V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Human Health and Nutrition, Healthy Urban Life Style, and Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
<th>%1862 Extension</th>
<th>%1890 Extension</th>
<th>%1862 Research</th>
<th>%1890 Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
<td>30%</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>712</td>
<td>Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins</td>
<td>10%</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>723</td>
<td>Hazards to Human Health and Safety</td>
<td>0%</td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
<td>60%</td>
<td></td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>901</td>
<td>Program and Project Design, and Statistics</td>
<td>0%</td>
<td></td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>903</td>
<td>Communication, Education, and Information Delivery</td>
<td>0%</td>
<td></td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

Total 100% 100%

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

<table>
<thead>
<tr>
<th>Year: 2009</th>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1862</td>
<td>1890</td>
</tr>
<tr>
<td>Plan</td>
<td>10.4</td>
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</tr>
<tr>
<td>Actual</td>
<td>9.3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

<table>
<thead>
<tr>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith-Lever 3b &amp; 3c</td>
<td>Hatch</td>
</tr>
<tr>
<td>1890 Extension</td>
<td>1862 Matching</td>
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<tr>
<td>255175</td>
<td>254755</td>
</tr>
<tr>
<td>1890 Matching</td>
<td>1862 All Other</td>
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<tr>
<td>255175</td>
<td>368069</td>
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<tr>
<td>1890 All Other</td>
<td>1862 All Other</td>
</tr>
<tr>
<td>1631374</td>
<td>0</td>
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</table>

V(D). Planned Program (Activity)

1. Brief description of the Activity

**Improving Plant Food (Fruit, Vegetable and Whole Grain) Availability and Intake in Older Adults**

A survey instrument was designed, field tested, validated, and administered via an interview protocol to determine: to what extent adults eat quantities of fruits, vegetables, and whole grains as recommended by USDA guidelines; the level of nutritional knowledge of older adults and their particular knowledge related to health benefits of fruits, vegetables, and whole grains; how nutritional knowledge and diagnosis of illness in older adults affect food choices and eating behaviors; and how food choices and eating behaviors in older adults are affected by significant life changes other than diagnosis of illness. A literature review was completed that will inform the design of additional quantitative studies to determine how survey results can be used.
Interventions are being developed and validated with the Cooperative Extension Service that: improve identification of whole grain foods Increase awareness of the benefits of fruits, vegetables, and whole grains, and encourage eating these foods at levels recommended by USDA; provide acceptable recipes and cooking techniques; provide nutritional support to older adults who have experienced specific emotional events and/or crises.

An Integrated Approach to Prevention of Obesity in High Risk Families

Developed Easy-Survey software system. This system can be used for collecting research data. This system synchronizes local databases and online databases so that surveys or other electronic records of research participants entered on individual computers can be integrated into one centralized online database.

Developed MyHealth Journal software system. This software system is a journal software for personal health monitoring and control. The software can be used to record body weight, amount of exercise, water intake, medicine taken, etc. A user can also customize the software according to his/her own needs by adding or deleting items on the interface. A secure online database is implemented which will help users back up their information and access it from everywhere which provides better protection of the data. This software system can be integrated with the Easy-Survey Software System for collecting information for obesity and nutrition research.

Developing Fuzzy-set-theory-based Data Mining Methodologies for Diabetes Data Analysis

FM-test and CM-test were further developed and integrated with genetic algorithms to identify significant genes. It was confirmed that our approaches are not only effective but provide overall better performance. Manuscripts were submitted and accepted for publications. To evaluate the results of CM-GA and FM-GA, experiments were conducted on real-world datasets. Results were compared with CM-test, FM-test, t-test and t-GA. The list of genes produced by CM-GA and FM-GA have the highest overall classification accuracy among all these methods. For selected datasets, we also examined the biological relevance of the result genes. We selected top 10 differentially regulated genes from the result of applying our approach to lung cancer data and searched published literature to validate their relevance in tumor growth and development. Overall, the validation of top ranking molecules based on published literature suggest that CM-GA and FM-GA are efficient and superior methods for identifying significantly modulated genes in target gene expression datasets. We also developed new collaboration with Tuskegee University to investigate approaches to further develop X-test family. This effort has generated a manuscript that has been submitted to an international journal. It is currently under review.

The Nutrient Modulation of P53-ATF Signaling in Breast Cancer

The project made significant progress in the last year. In this phase of the study, the PI generated significant data on the mechanisms of action of gamma-Tocotrienol (a Vitamin E compound) on breast cancer cells. The experiments utilized high-throughput state of the art microarray methodology. Analysis of the microarray data revealed the modulation of various genes involved in cellular stress response and identified useful targets that can be pursued as molecular targets for developing new drugs and preventive agents for breast cancer. Direct relevance of this proposal is towards identifying new targets for developing drugs against breast cancer and exploring the possibility of developing Vitamin E compounds as chemopreventive and chemotherapeutic agents. The results were disseminated in the form of research seminar sponsored by UDC AES at UDC and poster presentations at national meetings. A manuscript is currently being developed to publish the findings in a refereed journal.

The Supplemental Nutrition Assistance Program-Education (SNAP-Ed)

The target population groups included community-based childcare centers, Head Start, and children between 8 to 10 years of age. The program impacted 193,000 contacts and 85 preschool programs throughout the District and 175 extension-trained volunteer teachers. It continues to build capacity by increasing outreach and expanding methods of delivery of the messages of Dietary Guidelines for Americans and MyPyramid.

In an effort to increase the consumption of fruits, vegetables, whole grains, low-fat milk and low-fat milk products, nutrition educators from the Center for Nutrition, Diet and Health (CNDH) developed and conducted nutrition education activities
for children, parents and teachers in Washington, DC, through the Supplemental Nutrition Assistance Program-Education (SNAP-Ed). With the increase in the number of classroom nutrition education activities provided by CNDH staff, along with an increase in repeat visits to SNAP-Ed classrooms, the number of DCPS teachers requesting nutrition education activities and food demonstrations has increased significantly. At the Brightwood Education Campus, Head Start teachers have requested meetings with CNDH nutrition educators this year, to plan nutrition education activities for FY 2011. The **18 colorful, vegetable fact sheets, produced and distributed by CNDH for SNAP-Ed participants**, have generated queries outside of the SNAP-Ed target population. CNDH has received numerous requests from diverse groups, including a housing collaborative, senior wellness centers, church groups, gardening programs, farmers markets and non-profits who work with underserved communities, for nutrition education assistance.

### The DC Food Handler Certification Program

The **Team Nutrition Education Program** provided training for 210 food service paraprofessionals to support overall healthy child care messages and strategies and improve food service delivery in DC child care facilities. The program collaborated with the Capital Area Food Bank and Mid-Atlantic Dairy Association to produce a 132-page, 10 lesson best practices manual (Team Nutrition Training guide) for training and reference. 100% of the participants passed the national food sanitation certification examination. 96% of the participants mastered all of the knowledge and skills in food handling techniques.

### The Farmers' Market Nutrition Education Program

The program **provided nutrition education at point-of-purchase for market goers**. Recipes and information on nutritional quality of foods sold at the markets were provided. Approximately, 1500 District residents received information about the health benefits and dietary requirements of fresh fruits and vegetables and are enabled to make healthier and more informed food choices. Also, these residents received information about food safety and food preparation including various options for tasty yet nutritious recipes.

### The DC Water Blind Taste Testing Project

**Water blind taste testing was conducted to a cross-sectional sample of individuals living and/or working in DC, 908 participants**, to determine consumers' preferences for the different types of drinking water, to determine factors related to their selection of drinking water, and to develop recommendations for the increased consumption of DC tap water. After participants completed the taste test of four different types, they completed a survey which involved ranking each cup of water in order of preference. Each participant was unaware of what type of water they were choosing.

2. Brief description of the target audience

The target audience for research includes: elderly citizens of the District of Columbia; researchers in bioinformatics study and diabetes study; breast cancer patients; and researchers in obesity study and data mining.

The target audience for extension projects include: children, youth, adults, public schools, universities, community service organizations, small businesses, daycare centers, food service workers, and farmer's markets.

### V(E). Planned Program (Outputs)

1. Standard output measures

<table>
<thead>
<tr>
<th></th>
<th>2009 Direct Contacts Adults</th>
<th>Indirect Contacts Adults</th>
<th>2009 Direct Contacts Youth</th>
<th>Indirect Contacts Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>1600</td>
<td>250</td>
<td>7400</td>
<td>0</td>
</tr>
<tr>
<td>Actual</td>
<td>5174</td>
<td>6000</td>
<td>8700</td>
<td>0</td>
</tr>
</tbody>
</table>

2. Number of Patent Applications Submitted (Standard Research Output)

**Patent Applications Submitted**

Year: 2009

Plan: 0

Actual: 0
Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

<table>
<thead>
<tr>
<th></th>
<th>Extension</th>
<th>Research</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
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<td></td>
</tr>
<tr>
<td>Actual</td>
<td>20</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Assessment of nutritional risk is measured by a validated survey and a seven day food diary, both of which collect quantitative data; and a cognitive interview protocol that collects qualitative data. Additionally, curriculum will be developed for various workshops, nutrition related activities, cooking demonstrations, train the trainer programs, health fairs, community participation, field trips and seminars. Fact sheets, newsletters and brochures will be developed and disseminated.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Output #2

Output Measure

- Number of subjects who are exposed to information about good nutrition in the process of their participation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

Output #3

Output Measure

- Development of new or improvement of existing tools for measuring the effectiveness of the interventions targeted to childhood overweight in low income families.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Output #4

Output Measure

- Identification of objective, physiological-based measures that correspond to target behaviors (bio-behavioral markers) for use later as measures of intervention progress and success or means for tailoring interventions in ways that will be most effective for specific groups and subgroups.

Not reporting on this Output for this Annual Report

Output #5

Output Measure

- The methodology Fuzzy-Inferenced Decisionmaking (FIND) for gene microarray data analysis will be developed and tested on both synthetic and real data.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Output #6

Output Measure

- Eight Workshops for teachers in the Ag in the Classroom Project
  Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Curriculum developed for various workshops, fact sheets for nutrition education for teachers.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>10</td>
<td>19</td>
</tr>
</tbody>
</table>

Output #8

Output Measure

- Train the Trainer Food Stamp Educational Workshops: 2 hours a week by teacher volunteers; FFNews; Creative Curriculum; Color Me Healthy; Tickle Your Appetite; 5 A Day; DCPS Nutrition Curriculums; and Development of Food Safety and Dietary Quality Lessons

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>12</td>
<td>25</td>
</tr>
</tbody>
</table>

Output #9

Output Measure

- IRB Committee; Development of Instruments; Training on Instruments; Recruitment of project participants; Selected interventions; Review of data Data analysis; Report development - 250 Overweight and Obese individuals 150 Non Overweight and Obese individuals from the same environment Parents of participants. Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Asthma education for District residents: how to improve the quality of indoor air; Newsletters; Fact Sheets, and home audits will be provided to Districts residents. Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Number of residents who are aware of the CES Asthma Project. Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Number of residents participating in CES Asthma Project activities in their homes. Not reporting on this Output for this Annual Report

Output #13

Output Measure

- Number of residents who are able to identify issues in their homes related to asthma as a result of the CES Asthma project. Not reporting on this Output for this Annual Report

Output #14

Output Measure

- Classroom instruction/workshops (20 clock hours) on Food Handler Certification Regulations to include DC
Output #15

Output Measure

- Drinking water blind taste testing of residents and workers to determine factors related to selection of drinking water and encourage drinking local tap water.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>300</td>
<td>300</td>
</tr>
</tbody>
</table>

Output #16

Output Measure

- Train food service professionals in child care settings to support healthy child care messages and strategies and improve food service delivery. Develop a user-friendly training manual for easy reference.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>{No Data Entered}</td>
<td>908</td>
</tr>
</tbody>
</table>

Output #17

Output Measure

- Nutrition education at point-of-purchase for market goers. Market goers learn information about foods purchased, preparation methods, recipes, and nutrition exercises designed to facilitate self-learning.

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>{No Data Entered}</td>
<td>1500</td>
</tr>
<tr>
<td>O. No.</td>
<td>OUTCOME NAME</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Number of participants who exercise and experience slow weight loss and better glycemic controls.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Advances in the study of obesity, particularly an understanding of various inputs and interactions of family and child, SES, nutrition, physiology and behavior, will result from this work, opening doors of opportunity for development of effective solutions to reverse trends in childhood obesity.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Identification of the genes to be associated with diabetes</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Contribute to the development of strategies to prevent and control of diabetes</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Development of methods that can be applied for prognosis of many other diseases</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Percentage of student participants who have increased knowledge as to where and how food is grown.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Percentage of students and teachers in grades Pre-K with increased agriculture literacy.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Number of teachers who have increased their awareness, knowledge, and understanding of agriculture, nutrition, and food gardening.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Percentage of participants with increased knowledge of the Food Guide Pyramid and Dietary Guidelines for Americans.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Percentage of participants with increased knowledge of nutrition of various fruits and vegetables</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Percentage of parent participants who make better food choices (fruits/vegetables).</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Percentage of decrease in the risk factors food borne illness.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Number of participants gaining awareness, knowledge and skills in Food Handling techniques.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Number of participants scoring a required minimum of 70% on post test and national examination.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Percentage of participants who improved eating habits.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Percentage of decrease in the incidences of obesity in the District of Columbia</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Number of participants gaining awareness, knowledge, and skills in nutrition and agriculture.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Number of residents who have applied knowledge to alleviate vermin in their homes.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Number of residents who have made changes, i.e. elimination of secondhand smoke, removal of mold and/or mildew, and/or sanitation measures, in their homes as a result of information received from participating in the CES Asthma Project.</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Number of residents and/or workers participating in the water taste testing survey.</td>
<td></td>
</tr>
</tbody>
</table>
**Outcome #1**

1. **Outcome Measures**

   Number of participants who exercise and experience slow weight loss and better glycemic controls.

   Not Reporting on this Outcome Measure

**Outcome #2**

1. **Outcome Measures**

   Advances in the study of obesity, particularly an understanding of various inputs and interactions of family and child, SES, nutrition, physiology and behavior, will result from this work, opening doors of opportunity for development of effective solutions to reverse trends in childhood obesity.

2. **Associated Institution Types**

   - 1862 Extension
   - 1862 Research

3a. **Outcome Type:**

   Change in Knowledge Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

   **Issue (Who cares and Why)**
   There is a national health concern as overweight and obesity have reached epidemic proportions in the United States. Overweight and obese children are likely to remain overweight and obese as adults and develop chronic diseases at younger ages. Stakeholders, individuals, the scientific community, educators, and health providers are concerned with combating these serious conditions that may lead to chronic diseases that can result in disability and/or death.

   **What has been done**
   Developed Easy-Survey software system that can be used for collecting research data. This system synchronizes local databases and online databases so that surveys or other electronic records of research participants entered on individual computers can be integrated into one centralized online database. Developed MyHealth Journal software system. This software system is a journal software for personal health monitoring and control.

   **Results**
   The MyHealth software can be used to record body weight, amount of exercise, water intake, medicine taken etc. A user can customize the MyHealth Journal software according to his/her own needs by adding or deleting items on the interface. A secure online database is implemented which will help users back up their information and access it from everywhere which provides better protection of the data. This software system can be integrated with the Easy-Survey software system for collecting information for obesity and nutrition research.

4. **Associated Knowledge Areas**
Outcome #3

1. Outcome Measures

Identification of the genes to be associated with diabetes

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Diabetes was the seventh leading cause of death listed on U.S. death certificates in 2006. Researchers are collaborating to develop innovative and advanced methods for the prediction of diabetes outcomes using gene expression data. Successful development of this research will greatly help the understanding of diabetes disease and the development of strategies to prevent and control diabetes, which in turn, will significantly reduce the burden of diabetes on healthcare systems.

**What has been done**
In this period, we have further developed our FM-test and CM-test and integrated with genetic algorithms to identify significant genes. We tested the FM-GA and CM-GA approaches on real world data and compared them with currently existing approaches.

**Results**
Two new approaches were developed to identify significant genes. The approaches were tested on real world data and compared with currently existing approaches. Approaches are evaluated by how accurate patients can be classified as diabetic or non-diabetic based on the expression values of the identified genes. For selected datasets, we also examined the biological relevance of the result genes. It is confirmed, by the above two approaches, that our approaches are not only effective but also provide overall better performance.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>901</td>
<td>Program and Project Design, and Statistics</td>
</tr>
</tbody>
</table>
Outcome #4

1. Outcome Measures

Contribute to the development of strategies to prevent and control of diabetes

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Development of methods that can be applied for prognosis of many other diseases

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Percentage of student participants who have increased knowledge as to where and how food is grown.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Percentage of students and teachers in grades Pre-K with increased agriculture literacy.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2009</td>
<td>90</td>
<td>80</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

The Department of Health and Income Maintenance Administration is tasked with ensuring that families receiving supplemental nutrition assistance such as food stamps are knowledgeable of healthy eating, food safety measures, and wise spending of food stamp dollars. Public schools and child care facilities under the Early Childhood Education Administration are interested in ensuring that preschool children and their parents are introduced early in the children's life cycle to healthy eating, food safety and physical activity to prevent and control obesity and other chronic diseases.

**What has been done**

The SNAP-Ed Program was implemented in 85 preschool sites to address dietary quality and food safety through education. Families were assisted to adopt healthier lifestyles in accordance with Dietary Guidelines for Americans and MyPyramid-Steps to a Healthier You. Classroom teachers (174) were trained to implement a 48-lesson program.
curriculum to improve each child's ability to choose healthier foods, safely handle food, properly prepare and store foods and increase physical activity for health. Messages were shared with parents.

**Results**
100% of the children were able to correctly identify food colors in the coloring contest in the Health Kidz Corner of the Bi-monthly newsletter. The children were able to identify at least one new fruit and vegetable by color which they were not able to do prior to the exercise. The identification of healthy food items is the first step in improving healthy eating. 100% of the children reported more fruits and vegetables are being used by the household. The children reported parents are purchasing the new fruits and vegetables introduced in the classrooms and are trying the new recipes. From the data received, at least one additional serving of fruit and vegetables are served and consumed. 80% of teachers enthusiastically agree that SNAP-Ed activities constitute an excellent intervention for preschool children and families.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #8

1. Outcome Measures

Number of teachers who have increased their awareness, knowledge, and understanding of agriculture, nutrition, and food gardening.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Percentage of participants with increased knowledge of the Food Guide Pyramid and Dietary Guidelines for Americans.

2. Associated Institution Types

● 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>50</td>
<td>80</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Health and school officials, city officials, obesity prevention and control advocates, service agencies and programs, teachers, food handlers, parents and children are all concerned with the messages on dietary quality and food safety contained in the Food guide Pyramid-Steps to a Healthier You and Dietary Guidelines for Americans. They are designed to improve the ability to select healthy foods, safely handle food, and properly prepare and store food.

**What has been done**
From its inception, the SNAP-Ed Program in the Center for Nutrition, Diet and Health has expanded from 40 to 85 participant agencies, 46 to 174 extension-trained volunteers, and 350 to 179,345 contacts. A video series on fitness and nutrition was developed. The program issued two bi-monthly newsletters for parents, teachers and...
children. The program published and distributed 18 vegetable fact booklets. A series of focus groups were conducted with parents and teachers.

**Results**

90% of parents who participated in the focus groups reported increased knowledge of the importance of good nutrition, i.e. increasing daily consumption of fruits and vegetables, choosing healthy snacks, and selecting either low fat or fat free milk. The focus of the program was on healthy eating, USDA nutritional guidelines, and the importance of increasing physical activity.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

**Outcome #10**

1. **Outcome Measures**

   Percentage of participants with increased knowledge of nutrition of various fruits and vegetables

2. **Associated Institution Types**

   - 1862 Extension

3a. **Outcome Type:**

   Change in Condition Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>50</td>
<td>85</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Messages related to dietary quality and food safety from the Food Guide Pyramid and Dietary Guidelines for Americans are essential to limited resource families. Health and School officials, DC Council members, child-serving agencies, classroom teachers, community residents, foodhandlers, parents, and families are all concerned with good nutrition and food safety to ensure healthy lifestyles for maximum physical and mental performance and prevention and/or control of illnesses associated with malnutrition.

**What has been done**

The SNAP-Ed Program-Education offered classroom nutrition and food safety education to over 3,000 preschool children and families, working with 174 teachers in 85 child care sites throughout the District of Columbia. Increasing consumption of fruits and vegetables was a major emphasis in the curriculum. A series of 18 fact booklets and a bi-monthly newsletter increased the level of social marketing to parents. Children participated in a coloring contest featuring vegetables.

**Results**

80% of the children increased their knowledge on the importance of fruits and vegetables in their diet, eating more fruits and vegetables, healthier snacks, and choosing reduced fat milk more often over less healthy beverages. The program taught the FNS/USDA core messages: more fruits and vegetables, whole grains, low or fat free milk, and increased physical activity. All measures have not been analyzed. However, we are putting measures in place to capture similar data and will include the findings in the 2011 Accomplishment Report.

4. Associated Knowledge Areas
Outcome #11

1. Outcome Measures

   Percentage of parent participants who make better food choices (fruits/vegetables).

   Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

   Percentage of decrease in the risk factors food borne illness.

   Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

   Number of participants gaining awareness, knowledge and skills in Food Handling techniques.

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>400</td>
<td>300</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)
   Foodhandlers working in public school child care centers need training to ensure authorities, school officials, and families that food service is healthy, nutritious and safe for the children.

   What has been done
   The Team Nutrition Education Program provided training for 210 food service paraprofessionals to support overall healthy child care messages and strategies and improve food service delivery in DC child care facilities. The program collaborated with the Capital Area Food Bank and Mid-Atlantic Dairy Association to produce at 132-page, 10 lesson best practices manual (Team Nutrition Training guide) for training and reference.

   Results
   100% of the participants passed the national food sanitation certification examination. 96% of the participants mastered all of the knowledge and skills in food handling techniques. Approximately, 750 individuals were trained. Classroom instructions were conducted - 20 clock hours divided into three to five sessions; tests included pretest, post test, and DC Code examination test in order to measure knowledge; and the national examination. All of the individuals need the certification to continue their current job or gain employment. New measures (economic benefit data) will be reported in the 2011 Accomplishment Report.
4. Associated Knowledge Areas

KA Code  Knowledge Area
703       Nutrition Education and Behavior
724       Healthy Lifestyle

Outcome #14

1. Outcome Measures

   Number of participants scoring a required minimum of 70% on post test and national examination.

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>365</td>
<td>300</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)
   Department of Health authorities are responsible for maintaining food sanitation in food serving establishments in the District through requirements for certification of food service workers/handlers. Food handlers and their employers are, in turn, interested in meeting these requirements in order to remain employed and in operation serving food.

   What has been done
   In the DC Food Handler Certification Program Model, 300 food handlers were prepared for and administered the national and local exams in a series of 6 five-day sessions.

   Results
   Mean percentages of test scores on the national exam for 877 participants increased from 81.1% in 2006 to 96% in 2009. The required passing score is 70%. Pass rates in this test model are higher than the national average.

4. Associated Knowledge Areas

KA Code  Knowledge Area
712       Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
724       Healthy Lifestyle

Outcome #15

1. Outcome Measures

   Percentage of participants who improved eating habits.

   Not Reporting on this Outcome Measure
Outcome #16
1. Outcome Measures

Percentage of decrease in the incidences of obesity in the District of Columbia

Not Reporting on this Outcome Measure

Outcome #17
1. Outcome Measures

Number of participants gaining awareness, knowledge, and skills in nutrition and agriculture.

Not Reporting on this Outcome Measure

Outcome #18
1. Outcome Measures

Number of residents who have applied knowledge to alleviate vermin in their homes.

Not Reporting on this Outcome Measure

Outcome #19
1. Outcome Measures

Number of residents who have made changes, i.e. elimination of secondhand smoke, removal of mold and/or mildew, and/or sanitation measures, in their homes as a result of information received from participating in the CES Asthma Project.

Not Reporting on this Outcome Measure

Outcome #20
1. Outcome Measures

Number of residents and/or workers participating in the water taste testing survey.

2. Associated Institution Types

• 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>(No Data Entered)</td>
<td>908</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The US Environmental Protection Agency and Centers for Disease Control are responsible for ensuring safe drinking water. The DC Department of the Environment and citizen groups such as Science in the Public Interest attempt to keep water safe for consumption for all consumers. Unsanitary water can lead to foodborne illnesses and death, if not controlled.

**What has been done**

908 participants completed the blind taste test of 4 different types of water and completed a survey which involved ranking each sample in order of preference due to the influence of the local media on drinking tap water in the District. The objectives were: 1) to conduct drinking water blind taste testing to a cross-sectional sample of individuals who live in the District of Columbia; 2) to determine consumers' preference for the different types of water; 3) to determine the types of drinking water being consumed; 4) to determine factors related to the selection of drinking water; and 5) to develop recommendations for the increased consumption of District of Columbia tap water.

**Results**

As a result of the DC Water Blind Taste Testing Project, 908 DC residents have increased their knowledge about the types of drinking water available to them and were able to taste the water. Most participants preferred spring water and the least preferred was mineral water. Additionally, residents are more knowledgeable of the dietary recommendations for water consumption. As 50% of the participants did not meet dietary recommendations, their participation in this program may lead to a change in behavior (increase in water consumption). Participants completed the blind taste test of four different types of water and completed a survey which involved ranking each sample in order of preference due to the influence of the local media on drinking tap water in the District. More findings will be available in the 2011 Accomplishment Report.

4. **Associated Knowledge Areas**

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

**Outcome #21**

1. **Outcome Measures**

   Number of market goers who receive point of purchase nutrition education to increase consumer awareness of healthier food choices, food safety, quality, and usage.

2. **Associated Institution Types**

   ● 1862 Extension

3a. **Outcome Type:**

   Change in Action Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>{No Data Entered}</td>
<td>1500</td>
</tr>
</tbody>
</table>

3c. **Qualitative Outcome or Impact Statement**

   **Issue (Who cares and Why)**
   Consumers are challenged with rising prices that force more careful use of food dollars, concern about the safety of produce, and ways to eat healthier and tastier foods.

   **What has been done**
   In the Farmers' Market Nutrition Education Program, 1500 individuals were assisted at farmers' markets with consultation and information from 18 fact booklets on beets, broccoli, cabbage, carrots, cauliflower, corn, lettuce, mushrooms, onions, peppers, potatoes, rutabaga, snap beans, spinach, summer squash, sweet potatoes, tomatoes and winter squash. In addition to nutrition education, food preparation techniques and healthy recipes were provided at the markets.
Results
As a result of the Farmer's Nutrition Education Program, 1500 District residents are more knowledgeable about
the health benefits and dietary requirements of fresh fruits and vegetables and are enabled to make healthier and
more informed food choices. Additionally, these residents are more knowledgeable about food safety and food
preparation including various options for tasty yet nutritious recipes. As residents continue to frequent these
markets, it is evident that many individuals and families are including more fresh fruits and vegetables in their
diets. Residents return to the market and report their increase in fruits and vegetables as a result of the nutrition
education received at the market. An instrument will be developed to collect information from residents who used
the Farmer's Markets in an attempt to measure knowledge and reported changes in attitudes and behavior.

4. Associated Knowledge Areas

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Other (Discussed in explanation below.)

Brief Explanation

Developing Fuzzy-set-theory-based Data Mining Methodologies for Diabetes Data Analysis

Our researchers are working to contribute to the development of strategies to prevent and control of diabetes as
well as the development of methods that can be applied for prognosis of many other diseases. These goals
require more time to produce efforts. A Book Chapter: FM-GA and CM-GA for Gene Microarray Analysis, Advances in
Computational Biology, is scheduled to be published in Spring 2010.

Ag in the Classroom

Our Ag in the Classroom Extension Agent retired and has not been replaced. It is expected that this vacancy will
be filled in 2010.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned
   - Before-After (before and after program)
   - During (during program)
   - Case Study
   - Other (Comparison of individuals and group participants before and after interventions.)

Evaluation Results

1) Pre and Post tests of knowledge gained showed that participants had improved in their knowledge of nutrition.
2) Focus groups conducted with parents and teachers enabled improvements in program design.
3) Likert scale evaluation of teacher confidence and preparation regarding curriculum items and program
   objectives enabled understanding for program changes.
4) National foodhandler certification exams showed improvement among participants affirming the program model.

Key Items of Evaluation
1) Foodhandler certification exam scores were consistently above the national average.

2) The Likert scale model is a state-of-the-art instrument based on shared information from USDA youth programs.

3) Promotion of focus group activity was accomplished through a bi-monthly e-newsletter (SNAP-Ed Connector) to assist in eliciting cooperation while keeping teachers, staff, and families on the same page.