

# Diabetes and Nutrition

## Diabetes: The National Challenge\*

Diabetes poses a significant public health challenge for the United States. Some 800,000 new cases are diagnosed each year. There are two major types. Type 1, mainly occurs in children and adolescents 18 years and younger. In Type 1 the body does not produce insulin and thus insulin administration is required to sustain life. Type 2, usually occurs in adults over 30 years of age. In Type 2, the body's tissues become unable to use its own limited amount of insulin effectively. Treatment for type 2 diabetes usually consists of a combination of physical activity, proper nutrition, oral tablets, and insulin. Previously, Type 1 diabetes has been referred

to as juvenile or insulin-dependent diabetes and Type 2 diabetes as adult-onset or non-insulin dependent diabetes.

The occurrence of diabetes, especially type 2 diabetes is increasing in the United States. The number of persons with diabetes has increased steadily over the past decade. Presently, 10.5 million persons have been diagnosed with diabetes, while 5.5 million persons are estimated to have the disease but are undiagnosed. This increase in the number of cases of diabetes has occurred particularly within certain racial and ethnic groups. Over the past decade, diabetes has remained the seventh leading cause of death in the United States.

### Diabetes Related Diseases

Women usually are at less risk of cardiovascular disease than men, but the presence of diabetes in women is associated with a three- to four-fold increase in coronary heart disease compared to nondiabetic females. In the United States, diabetes is the leading cause of nontraumatic amputations (approximately 57,000 per year); blindness among working-aged adults (approximately 20,000 per year); and end-stage renal disease (ESRD) (approximately 28,000 per year). These and other health problems associated with diabetes contribute to an impaired quality of life and substantial disability among people with diabetes.

### Cost of Diabetes

Diabetes is a costly disease; estimates of the total attributable costs of

## Nutrition and Physical Fitness: The National Challenge\*

### Nutrition

Nutrition is essential for growth and development, health, and well-being. Behaviors to promote health should start early in life with breastfeeding and continue through life with the development of healthful eating habits. Nutritional, or dietary, factors contribute substantially to the burden of preventable illnesses and premature deaths in the United States. Indeed, dietary factors are associated with 4 of the 10 leading causes of death: coronary heart disease (CHD), some types of cancer, stroke, and type 2 diabetes. These health conditions are estimated to cost society over \$200 billion each year in medical expenses and lost productivity.

In general, however, excesses and imbalances of some food components in the diet have replaced once commonplace nutrient deficiencies. Unfortunately, there has been an alarming increase in the number of overweight and obese persons. Overweight results when a person eats more calories from food (energy) than he or she expends. This balance between energy intake and output is influenced by metabolic and genetic factors as well as behaviors affecting dietary intake and physical activity. Environmental, cultural, and socio-economic components also play a role. When a body mass index (BMI) cut-point of 25 is used, nearly 55 percent of the U.S. adult population was

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\*From Healthy People 2010, U.S. Department of Health and Human Services.

## Jacksonville Diabetes and Nutrition Report Card

### 2010 Diabetes Objectives

Obj #	Objective	U.S.	FL (1999)*	Duval (1999)*	2010 Target
5-1	Increase the proportion of persons with diabetes that have received formal diabetes education.	45	45.81** (2000)	30.41** (2000)	60
5-3	Reduce the overall rate of diabetes that is clinically diagnosed. (Per 1,000)	40	681** (2000)	551** (2000)	25
5-5	Reduce the diabetes death rate. (Per 100,000) Diabetes as underlying or contributing cause.	75.0	53.2 <sup>2</sup>	72.8 <sup>2</sup>	45.0
5-5a ***	Reduce the diabetes death rate. (Per 100,000) Diabetes as the underlying cause only.	Not Appli- cable	22.3 <sup>2</sup>	37.0 <sup>2</sup>	Not Applicable
5-6	Reduce diabetes-related deaths among persons with diabetes. (Per 1,000)	8.8	10.0 <sup>2</sup> Not AA	10.1 <sup>2</sup> Not AA	7.8
5-7	Reduce deaths from cardiovascular disease in persons with diabetes. (Per 100,000)	343	363.3 <sup>2</sup> Not AA	330.3 <sup>2</sup> Not AA	309
5-10	Reduce the lower extremity amputations in persons with diabetes. (Per 1,000 persons with diabetes)	4.1	4.9 <sup>3</sup> Not AA	5.9 <sup>3</sup> Not AA	1.8

### 2010 Nutrition Objectives

Obj #	Objective	U.S.	FL (2000)*	Duval (2000)*	2010 Target
19-1	Increase the proportion of adults (20 years and older) who are at a healthy weight.	42%	56.2 <sup>1</sup> unwt.	60.5 <sup>1</sup> unwt.	60%
19-2	Reduce the proportion of adults (20 years and older) who are obese.	23%	18.1% <sup>1</sup>	Not Avail.	15%
19-3	Reduce the proportion of children and adolescents who are overweight or obese.	11%	9% <sup>4</sup>	Not Avail.	5%
19-b ***	Reduce the proportion of current WIC children (>= 2 years old) that have a BMI >= 85 percentile.	Not Appli- cable	29.7 <sup>5</sup>	27.3 <sup>5</sup>	Not Applicable
19-5	Increase the proportion of persons aged 2 years and older who consume at least two daily servings of fruit.	28%	63.11**** unwt.	61.81** unwt.	75%
19-6	Increase the proportion of persons aged 2 years and older who consume at least three daily servings of vegetables, with at least one-third being dark green or orange vegetables.	3%	63.11**** unwt.	61.81** unwt.	50%

<sup>1</sup> Source: Behavior Risk Factor Surveillance System

<sup>2</sup> Source: Florida Department of Health, Office of Vital Statistics

<sup>3</sup> Source: Agency for Health Care Administration

<sup>4</sup> Source: Youth Risk Behavior Surveillance Survey

<sup>5</sup> Source: Duval County Health Department, Community Nutrition Division, WIC

<sup>6</sup> Source: Duval County Health Department, Fitness Challenge Survey

\*Unless Otherwise Noted

\*\* Based on small numbers.

\*\*\* Not a Healthy People 2010 Objective

\*\*\*\* Based on Adults 18 and over.

Unwt. Un-weighted data

## Jacksonville Diabetes and Nutrition Report Card (cont.)

### 2010 Physical Fitness Objectives

Obj #	Objective	U.S.	FL (2000)	Duval (2000)	2010 Target
22-1	Reduce the proportion of adults (18 years and older) who engage in no leisure-time physical activity.	40.0%	28.5% <sup>1</sup>	27.6% <sup>1</sup>	20%
22-2	Increase the proportion of adults (18 years and older) who engage regularly, preferably daily, in moderate physical activity for at least 30 minutes per day.	15.0%	26.8% <sup>1</sup>	33.6% <sup>1</sup>	30%
OR					
22-3	Increase the proportion of adults (18 years and older) who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion.	23.0%	26.8% <sup>1</sup>	33.6% <sup>1</sup>	30%
22-6	Increase the proportion of adolescents (students in grades 9-12) who engage in moderate physical activity for at least 30 minutes on 5 or more of the previous 7 days.	17.0%	22% <sup>4</sup> (2001)	32.9- 35.4% <sup>6</sup> (2001)	35%

### Data Report Card Overview

Reliable data related to diabetes, nutrition and physical activity for the U.S. and Florida is widely accessible through the internet and many government agencies. However local counties do not have reliable data because the samples taken from the county are too small. Thus increased surveillance at the local level is needed.

For this report, the majority of data was provided from the Florida Department of Health's Epidemiology Division. This division is responsible for implementing both the Behavior Risk Factor Surveillance System Survey (BRFSS) and the Youth Risk Behavior Surveillance System Survey (YRBSS) throughout the state of Florida. The state Office of Vital Statistics and the Agency for Health Care Administration provided data related to mortality and morbidity.

When comparing the national base-line data with Duval County, Duval

lagged behind the nation. For objective 5-6 (diabetes related deaths) the U.S. had a rate of 8.8 deaths per 1,000 while Duval County had a rate of 10.1 per 1,000. When looking at diabetes education (objective 5-1) only 30.4 % of persons with diabetes receive education in Duval County as opposed to 45% for the U.S. Another objective, 5-10 (lower extremity amputation), the U.S. had 4.1 per 1,000 person with diabetes while Duval County had 5.9 per 1,000. Duval County had almost 2 more amputation per 1,000 than the nation.

Although Duval County lags behind the nation for many indicators of diabetes, indicators for nutrition and physical activities are higher in Duval than the nation. For example, objective 19-1 (healthy weight), in 2000 the proportion of adults (20 years and older) in Duval County who were at a healthy weight was 60.5 percent while the U.S. was at 42 percent. In this case, Duval County

has surpassed the Healthy People 2010 goal of 60 percent. For objective 22-1 (no leisure-time physical activity), Duval County also exceeds the nation. The nation proportion was at 40 percent while Duval County was 12.4 percentage points lower with 27.6 percent. In this instance, Duval County has a better percentage than the nation but is still short of the Healthy People 2010 target of 20 percent.

Duval County still has a long way to go to reach all the Healthy People 2010 objectives for Diabetes, Nutrition and Physical Fitness. In particular diabetes-related deaths among persons with diabetes and the lower extremity amputations in persons with diabetes are relatively higher. These objectives will be addressed by state and local agencies including the Duval County Health Department, the Healthy Jacksonville Coalition and other partners and collaborators.

## Diabetes: Health Disparities at the National, State and Local Level\*

Gaps exist among racial and ethnic groups in the rate of diabetes and its associated complications in the United States. Certain racial and ethnic communities, including African Americans, Hispanics, American Indians, and certain Pacific Islander and Asian American populations as well as economically disadvantaged or older people, suffer disproportionately compared to white populations. For example, the relative number of persons with diabetes in African American, Hispanic, and American Indian communities is one to five times greater than in white communities. Deaths from diabetes are 2 times higher in the African American population than they are in the white population, and diabetes-associated renal failure is 2.5 times higher in the African American population than it is in the Hispanic population.

When comparing diabetes death rates at the state level, there is a huge disparity between white and non-white. There are more than twice as many deaths due to diabetes in non-whites compared to whites (108.24 vs 48.10 per 100,000). At the county level there is almost as much of a disparity. Whites have a rate of 61.81 while non-whites have a rate of 107.21 (see figure 1).

These huge disparities need immediate attention. If the community can focus on four potential reasons for the diabetes burden, overall health of the community will improve. These four focus areas are:

**Reducing the number of cases of diabetes.** If diabetes is more common, then more amputations, death, and other complications from diabetes would be expected.

**Reducing the seriousness of diabetes.** By minimizing other health conditions (e.g. high blood pressure, hyperglycemia) in persons with diabetes, the seriousness and complications associated with diabetes would be reduced.

**Improving access to proper diabetes prevention and control programs.** If proven diabetes services, such as self-

management training programs or eye-retina examinations, are not a part of routine diabetes care, then effective programs to reduce the burden of diabetes will not be accessed and used. Another prevention issue is access to a healthy environment. If one does not have access to healthy foods, then one does not have a choice in a healthy diet. Figure 2 shows the distribution of major supermarkets by health zone for Duval County. In Zone 1 (a predominantly non-white, low socioeconomic

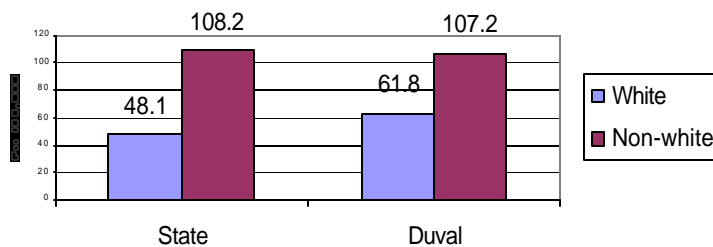
area), we see almost half the access as other more affluent areas.

**Improving quality of care.** If diabetes management services are available, but the quality of that service is inadequate, prevention programs would not be effective in reducing the burden of diabetes.

If these four areas are addressed, then not only will the diabetes burden decrease but so will the disparities.

\*From Healthy People 2010, U.S. Department of Health and Human Services.

**Figure 1** Diabetes Mortality Rates<sup>1</sup>, Florida Vs. Duval County, 1999

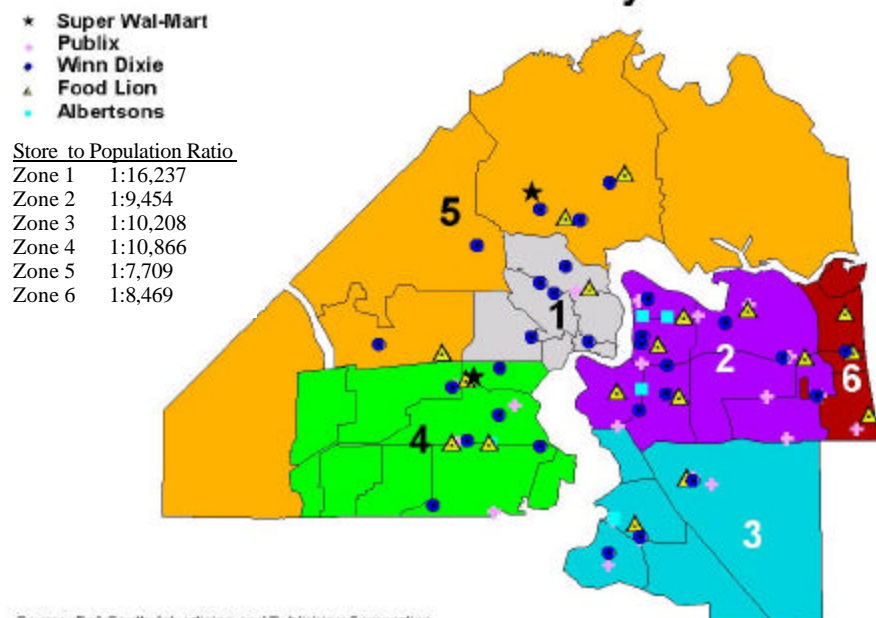


<sup>1</sup> includes diabetes as the underlying and/or contributing factor of mortality.

Source: Florida Department of Health, Office of Vital Statistics

Prepared by: Center for Health Statistics, Duval County Health Department, November 2002

**Figure 2** Brand Name Supermarket Chains, Duval County



Source: Belf South Advertising and Publishing Corporation  
Prepared by: Center for Health Statistics, Duval County Health Department



# The Obesity Epidemic: How Important is Nutrition & Physical Activity?

By Heather Huffman, Obesity Prevention Program Manager, MS, RD, LD/N

During the past several decades, obesity has grown to epidemic proportions. According to the Center for Disease Control (CDC), obesity trends continued to increase through the 1990's for Americans of all ages. If our current trend continues, obesity will surpass tobacco use as the #1 preventable cause of premature death by 2020. Obesity occurs when calories consumed do not equal calories expended. Simply put, too much in, not enough going out. This is occurring in our society due to a number of factors, but mainly because of sedentary lifestyles and poor nutrition choices. Obesity is measured using a wide variety of methods, but the most acceptable way to assess a person's risk for obesity is by calculating their Body Mass Index (BMI). BMI is calculated based on height and weight and correlates well with other chronic conditions such as heart disease and diabetes. BMI is not a perfect tool, but an initial evaluation tool in assessing body fat and has been the most common method of tracking weight problems and obesity (*CDC website*).

Nutrition and physical activity play a vital role in the prevention of obesity and obesity related diseases. Obesity related diseases include heart disease, diabetes, osteoarthritis, asthma, gall bladder disease, and some cancers. Individuals that fall into the overweight or obese categories, have a much greater likelihood of initial diagnosis or developing complications from these chronic diseases. Currently, Duval County has 60.5% of adults, 20 years or older, who are at a healthy weight. On the other hand, only 61.8% of persons aged 2 years and older, consume at least two daily servings of fruit. Likewise, only 32.9% of adolescents (students in grades 9-12) engage in moderate

physical activity for at least 30 minutes 5 or more days per week.

Regular physical activity is an important part of maintaining a healthy lifestyle. No matter what type of physical activity occurs, all are beneficial to overall health. Studies show that even the most inactive people can gain significant health benefits by engaging in daily physical activity. Research repeatedly shows that regular physical activity, combined with healthy eating habits, is the best method for the prevention of obesity and chronic diseases (*Weight Control Information Network*).

Within the past two decades, the prevalence of childhood obesity has increased at an alarming rate. Obesity is now the most prevalent nutritional disease of children and adolescents in the United States (*Bill Dietz, CDC*). Childhood obesity increased in the United States 100% between 1980 and 1994. According to the only local data available, 46.3% of child in Duval County full service schools are overweight or obese (See figure 2 below).

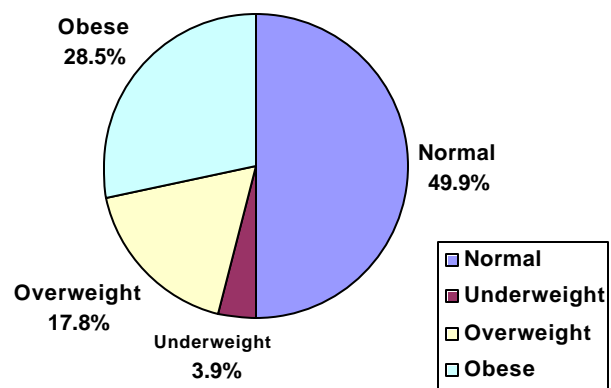
This is a much higher proportion than the state level at 9% and the national level at 11%.

Type 2 diabetes in children was virtually unheard of a decade ago. Type 2 diabetes used to be referred to as adult onset diabetes. Now, as many as 300,000 children have it, and about 20% of new cases of childhood diabetes are Type 2. About 85% of Type 2 cases in children are linked to obesity (*The American Diabetes Assoc.*).

The prevention of obesity and obesity related diseases is an important initiative of the Duval County Health Department (DCHD). Obesity is a preventable disease. Prevention includes lifestyle and behavior modification including nutrition education, healthier food choices, and regular physical activity. DCHD currently has realized the importance of obesity prevention and has created the Obesity Prevention Program. For more information on obesity programs and initiatives, call Community Nutrition Services Division 630-3337.

## BMI RESULTS FULL SERVICE SCHOOLS IN DUVAL COUNTY

Figure 2



n = 569

Source: Department of Health, Office of Planning, Evaluation and Data Analysis  
Prepared by: Center for Health Statistics, Duval County Health Department

## Prevention and Treatment of Diabetes Related Diseases

By Irmatine Bealyer, Community Cardiovascular Health Program Manager, MHA, RD, LD/N

Diabetes is a chronic disease that claimed the lives of 231 people in Duval County for a rate of 37.0 per 100,000 people in 1999, while Florida had 4,414 deaths for rate of 22.3 per 100,000. Type 2 diabetes is usually preventable by making certain lifestyle changes. Lifestyle changes such as exercising, reducing the amount of total fats in their meal plan, losing weight, maintaining a normal weight range and monitoring and regulating blood pressure can possibly prevent the development of diseases.

The overall proportion of diabetes is 5.5 per 100,000 in Duval County and 6.8 per 100,000 for the State of Florida in 1999. This is indicative of a possibly slow rate of new cases of diabetes in Duval County versus the state's rate. However, diabetes is still a major health and economic problem in Duval County. Diabetes related deaths are

10.1 per 100,000 in Duval county and Duval lags behind the targeted Healthy People 2010 objective of 7.8 per 100,000.

Current research indicates that most diabetics will develop some form of cardiovascular disease. In Duval County there are 330.3 deaths per 100,000 and the State of Florida rate is 363.3 with a targeted goal of 309 per 100,000. Cardiovascular disease is currently being considered as another disease state in diabetes. The public should be informed on regulating blood pressures to 120/80 or less, triglycerides of 150 or less, cholesterols at less than 200, HDL of 45 or higher and LDL of 100 or less, glucose of less than 110 and hemoglobin A1C of 7% or less, and Body Mass Index of less than 25 or within normal weight range per doctor's recommendation. If tests for these conditions are not automatically completed during an office visit or annual examination, the client should request these tests.

Diabetes is a progressively debilitating disease that when left undertreated will lead to eye diseases and blindness, impotence, kidney failure (Nephropathy), nerve damage (Neuropathy), skin rashes, dental problems, heart diseases and heart failure, and poor circulation which may lead to infections and amputations. The Healthy People 2010 objective is to reduce lower extremity amputations to 1.8 per 1,000 person with diabetes. Duval County's rate is at much higher rate, 5.9 per 1,000.

Diabetes is a chronic disease for which self care is crucial for disease management. The impact of diabetes on a diabetic's lifestyle can be dramatic, and self care recommendations often require substantial time and effort from the diabetic, but this will be well spent and well invested time to improve one's health.

## The Purpose and Need for Data: BRFSS & YRBSS

### **Behavior Risk Factor Surveillance System (BRFSS)**

Research increasingly shows that behavior causes most premature deaths and disabilities. The BRFSS survey's goal is to measure behavior that contributes to the highest risks for illness, disability, and death for the 18 years and older population. This survey is conducted by a random-digit dialed telephone. All fifty states and its territories conduct the survey annually. Since all states are obligated to follow survey protocol standards, the data is comparable at the national, state and local level. The survey contains 76 questions on demographics, physical activity, diet, tobacco use, alcohol consumption, weight control, immunization, health care access, hypertension, cholesterol, asthma, diabetes, cardiovascular disease, oral health, women's health, and colorectal cancer screening.

The purpose of this survey is critical for developing and evaluating community interventions and policies related to reducing disabilities and deaths.

### **Youth Risk Behavior Surveillance System (YRBSS)**

Today, the health of young people—and the adults they will become—is critically linked to health-related behaviors. A limited number of behaviors contribute markedly to today's major killers. These behaviors, often established during youth, include: tobacco use, unhealthy dietary behaviors, inadequate physical activity, alcohol and other drug use, sexual behaviors that may result in HIV infection, other sexually transmitted diseases, and unintended pregnancies and behaviors that may result in violence and unintentional injuries (e.g. motor vehicle crashes).

The YRBSS survey is conducted in both public and private schools, among students in grades 9–12 in 42 states, 16 large cities, and 4 territories. The average sample size

was 2,200. It is an anonymous, self-reporting survey.

Among both children and adults, the leading causes of death are closely linked to these behaviors. Among adults, chronic diseases—such as cardiovascular disease, cancer, and diabetes—are the nation's leading killers. Practicing healthy behaviors, such as eating low-fat, high-fruit-and-vegetable diets, getting regular physical activity, and refraining from tobacco use, would prevent many premature deaths. Because health-related behaviors are usually established in childhood, positive choices need to be promoted before damaging behaviors are initiated or become ingrained.

The purposes of the YRBSS is to determine the prevalence and age of initiation of health risk behaviors, assess whether health risk behaviors increase, decrease, or remain the same over time, examine the co-occurrence of health risk behaviors among young people, and provide comparable national, state, and local data.

## Diabetes: The National Challenge\* (cont.)

diabetes are around \$100 billion (\$43 billion direct; \$45 billion indirect).

These costs and problems caused by diabetes are especially disturbing given the efficacy and economic benefits of secondary prevention (controlling glucose, lipid, and blood pressure levels) and tertiary prevention (screening for early diabetes complications followed by appropriate treatment and prevention strategies). For many reasons, however, these cost beneficial prevention programs are not used routinely in daily clinical management of persons with diabetes. Diabetes is thus a “wasteful” disease. Strategies that would lessen the burden of this disease are not used regularly, resulting in unnecessary illness, disability, death, and expense.

## Nutrition and Physical Fitness: The National Challenge\* (cont.)

defined as overweight or obese in 1988–94, compared to 46 percent in 1976–80. In particular, the proportion of adults defined as obese by a BMI of 30 or greater has increased from 14.5 percent to 22.5 percent. A similar increase in overweight and obesity also has been observed in children above age 6 years in both genders and in all population groups.

Many diseases are associated with overweight and obesity. Persons who are overweight or obese are at increased risk for high blood pressure, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, respiratory problems, and some types of cancer. The health outcomes related to these diseases, however, often

can be improved through weight loss or no further weight gain. Total costs attributable to obesity alone amounted to an estimated \$99 billion in 1995.

### Physical Activity

The 1990s brought a historic new perspective to exercise, fitness, and physical activity by shifting the focus from intensive exercise to a broader range of health-enhancing physical activities. A Surgeon General’s report on physical activity and health concluded that moderate physical activity can reduce the risk of developing or dying from heart disease, diabetes, colon cancer, and high blood pressure. Physical activity also may protect against lower back pain and some forms of cancer (for example, breast cancer), but the evidence is not yet conclusive.

On average, physically active people outlive those who are inactive. Regular physical activity also helps to maintain the functional independence of older adults and enhances the quality of life for people of all ages.

For individuals who do not engage in any physical activity during their leisure time, taking the first step toward developing a pattern of regular physical activity is important. Unfortunately, few individuals engage in regular physical activity despite its documented benefits. Only about 23 percent of adults in the United States report regular, vigorous physical activity that involves large muscle groups in dynamic movement for 20 minutes or longer, 3 or more days per week. Only 15 percent of adults report physical activity for 5 or more days per week for 30 minutes or longer, and another 40 percent do not participate in any regular physical activity.

Both nutrition and physical activity are related to health. Therefore, it is critical to increase positive dietary behavior and physical activity to maintain a long and healthy life.

## Healthy Jacksonville Coalitions

By Antoinette Lloyd, M.D.,  
Director Healthy Jacksonville

Healthy Jacksonville has several Coalitions that are working to achieve Healthy People 2010 goals in the areas of nutrition, diabetes, and physical fitness. Namely, they are the **Adult Weight Management, Childhood Obesity, Diabetes, Healthy Start, Heart & Stroke, and Physical Fitness Coalitions**.

For years now, the Healthy Start Coalition has been addressing the nutritional needs of pregnant mothers and their children. The other Coalitions mentioned above are new, and includes service to men, women and children.

Healthy Jacksonville is a non-profit initiative, started in June 2002 to improve the health of our community by specifically developing strategies to achieve Healthy People 2010 goals in Duval County.

Representatives from Healthy Jacksonville and the Duval County School Board will be meeting in January 2003, to begin to look at ways that we can work together to improve the health of our children by specifically improving our children’s nutrition and physical activity.

Healthy Jacksonville Coalitions are developing innovative programs to educate and motivate people to make positive lifestyle changes, including improving nutrition and physical fitness in order to prevent or better manage diabetes and other chronic illnesses.

Help make Jacksonville Healthy!

We invite you to join this Healthy People 2010 COMMUNITY Initiative. Call us at (904) 665-2520, or visit our website at [www.HealthyJacksonville.com](http://www.HealthyJacksonville.com)

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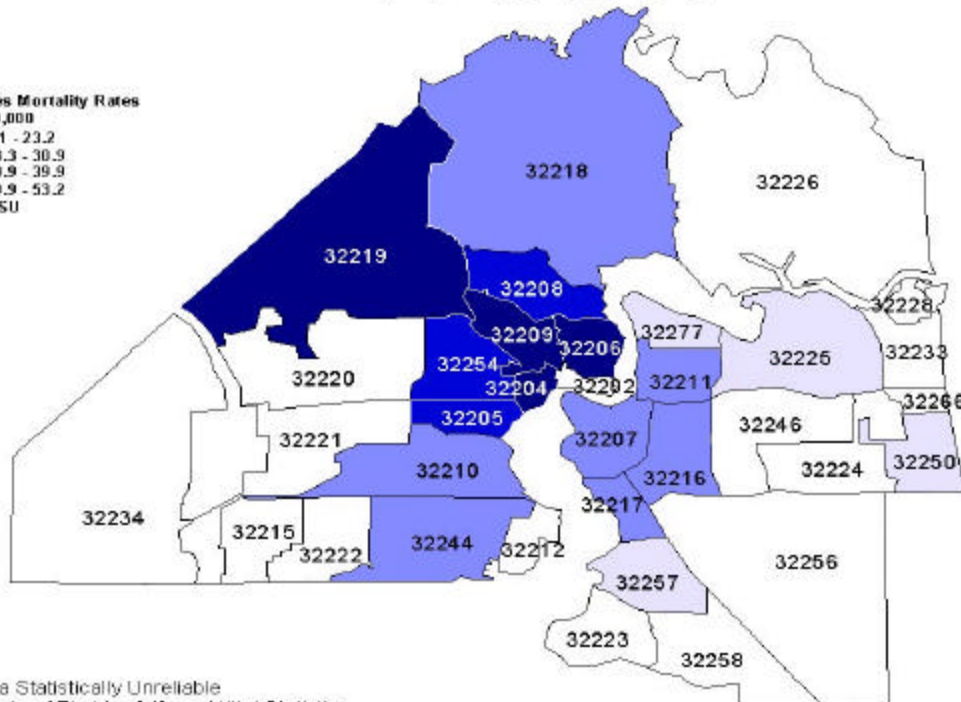
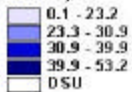
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## Diabetes Mortality Rates by Zip Codes, FY 1995-99

Diabetes Mortality Rates  
Per 100,000



\*DSU- Data Statistically Unreliable  
Source: State of Florida, Office of Vital Statistics  
Prepared by: Center for Health Statistics, Duval County Health Department, August 2002

