Health Impact Assessment of Modifications to the Trenton Farmers' Market (Trenton, New Jersey)

UCLA Health Impact Assessment Group

(http://www.ph.ucla.edu/hs/health-impact)

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Executive Summary

Project background

In the spring of 2005 the Project for Public Spaces (PPS) with funding from the Ford Foundation sponsored a meeting in Los Angeles to discuss how public markets (including farmers' markets) can benefit the public's health. Attending this meeting were PPS staff, market managers and organizers from PPS-funded sites across the U.S., representatives from the Robert Wood Johnson Foundation (RWJF) and staff from the UCLA Health Impact Assessment (HIA) Group. Based on discussions at this meeting, the UCLA HIA group in consultation with PPS drafted a proposal to request funding from RWJF to conduct a health impact assessment (HIA) of public markets. The aims of this HIA were to be two-fold:

1. To contribute site-specific information on how proposed modifications to one market might impact the health of local residents;
2. To outline the links between health and farmers' markets and public markets more generally to provide a template for analyses of health impacts of public market proposals in other locales.

After RWJF awarded a grant to fund this project, UCLA and PPS searched for a potential case-study site from among farmers markets and public markets across U.S. and chose the Trenton Farmers Market—a site with whom PPS was already working to improve their economic viability.

Description of the Trenton Farmers Market

The Trenton Farmers Market is located approximately 2-miles outside of Trenton in Lawrence Township, where it has been operating year-round for sixty years. The neighborhoods immediately around the market, like much of the outlying areas of Mercer County, are mostly suburban, middle-class, and have few non-White residents. Areas close to downtown Trenton tend to be predominantly low-income, with a high proportion of African-Americans. Although the market is called a "Farmers' Market" and is run by an executive board composed entirely of farmer-vendors, 27 of the current 38 vendors sell primarily non-farm products, including baked goods, meats, pizza, jewelry and household decorations. And, while a wide variety of fresh, locally grown produce is available in the summer and early fall, in other months non-farm products predominate. Only three of the farmer-vendors sell in the market year-round. Corresponding to the number of vendors operating in the market and the variety of products available, market patronage waxes and wanes with the seasons.

Who currently patronizes the Trenton Farmers Market?

The market appears to attract a higher proportion of more middle- to upper-middle income residents of suburban Mercer County and a lower proportion of lower-income residents from central Trenton. Despite the fact that low income, predominantly African-American neighborhoods of central Trenton have few retail outlets selling fresh fruits and vegetables, very few African-American patrons were observed during our visit to the site. A Rutgers University survey of low-income, mostly African-American Trenton residents confirmed that many did not patronize the market. Distance, especially for those who do not own a car, may deter some Trenton residents' patronage of the farmers market, yet other factors also clearly play a role,

since many African-American residents patronize the adjacent Halo Farms Dairy store and the Capital Plaza shopping center.

According to a statewide survey of farmers market customers conducted by Rutgers University in 2002, farmers' market customers are more likely to be older, more affluent, female, White, and have more years of education compared to the general population. We have no reason to believe that this is different for the Trenton Farmers Market patrons.

Three policy scenarios analyzed for the HIA

Changes to the market have the potential to significantly benefit the health of area residents, particularly if these changes help the market reach out to the high-need, under-served population in central Trenton. The limited modifications being considered by the market's executive board do not, however, seem sufficient to significantly impact the health of community residents beyond the status quo. Recognizing the major disparities in health status, risk factors and food access between residents of Central Trenton and residents in outlying areas where the market is located, we created an alternative policy scenario (Alternative 3) to capture the full potential of the market to positively impact public health. The analysis of health impacts compares this and two other alternatives.

Alternative 1: No-change/minor change: It appears likely that near term changes envisioned by the market's executive board will be limited to relatively minor changes, such as improved lighting, new wiring, and new exterior doors, with little or no change to signage, parking, or the

number and mix of vendors. Changes in the number, shopping patterns and profile of patrons is not expected.

Alternative 2: Full implementation of PPS recommendations – major remodeling: Through intensive study of the market and in meetings with market stakeholders PPS crafted a series of short-, medium- and long-term recommendations for modifying the market. These recommendations include changing the outside appearance of the market, expanding the market, and implementing a series of organizational and infrastructure changes to better integrate the market into the surrounding community. The vision supported by these recommendations is of a market that is a vibrant and valuable public space that will pave the way for other changes that improve the quality-of-life in the surrounding community.

Alternative 3: Market outreach – satellite markets, etc.: In order to maximize the market's potential health benefits this alternative brings the market to the people who could benefit most from its services. Without involving a wholesale relocation of the market, (a proposal that engendered significant resistance when it was proposed by experts from the Urban Land Institute in 2005), this could be achieved by operating mobile vans selling market produce or organizing a satellite market at a convenient and familiar location, and coupling these changes with a series of educational outreach programs. A potential site for the satellite market would be the Capital Health Systems Hospital on Brunswick Avenue. It is well known and relatively accessible. Hospital employees could provide a stable customer base. Backing from a medical institution would help emphasize the importance of healthy eating. Although this alternative may be

beyond the scope of what the market's executive board is considering, it helps illustrate the full potential of the Trenton Farmers Market for addressing community health needs.

Profile of the affected populations

In addition to examining aggregate impacts to the overall population, the funders and PPS emphasized that information on the distribution of health impacts to different segments of the population would be a valuable contribution of the HIA. An examination of the distribution of effects is especially important in Trenton where major social and health disparities between poorer inner-city residents and more affluent residents in outlying periurban areas. To facilitate the analysis of health disparities, such as food access, we chose to define the affected population in three ways:

1. Residents living within a two-mile radius of the market, most of whom could drive, walk or take public transit to the market, representing both inner city residents and more affluent suburbanites;
2. Residents of the City of Trenton, with a large percentage of African-American and poor residents;
3. Residents of Mercer County (which includes Trenton), a demographically and economically mixed population, encompassing nearly all potential market patrons.

Demographic and economic disparities

Significant demographic, economic and health disparities exist between residents of central Trenton and residents of the suburban and exurban areas of the rest of Mercer County.

1. City of Trenton residents

   In the 2000 Census just under one-quarter of Trenton residents identified themselves as non-Hispanic White, an equal number identified themselves as Hispanic and just over 50% identified themselves as Black/African-American. Approximately 62% of African-Americans living in Trenton resided in tracts in which 65% or more of the population was African American. Latinos tended to live in census tracts in the city's South and East wards. Approximately 38% of the residents in the City of Trenton in the 2000 census had less than a high school education. According to the 2000 Census, the unemployment rate in Trenton was 11.8%. Twenty-one percent of Trenton residents and nearly 30% of Trenton's children under the age of five in 2000 were living in households with incomes below the federal poverty level. One-quarter of the households in 2000 did not own a vehicle. Reflecting the economic challenges facing Trenton, the population of the City of Trenton decreased 3.6% (from 88,675 to 85,403) between the 1990 and 2000.

2. Residents living with a 2-mile radius of the market

   At the aggregate level, the profile of the population living within a two-mile radius of the market is generally similar to the population of Trenton since this area includes much of central Trenton, however it also includes small numbers of more affluent, predominantly White residents who live in the periurban areas of Lawrence and Ewing Townships outside of Trenton. In 2000 African-American comprised 58.4% of this population and Whites comprised 24.7%. Latinos, who are concentrated in census tracts in the East and South portions of Trenton further away from the market, are less represented in this

population compared to the City of Trenton, making up 13.4% in 2000. Thirty percent of the households in this area did not own a vehicle.

3. Mercer County residents

   The population of Mercer County, which includes Trenton, is significantly different from that of the City of Trenton and the population living within a two-mile radius of the market. In the 2000 Census 64.2% of County residents were White, 20% were African-American, and about 10% were Latino. Eighteen percent of Mercer County residents had less than a high school education, compared to 38% of Trenton City residents and 34% of residents living within two miles of the market. Thirty-four percent of county residents had at least a college education. In 1999 47.8% of county residents had annual household incomes over $60,000, compared to 25.9% of Trenton residents and 20.6% of residents living within two miles of the market.

Health disparities

High priority health concerns in the affected populations include: asthma, obesity-related diseases, environmental pollutants and racial disparities in morbidity and mortality. There were over 370,000 deaths in New Jersey from 1999 to 2003, of which about 4% occurred in Mercer County. A prominent feature of the mortality statistics for both the state and county is the disparity in mortality rates by race. All-cause mortality was about 1.4 times greater among Blacks than Whites in Mercer County. Blacks in Mercer County had mortality rates that were 1.3 times greater for heart disease, 2.5 times greater for hypertension, 1.2 times greater for cancer, and 2.5 times greater for diabetes compared to Whites.

Risk behavior data was available only at the state level. Over 70% of the state's adult population fails to consume at least 5 servings of fruits and vegetables a day, with little racial/ethnic differences. Physical activity levels are low in all racial/ethnic groups, but especially among non-Whites. About 24% of Whites, 46% of Hispanics, and 35% of Blacks reported not having any physical activity in the past month.

Environmental pollutants are widespread in Mercer County and Trenton in particular. Historically the area was one of the nation's largest manufacturing centers for goods such as steel, ceramics, electrical components, rubber, and automobiles. Now, however, many of the manufacturing sites have been closed down, abandoned, or idled. A large number of these "brownfield sites" have yet to be cleaned up and continue to harbor hazardous wastes and pollutants. In 2006, Mercer County was in the top 90% of US counties where the cancer risk from air pollutants exceeded 1 in 10,000 individuals. The cancer risk among residents of Mercer County is more than 100 times the goal set by the Clean Air Act.

On the positive side, perhaps in response to all the social and economic challenges facing Trenton's population, a large number of community-based organizations have arisen. They operate food banks, help construct safe, affordable housing, provide health services and conduct a range of other activities. These provide important resources which the market could potentially tap into and leverage. Several key organizations whose activities are particularly important to farmers' market outreach efforts are described in the report.

Scoping: Pathways and methods

In order to structure the analysis and help communicate the results we developed a generic logic framework that illustrates the pathways through which a farmers' market might impact health. We reviewed published reports on public markets, surveyed the pertinent research literature, and consulted both technical experts and Trenton Farmers Market stakeholders. We identified five major pathways through which changes in the market might impact the health in the affected populations:

1. Nutrition;
2. Physical activity;
3. Economics (vendors and surrounding community);
4. Social capital;
5. Public health services.

While there may be other impacts that could eventually impinge on health, including impacts on traffic and housing, the likelihood and magnitude of these impacts seemed to uncertain and too small to warrant inclusion in the HIA.

Given the limited data on these impact pathways, the analysis is primarily qualitative, with some descriptive quantitative information. More refined, quantitative analysis that predicts the health impacts of a farmers market will be possible only when there is more data on the proximate impacts of markets (e.g. increases in the number of patrons, changes in the types of patrons, frequency and amount of purchases per household, and the nutrition profile of these purchases), as well as more locale-specific data on the prevalence of pertinent risk factors, perhaps employing small area analysis.

Impact analysis (see Table 8)

Nutrition

Public and/or farmers' markets can serve as a vehicle to increase access to fresh fruits and vegetables, particularly in low-income communities. However, there are significant logistical barriers to doing so: (1) potential patrons must be encouraged to attend and purchase produce, (2) the market must be easily accessible by public transportation/walking or transportation must be provided, and (3) the farmer-vendors must have a consistent supply of customers. Selling directly to an institution or creating a market within an institution minimizes the risk for farmers. By itself, improved access to fresh fruits and vegetables does not change consumption behavior. Individuals can be encouraged though subsidies such as coupons to attend markets. This strategy has been successful in changing purchasing behaviors in those already consuming fresh produce. However, in order to change consumption behaviors among non-fresh produce consumers, substantive adjunct programs are necessary. There is ample evidence suggesting that both coupons and education are necessary to change fresh produce consumption behavior in low-income individuals. Additionally, there is a proven dose-response relationship between the number of the classes and the amount of fresh produce consumed. The education component is necessary to change long-term consumption behaviors among low-income individuals.

The range of market modifications included under Alternative 1 (minor cosmetic changes to the facility) and Alternative 2 (PPS recommendations for major remodeling) would probably not significantly impact consumption of fresh fruits and vegetables. In fact, simply attracting more

patrons could actually harm health if they primarily patronize the unhealthy food options, such as pizza, fried chicken and deli sandwiches, of which there are many in the market. Market outreach efforts directed towards the low-income population of central Trenton proposed under Alternative 3 might increase consumption of fresh fruits and vegetables if they are coupled with coupons and education efforts.

Economics

A farmers' market is first and foremost an economic institution. The economic benefits of a successful market for vendors, farmers and the surrounding community have secondary effects on health. A large body of research evidence has demonstrated the health benefits of additional income and wealth (Backlund et al., 1999; Ettner, 1996; Fiscella and Franks, 1997; Marmot, 1987). Secondary economic benefits to the surrounding community, can also have broad health benefits by improving the quality of life.

The two economic pathways considered in this HIA through which the farmers market may impact health include (1) income generation for individual vendors and producers (including both farmers and on-farmers) and (2) secondary economic development in the surrounding neighborhood. Currently there is much room for improvement since most existing patrons drive to the market from outside of the community. The Project for Public Spaces estimates there is over $7.5 million in of annual sales potential if local, low-income residents begin shopping at the market, with daily sales per square foot comparable to an existing farmers' market in a low-income community. In addition, $3 million has been projected in other sales from specialty shops, neighboring retailers and others.

Physical activity

The Trenton Farmers' Market has the potential to increase physical activity by (1) encouraging more patrons to travel to the market on foot or by bicycle instead of by motor vehicle, (2) serving as a catalyst for the development of a more walkable neighborhood, and (3) providing a venue for physical activity promotion education. Currently there is much room for improvement since most patrons drive to the market and neighborhood walkability is extremely poor. Significant barriers exist to making the physical infrastructure conducive to walking and biking—a goal that can probably be achieved only with substantial, long-term economic inputs from the community and other businesses. In the shorter term with minimal additional resources it may be feasible to make the market a more attractive destination for patrons who live within walking distance but who currently do not frequent the market. While additional increments of physical activity gained by walking and biking to the market may be small, they are an important part of broader efforts to create encourage more active lifestyles.

Social capital

"Social capital" is a term often used to describe the amount of formal and informal social networks, group membership, trust, reciprocity, and civic engagement in a neighborhood. It has also been shown to benefit both subjective and objective measures of health, including lower levels of adult mortality (all cause, ischemic heart disease, and cardiovascular disease), improved perceptions of overall health, and psychological health. Even a casual visitor to Trenton will see the classic symptoms of a community with low levels of social capital—abandoned buildings, a

proliferation of graffiti and other vandalism, and the disappearance of pedestrians after the sun sets.

A popular, vibrant market is likely to benefit social capital in many ways. Merely serving its core function to offer a place that attracts and holds customers is likely to increase social capital by increasing opportunities for social interaction. Beyond its core economic functions, secondary effects of markets on neighborhood development and infrastructure can also benefit social capital, for instance by increasing walkability and walking, which have been shown to be associated with higher levels of social capital.

There is much room for improvement in the degree to which the Trenton Farmers Market contributes to community social capital. Some observations that suggest that the market is not currently living up to its potential to increase social capital include: a market that is often empty (as it was when the HIA team visited in mid-May), shoppers at nearby stores not making the effort to walk over to the market, and perceptions that the market often appears closed even when it is open. Efforts to improve the economic viability of the market are likely to also benefit social capital.

Public health services

A number of markets across the country have demonstrated that they can serve as valuable venues for providing preventive health services to the community. Such services include health screenings, healthy cooking demonstrations, nutrition education and other types of health and nutrition programs. Likewise, health care institutions can be notable venues for hosting farmers

markets. Such partnerships between markets and health afford opportunities for setting healthy behavior norms and outreach to hard-to-reach populations. By improving healthy eating and providing health screening and education, there exists great potential for these activities to positively affect public health. While Trenton Farmers Market has periodically offered preventive services, there exists opportunity to expand these services in such a way that would benefit both the farmers and the community. For example, a potential partnership with the Capital Health System Hospital on Brunswick Hospital could be forged to create a satellite market that would allow better outreach to a population that could gain the most health benefit from healthy eating while also providing the market a steady customer base throughout the year. By integrating preventive-health services into standard market operations, farmers markets can be steady resources for healthy-living for communities.

Summary -- maximizing benefits/minimizing harm

The modifications to the market proposed under Alternative 1 would probably not significantly impact health. However, even within the limited scope of changes under this alternative, there are ways the market could improve potential health benefits and minimize harm. Setting up vendor stalls, particularly those selling fresh fruits and vegetables, with EBT machines to take WIC and other government benefit cards could help encourage low-income patrons to increase purchases of fruits and vegetables. The existing plethora of unhealthy food choices at the market means that getting food at the market may actually be less healthy than buying food in a supermarket. Seasonal variations in the availability of locally grown produce and rules at this market limiting fresh produce sales to locally grown fruits and vegetables mean that prepared foods dominate in the off-season. Steps could also be taken to insure that prepared food vendors

offer healthy food choices, perhaps not forbidding unhealthy foods but pricing healthier food choices to make them more attractive.

The broader changes to the market proposed by PPS (Alternative 2) could yield significant health impacts in some areas, but by themselves would probably not improve consumption of fresh fruits and vegetables. Expansion of the market, updating its appearance, improved signage and the separation of pedestrian and vehicle traffic could increase patronage, thus benefiting community health through economic and social capital pathways. Long-term recommendations to improve pedestrian and bicycle infrastructure would improve the walkability and bikeability of the area around the market, which is presently very poor. Economic development of the surrounding area that could be catalyzed by a successful farmers market, would add the destinations and density necessary for translating improved walkability into walking.

By improving access to fresh fruits and vegetables, Alternative 3 (market outreach/improved access) has the best likelihood among the alternatives for improving nutrition. Although suggestions for moving the market have not been well received by market stakeholders, there are other ways to bring farmers market services to the population of central Trenton, where there are few grocery outlets and many low-income residents do not own vehicles. Among ideas for this outreach are using mobile market vans and/or a satellite market. Even this alternative, however, is not likely to change food consumption patterns unless augmented by other tactics to encourage behavior change, such as coupons and nutrition education. Maximizing health benefits in other areas—physical activity, economics, social capital, could be achieved by coupling this alternative with the modifications proposed under Alternative 2.

Stakeholders in other communities could use the framework developed for this HIA to help identify potential health impacts of proposed farmers markets or market modifications. Not all the impact pathways identified here would necessarily be relevant, and there could be additional impacts, such as impacts on traffic congestion and housing, that may pertinent to other situations. As with this analysis, it is important to consider how these impacts affect different populations.

Table 8: Summary of expected health impacts from modification of the Trenton Farmers' Market

Pathway ↓	Alternative 1: No-change/minor change		Alternative 2: Full implementation of PPS recommendations: major remodeling		Alternative 3: Market outreach/ satellite markets	
Nutrition (e.g. consumption of fresh fruits and vegetables)	0	Changes to the market too small to significantly impact food access and consumption	0	Patronage and sales may increase, but these changes would probably not change consumption patterns, since there's no indication that changes would affect individuals with poor food access	+	Satellite markets would target neighborhoods and populations with limited access to fresh produce.
Direct Economics Effects (e.g. increased income for vendors)	+/0	Some small increase in patronage and revenues could occur as a result of minor cosmetic changes to facility.	+	Expansion of the market and increasing market activities during the low season, coupled with improved visibility will likely lead to a substantial increase in sales with subsequent increases in income for vendors.	+	Expansion of outlets, broadening of customer base will likely increase sales and income to vendors, but probably not as much as in Alternative 2.
Second-order economic effects (e.g. neighborhood economic expansion and development)	0	Any increase in revenue would be unlikely to be large enough to generate secondary economic impacts.	+	Increased patronage and sales are likely to generate secondary economic benefits through "recycling" of income, by attracting customers to other nearby businesses, and by stimulating neighborhood redevelopment efforts.	0	Modest expansion of sales potential under this option would probably be insufficient to yield second-order economic impacts on the surrounding community.
Physical Activity (e.g. walking and biking to the market)	0	Changes to the market too small to change patterns of physical activity.	+	Redevelopment in surrounding neighborhood could improve walkability/bikeability and induce more people to walk /bike to the market. Improvements in bus service, coupled with outreach to transit-dependent populations could increase walking associated with bus trips to the market.	0	Bringing the market to people would minimize travel distance, thus walking trips to the market would not increase. This alternative by itself would not be sufficient to spur neighborhood redevelopment with improvements in walkability.
Social Capital (e.g. opportunities to socialize with other residents, develop social networks)	0	Changes to the market too small to change community social capital.	+	Increases in market patronage, using market facilities for community meetings and events, and subsequent redevelopment could all contribute to improved community social capital.	+	Could benefit community social capital. Depends on reaching new patrons and providing events that draw residents. May also improve sense of community of it becomes seen as neighborhood asset.
Preventive health services (e.g. health education and screening services on site)	0	No additional preventive services planned under this alternative	+/0	Impacts on preventive health services available at the market contingent on agencies and organizations deciding to bring such services to the market.	+/0	Satellite market at the Capital Health Systems hospital would facilitate tie-in to various health services. Contingent on hospital and health department decisions.

"0" (no change), "+" (potentially beneficial), "-" (potentially harmful)

I. Rationale for a health impact assessment (HIA) of proposals to modify the Trenton Farmers Market

Purpose and aim of the HIA

Over the past three decades the number of farmers' markets, has grown rapidly across the nation (Brown, 2001; USDA, 2007) from about 500 markets in 1975 to 4300 markets in 2007. This growth been fueled by an opportune confluence of demand- and supply-side factors that farmers markets are particularly well positioned to address. On the demand side, consumers have expressed increasing demand for fresh, high quality produce (Govindaswamy et al., 2002; USDA, 2007) with a growing emphasis on organic and sustainably grown products (Zehnder et al., 2003). On the supply-side, small farmers, increasingly left out of mainstream food production and marketing, have turned to direct marketing strategies, such as farmers markets, for their economic survival. In addition to these evolving market forces, the growth of farmers markets has been enabled by changes in public policy, such as Public Law 94-463 which has allowed county cooperative extension agents to help organize farmers markets (Brown, 2001).

Box 1: Farmers' Market or Public Market?

Not all "public markets" are "farmers' markets," nor are all "farmers' markets" "public markets." Adding to the confusion is the fact that vendors selling non-agricultural products may constitute a substantial portion of vendors at a "farmers' market," especially in locales with large seasonal fluctuations in the availability of farm products.

Definitions of "farmers' markets" vary widely and have changed over time. So-called farmers markets vary in size, frequency, type of facility, mix of products and ownership. "Farmers markets are generally considered to be recurrent markets at fixed locations where farm products are sold by farmers themselves." (Brown, 2001).

The term "public market" has also changed in meaning over the years and still differs from place to place. In the United States, a public market has been usually defined as a venue where vendors sell fresh food from open stalls. Public markets must have public goals which give a defined civic purpose to the activity including attracting individuals to the neighborhood, providing affordable retailing opportunities, utilizing farmland in the region, and using underused public spaced or renovating undesirable use of public space. Public markets are typically located in public space in the community and can be an effective place for socializing and a community setting where activities can take place. Lastly, unlike the retail chains and

franchises run by large corporations, public markets are comprised of locally owned and independent merchants. (Public Markets report)

The Trenton Farmers' Market, which is owned and operated by a board of farmer-vendors, is also a public market. Thus, the generic portions of this analysis that are extrapolated to analyses of other markets will be applied to those markets, which like Trenton, are both public and farmers' markets.

In addition to providing consumers with a source of fresh fruits and vegetables and improving the economic viability of small farms, farmers market supporters may also look to farmers markets as vanguards of community redevelopment projects, opportunities for building neighborhood social ties, and as a means to restore face-to-face relationships between consumers, farmers and craftspeople in response to a proliferation of large, impersonal big-box stores. However, plans to initiate a new farmers market or expand an existing one are not without controversy. Existing retailers may be concerned about new competition, local residents and others may be concerned about attendant traffic congestion or even crime as a result of increased market patronage. In some cases, customers and vendors may resist plans to move or modernize an economically precarious market in bad condition, preferring to keep to what is time-honored and familiar.

Just as farmers markets fulfill a range of functions, so must public decisions affecting markets consider a range of audiences and potential impacts. Policy-makers and stakeholders should have as complete and unbiased information as reasonably possible. Since economic and community development considerations may be the driving forces behind most public decisions about markets, the health impacts of a market and the distribution of these impacts to different segments of the population may be under-appreciated. As such, an HIA seeks to bring health issues to the table so that decision-makers can make more informed decisions.

This health impact assessment (HIA) examines the potential health impacts of proposed changes for the Trenton Farmers Market, just outside of Trenton, New Jersey. To our knowledge this is the first formal assessment of health impacts of a farmers market in the U.S. Besides providing site-specific information on how proposed modifications to this market might impact the health of local residents, this HIA aims to outline the links between health and farmers' markets and public markets more generally so as to provide a template for other analyses of farmers' markets proposals in other locales.

This HIA will highlight the pathways through which farmers' markets might impact health, examine supporting evidence, and identify strategies that this and other markets can utilize to maximize potential health benefits. Some of the specific questions guiding this inquiry are:

1. Does the market improve the availability of fresh fruit and vegetables?
2. Does the market contribute to improved patterns of nutrition in the community?
3. Are there other ways (besides nutrition) in which the market might impact health?
4. Are there particular ways market operations could be modified or augmented that would better maximize potential health benefits?

Box 2: What is health impact assessment (HIA)?
(from the Cole and Fielding, 2007 (Annual Review of Public Health)

Among the numerous definitions of HIA, a particularly useful one is provided by researchers at the Northern and York Public Health Observatory in Great Britain:

"A multidisciplinary process within which a range of evidence about the health effects of a proposal is considered in a structured framework, …based on a broad model of health which proposes that economic, political, social, psychological, and environmental factors determine population health." (Northern and York, 2004).

This definition incorporates five generally accepted key characteristics of HIA:
1. a focus on specific policy or project proposals,
2. a comprehensive consideration of potential health impacts,
3. a broad, population-based perspective that incorporates multiple determinants and dimensions of health,

4. a multidisciplinary systems-based analytical approach, and
5. a process that is highly structured but maintains flexibility.

The general tenet underlying HIA is that by bringing consideration of health issues into decision-making in other sectors whose actions affect population health, HIA can provide a practical means for facilitating intersectoral action for health promotion (World Health Organization, 1999). Its greatest value lies in its ability to identify and communicate potentially significant health impacts that are under-recognized or unexpected, addressing, for example, the potential health effects of policies such as agricultural subsidies, wage laws, education programs, and urban redevelopment projects.

HIA has taken on a wide variety of forms depending on the socio-political environment of the different countries where it is conducted, the characteristics of the particular policy questions to which it is applied, the disciplinary backgrounds of practitioners, and the expectations of stakeholders who use its results.

Support for HIA grew most rapidly in Canada (Banken, 2004), Europe (Berensson, 2004; Roscam-Abbing, 2004), Australia (Wright, 2004), and New Zealand (Wright, Parry and Scully, 2005), countries where other initiatives rooted in an environmental approach to public health promotion, such as Healthy Cities (Ashton, 1991) and "healthy public policy" (Milio, 1988), also garnered considerable interest.

History of the UCLA/PPS Collaboration

In the spring of 2005 the Project for Public Spaces (PPS) with funding from the Ford Foundation sponsored a meeting in Los Angeles on Public Markets and Healthy Communities. Representatives from the Robert Wood Johnson Foundation (RWJF) and the UCLA Health Impact Assessment (HIA) Group were invited to attend in order to discuss ideas on how public markets can benefit the health of market patrons and others in the communities where they are based. Ensuing discussions over the next several months led to the formulation of a proposal from the UCLA HIA Group for funding from RWJF to conduct an HIA of a public market.

The project-specific goals of this project were:

1. to assess how public markets affect community health;
2. to determine the magnitude and distribution of these health impacts to the extent supported by existing data.

Secondarily, the longer, strategic aim of this work was to:

1. illuminate the theoretical influences of "upstream factors" on population health,
2. provide a setting for practical inter-sectoral collaboration on improving health.

To achieve these aims and facilitate conducting an HIA, which are typically conducted in response to a specific proposal, it was decided that a case-study market was needed as the focus of the HIA.

Case-study selection process

In late 2005 the UCLA HIA Group began discussing with PPS potential sites for the case study. Selection criteria (Box 3) were drafted by UCLA and submitted to PPS to use to identify sites that best fit.

Box 3: Criteria for selecting the case study site

(submitted by UCLA-HIA to PPS)

Required

1. High level of interest in HIA and potential population health impacts on the part of the market promoters/managers
2. Interest and capability on the part of the local planning health or planning departments, and/or a local university to assist in assembling existing locale specific baseline data, and conducting other HIA work
3. Proven track record and economic sustainability
4. Sufficient magnitude of potential impacts. A factor of:
    a. Number of vendors
    b. Number of patrons
    c. Freq (i.e. # days/week)
    d. Integration into other community development initiatives
5. Market promoters are considering possible changes (new location, expansion, etc.)

Preferred

1. Includes a large number of vendors and patrons
2. Serves a wide spectrum of residents, including a high number of low income individuals and/or under-served ethnic minorities
3. Held every or nearly every day
4. Includes diverse vendors (produce farmers, artisans, food stalls, etc.)
5. Is integrated into other community development projects and programs
6. Includes a nutrition education component
7. Offers organizational support, such as business education and micro-financing plans, for vendors
8. Has been in place for at least several years

9. Documentation demonstrates performance
10. (survey) data available documenting community residents' practices vis-a-vis the market (number of visits/week, fruit and vegetable consumption, etc.)

An early contender for consideration was the Crescent City Farmers Market in New Orleans, but Hurricane Katrina forced us to consider other markets. Staff at PPS strongly recommended using the Trenton Farmers Market as a case study for the HIA.

In terms as serving as an ideal case study site for the HIA, the Trenton Farmers' Market offered a site that was open nearly every day, year-round. The market had a long history, providing information on the mix of products sold and the number of customers. Data on customer characteristics and attitudes were available from surveys conducted by the PPS. The downside of selecting this market as the case-study site for the HIA was that it did not appear to serve a high-need, under-resourced community, despite proximity to such a community in central Trenton. In addition, although it calls itself a "Farmers' Market," fresh produce makes up only a small part of market sales during a large portion of the year. Another drawback in selecting this market as a case study was not to reveal itself until later when it became clear that stakeholder support was weak for anything but very modest changes to the market's structure or function. Major changes to the market that would significantly impact health did not seem to be politically viable.

Despite these limitations, the Trenton Farmers Market can still serve as a valuable case study. We have created an alternative change scenario that encompasses major changes to the market. While not being considered presently, this scenario illustrates the pathways through which a

market might impact health. Furthermore, a less than perfect case study highlights the real world limits and conflicting demands that markets face.

Box 4: Project for Public Spaces (PPS) research on public markets

The Project for Public Spaces (PPS) reviewed findings on eight unique markets in low-income communities discovered the following:

Public Markets Today

- Social capital, must have something other than food
- Customers come to markets because it brings them together with other people (28%), products (17.7%), and price (15%)
- Ethnic diversity of customers and vendors
- Can create upward mobility when farmers and consumers are ethnically diverse
- Almost half the vendors (46.5%) only sell at one public, while the others sell at multiple, have another job, etc.
- Approximately 60% of vendors' noted that 0-25% of their total household income is derived from selling at public markets, while 20% responded that sales from public markets make up 26-50% of income. The remaining 20% indicated that 51%-100% of their income comes from sales at public markets.
- Over 83.1% of vendors fund start-up cost with their own savings

The Project for Public Spaces found that public markets are being preserved and spurring throughout the country. Despite their potential many markets have failed or experiencing problems with sustainability (Public Markets reports). Thus drawing from their experience on studying the best public markets in the country, Project for Public Spaces suggests there are ten qualities that will help make a market successful.

1. Right Vendor
2. Right Location
3. Right Mix
4. Right Mission
5. Right Public Space
6. Right Connections
7. Right Economics
8. Right Promotion
9. Right Value
10. Right Management

II. Scoping: Specification of HIA focus

Before actual analysis of impacts in an HIA, scoping is conducted to outline what the HIA will examine and how, specifying the proposed policy/project parameters, the population affected, and the effects and pathways to be considered. As part of scoping for the Trenton Farmers Market HIA, we reviewed the research literature, consulted researchers with expertise on the relevant pathways, PPS staff, and the Market's Executive Board.

Alternative scenarios for market modification

Through intensive study of the market and in meetings with market stakeholders PPS crafted a series of short-, medium- and long-term recommendations for modifying the market (see Appendix 1). The recommendations include changing the outside appearance of the market, expanding the market, and implementing a series of organizational and infrastructure changes to better integrate the market into the surrounding community. Seeking feedback, PPS presented preliminary suggestions, including architectural renderings of what the market might look like, to market stakeholders at a meeting in May 2006, which was attended by HIA team members. The reaction from the market's executive board was less than enthusiastic, giving the impression that the market's executive board would like to leave the market pretty much as it is, only updating wiring, lighting and the exterior doors to stalls (they're now garage doors). The three alternative scenarios for modifying the market range from the minor changes sought by the market's executive board (Alternative 1) to a broad refashioning and expansion of the market as outlined by PPS (Alternative 2) to a third alternative developed for illustrative purposes for this HIA that adds a major outreach effort to the PPS-recommendations (Alternative 3).

We did not examine alternatives involving relocation of the market or starting new, completely separate markets in other locations. Suggestions made by an Urban Land Institute Study Group for moving the market a few blocks and to use it as an anchor for new economic development stimulated significant resistance (Trentononian, August 10, 2004).

Alternative 1: No-change/minor change

Based on the market's executive board's reaction to PPS's recommendations, it appears likely that near term changes to the market will be limited to relatively minor changes, such as improved lighting, new wiring, and new exterior doors. There would be little or no change to signage, parking, or the number and mix of vendors. These minor changes are unlikely to significantly impact the number or characteristics of patrons or their shopping patterns. As a consequence the economic and public health "footprint" of the market would remain largely unchanged. Correspondingly, these minor changes are grouped with the no-change alternative.

Alternative 2: Full implementation of PPS recommendations – major remodeling

The PPS recommendations listed in Appendix 1 aim to create an attractive, clean and safe market that appeals to both vendors and patrons. In line with PPS work with other markets and public spaces, the vision supported by these recommendations is of a market that is a vibrant and valuable public space that will pave the way for other changes that improve the quality-of-life in the surrounding community. The resulting market would be larger, attract more patrons, offer a wider selection of products throughout the year, and provide space for other activities (e.g. nutrition classes, performances, etc.).

Alternative 3: Market outreach – satellite markets, etc.

Recognizing the major disparities in health status, risk factors and food access between residents of Central Trenton and residents in outlying areas where the market is located, we believe a third alternative is necessary to capture the full potential of the market to positively impact public health. The PPS recommendations that make up Alternative 2 might make the market more successful and catalyze other positive changes in the surrounding neighborhood, but they would likely not affect the population living in Central Trenton. Although these residents live only one to two miles away, they do not currently appear to frequent the farmers market. One way to help maximize the market's potential benefits to the people who need it the most would be to bring the market to them. This could be achieved by operating mobile vans selling market produce or organizing a satellite market at a convenient and familiar location, and coupling these changes with a series of educational outreach programs. An opportune location for a satellite market operating once or twice per week would be the Capital Health Systems Hospital on Brunswick Avenue. This location is well known and relatively accessible. Hospital employees would provide a steady customer base. And, backing from a medical institution would help emphasize the importance of healthy eating. This alternative may be beyond the scope of what the market's executive board is considering. Nonetheless, consideration of this alternative helps illustrate the full potential of the Trenton Farmers Market for addressing community health needs, and it provides useful, potentially generalizable information on impact pathways that would not be examined in detail if the analysis was limited to a consideration of only alternatives 1 and 2.

Affected populations

In addition to examining aggregate impacts to the overall population, the funders and PPS emphasized that information on the distribution of health impacts to different segments of the population would be a valuable contribution of the HIA. Major social and health disparities exist in the Trenton area, so the importance of addressing equity issues was more important in this case than it would be if the subject of the HIA were a market located in a more demographically and economically homogenous area. To facilitate the analysis of health disparities, such as food access, we chose to define the affected population in three ways:

4. Residents living within a two-mile radius of the market, most of whom could drive, walk or take public transit to the market, representing both inner city residents and more affluent suburbanites;
5. Residents of the City of Trenton, with a large percentage of African-American and poor residents;
6. Residents of Mercer County, a demographically and economically mixed population, encompassing nearly all potential market patrons.

Profiles of the demographic and economic characteristics of these populations are presented in Section IV.

Impact pathways and logic framework

In order to structure the analysis and help communicate the results we developed a tentative generic logic framework to illustrate how a farmers' market might impact health. First we reviewed the literature on farmers' market and public market initiatives—mostly documents published on the internet written by market organizers, advocates and supporting agencies, such as the U.S. Department of Agriculture. A small number of peer-reviewed journal articles on

farmers markets were also found, including nutrition and food access studies in public health journals and market economics and descriptive studies in agriculture journals. From this review we outlined the core functions of markets and potential health and healthcare-related adjuncts (e.g. health screenings). Next the HIA team brainstormed pathways through which changes to markets might impact health. Recognizing that changes to morbidity and mortality might be small and take a long time to be realized, we identified intermediate outcomes for each pathway. Finally we fleshed out the pathways after a more thorough review of the relevant research literature. A working version of the logic framework was presented for review to Trenton Farmers Market board members, PPS, local officials and academic experts at a meeting organized by PPS in May 2006. With minor modifications the logic framework shown in Figure 1 was then finalized.

Nutrition pathway

Since much of the interest in farmers' markets on the part of public health advocates is focused on markets' potential to improve nutrition, this is the pathway we consider first. Introducing a farmers' market or modifying an existing market could impact nutrition in several ways. First, a market can improve access to fresh fruits and vegetables. This is especially important in neighborhoods where there are currently few retail outlets for fresh produce. Accessibility is more than just simple availability. If fresh produce is available at supermarkets or other retail outlets but the quality is poor or the price is high, then there is room for farmers markets to improve access by offering higher quality produce or selling at a lower price.

Less obviously, farmers' markets may also improve nutrition by changing knowledge, attitudes and preferences. Attractive displays, taste samples of extremely fresh produce, cooking demonstrations and handing out recipes at a farmers' market can encourage market patrons to try include more fresh fruits and vegetables (and hopefully continue consuming) more fresh produce. Indeed as discussed in the discussion of nutrition impacts (Section V), simply increasing access is unlikely to yield significant shifts in consumption patterns without concomitantly addressing the psychological factors that induce consumers' purchase choices.

While patronizing farmers' markets is typically seen as potentially beneficial for nutrition, in some cases it could be harmful. Fresh fruits and vegetables are not the only foods available at many farmers' markets. At the Trenton Farmers' Market sales of less healthful foods, such as deli sandwiches, fried chicken, ice cream and pizza, constitute a significant portion of sales, particularly during the colder months when little if any fresh produce is available. Frequent patronage of the farmers market could be associated, less with increased consumption of broccoli and strawberries, and more with increased consumption of fried chicken and french fries. On the other hand, these less healthful food choices might serve valuable functions, drawing customers in who might not otherwise visit the market, and of course providing important revenue during the colder months when less fresh produce is available.

Physical activity pathway

Public markets, like the Trenton Farmers' Market, have some limited potential to encourage increased physical activity. At small markets like this one, however, additional physical activity will be offsite—walking or bicycling to a market instead of using a car or perhaps increased

numbers of people walking in a neighborhood that has been made more walkable in part by the presence of a well situated, popular destination such as a farmers market. Market managers have limited ability to influence physical activity in these offsite settings. Nonetheless, in conjunction with community planners, other businesses, and other agencies the market could still play a pivotal role in encouraging more active lifestyles. We see three mechanisms by which a farmers' market and associated activities could potentially increase physical activity:

1. Working with city and county authorities to make it easier and safer for customers to walk and bicycle to the market, followed up with encouragement to support walking and biking to the market;
2. Serving as a catalyst for the development of a more walkable neighborhood, thus increasing levels of walking in the neighborhood, irrespective of whether such walking is associated with trips to the market;
3. Providing a venue for physical activity promotion education programs.

Economic pathways

Economic considerations are vital to this analysis for two reasons. First, farmers' markets are first and foremost economic institutions. They exist to give farmers a chance to sell what they produce and consumers a chance to buy what they want in a transaction that is mutually beneficial. If a market is not economically viable then everything else is a moot point. Second, the economic benefits of a market to vendors, farmers and the surrounding community have secondary effects on health. A large body of research evidence has demonstrated the health benefits of additional income and wealth (Backlund et al., 1999; Ettner, 1996; Fiscella and Franks, 1997; Marmot, 1987), although much uncertainty and debate exists as to the exact

mechanism of these effects, which might be due to improved access to health-related services, expanded choices for where one lives and goes to school, improved quality-of-life or the alleviation of stress. As with individuals, improved economic conditions can benefit health conditions in a community. An improved tax base can support additional public services for education, public safety and health services. Access to secure, well paying jobs is a valuable protective factor against youth involvement in violence (Currie, 2000). In addition to the direct benefits of employment on household income and quality-of-life, higher rates of neighborhood employment have been shown to have an independent effect on reducing coronary heart disease in Sweden (Sundquist et al., 2006). Economic development can also lead to the kind of infrastructure investments, such as "Smart Growth" projects (see http://www.smartgrowthamerica.org), that make a community more walkable. A comprehensive review of the research literature on distal health outcomes is beyond the scope of this HIA which will focus on the more proximal impacts and intermediate outcomes, addressing such questions as: Do markets improve individual finances? How successful are farmers markets in catalyzing neighborhood economic development?[1]

The two economic pathways considered in this HIA through which the farmers market may impact health include (1) income generation for individual vendors and producers (including both farmers and on-farmers) and (2) secondary economic development in the surrounding neighborhood. The research literature on income generation is more extensive and the linkages are more direct than they are with neighborhood economic development, which requires extensive resource investments that are difficult to predict and are beyond the control of the

[1] Readers interested in more in depth analysis of how increased income can improve individuals' health are recommended to read the HIA on the Los Angeles Living Wage (Cole et al., 2005).

market. Nonetheless, it is important to consider because of the potentially broad health impacts arising from neighborhood economic development.

Social capital pathway

"Social capital" is a term often used to describe the amount of formal and informal social networks, group membership, trust, reciprocity, and civic engagement in a neighborhood (Kawachi, Kennedy and Glass, 1999). Defined and measured by issues such as trust in neighbors, social engagement and political involvement, social capital obviously benefits quality-of-life. It has also been shown to benefit both subjective and objective measures of health, including lower levels of adult mortality (all cause, ischemic heart disease, and cardiovascular disease), improved perceptions of overall health, and psychological health (Berkman, Glass, Brissett, Seeman, 2000; Kawachi and Berkman, 2001; Kawachi, Kennedy, Glass, 1999; Yen and Kaplan, 1999)

A popular, vibrant market is likely to benefit social capital in many ways. Many of the core elements that go into making an economically successful market—offering a setting and goods that attract customers and encourage them to spend time at a market—are also likely to contribute to success in building social capital. A farmers market can provide a setting for social interaction. Indeed, the desire to have a more personal, face-to-face relationship in the buying and selling of food has been one of the driving forces behind growing public interest in the growth of farmers markets. A farmers market could also have more indirect effects on social capital by catalyzing other changes in a community that make it more amenable to social interaction and public life in general.

Preventive health services pathway

At a meeting organized by PPS of market organizers managers from around the country we asked about the ways public markets can promote health. The most common response was holding health clinics and disseminating health information. Farmers markets can provide valuable venues for preventive health services, including health screenings, healthy cooking demonstrations, distribution of nutrition information and other types of health education programs, nutrition education and health screenings. Partnerships between markets and health services providers can improve access to preventive health services, provide opportunities for outreach to hard-to-reach populations, and contribute to norms favoring healthier behavior. A number of markets across the US have integrated preventive-health services into standard market operations. While not a regular part of the market, the Trenton Farmers Market has periodically hosted nutrition education and healthy cooking demonstrations conducted by the Cooperative Extension and other organizations.

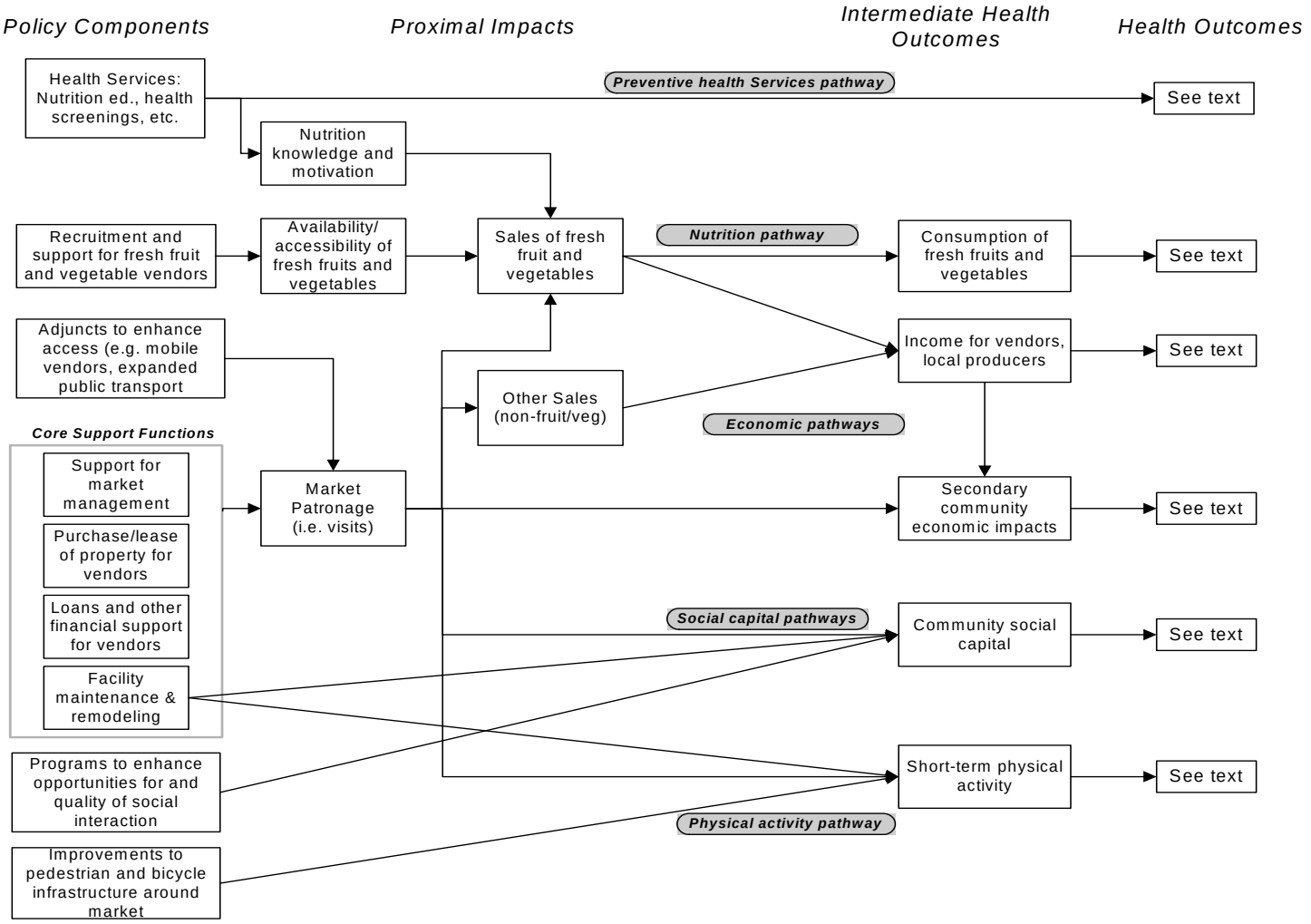
Farmers markets and nutrition advocates are natural partners since both are interested in encouraging greater consumption of fresh fruits and vegetables. Just providing improved access to fresh fruits and vegetables may not increase consumption. Nutrition education programs may be able to provide the information and normative supports necessary for behavior change that benefits consumers health and vendors bottom-line.

Nutrition education programs are not the only type of preventive health services that may be associated with a market. Other types of health education, along with health screening programs have found that farmers markets can provide a useful venue for reaching their target programs.

Impacts and pathways not considered

Major expansion of the Farmers' Market and possible redevelopment of the surrounding neighborhoods could impact community health in ways beyond the five pathways considered in this HIA. Expansion of the market and redevelopment could increase traffic congestion with secondary impacts on quality-of-life, walkability and air pollution. Redevelopment of the area could also affect housing. More housing could be provided, but new, market rate housing might be beyond the means of many current residents. Redevelopment could also trigger an increase in housing prices of existing housing. Mitigation of traffic impacts could be relatively easy to mitigate, however mitigating impacts on affordable housing would likely be more challenging. Whether these impacts occur is uncertain, depending on a number of community and regional factors beyond what happens at the Farmers' Market. Therefore, in the scoping phase we decided to drop these impacts from consideration.

Figure 1: General Logic Framework illustrating how changes to a farmers' market might impact health



III. Description of the Trenton Farmers' Market

Physical setting

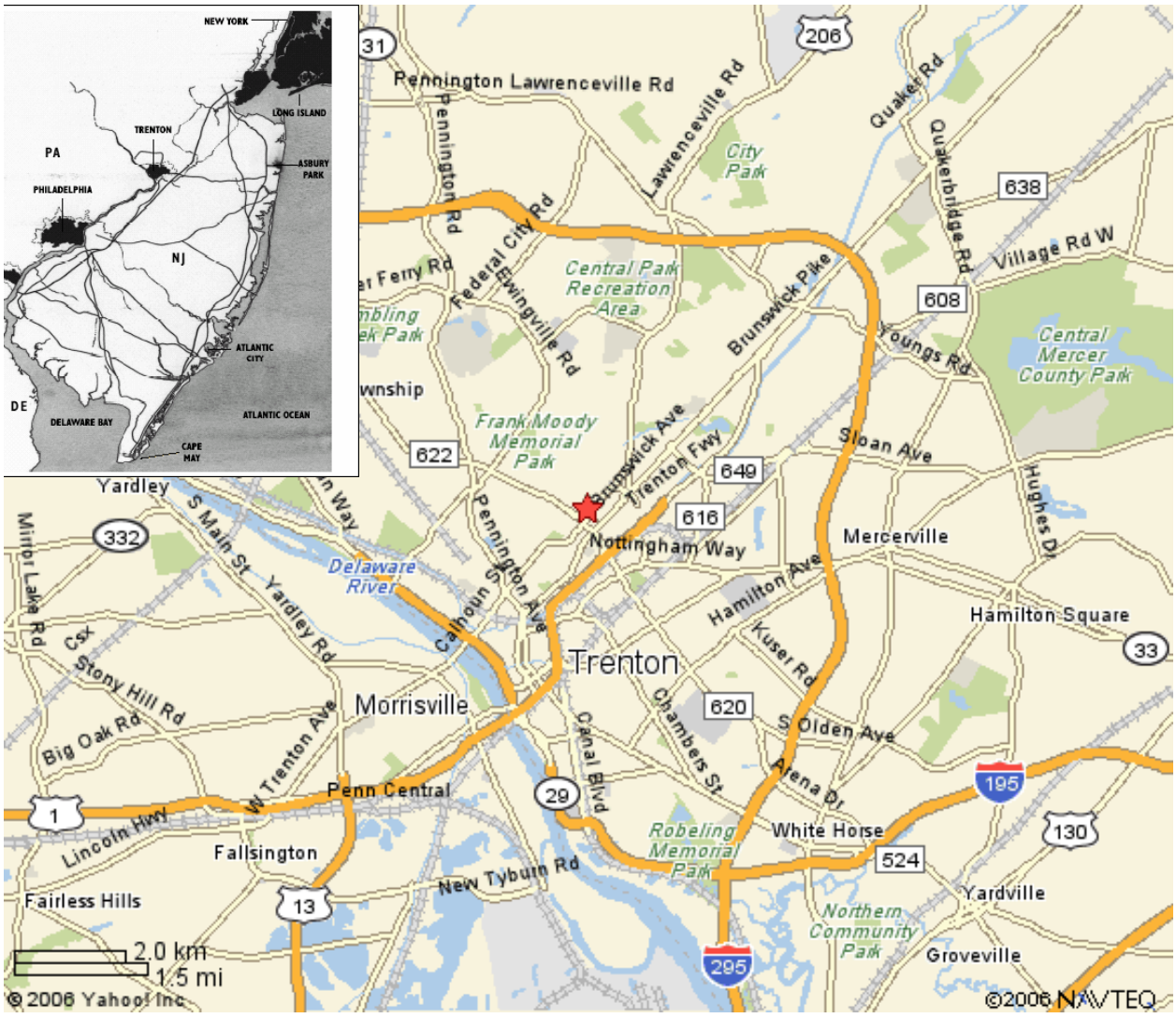
The Trenton Farmers' Market is located on the outskirts of Trenton in Lawrence Township, about two miles from downtown Trenton (see Figure 2). Trenton and the surrounding area are full of sharp contrasts in patterns of land-use, wealth and living conditions. While the city of Trenton is densely populated with a population density of 11,053.8 people per square mile (New Jersey Department of Labor and Workforce Development, 2006), the area around and beyond the market is more suburban and rural. Downtown Trenton, site of the state capital, has many modern, high-rise office buildings but interspersed among them are numerous abandoned buildings and old industrial sites (U.S. Environmental Protection Agency, 2006). During mid-day the area is bustling with activity, but at night the streets and sidewalks of the downtown area are nearly devoid of pedestrians. The city has one of the nation's highest violent crime rates, 11th highest among U.S. cities, with 1770.6 violent crimes per 100,000 people in 2005 (based on FBI crime statistics reported by http://www.morganquitno.com). Moving beyond Trenton's urban core, patterns of development transition to suburban and rural. Outlying areas are dotted with small farms, pockets of mostly middle-/upper middle-class residential development, occasional mansions, a few stately, and old, ivy-coated private schools, punctuated here and there by massive abandoned industrial sites.

Market history

The Trenton Farmers' Market has been operating at its present location for nearly sixty years. Originally consisting of only outdoor stalls, soon after opening the market moved into its

existing indoor/outdoor facility that has since been expanded. This space provides an enclosed market space in cooler months that can be opened up as outdoor stalls in the summer. Although the market is still run by a board composed entirely of farmer-vendors, 27 of the current 38 vendors sell non-farm products, including baked goods, meats, pizza, jewelry and household decorations (http://www.thetrentonfarmersmarket.com (accessed 1/12/07)). The market sits on a seven-acre site with a 239-space parking lot and 20,000 square feet of enclosed retail space.

Figure 2: Map of Trenton area (star indicates location of Farmers Market).



While the market is open year round, there is little farm produce available in the middle of winter (see Figure 3). Only three of the farm vendors sell in the market year round (PPS, 2007, p. 16). When members of the HIA team visited the market on a weekday in mid-May fresh produce was largely limited to strawberries. The couple dozen customers seen at the market at that time appeared to have come primarily for the prepared food offerings, such as pizza, sandwiches and fried chicken. In summer, however, as a large variety of fresh farm produce becomes available, the market becomes crowded with customers from all over the region (TFM Manager, personal communication May 17, 2006).

Adjacent services and access

Next to the market is Halo Farms Dairy selling milk, ice cream and other dairy products. Across the street is shopping center, consisting of half a dozen stores, a bank branch, and an empty building previously occupied by a Super G supermarket. Despite their proximity, the market faces the back of the mall and there appears to be little cross-traffic between the mall and the market. The area is served by several public bus routes with buses running approximately every half-hour, taking about 15 minutes to downtown Trenton. According to a survey conducted by PPS almost all customers who come to the farmers' market come by car. Some nearby residents, who are mostly middle-class and predominantly white, but also include some lower income Eastern European immigrants, may sometimes walk to the market.

A community food assessment conducted by a local community-based non-profit agency, Isles, Inc., and the Rutgers University Community Development Studio to better understand food and nutrition in Trenton's low-income neighborhoods, identified substantial disparities in the

availability of healthy food options in Trenton. Food available in the neighborhood grocery stores found in the lower income areas of central Trenton tends to be higher priced and of lower quality than that available in supermarkets, which tend to be located in more affluent, outlying areas (Rutgers, p. 21). Farmers' markets, roadside stands, and community gardening offer alternative means to get fresh produce. However, according to the Isles/Rutgers survey "few residents of inner city Trenton access the farm markets and there are no roadside farm stands in the city of Trenton."

Current and potential sales

Closing the gap between unmet demand for high quality, affordable food among lower income residents in central Trenton and the supply of fresh farm products available in the Trenton Farmers' Market might benefit both consumers and producers. The Project for Public Spaces (PPS) has estimated that current annual sales at the market total $7,000,000 based on surveys showing approximately 4000 to 6000 customers per week and $20 to $30 of purchases per visit.[2] They estimate that market sales could grow as high as $18,316,000 annually with updated facilities, improved access and the right mix of vendors. Currently, however, most vendors report stagnant or declining sales (PPS, 2006, p. 15).

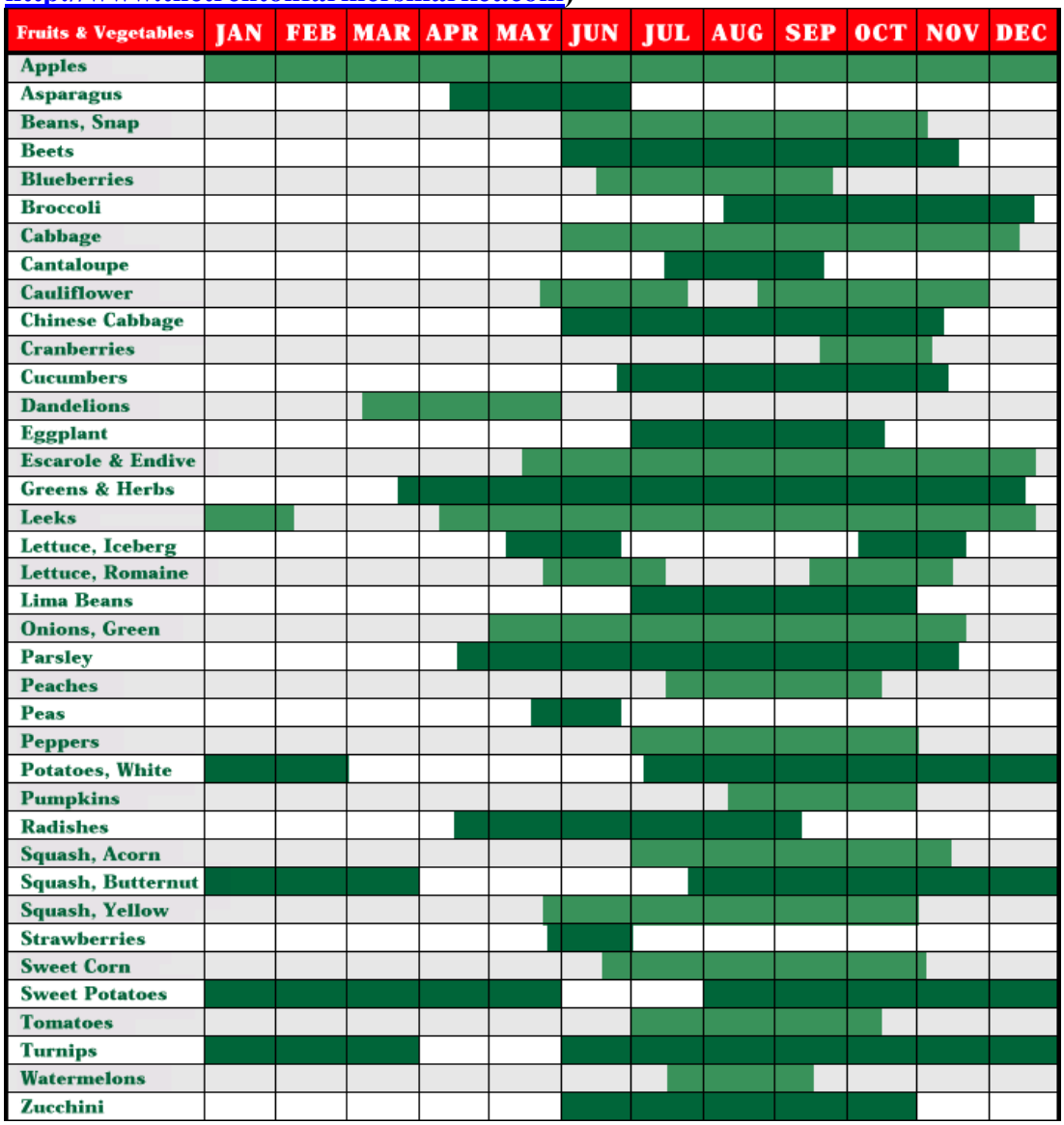
PPS surveyed existing farmers' market customers to elicit their ideas for improving the market. Among their suggestions:

- More than one out of three customers (36%) surveyed said that **more farmers selling produce** would attract them more often;

[2] Actual sales figures are not available since according to PPS vendors and the board have elected not to share this information.

- One out of four (25%) said that **more specialty foods** would encourage them to come more frequently.
- About 11% also think that the market should have a **greater variety of produce**;
- Some customers and workshop participants anecdotally expressed **desire for organic produce**. Additionally, 36% of vendors thought the addition of organic produce would improve the market.

Figure 3: Seasonal availability of fresh produce in the Trenton Farmers Market (from http://www.thetrentonfarmersmarket.com)



IV. Population and community profile

Three alternative geographies to define the affected population

Three alternative definitions of the affected population were used. In examining potential health impacts we are interested in how the market might affect three groups—current patrons, potential patrons and residents who might be affected by market activities even if they do not patronize the market. While our geographically based population definitions do not correspond perfectly to these target groups, these definitions facilitate the use of existing population statistics, such as the U.S. Census, which are geographically based.

The first definition of the affected population includes all residents living within a two-mile radius of the market. This includes some, but not all of downtown Trenton, along with large portions of Ewing and Lawrence Townships. While actual travel distances may vary, especially with the circuitous, non-grid pattern of road development in this area, this distance should not pose a significant barrier to market customers traveling by car and bicycle. Two miles is beyond what is generally considered easy walking distance (about ¼ to ½ mile (Pushkarev and Zupan, 1975)). For bus riders a two-mile "as the crow flies" distance may consist of an easy 10-minute ride or require walking virtually the entire distance to get to the nearest bus stop. Considering that most market patrons drive to the market, we believe this 2-mile distance best represents the base of potential market patrons. It also represents the population most directly affected by the economic and environmental impacts associated with market expansion and development in the surrounding neighborhood.

The second definition of the affected population includes all residents of the City of Trenton. Although it is called the "Trenton Farmers Market," the market is actually just outside Trenton in Lawrence Township. This definition of the affected population excludes many current customers (who seem to come from the areas of Mercer County outside Trenton) and many likely new customers (who live in neighborhoods adjacent to the market). Nonetheless, this definition of the affected population is important to consider since it represents a low income, under-resourced community that probably has the highest need for potential health benefits associated with the market, such as improved nutrition and increased opportunities for development of social ties and community networks.

The third definition of the affected population includes all of Mercer County. It includes all of the residents within Trenton and the 2-mile radius around the market, in addition to areas as far away as Princeton (13 miles away). While not all of Mercer county's population shops or is likely to shop at the farmers market, the profile of the county's population seems similar to the population of patrons observed at the farmers market.

Demographics

Based on data from the 2000 Census, the area within a 2-mile radius of the market, which captures much of Central Trenton, had a predominantly African-American population (58.4%), Whites were the next largest group (24.7%), and then Latinos (13.4%); Asians made up only a small proportion of the population in this area (1.1%). In comparison to the City of Trenton, there was a smaller proportion of African-Americans (50.9%) and a larger proportion of Latinos (21.5%). The population of Mercer County had a very different racial/ethnic distribution. The

majority of the population was White (64.2%), and African-Americans made up only 20% and Latinos about 10% of the County.

According to the City of Trenton's 5-year Consolidated Plan, there are clear patterns of racial segregation across the city based on 2000 Census data. Approximately 62% of African-Americans living in Trenton resided in tracts in which 65% or more of the population was African American. Latinos tended to live in census tracts in the city's South and East wards.

Approximately 38% of the residents in the City of Trenton had less than a high school education in 2000, compared to 34% of the residents in the 2-mile radius of the market, and 18% of Mercer County. Along the same lines, less than 10% of Trenton had at least a college education, compared to 34% in the County.

Economics

The population of the City of Trenton decreased 3.6% (from 88,675 to 85,403) during the period of time between the 1990 and 2000 Census. This reflects the city's fiscal struggle and inability to attract jobs into the area. The unemployment rate in Trenton was 11.8% in 2000. The concentration of poverty in Trenton increased from 18% living below the poverty level in 1990 to 21% in 2000. In 2000, nearly 30% of all Trenton's children under the age of five were living in poverty, which is a 3% increase over 1990. The percent of seniors living in poverty also increased over the decade, from 14.6% to 19.5%.

In South Trenton (adjacent to downtown Trenton and approximately 2 miles from the farmers market) 60% of households surveyed in 2000 reported having at least two income earners, according to the South Trenton Community Survey Project. Close to half of the primary income earners in the surveyed households and slightly less than half of the secondary income earners worked at blue collar jobs (e.g. construction and factory work). Approximately 30% of the primary income earners and 20% of the secondary income earners reported having experienced unemployment in the last 5 years. Lastly, about 38% of surveyed households received some kind of public assistance, pension, disability, or social security income.

Based on the 2000 Census, approximately 16% of residents living within a 2-mile radius of the market, 18% of City residents, and 7% of Mercer County residents had household incomes of less than $10,000. Close to 56% of people living in the 2-mile radius of the market were under the 185% Federal Poverty Level, or the cutoff for eligibility for various public programs.

Car ownership also varies in these three populations. Thirty percent of residents living within the 2-mile radius of the market and 26.4% Trenton residents reported having no household vehicle in the 2000 Census, compared to 11.7% of county residents. Home ownership follows similar a pattern. A little over half of the residents living within a 2-mile radius of the market and 45% of City residents were home owners in 2000. Home ownership for the entire county was 67%. Among African-American and Latino households in Trenton, the percentages of homeowners in 2000 were 42% and 35% respectively, compared to 59% homeownership for White households.

As stated by the City of Trenton's 5-year Consolidated Plan there continues to be a "dearth of attractive, safe and affordable rental housing available for Trenton's extremely low and very-low-income residents, many of whom live in substandard housing located in neighborhoods characterized by disinvestment as indicated by vacant, boarded up structures, of which there are nearly 2,000 throughout the city". According to a housing survey conducted by Habitat for Humanity in East Trenton in 1999, 25% of all occupied houses were in seriously substandard condition (City of Trenton's 5-year Consolidated Plan, 2005).

Table 1: Demographic and economic characteristics of the affected population defined by three geographies: Residents living within a 2-mile radius of the Trenton Farmers' Market, Residents in the City of Trenton, Residents in Mercer County.

	Area within 2-mile radius of market*	City of Trenton	Mercer County
Population			
Number of Individuals	57,982	85,403	350,761
Number of Households	20,262	29,437	125,807
Percent in Demographic Categories:			
Age			
0-4 years	7.5%	7.6%	6.3%
5-14	16.7	16.1	13.9
15-24	14.8	14.1	14.1
25-44	29.8	31.9	30.6
45-64	19.1	18.9	22.5
65-84	10.9	10.0	11.0
+85	1.2	1.4	1.5
Race/Ethnicity			
Non-Hispanic White	24.7	24.6	64.2
Non-Hispanic Black	58.4	50.9	19.4
Non-Hispanic Asian/PI	1.1	0.9	5.0
Hispanic/Latino	13.4	21.5	9.7
US/Non-US born			
US born	85.8	85.9	86.1
Non-US born	14.2	14.1	13.9
1999 Household Income			
<$10,000	16.2	18.0	7.4
$10-24,999	20.7	22.2	13.2
$25-39,999	19.0	20.3	14.2
$40-59,999	18.1	17.9	17.4
$60-99,999	18.8	15.7	24.8
+$100,000	7.1	5.9	23.0
Percent below 185% FPL	56.2	42.4	18.4
Education			
<High School	34.0	37.6	18.2

High School	32.3	32.0	25.6
Some college/Associate degree	21.9	21.2	22.3
College/Post-grad	11.7	9.2	34.0
Means of Travel for Workers			
Vehicle	83.1	79.3	84.3
Public transportation	9.6	11.6	6.9
Household Type			
1-person	26.8	29.7	25.6
2-or-more person family	67.3	70.3	74.4
Female-householder (no husband) family with children under 18 years	22.5	24.8	10.7
Home and Vehicle Ownership			
Household home ownership	52.5	45.5	67.0
Household vehicle ownership	73.6	69.2	88.3

Demographic profile of market patrons

In focus groups conducted by Rutgers University of mostly low-income, African-American residents in central Trenton, most focus group participants said that they did not regularly shop at the Trenton Farmers' Market. Interestingly, all of these focus group participants cited Halo Farms Dairy, adjacent to the Trenton Farmers' Market, was the place to go dairy products and ice cream in particular (Rutgers, p. 38). When HIA Project staff visited the farmers market in mid-May 2006 there were virtually no African-American customers in the market, although in the adjacent Capital Plaza shopping center the majority of shoppers were African-American. While African-American customers may travel to Halo Farms and the Capital Plaza shopping center, they do not seem inclined to venture to the farmers market. For whatever reason, the adjacent Trenton Farmers Market seems to be off the map for many of the African-American residents of Central Trenton.

So, who is patronizing the market? Specific demographic data on Trenton Farmers Market patrons has not been collected; however, customers' demographic characteristics can be inferred from a statewide survey of farmers market customers conducted by Rutgers University in 2002 (see Table 2). Since the wide area of Mercer County and surrounding areas from which the

Trenton Farmers Market draws customers represents a broad cross-section of New Jersey's population and geography, there is no reason to believe that respondents participating in the Rutgers statewide survey are markedly different from those frequenting the Trenton Farmers Market.

The majority of respondents in the statewide survey of farmers' market patrons were at least 51 years old. The 51-65 age group was the second largest, followed by those who were 65 years or older. Approximately 83% of the participants were female. The average household size of those responding was 2.72 individuals. The average respondent had at least graduated from college (62%). Nearly 84% of the respondents were Caucasian, while the remaining 16% were African Americans, Hispanic, Asian/Pacific islander, or American Indian. The annual household income of 5% of the survey participants was less than $20,000; 16% had an income of $20,000-$39,999; 24% had an income of $40,000-$59,999; and 19% had an income of $60,000-$79,999. While 9% had a household income of $80,000-$99,999, 27% made $100,000 or more. The type of neighborhood in which the participants lived was considered suburban by 83% of the respondents, urban by 14%, and rural by only 3% of the respondents.

Table 2: Select demographic and economic characteristics (percentage) of participants in a statewide survey of farmers market customers compared to characteristics of residents of the City of Trenton, Mercer County and the State of New Jersey.

	Rutgers Farmers Market Survey Respondents	City of Trenton	Mercer County	New Jersey
Sex				
Male	17.0	49.4	48.7	48.5
Female	83.0	50.6	51.3	51.5
Race/Ethnicity				
Non-Hispanic White	84.0	24.6	64.2	66.0
Non-Hispanic Black	Not available	50.9	19.4	12.9
Non-Hispanic Asian/PI	Not available	0.9	5.0	5.7
Hispanic/Latino	Not available	21.5	9.7	13.3
1999 Household Income				
<$20,000	5.0	32.9	16.0	16.3
$20-39,999	16.0	27.5	18.8	19.7
$40-59,999	24.0	17.9	17.5	17.8
$60-99,999	28.0	15.7	24.8	24.8
+$100,000	27.0	5.9	23.0	21.3

*Survey respondent data reported in Govindasamy R, Italia J, Adelaja A. 2002. Farmers' Markets: Consumer Trends, Preferences, and Characteristics. Journal of Extension: 40(1). Electronic journal article available at: http://www.joe.org. All other demographic data from U.S. Census (2000).

Health conditions and health risk factors

High priority health concerns in the affected populations include: asthma, obesity-related diseases, environmental pollutants and racial disparities in morbidity and mortality.

There were over 370,000 deaths in New Jersey from 1999 to 2003, of which about 4% occurred in Mercer County (see Table 3). A prominent feature of the mortality statistics for both the state and county is the disparity in mortality rates by race. All-cause mortality was about 1.4 times greater among Blacks than Whites in Mercer County. Blacks in Mercer County had mortality rates that were 1.3 times greater for heart disease, 2.5 times greater for hypertension, 1.2 times greater for cancer, and 2.5 times greater for diabetes compared to Whites. The heart disease

mortality rate among Blacks was higher in Mercer County than in the State, suggesting a higher prevalence of risk factors among Mercer County Blacks.

Table 3: Mortality (number and age-adjusted rate/100,000) for select causes of death 1999-2003 for Mercer County and New Jersey, Whites, Black and All Races.

		Whites		Blacks		All Races	
		n	Rate*	n	Rate*	n	Rate*
Heart Disease	Mercer Co	3,602	235.0	748	297.8	4,389	243.0
	NJ	101,480	252.6	11,671	284.3	114,474	253.5
Hypertension	Mercer Co	72	4.7	30	11.8	102	5.6
	NJ	1,809	4.5	539	12.8	2,391	5.3
Cancer	Mercer Co	2,814	191.5	637	235.2	3,500	195.7
	NJ	78,039	201.5	10,723	240.7	90,200	201.9
Diabetes	Mercer Co	349	23.7	154	58.6	513	28.7
	NJ	9,892	25.2	2,371	54.9	12,491	27.9
All cause	Mercer Co	11,673	778.1	2,915	1,086.1	14,771	821.3
	NJ	317,957	808.8	48,063	1,071.7	371,189	827.9

From: NJ State Health Assessment Data (SHAD) http://njshad.doh.state.nj.us/death1119lev.html
* rate per 100,000, adjusted to 2000 standard population.

Risk behavior data was available only at the state level. Data from the 2005 Behavioral Risk Factor Surveillance Survey reveal the prevalence of two major behavioral risk factors for chronic diseases, low fruit and vegetable consumption and physical inactivity, among residents of New Jersey (see Table 4). A large majority of the population, over 70%, fails to consume at least 5 servings of fruits and vegetables a day, with little racial/ethnic differences. While disparities in physical activity levels are striking, physical activity levels are low in all racial/ethnic groups. About 24% of Whites, 46% of Hispanics, and 35% of Blacks reported not having any physical activity in the past month. Furthermore, 50% of Whites, over 62% of Hispanics and 58% of Blacks failed to meet the weekly recommended levels of physical activity.

Table 4: Nutrition and physical activity practices among New Jersey adults by race/ethnicity (% of race/ethnic group) (2005 BRFSS).

	5 or more servings of fruit/vegetables per day?		Any physical activity in the past month?		Meets/exceeds recommendation for weekly physical activity*	
	No	Yes	No	Yes	No	Yes
White	73.8	26.2	23.7	76.3	50.0	50.0
Black	71.7	28.3	35.3	64.7	58.3	41.7
Hispanic	78.0	22.0	46.1	53.9	62.8	37.2
Other	69.4	30.6	30.7	69.3	61.2	38.8

* recommended weekly physical activity: moderate physical activity for 30+ minutes/day 5 or more days/week, or vigorous physical activity for 20+ minutes 3+ days per week)

Mercer County, and Trenton in particular, was historically one of the nation's largest manufacturing centers for goods such as steel, ceramics, electrical components, rubber, and automobiles; unfortunately extensive environmental contamination accompanied these industries. Many of the manufacturing sites were subsequently closed down, abandoned, or idled, becoming Brownfield sites, which have been shown to harbor hazardous wastes and pollutants. These exposures can have damaging health consequences, infant mortality and childhood lead poisoning in particular (Brownfields Showcase Community: Trenton, NJ. 1998. U.S. EPA. http://www.epa.gov/brownfields). Current sources of hazardous air pollutants come mostly from mobile sources (92%), with 4% coming from area sources and another 4% from point sources. In 2006, Mercer County was in the top 90% of US counties where the cancer risk from air pollutants exceeded 1 in 10,000 individuals. The cancer risk among residents of Mercer County is more than 100 times the goal set by the Clean Air Act. (Mercer County Environmental Health Assessment and Improvement Plan 2006. Available at: http://www.nj.gov/dep/enforcement/county/mercer2006.pdf)

Organizational/Community Resources

In response to the many social and economic challenges confronting Trenton's population, a number of community-based organizations have arisen. They operate food banks, help construct safe, affordable housing, provide health services and conduct a range of other activities. We have highlighted a few of these organizations that are particularly important community resources in areas addressed by this HIA—nutrition, economics and public health services. Along with the community-based organizations (Box 5) whose interests in promoting food security and community redevelopment are closely related to the activities of the farmers' market, are public agencies (Box 6) responsible for public health, social services and planning. In addition, there are several other for-profit and not-for-profit organizations (Box 7)with whom the farmers' market board and community advocates might forge partnerships for implementing proposed changes to the market.

Representatives from most of these organizations have already attended meetings with PPS and the UCLA HIA Team to voice the concerns of their constituencies and offer assistance in helping the market maximize its success.

Box 5: Community-based organizations

Isles, Inc. [http://www.isles.org]
Isles, Inc. is a nonprofit community development and environmental organization founded in 1981 with the mission to foster more self-reliant families in healthy, sustainable communities. Isles operates a vast array of activities that recognize the interdependence of physical, economic, health, and social development strategies to address the problems of distressed communities. Isles' programs include at-risk youth job training, affordable housing development, financial literacy training, homeownership counseling, community gardening, environmental health and education, community organizing, and regional planning.

Mercer Street Friends [http://www.mercerstreetfriends.org]
Mercer Street Friends is a Quaker-affiliated, nonsectarian human care organization founded in 1958 to provide compassionate and practical solutions to the problems of poverty and health. They serve more than 30,000 people a year from seven locations and 15 program sites, including the historic original location, a former Friends meeting house in the Mill Hill section of Trenton. Their programs include a food bank, early childhood centers, educational enhancement programs for at-risk youth, employment support, parenting classes, and health care for home-bound clients.

United Way of Greater Mercer County [http://www.uwgmc.org]
The United Way of Greater Mercer County is an independent nonprofit organization that provides a neutral table around which diverse groups can partner and collaborate to produce measurable results in local human care issues in the greater Mercer County area. They provide grants to community-based organizations to assist vulnerable populations, including children in poverty who lack resources to prepare for school, youth at risk who drop out of school, low-income families who struggle to make ends meet, and seniors in need of socialization, transportation and medical care. They also partner with municipal, County, State and Federal organizations to provide administrative services for the Emergency Assistance program FEMA and disaster relief, and a Child Care Voucher program.

Notes: A comprehensive listing of CBOs is available at: http://njserves.rutgers.edu. Additional information available through Princeton University's Community-based Learning Initiative available at: http://www.princeton.edu/~cbli/

Box 6: Public Agencies

Local Health Departments
Most public health functions are administered by local (i.e. municipal or township) health departments, including:

- ***City of Trenton, Division of Health*** [http://www.trentonnj.org/Cit-e-Access/webpage.cfm?TID=55&TPID=6474]
- ***Lawrence Township Department of Health*** [http://www.lawrencetwp.com/health.htm]
- ***Ewing Township Department of Health*** [http://www.ewingtwp.net/healthdept.htm]

Mercer County Board of Social Services
[http://nj.gov/counties/mercer/commissions/social]
The Mercer County Board of Social Services supervises the administration of an array of need-based economic and social services to individuals and families residing in Mercer County, including Temporary Assistance to Needy Families (TANF), General Assistance, Food Stamps, WIC Nutrition Programs, Child Support and Paternity Program, Medicaid, Refugee Resettlement Program and transportation assistance. Among the divisions within in the Department of Social Services is the Divisions of Public Health (responsible for supervising environmental health services), Mental Health, and Youth Services.

Mercer County Planning Division [http://nj.gov/counties/mercer/departments/planning/]
The Planning Division provides for the development of the county in a comprehensive and controlled manner using various strategies relating to land use and development. The Mercer County Growth Management Plan, along with its various sub elements, provides a framework for orderly growth which protects quality of life through the timely provision of infrastructure, preservation of open space and farmland, and transportation planning.

New Jersey Department of Agriculture [http://www.state.nj.us/agriculture/]
In addition to their primary mission to promote, protect and serve the Garden State's diverse agriculture and agribusiness industries, the New Jersey Department of Agriculture administers a number of nutrition programs including school meal programs, food distribution programs to furnish food to organizations that feed the needy, and nutrition education programs. In cooperation with the New Jersey Departments of Health and Senior Services and Education, it promotes the "Healthy Choices, Healthy Kids" campaign, a series of initiatives to combat

childhood obesity and improve children's academic performance by promoting better nutrition and physical activity in schools. An important farm commodity marketing program is "Jersey Fresh," which promotes farmers markets. Their website [http://www.state.nj.us/jerseyfresh] serves as a clearinghouse for information on farmers markets in New Jersey.

Rutgers Cooperative Extension of Mercer County [http://www.mgofmc.org/rutgers.html] Rutgers Cooperative Extension of Mercer County provides educational programs to consumers, homemakers, farmers, growers, and youth grades K-13. Programs include 4-H Youth Development, education programs on nutrition, personal finance, housing, gardening and other topics, and an Expanded Food Nutrition Education Program (EFNEP) classes for limited-income adults and youth on improving diets and stretching economic resources.

Box 7: Other organizations

Capital Health System
Formed in 1997, the Capital Health System was a consolidation of the resources of the Helene Fuld Medical Center and the Mercer Medical Center. The Fuld Campus is located on Brunswick Avenue, a little over a half a mile from Trenton Farmers Market. This hospital has a current operating capacity of about 180 beds, which include 24 critical care (intensive care and coronary care) beds and 72 general medical floor beds. This hospital hosts the only end stage renal disease center in Mercer County and is a designated Level II Trauma Center. In addition to the medical care provided at the hospital, the Capital Health System provides a number of educational and outreach programs. The Community Health Education Department of the Capital Health System provides preventive services to the community through activities such as health fairs, health screenings, health education lecture series, and walking clubs. The Mobile Outreach Program offers outreach services at home, work, school or any other place a crisis situation might arise. The program offers prevention, intervention and evaluation, and follow up care, referral to services for continued care, such as drug and alcohol treatment, counseling, family therapy and inpatient hospitalization.

N*ew Jersey Community Capital* [http://www.newjerseycommunitycapital.org]
New Jersey Community facilitates the flow of money and knowledge to create wealth and well-being in communities. New Jersey Community Capital offers financial assistance in the form of loans, grants and equity to organizations either lacking access to or unable to afford the cost of capital from conventional sources. Sectors (and underlying industries) served include affordable housing (homeownership, rental, supportive, transitional), community services (early care, education, health care, human and social services, cultural and arts), and business (small business, social enterprise, economic development, commercial real estate). New Jersey Community Capital also offers technical assistance whereby the company partners its talents and strategic expertise with advocates and service providers to develop a host of products, services, and trainings to make a lasting impact on the social sector. Technical assistance programs assist community-based organizations and other clients achieve breakthrough results with respect to their individual missions.

V. Impact assessment

Nutrition

Summary: Impacts on nutrition

Public and/or farmers' markets can serve as a vehicle to increase access to fresh fruits and vegetables, particularly in low-income communities. However, there are significant logistical barriers to doing so: (1) potential patrons must be encouraged to attend and purchase produce, (2) the market must be easily accessible by public transportation/walking or transportation must be provided, and (3) the farmer-vendors must have a consistent supply of customers. Selling directly to an institution or creating a market within an institution minimizes the risk for farmers. By itself, improved access to fresh fruits and vegetables does not change consumption behavior. Individuals can be encouraged though subsidies such as coupons to attend markets. This strategy has been successful in changing purchasing behaviors in those already consuming fresh produce. However, in order to change consumption behaviors among non-fresh produce consumers, substantive adjunct programs are necessary. There is ample evidence suggesting that both coupons and education are necessary to change fresh produce consumption behavior in low-income individuals. Additionally, there is a proven dose-response relationship between the number of the classes and the amount of fresh produce consumed. The education component is necessary to change long-term consumption behaviors among low-income individuals.

The range of market modifications included under Alternative 1 (minor cosmetic changes

to the facility) and Alternative 2 (PPS recommendations for major remodeling) would probably not significantly impact consumption of fresh fruits and vegetables. In fact, simply attracting more patrons could actually harm health if they primarily patronize the unhealthy food options, such as pizza, fried chicken and deli sandwiches, of which there are many in the market. Market outreach efforts directed towards the low-income population of central Trenton proposed under Alternative 3 might increase consumption of fresh fruits and vegetables if they are coupled with coupons and education efforts.

Definitions

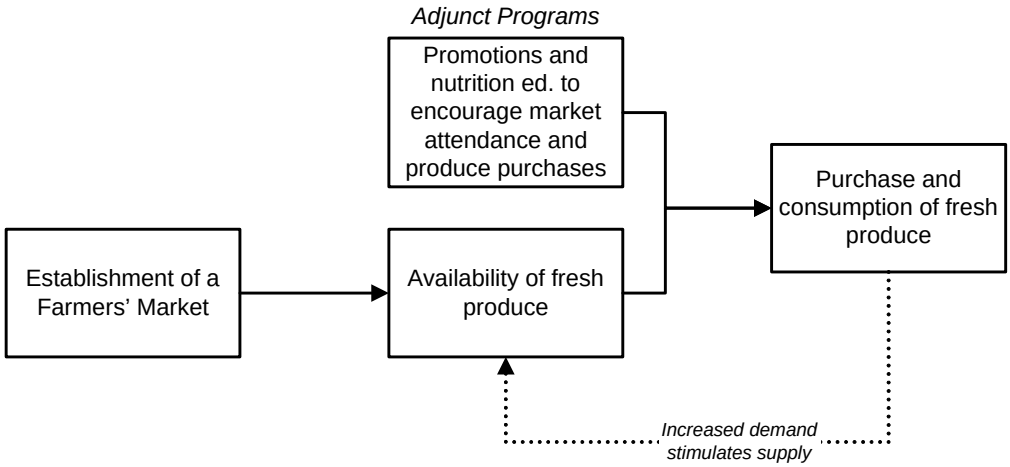
- Community food security: A situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes self-reliance and social justice (Hamms and Bellows 2003)
- Food access: Individuals have adequate incomes or other resources to purchase or barter to obtain appropriate feeds need to maintain consumption of an adequate diet/ nutrition level. (USAID 1992-definitions consistent with four international organizations).
- Food availability: Sufficient quantities of appropriate, necessary types of food from domestic production, commercial imports or donors are consistently available to the individual or are within reasonable proximity to them or are within their reach. (USAID 1992- definitions consistent with four international organizations).

Nationwide there has been an emergence of farmers' markets, providing access to fresh produce at low prices in the low-income communities (Policy Link 2005). Programs placing emphasis on increasing access and availability intend to change consumption behaviors but often such programs do not evaluate consumption changes. Although simply increasing access is unlikely to yield significant shifts in consumption patterns without concomitantly addressing the psychological factors that induce consumers' purchase choices (Havas et al. 2003).

Improvements in nutrition come by means of changing knowledge, attitudes and preferences (Conrey, Frongillo, Dollahite & Griffin 2003).

As illustrated in Figure 4, the following key factors are necessary in order for a farmers' market impact nutrition in a low-income community: (1) A farmers' market must be established. A location must be secured, preferably one that is accessible to community members. Collaboration with local organizations is important to minimize farmers' risk. (2) There must be fresh fruits and vegetables accessible and available at the market, (3) Adjunct programs are often necessary to encourage attendance in the market and provide education and incentives to purchase fresh produce. (4) Participants must consume the produce.

Figure 4: Logical pathway for farmers' market impact on nutrition



Establishing a Farmers' Market

In 1975, a small group of local organic farmers organized the Davis Farmers' Market (DFM) in Davis, California in order to support direct grower to consumer sales. DFM founders believed the market provided an opportunity to for smaller growers to sell their produce who could otherwise not compete in conventional marketing arenas. DFM collaborated with the Davis Food Co-Op establishment, buying all remaining produce after the market closed for the first six

months after it opened. This reduced the participation risk for the farmers by providing insurance and stability to the market. This created "a consistent market for vendors and customers during the critical time when community awareness of the market was first developing." By 1997, the DFM become one of the first four certified markets in California and in 1984 a covered structure was built by the city of Davis to make year around operations more viable. Currently, the DFM is still located in its original location and an average of 85 vendors dell their produce every Saturday. Operating all year, the gross annual sales are greater than 1.5 million, attracting between 5,000 to 7,000 people per week (260,000+ per year) and up to 10,000 for special events (Podell).

Access and Availability to Fresh Produce

One of the aims of a farmers' market is to increase consumption of fresh fruits and vegetables (Bellows, Dufour and Bachman 2003). Americans fall significantly below recommended intake of fruits and vegetables and dietary trends reflect increased consumption of energy dense foods, comprised of refined grains, added sugars and fat. Further, it is well documented that low income and minority groups consume disproportionately les fresh produce (Morland, Wing, Roux, 2002)

Rose and Richards (2004) demonstrated the importance of environmental factors on dietary choices among a national representative sample of low-income households. Increased consumption of fruits was associated with easy access to supermarkets. Similarly, there was inverse relationship associated with fruit consumption and distance to supermarket from home. There is also a scarcity of supermarkets in low-income neighborhoods across the country creating a pervasive problems of nutritional deficiencies and related health problems in low-

income communities (Gottlieb 1996). Gottlieb and colleagues (1996) note that farmers' markets are unrealized opportunities to provide access to health foods in low income communities.

Disparities in Access to Fresh Produce

In a multi-state study (Morland et al. 2002), demonstrated that there are over three times as many supermarkets in wealthy areas compared to low-income and four times as many supermarkets in predominately White areas compared to Black areas. In another study, Morland et al. (2002) found that in African Americans living in neighborhoods containing at least one supermarket were more likely to meet dietary guidelines for fruit and vegetable consumption than those African Americans living in neighborhoods without a supermarket. Zenk, Schulz, Israel et al. (2005) found that Detroit racial residential segregation leads to reduced supermarket access among African-Americans. Moreover, analysis from study in St. Louis (Baker, Barnidge, Stayhorn, Schootman, Struthers, & Griffth 2006) showed that poor access to healthy foods in predominantly African-American neighborhoods made it particularly difficult for low-income African American families to make healthy dietary choices. Compounding this problem, there is an inverse relationship between energy density of selected foods and their energy costs (Drewnowski 2004). This makes purchasing fruits and vegetables less attractive to low income populations. Kaufman et al. (1997) showed that supermarkets in urban and rural areas charge more for fruits and vegetables when compared to prices in suburban supermarkets despite having the larger concentration of low-income populations. The authors attribute this to higher operating costs.

Despite alleged high operating costs of supermarkets in inner cities, academics, non-profit organizations and businesses alike are beginning to realize the potentials of these untapped

markets. There is a density of purchasing power, limited competition and available labor force (Policy Link 2005). The Policy Link report suggests with accurate data about the community, food retailers and can take advantage of these market opportunities while increasing access to fruits and vegetables to low-income communities.

Evidence-base evaluations on access and consumption of fresh fruits and vegetables through Adjunct Programs

The lack of accessibility to supermarkets in low-income communities is demonstrated in geocoding individual data relative to food store location (Algert, Agrawal & Lewis 2006). Additionally, Algert et al. notes that despite the substantial purchasing power of low-income communities, there are few supermarkets in these communities compared to higher-income communities. Morland and colleagues (2002) found a positive relationship between supermarkets in census tracts and fruit and vegetable consumption. Rose and Richards (2004) similarly shows that neighborhood access is an important correlate of consumption. However, there is a lack of research evaluating consumption outcomes and/or health outcomes of many environmental interventions.

Intervention research on whether increased access to fresh produce increases consumption of fresh fruits and vegetables in low-income communities has been limited primarily adjunct programs Women Infant Children (WIC) programs and Senior Farmers Markets Nutrition program. These programs enable low-income participants to by produce from local farmers' market, inevitably helping to sustain such markets. Farm to institution programs are also becoming notably more popular but there is lack of evaluation data.

Evidence from an WIC Evaluations

- WIC programs providing coupons for fresh produce only did not yield a significant change expect in the Los Angeles WIC program in which they provided participants $40 per month (compared to approximately $10 per month) in coupons.
- Programs comprised of both education and coupons were more successful than coupons alone and produced significant consumption changes. In the Maryland WIC program, they noted a dose response relationship between the number of classes attended and consumption behavior.

Women, Infants, and Children (WIC) is a large public health program in the United States designed to provide supplemental nutritional foods as well as education and referral to health care for low-income women and their infants and young children through 5 years old. It was established in the mid 1970s and currently more than 7.5 million people participate in the program. In 1992, the Women, Infants, and Children Farmers' Market Nutrition Program (FMNP) was established to improve the health of nutritionally at-risk women, infants, and children as well as to support small farmers by expanding the awareness and use of local farmers' markets. This is a cooperative program, in which participating states are required to provide a 30 percent match of federal from the states. The program targets women, infants, and children who have been certified to receive WIC program but on the waiting list for WIC certifications. The 2004 WIC impact report indicated that 13,176 farmers accepted coupons at 2,824 farmers markets and farm stands nationwide. Through state and federal funding, FMNP

benefits were proved to nearly 2.4 million recipients in 2002, resulting in over 20.8 million in revenue.

It is interesting to note while evaluating the Connecticut Farmers' Market Anlinker, Winne and Drake (1992) measured barriers to using the coupon vouchers at farmers' markets. Results indicated that location their primary barrier. Suggestions to increase their participation included making transportation and/or childcare available, improving the location of the market, and changing the hours of operation.

Table 5, shows that in most cases economic incentives do not generate significant changes consumption in fresh fruit and vegetable among WIC program participants with the exception of the Los Angeles WIC program. Herman and Colleagues (2006) assert that the large redemption and consumption rates are likely attributable to the large economic incentive ($40/per month) however they suggest that redemption rates for vouchers at a lower incentive level would be similar to that of their study result. As seen below, programs comprised of both education and coupons were more successful than coupons alone and produced significant consumption changes. Additionally, the Maryland WIC program, noted a dose response relationship between the number of classes attended and consumption behavior.

Table 5: Summary of dietary effects from WIC interventions on Fruit and Vegetable consumption.

Program/Location	N	Ethnicity	Intervention	Follow-up time	Effect on consumption	Other char
Connecticut WIC	489	Break-down not given but discussion includes Hispanic, AA,white	Coupons ($6/mo) for two months. Control group did not receive.	2-4 months	No significant change	1) Coupon recipients significantly more lik FM compared to thos not receive them.2) 3 participants used thei money in addition to to purchase fresh pro One-third of participa back to the market af coupons up.
New York integrated WIC		1 year	Interagency collaboration, hiring program coordinator, supporting capacity building locally, and disseminating nutritional education materials.	None stated	Did not measure consumption	Program reversed 2.3 redemption decreasin from 1996-2000. Aft redemption increased
Maryland WIC 5-A-Day	3,122	56% black 44% white/other	Ed nutrition sessions given by peer educators, printed materials and direct mail. Controls got standard of care.	1 year	Interventions participations showed significantly greater positive movement through the stages of changes. SOC measured by eating five servings of F &V per day and eating more F& V per day.	There was a dose-res relationship between of sessions attended a consumption of F&V
5 A Day fruit and vegetable Michigan WIC	455	45% Afr Am 49% white 6% other	Coupons ($40 June-Oct)+ 20-min ed. Control group got ed only.	2 months	Coupons and education were significantly related to changes in attitudes about fruits and vegetables and the consumption behavior of them.	Attitudes about fruits vegetables (through e were 80% predictive vegetable consumptio
Los Angeles WIC	602	86% Hispanic 7% Black 7% Other	1) Coupons ($40/month) for supermarket. 2) Coupons ($40/month) for farmers market. 3) Controls received diaper vouchers.	6 months	Economic incentives significantly increased F&V consumption in both farmers markets and supermarket groups. Post 6 months Control group was consuming 2.7 servings if F&Vcompared to 4.25 (supermarket) and 3.9 (FM)	Intake was sustained post intervention. The received farmers' ma vouchers consumed m and vegetables than t received supermarket

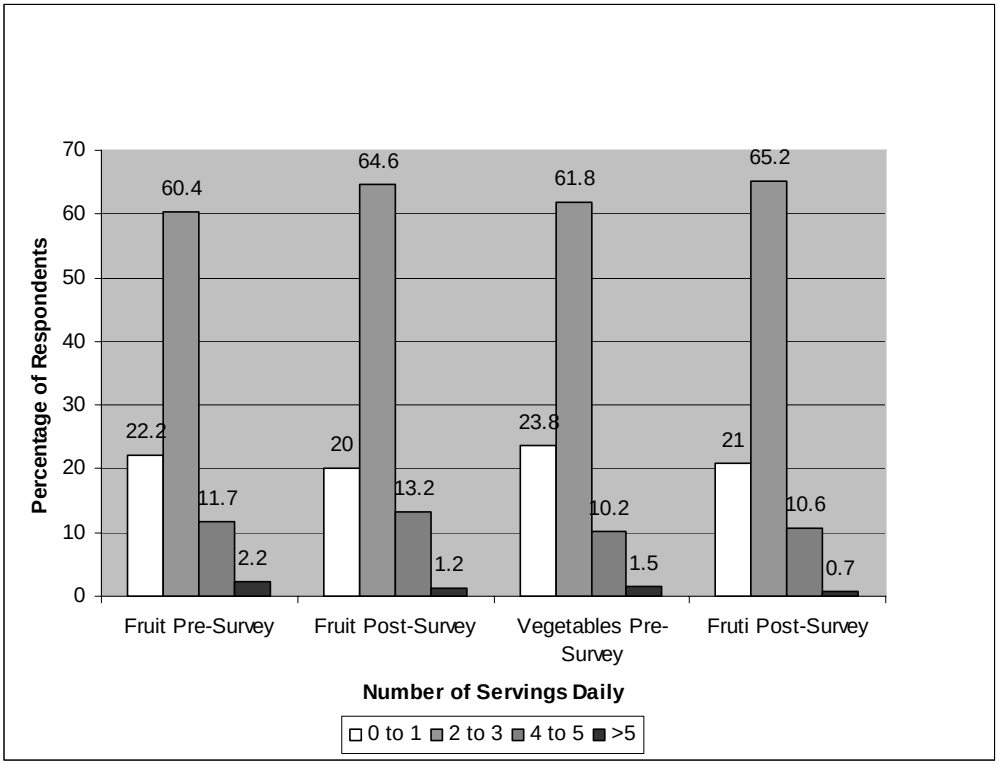
Evidence from an Evaluation of a Seniors Farmers' Market

- A subsidy did not produce significant fruit and vegetable consumption change between pre and post test
- The most significant change was almost 74% of elders continued buying fresh produce from the farmers' market

There has been an emergence of direct grower to consumer services among the elderly in various states nationally from Massachusetts to Seattle to encourage consumption of fruits and vegetables among low-income elders as well as to support local farmers participating in the program. A Seniors Farmers Market Nutrition Program was evaluated to determine whether one $28 incentive over a five-month period promotes increased buying and consumption of fresh fruits and vegetables (Russell 2002). As seen in Figure 5, there was a small yet insignificant change between pre and post consumption based on a self-reported survey. Most significantly, 73.9% of the elders continued buying produce after program completion.

Ancillary data on the availability of fresh produce prior to the intervention was not given in the literature. However, based on the slight but insignificant change from pre to post consumption data, it is likely that these low income Iowa seniors had ample access to fresh produce prior to the intervention since the program ultimately affected where they bought food, not their consumption. The Iowa Department of Public Health suggests that additional education is necessary in order to change consumption behavior more significantly amongst the elderly.

Figure 5: Changes in fruit and vegetable consumption in the Iowa Seniors Farmers Market Nutrition Program (pre-program survey (N=3043), post-program survey (N=681)).



Evidence from Farm to Institution

- Consumption results are largely unclear but selling directly to an institution or creating a market within an institution minimizes the risk for the markets. Farmers can sell to captive audiences and there is already infrastructure reducing potential building and logistical costs.
- College campuses have started revamping their cafeteria food selections to combat the typical weight gain experienced by college students
- A study revealed that with proper support an environmental intervention to introduce and promote lower fat foods was effective in changing purchasing behavior.

- Anecdotally, food service directors note that healthy options in schools increase consumption of such foods.

Many organizations are now adapting various forms of farm-to-institution program in order to increase access to fresh fruits and vegetables. Selling to institutions such as schools, hospitals, churches and prisons, can provide small farmers with a dependable supply of consumers (Bellows, Dufour and Bachman 2003). Further, there is already infrastructure reducing potential building and logistical costs. The consumers who have access to local produce in institutions can normalize consumption behavior and potentially become more aware of farmers' market inevitably increasing purchasing behavior. Farm to institution programs sets up an ideal environment for building community food security, defined by Hamm and Bellows (2003) as "a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes self-reliance and social justice."

School-based environmental interventions have changed purchasing behaviors among high school students over a two-year period (French, Story, Fulkerson, Hannan, 2004). This was achieved through increasing availability of lower-fat foods and implementing of school-wide peer promotional activities highlighting lower-fat foods in the ten intervention schools. Promotions included taste tests, social marketing, and food choice self-assessments. The exposure to additional information and availability of lower-fat foods lead to a significantly higher percentage of lower-fat food sales compared to the control schools.

Colleges and universities have plentiful potential for supporting local foods since they order in large quantities and have a captive audience (htpp://www.foodroutes.org). In 2005, there were over 200 universities supporting farm-to cafeteria movements across the nation (http://www.nytimes.com/2005/08/24/dining/24school.html). The movement towards supporting local sustainable agriculture while helping students eat healthier began on the east and west coasts and is now resonating with college campuses nationwide. In colleges across the country, there have been movements to reverse the typical weight gain trends by offering healthy food selections.

Izumi and colleagues (2006) assert that farm to institutions can be a vehicle to increase access to fresh produce. It should be noted that many institutions are contending with budgets and other operating issues and their demand for locally grown products may be contingent on the pricing. For example, in Michigan schools only 10% of food service directors were willing to pay higher prices for locally grown schools. Nearly half (45.5%) of food service directors indicated that their institutions would not pay a higher price for local produce while 43% of food directors were unsure or were neutral on the topic (Izumi et al. 2006).

A provision to the National School Lunch Act was amended in 2002 to encourage schools participating in breakfast and lunch programs to also partake in Farm-to-School programs. These programs encourage purchasing food produced locally, including fruits, vegetables, and eggs. In turn, many schools have implemented supplemental educational programs as well. Although peer reviewed research evaluating farm-to-school programs are limited, anecdotal reports suggest such programs may be an effective way promote health eating. In fact, food service directors

have documented that inclusion of local produce in school meals have increased their students intake of fruit and vegetables (Izumi et al. 2006)

What are the economic effects of Adjunct Farmers' Market Coupon Programs?

- Agencies are likely to initiate and sustain coupon program if they are mutually beneficial to farmers and consumers.
- The use of both coupon vouchers and education increases demand for fresh fruits and vegetables.

Just and Weiner (1997) developed a framework to evaluate food assistant programs and applied it to the WIC Farmers' Market Nutrition Programs which aim to increase consumption of fresh produce by providing coupons and/or educational materials. Table 6, shows the estimated effects of the FMNP by state, city and local market. It is interesting to note that the extra economic benefit for the farmer is mitigated by the loss of the non-food assistance customers, who may consume less at the higher price. (The authors assume that a shift in demand will cause a price increase when the local farmers fill the increase). The most significant results are the net economic welfare effects. The net welfare effect nationally was approximately 23% due to the "non market" effects, described as the benefits derived from enhanced valuation of fresh produce consumption due to information. Consumers benefit more than the value of the coupon redemption due to market-correcting information.

Table 6: Estimated Effects of FMNP at Various Market Levels (Just and Weninger 1997).

	Economics Welfare (% coupons redeemed)

Market	Percent change in price and quantity	FMNP coupons redeemed	FMNP participants	Farmers	Non-FMNP consumers	Net effect
National market level	<.01	2,560,108	122.76	7.88	-7.88	22.7
State market level						
IA	1.52	365,000	128.89	9.15	-7.84	30.2
MA	0.02	336,000	123.01	7.26	-7.24	23.0
PA	0.01	252,000	119.93	7.56	-7.54	19.9
TX	0.02	448,528	123	7.65	-7.63	23.0
VT	0.03	28,000	114.2	8.13	-8.11	14.2
WA	<.01	48,280	128.32	8.34	-8.34	28.3
Local market level						
Crossroad, IA	1.88	135,000	128.6	9.14	-7.53	30.2
Holyoke, MA	4.25	594,000	119.5	7.11	-3.51	23.1
West Erie, PA	0.12	4,400	119.83	7.55	-7.44	19.9
Central, TX	0.89	126,000	122.26	7.62	-6.94	23.0
Port Orchard, WA	0.01	240	128.31	8.24	-8.23	28.3
Individual market level						
Crossroad, IA	1.88	27,000	128.6	9.14	-7.53	30.2
Holyoke, MA	4.25	99,000	119.5	7.11	-3.51	23.1
West Erie, PA	0.12	2,200	119.83	7.55	-7.44	19.9
Central, TX	0.87	63,000	122.26	7.62	-6.84	23.0
Port Orchard, WA	0.05	240	128.27	8.23	-8.81	28.3

Has availability of fast food and soft drinks has presumably led to an increase in consumption?

- The availability of sugar and fast food lead to an increase in consumption due to aggressive marketing and changing demand for such products.
- Overall trends in the availability of sugar show an increase in caloric consumption with mean intake of soft drinks more than doubled, from 5 fluid ounces to 12 fluid ounces per day in the approximate 10-year span
- Nationally, fast food sales have been growing annually at a rate of 6.8% since 1985. "Eating out" made up 10% of food expenditures in 1960, by 1998 this nearly quadrupled to 47%

Overall trends in the availability of sugar show an increase in caloric consumption in United States (Popkin and Nielsen, 2003). Ebbeling and colleagues (2006) explains that soft drinks are readily available in homes, fast food, restaurants, vending machines and in school cafeterias. The soft drink industry aggressively markets consumers, particularly younger consumers. The prevalence of soft drink consumption among youth ages 6 to 17 years increased 48%, from a

prevalence of 37% in 1977/1978 to 56% in 1994/1998 (French et al. 2003). Mean intake of soft drinks more than doubled, from 5 fluid ounces to 12 fluid ounces per day in the approximate 10-year span (French et al., 2003). Wiecha, Finkelstien, Troped, Fangala, and Peterson (2006) showed that vending machine and fast food restaurant use are associated with overall increase in sugar-sweetened beverage intake. The ready availability and aggressive marketing of sweetened beverages often undermines behavioral strategies that focus on making healthful choices.

Nationally, the amount consumers spent on fast food sales have been growing annually at a rate of 6.8% since 1982 (Jekanowki, 1999). While "eating out" made up 10% of food expenditures in 1960, by 1998 this nearly quadrupled to 47% (Beale, 2000). Moreover, researchers contend that these trends will likely continue due to demanding work schedules and the perceived convenience of "eating out." (Jabs and Devin, 2006).

Does restricted access in fresh fruits and vegetables decrease consumption?

Restricted access to fresh fruits and vegetables may inevitably affect consumption. For example, New York and other states in the Northeast have a limited growing season and if intake is concentrated during certain seasons, then agricultural supply must meet demand. Analysis suggests that diets of those in New York fail to meet the food pyramid recommendations as: 1) Consumption of fruits is only 1.9 servings per day, 38% below recommended number of servings, 2) Fruit juices comprise more than one-third of total fruit consumption (guidelines recommend emphasis should be on whole fruit), 3) Nearly three-quarters of all fruit servings come from just five crops. This suggests that there is a need for a greater variety of fruit in the diet (Peters, Bills, Wilkins, and Smith, 2002).

Can increased availability of fresh fruits and vegetables in farmers markets lead to changes other than consumption?

Increased availability of fresh fruits and vegetables in farmers markets lead to changes other than consumption. Farmers' market provides social educational opportunities (Healthy Food, Healthy Communities, Policy Link 2005). The space provides room for interaction and learning that shoppers are not likely to find at a standard supermarket. In fact, the Project for Public Spaces found social interaction was the main driver in attracting customers to public markets (Public Markets as a Vehicle for Social Integration and Upward Mobility).

Do supermarkets change the quantity/quality of produce for sale or the way it is displayed subsequent to introduction of farmers markets nearby?

A multivariate study on prices (Blake 1994) revealed that broadly prices are lower at farmers' market when compared to nearby grocers. In order to remain competitive it is plausible to assume that supermarkets can change their quantity and/or quality of produce subsequent to the introduction of the farmers' market nearby. However, there was no such data to support that. In fact, in Minnesota, the local farmers' market was supported by a grocery store initially offering their parking lots to house the market (but there was not enough space for both). The grocery store did not see the farmers' market as competition but rather believed the market could attract more customers into the grocery store (Goreham 2000).

The Garden of Eden Market, St. Louis, MO: Improving access for better nutrition

In Saint Louis, Missouri faith-based ministries partnered with academic and business leaders (St Louis University and St Louis Produce Market) to create the "Garden of Eden" to house a market where residents could buy fresh produce in lieu of the supermarket shortages found in their communities. Prior to implementation, researchers performed supermarket audits in order to choose a low income locations underserved with fresh. Similar to Morland et al. (2001), results indicated that areas that had more that a 50% African American majority had a fewer supermarkets than those with a White majority. Thus, the "Garden of Eden" market was housed in church of a low income, predominately African American community with a low availability of fresh fruits and vegetables.

Lay health advisors taught classes about nutrition information and performed cooking demonstrations at the Garden of Eden and throughout the community at libraries, other churches, etc. The recipes had few but affordable ingredients available for purchase at the store. There is a Shuttle service is available from four other cooperating churches in the community. The Garden of Eden's is currently open every Saturday from 10 a.m.- 2 p.m. "They probably have gotten me to eat a broader span of vegetables than I have in the past," says one of about 50 shoppers who show up weekly. A press release states that the market, which is open to anyone, needs many more shoppers to become self-sustaining after t

While a survey instrument was used to measure confidents of health advocates, many measures were not quantified in the published literature including the impact on fruit and vegetable access and consumption, total participation rates, or numbers of participants utilizing the transportation service. The grant runs out in a few years.

Physical activity

Summary: Impacts on physical activity

The Trenton Farmers' Market has the potential to increase physical activity by (1) encouraging more patrons to travel to the market on foot or by bicycle instead of by motor vehicle, (2) serving as a catalyst for the development of a more walkable neighborhood, and (3) providing a venue for physical activity promotion education. Currently there is much room for improvement since most patrons drive to the market and neighborhood walkability is extremely poor. Significant barriers exist to making the physical infrastructure conducive to walking and biking—a goal that can probably be achieved only with substantial, long-term economic inputs from the community and other businesses. In the shorter term with minimal additional resources it may be feasible to make the market a more attractive destination for patrons who live within walking distance but who currently do not frequent the market. While additional increments of physical activity gained by walking and biking to the market may be small, they are an important part of broader efforts to create encourage more active lifestyles.

Regular physical activity is important for maintaining good health and quality-of-life (CDC, 2006), however most American adults do not get sufficient physical activity (MMWR, 2005). While recreational physical activity, such as jogging, working out at a gym and playing basketball, are excellent sources of physical activity for some, incidental physical activity that

occurs as people go about their daily routines is far more likely to provide regular, on-going activity throughout the lifespan for broad segments of the population, particular for those individuals whose lives are presently largely sedentary (Smith and Bird, 2004). Such physical activity takes place when we walk or bike to work, walk to a bus stop, use stairs instead of elevators, and elect to shop and walk along a pedestrian-friendly shopping street instead of driving a car from strip mall to strip mall.

At least in this country, however, a great deal of effort in the last half of the 20th century was spent on creating a built environment that facilitated moving about by automobile traffic, usually at the expense of walkability and bikeability (Jackson, 2003). While many factors contribute to rising rates of obesity and diseases associated with sedentary lifestyle, the creation of places that deter an active lifestyle undoubtedly played a contributing role (Ewing et al, 2003; Ewing, Brownson and Berrigan, 2006; Frank, Andresen and Schmid, 2004).

Increasingly planners, developers, government officials and public health advocates are working to counter this trend in order to create places where we live, work, to school, play and shop that are more conducive to physical activity. Public markets, like the Trenton Farmers' Market, have the potential to increase physical activity in three ways:

1. changing the way market patrons get to the market, that is by encouraging more patrons to travel to the market on foot or by bicycle instead of by motor vehicle;
2. serving as a catalyst for the development of a more walkable neighborhood, thus increasing levels of walking in the neighborhood, irrespective of whether such walking is associated with trips to the market.

3. Providing a venue for physical activity promotion education programs.

The evidence supporting prospects for the first two pathways at the Trenton Farmers' Market will be discussed below, along with specific features and strategies that could facilitate the realization of these prospects for increased physical activity. The third pathway, physical activity education, will be addressed in the discussion of impacts on public health services in Section IV.

Increased walking and biking to the market

Extremely large markets, like the Pike Place Market in Seattle, might provide patrons with significant opportunities for walking simply because distances are so great from vehicle parking areas to the market and within the market itself. At small markets, such as the Trenton Farmers' Market, any significant physical activity associated with visits to the market will take place, not within the market but in travel to and from the market.

Research suggests the following as important factors impacting on the decision to walk to and from public markets:

- Distance to the market, influenced by market location and community spatial design
- Coverage, quality, and attractiveness of pedestrian infrastructure
- Perception of safety (i.e. from both traffic and crime)
- Perception of local walking environment, including aesthetic appeal of houses, gardens, etc. along the route

- The comfort or ease of walking (i.e. the nature of the terrain, ability to carry goods)
- The frequency and desirability of seeing people while walking
- Personal attitudes towards walking (Handy, 1996; Kitamura, Mokhitarian, and Laidet, 1997; Lee and Moudon, 2004).

Currently, however, it seems that walking or biking to the Trenton Farmers market is the exception, not the rule. According to a survey of market patrons conducted by PPS, nearly all market patrons come by car. Only three of 165 respondents surveyed came to the market on foot none bicycled and only one came by bus. While the first wave of the survey was conducted in December when inclement weather could be expected to deter walking and biking, the second wave of the survey was conducted in mid-June when weather would not be expected to be a barrier to walking and biking.

From a bird's eye perspective, the infrequency of walking and biking to the market might seem surprising, given the proximity of densely populated residential areas near the market. Closer investigation, however, suggests two factors that are likely to deter walking and biking to the market: a lack of pedestrian and bike infrastructure and the fact that a substantial portion of the market's current customer base may come from distant areas, not the local neighborhood.

The challenges posed for people attempting to walk or bicycle to the market are well summarized by PPS in their final report on opportunities for revitalizing the market.

> *The current situation for pedestrians walking to the market is dire. While sidewalks exist along Princeton, the north (main) entrance to the market is auto-dominated and provides no space for pedestrians. Along Spruce, there are simply no sidewalks or even clear curb*

cuts for cars to enter the market – as it is, cars enter pretty much where they please. Furthermore, crossing either Spruce or Princeton toward the market is an exercise in bravery. Crosswalks or pedestrian signals are virtually non-existent and traffic can be overwhelming.

Besides the absence of sidewalks and bicycle lanes, the streets in the area are generally narrow with little or no shoulder. Attempting to walk or bike along the roadway would be extremely dangerous.

There are also more subtle barriers to walking and bicycling. Across the street is a small shopping center, Capital Plaza. Despite the proximity, no pedestrian cross traffic was observed between the market and the shopping center. Part of the problem is that the market faces the back of the shopping center which serves as a long wall separating shopping center parking and shop fronts from the public market. From the front of the shopping center there is nothing to suggest that there's a farmers' market just behind this wall. Even if someone wanted to go to the market from the shopping center they would have to take a circuitous route several hundred yards around this wall of buildings.

The supposition "even if someone wanted to go to the market" is an important one to examine. In focus groups conducted by Rutgers University of mostly low-income, African-American residents in central Trenton, most focus group participants said that they did not regularly shop at the Trenton Farmers' Market. Some focus group participants noted barriers such as the fact that Trenton Farmers' Market vendors do not accept EBT cards, others cited reasons based on misconceptions, such as the belief that the market only sold large quantities (Rutgers, p. 22).

Lack of transportation is also an issue, since the farmers' market is beyond easy walking distance for residents of central Trenton. Reaching the market for these residents requires a car or a bus trip. Residents without a car who must take a taxi or bus or get a ride from someone with a car may prefer making a single trip to a supermarket where they can find all the products they need, not just fruits and vegetables.

The Farmers' Market as a catalyst for developing a more walkable neighborhood

Sometimes by design, sometimes by happenstance, farmers markets and public markets have acted as catalysts for the redevelopment of neighborhoods. If a automobile-dominated streetscape is transformed into a highly walkable area where it is enjoyable to walk, then physical activity levels could significantly increase (Rutt, Cole, Shimkhada et al).

Examples of markets that have helped lead the transformation of neighborhoods include:

- Des Moines Farmers Market in Des Moines, IA
- City Market in Kansas City, MO
- Lindsey Farmers Market in Lindsey, CA
- River Market in Little Rock, AR
- Union Square Greenmarket in New York City
- Olympia Farmers Market in Olympia, WA
- Pike Place Market in Seattle, WA

While each of these markets and situations is unique, the driving force behind redevelopment efforts has been economic, not physical activity or health. Farmers markets are conducive to and benefit from increased levels of walking, however redevelopment efforts are not necessarily

geared toward making a neighborhood more walkable. If redevelopment plans are being proposed, walkability considerations can be integrated into these plans, such as the pedestrian level-of-service assessments promoted for proposed developments in Kansas City (see http://www.kcmo.org/planning.nsf/plnpres/walkability?opendocument).

As explained in the discussion above of barriers to walking and biking to the market, the neighborhood surrounding the Trenton Farmers Market is not very walkable. Many streets do not have sidewalks or sufficient crosswalks. Furthermore, just installing infrastructure is not sufficient to increase levels of walking. Getting people to walk also requires having convenient and attractive destinations, perceived safety, and connections between the redeveloped area and where people live and work (Pushkarev and Zupan, 1975).

Economic impacts

Summary: Impacts on economic intermediate outcomes

A farmers' market is first and foremost an economic institution. The economic benefits of a successful market for vendors, farmers and the surrounding community have secondary effects on health. A large body of research evidence has demonstrated the health benefits of additional income and wealth (Backlund et al., 1999; Ettner, 1996; Fiscella and Franks, 1997; Marmot, 1987). As with individuals, improved economic conditions can benefit health conditions in a community.

The two economic pathways considered in this HIA through which the farmers market may impact health include (1) income generation for individual vendors and producers (including both farmers and non-farmers) and (2) secondary economic development in the surrounding neighborhood. Currently there is much room for improvement since most existing patrons of the Trenton Farmers' Market drive to the market from outside of the community. The Project for Public Spaces estimates there is over $7.5 million in annual sales potential if local, low-income residents begin shopping at the market, with daily sales per square foot comparable to an existing farmers' market in a low-income community. In addition, $3 million has been projected in other sales from specialty shops, neighboring retailers and others.

It is well documented that there are health benefits related to additional income and wealth (Backlund et al., 1999; Ettner, 1996; Fiscella and Franks, 1997; Marmot, 1987). Public markets can generate additional income generation for vendors as well as encourage economic development for low-income communities. Low-income residents often live in distressed communities suffering from both job loss and economic decline. Transforming the farmers' market and creating new developments can help revitalize such communities (Health Food, Healthy Communities 2005). One study estimates that residents of inner city communities across the United States spend approximately $85 million per year in stores located outside of their communities (cite 19- CA endowment), showing there is untapped income generating potential in inner cities.

Newark, NJ is approximately 55 miles from Trenton, NJ and has similar demographics as Trenton. One community in Newark suffered from severe poverty, depopulation and disinvestment (Healthy Foods, Health Communities 2005). After 25 years of not having a supermarket, Pathmark opened in 1990 to serve this 55,000-person community. Pathmark is anchored in new community shopping center owned by the New Community Corporation, a faith-based organization that channels all the profits back into the community through housing, childcare, job training, and educational activities. The supermarket launch was profitable and the opening have this new community shopping center created thousands of jobs.

Correcting market failure

Classical economic theory posits that free markets maximize social welfare if three criteria are met: 1) information is perfectly and readily available to all consumers, 2) individuals are rational,

3) and the production and consumption of goods does not impose additional costs on others in society (Crawley, 2004). Violation of these assumptions has been suggested as a reason why free markets fail to adequately maximize social welfare in the distribution of food (Crawley, 2004). Objective information on nutrition is often drowned out my industry advertising. For example, in 1996 McDonalds spent $599 million, while the National Cancer Institute spent less than $1 million (Vanchieri 1998). Similarly, the distribution of goods is not equal as grocery stores in poorer areas are less likely to sell healthy foods (Morland et al. 2004), ultimately posing additional costs on society. Policy interventions can help correct these market failures. For instance, coupons can improve access, and coupled with education they can increase the valuation of fresh produce in environments where it is undervalued due to misinformation or a lack of information (Just and Weiner, 1997).

Farmers Market: Stimulus for Economic Development?

- Crescent City Farmers Market generated over $1 million annually in direct and indirect benefits to vendors.
- Downtown business generated additional $450,000 per year as a result of the market and created 15 new businesses and 22 new jobs.
- Approximately $90 of direct income is generated per square foot yearly.
- Average vendor took home about $391/week (1999)- equivalent to $20,000 per year
- 1500 shoppers come to the year-round markets per week with over 50 vendors weekly.

From A.B. Freeman School of Business Economic Study, based on 1999 data

The Economic Institute evaluated the Crescent City Farmers Market (CCFM) in 1999 to determine whether farmers' markets are an effective stimulus for economic development in the downtown New Orleans area. The market generated over one million dollars annually from direct and indirect benefits to vendors as well as the downtown businesses and rural communities. The market is just over 6000 square feet, approximately $2 of income per square foot daily. The income has also lead to job expansion with the first three years 15 new businesses and 22 new jobs were created as a result of the market according the Tulane University's AB Freeman economic impact study. The additional income is spent on food, clothing, vehicles, and more. The market offers both a social and practical operation to purchase food. Small-scale food producers have commented that the CCFM is important to smaller retailers who cannot afford shelf space at the grocery store (A.B. Freeman School of Business Economic Study).

The Economic Institute recognizes that organizational must have the following prerequisites to have a successful market:

- Secure space
- Staffing and Security
- Parking
- Continuity (rain or shine)
- Safe handling of food
- Knowledge and compliance with local regulations
- Name, logo, signage, phone number, and other elements that identify the market as a professional, stable retail operation
- A governing board for resolving problems and complaints, accepting new vendors and enforcing rules

Can the Trenton Farmer's Market stimulate economic development?

The Project for Public Spaces (PPS) has estimated that current annual sales at the market are approximately $7,632,000 based on surveys showing approximately 4000 to 6000 customers per week and $20 to $30 of purchases per visit (actual sales not available). They estimate that market sales could grow as high as $18,316,000 annually with updated facilities, improved access and the right mix of vendors. Currently, however, most vendors report stagnant or declining sales (PPS, 2006, p. 15). The sales potential for the Trenton Farmers Market was estimated using a Huff Gravity Model – a forecasting tool used by supermarkets that has been adapted for public markets. The model uses existing demographic information about income and spending habits and factors in the competitive options for food purchasing in the primary trade area. Below are some estimates and assumptions on which the sales potential was based on:

- Half of the customers are within a five minute drive from the market
- The potential market share for fresh food sales in the five minute drive ring is:

Baked Goods	$1,395,000
Meat, poultry, fish, eggs	$3,816,000
Fresh produce	$2,421,000
Total	$7,632,000 **incremental** annual sales

- Additionally, this figure does not include flowers, specialty and prepared foods. PPS estimates an additional 20% for this, equating to $3,052,800
- Annual sales potential is $18,316,000 comprised of 7,632,000 (existing sales) + 7,632,000 (incremental sales) + 3,052,800 (specialty sales)

When compared to the Crescent Farmer's Market, the PPS estimates are logical. Both markets are located in low-income communities underserved by supermarkets. The CCFM market operations are more efficient, evidenced by their yield over $2 of daily sales per square foot while the Trenton Farmer's Market is approximately $1 dollar per square foot, a difference of 100% (see Table 7). Thus, the estimating tool that PPS used to project the double sales potential seems reasonable when comparing the daily sales potential per square feet to the Crescent City Farmer's Market.

Table 7: Daily Sales Dollars per Square foot: Crescent City and Trenton Farmers' Market.
*** Adjusted to 2005 Consumer Price Index**

	Annual sales ($)	Square feet	Days/year	$/day	Daily $ per square foot
CFFM	643,575*	6,080	52	12,376	2.04
TFM	7,632,000	20,000	365	20,910	1.05
TFM potential	15,264,000	20,000	365	41,819	2.09

Secondary Economic Development: Spillover Effect

The Economic Institute at the CCFM reports indirect business gains of $450,000 dollars or approximately 44% of the total revenue generated. For every one dollar generated by the CCFM, an additional 44 cents was also invested in nearby businesses in the downtown New Orleans area, from coffee shops to restaurants, to retailers. It is difficult to estimate if there will be a spillover effect on other businesses because the area around the TFM is not as dense as and certainly lacks the walkability of the downtown New Orleans. Next to the TFM is Halo Farms Dairy selling milk, ice cream and other dairy products. Across the street is shopping center, consisting of half a dozen stores, a bank branch, and an empty building previously occupied by a

Super G supermarket. Despite their proximity, the market faces the back of the mall and there appears to be little cross-traffic between the mall and the market. Therefore, we do not anticipate the spillover effect to be at the 44% level. PPS estimates an additional 20% of revenues, or approximately 3 million dollars, for flower shops, prepared foods, and specialty stores based from the Huff Gravity Model. This estimate is reasonable given the implementation of the proposed TFM market improvements. Additionally, improving the TFM has potential to generate further economic effects if it can attract additional business into the community.

These developments will also generate tax revenue for local cash-strapped municipalities though sales and property taxes. Residents benefit through greater tax-financed city services (Healthy Food, Health Communities 2005). TFM can be the heart of the transformation of the surrounding neighborhood as discussed earlier in the report. This new development can provide needed public space for the surrounding neighborhood, restoring economic vitality to the area that has a decreasing population despite being located between Manhattan and Philadelphia and having central access to the NJ Transit, AMTRAK, Septa Rail, and NJ bus lines.

Market Outreach to Satellite locations (Health Systems Hospital): Economic Effects of Relocating Farmers' Market to Hospital

Historically, creating a consistent market for vendors is necessary to encourage their participation. If the farmers' market were to move to Health Systems Hospital create a potential customer base of __??__ hospital employees, mitigating some of the relocation risk for the vendors. According to the Rutgers study (Rutgers, 2005), many residents believe that the market is too inconveniently located. Given that the hospital is easily accessible by bus, it

will likely encourage greater neighborhood participation and provide a stable captive audience of hospital employees for the vendors. Further being located in the worksite, lends itself to educational interventions discussed earlier.

According to a survey conducted by PPS almost all (98%) customers who come to the farmers' market come by car (Project for Public Spaces, 2006a). Proximity is therefore not a consideration for nearly all the existing customer base. Accordingly, moving the market to the hospital will not poise a threat to losing the existing customer base- since the hospital is one mile away from the existing location. However, the PPS survey revealed that there is a "strong base of die-hard, regular customers that love the market." While some may follow the market to the hospitals, others may opt to shop in alternative places.

The implementation of marketing will certainly encourage the existing 4000 to 6000 weekly customers to follow the farmers to the hospital while recruiting new customers. The Rutgers study showed that Trenton residents felt that the farmers' market needed to advertise more in their communities (Rutgers University, 2005). Efforts made to retain the existing customer base, attract new, local residents as well as hospital employees, will provide vendors assurance of a consistent customer base.

Although some initial investment is necessary to ensure a customer base, there will be minimal capital investment necessary given that the hospital infrastructure exists. Additionally, the indoor hospital farmers' market lends itself to continuity, as it can be open "rain" or "shine." There are also many opportunities for partnership with small investment

costs. For example, collaborating with adjunct programs such as WIC can help to attract a new customer base.

The farmers' market will be limited to an indoor space within the hospital so spillover economic effects of nearby businesses are unlikely at this venue. A conceivable indirect benefit to economy will be an increase in purchasing power by the farmers, stipulating an improvement in their sales and profits.

Social capital

Summary: Impacts related on social capital

"Social capital" is a term often used to describe the amount of formal and informal social networks, group membership, trust, reciprocity, and civic engagement in a neighborhood. It has also been shown to benefit both subjective and objective measures of health, including lower levels of adult mortality (all cause, ischemic heart disease, and cardiovascular disease), improved perceptions of overall health, and psychological health. Even a casual visitor to Trenton will be able to see the classic symptoms of a community with low levels of social capital—abandoned buildings, a proliferation of graffiti and other vandalism, and the disappearance of pedestrians after the sun sets.

A popular, vibrant market is likely to benefit social capital in many ways. Merely

serving its core function to offer a place that attracts and holds customers is likely to increase social capital by increasing opportunities for social interaction. Beyond its core economic functions, secondary effects of markets on neighborhood development and infrastructure can also benefit social capital, for instance by increasing walkability and walking, which have been shown to be associated with higher levels of social capital.

There is much room for improvement in the degree to which the Trenton Farmers Market contributes to community social capital. Some observations that suggest that the market is not currently living up to its potential to increase social capital include: a market that is often empty (as it was when the HIA team visited in mid-May), shoppers at nearby stores not making the effort to walk over to the market, and perceptions that the market often appears closed even when it is open. Efforts to improve the economic viability of the market are likely to also benefit social capital.

"Social capital" is a term often used to describe the amount of formal and informal social networks, group membership, trust, reciprocity, and civic engagement in a neighborhood (Kawachi, Kennedy and Glass, 1999). By providing a setting for social interaction and by catalyzing other changes in a community, farmers' markets and public markets have the potential to increase social capital. Indeed, the desire to have a more personal, face-to-face relationship in

the buying and selling of food, which has been one of the driving forces behind growing public interest in the growth of farmers markets, is essentially about increasing social capital.

Defined and measured by issues such as trust in neighbors, social engagement and political involvement, social capital obviously benefits quality-of-life. It has also been shown to benefit both subjective and objective measures of health, including lower levels of adult mortality (all cause, ischemic heart disease, and cardiovascular disease), improved perceptions of overall health, and psychological health (Berkman, Glass, Brissett, Seeman, 2000; Kawachi and Berkman, 2001; Kawachi, Kennedy, Glass, 1999; Yen and Kaplan, 1999).

While we were not able to find any surveys of community social capital in Trenton, even a casual visitor will be able to see the classic symptoms of a community with low levels of social capital—abandoned buildings, a proliferation of graffiti and other vandalism, and the disappearance of pedestrians after the sun sets. While better off than Central Trenton, conditions in the neighborhood immediately around the market with a shopping center in economic decline, abandoned buildings, and a lack of pedestrian infrastructure all suggest considerable room for improving social capital.

A popular, vibrant market is likely to benefit social capital in many ways. Many of the core elements that go into making an economically successful market—offering a setting and goods that attract customers and encourage them to spend time at a market—also contribute to success in building social capital. Efforts to boost market patronage across seasons and to tie the market the market to other community institutions, such as schools, hospitals, and social programs,

could be expected to increase social capital. In the case of the Trenton Farmers Market, increasing the number of vendors and customers in low seasons and broadening the customer would be two particularly valuable ways for increasing the extent to which the market benefits social capital. Some observations that suggest that the market is not currently living up to its potential to increase social capital include: a market that is often empty (as it was when the HIA team visited in mid-May), shoppers at nearby stores not making the effort to walk over to the market, and perceptions that the market often appears closed even when it is open.

Beyond the core functions of a market, secondary effects of markets on development and infrastructure in surrounding neighborhoods can also benefit social capital. For instance, increases in walkability and walking can also improve social capital as suggested by Leyden's study (2003) that found that residents in more walkable communities were more likely to trust others, be socially engaged, be politically active, and know their neighbors than those in less walkable neighborhoods.

Public health services

Summary: Impacts related on public health services

A number of markets across the country have demonstrated that they can serve as valuable venues for providing preventive health services to the community. Such services include health screenings, healthy cooking demonstrations, nutrition education and other types of health and nutrition programs. Likewise, health care institutions can be notable venues for hosting farmers markets. Such partnerships between markets and health afford opportunities for setting healthy behavior norms and outreach to hard-to-reach populations. By improving healthy eating and providing health screening and education, there exists great potential for these activities to positively affect public health. While Trenton Farmers Market has periodically offered preventive services, there exists opportunity to expand these services in such a way that would benefit both the farmers and the community. For example, a potential partnership with the Capital Health System Hospital on Brunswick Hospital could be forged to create a satellite market that would allow better outreach to a population that could gain the most health benefit from healthy eating while also providing the market a steady customer base throughout the year. By integrating preventive-health services into standard market operations, farmers markets can be steady resources for healthy-living for communities.

Farmers markets can provide valuable venues for preventive health services, including health screenings, healthy cooking demonstrations, distribution of nutrition information and other types

of health education programs, nutrition education and health screenings. Partnerships between markets and health services providers can improve access to preventive health services, provide opportunities for outreach to hard-to-reach populations, and contribute to norms favoring healthier behavior. Farmers markets and nutrition advocates, in particular, are natural partners since both are interested in encouraging greater consumption of fresh fruits and vegetables. A number of markets across the US have integrated preventive-health services into standard market operations. While not a regular part of the market, the Trenton Farmers Market has periodically hosted such activities conducted by various public agencies and non-profit groups. Examples of such programs at other locales will be discussed below, followed by a discussion of opportunities for expanding these opportunities at the Trenton Farmers Market in a way that benefits both the farmer-vendors' bottom-line and the health of community residents.

Nutrition education

Nutrition education, with the goal of setting norms, comes in a variety of forms: through the use of educational fliers or other written materials, demonstrations and classes. There are a number of programs associated with public markets that have either been shown to or have the potential to positively affect food purchasing behavior and nutrition knowledge among consumers.

A major supporter of such nutrition education programs is the Farmers' Market Nutrition Program (FMNP) sponsored by the Special Supplemental Nutrition Program for Women, Infants, and Children, also known as WIC (FNS USDA. WIC Farmers' Market Nutrition Program. August 2006. Available at: http://www.fns.usda.gov/wic/FMNP/FMNPfaqs.htm). WIC's objective is to protect the health of low-income women and children by providing

nutritious foods, information on healthy eating, and referrals to health care. In 1992 the FMNP was established by Congress to provide fresh, unprepared, locally grown fruits and vegetables to WIC participants. The FMNP allows WIC participants to purchase fresh fruits and vegetables from farmers' markets. Nutrition education is typically provided to FMNP recipients by the host State's agencies. However, non-governmental entities may also provide nutrition education and other related information to FMNP recipients; for example, Cooperative Extension Programs, local chefs and farmers, or farmers' markets associations, and other non-profit health organizations (FNS USDA. WIC Farmers' Market Nutrition Program. August 2006. Available at: http://www.fns.usda.gov/wic/FMNP/FMNPfaqs.htm). These educational programs are geared towards improving diets by adding fresh fruits and vegetables, as well as improving knowledge on how to select, store and prepare fruits and vegetables purchased using FMNP voucher.

In California, the California Nutrition Network, principally funded by the U.S. Department of Agriculture (USDA) Food Stamp Program, has worked closely with FMNP programs to provide extensive outreach and nutrition education (Prevention Institute. Nutrition Policy Profiles: Women, Infants, and Children Program May 2002.Available at: http://www.preventioninstitute.org/CHI_WIC.html#seven). Similarly, the California Children's 5-a-Day-Power Play! Campaign, also USDA funded, has also paired with farmers' market organizations to provide nutrition education to children (California Department of Health Services. Program Overview: California Children's 5 a Day Power Play Campaign. Available at: http://www.dhs.ca.gov/ps/cdic/cpns/powerplay/default.htm)**.** Various activities for children include: food demonstrations, game booths that promote fruit and vegetable consumption, and

field trips to markets. At the Oakland Fruitvale Market, Latino 5, a branch of California's 5-a-Day, supplies the market with books and information about healthy eating targeted to the local Latino community (Project for Public Spaces, 2006b).

Nutrition education programs at farmers' markets potentially improve knowledge of healthy eating and consumption patterns. In a national survey of farmers' markets, 71% of participants surveyed said that they ate more fruits and vegetables with the FMNP coupons and 54% said they learned new ways to prepare these foods, which may be attributed to nutritional education programs at the markets (Prevention Institute. Nutrition Policy Profiles: Women, Infants, and Children Program. May 2002. Available at: http://www.preventioninstitute.org/npp.html).

Health screenings and other health education/health promotion programs

Public markets have the potential to become a neighborhood's focal point or gathering place where people may go not only for social interaction and goods but also to attain knowledge or skills. An example of such a market is the Mercado La Paloma in Los Angeles. This market houses fifteen permanent businesses producing handmade-goods and offering a variety of services. Esperansalud, a project of Esperanza Community Housing Corporation, is a no-cost health education and information center permanently located in Mercado; health promoters provide health information and make referrals to any type of service needed. They also provide weekly programs on a variety of health topics and a tea club for senior citizens to socialize and learn about relevant health topics. In addition, a weekly farmers' market occurs on Saturday afternoons with coordinated nutrition and cooking classes (Mercado La Paloma. Classes, Services, and Resources. Available at: http://www.mercadolapaloma.com/services.html).

Providing health screenings and health education are other preventive-health services that are often coupled with farmers' markets. An example of this is seen at the Camden Community Farmers' Market (Project for Public Spaces, 2006b). The Camden Area Health Education Center runs a center with an on-site professional who provides advice on nutrition, asthma, and other health concerns at the market, which occurs twice a week. Another example is the Portland Farmers' Market. In celebration of its 85th Anniversary and to highlight the connection between good food and good health, the Portland Clinic sponsored monthly health events at the Market throughout 2006 (Portland Farmers' Market, 2007).

Partnerships with health care institutions

Hospital sponsorship of farmers markets can benefit both farmers' market vendors and health care sponsors. Hospital sites provide farmers' markets with access to large numbers of potential customers concentrated at one site. Farmers' markets allow health care institutions to disseminate information, norms and improved access for healthy eating. Examples of these include: Duke University Medical Center in North Carolina, Allen Memorial Hospital in Iowa and at numerous Kaiser Permanente facilities in California, Colorado, Georgia, Hawaii, Oregon and Hawaii (Institute for Agriculture and Trade Policy, 2005).

The Duke University Medical Center Farmers' Market was started in 2001 upon the completion of an employee survey that revealed low fruit and vegetable consumption. The market's target population is the hospital staff, however patients and students also visit the market. The market is offered as an employee benefit through Duke University's "Live for Life" employee health

promotion program. Educational materials regarding nutrition are provided to employees as well. Approximately 90% of respondents to satisfaction surveys said that the market motivated them to eat more fruits and vegetables (Institute for Agriculture and Trade Policy, 2005).

In contrast, the Allen Memorial Hospital farmers' market was created in 1999 out of the need for a community market since the multifamily homes around the hospital had limited access to green space for gardens and community discussions revealed a desire to have a farmers' market in easy access (Institute for Agriculture and Trade Policy, 2005). The market serves both the hospital staff and community.

With the goal of meeting improving access to and consumption of fruits and vegetables by staff, patients and the surrounding community, Kaiser Permanente, as of 2005, also hosts farmers markets and farm stands at numerous locations in California, Oregon and Hawaii (Permanente Medical Group, 2007). Most markets have a nutritional component that ranges from 5-a-Day informational material to cooking demonstrations. The organization hopes to see positive changes in staff morale, fruit and vegetable consumption and overall health.

Experience with preventive health services at the Trenton Farmers Market

At the Trenton Farmers' Market nutritional education has been offered by the Mercer County Extension Service. The market also receives New Jersey Department of Agriculture "Jersey Fresh" grant funds, which are used to sponsor yearly events to promote in-season agricultural products grown in New Jersey to attract more people to the market. In addition, the market sponsors a "Senior Day", during which seniors can get food assistance coupons from the Seniors

Farmers Market Nutrition Program, established by USDA's Commodity Credit Corporation. School trips are also frequently arranged to the market (Rutgers University, 2005).

Potential for new and expanded partnerships for providing preventive health services

Scenario 3 (satellite markets) has the potential to provide an excellent opportunity for health services outreach if one of the satellite sites is the Capital Health Systems Hospital on Brunswick Avenue. For the Farmers' Market this has the advantage of improving visibility and tapping into captive audience of hospital visitors and staff, providing a steady customer base throughout the year. It would benefit public health by (1) reaching the populations who could gain the most from improved access to fresh produce (i.e. residents of Central Trenton), (2) endorsing norms for healthier eating by associating the market with a health care institution, and (3) providing a convenient venue for preventive health outreach. Of course, the institutional arrangements necessary to establish a satellite farmers' market at a hospital would not be trivial, but in Trenton this arrangement could be especially beneficial for the market, the hospital and the community.

VI. Summary and recommendations

The modifications to the market proposed under Alternative 1 would probably not significantly impact health (see Table 8). However, even within the limited scope of changes under this alternative, there are ways the market could improve potential health benefits and minimize harm. Setting up vendor stalls, particularly those selling fresh fruits and vegetables, with EBT machines to take WIC and other government benefit cards could help encourage low-income patrons to increase purchases of fruits and vegetables. The existing plethora of unhealthy food choices at the market means that getting food at the market may actually be less healthy than buying food in a supermarket. Seasonal variations in the availability of locally grown produce and rules at this market limiting fresh produce sales to locally grown fruits and vegetables mean that prepared foods dominate in the off-season. Steps could also be taken to insure that prepared food vendors offer healthy food choices, perhaps not forbidding unhealthy foods but pricing healthier food choices to make them more attractive.

The broader changes to the market proposed by PPS (Alternative 2) could yield significant health impacts in some areas, but by themselves would probably not improve consumption of fresh fruits and vegetables (see Table 8). Expansion of the market, updating its appearance, improved signage and the separation of pedestrian and vehicle traffic could increase patronage, thus benefiting community health through economic and social capital pathways. Long-term recommendations to improve pedestrian and bicycle infrastructure would improve the walkability and bikeability of the area around the market, which is presently very poor. Economic development of the surrounding area that could be catalyzed by a successful farmers

market, would add the destinations and density necessary for translating improved walkability into walking.

By improving access to fresh fruits and vegetables, Alternative 3 (market outreach/improved access) has the best likelihood among the alternatives for improving nutrition (see Table 8). Although suggestions for moving the market have not been well received by market stakeholders, there are other ways to bring farmers market services to the population of central Trenton, where there are few grocery outlets and many low-income residents do not own vehicles. Among ideas for this outreach are using mobile market vans and/or a satellite market. Even this alternative, however, is not likely to change food consumption patterns unless augmented by other tactics to encourage behavior change, such as coupons and nutrition education. Maximizing health benefits in other areas—physical activity, economics, social capital, could be achieved by coupling this alternative with the modifications proposed under Alternative 2.

Stakeholders in other communities could use the framework developed for this HIA to help identify potential health impacts of proposed farmers markets or market modifications. Not all the impact pathways identified here would necessarily be relevant, and there could be additional impacts, such as impacts on traffic congestion and housing, that may pertinent to other situations. As with this analysis, it is important to consider how these impacts affect different populations.

Table 8: Summary of expected health impacts from modification of the Trenton Farmers' Market

Pathway ↓	Alternative 1: No-change/minor change		Alternative 2: Full implementation of PPS recommendations: major remodeling		Alternative 3: Market outreach/ satellite markets	
Nutrition (e.g. consumption of fresh fruits and vegetables)	0	Changes to the market too small to significantly impact food access and consumption	0	Patronage and sales may increase, but these changes would probably not change consumption patterns, since there's no indication that changes would affect individuals with poor food access	+	Satellite markets would target neighborhoods and populations with limited access to fresh produce.
Direct Economics Effects (e.g. increased income for vendors)	+/0	Some small increase in patronage and revenues could occur as a result of minor cosmetic changes to facility.	+	Expansion of the market and increasing market activities during the low season, coupled with improved visibility will likely lead to a substantial increase in sales with subsequent increases in income for vendors.	+	Expansion of outlets, broadening of customer base will likely increase sales and income to vendors, but probably not as much as in Alternative 2.
Second-order economic effects (e.g. neighborhood economic expansion and development)	0	Any increase in revenue would be unlikely to be large enough to generate secondary economic impacts.	+	Increased patronage and sales are likely to generate secondary economic benefits through "recycling" of income, by attracting customers to other nearby businesses, and by stimulating neighborhood redevelopment efforts.	0	Modest expansion of sales potential under this option would probably be insufficient to yield second-order economic impacts on the surrounding community.
Physical Activity (e.g. walking and biking to the market)	0	Changes to the market too small to change patterns of physical activity.	+	Redevelopment in surrounding neighborhood could improve walkability/bikeability and induce more people to walk /bike to the market. Improvements in bus service, coupled with outreach to transit-dependent populations could increase walking associated with bus trips to the market.	0	Bringing the market to people would minimize travel distance, thus walking trips to the market would not increase. This alternative by itself would not be sufficient to spur neighborhood redevelopment with improvements in walkability.
Social Capital (e.g. opportunities to socialize with other residents, develop social networks)	0	Changes to the market too small to change community social capital.	+	Increases in market patronage, using market facilities for community meetings and events, and subsequent redevelopment could all contribute to improved community social capital.	+	Could benefit community social capital. Depends on reaching new patrons and providing events that draw residents. May also improve sense of community of it becomes seen as neighborhood asset.
Preventive health services (e.g. health education and screening services on site)	0	No additional preventive services planned under this alternative	+/0	Impacts on preventive health services available at the market contingent on agencies and organizations deciding to bring such services to the market.	+/0	Satellite market at the Capital Health Systems hospital would facilitate tie-in to various health services. Contingent on hospital and health department decisions.

"0" (no change), "+" (potentially beneficial), "-" (potentially harmful)

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Appendix 1: Project for Public Spaces (PPS) recommendations from "Revitalizing the Trenton Farmer's Market New Opportunities for the Market & Surrounding District" (October, 2006: pp. 43-57)

GETTING STARTED: SHORT TERM RECOMMENDATIONS

This report sets the stage for additional analysis of the market facility to determine the extent to which investments are needed for the building and its systems, as well as to develop a more detailed plan for reconfiguring the parking lot. The NJ Department of Agriculture has recently provided a $50,000 grant to the market to accomplish this work, which can also include some modest upgrades to the market exterior.

PRODUCT MIX

• **Day Stalls** – Create a day stall program to fill up empty stalls with specialty producers (i.e. local cheese, flowers, mushrooms, organics) that enhances the existing mix of the market, but doesn't directly compete with farmers and other regular vendors. Start on the day with the most potential for new additional growth Sundays – this can help make the market more of an overall destination. Target farmers who already sell at other markets – use TFM as an additional venue; maybe they'll like it.

• **Experiment with the winter mix** – Build on the tradition of the market as a family destination during the holidays to feature more non-food items, such as hand-made gift items. The market might consider adding a holiday market in the winter to capture additional sales**.** The market could also talk to the Trenton Downtown Association to recruit some of the hand crafters and artists that sell at a market downtown in there too.

• **East Wing** – An immediate opportunity that should be seized upon is to strategically lease the vacant corner stall in the East wing near the center of the market (formerly Ladybug Catering) to anchor the center of the market and draw more customers into the east wing. This large stall could potentially be turned "inside out" so that customers could see and walk through the stall to the East wing as opposed to around it, as in the current layout. A coffee shop or other type of prepared food business that attracts customers throughout the day could take advantage of such a layout by installing additional customer seating, thus helping create a strong social center at the "crossroads" of the market.

• **Create a long-term strategic plan to manage the mix to remain competitive and attract new customers.** Management should cease the process whereby vacant stalls go to the highest bidder, regardless of the business. This does a disservice to the market as a whole, as the new business will not necessarily complement the market's existing mix. Rather, new tenants should be sought according to the long-term plan, so as to maintain a healthy, competitive mix of products.

MARKETING & PROMOTIONS

During this phase, it is also important **to build management's capacity to undertake more extensive marketing and promotional efforts**, to reach out to community groups and entities. (See implementation section below.) Some of the initial marketing activities that could be undertaken as capacity increases include:

- Invite local churches and other groups in with discounts/coupons;

- Create more community activities that would draw other customers – partner with other community organizations, esp. for Sundays, to get people into the market;
- Get local chefs involved through cooking demos to showcase local products from the market and simultaneously promote their restaurant;
- Program new Flower Day event to kickoff growing season (i.e. in April);
- Access new funding sources to increase marketing and promotions; and
- Experiment over the winter (Jan/Feb) with different uses to activate the West Wing, which is largely empty this time of year (farmers who are there could stay in the wing or move temporarily to empty stalls in other parts of the market). Programming might include arts or educational events, pancake breakfasts, etc. to help bring customers in the doors when the market is otherwise slow.

INFRASTRUCTURE

Conduct a **comprehensive civil engineering survey of the market site and building**. This survey should include an assessment of the following:

- Electrical safety and capacity for future growth;
- Water lines and possibility for extension of lines to the farmer stalls; • Indoor and outdoor drainage;
- Optimal garage door and interior lighting designs.

Do a **pilot "makeover" of one farmer stall and one permanent food stall**. This will provide an opportunity to experiment with new lighting, displays, signage, etc. **Implement a pilot EBT project at one or two farmer stalls.** Two stalls could even share one machine, a practice other markets engage in to keep costs down and maximize the system. The pilot would include wiring the stall(s) for EBT/credit cards, marketing the new capability to existing customers, and promoting the system to food stamp recipients.

CUSTOMER AMENITIES

For a strong short-term impact, the market should install:

- Better signs to restrooms and office;
- Market directory at the primary entrances and in the center of the market;
- An ATM machine in the market (while this can potentially generate revenue for the market, keeping fees reasonable will ensure customers use it);
- Bicycle racks near the East wing; and
- Indoor and outdoor public seating; in eating areas as well as by possibly converting a small number of day stalls into benches (this could be flexible, with the bench converting back to a day stall on busy days).

ACCESS & LINKAGES

Site circulation plan – Undertake an engineering study of the market, county extension, and Halo Farm properties to determine the feasibility of consolidating parking; reconfiguring circulation; and reducing curb cuts. The plan that emerges should help maximize parking, reduce cut-through traffic,

improve the connection to Halo Farm, and allow for safer access to the market for pedestrians and drivers. **Improve signage -** Add additional signage:

- Provide new fabric flags for the exterior of the market;
- Better utilize existing street signage – "Open Tuesday – Sunday!" and to highlight seasonal products; and
- Install a directory of businesses in the center of the market.

Start creating an entry plaza at the Spruce St. (south wing) entrance – Do a low cost "fix up" for improving this entrance, i.e. experiment with plantings, picnic tables, hay bales, promotional events, signage, etc., in effect creating a mini "market square" to announce and showcase the market from Spruce Street.

FUTURE PHASED-IN IMPROVEMENTS

To take the next steps in the evolution of the market will require a long-term fundraising strategy as well as a more detailed design master plan for the building. As part of the long term fundraising strategy, the market should organize a 501(c)(3) fundraising arm for the market (e.g. Friends of the Market group). This is described in more detail under *Implementation*, below. The design master plan will provide more specific recommendations for the market: as funds are raised, these improvements can be phased in.

PRODUCT MIX

- Building on day stall program, described above, **continue to expand diversity of farm products as the anchor draw for the market**. This could include expanding the number of outside stalls as well as inside stalls. Market management could work with the County Extension office, NOFA-NJ, and others to connect with potential farmers.
- **Continue to expand the number of existing farmers open on Sunday and promote Sunday shopping to customers**.
- **Prepare a merchandising plan for the market and phase in products to diversify the mix of the market and attract new customers.** This can include more prepared foods, specialty foods, ethnic foods, fish and seafood, and related businesses (such as a wine shop and kitchen supply store) and places to buy food to eat on the premises.
- **Continue to upgrade the East wing of the market.** Building off the new anchor tenant at the East wing corner, continue to recruit other restaurants and/or prepared foods to the market, especially those that can commit to using products from the market's farmers and/or sourcing from other market vendors. Provide better seating, including an outdoor eating area (perhaps outside A+ Hoagies), lighting, and windows to brighten up the wing. Require all new businesses to update and improve their stalls before moving in, according to the new tenant design criteria.

MARKETING & PROMOTIONS

Under the "New Jersey Fresh" banner, reach out to new customers for the market: • Expand EBT and Farmer Market Nutrition Program utilization in the market for lower income shoppers; • Reach out to the 66,000 state office workers in downtown Trenton; • Flyer adjacent neighborhoods with

special sales and promotions; • Develop a customer listserv and e-mail list announcing new products and market activities; and • Reach out to local churches, school, and senior centers in the market – involve them in special events and encourage them to provide shuttle buses to bring people to the market; **Find other sponsors** (e.g. appropriate corporate sponsors like an HMO or hospital) who can bring additional resources to the market to stretch limited advertising dollars.

Expand the number of promotional events and activities which encourage purchasing of food products, e.g. tastings, cooking demonstrations, ethnic food fairs, cookoffs, and special events such as the "Taste of the Trenton Farmers Market"

Provide infrastructure and space for events and activities in and around the market. Continue to use the west wing during the winter for promotional events and programs (consolidating vendor spaces in the other wings) and in and around any of the expanded market entrances during the summer. Ideally, fair weather activities would be easily visible from Spruce Street, so as to attract additional attention to the market.

INFRASTRUCTURE

Complete a design master plan for the market, coordinated with the leasing plan and the facility engineering study conducted in Phase I, to develop a coordinated approach to upgrading the interior and exterior of the market. This master plan should include **tenant design criteria**, which will ensure that all new tenants update their stalls in accordance with the aesthetic vision of the market. Criteria should include stall lighting, signage, counter heights/ depths, overhead clearances, etc. **Phase in interior improvements as funds become available** with potential initial focus on revamping of East wing, including:

- Improved lighting that highlights products;
- Vendor storage;
- Increased water access and distribution;
- Additional electrical capacity;
- Phone lines for full credit/debit/EBT system;
- Cold storage/refrigeration;
- Improved drainage; and
- Upgraded garage doors.

CUSTOMER AMENITIES

Continue to expand seating so that customers have places to sit both in and around the market**:** • Create outdoor seating areas with picnic tables or café tables and chairs on the market's entrance plazas;

- Benches at a few locations inside the market; and
- More uniform and better quality caféstyle seating in the east wing (both indoor and outdoor)

Upgrade/relocate customer restrooms, ideally to inside the market.

ACCESS & LINKAGES

1. Restripe and enhance the parking lot, creating a new circulation pattern and new pedestrian connections between the market and Halo Farm and the Extension office; this should include a sidewalk on Spruce Street as well as landscaping to make the parking lot less stark and unattractive. Ideally, the fence between Halo Farm and the market would come down at this point.

2. Develop new signage and a signage system for the market, including roadside signs, entrance signs, stall signs, and upgrading and lighting existing roof signage. Make sure that signs (and the market as a whole) convey when the market is open, as well as what's in season and what's inside!

3. Create more permanent improvements which help to better define each entrance to the market building, in effect creating a series of small entrance plazas: better signage, plantings, awnings, lighting, umbrellas, seating and tables, outdoor product displays (e.g. corn stalks, hay bales, pumpkins). Each entrance should become a safe, inviting, pedestrian-dominated domain.

4. Improve the pedestrian connections from the market to Princeton Avenue by installing sidewalks or walking paths along both the main entrance road leading all the way to the market, as well as along the recently repaved alley between the market's east lot and Princeton.

5. Work with NJ Transit to create actual bus stops along Princeton Avenue near Pine Street, to encourage transit use along the corridor and so that bus riders can use the alley as an access point to the market.

FUTURE OPPORTUNITIES TO CREATE A MARKET DISTRICT

The market's neighborhood is poised for change. Long a transitional area, caught between the dense urban fabric of Trenton and south Lawrence (e.g. along Brunswick Avenue), and the more recent suburban-style development of Ewing, the junction of these three areas has the opportunity to become a destination in itself. The potential for redevelopment to the south and east in Trenton and Ewing could encourage new thinking regarding the commercial uses surrounding the Market, as well as along Spruce Street and Princeton Avenue. Across Spruce Street, the market faces the back of the partially vacant Capital Plaza Mall in Ewing Township, which is accessible from North Olden Avenue and from a driveway on Spruce. North Olden Avenue, once a small retail destination, has become dominated by enclosed malls and big box retail interspersed with vacant or underutilized parcels. New retail and mixed-use development on North Olden Avenue, as suggested in the 2005 ULI report and in the most recent plans of Ewing's Redevelopment Authority, could bring new residents, shops and offices to the area.

As mentioned above, a new WalMart is under discussion for Spruce Street in Ewing Township, which could transform the market's neighborhood to the east. Even with the possibility of increased traffic on Spruce, Mercer County is considering reducing the street to two lanes with a middle left turn lane, which would decrease speeds, rationalize turning movements and enhance pedestrian use and safety. Other traffic calming measures should be studied as well, in the event that a "road diet" is not feasible.

With the potential transformation of the surrounding neighborhood, the crossroads near the market could itself take on a more important role at the center of new mixed-use development. Mercer County is in the process of acquiring the vacant lot at the corner of Spruce and Princeton as open space, which could in turn be swapped for another parcel and developed as a focal point for the

area. With street and intersection improvements, Princeton Avenue and Spruce Street may no longer be perceived as barriers – impossible for pedestrians to cross – but as connectors.

Retail along both streets could be redeveloped to the sidewalk, improving pedestrian comfort and access, and new residential or office uses could be located above the retail. Shared parking for all uses could be located behind the buildings. The market could be at the heart of this new development, providing needed public space for the surrounding neighborhood.

A District Grows Around the Market In other words, the Trenton Farmers Market could become the focus of a new "market district". Market districts emerge when a market becomes the center of an area where related activities choose to locate, creating a highly synergistic and dynamic place. Once people are drawn to a market on a regular basis, year-round, complementary entities such as restaurants, specialty food stores, and neighborhood services often locate nearby, filling vacant storefronts and, thereby, renewing the neighborhood. As redevelopment on Spruce Street and Princeton Avenue takes place over time, it could be reshaped to create a walkable destination with a variety of related retail uses and vibrant public spaces. The linking of the market with Halo Farm, with a shared entrance and parking, could be just the beginning of a food- and plant-related district. The diagram on page 54 illustrates how the area might be redeveloped with the market at the center of a mixed-use village.

- **New mixed-use buildings on Princeton Avenue** should provide retail adjacent to the sidewalk and parking should not be located in front of the buildings. Shops should be accessible from the rear, facing the Market, as well.

- **Develop new parking lots** that allow for shared parking among the existing uses (e.g. the market and County Extension office) and future retail and residential uses. Off-street parking should be located behind the buildings and be convenient, but should not dominate the site.

- **Relocate the vehicular entrance to the market from Princeton Avenue**, so that it aligns with Mulberry Street, and improve the pedestrian crossings. The owner of the Aamco business adjacent to the market entrance on Princeton has expressed support for this idea and might be willing to sell his property or create the necessary right-of-way though the property.

- **New retail uses**, such as the non-food related uses now in the market (e.g. the Clock Shop), could have their own buildings separate from, but related to, the market.

- **The Corner of Spruce and Princeton,** now vacant, but slated for acquisition by the County, could be redeveloped with a two- or three-story mixed-use building that would help to create an identity for the Market Village. A restaurant with a healthy, farm-fresh food might be an appropriate ground floor use, assuming that this property could be 'traded off' for designated public open space around the market.

- **The Mercer County Cooperative Extension** office could continue to share parking with the market in the short term (as it does now) and in the long-term, be relocated into a new mixed-use building adjacent to the market. Ideally, any relocation of the cooperative extension office should facilitate movement between the two entities as well as programmatic partnerships that further their respective missions.

- **A Garden Center,** a use considered by stakeholders to be complementary to the market, could occupy a new building adjacent to the market, share its parking lot and locate its outdoor nursery in one of the vacant areas adjacent to the market. It was also suggested that the Garden Center be run by the Extension office and be used for training programs.

• **A Community Garden, Urban Farm, or Demonstration Garden**, or some combination of all three, could be developed in the open space on and/or adjacent to the "wet" area on the west side of the market property. Many markets today have a youth and/or community-gardening presence at the market, as it is a good way to connect the market to the community, encourage healthy eating among younger generations, and teach entrepreneurship skills. Products from this operation, for example, could be sold in the market by the groups involved. In the case of the Trenton Farmers Market, such an operation could be run by a local partner, such as the County Extension, the 4H program, Isles, Inc., Sustainable Lawrence, local schools, and others, or by a coalition of these groups. Given the lack of activities for children at the market and the draw of such areas for kids and their families, **a children's garden and/or play area** could be part of or adjacent to this area. This could be as simple as some old tractors that kids could play on or a larger playground-type structure. In terms of children's gardens, more and more markets are creating or building connections to them, as they are a way to build interest early on in the benefits of eating fresh fruits and vegetables and in the importance of local food systems.

NEIGHBORHOOD OPPORTUNITIES

As properties to the south and east of the market are redeveloped, the market and the local governments should take advantage of opportunities to improve access and make connections to the adjacent neighborhoods where barriers now exist.

• **Provide pedestrian signals at the intersection of Princeton Avenue and Spruce Street** to facilitate access from the Brunswick Avenue neighborhood. The free right turn should also be removed.

• **Reduce Spruce Street from four lanes to three**, as suggested by Mercer County, to allow room for wider sidewalks, bicycle lanes, and street trees, and to slow traffic and facilitate safer left-turns.

• **Increase the number and safety of pedestrian crossings on Princeton Avenue and Spruce Street adjacent to the market.** For example, a new pedestrian activated crossing should be created at the end of Pine Street across Princeton Avenue to connect with the recently repaved alley leading to the market. The crossing at Mulberry across Princeton should also be improved (e.g. repainting at the least, but potentially brick paved and/or with sidewalk bumpouts).

• **Improve access from Route 1** by converting one-way streets back to two-way. Direct access to the market from Rt. 1 via the North Olden Avenue exit is particularly cumbersome because of a short section of Spruce Street near the exit that runs one-way east, away from the market.

• **Create a new through street through the Capital Plaza Mall** to the south that could be an extension of Calhoun Street. This would facilitate both vehicular and pedestrian connections to existing neighborhoods and any new development occurring to the south.

• **Work with the owner of Capital Plaza Mall to create a larger destination on Spruce Street** by opening up what is now a long, blank wall. The back of the mall could potentially have storefronts and attractive facades on Spruce Street.

• **Connect the market to future county bike trails.** Lawrenceville and Ewing are both planning greenways – one going north/south along Shabakunk Creek and an old trolley right-of-way west of the market and one going east/west to the north of the market, perhaps adjacent to the Project Freedom development – which should be connected by signs and spur paths to the market. Linking up with potential new bicycle lanes on Spruce Street would place the market at the center of a growing network of greenways.

Appendix 2: Description of other public markets mentioned in this report

Pike Place Market Seattle, WA
Pike Place was founded in 1907. Today the market consists of primarily fish and produce stalls as well as over 200 non-food shops including art galleries and local crafts. It also provides ranges of social services including childcare, pre-school, a food bank, a medical clinic, and a senior center. Sitting in the center of a seven-acre Market Historic District, Pike Place has been an important landmark for years for both farmers and shoppers. In 1971 redevelopment plans for the market began. The new development plans eased traffic congestion and made the market is pedestrian friendly. The market continues to be a center for a strong neighborhood community.

Olympia Farmers Market in Olympia, WA
Open from Thursday through Sunday with both indoor and outdoor vendors, the market consists of approximately 200 local produce, bakery, and arts and craft vendors as well as a food court of ethnic foods. In addition, there is a performing stage used by entertainers. It is located on the waterfront near a bus terminal and is 10-minute walk to downtown. The atmosphere is festive with places to sit, eat, and relax and promotes a pedestrian feel. The market is attractive to all ages because of the variety of the vendors and entertainment.

Crescent City Farmers Market, New Orleans, LA
The Crescent City Market is located in downtown New Orleans. It easily accessible with a broad range of supporters including farmers, business and government leaders, chefs, and nutrition advocates. In addition to buying and selling of fresh produce, activities at the market include cooking demonstrations and tastings, children's activities, and music. Despite its central location, PPS suggest that by adding amenities to the area in can create vitality and potential spin-off to the rest of the community. The market is a non-for-profit project of Economics Institute housed at Loyola University's Twomey Center for Peace through Justice. Efforts are now being made to restore and revitalize this market following Hurricane Katrina.

Des Moines Farmers Market in Des Moines, IA
The Des Moines Farmers' Market is located downtown Des Moines, open May through the end of October on Saturday mornings. It showcases more than 200 farmers and vendors, representing 47 Iowa counties. The farmers sell fresh fruits and vegetables, fresh salsa and fresh farm products including pork, beef, lamb, nuts, eggs, butter, cheese, breads, pastries, jam and more. In addition, there are flowers local crafts, jewelry, rugs and clothing for sale.

City Market in Kansas City, MO
The market has been the centerpiece for the entire riverfront district since renovation efforts in 1980. City Market is the focal point of Kansas City boosting open-air sheds that accommodate over 200 vendors selling everything from flowers to produce. In the summer, Kansas farmers have the exclusive use of the sheds on Wednesday and Saturday. The market is surrounded by year-round shops selling variety of foods, products, and crafts. The market hosts weekly concerts and events during the summer as well as seasonal activities.

Lindsay Public Market in Lindsay, CA
In 2004, the public market in downtown Lindsay began operating, attracting thousands of people to downtown on Friday nights with vendors selling produce as well as local crafts. Due to the success of the market, in May 2006 the city began transforming the downtown area. They will be adding an outdoor courtyard to the town library, turning an abandoned packing house into a recreational center and revitalizing the empty downtown building into a large indoor market space for local vendors.

River Market in Little Rock, AR
The River Market is a year-around indoor market with an outdoor farmers' market with two covered pavilions. Located in the heart of Little Rock, the Market was part of a $300 million riverfront development project to utilize the scenic charm of the Arkansas River, the Riverfront Park and existing historical structures along the riverfront. The indoor market boosts oven baked breads, pastries, pies; meats and poultry including pork, beef, chicken, and turkey ; fresh flowers; coffees and specialty fruit drinks; authentic ethnic food; gourmet chocolates, jellies, preserves, sauces, spices, seasonings, and more. Outdoors, the two open-air pavilions are filled with farmers selling farm-fresh produce including fresh fruit, vegetables, herbs, cheeses, and eggs. The Farmers' Market is a permanent year-round home in the River Market. The River Market hosts various activities including parades, cooking clubs, and festivals.

Union Square Greenmarket in New York City
Once a major hub for activity, in 1970 Union Square was considered unsafe. However, in 1976 the Union Square Greenmarket began selling produce from farms throughout the region four times week. By the early 1980s, the popularity of the market helped encourage a multimillion-dollar renovation to the park resulting in an improvement to the neighborhood as well. Currently the market draws tens of thousands of people. Although some people walk though it because it is in the middle of Union Square, others buy fruits and vegetables, cheeses, art or other merchandise. The area is now very safe, filled with families, office workers, and students. It extremely accessible to all with a nearby subway station and access to the market from each entrance of the park.

Mercado La Paloma, Los Angeles, CA
Mercado La Paloma, a community development project of the Esperenza Community Housing Corporation, is located in downtown Los Angeles and is open daily. The development of the Mercado was an essential element to revitalize the local neighborhood, bringing together new economic, health, social and cultural resources under one roof. The project redeveloped a 34,000 square foot warehouse. Currently Mercado La Paloma provides a safe, family orientated community gathering place and encourages entrepreneurs, health educators and artists to utilize their facilities. It features four ethnic restaurants, community art, and has several free activities for children. The Mercado also houses local non-profits that ensure low-income families receive access to health and social services. In addition, there are computer and English as a Second Language classes.