

To the University of Wyoming:

The members of the Committee approve the thesis of Peggy McCrackin presented on
8/29/2012.

Christine M. Porter, PhD, Chairperson

Deborah D. Paulson, PhD, External Department Member

Derek T. Smith, PhD, Member

APPROVED:

Dr. Mark Byra, Director, Kinesiology & Health.

Joseph F. Steiner, Pharm.D., Dean, College of Health Sciences

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Local gardening projects are proving to be viable components of a more sustainable and equitable food system. While interest in gardening and local food systems is growing, barriers limit the translation of interest into action. The challenge of overcoming hindrances to action initiation has been met by many community engagement projects through minigrant programs. **PURPOSE:** While an abundance of gardening minigrant programs exist, research evaluating the effectiveness of this approach does not. This mixed method experimental study begins to fill this void in the literature. Only the quantitative aspect of the study is reported in this thesis, which evaluated the likelihood of minigrant recipients expanding or initiating a garden compared to a control group. **METHODS:** Participants for this study were recruited from the 64 attendees in a food gardening workshop held in a small city in Wyoming in April 2011. Participants were randomly assigned to an intervention group (n=31) who received small minigrants and a control group (n=22) who did not. Each member of the intervention group received a \$40 minigrant that could be redeemed at a local gardening supply store. No technical assistance or additional support was provided for the duration of the study. At the conclusion of the 2011 gardening season, participants were asked to provide gardening dimensions for their 2010 garden and their 2011 garden via an e-mail questionnaire sent in September and October of 2011. **RESULTS:** This study found that minigrant recipients were more likely to start a garden (Fischer's exact test, $P=.012$) and increased their gardening space more than the control group (Mann Whitney $U=166$, $P<0.05$). **CONCLUSIONS:** These findings suggest that minigrants are a cost-effective tool for overcoming barriers to gardening action initiation and expansion. This study demonstrates that even very small amounts can be

enough to nudge interested residents into launching or expanding local gardening projects.

The implication of this study is that a gardening migrant program can stimulate action with only a small infusion of cash and without the overhead of providing ongoing technical assistance.

**BUILDING SUSTAINABLE FOOD SYSTEMS THROUGH LOCAL GARDENING
PROJECTS: TESTING THE IMPACT OF MINIGRANTS ON GENERATING
PROJECT ACTION**

By
Peggy McCrackin

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DEDICATION PAGE

I dedicate this thesis work to my family; for their support and encouragement throughout the last two years. Especially to my parents, Thomas and Patricia Gribble, and to my children, Kali and Sean McCrackin. To my mom for being a special source of inspiration as a mother, gardener, and role model for never giving up despite life's ongoing challenges. To Kali and Sean for their understanding and encouragement of my midlife revisioning quest. But also to the non-traditional student role models among my family members who have paved the way for me; my brother, Scott Gribble, my sister-in-law, Tammey Gribble, my niece, Andi Grant, and my nephew, Matt Gribble. Chief among them is my brother, Scott, who taught me that re-careering is worth the struggle and awkwardness of the journey. And to my siblings and their spouses Bill and Lynn Gribble and Penny and Kent Stine for their modeling of strength in the face of adversity and for their words of encouragement and support throughout my midlife foray into academia.

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First, to my committee, who provided guidance throughout and helped me weave my way through the process.

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Last, but far from least, this project was only successful because of the willingness of the 44 research participants who took time out of their lives to collect and share their gardening data with me.

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CHAPTER ONE – INTRODUCTION

Introduction

This study evaluated the effectiveness of a gardening minigrant program to determine whether minigrants can be an effective means to catalyze initiation or expansion of food gardening activities. As part of the study, a one-time gardening minigrant program was initiated in April 2011 that included an intervention group (n=31) and a control group (n=22). Members of the intervention group each received a \$40 minigrant that could be redeemed at a local gardening supply store, while members of the control group did not receive a minigrant. After the minigrant program was launched, participants did not receive any ongoing technical assistance or support. Participants were not contacted again until September 2011 when they were asked to provide data about their garden dimensions for the summer of 2011 (post-minigrant) and the previous summer of 2010 (pre-minigrant). Analysis of collected data revealed these gardening minigrants were effective at stimulating both gardening initiation and expansion.

Study Rationale

Today's threats to U.S. health and well-being have been widely recognized: lingering economic recession and a stubbornly high unemployment rate of 8.6% as of November, 2011¹; the highest levels of food insecurity in the U.S. since tracking began, with 14.5% of U.S. households and 11.6% of Wyoming households experiencing food insecurity in 2010²; record-breaking SNAP/Food Stamp participation in 2010, with nearly 14% of the U.S. population enrolled³ and the rates for Wyoming residents increasing from 4% at the beginning of 2009 to

6% by the end of 2010^{3,4}; and sky-rocketing overweight and obesity rates affecting nearly two-thirds of the U.S. and Wyoming population⁵ and nearly 50% of Albany county, WY, residents.⁶

The current dominant U.S. large-scale industrial food system has contributed to these challenges and others including environmental degradation in the form of lower agricultural productivity^{7,8}, declining soil quality due to overuse of chemical fertilizers and pesticides⁷⁻⁹, nitrate pollution of ground-water aquifers due to subsidized and overused nitrate fertilizers⁷⁻⁹, and devastation of the rural landscapes and the countryside⁹; increased energy use from petrochemical inputs and transporting food long distances from farm to processing centers to distribution centers to consumers^{7,8,10}; environmental injustice¹¹; health disparities in rates of obesity, diabetes, heart disease, and stroke associated with diet quality¹²; unequal access to good food¹³; and institutionalized racism¹⁴, exemplified by the case of the USDA denying farm loans, loan servicing, and equal access to credit to Black, Native American, and Hispanic farmers between the years 1981 and 2000.¹⁵

While the threats to personal, community, and environmental health are many, local food initiatives and social movements are leading the way to a healthier, more equitable, and sustainable future.

Gardening and collaborative gardening projects are providing viable contributions in addressing this web of interconnected issues. Interest and action in this area has increased throughout the world^{16,17}, the U.S.¹⁸, and locally.¹⁹ The American Community Garden Association has estimated that the number of community gardens has increased from 6,020 in 1996²⁰ to over 18,000 today.²¹ The National Gardening Association estimated that the number of American households participating in food gardening rose 19% between 2008 and 2009 from 36 million households to 43 million households.²²

The number of U.S. gardening projects has the potential to grow considerably larger given the current interest and the number of action initiation incentives available, in the form of minigrants, for starting new gardens or enhancing existing gardens.²³⁻³⁹ These gardening-specific minigrants are very modest, ranging from \$25 - \$2,000 and are offered through a variety of organizations including civic gardening clubs, cooperative extension service, private corporations, and government agencies.²³⁻³⁹

Despite the potential of gardens to be part of the solution in bringing about a more sustainable and equitable food system and increasing interest in gardening locally and worldwide, potential and interest don't always translate into action. In Laramie, anecdotal obstacles to gardening action initiation include limited access to land, long waiting lists for the three existing Laramie community garden plots, inexperience and lack of self-efficacy for launching a new gardening project, reluctance to commit to initiating and maintaining new garden projects, a short growing season, and the myth that nothing grows in Laramie.

The challenge of overcoming action initiation obstacles and translating community interest into action has been met by many community engagement programs through minigrant programs, which have shown promise as an effective means for breaking down obstacles to participation in community change processes.⁴⁰ Specific examples of minigrant tangibles are provided in Table 2 (Chapter Two). These small grants have become widely used by a broad spectrum of organizations as a way to overcome barriers to initiating local change efforts. Funding organizations include community organizations as The United Way, community granting organizations such as the Wyoming Community Foundation, national charitable organizations such as the Kaiser Family Foundation, local charitable organizations such as The

Colorado Trust, federal government agencies such as the Centers for Disease Control and Prevention, universities, and various state and local government agencies.

Although minigrants are a common mechanism for stimulating gardening activity, the effectiveness of the approach has not been well researched. This research project sought to address the gap in the research by evaluating the effectiveness of one gardening minigrant project designed to promote gardening activity in Laramie.

Purpose

Local gardening projects are proving to be viable components of sustainable food systems initiatives. Minigrants are widely used to spur local gardening activity, but the literature reveals little research evaluating the effectiveness of this approach. This gardening minigrant research project aimed to address this gap in the literature by determining the effectiveness of using minigrants to nudge community members into launching or expanding local gardening projects.

Hypotheses

My research hypothesis was that minigrants are an effective method of nudging participants into gardening activities. If true, this would result in more gardening projects initiated or expanded, as measured by square feet of gardening space, by the research participants who receive a minigrant compared to research participants in the control group who do not receive a minigrant. Conversely, the null hypothesis was that there would be no difference in the amount of gardening between the two groups despite provision of the minigrants.

Research Participants

The research participant selection pool was limited to attendees of an April 2011 gardening workshop. Workshop attendees had the opportunity to apply for a minigrant at the end of the workshop. Approximately half of the applicants received a minigrant through a random drawing and became the research intervention group (n=31). Those who did not receive a minigrant were the control group (n=22). This study compared the area of food garden space reported by participants in the 2010 season vs. the 2011 garden season based on self-reporting in a fall 2011 survey.

Operational definitions

Effectiveness: For this study, effectiveness refers to the state of producing a decided or desirable effect in routine conditions that are only controlled for in the sense of specific activities undertaken to increase the likelihood of positive result, as opposed to a controlled experiment trial conducted under highly constrained conditions.

Garden expansion: For this study, a participant was considered to have undertaken garden expansion if the dimensions (as measured in square footage) of her or his garden were greater in 2011 than in 2010.

Gardening initiation: For this study, a participant was considered to have undertaken garden initiation if he or she did not garden in 2010, but did garden in 2011.

Minigrants: Minigrants are small grants, usually ranging from \$50 to \$5,000 (with some considerably larger at \$10,000 - \$50,000⁴¹⁻⁴⁷). For this research project, \$40 minigrants, in the form of a voucher from Grand Avenue Nursery in Laramie, WY, were provided to research participants in the intervention group.

Participant: While minigrants were awarded to individual attendees of the April 2011 gardening workshop, the analysis of the 2010 vs. 2011 gardening area data was conducted at the household level. If anyone in a household received a minigrant, that household was categorized as part of the intervention group.

CHAPTER TWO – LITERATURE REVIEW

Gardening Literature Review

Gardening and collaborative gardening have proven to be an effective community health promotion activity^{10,13,18,48-61}, addressing issues of food security^{13,18,50,53,55,57,60}, fruit and vegetable intake^{13,18,48,50,51,53,57}, physical activity^{18,50,54,61}, social connectedness/community building^{13,18,48-50,52-55,57-60}, and economic^{18,50-52,55,60} and environmental^{10,18,52,60} sustainability.

Nationally, community gardening and local food projects have been proposed as viable aspects of the alternative food system practice by which a more sustainable, equitable food system can be achieved.⁶² Community gardening is gaining attention nationwide as an approach to increase the availability and intake of fruits and vegetables.⁵¹ In addition, community gardens provide benefits related to social determinants of health by creating open community gathering spaces, providing a venue for people of varying ages and backgrounds to work together towards a common goal, experiencing the spirit of community ownership and investment, learning new gardening skills, and developing increased feelings of self-reliance.¹³ Increasing local community gardening and local agriculture is a way of reducing natural resource imports, pollution, and waste exports, at the same time making better use of existing resources.¹⁰ Growing food on urban vacant land provides a host of environmental, social, and economic benefits. These include the cleanup and repurposing of brownfield sites; the creation of urban green spaces; and improvements in air quality and urban biodiversity.^{7,8,10} Community and urban gardening can reduce food insecurity, create stronger family bonds through shared work experiences in the garden, and increase fruit and vegetable intake through both ease of access and cost mitigation.^{48,63}

Minigrant Literature Review

From a review of the research, minigrants have been shown to be a cost-effective⁶⁴⁻⁶⁷ approach for mobilizing community-based health promotion action projects^{42,44,45,64,65,67-72} and neighborhood and environmental change efforts^{40,44,47,68,69,71,73,74} where a premium is placed on shared power, project control, and decision-making.

Minigrants have served to build effective collaborative efforts between such entities as government, community-based organizations, faith-based organizations, service agencies, and individuals.^{45,65,70,71} Community-based organizations benefit from small grants that can boost physical capital needed to fulfill missions, such as the purchasing of refrigerators for community food banks^{46,66} and purchasing equipment to promote physical activity^{44,64,69,70} and providing mobile medical services.⁷⁵ Local economic development can be positively impacted by small grants that provide increased employment and new income creation opportunities.⁴³

While minigrants are widely used to stimulate health promotion and community change action initiation, a review of the literature reveals little academic analysis of these efforts. The following three tables provide summary information about evaluated minigrant programs. Table 1 is a listing of minigrant programs that have been evaluated in the literature, along with associated minigrant goals and parameters. Table 2 describes the methods used to evaluate the minigrant programs, along with project tangibles and supports for each evaluated minigrant program. Lastly, Table 3 provides the outcomes, challenges, and conclusions from each evaluated minigrant program.

Table 1 - Overview of Evaluated Minigrant Programs

*Y indicates that individuals were eligible for grants

Overview of Evaluated Minigrant Programs

Minigrant Name	Overarching Goal	Grant Amount	# Grants	Grantees Types*		Control Group	Funding Agency(s)
				Groups	Ind		
Healthy Carolinians (HC) community microgrants project	1) Provide microgrants to a wide variety of CBOs to conduct activities related to Healthy People 2010, 2) Demonstrate advantages of statewide network, 3) Evaluate the microgrant concept.	\$2,010 US	199	Y	N	N	Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, NC. Office of Healthy Carolinians/Health Education.
Yale HP 2010 Microgrant Project	Engage communities in health promotion activities that reflect national HP 2010 goals.	\$2,010 US	67	Y	N	Y	DHHS Office of Disease Prevention and Health Promotion (ODPHP).
Yes we can!	Improve educational and economic and economic outcomes in low-income neighborhoods in Battle Creek, MI. Improve resident capacity initially through quick wins, then more strategically.	Up to \$2,500 US	205	Y	Y	N	W.K. Kellogg Foundation, Battle Creek, MI.
Grants for Healthy Youth	Advance public health approaches to improve nutrition and physical activity through environmental and policy change.	\$13,000 - \$40,000 US	5	Y	N	N	Center for Public Health Nutrition at the University of Washington, Seattle, WA.
The Hague Municipal Health Service micro grant scheme	Reduce health inequalities in six deprived neighborhoods in The Hague through initiatives that: 1) concern physical activity, nutrition, or provide pedagogic support 2) contribute to empowerment, 3) are innovative, 4) are sustainable, 5) include collaboration between health and community workers.	\$500 - \$3,500 Euros	61	Y	N	N	The Hague municipality for grants. Netherlands Organisation for Health Research and Development for evaluation, The Hague.
Kansas City-Chronic Disease Coalition (KC-CDC) REACH 2010 Initiative	Engage neighborhood and faith organizations in changing conditions to reduce risk for cardiovascular disease and diabetes in two prioritized populations: African Americans and Latinos. Two methods: 1) minigrants and 2) resource distribution	\$1,500 - \$3,000 US	108	Y	N	N**	Kansas City Chronic Disease Coalition (KC-CDC), Kansas City, MO.

**While the program did not include controls, it compared two different methods; minigrants and resource distribution

Table 2 - Evaluated Minigrants: Evaluation Methods, Tangibles, Supports

Evaluated Minigrant Evaluation Methods, Tangibles, Supports			
Minigrant Name	Evaluation Method	Sample Project Tangibles	Support Provided/Required
Healthy Carolinians (HC) community microgrants project	40 CBOs were interviewed. 153 CBOs returned a 2-page survey, which were analyzed. Final reports from all 199 CBOs were an evaluated. Completed surveys from 28 of the 32 HC coordinators were analyzed.	Meal delivery for aged, Physical education program for home-schooled children, Tobacco risk education, Fluoride sealants for children, Walking track & sports field built through leveraging funds, Car seats installed for families, Lake cleanup for recreational use, Physical activity equipment purchased, Sexual assault awareness, response, resources increased	Through HC coordinators: networking with other agencies, skills to leverage microgrant, resource materials and information (internet sites, funding sources), planning and evaluation sources, project promotion, administrative functions (reporting forms, purchasing, finding vendors), increasing awarness about health issues.
Yale HP 2010 Microgrant Project	Pre- and postsurveys, onsite visits, 3 focus groups	Mobile medical/dental van for low-income, health fairs, low-income obesity prevention.	Through 2 FT staff, PT interns. Workshops: grant writing, project mgmt, evaluation, phone/in-person as needed.
Yes we can!	46 semi-structured interviews with neighborhood resident leaders and lead residents of 11 neighborhood projects	Block parties, Open houses, Ice cream socials, Carnivals, Youth outings, Lighting projects, Landscaping of public spaces, Park cleanups, Improvement/removal of dangerous buildings, Computer classes, Language classes, self-esteem workshops, Tutoring programs	Through "Connectors", neighborhood outreach workers who served as coaches, mentors, facilitators, and resource brokers.
Grants for Healthy Youth	Mixed-method analysis included systematic review and analysis of a total of 29 project documents and 21 interviews with stakeholders in each community. Information was gathered from grant proposals, progress reports, and project products.	Train child care providers to improve nutrition and physical activity environments. Assess school environment and develop policies to prevent obesity. Empower parent advocates to improve nutrition and physical activity environments. Train middle school students to be mentors for elementary students. Integrate community gardens, farmers markets, schools, and community centers to serve middle school youth.	Assistance offered to grantees but they seldom took advantage of the offer because they were confused about resources available to them.
The Hague Municipal Health Service micro grant scheme.	The microgrants and neighborhood health panels were evaluated over a 2 year period using 3 methods: observation, in-depth interviews, and document analysis. Microgrant recipients were asked to write a final report, the results of which were included in the analysis.	Cooking courses, exercise courses, community building, information dissemination, familiarizing with local facilities.	Through six neighborhood-based health panels, who also distributed the grants. Health panels composed of health and community workers active in the neighborhood. Most of the applicants came from panel members.
Kansas City-Chronic Disease Coalition (KC-CDC) REACH 2010 Initiative	KC-CDC and partners used online documentation and support system (ODSS) to capture activites and accomplishments. Staff members of KC-CDC were trained to use the system to record events and activites in their communities. Primary measure examined was instances of community change.	Created walking groups, walking path, gym. Replaced soda with water drinks at events. Health info in Welcome Wagon baskets. Improved nutrition at group meetings. Health workshop/campaign. Cooking, nutrition, physical activity classes. Provided screenings. Created new collaborative relationships. Created health sections in newsletter.	Through KC-CDC coalition staff to document and code activities and events and to provide support for extensive required paperwork submissions.

Table 3 - Evaluated Minigrant Outcomes, Challenges, Conclusions

Evaluated Minigrant Outcomes, Challenges, Conclusions			
Minigrant Name	Positive Outcomes	Challenges/Barriers	Conclusions
Healthy Carolinians (HC) community microgrants project	Successful in distributing small grants to CBOs. CBOs self-selected initiatives and designed their own projects. Nearly half of the projects addressed three major risk behaviors: physical activity, poor nutrition, and tobacco use.	Weather, scheduling, staffing, time constraints, funding delays, excessive reporting requirements, recruiting volunteers, finding Spanish-language materials.	Positive outcomes far outweighed challenges faced by CBOs. The project demonstrated a cost-effective alternative funding approach for health promotion activities.
Yale HP 2010 Microgrant Project	Promoted HP 2010 knowledge, developed new programs, targeted new populations, piloted new initiatives, promoted project ownership and agency efficacy	Projects limited by grant size, increase staff workload, staff turnover, other costs such as transportation.	Mini-grants are an effective tool for empowering local agencies to respond to local needs. Not effective for high impact around a specific disease.
Yes we can!	Projects led to many immediate, tangible neighborhood improvements - quick wins. Improvements inspired the desire for even more change. Programs promoted resident ownership for change.	Mini-grants generated preconditions for action, but few projects were able to sustain resident action. Of 184 minigrants in first 2 years, only 11 had sustained impact on resident action. The extent to which the small wins can be leveraged to meet broader objectives remains to be seen.	Mini-grants may be an effective tool, but grants do not necessarily encourage residents to remain actively involved in neighborhood change efforts. Mini-grants are better positioned to help residents become ready and able to engage in change.
Grants for Healthy Youth	Improved skills and increased capacity to improve public health, unique approaches developed to improving community nutrition environments, new partnerships formed, increased skills in program development and management.	All grantees modified their original plans including timelines, project scope, community partners, number of sites, and evaluation procedures. While grantees were required to self-evaluate their programs, they all reported many barriers to program evaluation.	Small grants programs can be an effective way to improve community nutrition environments, but granting agencies need to provide effective technical assistance to communities throughout the process.
The Hague Municipal Health Service micro grant scheme.	The microgrant scheme facilitated many initiatives, enabled commitment and set an agenda for health issues. Microgrants served as an incentive for workers to develop skills and experience through increased networking and information sharing. Thus health inequities entered the agenda of a variety of organizations from multiple sectors.	Limitations were seen on interorganizational action and public participation, collaboration between health and community workers, and resident participation in the development of initiatives. The objectives were formulated loosely, resulting in differing interpretations of goals and criteria.	Microgrants have the potential to stimulate community action. The availability of grants is supportive, but not sufficient. To be optimally effective, grants must be accompanied by investments in infrastructure such as training and support of professionals in initiating collaboration and providing information on how to obtain structural funding.
Kansas City-Chronic Disease Coalition (KC-CDC) REACH 2010 Initiative	During the 6 years of operation, 306 community changes were implemented. Over 60% of them were sustained over time.	Disadvantage of microgrant strategy was the challenge of fiscal responsibility. Organizations often lacked the organizational capacity to manage the microgrants in a way that assured fiscal accountability even though they had to submit extensive paperwork. Paperwork demands required substantial dedication of staff time that KC-CDC found hard to sustain.	The microgrant strategy produced its intended result, which was the rapid implementation of community changes in large quantity. The microgrant strategy resulted in marked and immediate increase in the number of community changes compared to the resource distribution strategy.

The limited evaluation literature has generally reported positive results, often with caveats. A few evaluations concluded that while minigrants can serve as catalysts for action initiation, they require additional supports such as technical assistance, ongoing staff support, and training in order to ensure their effectiveness and to generate sustainable action.^{40,44,71,73}

For example, in their evaluations of the *Yes we Can!* initiative, both Foster-Fishman et al. and Deacon et al. conclude that the minigrant program was effective at creating “quick wins”.^{40,73} These projects were designed to address manageable issues in order to energize the neighborhood and overcome the feelings of hopelessness that overwhelmed some targeted neighborhoods. The results were concrete projects such as lighting, landscaping, park cleanups, block parties, youth outings, and learning programs that could be seen by all residents of targeted neighborhoods. The “quick win” strategy was incorporated into the first phase of the minigrant project in the hopes of leveraging those wins into more strategic actions in the second phase of the project. The second phase of the program narrowed the focus of the minigrants to more closely align with the overarching goals of the initiative – improving educational achievement and neighborhood economic conditions. This phase of the program met with less success. In fact, of the 184 minigrant projects initiated during the first two years of phase one of the program, only 11 had sustained impact on resident action during the second phase of the program. Deacon et al. attribute the success of the sustainable projects in part to effective technical assistance and training, which resulted in project designs that would begin with a “quick win” then scaffold towards larger-scale neighborhood change.^{40,73}

In an evaluation of a minigrant scheme aimed at reducing health inequities in six communities in The Hague, Schmidt et al. determined that while minigrants were supportive, they were not sufficient for stimulating the entirety of desired community action.⁷¹ In this case,

the expected community action included the development of small-scale health-promoting activities, interorganizational collaboration, and a commitment to the initiative on the part of workers in the health field. The program evaluation revealed that the minigrant scheme was effective in meeting several of its goals, but failed to fully meet others. It was successful in creating new initiatives and enabled worker commitment to the process. However, the initiative fell short of its goals in terms of interorganizational collaboration and public participation due to lack of professional training on the part of grantees in the skills required to elicit public participation and collaboration-building.

Another example of the need for technical assistance comes from The Grants for Healthy Youth project, established at the Center for Public Health Nutrition at the University of Washington. In their evaluation of the project, Johnson et al. reported positive outcomes for the initiative and endorsed small grant programs as an effective way to encourage environmental community changes.⁴⁴ However, the initiative included a requirement that all project proposals contain plans for project evaluation. Evaluating their own projects proved to be a difficult requirement for grantees. These challenges became barriers for grantees in evaluating the effectiveness of their programs, and thus, in completely fulfilling their obligations to the project.⁴⁴ The Center for Public Health Nutrition⁴⁴ required self-evaluation for two reasons 1) as a way for grantees to build their skills and 2) so that results from projects with favorable evaluations could be shared with other communities. Because grantees did not possess the skills, understanding, staff, or time required for project evaluation, this aspect of the minigrant project was generally unsuccessful.

From among the few published minigrant evaluations, only one of the evaluations included a control group for results comparisons. The Yale-Griffin Prevention Research Center

(PRC) was awarded a grant from the U.S. Department of Health and Human Services (DHHS) Office of Disease Prevention and Health Promotion (ODPHP) to conduct the Healthy People (HP) 2010 Microgrant Project.⁷⁵ The goal of the microgrant project was to promote HP 2010 objectives by providing small grants to local organizations and empowering local entities to create their own programs to meet locally-relevant HP 2010 objectives. The study included an intervention group of 103 agencies that received a \$2,010 microgrant and a control group of 67 agencies that did not receive funding. In their evaluation of the quasi-experimental study, Hartwig et al. used a pre- and post-survey design to measure differences between the two groups. They determined that there were significant differences between the intervention group and the control group when comparing baseline and post-project measurements. The intervention group was more effective in promoting HP 2010 objectives, was more knowledgeable about HP 2010 objectives, and was more likely to implement new projects than the control group at the conclusion of the study as compared to baseline measurements.⁷⁵

The Kansas City-Chronic Disease Coalition (KC-CDC) REACH 2010 initiative study included a quasi-control group. While the initiative did not include a true control group, it employed two different approaches: a minigrant strategy and a resource distribution strategy. In their evaluation of the initiative, Collie-Akers et al. compared the results from the two differing approaches. Collie-Akers et al. determined that both strategies increased the implementation of community change. However, the minigrant strategy produced more changes, with greater variety, and at a quicker rate when compared to the resource distribution strategy.⁶⁹

Gaps in the Literature

The review of published literature, evaluating the impact of minigrants on health promotion and community-change activities, yields limited results. But, when the field of research is narrowed to the impact of minigrants on gardening activities, a review of the literature yields no results. This is a surprising gap for two reasons. First, there is a large body of literature substantiating gardening and community gardening as an effective health promotion and community-change activity.^{13,48-53,55-60,76} And second, there are an abundance of minigrant programs throughout the country, from New York to California, for starting and/or enhancing garden projects.²⁴⁻³⁸ Also, as mentioned above, few studies have included controls and only one of the studies, KC-CDC REACH 2010⁶⁹, had quantifiable and comparable outcomes that enable statistical analysis. This research contributes to filling these gaps.

CHAPTER THREE – METHODS

Research design

I proposed to begin to fill a gap in the minigrant research literature through a gardening minigrant mixed-methods experimental research project that included both quantitative and qualitative design components. Only the quantitative component is reported in this thesis. The study included an intervention group (households that received a gardening minigrant) and a control group (households that did not receive a gardening minigrant). Through this research project, I sought to determine whether minigrants can provide enough incentive to overcome barriers to action initiation for launching or increasing gardening projects in Laramie, WY.

The design advantages of this research project were twofold. First, it was the first study to research the effectiveness of very small grants in generating gardening-specific action. This distinction is important in that the literature reveals the effectiveness of minigrants in generating action initiation for community change projects, but none of the evaluated projects were exclusively gardening projects. Second, it included a control group for comparison purposes.

The research project was unique in comparison to other evaluated minigrant projects in three additional ways: 1) Minigrant recipients were all individuals or households, as opposed to groups. In all but one evaluated minigrant program reviewed (Table 1), eligible recipients were limited to groups or organizations. The *Yes we can!* initiative was the only evaluated minigrant program that allowed both individuals and groups to apply and receive funds. My research captured household rather than collaborative or organizational action initiation. Thus, any differences between the control group and the intervention group can more readily be attributed to the grant rather than the benefits and challenges of collaborative work. 2) No ongoing

supports were provided to minigrant recipients. In every evaluated minigrant project reviewed (Table 2), some sort of support was made available to minigrant recipients throughout the project. Evaluators typically attributed a portion of program success to these supports. This was especially true of Johnson et al. and Bobbitt-Cooke in their evaluations of the Healthy Carolinians (HC) community microgrants project^{64,70}, where the HC partnership and coordinators were determined to be key to program success. The implication for my research project is that any differences between the intervention group and control group can more readily be attributed to the minigrant itself rather than any accompanying supports. 3) The amount of the minigrant was very small - \$40. By comparison, the smallest minigrant from the evaluated minigrant programs reviewed (Table 1) was \$1,500. This may have implications for gardening-specific minigrant minimums, at least for those sharing demographic characteristics of this participant group.

Procedures

A free two-part, three-hour startup gardening workshop was offered in Laramie on April 2, 2011, at the Albany County Public Library. One hundred eighteen citizens attended the first part of the workshop, where a panel of local gardeners and experts conducted a two-hour information-sharing and Q&A session on basic gardening and Laramie-specific gardening tips. After a brief break, 64 attendees remained for the collaborative gardening portion of the workshop. At the conclusion of the workshop, these 64 attendees were given the opportunity to apply for a randomly-awarded minigrant, in the form of a \$40 voucher from Grand Avenue Nursery, a local gardening supply store. Those wishing to apply filled out the minigrant application form (Appendix A). The forms were collected and a random drawing followed

immediately to award half of the applicants with a \$40 voucher. The vouchers were awarded to each recipient as his/her application was drawn.

The intention of this procedure was to award exactly half of the applicants with a minigrant so that the intervention group and the control group would be the same size. However, there were a few hitches in this selection procedure. First, it was expected that all 64 workshop attendees would apply for the minigrant, thus 32 applications were randomly selected for awards. However, only 60 attendees actually applied for a minigrant. Second, some minigrant applicants included members of the same household, e.g. husband and wife, since applicants were not instructed to apply as a household. The result was that in some cases, one member of the household was awarded a minigrant, while the other member was not. In one case, both members of the household were awarded a minigrant. This required some post-award data processing. Instead of analyzing award group by individual as was originally conceived, it was analyzed by household. If anyone in a participant's household was awarded a minigrant, then that household's garden data was analyzed as part of the intervention group. Prior to collapsing data to the household level, there were 60 minigrant applicants; 32 members of the intervention group and 28 members of the control group. After collapsing data to the household level, there were 53 minigrant applicants; 31 households that received a minigrant in the intervention group and 22 households that did not receive a minigrant in the control group.

Conditions of note regarding the minigrant award process include:

- The minigrant application was simple.
- Recipients were selected randomly from among the workshop participants (versus competitively).
- No strings were attached to expenditures and no reporting was required.

- No guidance nor technical assistance was offered beyond the workshop content.

Participants

This research project included two groups; the intervention group consisting of 31 minigrant recipient households and the control group consisting of 22 households that did not receive a minigrant. Both of the groups received the same technical assistance through the workshop presentations and materials. Both groups were interested enough in gardening to attend a three-hour workshop, on basic gardening and collaborative gardening. Both of the groups attended this workshop *without* knowing that there would be an opportunity to win a \$40 minigrant at the conclusion of the workshop.

After the minigrants were awarded, applicants were invited to participate in the research project and had the opportunity to sign a consent form (Appendix B) prior to leaving the workshop. Thirty-one people signed a consent form prior to leaving the workshop. To ease data collection, the U.W. IRB Office approved an implied consent process via e-mail (Appendix C) for those participants who did not sign a consent form at the workshop, and 15 additional people consented to participate in the research through this mechanism. This resulted in an overall response rate of 83% (44 out of 53), with a response rate of 81% for the intervention households (25 out of 31) and 86% for the control group households (19 out of 22).

Demographics of participants were not collected in this research. However, the 118 workshop attendees were given a chance to complete a survey about the workshop, which included demographic questions. The optional paper and pencil survey was completed by 69 attendees, and people could answer as many or as few of the demographic questions as they

wanted. The following list shows the number of people who responded to each of the demographic questions.

Question	# Respondents
Gender	64
Race/Ethnicity	65
Age	66
Education	66
Income	55

Based on this demographic data, my observations at the workshop, and the follow-up qualitative interviews, nearly all participants were white, the majority were women, and while adults of all ages participated, most were middle-aged or older. Based solely on the demographic data collected through the workshop survey, 80% of survey respondents had at least a Bachelor's degree, 65% had an annual household income of at least \$36,000, and nearly 50% had an annual household income of at least \$50,000. Compared to 2010 census data for Laramie, workshop attendees reflect the racial make-up of Laramie, where 90% of the population is white.⁷⁷ The education level of workshop attendees was higher than the educational level of Laramie, where 48.7% of the population had a Bachelor's degree in 2010⁷⁷ and much higher than the U.S. educational level, where 27.9% of the population had a Bachelor's degree in 2010.⁷⁸ Survey respondents provided their household annual income level by checking the income range within which their annual household income fell. Therefore, only the low end of the median income range could be estimated and not the actual median household income. At \$36,000 the estimated low end of the workshop attendees' annual household income range comes close to the Laramie 2010 median household income of \$38,267.⁷⁷ Without being able to estimate the actual median household income level of

workshop survey respondents, however, no comparison to the 2010 median household income level of Laramie residents can be made.

It is possible but not certain that the subset of people who participated in the minigrant research were demographically similar to this larger group of survey respondents. Observationally, the age and race make-up appeared to be similar. Forgoing demographic data collection among the minigrant research participants was an intentional research design decision that was made in order to bolster participation in this Laramie-based study where community members are weary and leery of researchers asking for personal information.

Instruments

Quantitative data was collected from willing research participants through a two-question survey (Appendix D). Research participants provided their contact information on the minigrant application form. The initial survey was emailed on Friday, September 30th, 2011. Only two participants did not provide an e-mail address and they were each sent a letter with a postage-paid, addressed envelope for providing data. An e-mail reminder was sent on Sunday, October 9th, 2011 to all participants who did not respond to the initial e-mail. A final e-mail reminder was sent on Sunday, October 16th, 2011 to all participants who had not yet responded. Finally, calls were made on March 24th, 2012 and March 25th, 2012 to participants who had not yet responded to the e-mail survey.

The primary research question was whether there was a difference between the control group and the intervention group in their gardening activity. The intervention was the minigrant. The outcome was the change in dimensions of participant gardening space, as self-reported for 2010 (pre-minigrant) and 2011 (post-minigrant).

Primary Data Analysis – increased garden space

All provided garden dimensions were converted to square footage. The difference in each respondent's gardening space between the two summers was calculated by subtracting the pre-minigrant summer dimension from the post-minigrant summer dimension.

The intention was to evaluate the significance in the difference in gardening space between the intervention group and the control group by using a t-test. However, because the difference data was not normally distributed, significance testing required the use of a non-parametric test. The Mann-Whitney non-parametric U-test was, therefore, used to evaluate the difference between the two groups. A one-tailed test was used, as it there was no reason to suspect that minigrants would reduce garden dimensions. Analysis was conducted using SPSS software version 19.0. An alpha-level of $P < 0.05$ was adopted for significance testing.

Secondary Data Analysis – gardening initiation

To evaluate gardening initiation, a subset of the 44 responses was extracted that included only those participants whose 2010 garden space was 0 square feet, which indicated that the participant did not garden in 2010. This subset included 20 participants, 10 of which were minigrant recipient households and 10 of which were control group households. Fischer's 1-tailed two proportion exact test was used to evaluate the difference between the groups using Minitab Version 16.1.1. An alpha-level of $P < 0.05$ was adopted for significance testing.

CHAPTER FOUR – RESULTS

Results – Primary Analysis

Participating households that randomly received a \$40 minigrant increased the dimensions of their gardens more than those that did not receive the minigrant. As a group, minigrant households increased their gardening by 57% from 2010 to 2011, whereas the control households decreased their gardening by 1.4% during the same timeframe. This data is summarized in Table 4 below.

Table 4 - Descriptive Data by Group

	Minigrant Households	Control Households
2010 Garden Sq Ft. Mean, SD	68.3, 115.4	23.8, 50.9
2011 Garden Sq Ft. Mean, SD	107.4, 150.9	22.4, 47.3
Diff (Sq. Ft.) in Mean from 2010 to 2011	39.2	-1.4
% Change In Mean from 2010 to 2011	57.4%	-6.0%

Further, the difference between the groups was statistically significant (one-tailed Mann-Whitney $U=166$, $n_1=25$, $n_2=19$, $p=.041$; sum of ranks, 634 intervention vs. 356 control). Table 5 below shows the output from the Mann-Whitney U Test. This table indicates which group increased their gardening dimensions more; namely the group with the highest mean rank. As table 5 indicates, the minigrant households mean rank was higher than that of the control group households, indicating that the minigrant households increased their gardening dimensions more than the control group households.

Table 5 - Mann-Whitney Test Ranks Table

		Ranks		
Group		N	Mean Rank	Sum of Ranks
Difference	Control	19	18.74	356.00
	Minigrant	25	25.36	634.00
	Total	44		

For this data, it can, therefore, be concluded that there is a statistically significant difference between the minigrant households and the control group households and that the minigrant households increased their gardening dimensions more than the control group households.

Results – Secondary Analysis

Of the 10 minigrant household recipients that did not garden in 2010, 8 of them gardened in 2011. Of the 10 control group households that did not garden in 2010, only 2 of them gardened in 2011. In other words, for participants who did not garden in 2010, 8 of 10 (80%) minigrant recipient households initiated gardens in 2011, while only 2 of 10 (20%) households in the control group initiated gardens in 2010. This data is summarized in Table 6 below.

Table 6 - 2011 Gardening Initiation

	Minigrant Households	Control Households
2010 Non-Gardening Households	10	10
2011 Garden Initiators	8	2

Participant households that randomly received a \$40 minigrant and that did not garden in 2010, initiated more gardening projects in 2011 than those that did not receive a minigrant and that also did not garden in 2010 (Fisher’s exact test P-value=0.012). While a smaller P-

value of 0.004 was generated from the two proportion test, Fisher's exact test results are reported here because of the small sample size.

CHAPTER FIVE – DISCUSSION

Discussion and Implications

The outcome of this study is that minigrant recipients started more gardens in 2011 and increased the dimensions of the 2011 gardens more than control households. The implication of this study is that a gardening minigrant program can stimulate gardening initiation action and expansion action with only a small infusion of cash and without the overhead of providing ongoing technical assistance. Stimulating action with only \$40 minigrants and without providing technical assistance to grantees contradicts somewhat with the limited minigrant evaluation literature that has generally reported positive results, but concluded that to be successful; minigrants require additional supports and training in order to be effective.^{40,44,71,73}

A few key differences between this study and other published studies that have evaluated minigrant effectiveness may explain this contrast. First, this study evaluated a gardening-specific minigrant program as opposed to the general health promotion and community change minigrant programs evaluated in the published literature. Second, minigrants were given to individuals or households in this study as opposed to groups. The overarching goal of this study's minigrant program (initiating or expanding individual gardens) is more easily achieved than the overarching goals of other evaluated minigrant programs such as engaging neighborhood and faith organizations in changing conditions to reduce the risk for cardiovascular disease and diabetes in African American and Latino populations.⁶⁹ Third, the demographics of this population likely differ from those involved in previous studies. Where previous studies targeted and included low-income, African American, and Latino populations, the participants in this study were nearly all white. As noted in Chapter Three, participant

income data was not collected, but workshop survey data indicate that the overall group of workshop participants had a higher educational level than the average for both Laramie and the U.S.

However, the implications for this study remain relevant for stimulating food gardening action and these findings suggest research in more diverse populations is warranted. The literature indicates that gardening is an effective community health promotion activity^{10,13,18,48-61}, addressing a myriad of issues including food security^{13,18,50,53,55,57,60}, fruit and vegetable intake^{13,18,48,50,51,53,57}, physical activity^{18,50,54,61}, social connectedness/community building^{13,18,48-50,52-55,57-60}, and economic^{18,50-52,55,60} and environmental^{10,18,52,60} sustainability. If these health issues can be addressed in part through gardening and barriers to gardening can be inexpensively overcome through minigrant programs, then granting agencies would be well-served by developing or expanding gardening minigrant programs aimed at interested participants.

Limitations

This research project was limited in a few ways. First, the sample size was small. The initial potential pool of participants was limited to the 64 attendees of the April 2, 2011 collaborative gardening workshop. From that pool, attendees representing 53 households applied for minigrants and data was collected from 44 of those households, for an overall response rate of 83%. Differences in gardening expansion were based on two small groups; 25 minigrant recipient households and 19 control group households. Differences in gardening initiation were based on two subsets of these groups; 10 minigrant recipient households and 10 control group households.

Second, this study was limited to a subset of people in one small town – Laramie, Wyoming. This limits the generalizability or transferability of results from this study to other people in Laramie or beyond Laramie to other communities with different demographics. For example, for families where money is the main barrier to gardening, the small amount of these grants might not be enough to stimulate action. Similarly, for families where time is the main barrier to gardening, these small monetary grants are unlikely to provide relief from time constraints.

Third, demographic and other information was not collected and controlled for, leaving open the possibility of confounders. Because the minigrants were awarded randomly and because the participation rate was high, at 83%, it can be argued that the minigrant recipient households and control group households were likely representative of the pool of applicants and did not differ from each other in ways that have the potential of impacting results (e.g. income, ethnicity, gender, past gardening experience). But because this information was not collected and controlled for, that cannot be substantiated.

Future Research

Although not reported in this thesis, qualitative data was also collected from research participants in the form of answers to semi-structured interview questions. The goal of the interviews was to gain insight into participants' gardening experiences and impact of minigrants on their gardening activities. This data and its implications will be analyzed and reported elsewhere.

Given the potential demonstrated by this study and the limitations of the study, further gardening minigrant research should be conducted. Recommendations for continued research

include the collection of demographic data and expansion of the research to different locations with a broader range of demographic and cultural mixes so that generalizability questions can be answered. Additionally, studies should strive for greater sample sizes. Lastly, the amount and type of minigrant award might need to be modified depending on the setting. For this study, the minigrant award was very small at \$40 and required minigrant recipients to redeem the minigrant certificate at one gardening supply store. Although \$40 is a small minigrant, for Laramie, it appeared to be enough to propel participants into action. This may not be the case in every setting and in every community, particularly if the main barriers to gardening are financial. For this study, no consideration was given to whether minigrant recipients had access to transportation to and from the one participating gardening store. While this worked in Laramie, it could represent a significant barrier in other communities. Thus, minigrant award amounts and types of minigrant awards should be determined specifically for each setting and community, taking local parameters into account.

Conclusion

These findings suggest that minigrants are a cost-effective tool for overcoming barriers to gardening action initiation and expansion. This study demonstrates that even very small amounts are enough to nudge interested residents into launching or expanding local gardening projects.

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APPENDIX A – MINIGRANT APPLICATION FORM

**Collaborative Gardening Workshop
Albany County Public Library - 4/2/11
Mini-Grant Application Form**

Name: _____

E-Mail: _____

Phone: _____

Address: _____

City: _____

Zip: _____

If awarded a mini-grant, how would you apply the grant toward collaborative gardening work?

APPENDIX B – CONSENT FORM

University of Wyoming

Consent to participate in research on Community Gardening and Food System Projects

A. Purpose of the study

I, Peggy, am inviting you to participate in my *research on collaborative gardening and other work communities are doing to improve their local food systems*. Such work might include starting gardens, creating new collaborative gardening groups, promoting awareness of local food businesses and Community Supported Agriculture businesses, conducting food preservation workshops, or promoting composting.

I hope to learn about the strategies communities are using for this and what drives people's work with such projects. I'm also interested in who tends to be involved and strategies for getting people involved in this work. Then I will compare and contrast what communities are doing. From this work, I hope that communities can learn successful strategies from each other. I also hope that governments and universities can find ways to support these strategies.

B. What I will ask you to do

If you agree to participate, *I would like to gather information about your experience in any of three ways. I may invite you to:*

- Answer survey questions about your collaborative gardening experiences, to be administered one time in September 2011. The survey should take less than 30 minutes to complete.
- Take part in a focus group composed of other gardeners where you can talk with

others about your experiences and I can gain a deeper understanding about the rewards and challenges you experienced through your collaborative gardening work. The focus group is expected to meet one time in September 2011, and is expected to last no more than two hours. If all members of the group are willing, *I would like to audio record the session*. Then I would have it transcribed (all the words written down) and share a copy with the group if group members would like one. This way, I can listen better instead of concentrating on taking detailed notes. However, like taking part in the focus group itself, this is completely optional.

- Participate in a one-on-one interview with me about your experiences with collaborative gardening or other food systems work. The interview is expected to occur one time in September 2011. We can meet at a time and place convenient to or, if you prefer, talk on the phone. This can take as little as 15 minutes, but if you are able, I'd like to talk with you for about 60 minutes. If you are willing, *I would like to audio record* the interview. Then I would have it transcribed (all the words written down) and share a copy with you if you would like one. This way I can listen better instead of taking detailed notes. However, like the interview itself, this is optional.

C. Risks

The risks of participating are *not greater than those you probably face in everyday life*. My research is about the community projects, rather than about individual people such as yourself. However, the survey, focus group, and interview will be centered on your experiences, which might bring up memories of social or political situations that make you feel uncomfortable. You do not need to answer any questions or report any experiences that make you uncomfortable. A breach of confidentiality also poses a risk. I will, however, follow the procedures below to minimize that risk. Finally, my interpretations of all the data I get about a particular project might not agree with your own view of the project. I will share and check my work with you, but it is possible we might end up agreeing to disagree. If so, I'll will try to represent your views in my work, e.g., with quotes.

Your participation and communication in focus groups and meetings will NOT be confidential. By nature, your participation in a focus group or meetings is by nature not confidential. However, I will not use or share your name in association with such work,

including in any publications, without your express request and permission. **Your communication with me about your project (e.g., emails and interviews) is confidential.**

This includes making sure that my publications and presentations do not make you identifiable in association with individual outcomes or statements unless you request otherwise. I will also be extremely cautious about using any comments you make about other people that may make them identifiable to avoid any harm to them, you, or the project. Please note, however, that communication by email or the Internet is not secure, and that this might jeopardize confidentiality.

IV. Benefits:

You receive *no direct benefits* from participating in this project. I do hope that people who are involved with community food system work will learn from this research, and that the projects involved can use the data to support their fundraising and publicity work.

V. Confidentiality:

Your individual communications with me (e.g., interviews, conversations and emails) are confidential. This includes making sure that my publications and presentations do not make you identifiable in association with individual outcomes or statements unless you request otherwise. I will also be extremely cautious about using any comments you make about other people that may make them identifiable to avoid any harm to them, you, or the project. Please note, however, that *communication by email is not secure*, and that this might jeopardize confidentiality. Comments you make in public (e.g., at events or meetings) are, by nature, not confidential. However, I will treat them in the same way as above in publications and presentations resulting from this work.

I will keep project data (e.g., audio files, transcripts, my notes) on my password-protected computer and on a secure storage website. I will share any notes or transcripts of your interview only with you, if you would like a copy. Also, the person who transcribes the interviews will have access to the audio files. That person will sign a confidentiality agreement. No one else will have access to this data. I will keep the data indefinitely unless you contact me or the University to ask me to delete them. I will use them only for the purposes described here.

VI. Freedom of consent and participation

If you have decided to participate in this study, please understand that your *participation is voluntary*. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss

of benefits to which you are otherwise entitled. To withdraw from the study, use the information below.

VII. Contacts for questions or withdrawal

You can contact me or my faculty advisor at any time with questions or to withdraw from the study:

Peggy A McCrackin, Graduate Student, Division of Kinesiology & Health

307-766-2141, peggym@uwyo.edu

Christine M. Porter, Assistant Professor of Public Health

307-766-2143, christine.porter@uwyo.edu

If you have questions about your rights as a research subject, please contact the University of Wyoming IRB Administrator at 307-766-5320.

I agree to participate in this research as described here:

Your name, printed

Your signature

Date

By checking this box, I also agree to have the interview audio recorded (noting these can be paused, stopped, or deleted upon my request): your initials: _____

By checking this box, I also agree to have the focus group session audio recorded (noting these can be paused, stopped, or deleted upon my request): your initials: _____

Researcher's statement of commitment: I, Peggy A. McCrackin, commit to abide by the terms outlined in this document both in letter and in spirit.

Peggy's Signature _____ Date _____

APPENDIX C – IMPLIED CONSENT VIA EMAIL

Hello Participant,

April seems like a long time ago when we were gathered together at the gardening workshop.

I hope you have enjoyed a great summer.

During the workshop I mentioned that I'm doing some research about gardening as part of my master's thesis at UW. I would be very grateful if you would participate in this research. If you are willing, please **reply to this e-mail by Friday, October 7th**, with answers to the two questions below.

Your e-mail reply to the two questions below indicates your **voluntary** willingness to participate in my research and to have your responses included in my research data. Please review the detailed informed consent information at the end of this e-mail regarding your participation in this research and rights as a research participant.

1. How large was your total food garden in 2010? If you did not garden fruits, herbs, and/or vegetables in 2010, write "0". Please provide your best estimate for the dimensions of the total food gardening space you planted and maintained. Please include any containers. For example: "I worked a 2 feet by 4 feet garden area in my yard and had 2 containers of about 1 foot by 1 foot each."

Your total **2010** gardening space:

2. **How large was your total food garden this summer, 2011?** If you did not garden fruits, herbs, and/or vegetables in 2011, write “0”. Please provide your best estimate for the dimensions of the total gardening space you planted and maintained. Include containers, pots, hanging gardens, and/or estimates of the dimensions of your garden space. For example: “I worked two 4 feet by 6 feet raised beds in my yard and kept one container about 2 feet by 2 feet.”

Your total **2011** gardening space:

As I mentioned in April, for this research project, I will:

- Share summarized results of this research with you.
- Hold interviews and focus groups. I will send invitations in the coming weeks.
- Keep all communication confidential. Please note, however, that communication by e-mail is not secure.
- Remove you from my mailing list if you do not wish to be contacted again.

Please let me know if you have any questions. I can be reached via phone at: 307-399-1802 or via e-mail at: peggym@uwyo.edu.

Thanks,
Peggy McCrackin
Graduate Assistant, Kinesiology & Health

APPENDIX D – TWO QUESTION EMAIL SURVEY

1. How large was your total food garden in 2010? If you did not garden fruits, herbs, and/or vegetables in 2010, write “0”. Please provide your best estimate for the dimensions of the total food gardening space you planted and maintained. Please include any containers. For example: “I worked a 2 feet by 4 feet garden area in my yard and had 2 containers of about 1 foot by 1 foot each.”

Your total **2010** gardening space:

2. How large was your total food garden this summer, 2011? If you did not garden fruits, herbs, and/or vegetables in 2011, write “0”. Please provide your best estimate for the dimensions of the total gardening space you planted and maintained. Include containers, pots, hanging gardens, and/or estimates of the dimensions of your garden space. For example: “I worked two 4 feet by 6 feet raised beds in my yard and kept one container about 2 feet by 2 feet.”

Your total **2011** gardening space: