, for each reason listed tell us how important that reason is to you -- this question will help us understand why you decide to participate in your activities**.** The scale goes from this is a **NOT** a reason to why you choose to participate in out-of-school activities to this is a **VERY important** reason that explains why you participate.

Reasons You DO PARTICIPATE in Out-of-school Activities

	NOT a reason	Weak reason	Between not a reason and a very important reason	Somewhat of a reason	VERY important reason
To be with my friends	○	○	○	○	○
To learn new skills	○	○	○	○	○
Because it's fun	○	○	○	○	○
To reduce my stress	○	○	○	○	○
My parents/guardians /teachers or other adults want me to participate	○	○	○	○	○

Q23. Now think about the **reasons you DO NOT participate** (the opposite of the question you just answered) in activities when you are not in school. Then, for each reason tell us how important that reason is to you when you decide to not participate in activities**.** The scale goes from **NOT** a reason for why you don't participate in out-of-school activities to this is a **VERY important reason** that explains why you don't participate.

Reasons You DO NOT Participate in Non-school Activities

	NOT a reason	Weak reason	Between not a reason and a very important reason	Somewhat of a reason	VERY important reason
I'm not allowed to participate (no money, no way to get to the activity, too dangerous)	○	○	○	○	○
I'm too busy (have chores, have to work or babysit, take private lessons)	○	○	○	○	○
I have no interest in participating (I don't like the activities, I'd rather stay home after school)	○	○	○	○	○
Social reasons (friends don't participate, I'd rather be alone, I don't feel comfortable with others)	○	○	○	○	○
No skills or have health issues (no skills to participate, health conditions limit me, my fitness level is too low)	○	○	○	○	○

Q24. Think about the following kinds of activities and tell us how many HOURS you participate in each... **The first column** is the time you spend in that activity **during a typical school week**. The **second column** asks about amount of time you typically do that activity **during the WEEKEND**. Please be sure to click a circle in each column for each activity.

	Week**DAY** Total Hours						Week**END** Total Hours					
	None	1	2	3	4	5+	None	1	2	3	4	5+
Academic kinds of activities like reading, practicing music, or homework	○	○	○	○	○	○	○	○	○	○	○	○
Watching TV	○	○	○	○	○	○	○	○	○	○	○	○
Playing video games	○	○	○	○	○	○	○	○	○	○	○	○
Engaged in social media, texting, or on the phone	○	○	○	○	○	○	○	○	○	○	○	○

Q25. Now we would like to **choose ONE of the activity categories you participate in** when you are **NOT in school**. The next question will be about the reasons you participate in that type of activity.

- ○ Organized physical activities like sports, gymnastics, dance, swimming, weight lifting...
- ○ Outdoor activities like playing in a park, skateboarding, walking, running, hiking, biking, climbing, hunting, fishing, and so on
- ○ Youth group activities like Girl or Boy Scouts, church youth groups, Boys/Girls Clubs, 4H activities, and so on
- ○ Any others not listed above? Please write in the activity here...

Q26. So, think about the activity category you selected in the previous question... Now, for each of the following statements, choose one number that BEST describes the reason you participate in that activity category. Remember to answer for each statement.

Reasons You Participate in the Selected Activity (above)

	Not a reason	A weak reason	Between no reason and very important reason	Somewhat important reason	Very important reason
I can meet new people	○	○	○	○	○
The activities are exciting	○	○	○	○	○
I am happiest when doing the activity	○	○	○	○	○
The activity is a good break from school and other responsibilities	○	○	○	○	○
I can hang out with my friends	○	○	○	○	○
I want to improve my skills	○	○	○	○	○
My parents/guardian really encouraged me to participate	○	○	○	○	○
The activities are fun	○	○	○	○	○
My friends want me to participate; they pressure me	○	○	○	○	○
I want to learn something new	○	○	○	○	○
This activity helps reduce my stress	○	○	○	○	○
The activity helps to relax me	○	○	○	○	○
I can develop new skills	○	○	○	○	○
I like being with other people who share my interests	○	○	○	○	○

Q27. Think of the opportunities in your town to participate in organized sport leagues, camps, lessons, and so on. We would like to know at what ages you participated in those formal sports programs. So, for each sport listed below, check the boxes that indicate how old you were when you participated. If you participated when you were 6 years old, 7 years old, and 8 years old, then check both of those age boxes (yrs) for that activity.

Mark ALL the Ages When you Participated in the Sports Listed

	Never	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs
Baseball/Softball	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Basketball	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Cheerleading	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fitness classes	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Never	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs
Flag football	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Football	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Golf	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hockey	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Lacrosse	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Q28. Think of the opportunities in your town to participate in organized sport leagues, camps, lessons, and so on. We would like to know at what ages you participated in those formal sports programs. So, for each sport listed below, check the boxes that indicate how old you were when you participated. If you participated when you were 6 years old, 7 years old, and 8 years old, then check both of those age boxes (yrs) for that activity.

Mark ALL the Ages When you Participated in the Sports Listed

	Never	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs
Martial arts	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soccer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Swimming	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Tennis	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Never	3 yrs	4 yrs	5 yrs	6 yrs	7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs
Track/Cross Country	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volleyball	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wrestling	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Q29. What would you like to do outside of school, but the opportunity does not exist? (for example, you would like to hang out at a youth center, or go swimming but your town doesn't have a center or pool)--Write in what you would like to see in your community in the box below.

Parents

Part 4. **Lastly, we want to know a little bit about your parents or guardians...**

This last section is about your PARENTS/GUARDIANS. So, the following questions ask about what your parents or guardians do -- answer the best you can even if you do not know for sure.

Q30. Now we want you to think **about your PARENTS or guardians.**.. for each of the following items tell us how much you agree or disagree. For each question "They" means your parents or guardians.

Things Your Parents/Guardians Do...

	Don't know	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
They set limits on the amount of time I can be on the computer, video games, and/or watch TV	○	○	○	○	○	○
They encourage me to participate in physical activities when I am not in school	○	○	○	○	○	○
They pay attention to or keep track of what I eat and drink	○	○	○	○	○	○
They tend to drink mostly water with meals (rather than soft drinks or wine, etc)	○	○	○	○	○	○
They like to do physical activities with me when I am not in school	○	○	○	○	○	○
They ask me about what activities I have done and how much time I spent doing them	○	○	○	○	○	○
They monitor and keep track of my physical activities when I am out of school	○	○	○	○	○	○
They have a nutrition plan that we all follow	○	○	○	○	○	○
They prepare homemade meals rather than pre-packaged or frozen meals	○	○	○	○	○	○
They are willing to pay for me to be in physical activities	○	○	○	○	○	○
They encourage me to play outside and be active	○	○	○	○	○	○
They control how many snack and 'junk' foods we have in the house	○	○	○	○	○	○
They exercise more 3 or more times a week on a regular basis	○	○	○	○	○	○

Exit

End.

Thank you for helping us with this survey! When you click SUBMIT your answers will go to a computer in North Carolina and no one will know who you are or how you answered.

Have a great school year!