



# Grow Before You Go

The Value of a Horticulture Therapy  
and Health Education Program in the  
Montgomery County Correctional Facilities

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## ABOUT THE FELLOW

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## ACKNOWLEDGMENTS

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## FREQUENTLY REFERENCED ABBREVIATIONS

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- **CDC:** Centers for Disease Control and Prevention
- **MCCF:** Montgomery County Correctional Facility
- **MCDC:** Montgomery County Detention Center
- **DOCR:** Montgomery County Department of Correction and Rehabilitation
- **PRC:** Pre-Release Center
- **SCT:** Social Cognitive Theory

## DEFINITIONS

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- **Community gardens:** collaborative projects on shared open spaces where participants share in the maintenance and products of the garden, including healthful and affordable fresh fruits and vegetables
- **Food insecurity:** the condition of not having access to sufficient food, or food of an adequate quality, to meet one's basic needs
- **Health behavior theory:** rooted in sociological and psychological constructs; a set of interrelated concepts, definitions, and propositions that presents a systematic view of health-related events or situations by specifying relationships among variables in order to explain and predict the events or situations
- **Health education:** a continuous, dynamic, and planned teaching-learning process implemented to facilitate and empower individuals to initiate and maintain behavior changes that promote positive health outcomes
- **Horticulture therapy:** the art and science of growing plants to improve physical, mental, and spiritual well-being

- **PRECEDE-PROCEED Model:** a theoretical framework and logic model used to assess health needs and design, implement, and evaluate public health programs; asserts that programs are more effective when those who will implement and be affected by them participate in the planning and evaluation process
- **Recidivism:** the act of a person repeating an undesirable behavior after they have experienced negative consequences of that behavior; can also refer to the percentage of formerly incarcerated individuals who are re-arrested for a similar offense
- **Re-entry:** the process of transitioning from incarceration back into the community; can also refer to correctional programs that help with this transition, such as pre-release, work release, and halfway houses
- **Social Cognitive Theory:** first named Social Learning Theory, developed in the 1960s by Albert Bandura and posits that learning occurs in a social context with a dynamic reciprocal interaction between the individual, their environment, and their behavior
- **Vertical garden:** agriculture that employs vertical space, rather than horizontal, and is suited for small spaces indoors and outdoors; no garden beds required
- **Youthful offender:** juveniles and inmates aged 18-21; kept separate from adult population

## EXECUTIVE SUMMARY

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The Montgomery County Department of Correction and Rehabilitation's mission places substantial emphasis on providing a wide array of constructive correctional services and reducing recidivism through self-improvement activities. A program centered around horticulture therapy and health education, *Grow Before You Go*, would contribute to the Department's existing efforts of affording incarcerated individuals opportunities for self-growth before re-entering society. *Grow Before You Go* would likely improve participants' mental and physical health, reduce recidivism, lower Department health care costs, and address food insecurity in the community. This paper seeks to answer the following questions:

- What are the benefits of having a horticulture and health education program in the Montgomery County correctional facilities?
- What is a theory- and evidence-based program design for this intervention?
- Who are potential stakeholders?
- What are facility-specific considerations for success?
- In what ways can the program expand or grow after year one?

# MONTGOMERY COUNTY DEPARTMENT OF CORRECTION AND REHABILITATION

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Established in 1972, the Montgomery County Department of Correction and Rehabilitation is a civilian agency managed by professionals in the correctional field. Montgomery is one of very few counties, with multiple correctional facilities, accredited by multiple agencies, including the American Correctional Association (ACA), the National Commission on Correctional Health Care (NCCHC), the National Correctional Education Association (CEA), and the Maryland Commission on Correctional Standards (MCCS). DOCR's mission is to protect the public by providing a wide range of constructive correctional services for detainees and ensure the safety and welfare of staff, visitors, and inmates by operating in a secure, humane environment which meets professional standards and constitutional requirements. Their mission also includes reducing recidivism by providing offenders with opportunities for self-improvement and development of inner resources, and meeting future correction and rehabilitation needs of the County through effective and responsible fiscal and resource planning.

DOCR is comprised of three facilities: the Montgomery County Detention Center, the Montgomery County Correctional Facility, and the Pre-Release Center. According to the Department's daily population data (2024), for the past year, the total population of all three facilities has been no less than 800 people on any given day. Throughout 2024, that number has not gone below 900, and since May it has remained over 1,000. This is due in part to the consistent influx of new offenders with a decreased speed in sentencing pre-trial individuals since the pandemic. The population includes men, women, and youthful offenders.

## MONTGOMERY COUNTY DETENTION CENTER

Built in 1961, the Montgomery County Detention Center is the oldest correctional facility in the County. MCDC is responsible for the intake and processing of adult male and female offenders and has a capacity of 200. As the intake unit of the County, this facility provides psychological screening, medical screening, and risk assessment to appropriately classify inmates and provide initial care, custody, and security before transfer to the Montgomery County Correctional Facility. The Clinical Assessment and Transition Services team screens individuals with mental health histories in attempt to divert them to community resources instead of remaining in incarceration. In addition to the intake and processing population, MCDC also houses fully sentenced male offenders from MCCF that were moved to MCDC to work, youthful offenders, and individuals in protective custody.

## MONTGOMERY COUNTY CORRECTIONAL FACILITY

The Montgomery County Correctional Facility was built in 2001 and has a capacity of 1,028. It is responsible for the custody and care of male and female offenders who are either pre-trial or serving sentences up to 18 months. Their mission is to provide progressive and comprehensive correctional services to all inmates. This is exhibited in the implementation of a wide variety of services and programs such as acute and chronic medical care, therapeutic substance abuse and self-help programs, Crisis Intervention Units, Choices for Change (CFC) program, the Model Learning Center, a full-service library, and an employment development program and center.

The Crisis Intervention Units are separate housing pods that consist of inmates that DOCR medical staff believe should be removed from the general



population for medical or psychological observation, evaluation, and treatment. Individuals separated for medical reasons are experiencing severe physical health issues, such as being immunocompromised. The individuals separated for mental health reasons are categorized by different acuity levels: those experiencing psychosis and “step-down”. Step-down refers to those who are experiencing less severe symptoms and may soon return to the general population.

Choices for Change is conducted in a therapeutic community setting within three housing pods: adult female offenders, adult male offenders, and youthful offenders. The CFC program is based on the Carey Guides which help offenders recognize, understand, and change personal and environmental factors that have contributed to their behavior. Offenders in CFC who have not finished high school are required to attend school.

The Model Learning Center is an educational program for those trying to improve their academic and vocational skills. Educational services are provided by Montgomery College and Montgomery County Public Schools and include programs such as: High School Equivalency (GED), English for Speakers of Other Languages (ESOL), Special Education, and ServSafe Food Manager’s Certification. Inmates that consistently participate in programs such as Choices for Change or the Model Learning Center, have the potential to earn 5-10 days off their sentence per month. Inmates may also be removed from certain programs if they are not consistent and accountable for their work.

The MCCF Library is a branch of the Montgomery County Public Library System. It provides opportunities for recreational book reading and browsing, book circulation, and access to a Law Library. Holds-to-Go allows inmates at MCCF and MCDC to request books to be delivered to their housing pods.

## PRE-RELEASE CENTER

The Pre-Release and Re-Entry Services Division provides community-based residential and non-residential alternatives to secure confinement for sentenced adult offenders. The residential program is located at the Pre-Release Center which is built similarly to a university dorm and has a capacity of 171. With a focus on successful re-entry and reduced risk of recidivism, they engage in work, treatment, education, family involvement, and other services. In order to take part, inmates must apply, be fully sentenced, within one year of release, eligible to work, and have no open warrants. The program primarily serves individuals sentenced to DOCR facilities, but also has residents from federal and state facilities who are returning to the greater Washington-Metro area upon release. Individuals living at PRC either work on-site or in the community and are expected to participate in programs and activities that align with the re-entry plan they created with their full-time case management team. Consistently following their re-entry plan and exhibiting positive behaviors can allow offenders to move up the PRC level system, which gives them more privileges. Some of their required programs include digital literacy and job interview preparation.

## PROGRAM INTRODUCTION AND BENEFITS

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It is evident that the Montgomery County Department of Correction and Rehabilitation closely follows its mission of working to reduce recidivism. This is exhibited in their provision of a wide range of services that allow for self-improvement and resource development to successfully readjust within the community. A program that could add to the array of existing activities, and be implemented at all three facilities, is one centered around horticulture therapy and health education and promotion. The program is named "Grow Before You Go"

because participants would be growing produce in the literal sense but also growing as individuals in a number of ways before leaving incarceration.

Gardening has many mental and physical health benefits such as improved physical functional ability, cognitive function, cortisol levels, immune function, self-esteem, social health, and more. Health education can increase health literacy and self-efficacy. The program would also benefit the participants by helping them develop a vocational skillset and decrease risk of recidivism. Moreover, not only would this program benefit participants, but it would also positively impact the Department and broader community.

## PHYSICAL ACTIVITY AND PHYSICAL FUNCTIONAL ABILITY

Physical activity, in general, has countless benefits for the body and is a protective factor against several health conditions. According to the Centers for Disease Control and Prevention (CDC, 2024), some advantages include weight management, strengthened bones and muscles, and fall prevention. The CDC (2024) also asserts that exercise reduces risk of cardiovascular disease, type 2 diabetes, metabolic syndrome, severe respiratory illness outcomes, and several common cancers (such as of the breast, kidney, and colon).

Park et al. (2014) conducted a study to determine the exercise intensity of gardening tasks for adults in their 20s as compared to more traditional forms of exercise. Participants' oxygen uptake and heart rate were measured during resting and gardening periods. This was measured in metabolic equivalents (MET). The MET is a measure of exercise intensity of physical activity as expressed by oxygen uptake (Ainsworth et al., 2000). One MET is the equivalent of lying down and meditating. Values less than 3 MET are considered low-intensity, 3 to 6 MET are moderate-intensity, and values greater than 6 MET are high-intensity. To benefit adult health,

at least 30 minutes of moderate-intensity physical activity, most days of the week is recommended (Nelson et al., 2007). It was found that many gardening tasks performed by adults can be moderate- to high-intensity physical activities (at least 3 MET) (Park et al., 2014).

Zick et al. (2013) conducted a study on the potential weight control benefits of community gardening. The study compared the weight changes of 198 community gardening participants to that of their non-gardening siblings and neighbors. It was supported that men in the program had significantly lower body mass indexes (BMIs) than their brothers, and women in the program had significantly lower BMIs than their sisters (Zick et al., 2013). It was also found that the community gardeners had lower odds of being overweight or obese than their otherwise similar neighbors (Zick et al., 2013).

## COGNITIVE FUNCTION

Cognitive function is a broad term that refers to the mental processes involved in learning, reasoning, and manipulating information. It includes several complex brain activities such as perception, memory, decision-making, psychomotor ability, language and verbal abilities, processing speed, and more. According to Park et al. (2019), "the volume and weight of the brain decrease at a rate of approximately 5% per decade after 40 years of age". This is why cognitive function tends to deteriorate as we get older. Research supports that exercise is associated with improved short- and long-term memory and overall brain function. Several studies have reported that gardening activities, such as digging, raking, and watering, can be considered aerobic and muscular exercise (Park et al., 2019).

Park et al. (2019) studied the effects of gardening on the cognitive function of adults over the age of 65. In order to measure cognitive function, they focused on brain-derived neurotropic factor (BDNF) and platelet-derived growth-factor

(PDGF). BDNF is a protein that can promote rapid cell reproduction and neuronal development and functioning. PDGF is a protein complex that promotes blood vessel growth and neuronal survival. Subjects participated in 20-minute low- to moderate-intensity gardening activities for several weeks. It was found that participants exhibited significantly increased levels of BDNF and PDGF (Park et al., 2019).

## CORTISOL LEVELS

Cortisol, also known as the “stress hormone”, is a steroid hormone produced by our adrenal glands. Cortisol primarily regulates the body’s response to stress but also affects almost every body system (Thau et al., 2023). Some of cortisol’s roles are helping control metabolism, suppressing inflammation, regulating blood pressure and sugar, and helping control the sleep-awake cycle (Thau et al., 2023). According to the National Institutes of Health (NIH), chronically elevated cortisol levels can lead to Cushing’s syndrome (Thau et al., 2023). Cushing’s syndrome is a collection of symptoms that includes weight gain (especially in the face and abdomen), high blood sugar which often leads to Type 2 Diabetes, high blood pressure, and osteoporosis (Thau et al., 2023). According to the American Psychological Association (APA, 2023), chronically elevated cortisol levels can also lead to mood changes (such as anxiety and depression), hormonal changes (such as irregular menstruation and erectile dysfunction), acne, and suppressed immune and digestive function.

In their study on gardening’s role in affective restoration from stress, van den Berg and Custers (2010) had participants perform a stressful task then garden or read indoors. Data was collected through participant salivary cortisol levels and self-reported mood. Both post-stress activities led to decreased cortisol levels, but this effect was significantly greater in the gardening group (van den Berg &

Custers, 2010). It was also found that positive mood was restored after gardening but further deteriorated during reading (van den Berg & Custers, 2010).

Activities that reduce stress are crucial to overall health and well-being but are especially important for incarcerated individuals. Incarceration can be an acute and chronic stressor (Massoglia & Remster, 2019). Initial adjustments, such as loss of agency and separation from family, have acute impacts while experiencing violence or navigating the social hierarchy may cause chronic stress (Massoglia & Remster, 2019). Xu et al. (2018), compared the hair cortisol levels and symptoms of anxiety and depression in incarcerated adolescents and those attending regular high school. Measuring cortisol from hair allows for a greater understanding of stress levels overtime, as opposed to more acute stress indicators like salivary cortisol. It was found that incarcerated adolescents showed significantly higher hair cortisol levels, and more anxiety and depression symptoms, than their counterparts (Xu et al., 2018). This asserts that incarcerated populations experience significantly higher chronic stress than others.

## SELF-ESTEEM AND SELF-EFFICACY

Another benefit of a horticulture therapy and health education program, such as *Grow Before You Go*, is that of increased self-esteem and self-efficacy. The American Psychological Association (2024) defines self-esteem as “the degree to which the qualities and characteristics contained in one’s self-concept are perceived to be positive”. Rooted in Bandura’s (1977) Social Cognitive Theory (SCT), self-efficacy is defined as “an individual’s subjective perception of their capability to perform in a given setting or to attain desired results”. Bandura (1977) asserts that self-efficacy is a primary determinant of behavioral change; essentially, people do not attempt things that they believe they are incapable of. Both constructs are essential to individual well-being and quality of life during and after incarceration.

Several studies support that gardening increases self-esteem (Gupta, 2022; Koay & Dillon, 2020; Pretty et al., 2006). This is especially important because incarceration negatively impacts self-esteem (Bruce et al., 2017; Kamoyo, 2018) and self-esteem is predictive of recidivism (Gendreau et al., 1979). Self-esteem also has a direct relationship with one's health. Through a 16-year longitudinal study, Liu et al. (2019) found that there is an inverse reciprocal relationship between self-esteem and chronic illness. This means that an initial decline in self-esteem predicts subsequent chronic illness and initial increases in chronic illness predict subsequent declines in self-esteem.

Bandura's (1977) Social Cognitive Theory is often illustrated through the Triadic Reciprocity Model, one portion of which focuses on Socio-Environmental Factors. Socio-Environmental Factors include social norms and access in community. SCT asserts that Socio-Environmental Factors, such as low health literacy and negative attitudes toward healthy eating, can decrease self-efficacy. Including health education on the *how* and *why* of healthy eating would promote self-efficacy, which in turn would encourage maintained behavior change and improve health outcomes (Farley, 2019). Moreover, the tangible nature of a gardening program, labor literally bearing fruit, also encourages increases in self-efficacy.

## SOCIAL HEALTH AND COHESION

Incarceration can also impact health by hindering social integration (Massoglia & Remster, 2019). Not only may individuals lose access to their families and support systems, but they have also increased risk of divorce and strained relationships with their children (Massoglia & Remster, 2019). The World Health Organization (WHO, 1947) defines health as "a state of complete physical, mental, and *social* wellbeing and not merely the absence of disease or infirmity". In working

towards true health for all incarcerated individuals, social integration and a sense of belonging must be incorporated in programming. Gardening and learning with others is one method of improving social health for this population. In a qualitative study on the gardening program at San Quentin Prison, it was even found that gardens could provide “neutral” territory in a gang-segregated facility (Waitkus, 2004).

Increased social cohesion is known to be a key determinant of mental health (Soga et al., 2017a). In Koay and Dillon’s (2020) study on gardening’s relationship to stress, well-being, and resilience, 111 participants were separated into three groups: control (no gardening activity), individual/home gardening, and community gardening. It was found that while gardening has a positive effect on several aspects of well-being, *community* gardening had an even greater impact (Koay & Dillon, 2020). Community gardening provides opportunities to interact with others which is likely to forge and reinforce social ties and a sense of community (Soga et al., 2017b; van den Berg et al., 2010, Wakefield et al., 2007).

In a case-study on community gardening in Toronto, participants saw their gardens as a place for positive social interaction (Wakefield et al., 2007). One gardener called them a place where “people come together,” and that “it breaks social isolation,” (Wakefield et al., 2007). Two more responses were “...we can know each other, and we can share everything like a culture, like a food,” and “...we all learn from each other...we can share stories,” (Wakefield et al., 2007).

Moreover, social cohesion would also positively affect the participants’ learning. SCT asserts that learning is a process that occurs in a social context (Bandura, 1977). *Grow Before You Go* would develop social norms of positive attitudes towards healthy eating and encourage a sense of shared pride in and responsibility for their gardens.



## HEALTH EDUCATION AND HEALTH LITERACY

Health education is a continuous, dynamic, and planned teaching-learning process implemented to empower individuals to initiate and maintain behavior changes that promote positive health outcomes (Pueyo-Garrigues et al., 2019). Health education takes place in several settings and throughout the lifespan. It also accounts for the personal and environmental factors that influence knowledge, attitudes, and beliefs as they relate to a given health need or behavior. Including health education in this program is imperative because true behavior adoption and maintenance only occur with improved knowledge and changed attitudes and beliefs. Improved knowledge would result in increased health literacy which would help improve participants' lives during and after incarceration.

As defined by the CDC (2023), health literacy is "the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and action for themselves and others". The CDC (2023) also emphasizes the merit of organizational literacy, which is the responsibility of organizations to equitably enable individuals to attain personal health literacy. DOCR would be exhibiting organizational literacy in the implementation of this program.

In the case of *Grow Before You Go*, the focus is healthy eating and being an active participant in your nutrition and overall health, and in the health of your family upon release. Employing health literacy best practices can build trust and advance health equity, trust is vital to participant willingness and engagement. Some health education and literacy best practices focus on language: using plain language, using the audience's preferred language(s), and using culturally and linguistically appropriate language (CDC, 2023). These practices will be implemented because they make health information more relatable and accessible, allowing audiences to gain a more thorough understanding.

## VOCATIONAL SKILL BUILDING

*Grow Before You Go* could also equip participants with, or further develop, a vocational skillset. Many incarcerated and formerly incarcerated individuals experience economic marginalization due to a lack of work experience, underdeveloped skillset, and criminal history (Massoglia & Remster, 2019). Having a strong understanding of horticultural practices is an employable skill that can also lay the foundation for entrepreneurship (Jenkins, 2016). According to the Bureau of Labor Statistics, the “green industry” continues to grow with a variety of jobs from landscaping and contract work to greenhouse managers and farmers (McCarron, 2005). *Grow Before You Go* could also host a “Green Career Fair” and invite professionals from varying agricultural and horticultural backgrounds, an idea from the Insight Garden Program at San Quentin. Some of these professionals could be from small farms and food-giving community non-profits. This could also create an employment pipeline for program graduates upon release. This career fair would also include organizations like WorkSource Montgomery. WorkSource is an existing partner with MCCF and has programs dedicated specifically to individuals who have been justice-involved. Also like the Insight Garden Program, *Grow Before You Go* could consider eventually hiring program graduates to come back and work with current participants. Improved economic opportunity is also associated with lower recidivism rates (Hall et al., 2015).

## REDUCED RECIDIVISM

The United States incarcerates the largest proportion of its population compared to any other country. The world average is 166 per 100,000 people and the U.S. average is 750 per 100,000 (Webb, 2009). One contributing factor to these large numbers is recidivism. Recidivism is the act of a person repeating an

undesirable behavior after they have experienced negative consequences of that behavior. It can also refer to the percentage of formerly incarcerated individuals who are rearrested for a similar offense. Because of the many health and economic benefits *Grow Before You Go* can provide participants, it could also contribute to lower recidivism rates. In a study on multiple prison gardens throughout the United States, it was found that participants had lower recidivism rates than those of the general incarcerated population (Jenkins, 2016). San Quentin's Insight Garden Program boasts a recidivism rate of less than 10%, compared to the country's 55%. Decreased risk of recidivism not only aligns with DOCR's mission, but it would also positively impact the community.

## FINANCIAL BENEFITS FOR THE DEPARTMENT

*Grow Before You Go* would also greatly benefit the Department of Correction and Rehabilitation financially. First, the produce grown in the gardens would be used in the meals cooked at the facilities. This would cut costs incurred by ordering from outside vendors. Also, being that the kitchens at each facility already only cook fresh produce, it would not be a major operational shift.

*Grow Before You Go* could also save DOCR some of the funds that would have been spent on inmate health care needs. There is an adage often used in public health, "an ounce of prevention is worth a pound of cure". This means that focusing efforts on preventative measures, such as health education and improving health literacy, could decrease the prevalence of chronic disease or at least prevent the exacerbation of existing illness. A focus on empowering inmates to manage their own health, through exercise and education on healthy eating, could make a major difference. According to the Maryland General Assembly (2023), monthly correctional housing and services cost approximately \$4,970 per inmate. A large component of costs is meeting health care needs. Individuals with a history of

incarceration are more likely to experience communicable disease and other health conditions related to stress (Massoglia, 2008). Incarceration is associated with high-levels chronic health conditions and the experience of incarceration has an even greater impact on health than the length of incarceration (Massoglia & Remster, 2019). This supports the notion that truly rehabilitative and constructive programming for incarcerated individuals will lead to improved health outcomes, during and after their sentences (Timler et al., 2019). The Department could spend less funding on medication and clinical care by investing in *Grow Before You Go*.

## BENEFITS FOR THE COMMUNITY

### POTENTIAL FOR SURPLUS DONATION

A major component of *Grow Before You Go* is the donation of surplus produce to food-insecure communities and organizations that serve the economically vulnerable. Some examples of such organizations are the Office of Food Systems Resilience, local homeless shelters, Manna Food Center, Food Now, and Interfaith Works. A gardening program at a prison in Canada includes donating to communities experiencing food insecurity. This caused the participants' reported self-esteem and self-worth to increase even more than from gardening alone (Timler et al., 2019).

### POTENTIAL TO CREATE COMMUNITY GARDENS AFTER INCARCERATION

Approximately 91% of inmates re-entering society report food insecurity at home (Growing Gardens, n.d.). Upon reentry, some *Grow Before You Go* graduates may desire to collaborate with local organizations and communities to help plan, build, and maintain community gardens. This would allow for the education and associated empowerment to reach others and bring the aforementioned health benefits to those that need it.

## EXISTING PROGRAM EXAMPLES

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There are multiple examples of horticulture therapy programs at correctional facilities in the U.S. and abroad. Created in the late eighties, the GreenHouse at Rikers Island is the country's oldest and largest prison garden. It began rather unstructured then developed into a job training program. Later, realizing the needs of the population, it evolved into a life skills-centered program, focusing on self-care, nutrition, teamwork, and personal responsibility. Over 500 incarcerated men and women have participated thus far.

The Insight Garden Program, which started at San Quentin, focuses on vocational gardening and landscaping training along with reconnection to self, community, and the natural world. The program has expanded to over 10 facilities throughout California and serves approximately 1,500 incarcerated people annually.

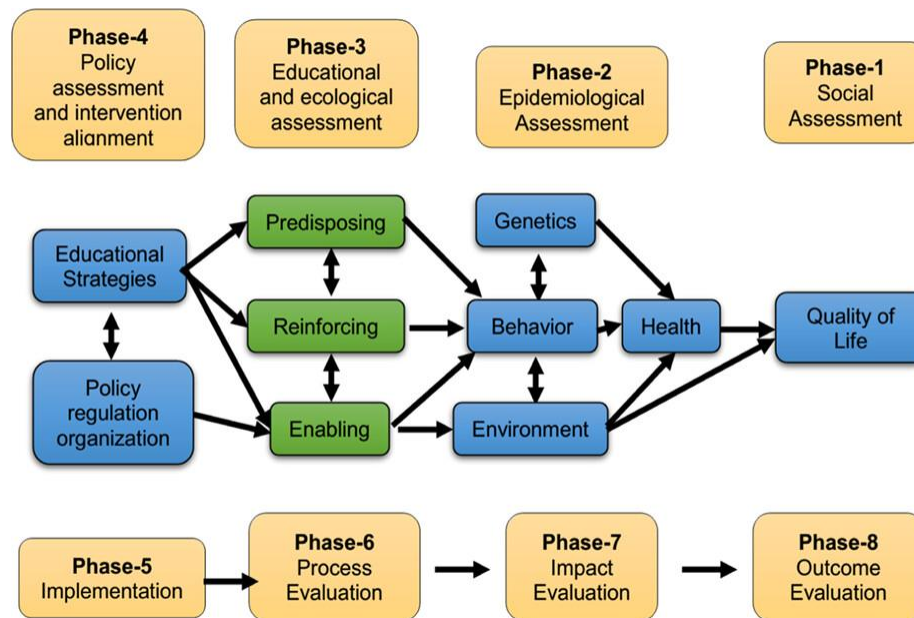
Growing Gardens in Oregon has several programs focused on horticultural education. Lettuce Grow is their program for incarcerated students. They have partnered with local colleges to provide classes such as Greenhouse Management and Sustainable Gardening. Some other garden initiatives at correctional facilities include Maryland Correctional Institution, Bedford Hills in New York, and several prisons in the United Kingdom and Norway.

## PROGRAM DESIGN

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The PRECEDE-PROCEED Model is a theoretical framework and logic model used to assess health needs and design, implement, and evaluate public health programs. It asserts that programs are more effective when those who will implement and be affected by them participate in the planning and evaluation processes. Throughout the implementation of *Grow Before You Go*, participants will be able to share their feedback, needs, and goals, contributing to the overall

direction of the program. This will empower them to take ownership and accountability.



**PRECEDE-PROCEED Model**

PRECEDE, which stands for Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation, provides the structure for planning a targeted public health intervention. The PRECEDE phase of *Grow Before You Go* planning was exhibited throughout earlier sections of this paper that assessed the social, epidemiological, educational, and ecological factors of the target population. The final component of this phase is the health program and policy identification and development. The program and policy, *Grow Before You Go*, has already been identified and will be further developed in the next subsection.

PROCEED, which stands for Policy, Regulatory, and Organizational Constructs in Educational and Environmental Development, provides structure for the implementation and evaluation of a public health intervention. The PROCEED phase of *Grow Before You Go* includes the process, short-term, intermediate, and long-

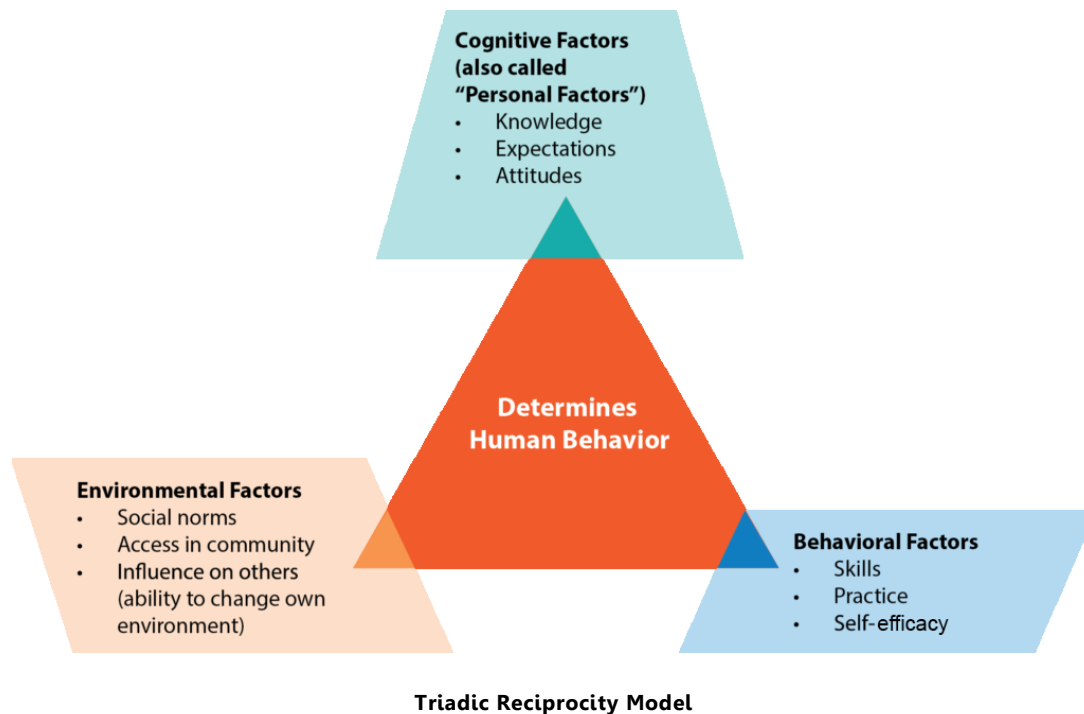
term evaluations of the program. Process evaluation would determine if *Grow Before You Go* reaches the target population and achieves its goals. Short-term evaluation would focus on the changes in participants' knowledge, skills, and attitudes. These changes would be best measured by verbal responses to questions asked during program sessions and through observation in the gardens. Intermediate evaluation relates to changes in behavior. This would be measured through the actions of the participants during program time and otherwise. Long-term evaluation identifies the increase or decrease in specific behaviors and health outcomes. This would be analyzed through pre- and post-tests and group interviews focused on gardening and nutrition knowledge, and in the collection of anonymous health data.

## CURRICULUM

*Grow Before You Go* will have 7-12 participants at a time and operate year-round (as the weather permits). The actual class meetings and group gardening sessions will happen on a "minimester"-like schedule. A minimester can last from 5 to 14 weeks. Like the Insight Garden Program, *Grow Before You Go* will not consist of only gardening. The program will include health education centered around nutrition and encourage mindfulness, self-reflection, and community. It will do so guided by a health behavior theory. A health behavior theory, rooted in sociological and psychological constructs, is a set of interrelated concepts, definitions, and propositions that presents a systematic view of health-related events or situations by specifying relationships among variables in order to explain and predict the events or situations.

Social Cognitive Theory is the health behavior theory that *Grow Before You Go* is grounded in. SCT, once named the Social Learning Theory, was developed in the 1960s by Albert Bandura and posits that learning occurs in a social context with

a dynamic reciprocal interaction between the person, their environment, and their behavior (as illustrated below in the Triadic Reciprocity Model). *Grow Before You Go* will address the Cognitive, Behavioral, and Socio-Environmental Factors that impact the behaviors of our target population.



Cognitive Factors will be addressed through health and horticultural education, reshaping participants' knowledge, expectations, and attitudes related to gardening and healthy eating. Behavioral Factors will be addressed through the practicing of gardening skills and consistent improvement. This will increase self-efficacy and empower participants to continue attempting new behaviors and setting new goals. Lastly, Socio-Environmental Factors will be impacted through the behaviors of others. As participants become more engaged and excited, their enthusiasm will contribute to a shift in social norms and influence their peers.

The health education and horticultural practices can be taught by students at Montgomery College. Environmental Horticulture and Sustainable Agribusiness students would teach best practices and supervise and guide time in the gardens.



Students in the Community Health and Public Health Services program could teach the nutrition and mental and physical health components. Community Health students have a requirement to complete a 45-hour practicum in order to be certified, participation in this program could satisfy it. Farmers from small farms in the Agricultural Reserve could also participate as instructors.

## CONSIDERATIONS FOR SUCCESS

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### MONTGOMERY COUNTY DETENTION CENTER

At MCDC, one of the main considerations is location and space. The facility does not allow for access to green space. However, the facility does have an open-air basketball court that allows for plenty natural sunlight. The intention is to build a vertical garden surrounded by a lockable metal fence. Vertical gardens do not take up as much space as traditional ones, so the basketball court will not be affected much. The lockable fence will keep it protected during recreational activities and be unlocked during garden maintenance. Tomatoes, vining squash and cucumbers, small pumpkins, Malabar spinach, basil, mint, and beans are examples of plants that grow well in vertical gardens.

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### MONTGOMERY COUNTY CORRECTIONAL FACILITY

MCCF has several yards of green space, only a portion would be needed at the onset of the program. Also, MCCF has a baking program, *Grow Before You Go* could donate produce for some of their recipes.

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### PRE-RELEASE CENTER

The Pre-Release Center also has bountiful green space and an existing area designated for a garden. Being that PRC is less restrictive, there is a potential for family involvement. Also, PRC's interns take residents on field trips; they could visit local farms and community non-profits to fulfill their community service

requirements. PRC's leadership suggested making *Grow Before You Go* participation mandatory during their orientation weeks, like they do for their meditation classes.

## COMPOSTING

Another major goal of *Grow Before You Go* is sustainability. Being that the DOCR facilities already recycle, adding composting would not be too large of an undertaking. The intention is that the cafeterias, dining spaces, and gardens will have compost bins. Food scraps and yard trimmings from the program and general groundskeeping will be collected in these bins and then picked up by an organization like the Compost Crew. Since MCCF and PRC have the space, the hope is that over time, the program can include on-site vermicomposting, which is an inexpensive and simple method made possible by worms.

## RACIAL EQUITY AND SOCIAL JUSTICE IMPACT STATEMENT

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People of color make up over 80% of the target population. Also, justice-involved individuals are a marginalized population facing increased risk of stress-related and communicable disease. They also experience economic hardship and social isolation to an elevated degree. People of color and those who are justice-involved face disparate health outcomes and systemic barriers to seeking and maintaining healthy behaviors; and this impact is exponential at their intersection. *Grow Before You Go* is likely to positively impact these factors and more, promoting equitable mental, physical, and social health outcomes and improved quality of life for participants and their families.

## DISCUSSION

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### FUNDING AND RESOURCE OPPORTUNITIES

There are a number of organizational grant opportunities for gardening programs. The Office of Food Systems Resilience and the Office of Grants Management have a grant program awarding \$10,000 to \$15,000 to resident and community gardens aiming to combat food insecurity. As it stands, *Grow Before You Go* does not meet all of their requirements, but since it would be through a government entity, there may be potential for a relationship in the future. Some other potential funding sources include the Lululemon Here to Be Grant, Greater Washington Community Foundation Health Equity Fund, American Heart Association Food is Medicine, and the W. K. Kellogg Foundation.

Not all support may be monetary. Individuals that work at the correctional facilities, farmers that we partner with, and individuals from the broader community could donate soil, fertilizer, seeds, plant cuttings, and tools. This would further reduce costs, especially at the onset of the Program.

### EXPANSION

As previously stated, PRC and MCCF and have a great deal of green space. After the program has been successful for at least a year, the plan is that these two facilities will expand their gardens. With utilizing more space, comes more opportunity to increase the quantity and variety of plants grown. This can allow for the more floral and non-edible plants as well as more produce for donations. Expansion could also include the use of greenhouses. Greenhouses can be used year-round and are especially advantageous in the winter. Some vegetables that grow well in cool greenhouses are potatoes, winter lettuce, broccoli, kale, and brussel sprouts.

## CONTINUITY

One potential challenge is how continuity can be ensured. It is not expected that instructors will remain with the program for the entirety of their careers, but transitions should be seldom and seamless. A potential solution is the establishment of a memorandum of understanding (MOU) with Montgomery College so that students are aware of the program and can apply year to year. MOUs could also be established with local farms and agricultural co-ops. Lastly, as previously stated, participants who have graduated from the Program and are no longer incarcerated may be able to come back as instructors that current participants may find particularly relatable.

## CONCLUSION

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The Montgomery County Department of Correction and Rehabilitation's varied selection of services and programs are meant to reduce recidivism through self-improvement activities. *Grow Before You Go*, an intervention centered around horticulture therapy and health education, would be a valuable addition to the Department's current programming. With crime, of course should come restitution but also true rehabilitation and restoration. The United States criminal justice system has a long history of systemic inequity, oppression, and recidivism. Programs like *Grow Before You Go* are intended to combat these phenomena by improving participants' mental, physical, and social health, building their vocational skillsets, and reducing their chances of recidivism. The Program would also likely lower Department health care costs and address food insecurity in the community. Another hope for *Grow Before You Go* is that more facilities in Maryland and throughout the United States will be inspired to implement similar programs, changing the landscape of the US criminal justice system one seed at a time.

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